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Research Note

Knowledge and perceptions toward cardiology pharmacy education and training: Malaysian pharmacy students' perspectives

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ABSTRACT

Introduction: The role of pharmacists in the patient care process is developing in the Malaysian healthcare setting. Pharmacy students are required to be aware of cardiology pharmacy practice as this is one of the top national disease burdens in Malaysia. This study was conducted to assess the knowledge and perceptions of pharmacy students toward the cardiology pharmacy specialty practice.

Methods: A descriptive cross-sectional study was conducted. The study instrument was a 31-item self-developed questionnaire. The target participants were third and fourth-year pharmacy students in one of the public Malaysian pharmacy schools.

Results: The overall response rate was 174/209 students (83.3%); 42 (24.1%) were male and 132 (75.9%) were female. The majority of students possessed a sound knowledge regarding cardiology pharmacy services and roles of the cardiology pharmacist. Nevertheless, important differences were noted between the participants in a few particular areas. These included prior familiarity with the term "cardiology pharmacy" ($p = 0.032$), limitations to the active participation of pharmacists in the cardiology unit in Malaysia ($p = 0.013$), and perceptions toward the necessity of a cardiology pharmacist to the Malaysian healthcare system ($p = 0.005$).

Conclusions: Overall, the pharmacy students in our sample have high knowledge of and positive perceptions toward cardiology pharmacy practice. The majority of students perceived the introduction of cardiology pharmacy as a stand-alone subject in the undergraduate pharmacy curriculum in a positive manner. This study may be considered as a starting point for Malaysian pharmacy schools to consider offering focused clinical learning aligned with both the nation's health priorities and the prospective specialty level of clinical pharmacy practice in the country.

Introduction

Today's pharmacist has taken on expanded roles in providing clinical pharmacy services to patients with a specific disease state. According to the American Board of Pharmacy Specialties (BPS), there are eight specialized areas in pharmacy practice currently available, including oncology, nuclear, psychiatric, ambulatory care, critical care, nutrition support, pediatric, and pharmacotherapy.

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Cardiology and infectious diseases are considered as sub-specialties under the umbrella of pharmacotherapy specialty. However, it is expected that cardiology pharmacy will be a stand-alone pharmacy specialty shortly.[1] Cardiology pharmacy practice is referred to as the role of the clinical pharmacist in facilitating the clinical care of patients with cardiovascular diseases (CVD) by focusing on optimizing the use, administration, and adherence to cardiovascular therapeutics.[2]

Undergraduate pharmacy education in Malaysia is designed as a four-year program that is followed by provisional training for one year.[3] The provisional training is designed to provide practice-based experience to graduates. They have the choice to select the setting of this provisional training within a community, hospital, industrial, or academic setting. Nineteen schools of pharmacy offer the program, and only five of them are in public universities.[4] Most of the programs provide the comprehensive pharmaceutical knowledge necessary as a basis for different practice settings. The clinical component of the pharmacy program relates mainly to therapeutic teaching and training. In this clinical component, a six-week hospital attachment requirement is undertaken by the final-year students. A few pharmacy schools started to offer an integrated curriculum that exposed pharmacy students to the therapeutics component as early as the second year of the program. In a study of final-year Malaysian pharmacy students, which assessed the effectiveness of the assessment method for a clinical pharmacy course, the majority of the students felt that a higher degree of clinical learning was required.[5] The findings highlighted the further need to focus on developing the clinical competencies among Malaysian pharmacy students. A more focused clinical learning could help to improve students' clinical competencies. Further strengthening of students' clinical training is assumed to have a direct effect on their enhanced integration with their career upon graduation. The results of a survey from four pharmacy schools showed that a significant portion of final year students was interested in pursuing pharmacy careers in hospital pharmacy practice.[6] Since the majority were interested to pursue a career in a hospital setting, more schools should offer cardiology pharmacy as an option.

Pharmacy practice in Malaysia started to experience transformation from product-oriented to patient-oriented service over the last three decades.[7] The first phase of clinical pharmacy practice involved the small-scale application of many services such as therapeutic drug monitoring, total parenteral nutrition, and drug information services.[7] Starting from 2004 onward, a noticeable expansion of clinical pharmacy services in the Malaysian healthcare facilities occurred, and the scope of services begun to target regular participation of pharmacists in wards.[8] The involvement of ward pharmacists has been expanded further to cover approximately 80% of the wards in the major governmental hospitals.[8] However, many other public facilities and almost all of the private care facilities are still far from involving the pharmacist in the medical rounds. Introducing new services that involve pharmacist-patient direct interaction happened in the model of medication therapy adherence clinics (MTAC) and home medication reviews (HMR).[8] The effectiveness of these new services was tested and proven. For example, the evaluation of MTAC service for patients with diabetes showed that a pharmacist-managed service was associated with significant improvements in the disease control and medication adherence.[9]

The future of clinical pharmacy services in Malaysia is specialized career paths in one of five major clinical areas: cardiology; nephrology; oncology; critical care; and infectious diseases. A post-graduate qualification, optional board certification, and two-year residency program are the main requirements for the future career pathway for the Malaysian pharmacists as specialists.[8] According to the latest board of pharmacy specialties statistics, a total of 64 Malaysian pharmacists were board certified. The distribution of 64 pharmacists was among four main board specialties, which included pharmacotherapy, ambulatory care, critical care, and psychiatry.[10]

As a part of the healthcare team, pharmacists play a vital role in reducing the number of adverse drug events and medication errors in cardiovascular disease adult patients.[11] The pharmacist role in cardiology is of particular importance as cardiovascular drugs lead to the highest cases of drug related problems.[12] Due to their intimate understanding and knowledge of the cardiovascular drug's therapy and pharmacology, pharmacists can provide the detailed information on the medications including dosing, interactions, and alternatives based on the patient's situation.[13,14]

According to World Health Organization (WHO), cardiovascular diseases were the leading cause of mortality worldwide, with an estimated death of 17.5 million people in 2012 931% of all global deaths).[15] Nationwide, an increase in the prevalence of cardiovascular risk factors in Malaysia has been reported.[16] The Malaysian National Health and Morbidity Survey 2015 on Non-communicable Diseases (NCD) revealed increasing prevalence of three major NCD risk factors. The three major risk factors were high blood sugar (diabetes), high blood cholesterol (hypercholesterolemia) and high blood pressure (hypertension).[17] The increasing rate of cardiovascular risks among Malaysians denotes the urge for health promotion interventions targeting CVD.

The goals of this research were to assess the future pharmacist practitioners' knowledge regarding cardiology pharmacy and their perceptions about the potential benefits that they can contribute after their graduation to the Malaysian cardiology clinical practice. The study was undertaken due to the plan to identify cardiology as one of the specialized areas of pharmacy practice among Malaysian clinical pharmacists. It is crucial for the future pharmacy practitioners to have the adequate knowledge and understanding of cardiology pharmacy upon graduation. Therefore, this work aimed to assess the knowledge of pre-final (third) and final (fourth) year pharmacy students about their knowledge and perceptions of cardiology. The study explored the association between students' knowledge and their preference to focus on cardiology pharmacy later in their career. This research was the starting point for Malaysian pharmacy schools to incorporate cardiology pharmacy as stand-alone courses in their undergraduate programs.

Methods

Design

A descriptive cross-sectional study was conducted to explore the knowledge and perceptions of undergraduate pharmacy students