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## Knowledge, Attitude, and Practice of Over-the-Counter Drugs among Community Pharmacists and Nurses in the Gambia

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### Abstract

Over The Counter (OTC) drugs are drugs that can be sold in the pharmacy without the prescription of registered medical practitioners. To assess the knowledge, attitude and practice of pharmacists, pharmacy technicians, pharmacy dispensary assistants and nurse dispensary assistants in dispensing OTC drugs in the Gambia. A cross-sectional questionnaire-based study was conducted to assess the KAP of OTC drugs among pharmacists, pharmacy technicians, and pharmacy dispensary assistants and nurse dispensary assistants dispensing in a pharmacy. A questionnaire was distributed via Google form and was responded by a total of 112 pharmacists, pharmacy technicians, pharmacy dispensary assistants and nurse dispensary assistants in the Gambia. A total of 112 participants responded to the questionnaire. About 60.7% of participants were males and 39.3% were females. Pharmacists were 13(12.5%) Pharmacy technician 19(17%) Pharmacy dispensary assistant 37(33.0%) Nurse dispensary assistant 29(25.9%). All participants were qualified and had a pharmacy degree/ diploma/ certificate. Among 112 participants, 149 (93.1%) had good knowledge, 93 (58.1%) positive attitude, 85 (53.1%) practiced toward OTC drug dispensing. Respondents' age and education qualification were significantly associated with knowledge. Knowledge of OTC drugs among community pharmacists was positively correlated with attitude. Community Pharmacists are aware of OTC drugs and have positive attitudes to periodically update information regarding OTC drugs but some of them were

less enthusiastic about the current standard treatment guideline STG of the Gambia. Thus, some of them lack the regular update of OTC drugs today.

**Key words:** Over The Counter (OTC) drugs, Community, Pharmacist, Nurse, Gambia

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## Introduction

OTC or nonprescription medicines are other terms for over-the-counter (OTC) medication (1). These words are all used to describe over-the-counter medications (2). When used as prescribed by your healthcare provider and in accordance with the label's instructions, they are both safe and effective (3).

### OTC medicines can be classified into two categories:

- **The first category of OTC medicines** is the ones that have been under the category of non-prescription medicines since the time they were introduced (4).
- **The second category of OTC medicine** is those that had been prescription medicines initially but were later shifted to the OTC category (5).

The World Health Organization (WHO) defines self-medication as the choice and application of medications by people to address ailments or symptoms that they have identified on their own (6). Purchasing medications without a prescription, utilizing leftover medications that are kept at home, exchanging medications with family or friends, or obtaining medications without a prescription are all examples of self-medication (7).

Many nations have set rules for the use of over-the-counter medications and acknowledge them as a distinct class of drugs (8). That being said, a significant number of medications have been deregulated and made accessible as over-the-counter medications over time (9). Presently, the United States alone offers over three million distinct over-the-counter medications (10). OTC pharmaceuticals, often known as non-prescription drugs, are a class of medications that are available over-the-counter (OTC) without a prescription from a licensed healthcare provider. The Food and Drug Administration (FDA) regulates these medications through OTC drug monographs (11).

The Gambia has a high trend of over-the-counter drug use (12). In The Gambia, over-the-counter medications are not recognized by law, but any medication that is not on the list of "prescription only" medications is regarded as non-prescription medication (13). Page 5 of the Standard Treatment Guidelines (STG) 2017 of the Gambia states that prescription-only medications are fully and thoroughly explained.

According to the Statista market forecast The Over-the-Counter Pharmaceuticals market comprises over-the-counter medicine that can be purchased without a medical prescription (14). The market is subdivided into Analgesics, Cold and Cough Medication, Digestives and Intestinal Remedies, Skin Treatment products and Vitamins and Minerals (15). It includes both products which are exclusively sold in pharmacies and products which can be purchased elsewhere (16). Sales by hospitals are not included.

- Again according to the statistical platform call Statista market forecast: Revenue in the OTC Pharmaceuticals market amounts to US\$3,115.00k in 2023 (17). The market is expected to grow annually by 8.97% (CAGR 2023-2027).
- The market's largest segment is the segment Vitamins & Minerals with a market volume of US\$870.00k in 2023.

These statistics and numbers show the heavy reliance on OTC drugs in the Gambia therefore the dispensers of these medications should be well-updated about their dangers.

### **Safe use of OTC drugs:**

- Consult your doctor or pharmacist before purchasing an OTC product
- Read the label carefully
- Do not take medicines with the same active ingredients
- Only treat the symptoms you have
- Keep a current list of medicines you take
- If you are pregnant or breastfeeding consult with your doctor before taking an OTC medicine
- Remember herbal supplements are not the same as OTC medicines
- Always check the expiration date
- Only use the measuring device that comes with the OTC product
- Seek medical attention if your symptoms get worse or you experience side effects

The drugs you buy at the store are referred to as over-the-counter (OTC) (19). You do not need a prescription from your doctor. They enhance your quality of life through the treatment or prevention of common health concerns (20). These could include soreness, allergies, diarrhea, the flu, or nausea. OTC drugs, however, could have negative side effects. These are what we call adverse effects.

They include: Side effects, drug-drug interactions, food-drug interactions, allergic reactions

### **Side Effects:**

The physiological effects of medications that do not alleviate your symptoms are known as side effects. Most adverse effects are uncomfortable (21). Nausea, lightheadedness, or bleeding in the gastrointestinal tract is a few instances. Side effects can occasionally be advantageous. For instance, some antihistamines may make you drowsy (22). Those who take antihistamines during the day may have negative effects from this. However, if you take an antihistamine at night, this side effect may make it easier for you to obtain the rest you require (23). True drug allergies are not the same as side effects. Those occur far less frequently (24).

### **Drug-drug Interactions:**

Every medication is metabolized differently by the body. The interactions between medications can alter how they function in the body (25). We refer to this as a drug-drug interaction. It occurs with both prescription and over-the-counter medications (26). It may make it more likely for you to experience adverse drug reactions.

- **Duplication:** This occurs when two medications with comparable active components are used (27). You can receive more medication than you require from it. An illustration would be using an anti-inflammatory prescription drug along with over-the-counter ibuprofen (Advil, Motrin) (28). Your kidneys or liver may suffer if you take too much of an anti-inflammatory or painkiller (29).
- **Opposition:** Drugs containing active components that interact with your body in different ways can occur (30). This could make one or both medications less effective. One example of an OTC decongestant that could increase blood pressure is (31). This may act in opposition to or interfere with blood pressure-lowering medications (32).
- **Alteration:** A medication may alter how another medication is absorbed, distributed, or processed by your body (33). Aspirin, for instance, may alter the effectiveness of some prescription blood thinners (34).

### **Drug – food interactions:**

Food may alter how your body reacts to certain over-the-counter or prescription medications (35). A drug-food (or drug-nutrient) interaction is what is meant by this. There are situations

where the components of a medication you take can be impacted by what you eat and drink (36). This may hinder the medication's ability to function as intended. For instance, the stomach lining is often the route via which oral medications are absorbed. This is also how the nutrients in the food you eat are absorbed. Your body may not be able to absorb a medication as intended if you take it with meals even though the instructions state not to (37).

Not every OTC medication is impacted by food. However, there are some medications where it matters what and when you eat. For this reason, it's recommended to take some medications empty-handed (38). This implies two hours after eating or one hour before. However, taking certain medications with food improves their absorption or processing (39).

### **Allergic Reactions:**

Although uncommon, some people have allergies to specific medications. Itching, rash, hives, and breathing difficulties are indications of an allergic reaction (40). Steer clear of medications that contain the same chemicals if you've ever experienced an allergic response to one. If you believe you may be experiencing an allergic reaction, contact your physician or get emergency medical attention (41).

### **Role of pharmacists, pharmacy technicians, pharmacy dispensary assistants, and nurse dispensary assistants in dispensing otc's:**

Pharmacists continue to be the patient's best resource for selecting OTC products, even while more is being done to raise awareness of the significance of OTC drug safety and appropriate usage (42). Furthermore, even though it's crucial that all patients use over-the-counter (OTC) products correctly, people in their advanced years, those with pre-existing medical conditions like diabetes, children, and those who are currently taking prescription medications should always speak with a healthcare provider before using OTC drugs to rule out any potential contraindications, drug-drug interactions, food-drug interactions, drug-alcohol interactions, and/or dosing errors.

Pharmacists should advise patients who take multiple over-the-counter medications to always check the active ingredients of these medications to make sure a specific ingredient isn't present in another medication they are taking. They should also advise patients to use only OTC products that specifically address their symptoms to avoid using unnecessary combinations of medications. The role of the pharmacist and dispensers will grow in tandem with the advancement of the pharmacy profession. Despite these developments, pharmacists will always be regarded as the authorities on drugs and the primary resource for drug information for any patient using these products (43).

Pharmacists should continue to be available to patients even if they cannot counsel every patient who uses an over-the-counter product. Pharmacists should take advantage of the chance to inform patients on the significance of utilizing these products correctly when a patient does ask for advice regarding them. Over-the-Counter (OTC) drugs can effectively treat a range of common ailments when used appropriately. Patients can use pharmacist recommendations to make informed decisions about over-the-counter product use.

Unfortunately, in the Gambia, the community pharmacies lend more on selling than making sure the patient's health comes first, most if not all the pharmacies in the Gambia sells prescription drugs without a prescription from a doctor e.g. anti-malarial drugs, antibiotic etc. and this is a growing trend and it seems to continue unless the regulatory departments step up.

Medications sold to patients or consumers over-the-counter do not require a prescription from a medical professional. OTC medicine dispensing without a prescription may be influenced by different factors in developed and developing nations, therefore efforts to design remedies must take into account the local context and target the underlying reasons. The knowledge and attitudes of pharmacists about the dispensing of over-the-counter pharmaceuticals have not been thoroughly studied, despite the fact that professional proficiency in this area is crucial. Therefore, the purpose of this study was to investigate the knowledge, attitudes, and practices of pharmacists, pharmacy technicians, and dispensary assistants in The Gambia regarding the distribution of over-the-counter (OTC) pharmaceuticals.

## Materials and Methods

### Cross-Sectional Study:

**Study Population:** Pharmacist, pharmacy technicians and dispensary assistant in the Gambia. Data was collected using questionnaires which consist of 5 knowledge questions, 4 attitudes and 11 practice a total of 20 questions.

**Study Duration:** The study was conducted for a period of six months (3<sup>rd</sup> June to 10<sup>th</sup> December 2023)

**SAMPLE SIZE:** Determined using RAOSOFT sample size calculator, at a confidence interval of 95% and a margin of error is 5%, the minimum required sample size was 109 for the population of 150.

**Inclusion criteria:** Pharmacist, pharmacy technicians, pharmacy dispensary assistant and nurse dispensary assistance. Both male and female pharmacists, pharmacy technicians, pharmacy dispensary assistants and nurse dispensary assistants.

**Exclusion criteria:** Pharmacists, pharmacy technicians, pharmacy dispensary assistants and nurse dispensary assistant that is not willing to participate in the study.

Study tool:

Pre-validated questionnaire in the English language with four sections (i.e., socio-demographics, knowledge, attitude, and practice) was utilized during the data section.

### Socio-demographic information:

Some questions related to socio-demographics were asked during the study including name, age (later categorized into three categories such as 15-25 years, 26-35 years and above 60 years), gender (male/female), and educational qualification (pharmacist, pharmacy technician, pharmacy dispensary assistant and nurse dispensary assistance).

### Knowledge, Attitude, and Practice:

The questionnaire had 20 questions (5, 4, and 11 in number for the assessment of KAP about OTC) respectively.

The Google form was used to distribute the questionnaires; to complete it online, participants must have an email address; once completed, the response is instantly saved. They were informed that their identity would not be disclosed throughout the study and that writing their name was not required. A score of one was given for each right answer or positive reaction, and a score of zero was given for incorrect or negative responses. For the final analysis, only the questionnaire completed by the appropriate personnel was used.

### Statistical analyses:

SPSS\_Statistics\_Client\_27.0.1\_Win\_64bit.exe was used to analyze the data. Descriptive statistics for total score of knowledge, total score for attitude and total score for practice variables were used to analyze the results of the study. Categorical data are reported as frequencies and percentages (%).

**Results and Discussion**

**Figure 1 Total Points Distribution between Average, Median and Rang**



**SOCIO – DEMOGRAPHICS**

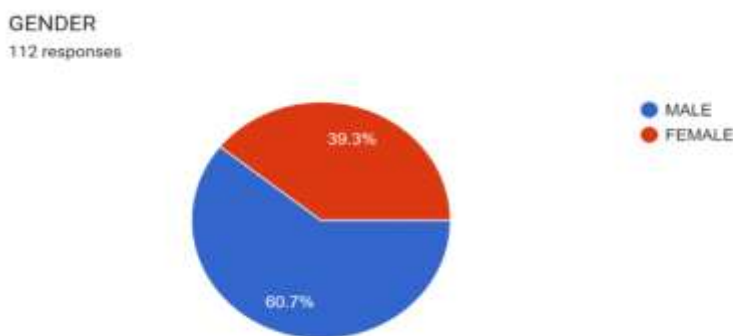
**i. Gender wise Distribution**

Among 112 study participants, 68 (60.7%) were males and 44 (39.3%) were females. Male participants are more compared to females. The [Table 1./Fig 2] summarizes the gender-wise details of participants.

**Table 1 Gender-wise Distribution**

GENDER	NO OF PARTICIPANTS	%
MALE	68	60.7%
FEMALE	44	39.3%

**Figure 2 Gender-wise distribution**



**ii. Education wise Distribution**

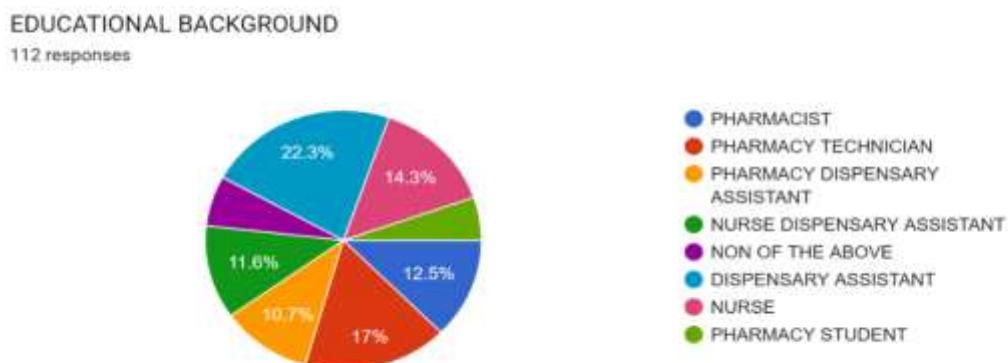
In this study almost all the participants have had training in various departments of the pharmacy department or at least the nursing department therefore it is categorized in the following [Pharmacist 14 (12.5%), Pharmacy technician 19 (17%), Pharmacy dispensary assistant 37(39.3%), Nurse dispensary assistant 29(25.9%)]. Among all these categories the Pharmacy dispensary assistant participation is the highest. The [Table 2/ Fig 3] summarizes the education-wise details of participants.

**Table 2 Education-wise Distribution**

EDUCATION	NO. OF PARTICIPANTS	%
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PHARMACIST	14	12.5%
PHARMACY TECHNICIAN	19	17%
PHARMACY DISPENSARY ASSISTANCE	37	39.3%
NURSE DISPENSARY ASSISTANCE	29	25.9%

**Figure 3 Education-wise Distribution**



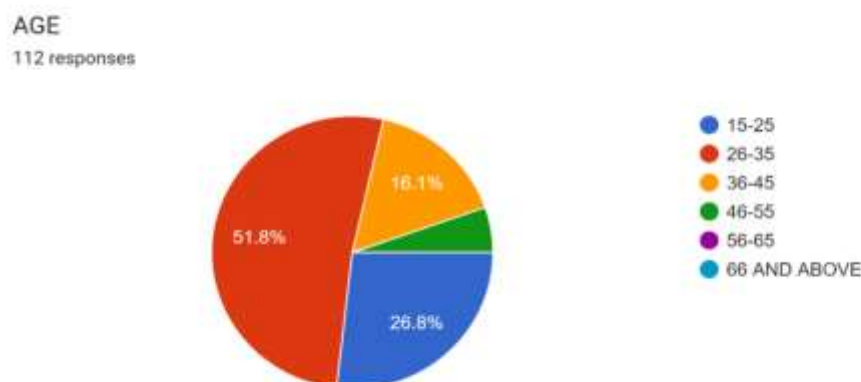
**iii. Age-wise Distribution**

The age of participants in this study is categorized into three groups namely 15-25 years (26.8%), 26-35 years (51.8), 36-45 years (26.8%) and 46-55 (5.4%). The [Table 3/Fig 4] summaries the age-wise details of participants.

**Table 3 Age-wise Distribution**

AGE	NO OF PARTICIPANTS	%
15-25	30	26.8%
26-35	58	51.8%
36-45	18	26.8%
46-55	6	5.4%

**Figure 4 Age-wise Distribution**



**COMMUNITY PHARMACIST KNOWLEDGE OF OTC DRUGS**

Responses pertaining to knowledge by the participants are depicted in Table 4.

**Table 4 Response to Knowledge-based Questions**

S. NO	KNOWLEDGE RELATED QUESTIONS	CORRECT RES	%
1	Can OTC drugs be dispense without prescriptions?	95	(84.8%)
2	In medical terms what does OTC stand for?	102	(100.3%)
3	Are NSAIDs OTC drugs?	56	
4	Is (DICLOFENAC) useful in managing pain for stomach ulcers?	99	(88.4%)
5	Do you think the ease of getting PARACETAMOL increases the risk of liver toxicity/kidney damage?	101	(91%)

#### COMMUNITY PHARMACIST ATTITUDE ABOUT OTC DRUGS

Responses of participants regarding questions related to attitude are depicted in table 5.

**Table 5 Response to Attitude base questions**

Response to Attitude based question

S.NO	ATTITUDE RELATED QUESTIONS	CORRECT RES	%
6	Do you think all analgesics should be available as OTC drugs?	86	(76.8%)
7	Do you think anti-biotic should be available as OTC drugs?	89	(79.5%)
8	Do you think there should be age limit to buy OTC drugs?	99	(88.4%)
9	Are you concern about the misuse of OTC drugs?	112	(100%)

#### COMMUNITY PHARMACISTS PRACTICE ABOUT OTC DRUG

Responses of participants regarding questions related to practice are depicted in Table 6.

**Table 6 Response to practice base questions**

Response to Practice-based questions

S.NO	RPRACTICE RELATED QUESTIONS	CORRECT RES	%
10	How up-to-date are you with OTC drugs?	105	(93.8%)
11	If any, what application, document or guideline do you use for reference in your pharmacy?	100	(89.9%)
12	Are you having the standard treatment guideline (STG) of the Gambia? If yes how often do you use it as a guideline?	100	(89.9%)
13	Do you ask for prescription before dispensing a prescribed drug?	109	(99.1%)
14	Does your pharmacy have a separate consultation room for patients?	75	(68.8%)
15	How often do you refer your patients to consult a doctor when they come with any discomfort or you just give them a medicine to ease their ailment?	108	(97.3%)
16	Do you help your patients alternate between brands when the prescribe drug is not available?	94	(84.7%)
17	Do you call the prescriber to consult while changing the prescribe brand?	96	(86.5%)
18	Have you dispensed prescription drugs to a patient without a prescription?	92	(82.9%)



19	Have you refused to sell OTC drugs to a patient base on a suspicion of misuse of the drug?	110	(82.7%)
20	Do you have weighing scale, temperature checker or height measurement tools in your pharmacy?	93	(84.5%)

**Table 7** Overall score for knowledge base questions obtain from spss

Overall score for knowledge base questions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	POOR	29	25.4	25.4	25.4
	GOOD	85	74.6	74.6	100.0
	Total	114	100.0	100.0	

There is a strong degree of knowledge 85 good and 29 poor in the score line towards OTC drugs in community pharmacy (Table 7).

**Table 8** Overall score for Attitude base questions obtain from spss

The overall score for Attitude base questions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	POOR	60	52.6	52.6	52.6
	GOOD	54	47.4	47.4	100.0
	Total	114	100.0	100.0	

There is a difference between the poor 60 and the good 54 in the attitude of the participants towards OTC drugs in community pharmacies (Table 8).

**Table 9** Overall score for Practice base questions obtain from spss

The overall score for Practice base questions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	POOR	3	2.6	2.6	2.6
	GOOD	111	97.4	97.4	100.0
	Total	114	100.0	100.0	

There is an excellent degree of practice 111 good and 3 poor in the score line towards OTC drugs in community pharmacy (Table 9).

**Comparison between KAP scores and age**

Anova knowledge, Attitude and Practice scores of age groups such as 15-25,26-36 were found to be .159, .766 and .850 respectively (Table 10).

**Table 10** Comparison of mean score between Age groups

		Sum of Squares	df	Mean Square	F	Sig.
knowledge	Between Groups	.989	3	.330	1.758	.159
	Within Groups	20.633	110	.188		
	Total	21.623	113			
Attitude	Between Groups	.293	3	.098	.382	.766
	Within Groups					

	Within Groups	28.128	110	.256		
	Total	28.421	113			
Practice	Between Groups	.021	3	.007	.266	.850
	Within Groups	2.900	110	.026		
	Total	2.921	113			

There was no statistically significant difference in the knowledge score between age groups and no significant difference in attitude and practice scores (Table 10).

## Discussion

Developing countries in general Gambia in particular have a long way in healthcare related problems and pharmacy is no doubt a vital part of the healthcare sector. Lack or inadequate doctors in the system means patients highly depend on the pharmacies for answers related to their health issues, it's no secret that community pharmacists, pharmacy technicians and dispensers are the first responders to most of the patient's early complaints. OTC drugs are consumed and dispensed in a high demand and this is not about to slow down but in fact, one can confidently say it will continue on the rise. If this trend continues which it will then the Gambia will continue to see self-medication from patients, pharmacy outlets will dispense regards of your physical symptoms, fewer blood works done business will become a priority instead of patient care, some prescription medicines will be unlawfully categorized as OTC for example antibiotics. Currently, there is this fear amongst health practitioners that few antibiotics might become resistant in the system of most Gambians this is due to the easy and frequent access to the public. Paracetamol in the Gambia is seen by most patients as ineffective to their pains because of its high consumption. The fact that Gambia only registered 33 pharmacists shows the possible lack of knowledge of the dangers in the medication and out of these 33 pharmacists very few are engaged in the community pharmacy which in itself is a problem and a concern for both the patients and the health system. Although OTC drugs empower the patients, their use may lead to mind-boggling harm to the consumers. Their improper use and inability to follow the necessary precautions due to lack of knowledge of their side effects and interactions could lead to serious complications, especially in children and the elderly. Hence, the public must be educated on the type of illnesses that are to be self-diagnosed and medicated and about the pitfalls and hazards of OTC. It is with urgency that all the pharmacists, pharmacy technicians, and dispensary assistants take it as a responsibility to educate and advise patients about the side effects and dangers of drugs especially since they are the last point of contact between the patients and the medications in both the community and hospital pharmacy. It is disturbing to see a pharmacy operating without a single well-qualified pharmacist or pharmacy technician in the settings or a pharmacy without a single council room for its patients, this is exactly what happens if we don't have the right people in the right positions what this leads to if instead of seeing the patients as patients, we consider them as customers as if the pharmacy outlet is just another business driving by profit. Pharmacy is a noble profession and we are meant to serve our patients anything less than that is a betrayal the oath and the profession thus it's the pharmacist's responsibility to drill that into the mind of each and every subordinate of theirs and most importantly their license rental holders. One of the main reasons for this KAP study was to understand the knowledge attitude and practice but unfortunately, most of the pharmacies did not respond to the questionnaire majority of the responders were dispensary assistants this to me shows the lack or insufficient involvement of pharmacies in the community pharmacy working setup. It will be hard if not impossible to conclude from this KAP study about the problems I believe more studies need to be done in this area, especially after the incident of the imported OTC syrup drugs that killed over 66 children in the Gambia during the 2022 year, these medications are said to be imported from India by a licensed pharmacist this is something to be a concern of because the license bearer is a registered pharmacist and it came in legally to the system and was dispensed legally in the community pharmacies by other pharmacist, pharmacy technicians, and dispensary assistant my point is even though those drugs were OTC but the damage and lives it took within the short period of time is scary, there for both the pharmacist and the regulatory departments, in general, should be vigilant and make sure the knowledge to carry out these duties should not be overlooked even for a second.

## Conclusion

This study concluded that the participants have a high level of knowledge and practice but a low level of attitude regarding the use of OTC drugs. I believe a further and more controlled study should be done on this topic. The standard treatment guideline STG should be updated as it was a concern for most and it's scary that most don't even use it anymore, the concerned bodies or regulatory bodies should try to engage the dispensers frequently in updating their knowledge not only in OTC drugs but drugs and its mechanisms in general. The relationship between community pharmacists and the doctors in the hospital should be improved significantly for the benefit of the patients.

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