

Enhancing Health Outcomes through Integration of Primary Healthcare and Public Health: The Critical Role of Pharmacists

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ABSTRACT

Background: Primary health care (PHC) and public health (PH) are dual cornerstones of health systems worldwide. While both aim to improve population health and quality of life, they differ in their approaches and target groups. Integrating PHC and PH is crucial for strengthening health systems, yet the specific role of pharmacists in this integration, despite their significant contribution to universal health coverage remains underexplored in the literature.

Objective: This review aims to appraise the documented roles and impact of pharmacists in the integration of primary health care and public health.

Methods: A literature search was conducted using PubMed, Google Scholar, and Web of Science databases. Original research publications that focused on pharmacists' role in primary health care, public health, community pharmacy, universal health coverage, and integrated healthcare were included. A total of 61 articles were selected for analysis.

Result: The review identified successful models of integrated healthcare from countries like the United States, Canada, Malaysia, Brazil, and Nigeria that effectively utilize pharmacists' expertise. Key findings demonstrate that pharmacists significantly improve patient quality of life, manage communicable and non-communicable diseases, conduct screenings for terminal illnesses, provide immunization and mass vaccination services, and support family planning. These roles prove essential in bridging individual patient care with public health objectives.

Conclusion: Pharmacists are pivotal in successfully integrating PHC and PH, with proven impacts on health outcomes. To replicate this success, it is recommended that governments in developing countries collaborate with international organizations and non-governmental actors to adopt and adapt these evidence-based, pharmacist-inclusive models for improved public health at all levels.

INTRODUCTION

The disruptions brought by health emergencies such as the corona virus (COVID-19) pandemic, and more recently, monkey pox, exposed the inadequacies of health systems worldwide, especially in the developing countries.^{1,2}

These 'natural disasters' also highlight and worsen the disparities that exist between developed and

underdeveloped nations in terms of accessing healthcare.^{3,4,5}

This also undermines the WHO mission on Universal Health Coverage.^{6,7} Therefore, the need for a total overhaul of the status quo as per the model of care in health systems is most desired. According to the American Institute of Medicine, these inadequacies can be minimized by integrating public health and primary care.⁸ Public health

and primary healthcare are considered the core pillars of health systems worldwide.^{9,10} They aim to alleviate diseases and improve the quality of life. While public health focuses on the larger population, primary care concentrates on individualized care for a particular patient at a particular time. Integrating these two healthcare models has a range of benefits that are widely established in previous studies.^{8,11,12} Pharmacists are persons qualified by a graduate degree in pharmacy, and licensed by a state to prepare, dispense, sell and control drugs.¹³

Contextually, public health is the art and science of promoting and protecting good health, preventing disease, disability, and premature death, restoring good health when it is impaired by disease or injury, and maximizing the quality of life.¹⁴ Similarly, Barbara Starfield defined primary health care as a health care system that provides the first level of contact with the health care system, prevents diseases, manages common diseases and manages persistent health issues.¹⁵

According to the World Health Organization (WHO), an integrated service delivery is the organization and management of health services so that people get the care they need, when they need it, in user-friendly ways, achieve the desired results and provide value for money.^{16,24}

In addition, there are three key components of PHC, namely: Integrated health services to meet people's health needs throughout their lives; addressing the broader determinants of health through multisectoral policy and action; empowering individuals, families and communities to take charge of their own health. More so, by integrating different health services, PHC helps individuals to meet their health needs throughout their lives. From preventive to rehabilitative and antenatal care, PHC has been modelled to encompass all health needs of the patient at the closest level to the community.

Furthermore, PHC is widely regarded as the most inclusive, patient-centred, cost-effective, and equitable healthcare model.¹¹ It strengthens the healthcare model by preparing for and responding to or recovering from public health emergencies such as the Covid-19 pandemic. It brings the social, economic, environmental and genetic factors affecting individuals into purview to manage their health.¹⁸ Through health promotion, outreach and advocacy, people are being encouraged and empowered to take care of their own health needs before or even after accessing the health services. This includes preventive measures such as Water, Sanitation and Hygiene (WASH) in prevention of

cholera;¹⁹ preparing simple health commodities such as oral rehydration solution in the management of diarrhea²⁰ and lifestyle modifications in the management of chronic diseases such as smoking cessation, exercise and use of barrier in prevention of sexually transmitted disease (STDs).

Although pharmacists demonstrate significant potential in areas spanning chronic disease management and preventative care, their specific role in integrating primary health care and public health is poorly documented. This review analyses this gap by exploring and highlighting the pharmacist's role through a systematic analysis of their functions in both distinct and integrated healthcare models. By systematically analyzing pharmacists' contributions, the review can inform policy reforms, expand professional scopes, and promote interdisciplinary collaboration, ultimately improving health outcomes and service delivery. Its findings could challenge the current status quo by advocating for pharmacists as essential players in holistic, community-based care, especially in managing chronic diseases and promoting preventive health.

Research Questions:

What roles do pharmacists play in integrated PHC and PH toward achieving enhanced health outcomes, and through what global best practices do the integrated healthcare models provide the best results?

METHOD

The literature was generated from PubMed, Google Scholar, and Web of Science databases using single or combination of the following keywords: primary health care; public health; pharmacist; community pharmacy; universal health coverage; collaboration; role of pharmacist; immunization; vaccination; terminal illnesses; family planning; quality of life; communicable diseases, non-communicable diseases; healthcare team; health system.

Inclusion Criteria: Studies that were published in English between 2000 and 2023, explicitly connected the pharmacists' activities to the integration of primary health care and public health principles; reported measurable health outcomes, or described a clear model of integration. After sorting out the literature, sixty-one (61) relevant studies were reviewed..

Exclusion Criteria: Studies that were published in other languages, prior to 2000 or has no clear connection between pharmacists' activities with health outcomes or model of integration.

RESULT AND DISCUSSION

Case Studies and Global Models

Table 1 below illustrated with references the examples of countries with integrated community pharmacies as primary health care contact points and engaging pharmacists as public health specialists worldwide.

Table 1: Examples of countries with integrated community pharmacies as primary health care contact points and engaging pharmacists as public health specialists

Country	Model/Special Services Provided by Pharmacists/Community Pharmacies	Outcomes/Impacts (From Patients or Government)	References
Belgium, Germany and Portugal	COVID-19 vaccines (Vaccine storage, stock management, and preparation promotional and advocacy activities)	Increase vaccine accessibility and rate of vaccination.	40
Italy, United Kingdom, Ireland and Switzerland	COVID-19 vaccines storage and handling preparation of doses and administration.		
Brazil	Primary care-based pharmaceutical services – PHCPS	Contribute to the safe and effective use of prescribed medicines and conduct health-promoting interventions both individually and collectively.	68
Canada	COVID-19 vaccines provision management and administration	Increase vaccines accessibility and aid recovery efforts	41
Malaysia	Diabetes Medication Therapy Adherence Clinical (DMTAC)	Significant reduction in HbA1c, which is an outcome measure of glycemic control.	49
Nigeria	Community-based Antiretroviral Therapy (CART) Model	Prescription refill was 100% and almost all the participants (99.3%) were retained in care after they were devolved to the community pharmacies.	23
Nigeria	IntegrateE Project	Increased access to family planning services amidst Covid-19 pandemic	23
Saudi Arabia	Insulin injection re- education	Improved glycemic control	48
United States of America	COVID-19 vaccine administration	Increase vaccine accessibility and rate of vaccination among the populace	39

In developing countries, for instance in Nigeria, a proof of concept project was carried out by IntegrateE Project ²¹ – which aimed at increasing service delivery for contraceptive mix and primary health care among Community Pharmacists (CPs) and Patent and Proprietary Medicine Vendors (PPMVs) in Lagos and Kaduna States. Also, a pilot study to integrate community pharmacies into antiretroviral therapy showed a feasible outcome with better compliance, follow-up, and adherence. ^{22,23}

Role of Pharmacist in Primary Health Care

To raise the standard of healthcare delivery, the basic healthcare system is being developed to utilize multidisciplinary care teams to deliver care in a coordinated manner. ^{25,26} Primary health care pharmacists are crucial to the management of medications. ²⁷ They have strategic responsibilities to maximize the benefits and reduce the risks of medication use. ²⁸ The International Pharmaceutical Federation (FIP), identified the following roles as covered

by the scope of practice of pharmacists: health promotion; triage; early detection; optimizing medication-related treatment outcomes by identifying and addressing medication needs and problems; follow-up assessment of effectiveness and safety; and adherence support.²⁹ The increasing demand for a more intensive primary care system with a wider scope of practice that focuses on giving patient-oriented care, increased the need for pharmacists to assess and monitor patients' medication therapy, recognize and manage adverse drug events, and other drug-related issues.^{30,31}

Pharmacist as a First Contact Health Care Practitioner

A study indicated that primary health care pharmacists see their patients between 1.5 times to 10 times more frequently than primary care physicians.³² According to the study, this is facilitated by accessibility. Pharmacists are also developing to play a larger role in the process surrounding the use of medications. They are now becoming independent prescribers without reference to the physicians, hence they are involved in the treatment of a much wider variety of illnesses in the community. Pharmacists are also becoming involved in a variety of processes surrounding medication use known as 'medicine management' which include prescription management and clinical medication reviews³³.

Pharmacist Role in Disease Prevention and Common Diseases Management

Pharmacists are increasingly involved in disease prevention, health promotion activities, and health education in primary care settings. There is increasing interest among community pharmacists in expanding their role to cover disease prevention in the community.³⁴ Studies have found a good sense of importance to the issue of health education and participation in health promotion and prevention activities among pharmacists.^{35, 36} Pharmacists are also seen to improve the appropriate use of vaccines, reduce vaccination errors and improve the rate of vaccination in pediatric primary care settings.³⁷ Many community pharmacies are now involved in immunization services for their communities.³⁸ Pharmacists have also participated well in the distribution and administration of covid-19 vaccines.^{39,40,41} Pharmacists enhance the health and wellness of chronic illnesses patients and have a beneficial impact on health quality indicators in patient-centered medical institutions.⁴² Recent studies have shown

Pharmacists to have a significant role in primary care teams in the management of cardiovascular patients, mostly through counseling, prevention of adverse drug events, risk identification and management, reduction in medication-related costs, and care activities that center on medication reconciliation and patient education.^{43,44} Patients with chronic diseases like hypertension and diabetes have their management, prevention of complications, adherence, and quality of life significantly improved due to pharmacists' intervention.^{45,6,47,48} Many studies have indicated the positive impact of community pharmacists' participation in the management of chronic diseases like asthma, rheumatoid arthritis, cardiovascular diseases, diabetes, depression, and osteoporosis as well as preventive services such as immunization and weight management.⁴⁹

The Role of Pharmacists in Public Health

Even though there is inadequate knowledge about pharmacist roles in the public health space by the general public.⁵⁰ It is paramount that the perception of pharmacists is shifted from just drug experts to more holistic healthcare professionals.⁵¹ Pharmacists are well positioned to integrate public health focuses and even implement it using various essential services of public health.⁵²

The Role of Pharmacist under the Three Stages of Health Intervention in Public Health

Primary intervention- deals basically with prevention, education, and decreased risk factors. Pharmacists play a role at this stage by participating in programs like vaccination, needle exchange programs and so on.⁵³ Secondary intervention- here disease early detection and treatment to avoid progress, the pharmacist plays a role in screening for HIV, diabetes, etc., prophylaxis, and lifestyle modification therapy. Tertiary intervention- symptomatic patients who are on drugs, here the pharmacist makes sure there's delayed progression, proper drug use, and counseling. Furthermore, pharmacists enforce drug laws and regulations which is an essential aspect of protecting the population from the use of unsafe medication.⁵⁴ Identified role of community pharmacists in public health includes; harm reduction, family planning, terminal disease management, drug use, dietary modification, and education.⁵⁵ Moreover, because the public health approach takes into consideration the whole population, pharmacists must devise means to upgrade individualistic care population-wise.⁵³

The Role of Pharmacists in an Integrated Healthcare System

Sequel to the established evidence for the need of integrating primary care and public health and the role that pharmacists can play in the present study, the authors will highlight the benefits of the integration as related to the pharmacists' role as illustrated in Figure 1 below and under the following subheadings:

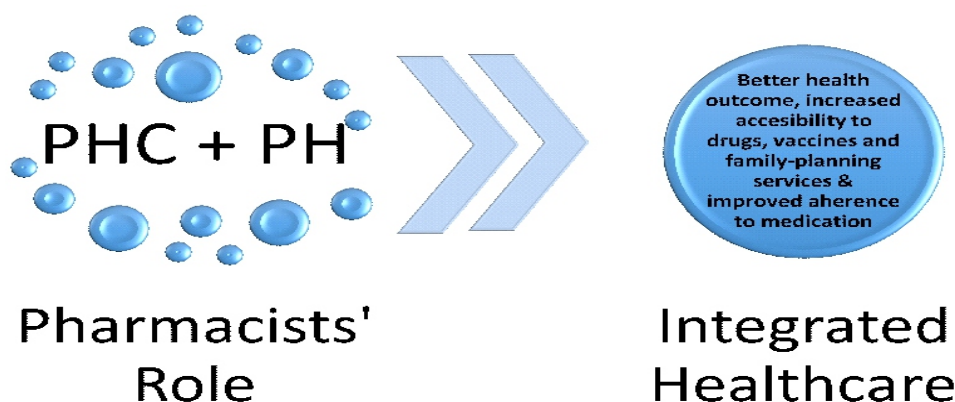


Figure 1: Graphical Abstract

Keys: PHC = Primacy Healthcare; PH = Public Health

Figure 1: Showing the Pharmacists' role in Enhancing Health Outcome through Integrating PHC and PH

a. Achieving SDG Goal 3

In an integrated health system, pharmacists have the potential to contribute to achieving the twelve targets of the United Nations Sustainable Development Goals three (SDG 3) in all ramifications. From treatment, prevention, and promotion of mental health and well-being through reduction of substance abuse to increasing access to essential medicines and vaccines, pharmacists have been major stakeholders in strengthening health systems worldwide – which is of paramount importance in achieving health for all by the year 2030.⁶⁶

b. Improving the Quality of Life

By integrating the two health systems, we are eliminating the barrier to accessing basic health needs, including increased access to vaccines, and this will overall increase the patient's quality of life. Community pharmacists can check and treat for malaria, pneumonia, and malnutrition in children less than five years.⁶⁷ They may look for danger signs that may require a specialist's attention and refer accordingly. By doing this, the under-five mortality rate, especially in developing countries, will be decreased substantially. Pharmacist's intervention has led to increased access to quality and cost-effective medicines, ensured adequate dispensing practices, contributed to the

safe and effective use of prescribed medicines by patients, and conducted health-promoting interventions both individually and collectively.⁶⁸

c. Reducing the burden of Communicable and Non-Communicable Diseases

Pharmacists in the community are at the forefront of the management of non-communicable diseases - especially chronic diseases. This can be achieved by providing services such as blood pressure monitoring in hypertension management^{69, 70} and Blood Sugar level monitoring for diabetic patients.⁷¹ Due to their closeness to the community and their ease of accessibility, the pharmacist can be the most preferred healthcare professional among patients for offering counseling in this population. They can also provide appropriate counselling for lifestyle modifications such as smoking cessation, reducing alcohol consumption, dietary modification, and exercise.

d. Prevention and Screening for Terminal Illnesses

Through their training and when assisted with appropriate skills and legal framework by policymakers, pharmacists can help prevent common cancers at the community level. For example, screening for Human Papillomavirus (HPV) by Pap smear test can prevent cervical cancer, and thus, if

pharmacists are equipped with the right skills, they can detect it and refer the patient for onward management and care. By doing so, pharmacists are bridging the existential threat of a very wide gap between prevention and care for terminal illnesses such as cancer.

f. Routine Immunization and Mass Vaccination

As highlighted above, pharmacists have demonstrated competency in administering vaccines, and community pharmacy is the first level of contact with healthcare for many patients. In an integrated model of healthcare, pharmacists' intervention will be paramount in achieving mass vaccination and herd immunity among the population. When this is achieved many life-threatening and preventable diseases – especially communicable diseases, such as rotavirus, diphtheria, typhoid, pneumonia, hepatitis, and polio can be eliminated through routine immunization schedules at community pharmacies.⁷²

g. Family Planning and Child Spacing services

In some countries including Nigeria, Canada, and the United States of America, pharmacists provide family planning services and counseling on child spacing.^{21,73} The involvement of pharmacists in the integration will assist public health officials with wider coverage of family planning services and more robust data to support the service delivery.

ENHANCING COLLABORATION AMONG MEMBERS OF THE HEALTHCARE TEAM

Interprofessional collaboration in the context of healthcare has been defined as “two or more healthcare professionals who have specific roles, perform interdependent tasks, and share a common goal; a negotiated agreement which values expertise and contribution that each individual brings to patient care.”⁵⁶

Generally, collaboration among members of the healthcare team is central to effective healthcare systems, especially taking into cognisance, inadequate financial resources and the individual professional responsibilities of these professionals.⁵⁷ Obviously, none of these professions can singly meet all societal health demands.⁵⁸ In addition, interprofessional collaboration eases the accomplishment of shared goals and the achievement of well-coordinated patient care. It was also found to improve healthcare outcomes and processes such as reducing readmission, decreasing the length of stay, and improving the quality of

healthcare.

Building Resilient Collaboration among Healthcare Team

Trust and mutual respect are vital to effective collaboration. Though trust is built gradually, it is of great importance for healthcare professionals to have confidence in each other's skills, acknowledge each other's roles in patient care, and not feel threatened by the other's involvement in care.⁵⁹ Hence, the unique expertise of every actor in the healthcare team is the bedrock for reliance, interdependence, and a source of respect for every member.^{60,61}

Clarifying and defining professional roles is one of the pillars for defining a resilient health system in healthcare collaboration.⁶² As a matter of necessity, to foster collaboration, governments should legislate clarification on the scope of work of each professional actor based on training and expertise to avoid duplication of services and encroachment into each other's role.

Further, an important factor that fosters collaboration among healthcare professionals is establishing a professional relationship through effective communication. Communication, whether formal through team meetings or informal through corridor chats, enhances collaboration.⁶³ Additionally, it further improves the quality of team meetings and reduces the risks of working distress.^{64,65}

Overall, to move from the widely known reactive and hospital-oriented care to more pragmatic, proactive, and preventive care in an integrated system, healthcare professionals must recognize the importance of collaborating, be willing to collaborate, and mutually cooperate to achieve their overall common goals of delivering high-quality services and improving the lives of the patients they have taken an oath to preserve.

RECOMMENDATIONS

The role of pharmacists in an integrated health system cannot be overemphasized. Whether in the primary care setting or in the public health arena, several studies suggest that the first level of contact for patients is, in most cases, the pharmacist, particularly the community pharmacist.⁷⁴ The pharmacist's capabilities in the health system are yet to be fully utilized. We recommend that policies be enacted by the authorities to help them perform their duties maximally and to explore their potential to promote good health care delivery. Also, pharmacists should regularly upgrade their training as required to acquire the necessary skills needed in carrying out emerging responsibilities within their scope of

practice in the ever-changing healthcare system.

There is a need for role specification and/or clarification and awareness among the health care practitioners. This will improve professional recognition and inter-professional collaboration, which will produce a better healthcare system. Pharmacists should work hard to promote awareness to the communities about their roles, particularly in public health and primary health care. This will further cultivate acceptance of their activities by the populace they serve.

In addition, some models of integrated healthcare systems have worked and have made a significant impact in some countries such as the United States of America, Malaysia, Brazil, Nigeria, and Canada, to mention a few. It is therefore recommended that governments in developing countries must liaise with international intergovernmental organizations such as the WHO and other actors in the non-public settings to replicate such models for an improved well-being of their citizens.

CONCLUSION

The roles that pharmacists can play in an integrated health system are enormous. This encompasses improvements in quality of life, management of communicable and non-communicable diseases, prevention and screening for terminal illnesses, routine immunization and mass vaccination, as well as family planning and child spacing services. To advance health outcomes and achieve universal health coverage, it is essential to strengthen policy frameworks that support pharmacists' expanded roles, invest in capacity building to enhance their competencies, and prioritize further research to identify best practices and innovative approaches. Future efforts should focus on creating an enabling environment where pharmacists can fully contribute to sustainable healthcare delivery and improved population health

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