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The Use of Simulated Patients in Pharmacy Practice Research: Its Importance for Saudi Arabia

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Abstract
Simulated patients (SPs) have emerged as a critical methodology in pharmacy practice research, offering a realistic and controlled means to evaluate and improve pharmacy services. In Saudi Arabia, where the healthcare system is rapidly evolving under Saudi Vision 2030, SPs can address gaps in patient-centered care, pharmacist communication, and regulatory compliance. Their application enables the assessment of pharmacist behaviors and the quality of patient counseling, contributing to safer and more effective pharmacy practices. This review highlights the relevance of SPs to Saudi Arabia's healthcare transformation, underscoring their role in advancing pharmacy education and enhancing service delivery. While the benefits are substantial, challenges such as methodological standardization, resource allocation, and ethical considerations must be addressed to fully realize the potential of SPs in pharmacy research and practice.

Aim of Work
The aim of this work is to examine the significance of simulated patients (SPs) in pharmacy practice research, with a particular focus on their importance for Saudi Arabia. This review seeks to explore how SP methodology can enhance pharmacy services by providing a realistic and controlled approach to evaluating pharmacist behaviors, patient counseling, and regulatory compliance. It also aims to highlight the potential of SPs in addressing key challenges within Saudi Arabia's healthcare system, such as ensuring quality care and fostering patient-centered practices. Additionally, this work aligns the benefits of SP integration with the strategic objectives of Saudi Vision 2030, emphasizing its role in advancing pharmacy education, improving service delivery, and ultimately contributing to the nation’s ongoing healthcare transformation.

Keywords: Simulated Patients, Pharmacy Practice Research, Saudi Arabia, Healthcare Education, Patient-Centered Care, Saudi Vision 2030, Pharmacy Services, Methodological Challenges

Introduction

Pharmacy practice in Saudi Arabia has undergone significant transformation over recent years, reflecting broader trends in healthcare modernization and the strategic goals of Saudi Vision 2030. The evolution of pharmacy practice encompasses community pharmacy services, clinical pharmacy advancements, and the integration of specialized fields such as infectious diseases pharmacy. This overview will explore the current state of pharmacy practice in Saudi Arabia, highlighting key developments, challenges, and future directions.

Community Pharmacy Services: Community pharmacies in Saudi Arabia have expanded their roles beyond traditional dispensing to include a variety of health services. These services include medication counseling, health education, and management of minor ailments, with a significant number of pharmacies offering online shopping and home delivery services (Alrasheedy, 2024). The density of community pharmacies has increased significantly, with a growth of 89.30% from 2007 to 2022. However, regional disparities in pharmacy density remain, and the ratio of pharmacists per pharmacy has seen minimal change (Alrasheedy, 2023). Despite these advancements, there is limited public awareness of the full range of services offered by community pharmacies, and a preference for other healthcare professionals often limits the utilization of these services (Khayyat et al., 2024).

Clinical Pharmacy and Specialized Services: Clinical pharmacy in Saudi Arabia is evolving, with a focus on patient-centered care in areas such as medication therapy management and chronic disease management. The specialty of ambulatory care pharmacy is particularly promising, aligning with the goals of Saudi Vision 2030(Arab et al., 2023). Infectious diseases pharmacy is a rapidly developing field, with efforts to enhance antimicrobial stewardship programs and increase the number of trained pharmacists in this specialty (Alsowaida et al., 2022). The Saudi Society of Clinical Pharmacy has emphasized the need for defining clinical pharmacy roles and enhancing education and training to meet the growing demand for clinical services (Korayem et al., 2021).

Workforce and Education: The pharmacy workforce in Saudi Arabia has seen significant changes, including an increase in the number of female pharmacists and a shift towards nationalization policies that have increased the proportion of Saudi pharmacists (Alrasheedy, 2023). Educational initiatives, such as the introduction of PharmD programs, have contributed to the growth of pharmacy practice research and the development of competencies aligned with international standards (Almaghaslah et al., 2022) (Alotaibi et al., 2022). While pharmacy practice in Saudi Arabia has made significant strides, challenges remain in optimizing the role of pharmacists within the healthcare system. Addressing these challenges will require coordinated efforts across educational, regulatory, and professional domains to ensure that pharmacists can fully contribute to patient care and public health.

The development of Simulated Patients (SP) methodology has been marked by several key milestones that have significantly influenced its applications in healthcare education and research. Originating in the 1960s, SP methodology has evolved to become a cornerstone in medical training, offering a safe and controlled environment for students to practice clinical skills. Over the decades, the methodology has expanded beyond medical education to include various health services and pharmacy practice, adapting to technological advancements and societal needs. The following sections outline the major milestones and their impacts on the applications of SP methodology.

Early Development and Adoption: 1960s Inception: The concept of SPs was pioneered by Drs. Barrow and Stillman, who envisioned using standardized patients in simulated clinical encounters to objectively teach and assess learners (Cohen-Tigor & Gliva-McConvey, 2020). Ubiquitous Adoption in the U.S.: Since its inception, SP methodology has been widely adopted in the United States, primarily due to its ability to allow healthcare learners to practice without risking harm to real patients (Huvet, 2022).

Expansion and Diversification: International Expansion: Over the past few decades, the use of SP methodology has grown internationally, with contributions from 72 countries, reflecting its adaptability across different healthcare systems and educational frameworks (Elcin & Elcin, 2020).

Pharmacy and Health Services Research: The methodology has been increasingly used in

pharmacy practice and health services research to observe practitioner behavior in naturalistic settings, often involving unannounced SPs to assess real-world practices ("Design and application of the simulated patient method in pharmacy and health services research", 2022) (Collins et al., 2021).

Technological Integration: Telehealth and Online Training: The COVID-19 pandemic accelerated the integration of SP methodology with online formats, supporting telehealth training and interprofessional education. This shift has paved the way for future innovations in distance learning combined with traditional SP education (Huvet, 2022). Diverse Interaction Modalities: SPs have been involved in various interaction types, including telephone and computer-based encounters, expanding the scope of their application in modern healthcare training (Szauter, 2019).

Methodological Refinements: Standardization and Flexibility: While the level of standardization varies, SPs are used in both formative and summative assessments, with a focus on consistent performance in high-stakes evaluations. This balance between standardization and flexibility allows for tailored learning experiences (Nestel & Bearman, 2014). Ethical and Practical Considerations: The design and implementation of SP studies involve ethical considerations, such as informed consent and the impact on real patient care, ensuring that the methodology remains ethically sound and practically viable (Collins et al., 2021).

Impact on Education and Research: Enhanced Learning Outcomes: SP methodology has been shown to improve clinical decision-making, communication skills, and self-confidence among healthcare students, providing a safe and effective learning environment (Gayef, 2019). Quality of Care Assessment: SPs serve as a 'gold standard' for measuring clinical care quality, allowing for benchmarking against established standards and providing insights into healthcare provider responses through controlled manipulations ("Simulated patients and their reality: An inquiry into theory and method", 2022). While SP methodology has become integral to healthcare education and research, it is important to recognize its limitations and the need for complementary methods. Observational studies, for instance, offer insights into real patient choices and their impact on diagnosis and treatment, which SPs alone cannot fully capture. Combining SP methodology with other research methods can provide a more comprehensive understanding of healthcare quality and patient-provider interactions ("Simulated patients and their reality: An inquiry into theory and method", 2022).

The evolution of pharmacy practice in Saudi Arabia and the development of Simulated Patient (SP) methodology shares a common trajectory of adapting to the dynamic needs of healthcare education and service delivery. Both fields have embraced innovation to enhance training, patient-centered care, and research outcomes. While Saudi pharmacy practice has transformed through advancements in community and clinical services aligned with Saudi Vision 2030, SP methodology has provided a robust platform for training healthcare professionals in safe, controlled environments. The integration of SP methodology into pharmacy education and research reflects its adaptability and effectiveness in assessing and improving real-world practices, complementing the strides made in pharmacy workforce development and specialized care. Together, these advancements underscore the critical role of continuous innovation and education in shaping modern healthcare systems.

- **Contribution of Simulated Patients in studying pharmacy services**

Simulated patients (SPs) play a crucial role in studying pharmacy services by providing a realistic and controlled environment to evaluate and enhance the quality of pharmacy practice. This method allows researchers to assess pharmacists' behaviors, communication skills, and the effectiveness of their interventions in a naturalistic setting. The use of SPs is particularly valuable in pharmacy

education and practice research, offering insights into areas such as patient counseling, medication management, and the overall quality of pharmacy services. The following sections detail the contributions of simulated patients to pharmacy services.

Evaluation of Pharmacy Practice: SPs are used to assess the quality of pharmacy services, particularly in community settings. They help evaluate pharmacists' ability to manage specific health conditions, such as childhood diarrhea, by simulating real-life scenarios where pharmacists must take patient histories and recommend appropriate therapies like oral rehydration salts (Pramestutie et al., 2023). The SP methodology, including mystery calls, is considered the "gold standard" for studying community pharmacy practices. It allows for the assessment of pharmacists' advice and counseling skills, providing a comprehensive view of service quality across different settings (Kunow & Langer, 2023) (Björnsdóttir et al., 2020).

Educational Benefits: In pharmacy education, SPs are instrumental in developing students' clinical and communication skills. They provide a safe environment for students to practice and refine their skills, leading to improved confidence and competence in real-life patient interactions (El-Geed et al., 2021) (Kerr et al., 2021). Virtual patient simulations, a form of SP, have been shown to enhance pharmacy students' knowledge, decision-making skills, and engagement. These simulations offer exposure to complex and infrequent patient scenarios, reinforcing learning and skill application (Phanudulkitti et al., 2023) (Beshir et al., 2022).

Methodological Advantages: The SP method is advantageous for its ability to observe pharmacy practice in a naturalistic setting without altering the behavior of the practitioners being studied. This method is also used as an intervention tool when combined with feedback and coaching, further enhancing its utility in practice improvement ("Design and application of the simulated patient method in pharmacy and health services research", 2022) (Collins et al., 2021). SPs provide a standardized approach to evaluating pharmacy services, ensuring consistency and reliability in the data collected. This standardization is crucial for comparing practices across different regions and settings (Björnsdóttir et al., 2020). In contrast to the positive contributions of SPs, there are limitations and challenges associated with their use. These include the potential for ethical issues due to the deceptive nature of the method, the need for extensive training and standardization of SPs, and the logistical complexities involved in implementing SP studies. Despite these challenges, the benefits of using SPs in pharmacy services research and education are substantial, providing valuable insights and improvements in practice.

- **Challenges in Saudi Arabia that could benefit from Simulated Patients methodology**

The use of simulated patients (SPs) in healthcare education and training can address several challenges in Saudi Arabia, particularly in enhancing medical education, improving patient care, and ensuring healthcare system efficiency. Simulated patients can provide a controlled, risk-free environment for healthcare professionals to practice and refine their skills, which is crucial in a rapidly evolving healthcare landscape. This methodology can be particularly beneficial in addressing specific challenges identified in various studies conducted in Saudi Arabia.

Enhancing Medical Education and Training: Residency Programs: Simulation has been identified as a critical tool for integrating into residency programs to address educational needs across various specialties, such as Obstetrics and Gynecology, Emergency Medicine, and Pediatrics. The use of SPs can help in developing essential skills and behaviors required in these fields, providing a standardized approach to training and assessment (AlZoraigi, 2022) ("Integrating Medical Simulation into Residency Programs in Kingdom of Saudi Arabia", 2022). Occupational Therapy Training: Role-play simulations have been shown to be as effective as real-patient training for teaching transferal skills to occupational therapy students. This suggests

that SPs can be used to safely train students in handling patients with complex conditions, reducing the risk associated with training on severely ill patients (Meny et al., 2023). Surgical Skills Acquisition: Simulation-based training has been positively received in surgical education, offering a safe environment for acquiring basic surgical skills. This approach can be expanded to include SPs to simulate real-life surgical scenarios, enhancing the learning experience for medical interns and residents (Yahya, 2020).

Improving Patient Care and Safety: Outpatient Clinics: Simulation models have been used to improve patient flow and reduce waiting times in outpatient clinics. By using SPs, healthcare providers can practice and optimize patient interactions, leading to improved patient experiences and outcomes (Alrabghi & Tameem, 2024). COVID-19 Preparedness: In situ simulations have been instrumental in preparing healthcare facilities for COVID-19, identifying latent threats, and improving teamwork and infection control measures. SPs can further enhance these simulations by providing realistic patient interactions, crucial for emergency preparedness (Hazwani et al., 2021). Addressing Systemic Challenges: Pharmacy Education: The transition of pharmacists to a more patient-centered role necessitates innovative teaching methods. Simulation-based pharmacy education, including the use of SPs, can improve clinical knowledge and critical thinking skills, aligning with the evolving role of pharmacists in patient care (Cheema, 2018).

Anesthesiology and Age-Related Challenges: For older anesthesiologists, simulation training, including SPs, can help identify and mitigate age-related issues, ensuring patient safety and maintaining high standards of care (Daabiss et al., 2022). While the integration of simulated patients in healthcare training offers numerous benefits, it is essential to consider the potential challenges and limitations. Implementing SPs requires significant resources, including trained personnel and infrastructure, which may be a barrier in some regions. Additionally, the effectiveness of SPs in replicating complex patient interactions and conditions needs continuous evaluation to ensure they meet educational and clinical objectives. Despite these challenges, the potential of SPs to transform healthcare education and improve patient care in Saudi Arabia is substantial, warranting further exploration and investment.

- **Current state of simulated patient implementation in pharmacy services in Saudi Arabia**

The implementation of simulated patients in pharmacy services in Saudi Arabia is an emerging practice that is gaining traction, particularly in the context of improving pharmacy practice and patient care. Simulated patients are used as a methodological tool to assess and enhance the quality of pharmacy services, including counseling practices and adherence to regulations. This approach aligns with broader healthcare transformation goals in Saudi Arabia, such as those outlined in Saudi Vision 2030, which emphasizes the modernization and improvement of healthcare services.

Current Implementation and Applications: Simulated Patient Methodology: The use of simulated patients in pharmacy practice research has been recognized as a robust method for assessing the quality of services provided by pharmacists. This methodology has been applied in various settings, including community pharmacies, to evaluate counseling practices and the dispensing of medications, such as antibiotics, without prescriptions (Watson et al., 2010) (Qarni et al., 2020) (Al-Tannir et al., 2020).

Counseling Practices: Studies have shown that the counseling practices of community pharmacists in Saudi Arabia often fall short of international standards, such as those recommended by the World Health Organization. Simulated patient visits have revealed that the average time spent on patient counseling is below the recommended minimum, indicating a need for improvement in this area (Qarni et al., 2020).

Regulatory Compliance: Simulated patient studies have also been used to assess compliance with regulations, such as the prohibition of dispensing antibiotics without a prescription. These studies have demonstrated a significant decrease in the sale of non-prescribed antibiotics following the implementation of stricter regulations, highlighting the effectiveness of simulated patients in monitoring and improving regulatory adherence (Al-Tannir et al., 2020).

Limitations: Variability in Methodology: There is significant variability in the application of simulated patient methodology across different studies and regions within Saudi Arabia. This variability can affect the quality and reliability of the findings, suggesting a need for standardized methodologies to ensure consistency and comparability of results ("Critical appraisal of simulated patient methodology to assess the practice of community pharmacist in the Middle East and North Africa region: A systematic review", 2022) (Boura et al., 2022). Integration with Virtual Services: The integration of simulated patients with virtual clinical pharmacy services is a potential area for development. Virtual services, which are part of the Saudi Vision 2030 initiative, aim to enhance patient care through electronic mediation history reviews, medication reconciliation, and patient counseling. Simulated patients could play a role in testing and refining these virtual services to ensure they meet patient needs and improve healthcare outcomes (Alomi et al., 2023).

Broader Perspective: While the use of simulated patients in pharmacy services in Saudi Arabia is promising, it is important to consider the broader context of healthcare simulation. Simulation techniques are widely used in healthcare to improve systems and processes, and their application in pharmacy services is part of a larger trend towards using simulation to enhance healthcare delivery. However, challenges such as the need for standardized methodologies and the integration of simulation with other healthcare innovations remain. Addressing these challenges will be crucial for maximizing the benefits of simulated patient methodologies in Saudi Arabia's pharmacy services (Alrabghi, 2020).

- **Global Partnering in implementing simulated patients**

Partnering with global pharmacy education organizations to implement simulated patients in pharmacy services offers numerous benefits, enhancing both educational outcomes and professional readiness. These partnerships can facilitate the integration of advanced simulation technologies, provide access to diverse educational resources, and foster a collaborative environment for sharing best practices. By leveraging the expertise and resources of global organizations, pharmacy education can be significantly enriched, leading to improved student competencies and better patient care outcomes. The following sections outline the key benefits of such partnerships.

Enhanced Learning Outcomes: Skill Development: Simulation-based education (SBE) has been shown to improve essential skills such as communication, decision-making, and teamwork among pharmacy students. These skills are crucial for effective patient care and interprofessional collaboration (Korayem et al., 2022) (Gaspar et al., 2024).

Empathy and Patient Understanding: Simulated patient experiences can enhance pharmacy students' empathy, particularly for patients with chronic diseases, by providing insights into patients' perspectives and experiences with medication (Prudencio & Kim, 2023) (Kaae et al., 2024).

Knowledge and Confidence: The use of virtual patients and computer-based simulations has been associated with significant improvements in students' knowledge, clinical reasoning, and confidence in communication (Phanudulkitti et al., 2023) (Beshir et al., 2022).

Resource Sharing and Collaboration: Access to Advanced Technologies: Global partnerships can provide access to cutting-edge simulation technologies, such as high-fidelity simulations and

virtual patient platforms, which may otherwise be cost-prohibitive for individual institutions (McBane et al., 2023) (Al-Worafi & Alshahrani, 2023). Standardization and Best Practices: Collaborating with global organizations can help standardize simulation practices and share best practices, ensuring consistent and high-quality educational experiences across different regions (Al-Worafi & Alshahrani, 2023).

Overcoming Barriers: Financial and Technical Support: Partnerships can help address financial constraints and technical support issues, which are common barriers to the implementation of simulation-based education (Gharib et al., 2024) (Al-Worafi & Alshahrani, 2023). Workload Reduction: By integrating simulation into the curriculum, educators can reduce their workload while maintaining high educational standards, as simulations can offer scalable and interactive learning opportunities (Gharib et al., 2024).

Global Perspective and Cultural Competence: Diverse Patient Scenarios: Global partnerships can introduce pharmacy students to a wide range of patient scenarios, including those that are culturally diverse or region-specific, enhancing their cultural competence and preparedness for global healthcare challenges (Phanudulkitti et al., 2023). Interprofessional Education: Simulation training can facilitate interprofessional education, allowing pharmacy students to collaborate with other healthcare professionals and understand different roles within the healthcare system (Gaspar et al., 2024). While the benefits of partnering with global pharmacy education organizations are substantial, it is important to consider potential challenges such as aligning educational goals across different cultural and regulatory contexts. Additionally, the integration of simulation-based education requires careful planning and resource allocation to ensure its effectiveness and sustainability. Despite these challenges, the potential for improved educational outcomes and enhanced patient care makes such partnerships a valuable endeavor in pharmacy education.

- **Case study**

Simulated Patient Studies in Saudi Arabia: Non-Prescribed Antibiotics: A simulated patient study conducted in Riyadh assessed the rate of non-prescribed antibiotic sales in community pharmacies. The study found a significant decrease in the dispensing of antibiotics without a prescription from 77.6% in 2011 to 12.5% in 2018, following the implementation of stricter regulations by the Saudi Ministry of Health (Al-Tannir et al., 2020).

Acute Childhood Diarrhea Management: In Jazan Province, a study evaluated the knowledge and practices of pharmacy professionals in managing acute childhood diarrhea. Simulated patient visits revealed discrepancies between self-reported knowledge and actual practice, indicating a need for educational programs to improve dispensing practices (Ali et al., 2022).

Pharmacy Counseling Practices: Another study in the Bisha Health Directorate used simulated patient visits to evaluate the counseling practices of community pharmacists. The study found that the average time spent on patient counseling was below the World Health Organization's recommended minimum, suggesting the need for improved counseling practices (Qarni et al., 2020).

- **Benefits and Challenges of Simulated Patient Method**

Benefits: The simulated patient method is effective in providing a realistic assessment of pharmacy practices in a naturalistic setting. It allows for the identification of gaps in service delivery and offers a basis for targeted interventions to improve patient care ("Design and application of the simulated patient method in pharmacy and health services research", 2022).

Challenges: Implementing simulated patient studies requires careful planning and ethical considerations. Ensuring the anonymity of simulated patients and maintaining the integrity of the

study are critical for obtaining reliable results ("Design and application of the simulated patient method in pharmacy and health services research", 2022).

- **Broader Implications and Future Directions**
  While simulated patient studies have shown promise in improving pharmacy services in Saudi Arabia, there are broader implications for their use. These studies can serve as a model for other countries looking to enhance their pharmacy services through similar methods. Additionally, integrating simulated patient studies with virtual pharmacy services, as seen in initiatives aligned with Saudi Vision 2030, could further enhance the quality and accessibility of pharmaceutical care (Alomi et al., 2023) (Alassadi et al., 2023). However, challenges such as resource allocation and training must be addressed to ensure the successful implementation of these methods on a larger scale.

Conclusion

Simulated patients are a transformative tool in pharmacy practice research, offering unparalleled insights into real-world pharmacist behaviors and service quality. For Saudi Arabia, the adoption of SP methodology aligns seamlessly with the country's healthcare modernization goals under Saudi Vision 2030. SPs enable the evaluation of critical aspects such as patient counseling, medication management, and regulatory compliance while fostering experiential learning for pharmacy students. Despite logistical and ethical challenges, the integration of SPs into pharmacy practice research has the potential to significantly enhance healthcare delivery and patient outcomes. Addressing these challenges through standardized protocols, resource allocation, and global partnerships will be key to maximizing the benefits of this innovative approach in Saudi Arabia's pharmacy sector.

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