

Education on antimicrobials, antimicrobial resistance, and infectious diseases in pharmacy curricula, Thailand

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ABSTRACT

To compare the number and percentage of subjects, credits, and learning hours with regard to antimicrobials, antimicrobial resistance, and infectious diseases in pharmacy curricula of Faculty of Pharmacy in Thailand. This was a survey study that defined keywords in regard with antimicrobials, antimicrobial resistance, and infectious diseases by physician and clinical pharmacist. The keywords were used to search from course descriptions, and course syllabi in Thai pharmacy curricula in each university. There were 19 universities providing pharmacy curricula in Thailand, which data were completed by 13 out of 19 universities. All universities provided the subjects related to antimicrobials, antimicrobials resistance and infectious diseases. Khon Kaen University had the highest number (36 credits) and percentage of credits (15.79%). Siam University had the highest percentage of lecture hours (57.33%). Mahasarakham University had the highest percentage of laboratory hours (86.67%). In addition, there were 6 out of 19 universities with the infectious diseases clerkship. All 19 universities provided the subjects related to antimicrobials, bacterial resistance and infectious diseases in various types of learning (i.e. lecture, laboratory and clerkship). These could provide pharmacy graduates in promoting appropriate use of antimicrobial agents.

1. INTRODUCTION

The problem of antimicrobial resistance (AMR) is rapidly growing and threatens to patient outcomes worldwide which can lead to high rate of mortality and hospitalization, including increased public health costs¹⁻³. Importantly, hospital-acquired infections caused by multidrug-resistant (MDR) Gram-negative bacteria, in particular *Pseudomonas aeruginosa* and *Acinetobacter baumannii* become a significant problem that resulted in a rising number of mortality, especially in critically ill patients⁴. The prevalence and severity of resistance vary in different area. Klevens et al. found that

Methicillin-resistant *Staphylococcus aureus* (MRSA) was responsible for mortality rate of 6.3 per 100,000⁵. In Thailand, the reports from National Antimicrobial Resistance Surveillance Center, Thailand (NARST) revealed a high prevalence of MDR which has been shown rising during 2000 and 2016⁶. Incidence of carbapenem-resistant *A. baumannii* (CRAB) was found increasing from 2.1% in 2000 to 46.7% in 2005⁷. The causes of antimicrobial resistance were composed of inappropriate antimicrobial use, prior antimicrobials, and long term hospitalization⁸. Similarly, risk factors for MDR gram-negative infections at Siriraj Hospital,

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