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A bibliometric review of pharmacy education literature in the context of low- to middle-income countries

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Abstract

Objective: This review systematically identified published literature on pharmacy education in low- and middle-income countries. Specific aims were twofold: Firstly, to systematically identify and quantify published literature on pharmacy education in the context of low- and middle-income countries. Secondly, to explore and understand the major patterns of dialogue in this literature.

Methods: Through bibliometric review, a cohort of publications were quantitatively analyzed to determine paper types, country context, publication by year, and journal source. Through document analysis a narrative of major themes was identified.

Results: A small number of publications ($n = 36$) were sourced; the majority being letters to the editor, commentaries or viewpoints (80%). The Asian subcontinent (39%), the Middle East (25%) and low-income countries combined (17%) were the dominant geographic areas. There was a peak in publication during 2008 and 2009; a single journal dominated. From narrative synthesis, seven themes emerged and implications for the relevant literature, policy, practice and future research were considered.

Conclusions: Aside from rhetoric, this bibliometric review demonstrates that there are few empiric publications in the area of pharmacy education in low- and middle-income countries. There is a need for a robust research agenda in order to address both gaps in the research literature; alongside the implications of the findings for educational policy and practice in this context.

Keywords: Bibliometric review; Low- and middle-income countries; Pharmacy education; Pharmacy practice; Clinical pharmacy

Introduction

Pharmacy education in developed economies such as the United Kingdom (UK), the United States of America (USA), Australia, Canada and New Zealand (labeled "high-income countries") has evolved over time; in response to external forces and internal professional need. This has been the case within the field of the pharmaceutical sciences, largely due to the fast pace of change and pressure on pharmaceutical industry to deliver new products; alongside technological advancement.[1,2] Likewise, there have also been shifts within other fields of pharmacy; particularly clinical as well as social and administrative pharmacy.[3]

Historically, pharmacy held the domains of sourcing raw ingredients, formulation, supply and distribution of pharmaceuticals, as well as other remedies.[4] Industrialization involving large-scale manufacturing of medicinal products, resulted in pharmacy losing the source and compounding aspects of its role with the pharmaceutical industry making pharmacy's role in the production of medication largely redundant; particularly for the community pharmacy

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sector.[4–8] The simple act of dispensing medications on the order of a medical prescriber, and the associated financial transaction meant pharmacists found themselves over-trained for what they did and under-utilized for what they knew.[8] A loss of function, social power and status resulted in a loss of identity for pharmacy.[4,5] Part of the response to this (since the late 1960s) has been the drive for "reprofessionalization" where there has been a gradual shift in focus away from the technical roles of pure procurement, supply and distribution of medications, toward disease and patient-oriented approaches to pharmaceutical decision-making; alongside the adoption of more clinically oriented roles.[4,5,8]

Within the community pharmacy sector in high-income countries, it has been role extension through cognitive clinical services that has received the most attention with respect to education, policy, practice and research. The need to reposition the pharmacy profession as medicine management experts through delivering value-added clinical services has been one of the main drivers for reprofessionalization.[4] This has been supported by professional pharmacy bodies and health policy-makers; particularly in Commonwealth countries.

There has also been a professional movement within hospital pharmacy, with greater presence and clinical input at the ward level as a result of the professional movement in 1990s.[9] This came before the community pharmacy reprofessionalization movement that has been more recent; and driven more by health policy, than impetus from the pharmacy sector per se; as was the case for hospital pharmacy. This occurred in the USA, UK and a number of countries within greater Europe. Pharmacists have managed to subspecialize within the hospital sector and have been active in clinical service provision, alongside core hospital pharmacy services; the source and supply of medications. Hospital pharmacists have also taken on roles that require an outward-looking, collaborative approach including the provision of clinical advice and drug information, but also areas such as strategic planning and policy-making.[10]

In the broadest sense, the pharmacy reprofessionalization agenda is likely to have influenced the education system in high-income countries through the requirement to train clinically oriented pharmacists. Equally, it is expected that by providing this clinical training, the profession is also being assisted by pharmacy academia in "moving forward", and achieving the clinically based vision of the future. The focus of pharmacy education has shifted from the basic sciences, to include clinical and health sciences, along with social and administrative pharmacy. In some countries pharmacy faculty moved from science faculties to be part of medical faculties.

For some time the Doctor of Pharmacy degree program (PharmD) has been the mainstay of clinical pharmacy education in the USA. Clinical pharmacy is an important discipline within the practice of pharmacy in high-income countries. Having had much to offer the profession, population health and healthcare systems in the broadest sense, the clinical pharmacy movement has been a significant vehicle for the reprofessionalization of pharmacy in high-income countries.[11] The growth of clinical pharmacy and pharmacy practice in high-income countries has also affected pharmacy education and practice in low- and middle-income countries. However, it is not clear whether the concept of modern pharmacy practice has been properly understood in these countries.

There are many definitions of "clinical pharmacy", and the term has been understood differently across the globe. Some relate it to "patient care", while others associate it more with the "appropriate use of medicines".[12] However, amid these discussions in the developed world, the change has also greatly affected the pharmacy sector in developing countries. Under this influence, the term "pharmaceutical care" is used as popular jargon in developing countries. Pharmacy degrees have been changed from bachelor degrees to PharmD and the length of degree programs extended.[13] However, despite all of this rhetoric, there is enough anecdotal evidence that the philosophies underpinning clinical pharmacy are poorly understood. This is in-part due to most of the developing world not having stable pharmaceutical systems.[14] Pharmacy degrees have been switched to PharmD degrees based on models from high-income countries in the greater Asian region.

It is unknown to what extent formal evaluation of the adoption of these programs has taken place, within the context of low- and middle-income countries.[15] Understanding how clinical pharmacy is perceived in different countries would be useful. In this context it is also vital to explore the pharmacy education literature that is related to broader clinical, social, and health-system pharmacy in developing countries.

It is clear there is scarce empiric literature about the scope and status of pharmacy education within low- and middle-income nations and, a thorough bibliometric review of the literature had not been previously undertaken. Through a better understanding of current dialogue and of the gaps in the literature across low- and middle-income countries, rhetoric and gaps in the literature can be explored in a systematic manner.

Objectives

The aims of this bibliometric review were twofold:

1. To systematically identify and quantify published literature on pharmacy education in the context of low- and middle-income countries.
2. To explore and understand the major patterns of dialogue in this literature.