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Original Research

Healthcare Providers' Perceptions of Patients' Prescription Medication Sharing Practices

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Abstract

Background: Prescription medications are essential for managing health conditions. However, when these medications are shared between individuals without medical supervision—a practice referred to as prescription medication sharing—it may lead to harmful outcomes such as incorrect dosing, drug interactions, and treatment delays. While medication sharing is widely reported internationally, limited research explores the perspectives of healthcare providers on this issue within specific cultural contexts, particularly in Saudi Arabia. This study aims to understand the views of healthcare providers on the reasons for and consequences of prescription medication sharing among Saudi Arabian adults. **Methods:** Forty-two healthcare professionals, including physicians, pharmacists, and nurses licensed to practice in Saudi Arabia, participated in semi-structured, in-person qualitative interviews conducted in the Eastern Province. Recruitment followed a snowball sampling technique. Interviews continued until thematic saturation was achieved. All sessions were audio-recorded, transcribed verbatim, and subjected to thematic analysis using NVivo 12 software. The analysis employed a hybrid approach, incorporating both inductive and deductive coding strategies. **Results:** Providers confirmed that medication sharing is a common practice involving a range of drugs, including analgesics, antibiotics, antidiabetics, and antihypertensives. Frequently cited drivers included convenience (74%), cost-saving due to financial hardship (40%), leftover medications (45%), limited access to medicines and healthcare services (60%), social influence (50%), and the need for emergency use or to maintain continuity of care (67%)—factors consistent with global literature. However, unique local factors also emerged, such as embarrassment related to gender norms (38%), mistrust of the healthcare system (33%), preference for specific brands (26%), and a low perceived value of free public medications (45%). Providers expressed concerns about the health and public safety risks of sharing, including adverse drug reactions, incorrect dosing, treatment failure, and antimicrobial resistance. **Conclusion:** Prescription medication sharing is prevalent in Saudi Arabia. While many motivations are globally recognized, others reflect sociocultural norms and healthcare system challenges unique to the Saudi context. Healthcare providers emphasized the need for public education, improved healthcare access, and culturally tailored strategies, such as campaigns to address stigma and national programs for safe disposal of unused medications. Interventions guided by frameworks like the Behavior Change Wheel may support safer practices and reduce harm.

Keywords: Prescriptions, prescription drugs, drug

INTRODUCTION

Prescription medication sharing—defined as borrowing or lending prescribed medicines for medical use without the supervision of a physician or pharmacist—can result in harmful outcomes such as adverse drug reactions, teratogenic effects, delayed medical care, increased antibiotic resistance, and treatment failure due to incorrect dosage or duration[1-4]. Sharing prescription medications is a well-documented medical and public health concern, with global prevalence rates ranging from 5% to 52% across studies conducted in nine countries, including the United States, New Zealand, Australia, Canada, the United Kingdom, Ireland, Qatar, Malaysia, and Nigeria[1,5-7]. A wide range of medications has been reported as commonly shared, including analgesics, opiates, hypnotics, antibiotics, and treatments for diabetes and asthma[1,5-7]. These studies highlight that medication sharing is not limited to a single region or culture, but rather reflects a widespread behavior influenced by diverse social, economic, and healthcare system factors. For example, higher prevalence rates have been reported in low-resource settings where access to healthcare is limited. At the same time, in high-income countries, social convenience and medication surplus are more commonly cited drivers.

In Saudi Arabia, a 2019 study found that 14% of adults reported borrowing, and 16% reported lending prescription medications in the previous year[8]. Existing global literature has also shown that individuals who borrow medications often bypass medical evaluation and are at greater risk for allergic reactions or misuse[9]. While several international studies have explored the reasons behind medication sharing, most have employed structured questionnaires with predefined response options, limiting the depth of insight into this behavior[1,2,4,5,7,9-12]. Moreover, most existing international research focuses on patients' perspectives, with limited attention given to healthcare providers' views[13-15]. These prior studies have largely relied on quantitative methods and do not adequately address the influence of systemic, cultural, and professional contexts.

While global research has investigated prescription medication sharing across various populations, studies from the Middle East—particularly Saudi Arabia and its neighboring countries—remain limited. In Saudi Arabia, only one study to date has specifically examined prescription medication sharing, using a quantitative cross-sectional design among the general public[8]. That study did not explore the perspectives of healthcare professionals or account for the broader sociocultural context. In neighboring countries such as Qatar[16], and the United

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Arab Emirates[17], existing studies have primarily focused on medication storage and disposal practices within households rather than on sharing behaviors. For example, a study in Qatar reported that most households stored prescription medications in easily accessible locations and lacked appropriate disposal practices[16], while similar findings were reported in the UAE[17]. Although not directly addressing sharing, these behaviors suggest that unsupervised household access to medications may facilitate informal sharing within communities. Given that healthcare providers regularly witness the consequences of such behaviors and play a central role in promoting rational medication use, their perspectives are crucial to understanding the causes and consequences of this behavior. Exploring their perspectives helps identify cultural, psychological, and systemic factors that may not be captured through patient-reported data alone, thereby supporting the development of effective public health responses.

Understanding the healthcare system and sociocultural context in Saudi Arabia is crucial for identifying the underlying factors that may promote medication sharing. In Saudi Arabia, healthcare services at government hospitals and primary care centers are provided free of charge to citizens, including access to medications. While this system ensures broad access, it may also contribute to a low perceived value of medications, increasing the likelihood of leftover medicines being stored and shared. Additionally, many medications can be purchased over the counter without a prescription, which may normalize self-medication behaviors. Cultural norms, such as gender-related sensitivities and strong community ties, may further influence individuals to seek medication support informally from family or friends rather than healthcare providers[18].

Given these limitations in both international and regional literature, a clear gap remains in understanding how healthcare professionals perceive and interpret the practice of medication sharing. Gaining insight into their perspectives—particularly regarding the underlying motivations and perceived risks—is essential for designing effective interventions that promote rational and safe medication use. Qualitative methods offer the opportunity to capture in-depth insights that may not be revealed through quantitative surveys[14,19]. In Saudi Arabia, there is a lack of qualitative research specifically examining healthcare providers' perspectives on prescription medication sharing, especially in relation to cultural norms and systemic healthcare factors. Therefore, this study aimed to explore healthcare providers' perceptions of prescription medication sharing among adults in Saudi Arabia, including the reasons behind this practice and its potential negative consequences.

METHODS

Design, sampling procedure, recruitment strategy, and data collection

Qualitative interviews using a semi-structured questionnaire were conducted in Arabic or English based on participants' preferences by three trained data collectors who were fluent in Arabic and also spoke English. Data were collected over three months at three hospitals located in the Eastern Province of Saudi Arabia. These sites were selected based on their convenient accessibility, as the three data collectors had received their internship training at these locations at the time of data collection. The research team acknowledged that the data collectors' prior professional affiliation with the sites could potentially influence participant responses and data interpretation. To reduce this risk, interviews were conducted in a neutral, non-clinical tone, and participation was voluntary and confidential. Importantly, the interviewers did not hold any supervisory roles over participants. To further minimize bias during analysis, two members of the research team independently coded the transcripts, and any discrepancies were resolved through team discussion and consensus. This reflexive approach was taken to enhance the credibility, trustworthiness, and rigor of the study findings.

Participants were a snowball sample of doctors, pharmacists, or nurses registered to practice in Saudi Arabia and practicing in the Eastern Province at the time of data collection. The study excluded interns and other healthcare providers such as radiologists, physiotherapists, and others. Snowball sampling was selected as a purposeful strategy to access information-rich participants across different healthcare professions, especially in light of the under-researched nature of prescription medication sharing in this context[20]. To reduce potential bias, initial participants were encouraged to refer colleagues from diverse clinical departments, professional roles, and experience levels. Efforts were made to achieve variation in age, gender, profession, and patient load to enhance the diversity of perspectives. Although the three hospitals were selected for accessibility, participants were drawn from multiple specialties and roles within each site to ensure a range of viewpoints.

The data collectors initially recommended potential participants who met the inclusion criteria from the three hospitals. These initial participants were then encouraged to suggest colleagues who might also qualify for the study. Once referred, the data collectors contacted the potential participants to explain the research and assess their interest and eligibility. Once eligibility was confirmed, eligible participants were provided with a participant information sheet and asked to sign a consent form before commencing the interview. Those agreeing to participate were interviewed face-to-face or by telephone. All face-to-face interviews were conducted at the hospitals where the healthcare providers served. To ensure confidentiality during telephone interviews, participants were assigned anonymized identification codes, and no personal identifiers were recorded. Interviews were conducted in private settings, and participants were informed they could pause or withdraw at any time. Audio recordings and transcripts were stored on encrypted, password-protected devices accessible only to the research team. Transcribed data were anonymized and securely stored in compliance with institutional ethical guidelines.

The Beyene interview schedule was used to explore healthcare providers' perspectives on prescription medication sharing practices[14]. The interview schedule covered topics such as types of medicines shared, reasons for sharing prescription

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medicines, and consequences of medication sharing. Participants' demographic and professional characteristics were also collected. The interview guide was translated into Arabic by two independent researchers. To ensure the validity of the translated tool, the translations were reviewed and compared by the principal investigator and a bilingual pharmacy expert to assess conceptual and linguistic equivalence. The guide was also pilot-tested with five bilingual participants to evaluate its clarity, cultural appropriateness, and comprehensiveness. Based on the feedback, no modifications were required. Reliability was supported by consistency in interpretation across the pilot group and agreement between translators and reviewers.

Participants were assured that their participation was voluntary, that they could withdraw at any time without giving a reason, and that their responses would remain anonymous. Interviews lasted between 30 and 45 minutes. Although there is no gold standard for determining sample size in qualitative research, previous studies have shown that interviewing 12–26 participants is sufficient[21]. This study reached data saturation with 42 interviews, as no new themes were identified beyond that point[22]. Ethical approval was obtained from the Deanship of Scientific Research (DSR) at Imam Abdulrahman Bin Faisal University (IAU). Written informed consent was obtained from all subjects involved in the study before data collection

Data management and analysis

Data analysis and transcription of interviews were conducted concurrently with data collection. QSR International's NVivo 12 software was used to organize and manage the qualitative data. A hybrid thematic analysis approach[21], combining both deductive and inductive methods, was employed. The analysis was initially guided by Beyene's codebook[14], which served as a preexisting coding framework, allowing for categorization of data under predefined themes. Additionally, an inductive approach enabled the identification of new, emerging themes based on participants' narratives. See Table 1.

All interviews were audio-recorded and transcribed verbatim. Transcripts were translated from Arabic to English using a parallel blind translation technique[21-24]. Two independent researchers who were familiar with both the healthcare terminology and cultural context completed the translations, which were then compared for consistency. To ensure translation validity, accuracy and cultural integrity, the final transcripts were reviewed by FA, a native Arabic speaker with a strong understanding of the local culture. Any discrepancies were resolved through discussion to preserve the intended meaning and ensure that theme development reflected the original narratives.

To ensure the reliability and validity of the coding process, two researchers (FA, FKA), both experienced in qualitative research and the study topic, independently coded all 42 transcripts using a hybrid inductive–deductive approach. Earlier transcripts were revisited to maintain consistency whenever new codes were added. Intercoder reliability was calculated at 93.3%, using the formula: number of agreements ÷ (number of agreements + number of disagreements). Coding disagreements were discussed during team meetings and resolved through consensus. Once agreement was reached, codes were organized into broader categories, which were repeatedly reviewed and refined to develop the final themes. This rigorous process ensured that themes were grounded in the data and accurately reflected participants' narratives.

RESULTS

Study response and participants' characteristics

Forty-two individuals agreed to participate in this study. Most were female (33/42; 79%) and Saudi nationals (40/42; 95%). The majority were aged between 25 and 34 years (27/42, 64%). In terms of education, 88% (37/42) held undergraduate degrees. Participants represented a range of professional roles, with hospital pharmacists being the largest group (26/42; 62%), followed by nurses (9/42; 22%). Work experience varied: 38% had less than 5 years, 21% had 5–10 years, and 41% had more than 10 years. Regarding workload, most providers (64%) reported seeing more than 50 patients per day, while 26% saw between 20–50, and 10% saw fewer than 20 patients daily. Table 2 provides a detailed description of participants' characteristics.

This broad participant profile enabled a rich exploration of diverse experiences and perspectives. For example, providers with longer work experience often reflected on shifts in patient behaviors over time, while those with high daily patient loads emphasized time-saving and convenience as prominent drivers of medication sharing. Pharmacists offered detailed observations on leftover medications and brand preferences, whereas nurses and physicians more frequently discussed clinical and behavioral implications of sharing in different healthcare contexts.

Types of shared prescription medicines

A wide range of prescription medicines was reported by healthcare providers to be commonly shared by patients (see Table 3). Medication used for chronic diseases were the most commonly reported, including those for diabetes (27/42, 64%), hypertension (30/42, 71%), and hyperlipidaemia (23/42, 55%). Pain medications (26/42, 62%) were also widely shared, as were antibiotics (34/42, 81%), gastric medications (20/42, 48%), contraceptives (7/42, 17%), thyroid medications (6/42, 14%), topical medications and vitamins and supplements (22/42, 52%). This broad spectrum of shared medications suggests that prescription drug sharing is prevalent behavior across various therapeutic drugs, often occurring without professional guidance.

Reasons for medication sharing

Convenience and time-saving

One of the most frequently cited reasons for medication sharing was the desire to save time and effort in seeking medical care. Among the 42 healthcare providers interviewed, 31 (74%) specifically identified convenience and time-saving

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Table 1. Beyene et al. codebook[7].

Themes	Sub-themes	Description
1. Reasons for medication sharing	1.1 Convenience and time-saving	Avoiding long waits for appointments or medication dispensing by using available medications at home or from others.
	1.2 Financial constraints	Reducing the cost burden by using borrowed medications instead of purchasing new prescriptions.
	1.3 Accessibility challenges to medicine/healthcare service	Barriers include remote locations, lack of transportation, or unavailability of medications in the pharmacies.
	1.4 Emergency use and continuity of care	Patients believe sharing ensures uninterrupted treatment when someone runs out or can't refill a prescription on time.
	1.5 Social influence and altruistic sharing	Willingness to support others in need, offering excess or unused medications, and relying on advice from family or friends who have had previous experience with illness or medication.
	1.6 Avoidance or embarrassment	Some avoid doctors out of fear of serious diagnoses or discomfort (e.g., reproductive issues), especially when the provider is of the opposite gender.
	1.7 Availability of leftover medications and low perceived value of medications	Patients share leftover or surplus medications at home due to a lack of disposal systems or over-prescription from multiple providers, or to prevent medication waste. In public hospitals, free medicines can lead to less perceived value, increasing the likelihood of sharing.
	1.8 Brand preferences and beliefs	Some patients trust certain brands more than generics and may share only their preferred type, assuming it's safer or more effective.
	1.9 Mistrust in healthcare providers or the healthcare system	Lack of trust in physicians or the healthcare system may lead patients to bypass formal consultation in favor of self-treatment or peer advice.
2. Risks of sharing medicines	2.1 Personal health risks	Situations where shared medication use poses direct health risks to the individual due to lack of personalization in treatment, dosage, or monitoring.
	2.2 Public health risks	Broader societal issues that arise when medication sharing impacts healthcare systems, community health, or regulatory processes.

Table 2. Characteristics of participants recruited into the study (N=42)

Parameter		N	%
Gender	Male	9	21
	Female	33	79
Age (years)	25-34	27	64
	35-44	10	24
	45-54	4	10
	≥55	1	2
Nationality	Saudi	40	95
	Non-Saudi	2	5
Education level	Postgraduate	5	12
	Undergraduate	37	88
Profession	Paediatrician	1	2
	Gastroenterologist	1	2
	Neurosurgeon	1	2
	Internal medicine	3	8
	Dentist	1	2
	Hospital pharmacist	26	62
	Nurse	9	22
Work experience in years	<5	16	38
	05-Oct	9	21
	>10	17	41
Clients per day	<20	4	10
	20-50	11	26
	>50	27	64

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Table 3. List of medicines which healthcare provides believed to be commonly shared by patient**s**
Antibiotics (e.g., augmentin, clindamycin)
Antihypertensives (e.g., perindopril, ramipril, atenolol, enalapril, hydrochlorothiazide, amlodipine)
Cholesterol Medications (e.g., simvastatin, atorvastatin)
Diabetes Medications (e.g., Metformin, insulin, glibenclamide, gliclazide, glipizide)
Pain Medications (e.g., tramadol, morphine, pregabalin)
Antiemetic (e.g., ondansetron)
Vitamins (e.g., vitamin D, B, B complex)
Antidiarrheal
Immunosuppressants (azathioprine, tacrolimus, mycophenolate)
Allergy medications
Anticonvulsants (e.g., carbamazepine, valproic acid, phenytoin)
Gastric/Duodenal Ulcer Medications (e.g., omeprazole, esmoprazole)
Sickle cell medications (e.g., Hydroxyuria)
Thyroid medicines (e.g., thyroxin)
Osteoporosis medications
Derma Medications (e.g., isotretinoin, roaccutane)
Oral contraceptives
Eye drops
Antitussive medications
Eczema creams
Cardiovascular (CV) medications (e.g., aspirin, apixaban, dabigatran, rivaroxaban, warfarin)

as key drivers of this behavior. Healthcare providers explained that patients often experience long waiting times to book appointments, consult with a doctor, or have prescriptions filled at pharmacies. In such cases, borrowing medications from family or friends is seen as a quicker and more convenient alternative. This behavior was particularly evident in situations where patients perceived their condition to be minor or previously diagnosed and believed that re-visiting a healthcare provider was unnecessary. Sharing medications thus offered an immediate solution without the hassle of navigating the healthcare system [Table 4, quote 1].

Financial constraints

Financial hardship was also a reason healthcare providers cited for why patients share prescription medications. In total, 17 out of the 42 participants (40%) mentioned financial constraints as a key factor influencing this behavior. In particular, patients who lack health insurance, have limited income, or do not possess valid residency or visa documents are often unable to access formal healthcare services. As a result, sharing medications becomes a survival strategy—an informal way to obtain needed treatments without incurring consultation fees or medication costs.

Healthcare providers observed that some patients explicitly requested extra quantities of their prescribed medications to share them with relatives or neighbors who could not afford treatment. This behavior was particularly common with expensive or long-term medications such as antidiabetics, antihypertensives, and immunosuppressants [Table 4, quote 2].

The issue was not limited to the uninsured. Even among those eligible for government-subsidized care, barriers such as delays in medication supply or unavailability of specific drugs sometimes push individuals to rely on others' prescriptions. Some healthcare providers also noted that patients may feel a moral responsibility to help less fortunate relatives by offering them part of their prescribed supply.

Accessibility challenges to medicines and healthcare services

Limited access to healthcare services and medications was a driver of prescription medication sharing, as described by healthcare providers. This concern was raised by 25 of the 42 participants (60%), who emphasized that such barriers often drive patients to seek informal alternatives. Patients in remote or rural areas often face geographical barriers, such as the absence of nearby healthcare facilities or a lack of transportation to reach hospitals or pharmacies. These logistical barriers may prevent timely access to healthcare, prompting individuals to rely on borrowed medications from relatives, friends, or neighbors with similar conditions or leftover supplies.

In addition, participants noted that even patients in urban areas encounter challenges such as the unavailability of specific medicines or required dosages in pharmacies, especially during prescription refills. Delays in obtaining appointments or long queues at healthcare institutions further discourage patients

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Table 4. Reasons for medication sharing

Quote no.	Illustrative quotes
1	"To save the time they spend at the pharmacy to collect their medicines because, frankly speaking, it is really crowded there and patients have to wait for a long time to have their medicines dispensed." — [P7, Hospital Pharmacist]
2	"Especially expensive medicines, patients may find it difficult to go and buy these treatments, and some patients ask physicians to increase these quantities of their supply because he/she knows that these treatments are expensive. So, he/she may donate these treatments to patients who cannot buy them, or don't have medical insurance, or don't have a medical file in a governmental hospital." — [P9, Hospital Pharmacist]
3	"Some of them [patients] face difficulties in going to hospitals due to unavailability of transportation such as elderly people or those who live in remote areas." — [P24, Hospital Pharmacist]
4	"In cases where both spouses use the same medication — like blood pressure medicines, insulin, multivitamins, or glucose regulators — if one of them runs out and cannot access the health center, they simply borrow from the other to avoid missing their dose." — [P26, Hospital Pharmacist]
5	"During casual conversations, people sometimes diagnose each other without involving a doctor. For example, one woman might say, 'This medicine really helped me, so you should try it too since you seem to have the same thing." — (P23, Hospital Pharmacist)
6	"Some people share their medications out of a desire to help. For example, someone with insurance may take extra medication even if they don't need it, just to give it to someone who doesn't have insurance." — (P27, Hospital Pharmacist)
7	"Sometimes, patients have a strong fear of going to the hospital or are afraid of discovering something shocking, so they try to escape reality. Some consider their illness a sensitive issue and don't want anyone to know about it. As a result, they prefer to take medications—even the correct ones—but obtained from someone else." — (P30, Gastroenterologist)
8	"In some cases, embarrassment about the illness or the examination itself plays a role—especially for conditions like infections. For example, if a woman knows that the nearby clinic only has a male gynecologist, she may prefer not to go and instead take medication from someone else. The opposite can happen too." — (P24, Hospital Pharmacist)
9	"Those who share their medications may struggle with adherence, or they simply don't believe the medication is really treating them… They always have this idea that no matter how much they give away or distribute, there will always be more free medicine available. That's a major factor." — (P24, Hospital Pharmacist)
10	"It depends on how comfortable the patient feels with the company. Some patients continue taking a medication just because they feel better with a specific brand—even when the hospital changes it or switches to a different one. This happens a lot." — (P26, Hospital Pharmacist)
11	"Sometimes the patient lacks trust or doesn't have enough awareness to build confidence in the healthcare provider. Some patients see doctors as deceiving or view certain hospitals as exploitative." — (P3, Hospital Pharmacist)

from seeking professional consultations. When faced with these barriers, patients may view medication sharing as a necessary and practical solution, especially in urgent situations or when symptoms recur [Table 4, quote 3].

Emergency use and continuity of care

Healthcare providers noted that some patients share medication as a temporary measure during emergencies or to ensure continuity of treatment, particularly for chronic health conditions. This issue was raised by 28 out of the 42 participants (67%), who emphasized that such sharing is often situational rather than habitual. In these cases, borrowing medications is often perceived as a practical and necessary action that helps prevent treatment interruption when a prescription runs out unexpectedly, the patient is away from home, or there is no immediate access to a healthcare facility [Table 4, quote 4]. Such instances are typically driven by situational factors rather than habitual behavior. For example, patients may forget their medication while traveling or become distracted and miss a refill appointment. Rather than allowing the treatment to be interrupted, they may turn to family members, friends, or even colleagues who are prescribed the same or a similar drug. This action, though well-intentioned, can still carry medical risks—especially if the borrowed medication is not identical in formulation, dose, or release mechanism. Healthcare providers emphasized that while this type of sharing often results from a desire to maintain health and avoid clinical deterioration, it reflects gaps in patient preparedness, medication access, or continuity of care systems.

Social influence and altruistic sharing

A significant driver of prescription medication sharing is the influence of social networks and altruistic motivations. This theme was identified by 21 out of the 42 participants (50%), who emphasized that patients often rely on informal advice from family, friends, or peers who have experienced similar health conditions. This advice is usually based on personal success stories or the assumptions that similar symptoms equate to the same diagnosis and treatment. In many cases, individuals offer medications that work for them, believing they are helping others avoid the burden of seeking care or the cost of treatment. This practice reflects a broader cultural norm where helping others, especially within close-knit communities, is highly valued [Table 4, quote 5].

In addition to offering advice, many patients share leftover or surplus medications with others as an act of kindness or perceived social responsibility. This is particularly common when medications are expensive or difficult to access. Some patients may even request additional quantities from physicians or collect medicines they no longer need, believing they are doing good by passing them on to someone less fortunate [Table 4, quote 6].

Avoidance and embarrassment

A notable psychosocial factor contributing to the sharing of prescription medications is avoidance behavior driven by fear,

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anxiety, or embarrassment. This theme was discussed by 16 out of the 42 participants (38%), who described how such emotional responses influence patients' reluctance to seek professional care. Healthcare providers reported that some patients deliberately avoid visiting healthcare facilities to escape the possibility of receiving distressing or life-altering diagnoses. For these individuals, seeing a doctor can be emotionally overwhelming, especially if they anticipate learning about a chronic or serious condition. Instead of confronting these fears, they may choose to self-manage their symptoms by borrowing medications from others who have experienced similar health issues.

According to a gastroenterologist (P30), this behavior reflects a form of denial or escapism. He described patients who would rather suppress their concerns and avoid formal diagnosis, fearing that medical testing could confirm a condition they are not psychologically ready to accept. Others may view their illness as a deeply personal or stigmatizing issue, choosing to remain silent and avoid professional help. In both scenarios, borrowing medications becomes a coping mechanism—an alternative to facing uncomfortable truths [Table 4, quote 7].

In addition to fear, embarrassment and cultural sensitivities further influence patients' choices. A hospital pharmacist (P24) highlighted that gender dynamics can hinder seeking care. For example, some female patients may feel uncomfortable undergoing specific examinations by male physicians, particularly in fields like gynecology. In such cases, they prefer to obtain medications from someone they trust, such as a friend or relative, rather than endure what they perceive as an awkward or shameful encounter in a clinical setting. In this context, sharing medication feels like the lesser of two evils—offering symptom relief while avoiding emotional discomfort [Table 4, quote 8].

Availability of leftover medications and low perceived value of medications

In public healthcare systems where medications are provided free of charge, some patients may not perceive them as valuable resources. This issue was reported by 19 out of the 42 participants (45%), who observed that such perceptions contribute to the accumulation of unused or leftover medications, either due to non-adherence, receiving multiple prescriptions from different providers, or switching treatments. Without structured systems for returning or safely disposing of these medications, many individuals opt to share them informally with family, neighbors, or friends. Sharing, in this context, is often seen as an act of kindness and a way to prevent waste—ensuring that medicines perceived as still "beneficial" are not discarded unused. Patients may believe that "it's free, so it's okay to give it away" [Table 4, Quote 9], and that offering leftover medications to someone in need is both helpful and resourceful. The combination of surplus availability and low perceived cost encourages a casual approach to medication ownership, where drugs are seen as shareable commodities rather than regulated therapeutic tools. This mindset increases the likelihood of unsupervised sharing, even when the medication may no longer be appropriate, needed, or safe for others.

Brand Preferences and Beliefs

An indirect yet important driver of prescription medication sharing is the patient's preference for specific brands, which often influences not only what they use themselves but also what they are willing to share with others. This factor was identified by 11 out of the 42 participants (26%), who noted that some patients believe that certain brands—whether due to previous personal experience, perceived effectiveness, or reputation—are superior to generics or alternative formulations. This belief is not always based on clinical evidence but rather on subjective comfort or brand loyalty.

Patients may resist switching to a different brand, even when prescribed by a physician or dispensed by a hospital pharmacy. When patients are given a different manufacturer's version, they may continue using or sharing their preferred brand, often obtained from previous prescriptions or even purchased separately. This belief system shapes medication-sharing behavior; individuals are more prone to offer medications they "trust," believing they are doing the recipient a favor by giving them something more "effective" or "reliable." [Table 4, quote 10].

Mistrust in healthcare providers or the healthcare system

Mistrust in the healthcare system or individual providers is a significant psychological and cultural barrier that may lead patients to bypass formal medical consultation and instead engage in self-treatment or rely on peer advice. This theme was mentioned by 14 out of the 42 participants (33%), who described how such mistrust can arise from past negative experiences, perceived negligence, long wait times, limited doctor-patient communication, or stories circulating within communities about medical errors. In such cases, patients may feel that seeking professional care is unnecessary, risky, or ineffective. Instead, they turn to people they know—family, friends, or online communities—for reassurance and treatment recommendations.

This behavior is especially pronounced when the illness is perceived as minor or when symptoms are familiar. However, even in more serious conditions, patients may be hesitant to seek medical help if they feel that the provider will not take them seriously, misdiagnose them, or prescribe unnecessary medications. This scepticism contributes to the informal circulation of prescription drugs, as patients are more likely to accept advice from someone they trust personally than from a provider they view as disconnected or unconcerned [Table 4, quote 11].

Negative experience from shared medicines

Healthcare providers reported several negative experiences. These negative experiences were classified into two sub-themes: personal and public health risks. While these risks were frequently mentioned, participants often spoke in general terms, and it was not always clear whether their accounts were based on direct clinical encounters, anecdotal reports, or hypothetical scenarios. As such, it was not possible to quantify

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the number of actual adverse outcomes from the interview data.

Personal health risks

Healthcare providers acknowledged that prescription medication sharing is often done with good intentions. However, they emphasized that most people are unaware of the serious and sometimes long-term consequences this practice can lead to. Sharing medications without medical supervision can result in adverse outcomes such as allergic reactions, drug toxicity, incorrect dosages, harmful drug–drug or drug–food interactions, and inappropriate treatment. These risks are further heightened when the borrowed medication is not tailored to the patient's individual condition, laboratory values, or clinical history.

Several examples illustrate these dangers. One patient developed a severe allergic reaction after taking a high dose of Augmentin recommended by a relative [Table 5, quote 1]. In another case, a woman unintentionally overdosed after taking her husband's levothyroxine tablets, not realizing his dosage was significantly higher than hers [Table 5, quote 2]. Similarly, a patient who borrowed Metformin discovered she had taken the immediate-release formulation (500 mg) instead of her prescribed extended-release version (750 mg), posing risks related to formulation mismatch [Table 5, quote 3].

Healthcare providers also reported cases where medications intended for specific health conditions, such as antidiabetics, were taken without proper diagnosis, potentially leading to serious complications [Table 5, quote 4]. Risks of drug–drug and drug–food interactions were also highlighted, particularly when patients self-medicate without understanding potential contraindications [Table 5, quote 5].

One pharmacist recounted a case in which a mother reused leftover Augmentin® oral suspension for her second child a month after it was initially prescribed for her first child. Unaware that the medication should be discarded within 7 to 10 days after reconstitution, she administered an expired dose, which failed to improve her child's condition and ultimately required hospital care [Table 5, quote 6].

Public health risks

Healthcare providers expressed significant concern regarding the broader public health consequences of medication sharing. At the population level, this practice—particularly involving antibiotics—was viewed as a major contributor to antimicrobial resistance, thereby reducing the effectiveness of treatments across entire communities. Providers reported that antibiotics are frequently shared among family members to treat self-diagnosed symptoms, accelerating resistance and complicating infection management. One pharmacist [Table 5, quote 7] recounted a case of a hospitalized patient with a serious infection where the medical team had to escalate to more expensive and broad-spectrum antibiotics, yet without clinical improvement—likely due to prior inappropriate antibiotic use. Beyond resistance, medication sharing can lead to improper resource utilization, such as early depletion of prescribed medicines, premature refill requests, and the diversion of publicly funded healthcare supplies. Patients sometimes sent medications abroad informally, bypassing regulatory controls [Table 5, quote 8]. Another critical public health concern involves the sharing of mood-altering and

Table 5. Perceived risks of medication sharing

Quote no.	Illustrative quotes
1	"Someone was taking Augmentin, which he got from a relative working at the Ministry of Health. He said he feels as strong as a horse whenever he takes it just once. It turned out he was taking 1 gram four times a day." — (P22, Hospital Pharmacist)
2	"A simple example—both my mother and father take levothyroxine for hypothyroidism. They keep their medications next to each other. She decided to take from my father's supply when hers ran out. Her usual dose was 150 mcg (two 75 mcg tablets), but she took two of his, which were 150 mcg each. So, she ended up taking 300 mcg and later experienced strong palpitations. She had to go to the hospital, and they stopped the medication for a while." —(P28, Hospital Pharmacist)
3	"A patient came to me to tell me that she ran out of Metformin, and she borrowed some Metformin from her relative. When I asked her to show me the tablets she borrowed, I discovered that she took Metformin 500 mg immediate release (IR) whereas we give her 750 mg extended release (ER)." — (P21, hospital pharmacist)
4	"Regarding the glucose regulator, a woman used it for glucose control and weight loss. She said she gave it to her sister, who didn't have diabetes, just to help her lose weight." — (P28, Hospital pharmacist)
5	"I had a heart patient who was taking warfarin, and his INR target should be (2.5-3.5), and when we measured the INR level, it was too low. We tried to increase the Warfarin dose to 7 mg, but we noticed that his INR was not improving and was 1.7. When we asked him to bring all his medicines to the pharmacy, we discovered that he borrowed a multivitamin from his friend, which contained a high amount of vitamin K, because his friend told him that this multivitamin was beneficial for his general health" — (P4, Hospital Pharmacist)
6	"There was a mother whose child had previously used an antibiotic and recovered. Later, her second child got sick, and she gave him the same antibiotic. I told her this wasn't appropriate because the bottle had been open for more than 14 days, and she had diluted it with water, which made it unusable. The maximum use period is seven days. Her child's condition worsened because he wasn't getting proper treatment—the antibiotic was Augmentin®" — (P24, Hospital Pharmacist)
7	"Regarding antibiotics—of course we're aware. Resistance is a major issue now; the body has become accustomed to antibiotics. There was a hospitalized patient with an infection, and we kept switching him from one antibiotic to a stronger one, yet he wasn't improving. And this wasn't the only case. Antibiotic resistance was once a nightmare scenario, and now it's becoming a reality." — (P28, Hospital Pharmacist)
8	"Some non-Saudi patients were prescribed three months' worth of medication and later came back claiming it was lost or that the kids played with it. Eventually, we found out they were sending the medicines to their families abroad. This is a drain on resources." — (P21, GP physician)

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pain-relieving medications, such as tramadol and Lyrica®. A community pharmacist [P25] described a patient who borrowed tramadol to relieve dental pain. In contrast, a hospital pharmacist [P23] reported increasing cases of Lyrica® misuse, noting that some individuals developed dependence and sought it through informal channels. These behaviors compromise not only individual safety but also undermine pharmacovigilance systems, make it difficult to accurately track drug-related outcomes, and pose risks of widespread misuse and illegal distribution.

DISCUSSION

This study is the first in Saudi Arabia to qualitatively explore healthcare providers' perceptions of prescription medication sharing, expanding the current understanding of this behavior beyond patient self-reporting[13,15]. The findings of this study are broadly consistent with international literature regarding the prevalence of prescription medication sharing and the range of medications involved. Similar to studies conducted in New Zealand, Croatia, the United States, and other countries[1,5-7,13-16], healthcare providers in Saudi Arabia reported that patients commonly share a variety of prescription drugs, including analgesics, antibiotics, antidiabetics, and antihypertensives. It is important to note that these insights are based on the perceptions and clinical experiences of the interviewed providers. As with all qualitative research, the findings are context-specific and not statistically generalizable to the broader population. Instead, they offer rich, exploratory data intended to inform future research and guide the development of targeted interventions.

Commonly cited reasons across contexts include convenience, time-saving, cost avoidance, emergency use, leftover medications, and social support, all of which align with global patterns of behavior[13-15,19]. However, this study also reveals several context-specific differences that have not been widely reported in the international literature. In the Saudi context, sociocultural factors—such as embarrassment related to gender-sensitive health conditions, fear of receiving a serious diagnosis, and a strong preference for certain medication brands based on their country of origin—played a prominent role in influencing medication sharing behavior. First, embarrassment related to gender-sensitive health conditions may arise from cultural and religious norms that emphasize modesty and gender segregation in clinical settings. Female patients, in particular, may avoid seeking care for intimate issues—especially from male physicians—leading them to rely on trusted family members for medication instead[25,26]. This stands in contrast to Western contexts, where gender-matched providers are more widely available and cultural expectations around modesty are less restrictive; thus, embarrassment is less likely to act as a barrier to accessing care[27,28]. Second, fear of receiving a serious diagnosis, which may reflect psychological denial or anxiety about social stigma associated with chronic illnesses. In the Saudi setting, this fear can discourage formal consultations and promote informal self-treatment through medication sharing[29,30]. By contrast, Western healthcare systems tend to emphasize patient education, early detection, and normalization of chronic disease management, which reduces avoidance behavior[31,32]. Third, a strong preference for certain medication brands based on their country of origin—a pattern linked to perceptions of superior quality associated with Western-manufactured drugs. In Saudi Arabia, patients often favor international brands even when local generics are clinically equivalent[33,34]. In many Western countries, however, greater public trust in regulatory authorities and widespread use of generic substitutions have reduced such brand biases[35,36].

In addition to these sociocultural influences, system-level factors related to healthcare access and medication provision also played a significant role in shaping medication sharing behaviors in the Saudi context. The perception of medications as having low personal value due to their free availability in the public healthcare system was a unique driver, rarely discussed in studies from countries where medications are paid for out-of-pocket or through insurance. In Saudi Arabia, the widespread access to free medications through government-funded healthcare may unintentionally lead patients to view these drugs as expendable or easily replaceable, contributing to casual sharing practices[37,38]. In contrast, in many Western countries, the financial cost associated with medications—either paid directly by patients or through insurance co-pays—can create a stronger sense of ownership and caution, thereby discouraging informal distribution[39,40]. These insights reflect how cultural beliefs and healthcare system design can influence non-adherent behaviors.

Beyond cultural and behavioral factors, broader systemic pressures may also influence the shaping of medication-sharing behaviors in Saudi Arabia. Several participants in this study described challenges such as delays in securing medical appointments, shortages of specific medications, and high patient volumes—particularly in public healthcare settings. These issues may reflect ongoing strain on the healthcare infrastructure due to population growth, increased demand, and limited resources[41,42]. Such pressures may contribute to patient frustration, diminished trust in healthcare institutions, and a growing tendency to seek informal alternatives, including the sharing of prescription medications.

Alongside these systemic challenges, medication sharing is shaped by culturally embedded ethical considerations. In culturally sensitive settings like Saudi Arabia, where familial bonds and collective decision-making are strong, ethical tensions can arise between respecting individual autonomy and ensuring patient safety. Patients may feel obligated to share medications due to social or familial pressure, even when doing so poses medical risks[18,30]. Additionally, well-intentioned sharing often bypasses informed consent or proper medical oversight, raising concerns about patient privacy—especially when sensitive conditions are involved. These practices highlight the ethical challenge of balancing compassion, cultural norms, and clinical safety in everyday healthcare interactions[18,30]. Future interventions must be designed with these ethical considerations in mind, particularly in collectivist societies where informal caregiving is common.

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The risks identified by providers—such as incorrect dosing, adverse drug reactions, antibiotic resistance due to misuse, and increased healthcare burden—align with findings from previous studies[1,3–7]. Beyond these shared concerns, this study contributes a unique insight by identifying a broader range of medication categories involved in sharing practices. While international research has largely focused on analgesics, antibiotics, and psychiatric medications, our findings also highlight commonly shared drugs for sickle cell disease, osteoporosis, and thyroid disorders in Saudi Arabia. These differences may reflect local disease patterns, national prescribing habits, and public perceptions about the safety or urgency of treating certain health conditions.

It is important to acknowledge, however, that the findings presented in this study are based on healthcare providers' perceptions and beliefs regarding patients' prescription medication sharing practices, rather than direct patient accounts. These perceptions may be influenced by providers' clinical experiences, patient-reported disclosures, or recollection of adverse outcomes, which introduces the potential for recall bias and a tendency to emphasize negative consequences. To further contextualize and validate these perspectives, our findings were compared with existing international qualitative research involving patients. Several of the provider-reported motivations—such as convenience, access issues, and social influence—were consistent with patient-reported reasons identified in prior qualitative studies[13,15]. Nonetheless, some differences in perspectives were noted, underscoring the importance of integrating both healthcare provider and patient viewpoints in future research in Saudi Arabia to develop a more comprehensive understanding of this complex behavior.

Future studies should also employ targeted qualitative or mixed-methods designs involving patients, pharmacists, and community members to triangulate perspectives and gain a deeper understanding of the specific dynamics of sharing behaviors. Such studies would enable a more comprehensive exploration of the motivations and perceived risks associated with sharing specific types of medication, as well as the contextual factors influencing these practices.

Implications for Practice and Policy in Saudi Arabia

The findings of this study highlight the urgent need for culturally appropriate, system-level interventions to address unsafe medication sharing[43,44]. In line with the Behavior Change Wheel (BCW) framework proposed by Beyene et al.[43], several strategies should be considered:

1. Patient-Centered Counseling: Healthcare professionals, particularly pharmacists, should be trained to proactively ask about medication sharing and provide personalized risk education during routine consultations. This should be delivered respectfully and non-judgmentally to encourage open dialogue.
2. Health Education Campaigns: Public awareness initiatives using social media, mosques, schools, and local influencers can help correct misconceptions about the safety of sharing medications. Specific campaigns should address cultural beliefs around free medications and brand loyalty.
3. Medication Labeling and Packaging: Prescription labels and patient information leaflets should include culturally appropriate warnings, such as "Do not share this medication—prescribed for your personal use only," in Arabic and English.
4. Improved Healthcare Access: Addressing structural barriers such as long waiting times, medication unavailability, and lack of insurance can reduce the reliance on informal medication sources.
5. Safe Disposal and Medication Return Programs: Establish national programs for the return and safe disposal of unused or leftover medications to reduce the likelihood of redistribution within communities.

These measures, tailored to the Saudi socio-cultural context, could play a critical role in minimizing harm and promoting rational medicine use. However, implementing these interventions may face several challenges within the Saudi healthcare system. Time constraints during consultations may limit the ability of pharmacists and physicians to provide thorough counseling on medication sharing. To overcome this, brief, standardized counseling scripts and visual aids could be integrated into routine practice. Public health campaigns may face resistance if perceived as conflicting with cultural norms or if not delivered through trusted local figures; therefore, involving religious leaders, social media influencers, and community elders could enhance credibility and engagement. Additionally, logistical and regulatory challenges may hinder the widespread adoption of national medication return and disposal programs. Pilot programs launched in selected healthcare centers, accompanied by public education, could serve as a feasible starting point. Addressing system-level access issues, such as appointment delays and medication shortages, may require broader healthcare reform; however, targeted efforts—such as expanding telehealth services and improving supply chain efficiency—could offer more immediate relief. Anticipating and addressing these barriers is essential for ensuring the feasibility and sustainability of the proposed strategies.

Strengths and limitations

Strengths: this study provides unique insight into medication sharing from the perspective of a diverse group of frontline healthcare professionals in Saudi Arabia, contributing original evidence to the global literature. Despite providing valuable insights, this study has several limitations that should be acknowledged. First, the use of a convenience sample of healthcare providers, recruited primarily through snowball sampling, may have introduced selection bias and limited the representativeness of the findings. While snowball sampling was practical for this qualitative study and effective in identifying information-rich participants, it may have also constrained the diversity of viewpoints. Moreover, this study recruited participants primarily from hospital settings, which may have led to the underrepresentation of healthcare providers working in other sectors such as community pharmacies, primary care centers, or private

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clinics. In particular, the sample was predominantly composed of hospital-based healthcare providers, especially hospital pharmacists (62%) and female participants (79%). While these providers offered valuable perspectives due to their frequent interactions with patients and direct involvement in dispensing and medication counseling, their views may not fully reflect the broader experiences of the healthcare provider population in Saudi Arabia. Future research should consider including a more balanced representation of provider roles, care settings, and gender distribution, and employ more diverse recruitment strategies to enhance the comprehensiveness and transferability of findings. Second, this study focused exclusively on healthcare providers' perspectives; therefore, it does not directly capture patients' experiences or motivations. Including patient perspectives in future research would help provide a more comprehensive understanding of the drivers and consequences of medication sharing. Third, the study was conducted exclusively in the Eastern Province of Saudi Arabia, which may affect the generalizability of the results to other regions with different healthcare infrastructure, cultural norms, or patient populations. Fourth, healthcare providers working in community settings—such as community pharmacists and general practitioners—were underrepresented, despite their critical role in patient medication access and counseling; their inclusion could have offered a more comprehensive view of medication sharing practices. Finally, the study did not distinguish between different types of shared medications when exploring reasons for sharing or associated risks. As such, it was not possible to determine whether specific drug classes (e.g., antibiotics versus analgesics) are associated with different motivations or consequences. Future studies should consider disaggregating data by medication type to more precisely explore risk profiles and drivers.

CONCLUSIONS

This study provides the first in-depth qualitative exploration of healthcare providers' perspectives on prescription medication sharing in Saudi Arabia. The findings highlight that medication sharing is a prevalent and multifaceted behavior, driven by a complex interplay of social, cultural, economic, and systemic factors. While some motivations—such as altruism, convenience, or perceived necessity—are shared globally, several context-specific influences emerged, including embarrassment linked to gender norms, mistrust in healthcare providers, and the perception of low medication value due to free access in the public sector.

Healthcare providers reported that this practice spans a broad range of medication classes, including high-risk and chronic-use drugs such as antibiotics, analgesics, antidiabetics, and cardiovascular medications. They also expressed serious concerns about the associated personal and public health risks, ranging from allergic reactions and treatment failures to antimicrobial resistance and medication misuse.

Given these findings, reducing medication sharing requires a culturally tailored, multi-level strategy. Public health interventions must not only raise awareness but also address underlying causes such as healthcare accessibility barriers, misconceptions about medication safety, and gaps in patient–provider trust. The Behavior Change Wheel (BCW) model[21] offers a useful framework for guiding such interventions through education, environmental restructuring, and behavior-specific policies. Future research should explore the effectiveness of these strategies, particularly within diverse patient populations and across different types of medications.

Stakeholders can consider incorporating brief screening questions about medication sharing into clinical consultations to normalize the dialogue and identify patients at risk. Pharmacy labeling and patient leaflets could be updated to include clear, culturally appropriate warnings against sharing prescribed medicines. Additionally, engaging the influence of religious scholars, mosque leaders, and community figures in awareness campaigns may improve public receptivity and reinforce safe medication practices.

Future research should adopt mixed-methods approaches that integrate quantitative assessments with qualitative inquiry to deepen the understanding of the motivations, barriers, and facilitators of prescription medication sharing. Such comprehensive evidence can guide the development of more targeted, culturally appropriate interventions.

AUTHOR CONTRIBUTIONS

Faten Alhomoud: Conceptualization; Methodology; Validation; Formal Analysis; Investigation; Resources; Data Curation; Writing – Original Draft; Writing – Review & Editing; Visualization; Project Administration.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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