

# Awareness of the rational use of medicines and the medication counseling practice in community pharmacies in Nyamagana district, Mwanza: A cross-sectional study

The Journal of Medicine Access  
2024, Volume 8: 1–6  
© The Author(s) 2024  
Article reuse guidelines:  
sagepub.com/journals-permissions  
DOI: 10.1177/27550834241261852  
journals.sagepub.com/home/map



Stanley Mwita<sup>1</sup> , Ezra Mgya<sup>1</sup> and Ambrose Haule<sup>2</sup>

## Abstract

**Background:** Community pharmacies play a vital role in promoting the rational use of medicines by providing medication counseling to their clients to ensure the safe and appropriate use of medicines. Thus, this study aimed to assess awareness of the rational use of medicines and the medication counseling practice in community pharmacies.

**Methods:** A descriptive cross-sectional study was conducted from June to July 2021. The study was carried out in community pharmacies in Nyamagana district, Mwanza, Tanzania. Data were collected using a self-administered, semi-structured questionnaire. The data for descriptive statistics were entered in Microsoft Excel and analyzed using STATA version 15.

**Results:** A total of 68 pharmaceutical personnel participated in this study. Thirty-eight participants, that is, 55.9%, were aware of the rational use of medicines. The awareness was significantly influenced by the participant's age and profession. The majority of the dispensers practiced rational use of medicines by telling their clients the dose of the medicine ( $n=63$ , 92.6%), frequency of administration ( $n=61$ , 89.7%), and route of administration ( $n=60$ , 88.2%). However, only 21 (30.9%) told clients about the need to comply with their medications. The information that was not regularly provided by dispensers to clients was the side effects of medicines ( $n=6$ , 8.8%). Less than a quarter of participants frequently told their clients information regarding why the medicine is prescribed, drug interactions, storage conditions, and contraindications.

**Conclusion:** This study has shown that almost half of the participants were aware of the rational use of medicines. There was a low frequency at which information was given regarding medication compliance, side effects, storage conditions, drug interactions, and contraindications. These findings underscore the need for targeted interventions to enhance pharmaceutical personnel's understanding of rational use of medicine principles and improve their practice of patient medication counseling.

## Plain Language Summary

### Awareness of rational medicine use and medication counseling practices in community pharmacies

Why was the study done? Community pharmacies play a vital role in promoting the rational use of medicines by providing medication counseling to their clients to ensure the safe and appropriate use of medicines. Thus, this study aimed to assess awareness of the rational use of medicines and the medication counseling practice in community pharmacies. What did the researchers do? This study was conducted from June to July 2021. The study was carried out

<sup>1</sup>Department of Pharmaceutics and Pharmacy Practice, Catholic University of Health and Allied Sciences, Mwanza, Tanzania

<sup>2</sup>Department of Medicinal Chemistry and Pharmacognosy, Catholic University of Health and Allied Sciences, Mwanza, Tanzania

### Corresponding author:

Stanley Mwita, Department of Pharmaceutics and Pharmacy Practice, Catholic University of Health and Allied Sciences, P.O. Box 1464, Mwanza, 33102, Tanzania.  
Email: stanleymwita@gmail.com



in community pharmacies in Nyamagana district, Mwanza, Tanzania. Data were collected using a questionnaire. What did the researchers find? A total of 68 pharmaceutical personnel participated in this study. Thirty-eight participants were aware of the rational use of medicines. The majority of the dispensers practiced rational use of medicines by telling their clients the dose of the medicine ( $n=63$ ), frequency of administration ( $n=61$ ), and route of administration ( $n=60$ ). What do the findings mean? These findings highlight the need for targeted interventions to enhance pharmaceutical personnel's understanding of rational use of medicine principles and improve their practice of patient medication counseling.

## Keywords

Rational use of medicines, medication counseling, community pharmacies, practice

Date received: 15 August 2023; accepted: 27 May 2024

## Introduction

The World Health Organization (WHO) defined the rational use of medicine (RUM) as “patients receiving medications appropriate to their clinical needs, in doses that meet their individual requirements, for an adequate period of time, and at the lowest cost to them and their community.”<sup>1,2</sup> RUM is also conventionally defined as the use of an appropriate, efficacious, safe, and cost-effective medicine given for the right indications in the right dose and formulation at the right time intervals.<sup>3</sup> Worldwide, the irrational use of medicines is a major problem. It is estimated that half of all patients fail to take their medications properly and that more than half of all medications are prescribed, dispensed, or sold improperly.<sup>4</sup> Irrational use of medicines is commonly expressed in terms of polypharmacy, inappropriate use of antimicrobials, over-use of injections, failure to prescribe in accordance with clinical guidelines, and inappropriate self-medication, often with prescription-only medicines and non-adherence to dosing regimens.<sup>5</sup>

Community pharmacies play a vital role in promoting RUM by providing accessible healthcare services to the public. Within these pharmacies, dispensers, as frontline healthcare providers, have a significant responsibility in ensuring the safe and appropriate use of medications.<sup>6,7</sup> When dispensing prescribed and over-the-counter medications, providing patient counseling regarding discharge medication, or providing any other type of medication, the pharmacy professional should appropriately educate the patient on the name and description of the medication, duration of treatment, common side effects, therapeutic indications and contraindications, proper storage, refill information, and appropriate actions to be taken in case of a missed dose.<sup>8</sup>

Studies done in Tanzania revealed that medicines are prescribed and dispensed irrationally in various settings.<sup>9,10</sup> Irrational use of medicines reported included overprescribing of antibiotics and injections as well as prescription-only medicines being dispensed without a prescription.<sup>11,12</sup> However, most of the previous studies in Tanzania had been carried out in hospital settings only.<sup>9,12</sup> Those done in drug dispensing outlets such as community pharmacies were

focused on antibiotics only.<sup>13,14</sup> Hence, there is limited research on the awareness and practice of dispensers in promoting the RUM in Tanzania. Understanding the awareness and adherence to best practices among dispensers is essential for identifying potential areas for improvement and enhancing the quality of pharmaceutical services provided to the community. Thus, this study aimed to assess awareness of the RUM and the medication counseling practice in community pharmacies in Nyamagana District, Mwanza.

## Methods

### Study design and setting

A descriptive cross-sectional study was conducted from June to July 2021. The study was carried out in community pharmacies in Nyamagana district, Mwanza, Tanzania. Nyamagana District is one of the seven districts of the Mwanza Region of Tanzania. It is bordered to the north by Ilemela District, to the east by Magu District, to the south by Misungwi District, and to the west by the Mwanza Bay of Lake Victoria.<sup>15</sup> Community pharmacies play a crucial role in providing essential healthcare services to the local population of Nyamagana district. These pharmacies serve as accessible points of care, offering a range of services and medications to meet the community's healthcare needs of about 594,834 people.<sup>16</sup> The study population was pharmaceutical personnel (pharmacists, pharmaceutical technicians, and pharmaceutical assistants). Pharmacies without any pharmaceutical personnel, as well as pharmaceutical personnel with less than 3 months of working experience in community pharmacies, were excluded from this study. The reporting of this study conforms to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement<sup>17</sup> (Supplementary File 1).

#### Sample size and sampling procedure

The minimum sample size of study participants was obtained by using the Taro Yamane formula:

$$n = N / (1 + N(e)^2)$$

$N$  = The population size (80).

$e$  = The margin error (0.05).

$n$  = The sample size (67).

The minimum sample size of study participants obtained was 67 pharmaceutical personnel. Convenient sampling was used to include a community pharmacy. One pharmacy personnel was conveniently involved from each pharmacy. All pharmacies that met inclusion criteria and pharmaceutical personnel who consented to participate in this study were interviewed.

### Data collection

A self-administered questionnaire (Supplementary File 2) was developed after an extensive review of the available literature related to the topic.<sup>18,19</sup> Three experts from the pharmacy practice and epidemiology departments reviewed and validated the content of the questionnaire to ensure that the questionnaire items adequately covered the content domain the study aimed to measure. Reviewers were instructed to assess each item separately for each area, noting any question that they considered to be improperly phrased or not applicable. The panel selected the best items for clarity of the questions and accuracy of the awareness and practice domains. This panel also helped in identifying and judging the content validity (relevance, coverage, and representativeness) of the items initially selected for inclusion in the questionnaire. Information on sociodemographic variables such as age, gender, and profession was collected. Data on awareness regarding RUM were also collected. To assess awareness, respondents were asked to describe the meaning of RUM. Those who clearly described the meaning of RUM and mentioned the need for medication counseling during dispensing to promote RUM were regarded as “aware,” and those who failed to give the real meaning of RUM and medication counseling were categorized as “not aware.” For practice, we asked for medication counseling activities performed within the previous month. Participants were asked if they frequently tell their clients the name of the medicine, route of administration, dose of the medicine, frequency of administration, why the medicine is prescribed, duration of therapy, drug interactions, storage conditions, side effects, contraindications, and compliance.

### Data analysis

The data for descriptive statistics was entered and cleaned using Microsoft Excel. Subsequently, the cleaned data was exported to STATA version 15 (Stata Corp., College Station, TX) for further analysis. For the statistical analysis, frequencies, percentages, mean, and standard deviation (SD) were calculated to summarize the data. The results were presented in the form of frequency distribution tables. Furthermore, Chi-square or Fisher exact tests were performed to examine the relationship between different categorical variables. Statistical significance was determined using a threshold of *p*-values less than 0.05.

**Table 1.** Sociodemographic characteristics of respondents (N=68).

Variables	Frequency	Percentage (%)
<b>Age (years)</b>		
≤25	20	29.4
26–30	38	55.9
>30	10	14.7
Mean age ± SD	27.4 ± 3.5	
<b>Gender</b>		
Male	24	35.3
Female	44	64.7
<b>Profession</b>		
Pharmacist	11	16.2
Pharmaceutical technician	42	61.8
Pharmaceutical assistant	15	22.0
<b>Year of experience (years)</b>		
≤1	13	19.1
2–5	33	48.5
>5	22	32.4
Mean year of experience ± SD	5.3 ± 4.9	

## Results

A total of 68 pharmaceutical personnel participated in this study. The main age group among the respondents was 26 to 30 years old, 38 (55.9%). The mean age of respondents was 27.4 ± 3.5 years. The majority of respondents were female, 44 (64.7%), Pharmaceutical technicians, 42 (61.8%), and had working experience between 2 and 5 years, 33 (48.5%). The mean year of experience was 5.3 ± 4.9 (Table 1).

### Awareness of RUM among dispensers in community pharmacies

Thirty-eight participants, that is, 55.9%, were aware of RUM. The awareness was significantly influenced by the participant’s age and profession. The proportion of awareness was higher (*n*=38, 73.7%) among participants aged between 26 and 30 years, *p*=0.003. The majority (*n*=9, 81.8%) of pharmacists were aware of RUM compared with other cadres (*P*=0.015). RUM awareness did not differ with gender or year of experience (Table 2).

### Medication counseling practice in community pharmacies

Table 3 shows that the majority of the dispensers practiced RUM by telling their clients the dose of the medicine (*n*=63, 92.6%), frequency of administration (*n*=61, 89.7%), and route of administration (*n*=60, 88.2%). However, only 21 (30.9%) tell clients the need to comply (adhere) to their medications, the name of the medicine, 22 (32.4%), and the duration of therapy 41, (60.3%). The

**Table 2.** Awareness of RUM among dispensers.

Variables	Aware (N=38)	Not aware (N=30)	p-value
Age (years)			
≤25	6 (30.0)	14 (70.0)	0.003
26–30	28 (73.7)	10 (26.3)	
>30	4 (40.0)	6 (60.0)	
Gender			
Male	13 (54.3)	11 (45.8)	0.833
Female	25 (56.8)	19 (43.2)	
Profession			
Pharmacist	9 (81.8)	2 (18.2)	0.015
Pharmaceutical technician	25 (59.5)	17 (40.5)	
Pharmaceutical assistant	4 (26.7)	11 (73.3)	
Year of experience (years)			
≤1	5 (38.5)	8 (61.5)	0.074
2–5	23 (69.7)	10 (30.3)	
>5	10 (45.5)	12 (54.5)	

**Table 3.** Medication counseling practice in community pharmacies in the last 1 month (N=68).

Information given	Frequency	Percentage
Name of the medicine	22	32.4
Route of administration	60	88.2
Dose of the medicine	63	92.6
Frequency of administration	61	89.7
Why the medicine is prescribed	11	16.2
Duration of therapy	41	60.3
Drug interactions	9	13.2
Storage conditions	10	14.7
Side effects	6	8.8
Contraindications	13	19.1
Compliance	21	30.9

information that is not regularly provided by dispensers to clients is the side effects of medicines ( $n=6$ , 8.8%). Less than a quarter of participants frequently tell their clients information regarding why the medicine is prescribed, drug interactions, storage conditions, and contraindications.

## Discussion

An aspect of the pharmaceutical personnel's responsibility in promoting RUM is medication counseling, which can help in the prevention of medication misuse and reduce the possibility of patient drug therapy problems.<sup>20</sup> Developing the necessary actions to improve RUM requires understanding issues that can be determined by examining the awareness and practice of dispensers in community pharmacies. In this study, over half of dispensers in community pharmacies were aware of RUM, indicating that they understood the concepts that ensure drug usage for the best possible health outcomes. However, the level of awareness in this study is lower than that reported in the previous

study (88%).<sup>1</sup> The awareness was significantly influenced by the participant's age and profession. Pharmacists exhibited higher awareness compared with other pharmaceutical personnel. This could be a result of the extensive education and training that pharmacists undergo, which equips them with the knowledge and skills necessary to understand the RUM. Furthermore, participants within the age group of 26 to 30 years displayed higher awareness. This could be attributed to higher experience and exposure than respondents with less than 26 years. Also, respondents may have received more recent education and training on RUM compared with respondents with more than 30 years, as pharmaceutical curricula are updated over time.<sup>21</sup>

The study also examined the practice of patient medication counseling among medicine dispensers. The majority of dispensers reported informing clients about the dose, frequency of administration, and route of administration. This finding is consistent with the results of previous studies conducted in Saudi Arabia,<sup>22</sup> Nigeria,<sup>18</sup> and Ethiopia.<sup>23–25</sup> However, other elements of medication counseling were less frequently reported in this study. Less than half of dispensers consistently informed clients about why medicine is prescribed, drug interactions, storage conditions, contraindications, and compliance. The lack of these important components of medication counseling highlights potential weaknesses in patient understanding and safety. Not explaining the purpose of the prescribed medicine may lead to reduced patient adherence, as individuals may not fully understand the intended therapeutic outcomes. Similarly, the absence of information about compliance can hinder patients' ability to adhere to prescribed regimens.<sup>26</sup> Furthermore, the limited communication regarding drug interactions, storage conditions, and contraindications raises concerns about patient safety and decreases medication potency or even causes harm if not stored appropriately.<sup>27</sup> Moreover, the

relatively low frequency of providing information about medication side effects (8.8%) is a noteworthy finding. This proportion is low compared with that observed by Wabe et al.<sup>25</sup> (18.8%). Patients need to be aware of potential side effects to make informed choices and detect any undesirable side effects as soon as possible. The limited counseling practice could be due to several factors, including the perception that the practice in community pharmacies is generally business-oriented and the heavy workload for many pharmaceutical personnel.<sup>28</sup>

To the best of our knowledge, this is the first study in Tanzania to assess awareness of the RUM and the practice of patient medication counseling in community pharmacies. However, it is limited by the use of a descriptive cross-sectional study in which the conclusions of the researchers were solely dependent on questionnaire responses, which were prone to recall bias, and there were no tangible means of verifying the answers provided by participants. Future studies with a larger sample size and that employ a simulated client approach are the priority. Furthermore, scale purification and reliability tests were not performed for the questionnaire used in this study; instead, the validity and reliability of the questionnaire were based on expert opinion. Finally, our results only pertain to one district of Tanzania and, hence, cannot be generalized to the country as a whole.

## Conclusion

This study has shown that almost half of the participants were aware of RUM, highlighting the need for continued efforts to enhance awareness of RUM among pharmaceutical personnel in community pharmacies. The majority of dispensers provided information such as dose, frequency, and route of administration to their clients. There was a low frequency at which information was given regarding medication compliance, medication names, therapy duration, side effects, storage conditions, drug interactions, and contraindications. These findings underscore the need for targeted interventions to enhance pharmaceutical personnel's understanding of RUM principles and improve their practice of patient medication counseling.

## Declarations

### *Ethics approval and consent to participate*

This study was approved by the Catholic University of Health and Allied Sciences and Bugando Medical Center's Joint Ethics and Research Review Committee (IRB No. 1853/2021). Permission to conduct interviews was obtained from regional medical officers and the management of the respective institutions. Before the interview, written informed consent was obtained from the participants who voluntarily agreed to participate in the study. To ensure confidentiality, no participant's name was recorded.

### *Consent for publication*

Not applicable.

### *Acknowledgements*

The authors thank all pharmaceutical personnel who participated in this study.

### *Funding*

The author(s) received no financial support for the research, authorship, and/or publication of this article.

### *Competing interests*

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### *Availability of data and materials*

The dataset generated and/or analyzed during the current study is available from the corresponding author upon reasonable request.

### **ORCID iD**

Stanley Mwita  <https://orcid.org/0000-0003-0563-6705>

### **Supplemental material**

Supplemental material for this article is available online.

## References

1. Arvinth A and Suganya E. Rational use of medicines among resident doctors: a cross-sectional study. *Natl J Physiol Pharm Pharmacol* 2022; 12(9): 1489–1492.
2. World Health Organization. *Promoting rational use of medicines: core components*. Geneva: World Health Organization, 2002.
3. Prakash B, Nadig P and Nayak A. Rational prescription for a dermatologist. *Indian J Dermatol* 2016; 61(1): 32–38.
4. Siele SM, Abdu N, Ghebrehiwet M, et al. Drug prescribing and dispensing practices in regional and national referral hospitals of Eritrea: evaluation with WHO/INRUD core drug use indicators. *PLoS ONE* 2022; 17(8): e0272936.
5. Sema FD, Asres ED and Wubeshet BD. Evaluation of rational use of medicine using WHO/INRUD core drug use indicators at Teda and Azezo Health Centers, Gondar Town, Northwest Ethiopia. *Integr Pharm Res Pract* 2021; 10: 51–63.
6. Bragazzi NL, Mansour M, Bonsignore A, et al. The role of hospital and community pharmacists in the management of COVID-19: towards an expanded definition of the roles, responsibilities, and duties of the pharmacist. *Pharmacy* 2020; 8(3): 140.
7. Pantasri T. Expanded roles of community pharmacists in COVID-19: a scoping literature review. *J Am Pharm Assoc* 2022; 62(3): 649–657.
8. Alaqeel S and Abanmy NO. Counselling practices in community pharmacies in Riyadh, Saudi Arabia: a cross-sectional study. *BMC Health Serv Res* 2015; 15: 1–9.

9. Irunde H, Minzi O and Moshiro C. Assessment of rational medicines prescribing in healthcare facilities in four regions of Tanzania. *J Pharm Pract Community Med* 2017; 3(4): 225–231.
10. Mboya EA, Sanga LA and Ngocho JS. Irrational use of antibiotics in the Moshi Municipality Northern Tanzania: a cross sectional study. *Pan Afr Med J* 2018; 31: 165.
11. Ndaki PM, Mushi MF, Mwangi JR, et al. Non-prescribed antibiotic dispensing practices for symptoms of urinary tract infection in community pharmacies and accredited drug dispensing outlets in Tanzania: a simulated clients approach. *BMC Prim Care* 2022; 23(1): 1–9.
12. Kilipamwambu A, Bwire GM, Myemba DT, et al. WHO/ INRUD core prescribing indicators and antibiotic utilization patterns among primary health care facilities in Ilala district, Tanzania. *JAC Antimicrob Resist* 2021; 3(2): dlab049.
13. Kamuhabwa AR and Ignace AM. Dispensing practice of prescribed medicines in the private pharmacies in urban areas of Tanzania. *Indian J Pharm Sci* 2015; 77(5): 542–549.
14. Poyongo BP and Sangeda RZ. Pharmacists' knowledge, attitude and practice regarding the dispensing of antibiotics without prescription in Tanzania: an explorative cross-sectional study. *Pharmacy* 2020; 8(4): 238.
15. Natai CC, Gervas N, Sikira FM, et al. Association between male involvement during antenatal care and use of maternal health services in Mwanza City, Northwestern Tanzania: a cross-sectional study. *BMJ Open* 2020; 10(9): e036211.
16. National Bureau of Statistics. Population size in Tanzania, <https://sensa.nbs.go.tz/> (2022, accessed 16 June 2023).
17. Vandembroucke JP, von Elm E, Altman DG, et al. Strengthening the reporting of observational studies in epidemiology (STROBE). *Epidemiology* 2007; 18(6): 805–835.
18. Ayalew E, Seid Y and Agalu A. Knowledge, attitude and practice of patient medication counseling among drug dispensers in Mekele town, Northern Ethiopia. *Int Res J Pharm Pharmacol* 2014; 4(2): 28–34.
19. Adogu P, Okechukwu R, Egenti N, et al. Attitudes, practice and predictors of rational use of medicines among medicines prescribers and dispensers in Nnewi Nigeria. *Br J Pharm Res* 2015; 7(5): 319–329.
20. Arimbawa PE and Adi IP. Patient perceptions on the role of a pharmacist and the understanding of the rational use of medicines (RUM). *Sustain Sci Manag* 2019; 14(6): 137–144.
21. World Health Organization. *The role of education in the rational use of medicines*. Geneva: WHO Regional Office for South-East Asia, 2006.
22. Alfadl AA, Alrasheedy AA and Alhassun MS. Evaluation of medication counseling practice at community pharmacies in Qassim region, Saudi Arabia. *Saudi Pharm J* 2018; 26(2): 258–262.
23. Ali S, Shimels T and Bilal AI. Assessment of patient counseling on dispensing of medicines in outpatient pharmacy of Tikur-Anbessa Specialized Hospital, Ethiopia. *Ethiop J Health Sci* 2019; 29(6): 727–736.
24. Ejeta F, Feyisa D, Kebede O, et al. Medication counseling practices in medicine retail outlets found in Bench Sheko Zone, Southern Nations, nationalities, and peoples' region, South West Ethiopia. *Pragmat Obs Res* 2021; 12: 105–117.
25. Wabe NT, Raju NJ and Angamo MT. Knowledge, attitude and practice of patient medication counseling among drug dispensers in North West Ethiopia. *J Appl Pharm Sci* 2011; 30: 85–90.
26. Basu S, Garg S, Sharma N, et al. Improving the assessment of medication adherence: challenges and considerations with a focus on low-resource settings. *Ci Ji Yi Xue Za Zhi* 2019; 31(2): 73–80.
27. Series QC. ASHP guidelines on preventing medication errors in hospitals. *Am J Health-Syst Pharm* 2018; 75(19): 1493–1517.
28. Alrasheedy AA, Hassali MA, Wong ZY, et al. Pharmaceutical policy in Saudi Arabia. In: Babar ZUD (ed.) *Pharmaceutical policy in countries with developing health-care systems*. Cham: Springer, 2017, pp. 329–347.