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QUALITY MANAGEMENT SYSTEMS IN COMMUNITY PHARMACIES: THE ROLE OF GPP AND ISO STANDARDS IN OPERATIONAL AND ECONOMIC PERFORMANCE

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Abstract
The transformation of pharmaceutical markets has intensified the need for structured quality management systems in community pharmacy networks. This study investigates the impact of Good Pharmacy Practice (GPP) guidelines and ISO 9001-based quality management systems on operational efficiency, service quality, and economic performance of community pharmacies. The research is based on an empirical analysis of a pharmacy chain operating in Samarkand, Uzbekistan, during 2024–2026. The results demonstrate that systematic quality management implementation contributes to process standardization, risk reduction, improved patient trust, and sustainable financial performance. The findings highlight the strategic importance of quality management systems for pharmacy networks operating in developing pharmaceutical markets.

Keywords: Community pharmacy; quality management systems; GPP; ISO 9001; pharmaceutical services; operational performance.

Introduction

Community pharmacies represent a critical component of healthcare systems by ensuring population access to safe, effective, and affordable medicines. In recent decades, the role of pharmacies has expanded beyond dispensing activities to include pharmaceutical care, patient counseling, and participation in public health initiatives. This transformation has increased the complexity of pharmacy operations and heightened the importance of quality management.

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Growing competition in pharmaceutical retail markets, stricter regulatory requirements, and rising patient expectations have forced pharmacy networks to adopt structured management approaches. Quality management systems (QMS) are increasingly viewed as strategic tools that enable pharmacies to ensure service consistency, regulatory compliance, and financial sustainability.

Internationally, Good Pharmacy Practice (GPP) standards developed by the World Health Organization (WHO) and the International Pharmaceutical Federation (FIP) define professional and organizational requirements for pharmacy practice. In parallel, ISO 9001 provides a universal framework for process-based quality management applicable across industries, including healthcare and pharmacy services.

For developing pharmaceutical markets such as Uzbekistan, the adaptation of international quality standards presents both opportunities and challenges. Pharmacy networks often combine retail operations with extemporaneous compounding, which requires heightened quality control and professional responsibility. This study aims to assess how the implementation of GPP and ISO standards influences operational and economic performance in community pharmacies under such conditions.

Literature Review

Quality management in pharmaceutical practice has been extensively studied in the context of manufacturing, distribution, and supply chains. However, community pharmacies have received comparatively less attention despite their critical role in healthcare delivery.

Studies indicate that GPP implementation improves patient safety, professional accountability, and service quality (FIP, 2021). GPP emphasizes standardized procedures, staff competence, ethical conduct, and patient-centered care. Research conducted in European pharmacy networks demonstrates that adherence to GPP principles reduces dispensing errors and enhances patient satisfaction.

ISO 9001 has been widely analyzed as a driver of organizational performance. Su et al. (2020) demonstrated that ISO 9001 certification improves productivity and operational efficiency, particularly when integrated across supply chain networks. In healthcare settings, ISO-based systems support documentation, process control, and continuous improvement.

Several authors highlight the economic implications of quality management. Montgomery (2019) emphasizes that systematic quality control reduces operational losses and improves cost efficiency. In pharmacy practice, quality failures may result in product recalls, regulatory penalties, and reputational damage, directly affecting financial performance.

Despite these findings, there is limited empirical research focusing on community pharmacies in Central Asia. Existing studies often address regulatory compliance but do not sufficiently examine the economic outcomes of quality management adoption. This research seeks to fill this gap by providing evidence from pharmacy networks operating in Uzbekistan.

Materials and Methods

Study Design

A descriptive and analytical study was conducted to evaluate the role of quality management systems in community pharmacy networks. The research design combined qualitative and quantitative

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approaches in order to comprehensively assess organizational, operational, and economic aspects of quality management implementation. This approach allowed for an integrated analysis of both process-related changes and performance outcomes associated with the adoption of GPP and ISO 9001 standards.

The study focused on real-world pharmacy practice and did not involve experimental interventions. Instead, it relied on systematic observation, document analysis, and retrospective evaluation of operational indicators, which is consistent with methodological approaches commonly used in health services and pharmacy management research.

Study Setting

The study was carried out within a community pharmacy network operating in Samarkand, Uzbekistan. The network consisted of 16 community pharmacies, of which 6 units provided extemporaneous compounding services in addition to standard retail pharmaceutical activities. This structural diversity made it possible to assess quality management practices across different types of pharmacy operations.

The observation period covered three consecutive years (2024–2026), allowing for the identification of trends and changes over time. During this period, the pharmacy network gradually introduced elements of Good Pharmacy Practice and ISO 9001-based quality management systems, including standardized operating procedures, internal audits, and staff training programs.

Data Collection

Data were collected from multiple sources to ensure the reliability and completeness of the analysis. The primary data sources included:

internal operational and financial reports reflecting sales volume, losses, and operational expenses;

documentation related to quality management procedures, including standard operating procedures (SOPs), internal audit protocols, and corrective action reports;

regulatory compliance records documenting inspections, identified non-compliances, and corrective measures;

staff training records and internal audit reports evaluating personnel competence and adherence to quality standards.

The use of multiple data sources enabled triangulation and reduced the risk of systematic bias. All data were anonymized and analyzed in aggregated form to ensure confidentiality

Methods

The study employed a combination of analytical methods appropriate for organizational and economic assessment in pharmacy practice. A process-based analysis was applied to examine pharmacy workflows related to procurement, storage, extemporaneous compounding, and dispensing of medicines. This approach made it possible to identify critical control points and areas most sensitive to quality deviations.

A comparative analysis of key performance indicators was conducted to assess changes before and after the implementation of quality management practices. In addition, a qualitative assessment of operational risks was performed based on internal audit findings and regulatory inspection outcomes.

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Descriptive economic analysis was used to evaluate the financial implications of quality management, including reductions in losses associated with expired products, returns, and regulatory penalties.

Results

The implementation of GPP and ISO-based quality management practices resulted in noticeable improvements in operational consistency across the pharmacy network. Pharmacies that adopted standardized operating procedures demonstrated a reduction in deviations related to storage conditions, documentation accuracy, and dispensing processes. Internal audit results indicated a steady decline in the number of identified non-compliances over the study period.

In pharmacies engaged in extemporaneous compounding, the introduction of stricter documentation requirements and enhanced process control significantly reduced formulation errors and material losses. Improved traceability of raw materials and finished preparations contributed to better accountability and compliance with regulatory standards.

From an economic perspective, the pharmacy network experienced a measurable reduction in losses related to expired products, customer returns, and regulatory sanctions. Enhanced service quality and professional consistency positively influenced patient trust, which was reflected in increased repeat purchases and greater customer loyalty. As a result, the network demonstrated stable revenue growth and improved financial sustainability despite a competitive market environment.

Discussion

The findings of this study confirm that quality management systems play a dual and interrelated role in community pharmacies by simultaneously ensuring patient safety and supporting economic sustainability. The implementation of GPP principles strengthens professional standards, promotes ethical pharmacy practice, and enhances the reliability of pharmaceutical services. At the same time, ISO 9001 provides a structured framework for process optimization, documentation, and continuous improvement.

The results are consistent with previous studies indicating that quality management reduces operational risks and improves organizational performance. In particular, the reduction of errors and non-compliances contributes to lower operational costs and mitigates reputational risks. However, the study also identified challenges associated with quality system implementation, including staff resistance to procedural changes and limitations in digital infrastructure.

Addressing these barriers requires targeted training programs, management engagement, and gradual digitalization of quality monitoring systems. In developing pharmaceutical markets such as Uzbekistan, a context-sensitive and phased approach to quality management implementation appears to be essential for achieving long-term effectiveness.

Conclusion

Quality management systems based on GPP and ISO standards are essential for the sustainable development of community pharmacy networks. Their implementation improves operational reliability, reduces risks, and positively influences economic performance. For pharmacy networks in Uzbekistan, adapting international standards to local regulatory and operational contexts is critical for long-term success.

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