

# Associations between prescribing non-steroidal anti-inflammatory drugs and their potential prescription-related problems in a primary care setting

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## Key words

ATC/DDD – prescribing pattern – NSAIDs – pharmacoepidemiologic study – prescription-related problems

**Abstract.** **Objectives:** The objectives of this study were 1) to obtain information regarding the prescribing pattern of non-steroidal anti-inflammatory drugs (NSAIDs) in the primary care setting at a Malaysian university, 2) to determine the prevalence and types of potential NSAID prescription-related problems (PRPs), and 3) to identify patient characteristics associated with exposure to these potential PRPs. **Methods:** We retrospectively collected data from 1 academic year using the electronic medical records of patients in the University Sains Malaysia (USM) primary care system. The defined daily dose (DDD) methodology and the anatomical therapeutic chemical (ATC) drug classification system were used in the analysis and comparison of the data. Statements representing potential NSAID PRPs were developed from authoritative drug information sources. Then, algorithms were developed to screen the databases for these potential PRPs. Descriptive and comparative statistics were used to characterize PRPs. **Results:** During the study period, 12,470 NSAID prescriptions were prescribed for 6,509 patients (mean  $\pm$  SD =  $1.92 \pm 1.83$ ). This represented a prevalence of 35,944 per 100,000 patients, or 36%. Based on their DDDs, mefenamic acid and diclofenac were the most prescribed NSAIDs. 573 potential NSAID-related PRPs were observed in a cohort of 432 patients, representing a prevalence of 6,640 per 100,000 NSAIDs users, or 6.6% of all NSAID users. Multivariate logistic regression analysis revealed that patients with a Malay ethnic background ( $p < 0.001$ ), members of the staff ( $p < 0.001$ ), having 4 or more prescribers ( $p < 0.001$ ) or having 2 – 3 prescribers ( $p = 0.02$ ), and representing 4 or more long-term therapeutic groups (LTGs) ( $p < 0.001$ ) or 2 – 3 LTGs ( $p < 0.001$ ) were

significantly associated with an increased chance of exposure to potential NSAID-related PRPs. **Conclusions:** This is the first study in Malaysia that presents data on the prescribing pattern of NSAIDs and the characteristics of potential NSAID-related PRPs. The prevalence of potential NSAID-related PRPs is frequent in the primary care setting. Exposure to these PRPs is associated with specific socio-demographic and health status factors. These results should help to raise the awareness of clinicians and patients about serious NSAID PRPs.

## Introduction

Non-steroidal anti-inflammatory drugs (NSAIDs) are frequently used for the treatment of different painful conditions [1], and it is expected that the use of NSAIDs will increase since the incidence of rheumatic diseases is also increasing. NSAIDs use is more common among women and increases with age [1].

A number of NSAIDs are available on the Malaysian market and are used as analgesics in various painful conditions related to the skeletal muscles, teeth, and menstruation. In addition, they are used in inflammatory arthritic conditions and as anti-pyretics [2]. Although generally well-tolerated, these drugs are associated with serious adverse reactions such as upper gastrointestinal ulcers and bleeding [1], hypersensitivity reactions [3], and renal failure [4]. NSAIDs use can improve the quality of life for patients, but may also result in adverse health outcomes

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