

Roles of Community Pharmacists in Screening and Disseminating of Information about Non-Steroidal Anti-Inflammatory Drugs Risks: Implications for Drug Safety Assessment

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Abstract

Background: The increasing use of non-steroidal anti-inflammatory drugs (NSAIDs) both on prescription and over the counter raises a major global health concern because of the risks associated with their use if no proper guidance is given by the health care provider. This study assessed the roles of community pharmacists in screening and disseminating information about the risks associated with NSAID use in Zambia. **Methodology:** This was a national cross-sectional study in which a structured self-administered questionnaire was administered to 245 registered community pharmacists in Zambia. Stata/BE, version 15.1 (Stata Corporation, College Station, Texas, USA) and multivariate logistic regression model was used to determine factors associated with information dissemination about ADRs of NS-NSAIDs. **Results:** 231 of the 245 distributed questionnaires were returned giving a response rate of 94.3%. All (100%) participating community pharmacists claimed to have practiced dispensing NSAIDs. However, only 26 (11.0%) and 71 (30.8%) regularly screened for risk factor of selective COX-2 NSAIDs (SC2-NSAIDs) and non-selective NSAIDs (NS-NSAIDs) respectively. Information dissemination on adverse drug reactions (ADRs) of SC2-NSAIDs was regularly provided by only 22 (9.5%) of pharmacists while that of NS-NSAIDs was regularly provided by 49 (21.2%). In the multivariate logistic regression model, being the owner of a pharmacy (AOR: 5.4, CI: 1.84 - 16.4) was significantly associated with information dissemination about ADRs of NS-NSAIDs while an hour increase in the working hours per day (AOR: 0.9, CI: 0.64 -

0.95) was associated with less likelihood of information dissemination. **Conclusion:** Pharmacists working in community pharmacies in Zambia did not regularly screen and disseminate information about the risks associated with NSAID use. Therefore, pharmacists should be able to screen and monitor patients at risk and be aware of the majority of risk factors while dispensing NSAIDs to minimize the associated complications.

Keywords

Community Pharmacists, Non-Steroidal Anti-Inflammatory, Drug Risk, Screening

1. Introduction

Non-steroidal anti-inflammatory drugs (NSAIDs) are one of the most commonly used drugs around the globe and approximately more than 35 million people use these drugs daily [1] [2] [3]. They are broadly used and effective for inflammation and pain but come with a huge risk of side effects [4] [5]. Regardless of this, they are more often prescribed to individuals with fundamental factors increasing risk, such as the elderly, and those with co-morbidities or multiple drug use [4] [6]. NSAIDs are categorized as either nonselective (NS-NSAIDs) or selective (SC2-NSAIDs) depending on their capacity to hinder various forms of the cyclooxygenase (COX) enzyme. Nonselective NSAIDs impede both COX-1 and COX-2 enzymes, whereas selective NSAIDs predominantly inhibit COX-2, which plays a role in inflammation. Typical nonselective NSAIDs comprise ibuprofen, diclofenac, and naproxen. By obstructing the enzyme, NSAIDs diminish the synthesis of inflammatory mediators such as prostaglandins and thromboxane [7].

The use of NSAIDs is extensive which gives all healthcare professionals the obligation to recognize factors possibly causing a rise in the possibility of adverse effects before supplying them to patients [8] [9]. Nevertheless, research that has been conducted in many countries has shown that in clinical practice, there is an increase in NSAID prescribing in patients having risk factors such as chronic kidney disease, GI problems, heart diseases, diabetes and hypertension [8] [10] [11] [12]. The importance of pharmacists communicating with the patient is critical in informing patients regarding the risks linked with NSAID use [13] [14].

Community pharmacies are strategically well placed for NSAID distribution, therefore, pharmacists should be alert to identify any clients with prescriptions for potential associated risks and provide information about the safety of these products ([15]. Pharmacists need to take patients' history of NSAID use as well as to give guidance to patients with risk factors associated with the use of over-the-counter (OTC) NSAIDs [16]. Due to the extensive availability of OTC NSAID products, patients are likely to assume that they are not of any harm and

consequently be unmindful of the increased associated risks [17]. Such circumstances bring up opportunities for pharmacists' involvement in educating patients on the risks and enlighten them of ideal or alternative substitute treatments for pain management, such as paracetamol and other topical products [17]. Paracetamol (acetaminophen) is frequently chosen as the initial analgesic for adults managing mild to moderate acute pain, as it's generally well-tolerated within the advised dosage (≤ 4 g/day) for healthy individuals. It may be favored over non-steroidal anti-inflammatory drugs due to the potential undesirable effects on the gastrointestinal system, kidneys, and heart [18].

A momentary educational mediation in a pharmacy based in the community enhances the knowledge of patients on risks associated with NSAIDs and community pharmacists can work together with other care providers in the medical practice model in educating high-risk patients [19]. Through patient education materials, such as brochures or leaflets, pharmacists can reinforce key information about NSAIDs and promote safe and effective use. Furthermore, pharmacists can collaborate with other healthcare providers to implement interventions such as medication therapy management programs or adherence counseling, which can further enhance patients' knowledge and optimize their outcomes with NSAID therapy [20]. Pharmacists can utilize Electronic health records (EHRs) to conduct medication reconciliation, ensuring that patients are not prescribed NSAIDs that may interact adversely with other medications they are taking. Furthermore, EHRs enable pharmacists to track patients' medication adherence and monitor for potential side effects or complications associated with NSAID therapy [21] [22]. Mobile apps tailored for healthcare professionals can also enhance pharmacists' ability to provide patient education and support. These apps may include drug information databases, clinical decision support tools, and educational resources on NSAIDs. For example, Medscape, Epocrates, and Lexicomp are popular apps that provide comprehensive drug information, including dosing guidelines, adverse effects, and drug interactions, which pharmacists can use to educate patients about NSAIDs [23] [24].

Based on the literature examined during the study period, no study has been published to evaluate and assess community pharmacists in Zambia on their roles in screen and disseminating information about the risks associated with the use of NSAIDs. As such, this study focused on the assessment of the roles of community pharmacists in screening and dissemination of information about the risks associated with the use of NSAIDs in Zambia.

2. Methods

2.1. Study Site and Design

A national cross-sectional study involving community pharmacists in all 10 provinces of Zambia was carried out over two months from 1st August 2022 to 30th September 2022. The pharmacists who participated in the study were either just working in the community pharmacies or they owned the pharmacies. The

standard of practice in these pharmacies is that pharmacists are present on-site at all times. Therefore, all pharmacists working in these pharmacies had an opportunity to respond to the survey.

2.2. Sample Size Determination and Study Population

The sample size was calculated using Slovin's formula (Guilford, 1950) as follows:

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

$$n = 631/1 + 631 \times 0.05^2, n = 631/1.93, n = 245 \text{ community pharmacies}$$

where: n is the sample size to be determined = Target population size (form 631 registered pharmacies as per Zambia Medicines Regulatory Authority (ZAMRA) register (ZAMRA, 2020), e = margin of error (5% = 0.05) from Confidence interval level (95% = 1.96)

To get a response, the study population was stratified according to 10 provinces of Zambia and proportions were calculated based on the total number of pharmacies in each province. From the stratified provinces, we randomly selected the pharmacies to be included in the sample as shown in **Figure 1**. From each pharmacy, only one pharmacist participated in the study. Where the pharmacy had more than two pharmacists, we used a non-probability sampling technique to reach the representative population easily in the selected community pharmacies.

Therefore, community pharmacists in their respective community pharmacies who were available in the selected study area at the time of data collection, were selected in the sample and those willing to participate in the study were given a questionnaire.

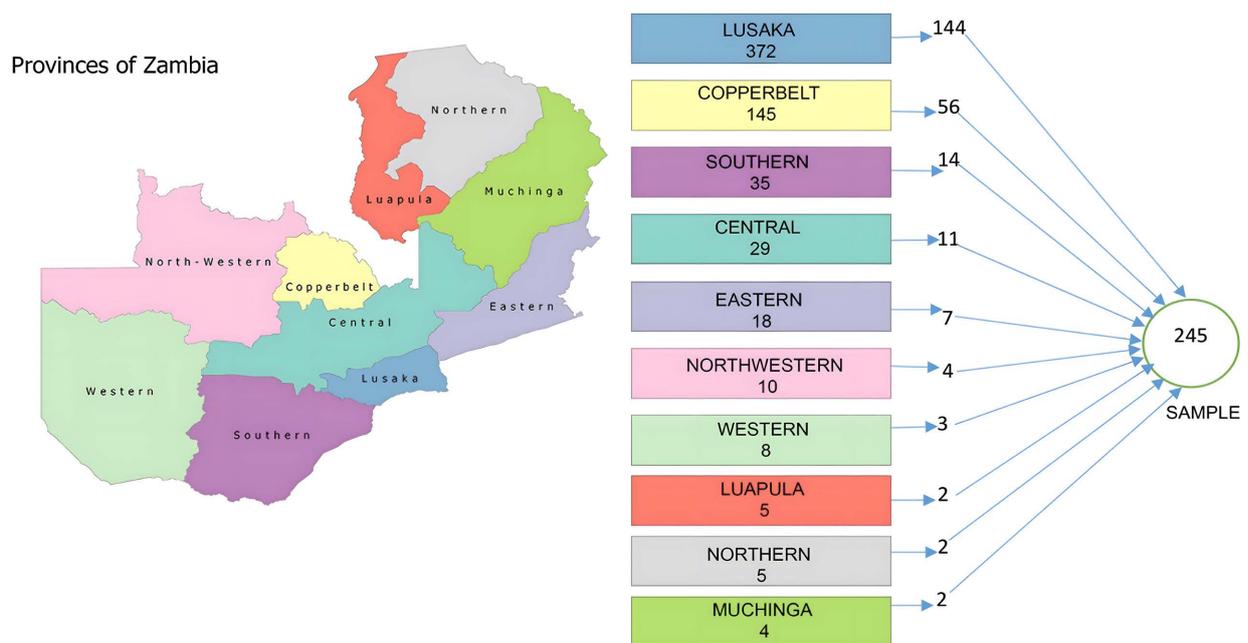


Figure 1. Study population distribution per province.

2.3. Data Collection Procedure

The questionnaire used to collect data in this survey was adopted from a previous study done in Thailand [4]. The questionnaire was divided into two sections: demographic data (sex, age, educational level, work experience, locality of the pharmacy) and the role of pharmacists in supplying NSAIDs. The second section comprised subsections addressing the screening of risk factors related to the usage of drugs, as well as guidance on the management of adverse drug reactions. Of particular emphasis was the co-administration of NSAIDs with other drugs, and the provision of information and education to patients regarding the potential side effects associated with the use of NSAIDs.

Questions were carefully designed to assess the roles of community pharmacists in the screening and dissemination of information about the risks associated with the use of NSAIDs in Zambia. We delivered questionnaires, information sheets, and consent forms via emails with links to Google Forms. Participants were only granted access to the questionnaires after returning the signed consent forms. For those who had not responded for at least three consecutive occasions, reminders were sent every week to boost response rates.

The validity of adopted instruments was measured through literature research and consultation with subject specialists. We evaluated the instrument's internal consistency and reliability by pre-testing it with 10% (25 community pharmacies) of an estimated sample population of a similar sort in a comparable setting. The instrument's overall reliability as measured by Cronbach's alpha was 0.73, showing acceptable internal consistency.

2.4. Data Processing and Analysis

Every completed questionnaire that was returned from the approached participants was double-checked for accuracy and the collected data was sorted out. The statistical analysis of the data was conducted using STATA version 13.0 and Microsoft Excel 2019 version 11. For categorical variables, data was expressed as numbers and percentages. For parametric continuous variables, the mean and their corresponding standard deviation (SD) were reported. For non-parametric continuous variables, median and interquartile ranges (IQR) were reported. A Pearson-Chi-square test was used to compare the dissemination of information regarding the risks associated with NSAIDs with sociodemographic characteristics. To detect the difference between two medians of continuous variables (Age, working hours per day, number of pharmacists and number of working hours), the Wilcoxon-Mann Whitney rank-sum test was used. In order to determine factors associated with the dissemination of information about adverse effects of NSAIDs, multivariable logistic regression was performed. All statistical tests were two-sided with a p-value < 0.05 considered statistically significant. Thereafter, the analyzed data was presented in reader format tables.

2.5. Ethical Approval and Informed Consent

The University of Zambia Health Sciences Research Ethics Committee, with the

assigned Protocol ID Number 202112030064, granted ethical approval for this research. Participation in this study was voluntary after providing written consent.

3. Results

3.1. Socio-Demographic Characteristics of Respondents

Out of the 245 questionnaires circulated through emails with links to Google Forms, 231 were returned and analyzed with a response rate of 94.3%. The majority of respondents were Males ($n = 143$, 61.9%) working in independently owned pharmacies ($n = 212$, 91.8%). The median age was 31 years (IQR: 28, 35) with more than half of the pharmacists having less than or equal to five years of practice experience in community pharmacy ($n = 125$, 54.1%) and the majority were holders of bachelor's degrees ($n = 181$, 78.4%). More than half were not pharmacy owners ($n = 170$, 73.6%) and most pharmacies were located in urban areas ($n = 220$, 95.6%) Other socio-demographic characteristics are shown in **Table 1**.

Table 1. Participant's Sociodemographic and comparison of dissemination of information about risks associated with NSAID use by category.

Variable	Total Population		Dissemination of NSAIDs risks				P-Value
			Irregularly		Regularly		
	N	%	N	%	N	%	
Gender							
Male	143	61.9	115	80.4	28	19.6	0.439
Female	88	38.1	67	76.1	21	23.9	
Education level							
Bachelor's degree	181	78.4	140	77.3	41	22.7	0.308
Higher than a bachelor's degree	50	21.6	42	84.0	8	16.0	
Practice Experience							
≤5	125	54.1	80	75.5	26	24.5	0.256
>5	106	45.9	102	81.6	23	18.4	
Owner of the pharmacy							
Yes	61	26.4	56	91.8	5	8.2	0.004
No	170	73.6	126	74.1	44	25.9	
Type of Pharmacy							
Independently owned	212	91.8	167	78.8	45	21.2	0.986
Chain/franchise	19	8.2	15	79.0	4	21.0	
Location of Pharmacy							
Urban	220	95.2	175	79.5	45	20.5	0.468
Rural	11	4.8	7	63.6	4	36.4	

Continued

Have an assistant in the pharmacy							
Yes	213	92.2	166	77.9	47	22.1	0.275
No	18	7.8	16	88.9	2	11.1	
Have student internships							
Yes	70	69.7	59	84.3	11	15.7	0.178
No	161	30.3	123	76.4	38	23.6	
	Median	IQR	Median	IQR	Median	IQR	
Age	31	28,35	31	29,35	30	28,36	0.164
Working hours per day	8	7,8	8	7,10	8	8,10	0.048
Number of pharmacists	1	1,2	1	1,2	1	1,2	0.576
Number of patients visit payday	8	7,8	80	51,100	80	60,100	0.328

3.2. Self-Reported Practices in Supplying NSAIDs

The frequency of community pharmacists' self-reported practice roles in supplying NSAIDs is illustrated in **Table 2**. Regarding the screening of patients for risk factors before dispensing NS-NSAIDs, a majority of participants reported occasional screening ($n = 148$, 64.0%). The frequency of occasional screening was slightly higher for selective SC2-NSAIDs ($n = 187$, 81.0%). However, less than half of the participants reported occasional assessment of the necessity for using NSAIDs ($n = 103$, 44.6%). Equally, the majority indicated that they occasionally disseminated information about ADR for NS-NSAIDs ($n = 182$, 78.8%) and half for SC2-NSAIDs ($n = 116$, 50.2%). On advice for managing and preventing adverse effects of SC2-NSAIDs and NS-NSAIDs, most (151, 65.4%) and (142, 61.5%) of the participants occasionally advised the patients respectively. Less than half of the participants reported occasionally seeking information about the current drug use of herbs and supplements ($n = 111$, 48.1%), while half occasionally provided advice on what to do or avoid while taking NSAIDs ($n = 121$, 52.4%).

3.3. Self-Reported Risk Factor Screening for Specific Conditions

Regarding the self-reported risk factor screening for specific conditions for different classes of NSAIDs, the results indicated differences. For NS-NSAIDs, the most ($n = 184$, 79.6%) frequently screened condition was GI ulcer/bleeding, while a history of renal impairment ($n = 36$, 15.6%) and uncontrolled hypertension ($n = 36$, 15.6%) were the least frequently screened. Conversely, for SC2-NSAIDs, allergy ($n = 35$, 15.2%) and risk of cardiovascular disease ($n = 45$, 19.5%) were the conditions least frequently screened as shown in **Table 3**.

3.4. Reported Specific Advice on the Management and Protection against ADR from NSAIDs

For advice, pharmacists' most regularly given advice for management of or protection against ADR from NSAIDs was to take after meals ($n = 194$, 84.0%), and

Table 2. Self-reported practices in supplying NSAIDs (n = 231).

Practice roles	Regularly	Occasionally	never
Screen for risk factors			
For non-selective NSAIDs	71 (30.8)	148 (64.0)	12 (5.2)
For selective COX-2 NSAIDs	26 (11.0)	187 (81.0)	18 (8.0)
Assessment of the necessity for using NSAIDs	62 (26.8)	103 (44.6)	66 (28.6)
ADR information dissemination			
For non-selective NSAIDs	49 (21.2)	182 (78.8)	0(0.0)
For selective COX-2 NSAIDs	22 (9.5)	116 (50.2)	93 (40.3)
General advice to manage and prevent adverse effects			
For non-selective NSAIDs	70 (30.3)	142 (61.5)	19 (8.2)
For selective COX-2 NSAIDs	42 (18.2)	151 (65.4)	38 (16.4)
Asking about current drug use/herbs/supplements	24 (10.4)	111 (48.1)	96 (41.5)
Advice on what should/should not do while taking NSAIDs	99 (42.9)	121 (52.4)	11 (4.7)

COX = cyclooxygenase, ADR = adverse drug reactions.

Table 3. Self-reported risk factor screening for specific conditions (n = 231).

Details on screening of risk factors	Regularly	Occasionally
Dispensing of non-selective NSAIDs		
History of GI ulcer/bleeding	184 (79.6)	47 (20.4)
Cardiovascular disease	40 (17.3)	191 (82.7)
Older age	73 (31.6)	158 (68.4)
Multiple NSAIDs/long term/high dose	141 (61.0)	90 (39.0)
History of liver impairment	37 (16.0)	194 (84.0)
History of renal impairment	36 (15.6)	195 (84.4)
Allergy	54 (23.4)	177 (76.6)
Pregnancy	91 (39.6)	139 (60.4)
Breastfeeding	49 (21.2)	182 (78.8)
Upcoming surgery	46 (19.9)	185 (80.1)
Uncontrolled hypertension	36 (15.6)	195 (84.4)
Taking steroid drug	40 (17.3)	191 (82.7)
Dispensing of selective COX-2 NSAIDs		
History of GI ulcer/bleeding	93 (40.3)	138 (59.7)
Cardiovascular disease	45 (19.5)	186 (80.5)
Older age	47 (20.4)	184 (79.6)
Multiple NSAIDs/long term/high dose	69 (29.9)	162 (70.1)
History of liver impairment	41 (17.8)	190 (82.2)

Continued

History of renal impairment	66 (28.6)	165 (71.4)
Allergy	35 (15.2)	196 (84.8)
Pregnancy	80 (34.6)	151 (65.4)
Breastfeeding	59 (25.5)	172 (74.5)
Upcoming surgery	40 (17.3)	191 (82.7)
Uncontrolled hypertension	89 (38.5)	142 (61.5)
Taking steroid drug	57 (24.7)	174 (75.3)

about half claimed they would regularly advise patients to use gastroprotective agents ($n = 121$, 52.4 %). More than half were occasionally advised to switch to another NSAID class ($n = 176$, 76.2%) or use other painkillers ($n = 137$, 59.3%) and to stop taking NSAIDs ($n = 173$, 74.9%) (**Figure 2**).

3.5. Situations Where Advice Is Not Provided about NSAID Use

Regarding situations where advice was not provided (**Figure 3**), approximately half of the participants agreed that the reason was due to the pharmacist being busy ($n = 125$, 54.6%), and the patient being unwilling to be advised ($n = 131$, 57.2%). Additionally, more than half of the participants agreed that the patients were busy ($n = 138$, 60.3%) or claimed to already know the necessary information ($n = 160$, 69.9%). However, almost half of the respondents strongly disagreed that the pharmacist did not know what advice to give ($n = 132$, 57.6%).

3.6. Factors Associated with the Dissemination of Information about Adverse Effects of NSAIDs

In the unadjusted logistic regression model, being the owner of the pharmacy (COR: 3.9, CI: 1.47 - 10.4) was associated with a higher likelihood of dissemination of information about adverse effects of NSAIDs while every hour increase in the working hours per day (COR: 0.9, CI: 0.75 - 0.99) was associated with less likelihood of information dissemination. To determine the factors associated with the dissemination of information about adverse effects of NSAIDs, variables with a p-value of <0.2 were selected to be fitted into the adjusted logistic regression model. Being the owner of the pharmacy (AOR: 5.4, CI: 1.84 - 16.4) was associated with a higher likelihood of dissemination of information about adverse effects of NSAIDs while every hour increase in the working hours per day (AOR: 0.9, CI: 0.64 - 0.95) was associated with less likelihood of information dissemination. The summary of these findings is presented in **Table 4**.

4. Discussion

Many studies have been conducted worldwide to evaluate public understanding and approach concerning the use of over the counter (OTC) medications particularly NSAIDs [25] [26]. These studies showed insufficient patient information

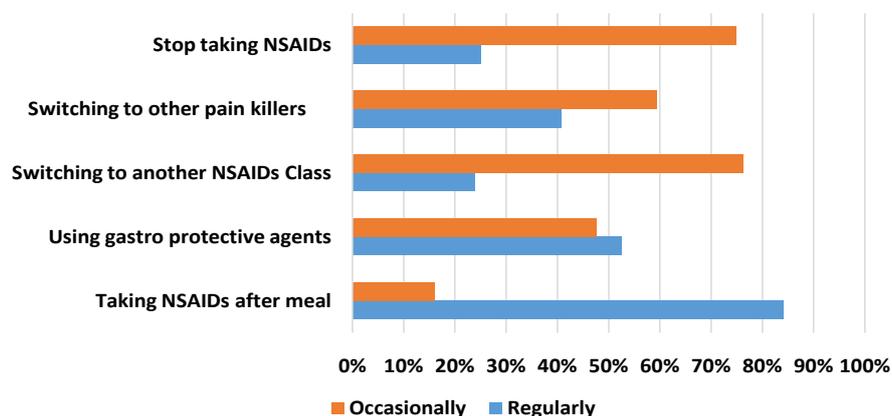


Figure 2. Reported advice on management of or protection against ADR from NSAIDs (n = 231).

Table 4. Unadjusted and adjusted logistic regression of factors associated with dissemination of information about adverse effects of NSAIDs.

Variable	Category	Unadjusted		Adjusted	
		COR	95% CI	AOR	95% CI
Gender	Male	1			
	Female	0.8	0.41 - 1.47	-	-
Age	31 (28.35)*	1.0	0.98 - 1.12**	0.99	0.93 - 1.06
Education level	Bachelor's degree	1			
	Higher than a bachelor's degree	1.5	0.77 - 3.53	-	-
Practice Experience	≤5	1			
	>5	1.4	0.76 - 2.71	-	-
Owner of the pharmacy	No	1			
	Yes	3.9	1.47 - 10.4**	5.4	1.84 - 16.4***
Type of pharmacy	Independently owned	1			
	Chain/franchise	1.01	0.32 - 3.19	-	-
Location of pharmacy	Rural	1			
	Urban	0.6	0.15 - 2.41	-	-
Assistance in the Pharmacy	No	1			
	Yes	0.4	0.10 - 1.99	-	-
Having Intern Pharmacy	No	1			
	Yes	1.7	0.79 - 3.47	-	-
Working hours perday	8 ^a (7,8) ^b	0.9	0.75 - 0.99**	0.9	0.64 - 0.95***
Number of pharmacists	1 ^a (1,2) ^b	0.9	0.59 - 1.94	-	-
Number of working hours	8 ^a (7,8) ^b	1.0	0.99 - 1.00	-	-

1: Reference category, **COR**: Crude odds ratio, **AOR**: adjusted odds ratio, **CI**: Confidence interval, *: Median (IQR), **: variables with $p < 0.02$ that fitted into the adjusted model, ***: variable with $p < 0.05$, a: Median, b: interquartile range

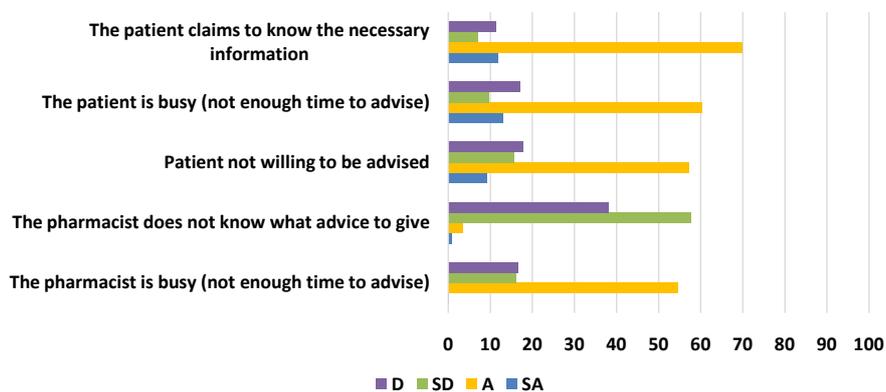


Figure 3. Situations where the advice is not provided (n = 231). D: Disagree, SD: Strongly Disagree, A: Agree, SA: Strongly agree.

about side effects which necessitate the need for more information and discussions concerning suitable management or prevention tips to combat the risks of NSAIDs [27] [28]. This study aimed to assess the roles of community pharmacists' practice in screening and disseminating information about the risks associated with NSAIDs in Zambia.

This study showed that less than half of the pharmacists recruited in the study regularly screened for the risks associated with the use of NSAIDs, provided information on how to manage side effects and inquired about the reasons for taking NSAIDs. These findings are contrary to what was reported in other studies [4] [29]. In the current study, only 21.2% and 9.5% of the Pharmacists disseminated information about ADR of NS-NSAIDs and SC2-NSAIDs respectively. This is lower than what was reported in the previous studies [4] [29]. This can be attributed to more than half of the participants in our study reporting that patients were unwilling to be advised and the pharmacies were busy on most occasions [4]. In a study that was conducted in Qatar, community pharmacists also reported that disseminating information about the risks associated with NSAIDs can be time-consuming [27]. Pharmacists often encounter barriers to effective communication, including language differences, health literacy limitations, and patient trust issues in drug counseling [30]. To overcome these barriers, pharmacists can employ various strategies. They can utilize multilingual staff or translation services to bridge language gaps, simplify medication information using plain language and visual aids to enhance health literacy, and build rapport with patients through empathetic communication to foster trust in their expertise. By implementing these approaches, pharmacists can mitigate barriers and ensure effective communication, leading to improved patient understanding and medication outcomes [31].

In the current study, being the owner of a pharmacy was associated with disseminating information about ADRs of NSAIDs. This finding is highlighted by another study in which being a pharmacy owner was associated with regular dissemination of information [4]. The owners of retail pharmacies may understand that their pharmacy's reputation can significantly impact its success.

Therefore, providing excellent customer service, including detailed medication counselling, can help build a positive reputation in the community and lead to customer loyalty. This study also showed that there was an inverse association between long working hours per day and the provision of medication information about the risks associated with NSAID use (AOR: 0.9, CI: 0.64 - 0.95). Longer work hours could mean that pharmacists have fewer opportunities for direct patient interactions. As a result, they may have less time to engage with patients and provide medication information. Regardless of the above arguments, several studies have revealed that NSAIDs are associated with serious ADRs such as GI bleeding and renal failure [32] [33]. Therefore, there is a need for Community pharmacists to properly monitor their patients for ADRs and inform them about the risks associated with the use of NSAIDs.

From the self-reported risk factor screening for specific conditions, the Majority (79.6%) of the participants reported regularly screening for a history of GI ulcer/GI bleeding for NS-NSAIDs. This was in line with a study conducted in Thailand and Saudi Arabia in which an account of gastrointestinal problems was noted to be regularly screened [4] [29]. However, less than half of the participants from the current study reported regularly screening for a history of GI ulcer/GI bleeding for SC2-NSAIDs contrary to what was reported in Thailand [4]. Participants in our study might have viewed SC2-NSAIDs as having less risk of causing GI ulcer/GI bleeding compared to NS-NSAIDs. Hence, screened more for the history of GI ulcer/GI bleeding for NS-NSAIDs than SC2-NSAIDs. Given that, both classes of NSAIDs can have negative effects on the GI and CV systems, distinctions in information provision between various NSAID classes do not seem justified.

In the current study, more than half of the pharmacists occasionally screened for specific conditions such as cardiovascular disease, older age, renal impairment and pregnancy among others during the dispensing of both NS-NSAIDs and SC2-NSAIDs. This is in contrast with what was reported in Saudi Arabia [29]. Both selective and non-selective NSAIDs are subject to the well-known risk factors for NSAIDs [10] [34] [35]. Healthcare workers should be aware of the necessity to screen and keep an eye on patients who may be at high risk of NSAIDs ADR. In many countries Zambia inclusive, NSAIDs can be dispensed with or without a prescription and it has been noted that patients may not inform the pharmacists about comorbidities and multiple NSAIDs use [36] [37]. Consequently, these screening inquiries are crucial.

The current study showed that the most regularly reported advice on the management of or protection against ADR from NSAIDs was to take NSAIDs after meals. This finding is supported by the results of previous studies [4] [29]. Other practices such as the use of gastro-protective agents, switching to other NSAID classes and stopping NSAIDs were occasionally practiced. This is conflicting with what was reported in Thailand [4]. In Saud Arabia, advice on the management of or protection against ADR from NSAIDs was occasionally practiced as well by community pharmacists. The importance of pharmacists as reli-

able sources of information elevates their responsibility and position as medication experts [20] [38] [39]. Therefore, pharmacists should be aware of the factors that are used to reduce NSAID complications through screening and monitoring patients at risk.

The majority of NSAIDs are purchased from community pharmacies [40]. Therefore, pharmacists in Zambia must continue efforts to provide necessary information to all patients about the potential risks associated with NSAID use. This study revealed that patients may still not receive the desired comprehensive service community pharmacies, and this may have an implication on public drug safety. To guarantee that community pharmacy services in Zambia contribute more to the safe use of medications, such as NSAIDs, greater effort is required. The development of specific standards of pharmacy practice for community pharmacists in Zambia through regulatory frameworks can play a crucial role in shaping the responsibilities of community pharmacists regarding NSAID (non-steroidal anti-inflammatory drug) management. These frameworks may mandate specific protocols for dispensing NSAIDs, such as limiting quantities or requiring consultation before purchase. Additionally, regulations may stipulate requirements for patient counseling on NSAID risks and proper usage, empowering pharmacists to provide comprehensive guidance. Compliance with regulatory standards ensures that community pharmacists serve as frontline advocates for safe NSAID use, mitigating risks and promoting patient well-being.

5. Limitations of the Study

Our study only included pharmacists who work in accredited pharmacies and did not include pharmacy technologists who most of the time also dispense NSAIDs. In addition, the proportion of pharmacists who screen and disseminate information to patients may be significantly lower than our outcomes suggest. Social desirability and recall bias may have occurred and as such, an observational study would have been ideal in addition to the self-completed questionnaire, which requires pharmacists to self-report the frequency of their practices. In order to promote effective communication and patient-centered care, we recommend that future studies should explore the understanding of patient perspectives on receiving NSAID-related advice and their preferences for learning about medication risks.

6. Conclusion

Screening and dissemination of information about the risks associated with NSAIDs was not a regular practice among Zambian community pharmacists. Appropriate patient advice and counselling while on NSAIDs medications were also occasionally practiced which is needed to minimize adverse effects. Therefore, there is a need to pay greater attention to the dissemination of medication safety information as well as screening the adverse effects of NSAIDs by community pharmacists to patients, among them those who use these drugs in the

long term, have a history of Ulcer/GI bleeding, renal impairment, with cardiovascular disease and those at increased risk of experiencing ADRs such as the elderly.

Conflicts of Interest

The authors declare that they have no competing interests.

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