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Beyond the Prescription: Exploring the Gap in Patient Knowledge of Medication Guidance in Southwestern Uganda

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Research Article

Keywords:

Posted Date: March 12th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-8872050/v1

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Additional Declarations: No competing interests reported.

Abstract

Background

Effective communication between health workers and patients is essential for ensuring the proper use of medication and improving therapeutic outcomes. Owing to poor health literacy levels and constrained healthcare systems, the gap between prescription and patient knowledge of how medications should be used is acute.

Objective

This study assessed patients' knowledge of prescribed medications, identified sociodemographic and systemic factors influencing this knowledge, and proposed practical recommendations to improve rational medicine use.

Methods

A cross-sectional survey was conducted among adult patients who had received prescribed medications from a healthcare facility through a structured questionnaire to collect data on sociodemographics, prescription details, and patients' recall and understanding of key medication information.

Results

While most patients reported adequate recall of the purpose (86.5%) and frequency (84.5%) of their medications, their knowledge of drug names (22.9%), side effects (18.5%), and storage instructions (36.6%) was notably poor. The composite knowledge score revealed that 54.9% of the respondents had poor knowledge, 37.0% had moderate knowledge, and only 8.1% had good knowledge. Low educational attainment and polypharmacy (≥ 5 drugs in 66.9% of patients) revealed the immediate necessity for culturally and linguistically appropriate medication counseling approaches and suggested community-based initiatives to close this information chasm.

Conclusions

Limited opportunities for patient–provider interaction and rushed consultations were significant contributing factors. There is a critical gap in patient knowledge of prescribed medications, especially concerning safety-related information.

1. Introduction

The National Institutes of Health (NIH) defines health literacy (HL) as the ability of individuals to access, comprehend, and apply basic health information and services necessary to make informed health decisions. HL is regarded as the cognitive and social skills that individuals use to gain access, comprehend, and utilize information in ways that promote and maintain good health (Mugabi et al., 2023).

This is because, as described in the WHO drug use indicators manual, patients' knowledge of medicines that are dispensed to them is said to be critical and a patient care indicator. Pharmacists are duty-bound to counsel patients on the use of drugs–dose, frequency, route, side effects, etc. The patient should also be provided with details about the medicine name, dose, route of medication administration, administration frequency, duration of treatment, and/or potential side effects. For assessing patients' medication knowledge, the key indicators for safe and effective use of a drug are the name of the medicine, dose of the medicine, route of administration, frequency of use, duration, possible side effects, and storage condition of the drug (Wogayehu et al., 2020).

Medication is a vital part of patient treatment, and clear medication instructions to enhance understanding among patients are crucial to minimize medication errors. When patients cannot (or cannot) take medicines, it has real morbidity and, at times, significant mortality. "And prescribing errors, with an estimated fifty percent of these ADEs thought to be preventable. [5] Patient knowledge regarding medication has been described as being aware of the drug name, purpose, administration schedule, possible adverse effects, or special instructions. Research has demonstrated that poor health literacy leads to adverse health outcomes, especially with respect to failure to understand instructions about drug use. If patients are better aware of the medications they are consuming, situations are safer. Novel methods of educating patients about prescribed medications exist (e.g., telephone calls, mobile applications, and pictograms); however, commonly utilized and universally applicable patient education methods include oral or written instructions, particularly in low- and middle-income countries (LMICs) (T et al., 2022a).

The selection of a healthy lifestyle, the ability to access health care services when needed, and the use of preventive measures are all contingent on an understanding and appropriate application or actuation of health information by individuals. Low health literacy is linked with limited communication between patients and health care providers, as well as poor health outcomes. This results in greater hospitalization rates, inappropriate management of chronic diseases, and increased mortality and morbidity (Perera et al., 2012).

Some studies have recognized the poor comprehension of prescribed medication and information as among the most significant problems in following treatment at home for patients. These barriers may promote health recovery and prevent damage and reinjury at risk. The need is to highlight the relevance of information to the patient: in a way that it holds much knowledge about their health problems, benefits, and conduct contributing to their clinic evolution and essentially the medications they use, aiming that such points are least likely to have complications (Carvalho et al., 2018).

On the basis of the National Assessment of Adult Literacy, 36% of adult Americans and 59% of adults 65 years or older have below basic or basic health literacy. People with low health literacy may have difficulty processing information on disease management, such as reading appointment slips and medication labels, comprehending verbal information from their healthcare providers, and understanding educational materials. Studies have also shown that low health literacy is associated with poorer health-

care knowledge, decreased medication adherence, diminished use of preventative services, poorer physical and mental health, and increased hospitalizations (Cajita et al., 2016).

Language variations blended with patient safety and access to health care issues for LEP, although a gain of almost all rural hospitals is that they were reported to have some tools available to assist patients in their preferred language. The most widely utilized instruments are brochures, poster language identification, and language identification cards. Supports included organizational language assistance services, staff members' willingness to utilize interpreters, and the availability of telephone language lines. Barriers include a lack of interpreter funding, a lack of local language training programs, and failure of state agency responsibility (Torres et al., 2008).

According to a pilot study conducted on language proficiency and adverse events in U.S. hospitals, only 49.1% of limited English-proficient patients' adverse events involved some type of physical harm, whereas 29.5% of patients who spoke English did. Among the adverse events that led to physical harm, 46.8% of the limited English-speaking patient adverse events involved moderate temporary harm through death, whereas 24.4% of the English-speaking patient adverse events did. Among the adverse events that occurred in patients with limited English proficiency, communication errors were also more common (52.4%) than were communication error-related adverse events in English-speaking patients (35.9%) (Divi et al., 2007).

The patient's information about his/her own medicine is generally not adequate, and this may be a cause of noncompliance, as medication may be available, but not all medication is actually ingested. For example, it may have been discontinued owing to intolerable side effects, noncompliance (nonadherence), dosing, treatment modification, or shelf life expiration (Jankie et al., 2022).

Patient Awareness of Information on Drugs Given by Health Workers

Patient medication knowledge has been described as the range of information patients need to know about their medications to help ensure their appropriate use. It contains details about the indication, dosage regimen, route of administration, duration of treatment, side effects, precautions/contraindications, and other drug interactions. 3.2 Knowledge, attitudes, and practices related to medication adherence. Findings from studies have shown that patients with chronic diseases have limited knowledge about their medication. Poor knowledge of the importance of medication/low awareness of the potential adverse effects of taking medications. The need for studying patients' knowledge of medication is founded on the association between inadequate/low medication knowledge and poorer adherence to prescribed medication37. The success of drug interventions, also between the intervention point and clinical outcomes, depends on both the efficacy of therapy and the patient's ability to cope with medication during daily life by themselves or their informal caregivers. Medication knowledge is an important component of medication self-management according to the patient (Eshiet et al., 2024).

In this study, patients' knowledge about medication prescription at the emergency service was considered, as most patients who use this health care level are sent back with (after) medical treatment to be executed under prescription and orientation of further treatment to be continued at home. To achieve this, people have the right to properly receive and experience these contextualizations, which are made individually available in sufficient quality. Many barriers prevent patients from acquiring comprehensive knowledge of the medical staff’s information, which is given to them to be ready for self-care. Mostly, it is in the very complex environment of emergency services that, at the time, does not encourage any type of written or verbal communication between health professionals and served patients, in addition to other difficulties such as lower public instruction. Research has indicated that a great obstacle to patients adhering to treatment at home is the lack of comprehension of the drug use prescribed and the explanation provided. (Carvalho et al., 2018).

A survey of a patient's knowledge about drugs and adherence to therapy under the guidance of medication counseling at an outpatient clinic was conducted. HORIGUCHI Y. A total of 90 patients were randomly allocated (1:2) to the counseled or usual care group. Their knowledge of medications was evaluated by means of a questionnaire, adherence through the pill count method, and self-evaluation by the patients. The average scores of the knowledge of medication for both the counseled and usual care groups were compared. Statistical analysis. All the demographic variables and number of medications were analyzed, as each one was an independent variable with a medication knowledge score, wherever a statistically significant correlation was present (Ponnusankar *et al.*, 2004).

Among the hospitalized children, 70% of the parents with suspected low health literacy had a medication error after discharge. Only 15% of parents have proficient health literacy, so most parents are at risk for HL-related difficulties. Low health literacy has been linked to 1.5- to 2.5-fold higher odds of liquid medication dosing mistakes. The stress, anxiety, and sleeplessness common among caregivers when their child is hospitalized could also lead to a transient deterioration in health literacy that would compound the difficulties of following discharge instructions. We tested the hypothesis that a health literacy intervention-informed communication intervention would decrease discharge medication dosing errors and improve caregiver knowledge of medications in comparison to standard discharge counseling for pediatric inpatients (Carroll et al., 2024).

Knowledge of the prescribed medication can influence adherence among patients. Between 30 and 50% of patients are not compliant with their medications as a result of a lack of information. Many factors can impact patients’ knowledge of and therefore their adherence to treatment, including doctor—patient communication, pharmacist—patient relationships, patient age, sex, education level, income, the first language at home, and the nature of the illness. It is important for a patient's health literacy to be an important indicator of what drugs are being prescribed. Treatment with medication that has low adherence may reduce the efficacy of drugs, cause treatment failure and drug adverse events, and worsen the problem of drug resistance. India's illiteracy rate is 26%; it has a population of 1.21 billion. There is limited evidence of health literacy from Asia, especially India. Moreover, studies from India that associate the predictors of patients’ knowledge of prescribed medication are rare. We offered free

treatment and medication at our hospital to the patients. Several patients who receive services from health facilities have low socioeconomic status and are illiterate (Roy et al., 2020).

Determinants of Patients' Knowledge about Medicine Information Provided by Health Workers

The knowledge of medicine includes knowledge of (clinical) pharmacology and therapeutics, as well as the transformation of this knowledge into competence to apply it on a day-to-day basis. As noted by the European Association of Clinical Pharmacology and Therapeutics, the essential components are 'a sound knowledge of frequently prescribed and cost-effective drugs, reasonable skills in the treatment of common diseases, an ability to make rational use of drugs (prescribe economically), a capacity to write prescriptions safely and clearly for essential medication'. The starting point for rational drug use is a proper knowledge base. There is also a need to note that studies on drug education and knowledge in some African countries have largely been limited in scale, with the scope of the paper dealing more with general health care issues rather than being focused on medicines only. Nevertheless, several studies have shown that health care professionals (HCPs) are reportedly incompetent in drug information (Berhe et al., 2018).

Patients' Knowledge of Medication Information

Patients' understanding of the information given regarding medications from health workers is essential for the safe and effective use of medicine, hence preventing morbidity and mortality. Involvement of patients and healthcare personnel. The involvement of both patients and healthcare professionals is an important success factor for service delivery and care management. The low health literacy of Pacific people may impact their interactions with providers (Perera et al., 2012).

Poor comprehension of medical instruments

Health literacy is a set of skills used to make decisions and complete actions related to health in the context of the healthcare system. They learn the following skills: reading, writing, and numeracy, the ability to communicate, and increasingly use electronic technology. Communication strategies that are informed by health literacy (plain language, pictures or pictograms, teach back, and demonstration with show back) enhance communication and comprehension while decreasing medication errors and patient injury. Despite evidence of effectiveness, low-cost interventions such as bundled communication strategies4-7 are rarely operationalized by clinicians, who find barriers, including a lack of time to communicate and compete with patient priorities. Few studies have examined the utility of implementing comprehensive bundle-based interventional approaches in a pediatric inpatient setting (Carroll et al., 2024).

Health Care Providers

Medication counseling during the hospital stay was the only variable that significantly affected the level of correct knowledge. Studies assessing knowledge about treatment among discharged patients have revealed particularly poor knowledge related to drug treatment. Medication information includes why

medications are used, how to take them, side effects, and the needed changes in lifestyle. Although most of the patients were familiar with the aim of the medicine, knowledge about side effects, tests, and lifestyle changes was seen to be relatively mediocre. O'Connell and Johnson reported that 27% of patients knew about the potential side effects of their drug (Kerzman et al., 2005).

Education

"The WHO says that education in all its forms has a major role in the rational use of medicines? This consciousness has to be raised in all concerned fields. To strengthen determinants of facilitation in the field of education, there must be a clear national drug policy that has an essential input related to education, which will contribute significantly to the rational use of drugs. (The Role of Education in the Rational Use of Medicines, 2006).

Low literacy is also more common among those who are less educated, who speak a language other than English as young children, and who live below the poverty level. The respondents' educational status appeared to be a determinant of their knowledge of dispensed drugs. The proportion of respondents with knowledge of dispensing drugs was greater among those who had attended below-class than among those with no formal education (Wogayehu et al., 2020).

Most patients were illiterate or educated at the middle school level and could not read English. Accordingly, a majority of the patients (75.2%) could not read and comprehend drug information on the prescription sheets. This finding is consistent with a previous study in which 54% of the patients could not read drug information, and only 1% could read the names of drugs due to their lack of English reading skills. Limited English proficiency is identified as a significant cause of poor health outcomes since this group of patients has less access to healthcare (Roy et al., 2020).

Age

Older age is associated with greater comorbidity; hence, older people usually take more medication. However, the use of this drug can be expected to decrease unless we develop even more cost-effective and safe ways to treat people. Older patients are major consumers of both prescribed and over-the-counter medicines; appropriate use is likely to contribute to better value care and increased safety. Medication noncompliance (i.e., how much a patient does not take their drugs as he/she has agreed with his/her healthcare provider) corresponds to 50% of patients with a chronic disease in developed countries, and this noncompliance also leads to worse health quality of life. Insufficient details of prescribing or misinterpretation of directives are associated with a lack of communication and poor awareness about drug use, resulting in mistakes as well as inefficient therapy(Plaza-Zamora et al., 2020). Triggers of old age, such as poor cognition and multiple comorbidities that require the use of polypharmacy, may be responsible for the low knowledge scores among elderly patients (Roy et al., 2020).

Polypharmacy

Adverse polypharmacy is best addressed through individualizing the use of drugs according to a patient's needs and situation. This may include discontinuing medicines (deprescribing); however, patients and clinicians frequently describe uncertainty on the best ways to do this (Reeve et al., 2022a). Furthermore, the majority of drug side effects are due to overdose and drug interactions (due to polypharmacy). Patients' drug knowledge and adherence are reduced when they have to juggle multiple medications. Too much information. There is a large amount of knowledge to understand and remember as medicine becomes more numerous and complicated, which exceeds the patient's ability to cope with (Kerzman et al., 2005).

2. Materials and methods

Study Design.

A cross-sectional hospital study design aimed to assess the Gap in Patient Knowledge of Medication Guidance in Southwestern Uganda.

Study Area

Kampala International University teaching hospital is located in Uganda, Ishaka, Bushenyi District. It was established in 2007 to enhance the quality of health science professionals' training while at the same time complementing the efforts of the government of Uganda towards the provision of quality, equitable, and accessible preventive and curative health services to the people of Uganda.

Study Population

All patients were treated at Kampala International University Teaching Hospital, Uganda.

Target population

The target population for this study comprised patients attending outpatient and inpatient services at Kampala International University Teaching Hospital (KIUTH) who had received a prescription for medication from a healthcare provider.

Inclusion and Exclusion criteria.

The study included all patients above 18 years of age who consented to the study. Patients who did not receive any prescription during their hospital visit and those with cognitive impairments or severe illnesses that may have hindered their ability to recall or understand medication-related information were excluded from the study.

Sample size determination

The sample size was determined via the 1960 Slovin formula.

Where

n is the required sample size

N is the population size

e is the margin of error, which is 0.05

n = 384.

Sampling Technique

Our respondents were sampled purposively since we were interested in outpatients who received prescriptions from healthcare workers at KIUTH. This method allowed for the intentional selection of participants who met specific criteria relevant to the study objectives.

Data collection instrument

Questionnaires

Data were collected using a pretested structured questionnaire, containing various questions concerning the Gap in Patient Knowledge of Medication Guidance in Southwestern Uganda. Questionnaire was developed, pretested, and validated for this study. The questionnaire used for data collection is provided as Supplementary File 1

Data Analysis

The collected data were entered and analyzed via IBM SPSS version 27.0. Descriptive statistics such as frequency counts and percentages, means, and standard deviations were used to summarize the results.

Ethical Approval

This study was conducted according to the Declaration of Helsinki. Ethical approval was obtained from the Kampala International University School of Pharmacy Research Committee, with reference number KIU-SOPRC/113/2025. All participants provided written informed consent, and the right to discontinue participation was emphasized. The responses were anonymous, and no identifying information was collected about any of them.

Results

Sociodemographic findings

The majority, 225 (58.6%), of the participants were females, whereas only 159 (41.4%) respondents were males. Many (69%) of the respondents were aged between 25 years and 59 years, 19% (75) of the respondents were aged below 25 years, and only 11.5% (44) were 60 years and above. In addition, 35.9%

(138) of the respondents had attained a primary level of education, and 12.8% had attained only a tertiary level of education. More than half of the respondents were married (217), 56.5%, and 17) 4.4% were divorced. More than half were self-employed (237), 61.7%, and a few were salaried (28), 7.3% (Table 1).

Table 1: Sociodemographic Characteristics of the Respondents

Variable	Category	Count	Percentage
Gender	Male	159	41.4
	Female	225	58.6
Age category	<25	75	19.5
	25-59	265	69.0
	>=60	44	11.5
Education level	: no formal education	82	21.4
	Primary	138	35.9
	Secondary	115	29.9
	Tertiary	49	12.8
occupation	Unemployed	61	15.9
	self-employed	237	61.7
	Salaried	28	7.3
	Employee	58	15.1
	Student	0	0.0
Marital status	Single	92	24.0
	Married	217	56.5
	Divorced	17	4.4
	Widowed	58	15.1

The KNOWLEDGE level of prescribed medication-related information provided by health workers.

The majority of the patients, 296 (77.1%), did not know the name of the prescribed medications, and 332 (86.5%) could recall the purpose of the treatment. Most patients, 286 (74.5%), could remember the dosage instructions for the medications given to them by dispensers, and 268 (69.8%) could recall the duration of taking the medication. However, more than half of the 221 (57.6%) patients did not remember any special instructions, 312 (81.5%) patients did not know of any side effects of the medicines, and as

many as 322 (84.5%) patients could recall the frequency with which they were supposed to take the medication, whereas 242 (63.4%) patients did not know how to store medicines (Table 2).

Table 2: The level of patients' knowledge of prescribed medication-related information provided by health workers.

Variable	Category	Frequency	Percent
Do you remember the name of the prescribed medication?	No	296	77.1
	Yes	88	22.9
Do you recall the purpose of the medication?	No	52	13.5
	Yes	332	86.5
Do you remember the dosage instructions for your medication?	No	98	25.5
	Yes	286	74.5
Do you recall the duration of taking the medication?	No	116	30.2
	Yes	268	69.8
Do you remember any special instructions?	No	221	57.6
	Yes	163	42.4
Does the patient know any side effects of the medication?	No	312	81.5
	Yes	71	18.5
Can you recall the frequency at which you are supposed to take the medication?	No	59	15.5
	Yes	322	84.5
Does the patient know how to store medicines?	No	242	63.4
	Yes	140	36.6

The level of patients' knowledge.

The level of patients' knowledge was calculated out of eight (the total number of questions used to evaluate patients' knowledge), and those above 80% had good knowledge of the medications, 50% to 79% medium knowledge, and less than 50% had poor knowledge of their treatment course. The mean score of knowledge was 4.4±1.5 out of 8. Over half (54.9%) of the participants have poor knowledge. Polypharmacy and chronic illness were the most common clinical factors identified (Figure 1, Figure 2, and Table 3).

Figure 1: level of patients' knowledge, which was calculated from eight questions (the total number of questions used to evaluate patients' knowledge.

Table 3: The level of patients' knowledge.

	Category	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	211	54.9	54.9	54.9
	Medium	142	37.0	37.0	91.9
	Good	31	8.1	8.1	100.0
	Total	384	100.0	100.0	

Structural and systemic factors that affect the health knowledge of patients attending KIU-TH OPD pharmacies.

Most of the patients, 257 (66.9%), were prescribed 5 or more drugs and took greater than or equal to 3 minutes; 340 (88.5%) received their medications, and the majority, 340 (88.5%), received medication information provided by both verbal and written methods combined. A total of 330 (85.9%) knew the language that was used by dispensers, while 268 (69.8%) were satisfied with the healthcare provider's explanation, and a few patients, 170 (44.3%), were allowed to ask questions (Table 4).

Table 4: Structural and systemic factors that affect the health knowledge of patients attending the KIU-TH OPD Pharmacy.

Variable	Category	frequency	Percent
How was the medication information provided? (Select all that apply)	Verbally	14	3.6
	Written	27	7.0
	verbally and in writing	340	88.5
	Leaflet	1	0.3
	Demonstration	2	0.5
Satisfaction with the healthcare provider's explanation.	very satisfied	59	15.4
	Satisfied	268	69.8
	Neutral	44	11.5
	Dissatisfied	10	2.6
	very dissatisfied	3	0.8
Did the healthcare provider use a language that was easy for you to understand?	Yes	330	85.9
	No	54	14.1
Did you feel rushed during the consultation?	Yes	128	33.3
	No	256	66.7
Were you allowed to ask questions?	Yes	170	44.3
	No	214	55.7
Number of prescribed medications	<5	127	33.1
	>=5	257	66.9
Chronic Illness Diagnosis	Yes	136	35.4
	No	248	64.6

Figure 2: Determinants, knowledge deficits, consequences, and interventions related to patient understanding of prescribed medications at Kampala International University Teaching Hospital (KIU-TH), Uganda. A total of 54.9% of patients showed poor medication knowledge (mean score 4.4 ± 1.5 out of 8). Key knowledge deficits were drug name recall, understanding of side effects, and storage instructions.

Discussion

This study assessed patients' knowledge of prescribed medication-related information at Kampala International University Teaching Hospital (KIU-TH). The findings reveal significant gaps in patient understanding, despite high rates of verbal and written communication during medication dispensing by health workers.

Sociodemographic characteristics

The study involved 384 participants, predominantly female (58.6%) and within the productive age group of 25–59 years (69%). A notable portion (21.4%) had no formal education, whereas only 12.8% had attained tertiary education; a relatively low level of formal education and the predominance of self-employment suggest that many patients may have limited health literacy resources and variable daily routines that could interfere with medication routines. In the study performed by Perera et al., eighty-four percent of the participants were educated up to secondary education or above, whereas 2.5% (n = 5) had no formal education. Low health literacy is associated with poor communication between patients and health care providers and poor health outcomes. It leads to increased rates of hospitalization, improper management of chronic conditions, and increased morbidity and mortality rates. The overall knowledge (total score-60) of prescribed medications among the study population was 'poor' (score ≤ 20) in 46%, 'adequate' (score 21--40) in 36.5%, and 'good' (score ≥ 40) in 17.5%. The majority of the patients were unable to read and understand information written in English. In this study, 44 respondents (11.5%) were 60 years and above. According to Roy et al., for elderly patients, age-related factors such as a decline in cognition as well as multiple chronic diseases, which necessitate the use of numerous medications, may contribute to their low knowledge scores. The majority were self-employed (61.7%), a factor that may be related to irregular access to structured health education or formal healthcare services.

The level of patients' knowledge of prescribed medication information provided by health workers.

According to the World Health Organization (WHO) drug use indicator manual, patients' knowledge of dispensed medication is a crucial patient care indicator. Pharmacy professionals are responsible for providing advice on the dosage, frequency, route of administration, and side effects of medicines. The patient should receive information about medicine identification (name), medicine dose, route of administration, frequency of administration, duration of therapy, and possible side effects, among other information. There is a dearth of studies about patients' knowledge of dispensed medication at primary health care facilities.

In this study, only 8.1% of patients demonstrated a good level of knowledge (≥ 80%) regarding their medications, with over half (54.9%) classified as having poor knowledge (<50%). Although a high percentage (86.5%) recalled the purpose of their medication, critical gaps were found in identifying the medication name (only 22.9% could recall), possible side effects (18.5%), and storage conditions (36.6%). Most patients understand why and when to take their medicines. In the study performed by Perera et al., critical safety elements, such as knowing the drug's name, recognizing adverse effects, and storing them correctly, are largely forgotten. Over half of all the participants fell into the "poor" category,

indicating a major gap in effective counseling. This indicates a critical gap in patients' ability to manage their treatment safely, as comprehensive medication knowledge (including name, side effects, and storage) is essential to prevent misuse and adverse drug events. Among other obstacles, such as the low educational level of the public.

The average knowledge score (4.4 ± 1.5 out of 8) also reinforces the conclusion that most patients have only moderate or poor understanding, with 54.9% classified as having poor knowledge. Patients' knowledge of their treatment regimen is an important patient care indicator. In the evaluation of patients' knowledge of medicines, the following are regarded as essential parameters for safe and effective use: the names of the medicines, the purpose of therapy, the duration of therapy, the dose and frequency of administration, and important side effects. Inadequate knowledge of medicines by patients may result in their incorrect use, which can lead to treatment failure and put the health of the patient at risk. Moreover, a lack of knowledge may lead to unintended overdose or nonadherence to medical regimens, resulting in poor outcomes.

Structural and systemic factors that affect the health knowledge of patients attending KIU-TH OPD pharmacies.

Patient knowledge of prescribed medications.

The study revealed that while patients reported high recall rates of the purpose (86.5%) and frequency (84.5%) of medications, critical areas such as drug names (22.9%), only side effects (18.5%), and storage (36.6%) were poorly recalled. These findings are consistent with the fact that although most patients were aware of the purpose of medications, they lacked knowledge of side effects and proper scheduling, resulting in significant gaps between reported and actual knowledge. Low health literacy is a major contributing factor. Knowledge of the medication name, dose, route, duration, side effects, and storage is essential for safe medication use. Without this, patients face increased risks of nonadherence and adverse effects.

Although 88.5% of patients received both verbal and written instructions, a strategy shown to improve knowledge retention, combined verbal/written counseling improved their recall of basic items (purpose/frequency), but evidently did not bridge the gap in safety details. A large proportion still demonstrated poor knowledge.

Additionally, 55.7% of patients were not allowed to ask questions, and 33.3% reported feeling rushed during consultations. These findings point to a lack of patient-centered communication and time constraints faced by healthcare workers, both of which have been shown to hinder effective counseling. Although 85.9% of the participants reported understanding the language used, language alone does not guarantee comprehension.

Influence of polypharmacy and consultation dynamics

A significant portion of patients (66.9%) were prescribed five or more drugs, increasing the cognitive burden. This is indicative of polypharmacy, which may overwhelm patients, diluting their ability to learn each drug's specifics, and is associated with decreased comprehension and adherence. The growing amount and complexity of knowledge required with increasing medication can result in too much information for a patient to process and remember correctly.

Health Literacy and Language Barriers and Satisfaction

Although 85.9% of patients understood the language used, language comprehension does not necessarily equate to an understanding of medical content. Limited English proficiency and low health literacy are major barriers to proper medication use, even when language seems "understood" at a conversational level. Patients may not grasp medical terminology or instructions if not explained clearly or if fear prevents them from seeking clarification. Notably, 69.8% expressed satisfaction with the provider's explanation, but satisfaction may not reflect actual understanding or knowledge.

Healthcare provider communication and counseling

The study indicated that 88.5% of patients received both verbal and written medication instructions, yet knowledge remained low in key areas. This aligns with findings from Carvalho et al. (2018), who emphasized that poor communication quality in clinical environments, even when both verbal and written information are provided, impacts patient understanding and retention.

Impact of Sociodemographic Factors

The low educational attainment of many patients (only 12.8% had a tertiary education) likely contributed to poor medication comprehension. Patients' knowledge about prescribed medication can affect their treatment adherence. Nonadherence to treatment can result in a decrease in the efficacy of medication, therapeutic failure, and adverse drug events, and increase the degree of drug resistance.

Additionally, 55.7% of patients were not allowed to ask questions, and 33.3% reported feeling rushed during consultations. These findings point to a lack of patient-centered communication and time constraints faced by healthcare workers, both of which have been shown to hinder effective counseling.

According to Eshiet et al. (2024), findings from studies suggest that patients with chronic diseases have poor knowledge of their medications and a low level of awareness of the potential risks associated with the use of their medications. The need for the study of patients' knowledge of medication is based on the relationship between inadequate/low medical knowledge and poorer adherence to prescribed medication. Moreover, the effectiveness of medication depends not only on the efficacy of the therapy itself but also on the patients' ability to manage the medication therapy daily, either by themselves or by informal caregivers. Medication knowledge is considered a critical aspect of medication self-management by patients.

Conclusion

This study revealed that most patients receiving KIU-TH outpatient pharmacy services possess inadequate knowledge about their prescribed medications, particularly in areas such as medication names, side effects, storage, and special instructions. While many understood the treatment purpose and dosing frequency, the low overall knowledge scores highlight a critical communication gap between health providers and patients.

Key factors contributing to poor medication knowledge include low educational levels, polypharmacy, rushed consultations, limited opportunities for patient queries, suboptimal counseling practices, and age. These findings emphasize the need for more tailored and interactive health education strategies, especially for patients with limited literacy or chronic illness.

Recommendations

Enhance communication strategies: simplified language, pictograms, and verbal reinforcement can be used to improve patient understanding, especially among those with low literacy levels. Pictograms or icons are used for side effects and storage instructions, especially for ≤ primary-educated patients. Implement Follow-Up Mechanisms: Introduction of post-dispensation follow-ups, in person or via phone/SMS A brief SMS reminder or leaflet with key icons sent home could help patients recall safety information to reinforce key medication information and adherence. By focusing on these choke-points—awareness of drug identity, adverse effects, and storage—a substantial proportion of patients are likely to shift from “poor” to “medium” knowledge, with downstream gains in adherence and safety.

Abbreviations

AMR
antimicrobial resistance
CMC
children with medical complexity
HL
health literacy
KIU-TH
Kampala International University Teaching Hospital
LEP
limited English proficiency
LMICs
low- and middle-income countries
OPD
outpatient department
SPSS
Statistical Package for the Social Sciences
WHO

World Health Organization.

Declarations

Ethical approval

This study was conducted according to the Declaration of Helsinki. Ethical approval was obtained from the Kampala International University School of Pharmacy Research Committee, with reference number KIU-SOPRC/113/2025. All participants provided written informed consent, and the right to discontinue participation was emphasized. The responses were anonymous, and no identifying information was collected about any of them.

Consent for publication: N/A

Data availability: The data set and data collection tools used in this study are available upon reasonable request from the corresponding author.

Funding

No specific funds were received by any of the authors to conduct this study.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

All the authors named in this manuscript have contributed considerably to this work and meet the criteria for authorship. G.C., O.A., S.A.A., S.P.N., M.A.M.A., M.A.M., M.H.A., O.S., N.M.E.M., and A.E.S. participated in research conceptualization, data collection, data interpretation, and manuscript revision. S.Y.E, M.D, N.G., J.O.C.E., T.M.Y., and A.E.S. contributed to the data analysis, data interpretation, and manuscript writing/revision. All the authors read and approved the final manuscript.

Clinical trial number

Not applicable.

Consent to Participate

All health care workers involved in the study provided informed consent at the time of data collection. The objectives, methods, possible risks, and benefits of the study were all presented to the participants transparently. They decided to participate and were also informed that they could choose to withdraw from the study at any time without penalty. Informed oral and written consent was obtained as per institutional ethics and principles of the World Medical Association Declaration of Helsinki (2013 revision).

Acknowledgments

I would like to thank the administrative and health workers at Kampala International University Teaching Hospital for their cooperation and support during the study.

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Figures

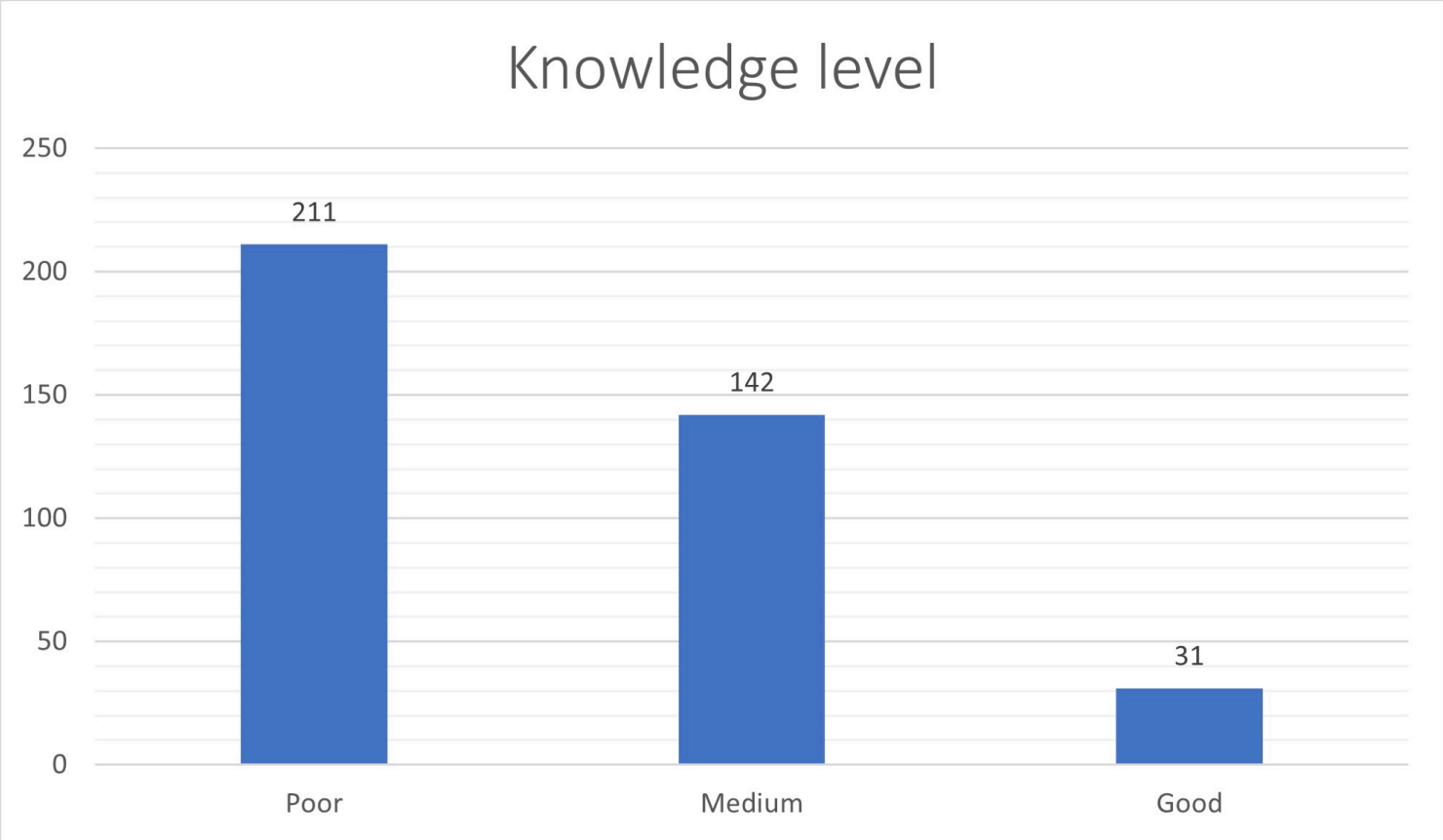


Figure 1

level of patients' knowledge, which was calculated from eight questions (the total number of questions used to evaluate patients' knowledge.

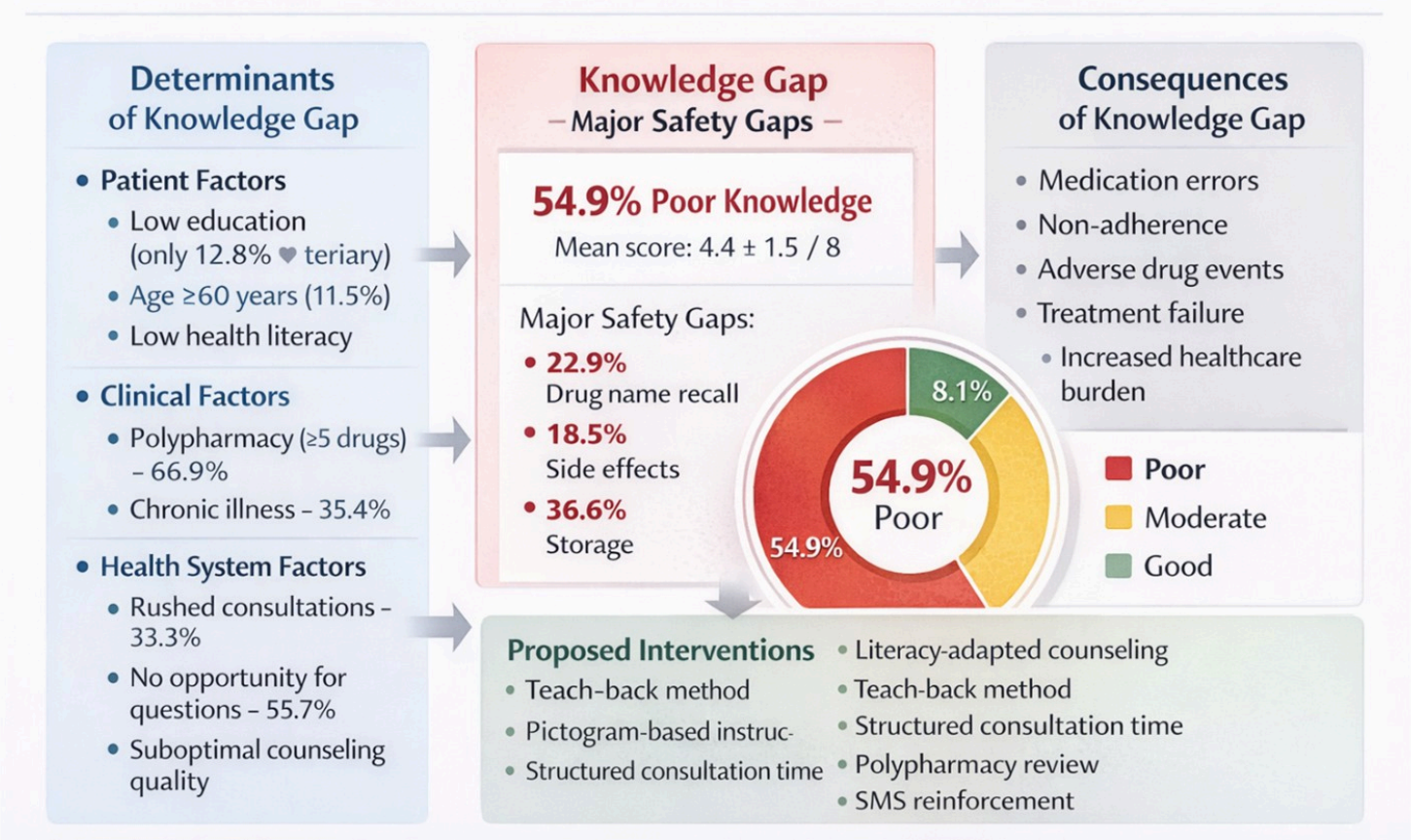


Figure 2

Determinants, knowledge deficits, consequences, and interventions related to patient understanding of prescribed medications at Kampala International University Teaching Hospital (KIU-TH), Uganda. A total of 54.9% of patients showed poor medication knowledge (mean score 4.4 ± 1.5 out of 8). Key knowledge deficits were drug name recall, understanding of side effects, and storage instructions.

Supplementary Files

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- SupplementaryFile1.pdf