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Application of Drug Supervision System and Drug Classification Management in Western Pharmacy Management

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Abstract: The outpatient pharmacy is one of the essential components of a hospital, and the quality of its work directly impacts the safety of patient medication. Therefore, effective management of the outpatient pharmacy is crucial to enhance medication safety. This study selected 100 patients who received services at the outpatient pharmacy of our hospital from April 2022 to April 2024, with 50 cases before and after the implementation of strengthened medication management. We compared the occurrence of medication management defects, satisfaction levels of outpatient pharmacy staff, professional competency assessments. The results indicated that the overall occurrence rate of medication management defects after the implementation of strengthened medication management was 0.25%, significantly lower than the 1.75% observed before. The satisfaction level of pharmacy staff regarding work processes showed no statistically significant difference compared to before the strengthening; however, their satisfaction with pharmacy supervision and work efficiency was higher post-strengthening. This indicates that strengthening the rational classification of medications and the medication supervision system in outpatient pharmacy management can reduce the occurrence rate of medication management defects, enhance the pharmaceutical knowledge level and improve the satisfaction of outpatient pharmacy staff.

1. Introduction

Medicines are substances used by medical institutions to prevent, diagnose, and treat diseases, purposefully regulating patients' physiological functions, and are closely related to human health. Effective management of medicines plays a crucial role in protecting human health and safety [1]. Moreover, medicines are also commodities, but they possess unique characteristics; improper use can have direct impacts on patient health, potentially leading to medical disputes and damaging the hospital's image. Unlike other products in the market, medicines cannot rely entirely on market mechanisms for development; instead, strict regulatory oversight is required to ensure the normal order of the pharmaceutical market, establish market mechanisms, and implement stringent regulatory measures to maintain the proper functioning of the pharmaceutical market. Therefore, ensuring the rational distribution of medicines in Western pharmacies and the quality of these

medicines, as well as guaranteeing medication safety, is one of the urgent issues that need to be addressed in hospital Western pharmacies [2].

In recent years, with the continuous improvement of national economic development and living standards, our country and government have increasingly emphasized intervention and care for the healthcare sector, continually deepening reforms and advancing healthcare development [3]. The number of Western medicines in the Chinese market is also steadily increasing. Strengthening the classification and regulation of medicines in hospital Western pharmacies can enhance the efficiency of pharmacy operations, reduce or even eliminate medication error rates, thereby better serving the public and improving patient satisfaction. Hospital pharmacies are comprehensive functional departments that integrate management, technology, operations, and services, and the management of pharmacy medicines is a task that combines technical, economic, and accountability aspects. The quality of medicine management in hospital pharmacies directly impacts the overall service quality of hospitals, contributes to ensuring patient safety in medical care, reduces the occurrence of adverse events, and helps decrease disputes between doctors and patients. To ensure the rational use of medications and medication safety for patients, pharmacies should strictly adhere to relevant regulations in managing medicines, continuously improve management systems based on actual conditions, and standardize management measures and operational processes. However, the management model of pharmacy operations in various medical institutions has traditionally been based on "financial management," which has shortcomings such as low management efficiency and inadequate management quality, making it no longer suitable for the current pace of pharmaceutical management development in hospitals.

In recent years, multiple studies have confirmed that the rational classification of medications and a robust medication management system can enhance the management of pharmaceuticals in hospital pharmacies, reduce the error rate in medication dispensing, and increase the satisfaction of both healthcare personnel and patients. Rational medication classification should be scientific and reasonable [4]. Ordinary medications, high-risk medications, and anesthetic medications should each be managed by designated personnel. Classified medications should be organized according to their pharmacological effects and dosage forms, while high-risk medications must be stored strictly according to medical directives. Daily verification of medication quantities and other relevant information is essential, and both parties must sign off during shift changes. Additionally, pharmacies should develop feasible and reasonable medication management systems based on the actual conditions of the hospital, standardizing all operational workflows. This includes clarifying inter-departmental medication transfer protocols, medication requisition and return procedures, borrowing protocols, loss and gain reporting systems, inventory management protocols, and other management systems to ensure the quality of medication management in the pharmacy [5-6]. Based on this, the present study observed and analyzed the application effects of rational medication classification and medication management systems in outpatient pharmacy management, which are reported as follows.

2. Materials and Methods

2.1 Data Sources

2.1.1 Patient Information

We selected 100 patients who visited the outpatient pharmacy at our hospital from April 2022 to April 2024.

There were 50 patients before the intervention (April 2022 - April 2023) with an age range of 19 to 67 years (34. 15 ± 0. 19 years), and 50 patients after the intervention (April 2023 - April 2024)

with an age range of 20 to 67 years (34. 16 ± 0.20 years). The comparison of baseline data for patients before and after the intervention showed no statistically significant difference ($P > 0.05$), indicating comparability.

Inclusion criteria: (1) received treatment at our hospital; (2) complete medication order information; (3) normal mental state.

Exclusion criteria: (1) lack of compliance capability for the safe use of medication research; (2) language communication barriers.

2.1.2 Staff Information at the Outpatient Pharmacy

Before and after the implementation of the rational classification of medications and medication supervision system, five staff members participated in related work at the outpatient pharmacy, including 2 males and 3 females, aged 28 to 49 years (35.17 ± 0.17 years). Among them, 2 were vocational school graduates and 3 held bachelor's degrees, with work experience in the outpatient pharmacy ranging from 3 to 22 years (10.05 ± 5.07 years).

Participation criteria for the implementation of the rational classification of medications and medication supervision system: (1) regularly attend meetings for the study of rational classification of medications and medication supervision system; (2) have at least 2 years of relevant experience in the outpatient pharmacy; (3) be continuously employed during the research period.

2.2 Research Methods

A total of 400 medications managed by the outpatient pharmacy from April 2022 to April 2024 in our hospital will be selected to observe the changes in medication management following the implementation of enhanced rational drug classification and drug supervision systems. From April 2022 to April 2023, the outpatient pharmacy employed traditional management methods: (1) separating the management of prescription medications and over-the-counter medications according to hospital regulations; (2) conducting regular random checks of medication management within the outpatient pharmacy; (3) holding regular internal study meetings to train outpatient pharmacy staff; (4) ensuring that the storage and dispensing of medications followed the original management regulations of the pharmacy. The enhanced rational drug classification and drug supervision systems from April 2021 to April 2022 were specifically as follows:

(1) Establishing a reinforcement working group. The leader is primarily responsible for overseeing the implementation of enhanced rational drug classification and drug supervision systems in the outpatient pharmacy, guiding group members to participate in related training activities and research meetings organized by the outpatient pharmacy, and supervising the execution of enhanced rational drug classification and drug supervision systems. Group members are tasked with carrying out relevant outpatient pharmacy medication management work as per the requirements of the reinforcement initiative, regularly attending training meetings organized by the outpatient pharmacy on medication management and operational protocols, and collecting various data regarding rational medication management and drug supervision systems.

(2) Identifying medication management issues: disorganized classification, lax enforcement of management systems, substandard medication storage, insufficient knowledge of medications among group members, and defects in the medication services provided to patients by the outpatient pharmacy.

(3) Clarifying the management plan: analyzing the medication management issues and implementing related work from multiple aspects, including group member training, classification management, drug circulation, medication storage, process management, patient services, and supervisory management.

Staff Training: Pharmacy management personnel invite in-house pharmacy experts to conduct regular training for outpatient pharmacy staff. The training content primarily focuses on enhancing pharmacy knowledge to ensure that outpatient pharmacy personnel possess a solid understanding of pharmaceutical information. Pharmacy leaders conduct specialized staff training based on identified deficiencies in outpatient pharmacy management, ensuring that lessons learned are applied to reduce the recurrence of related incidents. Additionally, opportunities for external training are provided to outpatient pharmacy staff to enhance their professional skills.

Categorization Management: (1) The outpatient pharmacy should integrate all medications within the pharmacy, categorizing them in detail based on non-prescription, prescription, indications, and storage methods, and conduct centralized partition management for the same category of drugs. (2) The outpatient pharmacy establishes management regulations based on drug classifications and facilitates staff in accessing management information via QR codes placed next to the management cabinet for self-correction of management tasks. (3) Special management medications should be stored separately.

Drug Distribution: (1) Stocking should be based on the drug distribution situation in the outpatient pharmacy.

(2) Medications with a daily sales volume of ≥80% should be stocked in large quantities to ensure timely availability for patients. (3) Medications with a daily sales volume of ≥15% should be stocked appropriately, with a weekly check on the inventory of related drugs in the outpatient pharmacy to avoid exceeding turnover rates. (4) Medications with a daily sales volume of <5% should be stocked in small quantities based on patient demand in the hospital, while ensuring that patient treatment needs are met.

Drug Storage: (1) Different drugs have different storage conditions; light-sensitive, moisture-sensitive, and heat-sensitive medications should be equipped with light-blocking curtains, storage cabinets, dehumidifying devices, and temperature control equipment. (2) Based on the management needs of all medications, the outpatient pharmacy should place them in different devices, adjusting temperature, humidity, and light, ensuring compliance with temperature and humidity standards in drug management. (3) Bulk medications in the outpatient pharmacy should be managed separately, ensuring closed management of drugs and using light-blocking measures when necessary to avoid property changes due to strong light exposure.

Process Management: (1) All information regarding the requisition, storage, and dispensing of medications in the outpatient pharmacy must be registered, ensuring transparency in the drug management process with a unique code for each item. (2) Internal management in the outpatient pharmacy operates based on management regulations, managing drug dispensing according to medical prescriptions and pharmacy safety.

Patient Services: (1) Medications should be dispensed according to the patient's prescription. (2) Verify the patient's personal information. (3) Check whether the medications listed in the prescription are appropriate for the diagnosed condition and whether there are any drug interactions. (4) Retrieve medications according to the prescription and double-check that the medication information is correct. (5) When dispensing medications to patients, announce the name and quantity of each medication to ensure the patient is informed. (6) Inform patients of medication precautions based on contraindications and advise against taking medications if the packaging is damaged, recommending a visit to the pharmacy for a replacement.

Supervision and Management: (1) Regular assessments of outpatient pharmacy staff's professional competency should be conducted to understand their foundational skills. (2) Random checks on drug management practices should be conducted to ensure correct placement of medications, and management information should be promptly communicated to the western pharmacy for self-correction of management deficiencies. (3) A medication safe should be

established for the secure storage of special medications to prevent accidental loss. (4) A dedicated procurement supervision team should be organized to oversee the procurement of medications, ensuring that purchased drugs meet hospital procurement requirements, possess legal documentation, and match the hospital's demand to avoid the influx of illegal drugs into the western pharmacy. (5) Regular reviews of drug inventory information should be conducted to ensure timely and safe handling of expired medications in storage.

2.3 Observation Indicators

The occurrence of defects in drug management is statistically recorded, including changes in drug properties, errors in information entry, incorrect administration, and others. Researchers have compiled data on 400 types of drugs to assess the situations regarding drug management defects before and after the implementation of work in outpatient pharmacies. If the same drug exhibits management defects multiple times, it is recorded only once.

The satisfaction level of pharmacy staff is measured, reflecting aspects such as work processes, pharmacy supervision, and work efficiency. A score of 0 indicates dissatisfaction, 1 indicates general satisfaction, 2 indicates a higher level of satisfaction, and 3 indicates complete satisfaction.

The professional competency assessment includes management regulations, pharmaceutical knowledge, storage techniques, and patient service. Researchers distributed satisfaction surveys to the team involved in strengthening management at outpatient pharmacies to understand the changes in professional levels among five staff members before and after the reinforcement measures. Each criterion is scored from 0 to 10, with higher scores indicating a higher level of professional competence among staff.

The SPSS 27.0 software was chosen for statistical analysis of the data. Continuous data are presented as $x \pm s$ and analyzed using t-tests, while categorical data are expressed as percentages (%) and analyzed using chi-square tests. A p-value of <0.05 indicates that the difference is statistically significant.

3. Results

Table 1 Comparison of drug management defects before and after implementing strengthened pharmacy management

Group	Quantity	Information entry error	Drug error	Others	Percent
Before	400	5	1	1	1.75%
After	400	1	0	0	0.25

Table 2 Comparison of staff satisfaction in outpatient pharmacy before and after implementing strengthened pharmacy management

Group	Quantity	Work flow	Pharmacy management	Work efficiency
Before	5	1.94±0.11	2.13±0.14	2.03±0.11
After	5	2.12±0.32	2.87±0.02	2.79±0.21
t	\	1.189	11.700	7.168
P	\	0.265	<0.001	<0.001

After implementing strengthened pharmacy management, the overall incidence of medication management defects was 0.25%, lower than the 1.75% observed prior to the strengthening (P=0.033), as shown in Table 1. There was no statistically significant difference in the pharmacy staff's satisfaction with work processes when compared to before the strengthening (P>0.05). However, satisfaction with pharmacy oversight and work efficiency was higher than that observed

prior to the strengthening (P<0.01), as indicated in Table 2. Following the strengthening, assessment scores for staff management regulations, pharmaceutical knowledge, storage knowledge, and patient service all exceeded those recorded before the strengthening.

Medications are the primary means for patients to treat their illnesses, but their diverse categories and numerous types impose high demands on usage, storage, and other aspects. In the management process of outpatient pharmacies, improper management can lead to medication risk events and result in complaints. As special commodities, medications require unique management by hospitals during supervision to avoid management deficiencies. Outpatient pharmacies should enhance management effectiveness through strict and safe systems in the medication management process. Rational classification management of medications is a model based on various factors such as the properties of the medications, storage returns, and circulation conditions, which refines vague management content to ensure that medications meet the needs of different management stages, thereby safeguarding medication quality. The medication supervision system can evaluate the state of medication management, identify issues within management, and provide feedback on supervision results to staff, promoting improvements in medication management quality. Multiple studies suggest that medication classification management and medication supervision are two essential components of outpatient pharmacy management; their application in management can significantly enhance management quality, ensure effective management, and mitigate management risks.

4. Conclusion

This study found that: (1) The incidence of defects in drug management processes, such as changes in drug properties, errors in data entry, and incorrect administration, was significantly lower after reinforcement compared to before. This is primarily due to the reasonable classification of drugs, which allows for separate management of medications according to different classification methods, thereby avoiding the issues of improper drug management caused by chaotic management and reducing problems such as data entry errors and dispensing mistakes. (2) The scores of professional competency assessments for drug management staff were higher after reinforcement than before. This is because the management of outpatient pharmacy work involves multiple steps, and reasonable classification of drugs and drug regulatory systems are essential for conducting relevant work at each stage, which imposes higher requirements on staff expertise. Professional levels must be enhanced through training, management, and daily supervision. (3) The reasonable classification of drugs and regulatory systems can improve staff satisfaction with relevant work, mainly because these systems help to structure drug management tasks and enable timely identification of issues within outpatient pharmacy management, leading to clearer work processes. This research aligns with the views of many researchers in Western medicine pharmacy management, who all recognize the value of implementing reasonable drug classification and regulatory systems, enhancing the credibility of the study.

In summary, adopting reasonable drug classification and regulatory systems in outpatient pharmacy drug management can reduce the incidence of defects, enhance staff professional levels, improve satisfaction rates among internal and external stakeholders, and lower complaint occurrence rates.

References

[1] Liao Yongzhong. Effect analysis of rational drug classification and drug supervision system on management of Western pharmacy [J]. Journal of Northern Medicine, 2023, 20(04):105-107.

[2] Jiang Yujun. Research on the application value of rational drug classification and drug supervision system in

hospital inpatient pharmacy management [J]. Chinese Community Physician, 2023, 39(02):162-164.
[3] REN Hongli. Research on the application of drug supervision system and rational classification of drugs in the management of hospital pharmacy [J]. Famous Doctor, 2021, (07):191-192.
[4] Bian Qinqin, Liu Jianping. Application value of rational drug classification and drug supervision system in the management of hospital pharmacy [J]. Journal of Clinical Medical Literature Electronic, 2020,7(51):2+4.
[5] Lin Yimou. Discussion on the role of hierarchical supervision of drug safety risk in drug management in hospital pharmacy [J]. Journal of Northern Medicine, 2020, 17(04):181-182.
[6] Zhu Dongmei, Guo Xiaohong, Qian Shengyong. Strengthening the application effect of rational drug classification and drug supervision system in outpatient pharmacy management [J]. Clinical Rational Use of drugs, 2023, 16(34):143-146.