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Janette Ellis

University of Wollongong, jce840@uow.edu.au

Judy Mullan

University of Wollongong, jmullan@uow.edu.au

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Abstract

Background Prescription medication borrowing and sharing is a behaviour that has been identified in patients of all ages. This behaviour is recognised by medical researchers and government health authorities as a potential risk factor in adverse drug events across the community. **Objective** This article discusses prescription medication borrowing and sharing and identifies populations more likely to participate in this behaviour. It also focuses on the classes of drugs identified in the research literature as those being more likely to be borrowed or shared. **Discussion** Prescription medication borrowing and sharing behaviours have been associated with several risk factors such as polypharmacy and multiple chronic comorbidities. General practitioners and health professionals are therefore encouraged to counsel patients, at the time of issuing prescriptions and following discharge from hospital, on the risks of borrowing and sharing prescription medications and the safe disposal of 'left over' prescription medications.

Keywords

borrowing, prescription, sharing, medication, factors, management, risk

Disciplines

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Janette Ellis

BA(PopHealthPsychol), is a Honours candidate, School of Health Sciences, Faculty of Health and Behavioural Sciences, University of Wollongong, New South Wales. jce840@uow.edu.au

Judy Mullan

PhD(PubHlth), BPharm, BA, is Lecturer, Graduate School of Medicine, Faculty of Health and Behavioural Sciences, University of Wollongong, New South Wales.

Prescription medication borrowing and sharing

Risk factors and management

Background

Prescription medication borrowing and sharing is a behaviour that has been identified in patients of all ages. This behaviour is recognised by medical researchers and government health authorities as a potential risk factor in adverse drug events across the community.

Objective

This article discusses prescription medication borrowing and sharing and identifies populations more likely to participate in this behaviour. It also focuses on the classes of drugs identified in the research literature as those being more likely to be borrowed or shared.

Discussion

Prescription medication borrowing and sharing behaviours have been associated with several risk factors such as polypharmacy and multiple chronic comorbidities. General practitioners and health professionals are therefore encouraged to counsel patients, at the time of issuing prescriptions and following discharge from hospital, on the risks of borrowing and sharing prescription medications and the safe disposal of 'left over' prescription medications.

■ **Prescription medication borrowing and sharing (PMBS) is a patient behaviour that negatively affects patient quality use of medicine.¹ This behaviour is recognised by medical practitioners, researchers and government health authorities as a risk factor in medication errors which results in adverse drug events (ADEs).²⁻⁴ Despite this, many studies examining the risk factors for ADEs do not directly examine PMBS behaviour. Any evidence reported usually categorises PMBS under the umbrella terms 'medication error'^{2,4} or 'medication misadventure';⁵ or may be referred to obliquely as 'use of inappropriate medicine'.⁴ The danger with this is that there is a risk of underestimating the impact of this behaviour on the incidence of ADEs.**

An adverse drug event is defined as 'harm that results from the intrinsic nature of a medication (an adverse drug reaction) as well as harm that results from medication errors associated with the manufacture, distribution or use of medicines'.² 'Borrowing' a prescription medication has been defined by Goldsworthy et al³ as the patient taking a medication prescribed for someone else. 'Sharing' (or 'loaning') means that the patient gives their prescribed medication to someone else.³

The impact of ADEs in Australia is significant in terms of cost to both the government and community.² In the Second National Report on Patient Safety⁴ it is noted that, of the 100 million general practice encounters every year in Australia, around 400 000 are associated with an ADE.⁴ Furthermore, it is estimated that around half of drug related hospitalisations in Australia are most likely preventable,⁵ and pre-admission ADEs are implicated in around half of hospitalisations.⁶

It is acknowledged that, due to difficulties in collecting data from community based incidents, the actual number of ADEs due to medication error can only be estimated.^{2,4} Systems can be put in place to measure and monitor inappropriate dose or medication administration while a patient is under the care of health professionals

in a hospital setting; however, this is more difficult when a patient is at home. One major issue reported in research literature is changes to patient medication regimens during hospitalisation and how these changes are communicated to the patient's primary care physician through the discharge summary.⁷ There is a possibility that complications may arise: for example, if a medication is discontinued the patient may not be counselled about correctly disposing of leftover medications at home, this may lead to possible hoarding of prescription medications, which in turn can facilitate PMBS behaviour and possible ADEs due to the availability of 'spare' medication.

Literature and reviews on ADEs in hospital and ambulatory care have pinpointed several risk factors for ADEs. These include the increased age of the patient, multiple medications (polypharmacy), and an increased number of chronic, comorbid conditions.^{2,5,8–10} As there is no complete, reliable, single source of data,² due in part to there being no centralised reporting system for 'minor' ADEs (ie. those that do not cause fatalities nor lasting morbidity),^{8,10} there may be more risk factors that have not yet been identified.

Different populations

Research has found PMBS behaviour is prevalent across all ages.^{3,11,12} There are similar issues with PMBS in all ages; however, there are also age specific and cultural issues which have been identified.

Patients who self medicate appropriately with over-the-counter (OTC) medications are the main focus of research studies.^{12–14} In general, this behaviour is considered benign, although a subgroup of 'unsafe self medicators' has been described in a survey of Spanish participants aged 16 years and over.¹² This description refers to the taking of prescription or restricted medicines without professional medical supervision¹² and it is assumed that this behaviour also includes PMBS. In this study, the characteristics of these 'unsafe self medicators' included female gender, living alone, being retired and being older.¹²

Very few studies since 2000 focus directly on PMBS behaviour. Two American studies looked at populations aged 12–44 years. In both studies it was found that around one-quarter of respondents reported sharing or borrowing prescription medications;^{3,11} usually asthma,¹¹ allergy, pain relief³ and antibiotic medications³ (*Table 1*). The incidence of this behaviour was higher in those aged 18–35 years,³ peaking in the early 20s.¹¹

In a review of medication use among older Australians it was found that 13–20% reported sharing prescription medications.¹⁵ In common with the younger populations previously discussed,^{3,11} older Australians were willing to share medication(s) previously prescribed for them if they had run out of that medication.¹⁵ Borrowing 'new' medication was not as acceptable, with only 2% reporting to have borrowed a prescription drug never prescribed for them.¹⁵

A recent small, qualitative Australian study looking at medication management habits of non-English speaking background (Chinese and Arabic) residents in southwestern Sydney found that a significant

Table 1. Conditions facilitating PMBS, as identified in research literature

More likely to share with a family member
Share with someone else, if they had the same prescription
Borrower had run out of prescription medicine in the short term
Wanting to 'help a friend'
Had 'leftover' medicine – kept deliberately for 'next time'
Non-English speaking background
More people in the house
Single (not in a relationship)
Wanting same medication as other family member

proportion of these people practised PMBS behaviour. Researchers identified several factors that facilitated this behaviour (*Table 1*),¹ most of which were similar to American studies.^{3,11} In particular, people in this population were more likely to share prescription medicine with a family member, kept 'leftover' medicine for 'next time' and asked their GP for the same medication that a family member had been prescribed.¹

Australians aged over 60 years have also been found to share, stockpile and hoard their prescription medications.^{5,15,16} The reported rates of elderly people stockpiling and hoarding prescription medicine varied from 0.9%⁵ to over 42%.¹⁶ It should be noted however, that these results are based on small studies, usually related to the home medicine review (HMR) process. Perhaps as a result of people hoarding medicines, a significant number of elderly respondents were found to have expired medicines in their home.⁵ Higher numbers of medications in an elderly person's home (prescription and OTC medications) have been found to have a significant correlation with severity of illness and worsened health status,¹⁷ including increased risk of ADEs.¹⁷ No definitive data on the link between hoarding medicines and PMBS has been collected or reported.⁴

Medications most likely to be borrowed or shared

Several classes of drugs (*Table 2*) have been identified as being borrowed or shared for the treatment of both acute and chronic health conditions. In particular, pain medications are commonly borrowed or shared, including nonsteroidal anti-inflammatory agents (NSAIDs) and the stronger opioids.^{12,18,19} Antibiotics also appear to be major contributors to borrowing and sharing behaviours.

The use of NSAIDs have been implicated in 'medication misadventures' due to inappropriate use or use of expired medications,⁵ behaviours which encompass PMBS. The unmonitored long term use of NSAIDs¹⁸ has the potential for ADEs, particularly drug-drug interactions with prescribed medications. Examples of these interactions include an exacerbation of bleeding when used in combination with anticoagulants (eg. heparin and warfarin),^{2,5} and cardiac complications when used in combination with cardiovascular medications (eg. antihypertensives and digoxin).^{2,5}

Table 2. Classes of drugs implicated in PMBS, as identified in research literature

Opioid analgesics
Other pain medications
NSAIDs
Allergy medications
Antibiotics
Anticoagulants
Cardiovascular medications

Table 3. Possible impacts of prescription medication borrowing and sharing

Complications of incorrect use
Drug-drug interactions
Development of antibiotic resistance (due to people not following the full course of antibiotics)
Addiction/misuse of addictive medications (leading to personal and societal consequences of such abuse)
Reduced care seeking (delays in seeking professional medical help can lead to misdiagnosis or diagnosis of a disease at a later stage, leading to poorer outcomes)
Increased patient perception of ineffective treatment (due to patient not taking an appropriate dose or medication for his/her condition)
Poisoning of patient due to inappropriate dose
Damage to fetus during early pregnancy

Much of the focus of borrowing and sharing associated with opioid analgesics is on the illegal diversion of these medications,³ with sourcing such medications from family members (through stealing or coercion) being recognised as a significant factor in this behaviour.²⁰

The final class of drugs, and of concern worldwide, is the use of unprescribed antibiotics, which has been identified as a risk factor in the development of antibiotic resistant bacteria.^{21–23} In a European study into antibiotic use by adults, it was found that 46% of respondents (n=15 548) used leftover antibiotics (antibiotics not used at the end of a course of antibiotics)²² when they believed that the infection had returned. This behaviour has also been observed in Australia,¹ with patients admitting to keeping leftover antibiotics 'for next time'.¹

Impacts of borrowing and sharing prescription medications

One of the few studies into PMBS behaviour by Goldsworthy, Schwartz and Mayhorn³ led to the framing of a theoretical model.³ This model describes the mechanisms and outcomes of this behaviour, positing possible individual and societal impacts. A study by Petersen et al¹¹ adds to the impacts component of the model (Table 3).

The risk of drug-drug interactions, poisoning and the development of antibiotic resistant strains of pathogens are readily recognised

impacts of PMBS behaviour. Other impacts related to patient perception of the effectiveness of medication treatments or physician care are less often discussed and are more difficult to manage.

Discussion

Several risk factors and characteristics have been identified which may be associated with PMBS behaviours, providing a theoretical picture of a patient who is more likely to borrow or share prescription medications (Table 1).

Prescription medication borrowing and sharing is acknowledged as being commonplace among patients; however, possibly due to the difficulties in collecting data on ADEs occurring in the community, little evidence has been collected on the prevalence and the incidence of this behaviour associated with ADEs. Further research into PMBS behaviour in elderly patients and those with chronic comorbid health conditions in particular, needs to be conducted as this group are at most risk of poor health outcomes or ADEs as a result of this behaviour.

General practitioners and other health professionals should be proactive in helping patients manage their prescription medications safely. In every day practice strategies such as education, and encouragement and reinforcement to discourage the practice of borrowing and sharing prescribed medications should be considered.

Patients recently discharged from hospital should have their current medication regimens reconciled. That is, a check of the medications listed on the patient's discharge summary should be made and the patient consulted to determine which medications are still being taken, and that the patient is managing their new medication regimen safely having appropriately discarded medications no longer required.

Patients should also be counselled at the time of prescribing, especially the identified 'at risk' medications (eg. antibiotics, NSAIDs, strong painkillers), that these medications are for their use only and that they should not be shared with family or friends. Likewise, any changes to a patient's medication regimens should include discussion about how patients should safely dispose of unwanted leftover prescription medications.

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