



Potential Determinants of Prescribers' Drug-Drug Interaction Knowledge

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Abstract

Background: Health care professionals' ability to recognize potential drug-drug interactions (potential DDIs) is important in reducing the risk of potential DDIs and their adverse consequences. Until now, little is known about the determinants of prescribers' potential DDI knowledge.

Objectives: This study was conducted to develop interval scales to evaluate prescribers' potential DDI knowledge and perceived usefulness of various potential DDI information sources, and to examine demographic and practice factors that may be related to prescribers' knowledge of potential DDIs.

Methods: Data were obtained from a national mail survey of prescribers who were determined from pharmacy claims obtained from a pharmacy benefits manager to have prescribed at least 1 drug involved in a potential DDI, and a control group who had prescribed either 1 of the medications in the drug combinations of interest. The survey instrument included 14 drug-drug pairs that evaluated prescribers' ability to recognize clinically important potential DDIs and 5-point Likert scale-type questions that assessed prescribers' perceived usefulness of potential DDI information provided by various sources. The knowledge and usefulness questions were examined via Rasch dichotomous and rating scale models, respectively.

Results: A total of 950 completed surveys were included in the analysis (overall adjusted response rate: 7.9%). Rasch analysis of knowledge and usefulness items revealed satisfactory model-data-fit (infit mean square [MNSQ] ≤ 1.5 and outfit MNSQ ≤ 2.0) and moderate person reliability of 0.72 and 0.61, respectively. Multiple regression analysis revealed that compared with generalists, specialists had lower potential DDI knowledge test scores. In addition, poorer potential DDI knowledge was associated with a lack of clinical experience witnessing harm caused by a potential DDI. Also, the prescribers whose drug selections were affected by the risk of potential DDIs "very much" scored higher than those who reported that their prescribing was affected by the risk "a little" or "not at all."

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Conclusions: This study found that specialists were less likely to correctly identify interactions compared with generalists. Other important predictors of potential DDI knowledge included the experience of seeing a potential DDI-caused harm and the extent to which the risk of potential DDIs affected prescribers' drug selection.

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Introduction

Previous research has found that drug-drug interactions (potential DDIs) lead to adverse clinical outcomes such as hospital admissions and emergency department (ED) visits.¹⁻⁶ Health care professionals' ability to recognize potential DDIs is important in reducing the risk of potential DDIs and their adverse consequences. Several studies that evaluated health care professionals' knowledge have found an insufficient ability to identify potential DDIs.⁷⁻¹¹ In a study of community pharmacists, only 1 of the 48 pharmacists notified the prescribing physician of the clinically important potential DDI studied (ie, sodium warfarin and phenobarbital).¹⁰ Another study found that 32% of pharmacies filled prescriptions for erythromycin and terfenadine without any comment, despite letters from the Food and Drug Administration warning of this potentially life-threatening interaction.⁷ Pharmacists' ability to identify interactions was found to vary significantly with the number of drugs on the medication profile.¹¹ As the number of drugs in medication profiles increased from 2 to 16, the percentage of potential DDIs detected decreased from 66% to 17%.¹¹ Langdorf et al found that compared with the performance of a computer software program, the sensitivities of general ED physicians and an expert ED physician to detect potential DDIs were 14% and 25%, respectively.⁹ More recently, Glassman et al used 10 drug pairs to test clinicians' familiarity with common potential DDIs, and they found that clinicians correctly categorized 44% of all drug pairs.⁸

Until now, little is known about the determinants of prescribers' potential DDI knowledge. Glassman et al found that general internists correctly categorized more potential DDIs than non-medical specialists and younger clinicians recognized more potential DDIs than older clinicians.⁸ In addition, the number of half-days spent in clinic was found to have a positive relationship with clinicians' ability to recognize contraindicated drug pairs.⁸

More research is needed to improve our understanding of the factors associated with prescribers' ability to recognize important potential DDIs. Such information could help to identify the prescribers with insufficient potential DDI knowledge who could be the targets for educational intervention.

Given the overwhelming existing and expanding information about potential DDIs, it is impossible to ask prescribers to remember all potential DDIs. When a prescriber prescribes an interacting drug pair, several sources may inform the prescriber about the potential DDI before the patient receives the drugs. Previous studies examining prescribers' medication information sources have focused on general pharmaceutical information¹²⁻¹⁶; relatively little research has been targeted on prescribers' sources of potential DDI information. However, a recently published study of prescribers in 7 Veterans Affairs medical centers suggested that pharmacists and electronic references were the most commonly used potential DDI information sources, with each source reported by about half of the prescribers. In contrast, printed references and nonpharmacist clinicians were seldom used.¹⁷ Nevertheless, the study did not assess the relative usefulness of the potential DDI information provided by these different sources.

The purpose of this study was 2-fold: (1) to develop interval scales to test prescribers' potential DDI knowledge and perceived usefulness of various potential DDI information sources, and (2) to examine demographic and practice factors that may be related to prescribers' knowledge of potential DDIs.

Methods

Sample selection

This study adopted a random sample design stratified by the frequency of potential DDI occurrences. Data from a pharmacy benefits manager covering over 50 million lives nationwide

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