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The Public Health Implications of Pharmacist-Provided Vaccinations and Their Role in Community Health Initiatives: A Comprehensive Review

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Abstract

Background: Community pharmacies are pivotal in providing accessible healthcare, especially in low- and middle-income countries (LMICs). Traditionally focused on dispensing medications, pharmacists are increasingly recognized for their role in public health interventions (PHIs), including vaccinations. Understanding the factors influencing pharmacists' involvement in PHIs is crucial for enhancing public health outcomes.

Methods: This review systematically analyzed literature up to 2023 from three databases—Embase, Scopus, and Medline—to identify determinants affecting community pharmacists' engagement in PHIs. Key areas explored included training, compensation, structural modifications, interprofessional collaboration, and governmental support.

Results: Findings indicate that inadequate training and a lack of formal education in public health significantly hinder pharmacists' confidence in delivering PHIs. Compensation models, such as fee-for-service, were deemed essential for sustaining pharmacists' participation. Structural adjustments, including designated consultation areas, facilitate a conducive environment for service delivery. Additionally, collaboration with other healthcare practitioners was identified as a critical factor for effective PHI implementation.

Conclusion: The study underscores the necessity for targeted training programs and appropriate compensation mechanisms to empower community pharmacists in their expanded roles. Policymakers should prioritize the integration of pharmacists into public health frameworks to optimize healthcare delivery and enhance health outcomes.

Keywords: Community pharmacy, public health interventions, pharmacist training, healthcare delivery, interprofessional collaboration.

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1. Introduction

Community pharmacies serve as the first point of contact with the healthcare system for the majority of individuals seeking treatment for minor ailments worldwide [1–3]. They are readily accessible, extensively spread, provide expedited services, operate for extended hours, and are comparatively more affordable than other private healthcare facilities [4–6]. Furthermore, they provide a more informal environment for people by providing over-the-counter treatments for those reluctant to access health care from medical institutions [7].

The conventional function of community pharmacists has mostly been focused on products. This involves the distribution of both prescription and non-prescription medications; however, this function has expanded to include the delivery of different Public Health Interventions (PHIs) in response to the heightened health needs of the community [1]. This development has been accepted by the International Pharmaceutical Federation (FIP) and is acknowledged in numerous high-income nations, including Australia, the United States, and the United Kingdom, where it has been incorporated into existing healthcare frameworks [8]. Conversely, low and middle-income nations (LMICs) are acknowledging the significance of community pharmacists in public health; nevertheless, this function is not effectively incorporated into the wider health system [9]. Public health encompasses three primary domains: health improvement, health protection, and health service delivery, with community pharmacists significantly contributing to all three via public health interventions. These interventions encompass smoking cessation services, including Nicotine Replacement Therapy (NRT) and counseling; the provision of initiatives designed to enhance health and well-being by modifying lifestyle habits, managing healthy weight, offering guidance on healthy living, and engaging in health promotion campaigns [10].

Concerning health protection, community pharmacists provide disease control measures, screening for risk factors associated with non-communicable diseases such as cardiovascular disease (CVD), screening for Sexually Transmitted Infections (STIs), Human Immunodeficiency Virus (HIV) screening, immunization services, and disseminating information regarding health threats to patients and the public [11-14]. Health service quality involves delivering innovative pharmacy services to enhance health outcomes, such as via drug treatment management and facilitating the safe and effective use of medications [15,16]. This study primarily examines public health strategies designed to enhance health and prevent illness, since the functions of community pharmacists are well delineated in the literature.

The provision of PHIs via community pharmacies enhances health outcomes and diminishes health disparities. This is due to their availability to persons who lack the means to use traditional healthcare providers [17]. It alleviates the strain on the healthcare system in two ways; firstly, it lessens the pressure on healthcare professionals at institutions experiencing a lack of personnel [18]. Secondly, offering vaccination and screening services alleviates the burden of avoidable diseases within the healthcare system [19]. Moreover, the implementation of these treatments via community pharmacists results in decreased medical treatment expenses, hence yielding savings in healthcare expenditures [20].

Notwithstanding the proof of these advantages, there exists a deficiency in understanding the causes motivating community pharmacists to assume this position. Comprehending the determinants that affect their choice to assume the position is crucial for formulating policies that correspond with their motivations and for the effective execution of PHI initiatives. This analysis seeks to examine the determinants that affect the community pharmacist's choice to adopt the expanded role of Public Health Intervention delivery. This research aimed to thoroughly analyze worldwide data about the variables that affect community pharmacists' decisions to engage in the delivery of Public Health Interventions.

2. Methods

A procedure for our review is available in the Open Science Framework [21]. We conducted a literature search up to 2023 across three databases: Embase, Scopus, and Medline to discover pertinent studies.

3. Instruction and ongoing education

Pharmacists are qualified to provide health care services; nevertheless, the research indicates that they see themselves as inadequate in this capacity and would benefit from more training on the administration of particular public health interventions [22-42]. Pharmacists in the UK were trained to do chlamydia testing by participating in a sexual health learning event and completing an online learning program [27]. Moore et al discovered that 70% (21/30) of pharmacists obtained health promotion instruction during their undergraduate education and informally by reading professional journal articles, rather than through official training programs [28]. In Canada, pharmacists received vaccine instruction via online learning modules and in-person training sessions [40]. Almukdad et al. examined pharmacists' views towards providing weight management services and concluded that pharmacists would benefit from consistent and structured training to enhance their knowledge [33]. Pharmacists in Malaysia indicated a preference for a minimum of 1 or 2 days of brief training courses [34].

Pharmacists in Pakistan and Poland identified a deficiency in formal training within the undergraduate curriculum and advocated for the incorporation of additional practical training sessions. They articulated apprehension over the elevated costs of the courses and proposed the need for financing options for complimentary training. Community pharmacists in Australia and Malaysia expressed readiness to offer vaccination services following supplementary brief training that included needle gauge and landmarking, vaccine storage, technique, and emergency case management, with a renewal period of two years. Four studies recommended training for both pharmacists and their helpers to enable the delegation of tasks [28, 32, 40, 43].

4. Compensation

The supply of PHIs was seen as an extra burden in addition to dispensing and pharmaceutical services, and compensation is essential for continued engagement in these activities [27, 28, 30, 32–34, 39, 40]. Pharmacists in Poland indicated a desire for wage increases as a means of incentivizing their engagement as health educators [31]. Pharmacists in the UK expressed a preference for compensation under a fee-for-service approach from the Kingston & Richmond Family Health Service Authority (FHSA) [28]. Pharmacy assistants in Australia saw compensation as a concrete acknowledgment for doing Chlamydia screening and engaging in the training program, alongside obtaining a certificate [32]. No other research addressed the methods of compensation; nonetheless, there was agreement that money served as a motivational tool for pharmacists. Pharmacists in the UAE said that financial incentives would encourage them to do more STI screenings for customers [27]. Pharmacists in Australia and the UAE agreed that screening services should be provided at minimum or no cost, financed by government subsidies [27].

5. Modifications to structure and workflow

Structural modifications, like the creation of a designated area for private consultations, facilitate the adoption of this position. This was shown in eight investigations: [28–30, 33–35, 38, 43]. Community pharmacists in Nigeria indicated that a designated area for patient counseling would motivate greater involvement in public health services [43], paralleling findings by Almukdad et al., who suggested that private space for counseling could enhance the delivery of weight management services (WMS) as an internal strategy [33]. In Pakistan, there is a documented need for a specific area equipped appropriately to assess obesity-related indicators, including blood pressure, weight, and cholesterol measurements [29]. Pharmacists indicated the need for a designated space for the administration of vaccination services and the appropriate storage of vaccines at regulated temperatures [34, 40]. Nevertheless, none of the investigations elucidated the methodology for doing this.

Organizational improvements, such as allocating specific time for the distribution of PHIs to prevent interruption of regular dispensing operations, were identified as facilitators for the adoption of PHI delivery. Training pharmacy assistants in managing pharmacy-related tasks was identified as a technique to provide more time for pharmacists to engage in the provision of public health interventions, as well as to schedule appointments for these interventions.

6. Cooperation with other healthcare practitioners

Pharmacists said that offering supplementary services (e.g., distribution of PHIs) necessitates a multidisciplinary approach, particularly for instances requiring referral and consultation with other healthcare experts, such as those related to obesity. Pharmacists indicated a preference for multi-disciplinary training courses to establish connections across various professional groups [28]. Pharmacists in Canada reported a lack of knowledge among general doctors about pharmacists' competencies in delivering PHIS and proposed the implementation of a shared electronic medical record with physicians to promote an integrated care model [36]. Pharmacists in Qatar saw the provision of Weight Management Services as intricate and emphasized the need for coordination with dieticians and doctors for referral reasons [33]. Nonetheless, the results from these research studies were mostly aspirational, and none documented a real collaborative paradigm.

7. Assistance from governmental and professional organizations

Assistance from regulatory authorities was deemed essential for the execution of public health initiatives in four studies [29, 33, 34, 36]. In Pakistan, pharmacists indicated a lack of knowledge of their role in public health, suggesting that the government may promote public understanding, hence enhancing public confidence. Similar results emerged in Canada, where pharmacists indicated that professional groups might contribute to raising awareness of this function [36]. Pharmacists in Qatar have articulated the need for the Ministry of Health to formulate guidelines that would support the implementation of Weight Management Services (WMS). Pharmacists in Malaysia said that the government should assist them by providing complimentary training and resources to enhance their vaccination responsibilities, and by encouraging professional organizations to include the roles of community pharmacists in vaccination initiatives [34].

The primary conclusion of this study was that providing supplementary training to community pharmacists on the administration of certain public health interventions is essential to enhance the adoption of this role. Training might enhance pharmacists' knowledge and abilities, so empowering them to offer PHI with more competence and confidence. Training pharmacists in PHI delivery enhances their confidence and competence in service provision, leading to improved health outcomes. For example, community pharmacists in Thailand who received training in smoking cessation services reported increased confidence in delivering these services in the future. Community pharmacists expressed confidence in screening customers for cardiovascular disease risk after training in their pharmacies [44]. Policymakers should endeavor to guarantee that community pharmacy practitioners are competent and have access to ongoing training. No uniform methodology for teaching pharmacists on PHI delivery was identified in the analyzed research. Nonetheless, many training strategies have been used in different contexts, varying according to the PHI in question [45–48].

The training approaches include peer learning, which may impact practitioner behavior, workplace learning, and formal certification for specialization [45-48]. These trainings are conducted in several forms, including in-person instruction (onsite/off-site) and online learning (webinars, learning modules, and exercises). Pharmacists in Ethiopia [45], UAE [49], and USA [50] have indicated a preference for face-to-face training, as it facilitates prompt feedback from instructors and fosters peer networking, potentially enhancing collaboration with healthcare professionals across various disciplines. Conversely, online training has been identified as the preferred delivery method by pharmacists in Australia, since it provides the ease of completing courses at their speed and according to their schedules. Integrating various training approaches and modalities according to pharmacists' preferences is essential for adequately preparing pharmacists to assume the role of delivering PHI. Furthermore, revising the undergraduate curriculum to include public health modules serves as a first step in enhancing pharmacists' professional abilities and views about this expanded responsibility [51, 52].

Government assistance to community pharmacists is essential for improving the adoption of PHI delivery. This may include supplying resources to support the implementation of PHI delivery, such as distributing materials to enhance awareness and providing equipment at a discounted, accessible rate for pharmacists [53]. Community pharmacies are worldwide acknowledged for their crucial contribution to enhancing

health indices; yet their integration into policy formulation, national health programs, legislation, and monitoring remains limited [54]. The government may therefore contribute by formulating explicit guidelines, regulations, and regulatory frameworks to facilitate the incorporation of this function into comprehensive health systems adapted to the distinct context of each nation. In Saudi Arabia, the Ministry of Health has established explicit standards for the delivery of vaccination services in community pharmacies [55]. In Kenya, the Ministry of Health, under the National AIDS and STI Control Programme (NASCOP), introduced guidelines promoting the distribution of HIV self-test kits in community pharmacies. Additionally, the government and professional organizations might initiate nationwide efforts to raise awareness of the vital role pharmacists play in public health [56].

Incorporating the function of community pharmacists in delivering PHI within the larger health system necessitates their overall operational independence from other healthcare practitioners in a retail setting [57]. Consequently, training sessions may facilitate interprofessional partnerships between pharmacists and other healthcare practitioners.

Collaboration between doctors and pharmacists has led to enhanced patient outcomes and decreased inefficiencies and expenditures within the healthcare system [58, 59]. This has resulted in the formation of Collaborative Practice Agreements (CPAs) in the USA, enabling community pharmacists to screen for chronic infections in pharmacies and refer reactive cases to general doctors. This aids in bridging the gap of patients lost to follow-up [60]. In other regions of the UK, general practitioners possess communication channels for the referral of patients to community pharmacists for same-day consultations, and vice versa [61]. Interprofessional cooperation is characterized as a dynamic process that advances through a sequence of phases outlined by different collaboration models. The GP-pharmacist model proposed by McDonough and Doucette [62] delineates a progression through four primary stages: stage 0 - professional awareness, stage 1 - professional recognition, stage 2 - exploration and trial, stage 3 - expansion of professional relationships, and stage 4 - commitment to collaborative working relationships. This progression is influenced by various factors, including proximity, time, clinical knowledge, communication, mutual interests, and professional equality. Alternative models have been used for cooperation between pharmacists and general practitioners, characterized by a progression from short meetings to a fully delineated partnership with well-defined duties for both professions [63, 64]. Role clarity has been shown to affect the acceptance of role expectations and job performance [65, 66].

Community pharmacies are private retail enterprises functioning in a competitive market, seeking to optimize earnings for sustainability; hence, it is unsurprising that compensation affects the adoption of the supplementary role. The provision of PHI is seen as an ancillary responsibility, and pharmacists possess little motivation to provide enhanced services when remuneration is insufficient. While the compensation of community pharmacists has mostly relied on their retail and dispensing roles, some nations have implemented adjustments in payment mechanisms to promote the adoption of this profession [67]. The fee-for-service model has been implemented to incentivize pharmacists to deliver smoking cessation services, influenza vaccinations, and diabetes-related education, training, and monitoring in community settings. This model is favored by pharmacists due to its ease of implementation and integration into existing business frameworks. The pay-for-performance concept has been used in a UK initiative, whereby pharmacists were compensated depending on the number of individuals who successfully stopped smoking [68]. Nonetheless, a deficiency exists in understanding the favored payment mechanism across different settings. Comprehending the payment model preferences of community pharmacists is an essential knowledge gap, as it significantly influences the implementation, acceptance, and possible effects of pharmacists' payment models.

Ultimately, structural and workflow modifications, including the establishment of a defined area and allocation of specific time, contribute to community pharmacists assuming the role of Public Health Interventions (PHI). Numerous studies have emphasized the significance of a private room in fostering trust and ensuring anonymity for patients wishing to address sensitive medical matters, including requests for emergency hormonal contraception, STI screening, PrEP, and HIV testing [69, 70]. Evidence indicates that

community pharmacists prefer a private consultation room for delivering diabetes management services to maintain patient privacy and confidentiality [71].

8. Implications of the study

This research elucidates the several elements that significantly influence community pharmacists' decisions to engage in the provision of Public Health Interventions (PHI). Further study is necessary to provide evidence on the interaction of these elements and their impact on implementation practices and sustainability. This study may include identifying context-specific challenges and facilitators to the implementation of public health interventions in community pharmacies, especially in low- and middle-income countries. This information may guide the formulation of implementation strategies that may improve the sustainability of PHI initiatives deployed in community pharmacies. This study is essential for two reasons: firstly, it will guarantee that policies are established to encourage community pharmacists to assume this position. Secondly, it would promote the formulation of recommendations to standardize community pharmacy practices and integrate this position into wider health systems, therefore augmenting the contribution of community pharmacists to public health.

9. Summary

This analysis elucidates the elements that affect community pharmacists' decisions to broaden their practice scope and assume responsibility for delivering public health treatments. Integrating these variables into policy and public health program design is essential for the effective incorporation of community pharmacists into wider public health efforts. Nonetheless, these results may not reflect the relative significance attributed to each item by community pharmacists. This review's findings will guide the creation of a discrete choice experiment to ascertain context-specific preferences of community pharmacists regarding the identified factors, thereby aiding in the formulation of policies that will augment the role of community pharmacists in public health.

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التأثيرات الصحية العامة لتقديم التطعيمات بواسطة الصيادلة ودورهم في المبادرات الصحية المجتمعية: مراجعة شاملة

الملخص

الخلفية :تُعتبر الصيدليات المجتمعية محورية في توفير الرعاية الصحية الميسورة، خاصة في البلدان منخفضة ومتوسطة الدخل .(LMICs) وعلى الرغم من التركيز التقليدي على صرف الأدوية، يتم الاعتراف بشكل متزايد بدور الصيادلة في التدخلات الصحية العامة(PHIs) ، بما في ذلك تقديم التطعيمات. يُعد فهم العوامل المؤثرة على مشاركة الصيادلة في التدخلات الصحية العامة أمرًا بالغ الأهمية لتحسين النتائج الصحية العامة.

المنهجية :حللت هذه المراجعة بشكل منهجي الأدبيات حتى عام 2023 من ثلاث قواعد بياناتEmbase—، Scopus، و—Medlineلتحديد العوامل المؤثرة على انخراط الصيادلة المجتمعيين في التدخلات الصحية العامة. وتم استكشاف مجالات رئيسية مثل التدريب، التعويضات، التعديلات الهيكلية، التعاون بين المهنيين، والدعم الحكومي.

النتائج :تشير النتائج إلى أن نقص التدريب والتعليم الرسمي في مجال الصحة العامة يُعتبر عائقًا كبيرًا يحد من ثقة الصيادلة في تقديم التدخلات الصحية العامة. كما وُجد أن نماذج التعويض، مثل الرسوم مقابل الخدمة، ضرورية لاستدامة مشاركة الصيادلة. وتُعتبر التعديلات الهيكلية، مثل توفير مناطق مخصصة للاستشارات، عاملاً مساعدًا على خلق بيئة مناسبة لتقديم الخدمات. علاوة على ذلك، تم تحديد التعاون مع ممارسي الرعاية الصحية الآخرين كعامل حاسم في تنفيذ التدخلات الصحية العامة بفعالية.

الاستنتاج :تؤكد الدراسة على ضرورة تنفيذ برامج تدريب مستهدفة وآليات تعويض مناسبة لتمكين الصيادلة المجتمعيين من أدوارهم الموسعة. ينبغي على صانعي السياسات إعطاء الأولوية لدمج الصيادلة في الأطر الصحية العامة لتحسين تقديم الرعاية الصحية وتعزيز النتائج الصحية.

الكلمات المفتاحية :الصيدلية المجتمعية، التدخلات الصحية العامة، تدريب الصيادلة، تقديم الرعاية الصحية، التعاون بين المهنيين.