Pharmaco-epidemiologic study of the prescription of contraindicated drugs in a primary care setting of a university: a retrospective review of drug prescription

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Key words
drug-contraindications
– Malaysia – prevalence
– primary care setting
– medication errors

Abstract. Background: The prescription of contraindicated drugs is a preventable medication error, which can cause morbidity and mortality. Recent data on the factors associated with drug contraindications (DCIs) is limited world-wide, especially in Malaysia. Aims: The objectives of this study are 1) to quantify the prevalence of DCIs in a primary care setting at a Malaysian University; 2) to identify patient characteristics associated with increased DCI episodes, and 3) to identify associated factors for these DCIs. Methods: We retrospectively collected data from 1 academic year using computerized databases at the Universiti Sains Malaysia (USM) from patients of USM’s primary care. Descriptive and comparative statistics were used to characterize DCIs. Results: There were 1,317 DCIs during the study period. These were observed in a cohort of 923 patients, out of a total of 17,288 patients, representing 5,339 DCIs per 100,000 patients, or 5.3% of all patients over a 1-year period. Of the 923 exposed patients, 745 (80.7%) were exposed to 1 DCI event, 92 (10%) to 2 DCI events, 35 (3.8%) to 3 DCI events, 18 (2%) to 4 DCI events, and 33 patients (3.6%) were exposed to 5 or more DCI events. The average age of the exposed patients was 30.7 ± 15 y, and 51.5% were male. Multivariate logistic regression analysis revealed that being male (OR = 1.3; 95% CI = 1.1 – 1.5; p < 0.001), being a member of the staff (OR = 3; 95% CI = 2.5 – 3.7; p < 0.001), having 4 or more prescribers (OR = 2.8; 95% CI = 2.2 – 3.6; p < 0.001), and having 4 or more long-term therapeutic groups (OR = 2.3; 95%CI = 1.7 – 3.1; p < 0.001), were significantly associated with increased chance of exposure to DCIs. Discussion and conclusions: This is the first study in Malaysia that presents data on the prevalence of DCIs. The prescription of contraindicated drugs was found to be frequent in this primary care setting. Exposure to DCI events was associated with specific socio-demographic and health status factors. Further research is needed to evaluate the relationship between health outcomes and the exposure to DCIs.

Introduction

New medications are constantly being introduced into the pharmaceutical market. Furthermore, new approaches for treating chronic diseases have led to an increasing number of medications, and increased polypharmacy [1]. Because most chronic diseases are related to aging, the number of medications per person is significantly higher among populations 65 y of age or older [2, 3]. Medication use can improve the quality of life for many patients, but may also result in adverse health outcomes (e.g. drug-disease interactions) if used inappropriately [4]. Drug contraindications (DCIs), are defined as possible disease exacerbations by medications prescribed for co-existing diseases or syndromes [4, 5]. DCIs cause considerable morbidity and mortality world-wide, and may result in the prescription of additional medications, and sometimes even hospital admission [6, 7, 8, 9, 10].

Several studies using administrative databases have reported the prevalence of DCIs among ambulatory patients in different countries [2, 4, 11, 12, 13]. A literature search using PubMed (http://www.ncbi.nlm.nih.gov/pubmed/) for keywords “contraindication” or “contraindicated” and “drug” or “medication” or “drug-related problems” or “medication-related problems” and/or “Malaysia” revealed only a few studies of English language. To the best of our knowledge, recent data on the factors associated with