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Self-medication with over-the-counter drugs among consumers: a cross-sectional survey in a Southwestern State in Nigeria

Wuraola Akande-Sholabi , Olamide Olubodunde Akinyemi

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Department of Clinical Pharmacy and Pharmacy Administration, Faculty of Pharmacy, University of Ibadan, Ibadan, Nigeria

Correspondence to
Dr Wuraola Akande-Sholabi; wuradol@gmail.com

ABSTRACT

Objectives This study set out to assess the knowledge, perception and practices of consumers regarding self-medication with over-the-counter (OTC) drugs, the prevalence of risky practices and their associated factors in pharmacy outlets in Ibadan, Southwestern Nigeria.

Setting A cross-sectional study was conducted using an interviewer administered questionnaire. Descriptive statistics and multivariate analysis were performed by using SPSS V.23 with statistical significance set at p<0.05.

Participants 658 adult consumers aged 18 years and above.

Primary and secondary outcome measures The primary outcome was self-medication, measured using the following question: A positive answer indicates a self-medicated participant. Do you practise self-medication?

Results Respondents who had practised self-medication with OTC drugs were 562 (85.4%), of which over 95% were involved in risky practice. Consumers agreed (73.4%) that OTC drugs can be recommended by pharmacists and perceived (60.4%) that OTC drugs are harmless regardless of how they are used. Reasons for practising self-medication with OTC drugs include: if it is a minor condition, I can take the initiative (90.9%), visiting a hospital wastes my time (75.5%) and ease accessibility of the pharmacy (88.9%). Overall, (83.7%) respondents had good practices of handling and use of OTC drugs, while (56.1%) had good knowledge of OTC drugs and identification of OTC drugs. Factors associated with consumer handling and use of OTC drugs in self-medication were older participants (p=0.01), those with postsecondary education (p=0.02), and who possessed good knowledge (0.02), were more likely to practise self-medication with OTC drugs.

Conclusion The study revealed a high prevalence of self-medication, good practices towards handling and use of OTC drugs, and moderate knowledge of OTC drugs by the consumers. This underscores the need for policy-makers to introduce measures to enforce consumer education by community pharmacists to minimise the risks of inappropriate self-medication with OTC drugs.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ An adequate sample size considered as representative study participants with a high response rate was a major strength of the study.
⇒ The findings of the study are subjected to recall bias by the study participants as consumers were asked to provide a history of use.
⇒ Our study explored the knowledge, perception and practices of consumers regarding over-the-counter drugs and self-medication as well as the prevalence of risky practice.

BACKGROUND

Over-the-counter (OTC) drugs, which can be purchased by consumers without a medical prescription, are believed to be relatively safe and are appropriate for use without the supervision of healthcare professionals.[1]

These drugs are used as means of self-medication with the aim of preventing diseases and maintaining health,[2] but such products can be misused or abused. The drugs used for self-medication are mostly OTC drugs, that is, they are legally available without a prescription.

Self-medication is a common practice in both developed and developing countries. A cross-sectional study, conducted in Pakistan, Serbia and India, showed that the prevalence of self-medication was 76%,[3] 79.9%[4] and 78.6%,[5] respectively. In Europe, research studies in Spain reported the incidence of self-medication to range from 14% to 90.1%,[6–8] while in Africa, the frequency of self-medication ranges from 11.9% to 75.7%.[9]

Ease of access to medicines and lack of access to healthcare services, degree of patient satisfaction with the healthcare provider, cost of the drugs, socioeconomic factors, educational level, age and gender are factors that may be responsible for this high prevalence globally.[10–12] Other personal factors such as having desired relief after self-medication, the notion of having experienced similar symptoms previously and being able to have successfully managed them, the fear of being diagnosed with a serious disease,

and the need to improve one's health and ease symptoms prior to using healthcare services have been reported to contribute to its prevalence.[11–13]

When self-medication is practised in the right way, it positively impacts the health of the individual and the healthcare system at large. Nonetheless, appropriate self-medication requires the individual to accurately recognise symptoms, set therapeutic objectives, select the appropriate medicine to be used for their medical condition, and determine the appropriate dosage and dosage schedule, considering their medical history, contraindications, and possible side effects of the medicine.[14] Inappropriate self-medication with OTC drugs can have serious implications (including deaths), especially in extremes of age (paediatrics and geriatrics), pregnant and lactating mothers, and patients with comorbidities.

There is no information on the present state of self-medication among the population of Ibadan with OTC drugs, and there is a paucity of literature regarding this in Nigeria at large. Therefore, this study aims to assess the knowledge, perception and practices of consumers regarding self-medication with OTC drugs, as well as determine the prevalence and other associated factors of self-medication with OTC drugs in Ibadan.

METHODS

Study design and setting

This study was a questionnaire-guided cross-sectional survey among consumers who visited selected community pharmacies in Ibadan, between June and August 2021.

Patient and public involvement

Patients or the public were not involved in the design, or conduct, or reporting, or dissemination plans of our research.

Study population

Consumers who visited selected community pharmacies in Ibadan, Oyo State, Southwestern Nigeria.

Study area

This study was conducted in Ibadan, this is the capital city of Oyo State in the southwestern area of Nigeria. Oyo State has a population of 5.6 million,[15] while Ibadan has a population of 3.6 million inhabitants and Ibadan consists of 11 local government areas (LGAs).

Study site

First, the list of community pharmacy premises in Ibadan was obtained from the Pharmacist Council of Nigeria (PCN), Oyo State chapter. Thereafter, community pharmacies premises were stratified by LGA. Of the non-systematically arranged 140 community pharmacy premises, 30 community pharmacy premises were randomly selected by probability proportionate to size. This is to ensure that each LGA was represented by at least one community pharmacy depending on the population of community pharmacies in that LGA.

Inclusion and exclusion criteria

All consenting consumers aged over 18 years who visited the selected community pharmacies were included in the study. Patients with cognitive impairment were excluded from the study.

Sample size determination

Managers of the selected pharmacy premises were asked to provide estimates of the average number of consumers per day. These numbers were summed, and the mean was obtained to give 1300 consumers per month, per community pharmacy. Using the assumption of 95% confidence level and 5% margin of error, a sample size of 314 was obtained using the Yamane sample size formula.[16] Adjusting for a 10% non-response rate that will allow for a large sample size gave a target sample population of approximately 345 for consumers. The number of consumers to be interviewed at each community pharmacy was allocated proportionally to the estimated average number of customers per day.

Sampling and data collection procedure

A consecutive sampling technique/approach was used for the participants' enrolment. The study was conveyed out in designated community pharmacies in Ibadan, comprising a minimum of one pharmacy from each LGA in Ibadan. Researcher visited the designated registered community pharmacy based on the PCN register for the study year. A total of 140 community pharmacies were registered in the year 2021 in the PCN register. Objectives and process of the study were described to the superintendent pharmacists in all the pharmacies visited, after which consent to relate with consumers who visited the pharmacy was attained. Thirty community pharmacies ultimately gave consent for the conduct of the study in their facility. Consequently, consumers who visited the selected pharmacies for refill of prescription or health-related issues were accosted, the aim of the study was elucidated to the consumer personally, while verbal informed consent was obtained. The consumers were interrogated with a questionnaire. Interrogation with questionnaire to consumers continued every day of the week, this was done by the researchers, while targeting the busiest consumer patronage for each pharmacy. Participants were guaranteed of their anonymity and confidentiality of response. Measures were put in place to ensure that no consumer was interrogated more than once. This was attained by coding of each questionnaire distributed to the consumers from each community pharmacy and asking if they had participated in the study earlier to avoid duplication. Consumers who did not understand English were interrogated by the researcher with a translated questionnaire, however, back-translation was subsequently done to ensure response consistency. An average of 23 clients was interrogated per consented community pharmacy.

Pretest and content validation

Face and content validity of the questionnaire was determined by four academics with pharmacy and public health expertise. The validation was done to rid the questionnaire of any ambiguity and to ensure its appropriateness in keeping up with the objectives of the study. Thereafter, a pilot test was done by means of a pretest, to check the comprehensibility of the questions at 5 randomly selected pharmacy outlets, 50 consumers were interviewed with a questionnaire to ensure the validity of the questionnaire. These pharmacies and consumers were not included in the main study. After the pretest, necessary modifications were made in the final version of the questionnaires.

Data collection instrument

To obtain the relevant information required for this study from the participants, an interviewer administered questionnaire was used.

For this study, a well-structured questionnaire was constructed on a review of similar studies,[1 17] as well as using researchers' skill. The content of the questionnaire was slightly modified to suit the objectives of the study. The questionnaire consists of five sections. Section A evaluated sociodemographic characteristics of the consumers such as age, gender, educational level and residential area settlement. Section B consisted of questions on consumers' level of knowledge and identification of classes of medications that are OTC. The questions were evaluated on a 3-point Likert rating scale from agree (2) to disagree (0) to explore and evaluate consumers' knowledge of OTC drugs. Section C comprises questions on consumers practices towards handling OTC drugs. Section D evaluated reasons for self-medication with OTC drugs and conditions treated. Section E included questions on the perception of consumers on pharmacists' approach and safety of OTC drugs. The questions were evaluated on a 5-point Likert rating scale from strongly agree to strongly disagree (see online supplemental file 1).

The overall score for the knowledge and practice questions was categorised into 'good' and 'poor' depending on the respondents score in each domain. For the consumers, a total score of at least >12 (≥60%) out of the maximum obtainable score of 20 was categorised as 'good' knowledge, while a knowledge score <12 (<60%) was categorised as 'poor' knowledge. With 10 being the maximum obtainable score for the practice questions, a total score of at least 6 (≥60%) was categorised as 'good' practice while a score <6 (<60%) was categorised as 'poor' practice. The binary categorisation was adapted from Bloom's cut-off criteria and other similar studies.[18 19] A respondent was considered to show risky practice if he/she failed to check expiry dates or read labels, failed to consult their pharmacist or physician when an OTC drug did not work for their symptoms, took more than the recommended dose, took expired drugs or continued consuming OTC drugs even though he/she noticed unusual colour, odour or shape changes. Definition of self-medication in this study was 'use of OTC drugs by the consumer to treat self-recognised disorders or symptoms, or the intermittent or continued use of these drugs prescribed by a physician for chronic or recurring diseases or symptoms'.

Data processing and analysis

Data were coded, cleaned and analysed by using the IBM-SPSS V.23. Descriptive statistics such as frequency counts and percentages were used to summarise and present the result. Cronbach's alpha reliability test was carried out on the 5-item knowledge and 10-item perception scales for internal consistency of the questionnaire among 50 consumers recruited for pretest. Negatively worded questions were reversed before the analysis was carried out. Cronbach's alpha coefficient was 0.68 and 0.65 for the 5-item knowledge scale and 10-item perception scale, respectively.

χ^2 test was used to investigate the association between knowledge, and practices of OTC drugs usage by consumers, and all results were deemed to be statistically significant when $p<0.05$.

RESULTS

Sociodemographic characteristics

Out of the 687 questionnaires distributed to the consumers, 658 completed the questionnaire successfully with a response rate of 95.8%. Three hundred and fifty-two were females (53.5%), many were married 433 (65.8%), had postsecondary education 443 (67.3%), aged 30–39 years 269 (40.9%) and living in urban areas 495 (75.2%).

Knowledge of consumers on OTC drugs and identification of classes of medications that are OTC drugs

Of the 658 participants, 539 respondents (81.9%) agreed that OTC drugs can be purchased without a doctor's prescription and 483 respondents (73.4%) agreed that OTC drugs can be recommended by a pharmacist. Less than half 288 (43.8%) agreed that OTC drugs can be affected by storage conditions and 346 (52.6%) agreed OTC drugs can expire. Most of the respondents 618 (93.9%), 565 (85.9%) and 544 (82.7%) identified vitamin C, paracetamol and cough syrup as OTC drugs, respectively, while 603 (91.6%) stated that diazepam is not an OTC drug (see table 1).

Consumer practices towards handling OTC drugs

Majority of respondents, 554 (84.2%) admitted to buying OTC drugs to keep at home in case there is a use for it later in the future, while 584 (88.8%) claimed to always check the expiry date of an OTC drug before using it. When asked how long they keep an OTC drug at home for before discarding it, 518 (78.7%) responded to keep OTC drugs for less than a year, although 12 (1.8%) keep them for greater than a year, and 52 (7.9%) claimed that they do not discard their OTC until it expires. Majority of the respondents 581 (88.3%) claimed that they have never

Table 1 Knowledge of consumers on over-the-counter (OTC) drugs (n=658)

Variables (n=658)	Agree n (%)	Neutral n (%)	Disagree n (%)
OTC drugs can be prescribed by a doctor	510 (77.5)	72 (10.9)	76 (11.6)
OTC drugs are drugs that can be purchased without a doctor's prescription	539 (81.9)	66 (10.0)	53 (8.1)
OTC drugs can be recommended by the pharmacist	483 (73.4)	154 (23.4)	21 (3.2)
OTC drugs are affected by storage conditions such as temperature, moisture or light	288 (43.8)	308 (46.8)	62 (9.4)
OTC drugs can expire	346 (52.6)	287 (43.6)	25 (3.8)

Identification of classes of medications that are OTC drugs (n=658)	Response category	Frequency (%)
Cough syrup	Yes	544 (82.7)
Answer—yes	No	114 (17.3)
Piroxicam	Yes	196 (29.8)
Answer—yes	No	462 (70.2)
Blood tonic	Yes	457 (69.5)
Answer—yes	No	201 (30.5)
Ibuprofen	Yes	397 (60.3)
Answer—yes	No	261 (39.7)
Diazepam	Yes	55 (8.4)
Answer—no	No	603 (91.6)
Tramadol	Yes	281 (42.7)
Answer—no	No	377 (57.3)
Vitamin C	Yes	618 (93.9)
Answer—yes	No	40 (6.1)
Loperamide	Yes	186 (28.3)
Answer—yes	No	472 (71.7)
Paracetamol	Yes	565 (85.9)
Answer—yes	No	93 (14.1)
Codeine	Yes	162 (24.6)
Answer—no	No	496 (75.4)

Cut-off score	Frequency (%)	Remark
>12 (>60%)	369 (56.1)	Good knowledge
<12 (<60%)	289 (43.9)	Poor knowledge
Mean score	8.9±2.1	

Maximum obtainable score=20; % individual score=score obtained by an individual/total obtainable score×100. Agree=2, neutral=1, disagree=0.

taken an expired OTC drug, while 77 (11.7%) admitted that they have. Most of the respondents 615 (93.5%) who had taken an expired OTC drug at one point, or another claimed that it was not intentional.

When asked if they read drug leaflets inserted in drug packages before using OTC drugs, 357 (54.3%) of the respondents affirmed that they read drug leaflets.

When asked what they would do if an OTC drug failed to work for their symptoms, 208 respondents (31.6%) reported that they would immediately consult their pharmacist or physician to make a complaint. Majority of the respondents 562 (85.4%) practised self-medication with OTC drugs (see table 2).

Perception of consumers on safety of OTC drugs

Few respondents 169 (25.7%) agree that OTC drugs are safe above the recommended dose. About two-thirds agreed OTC drugs are harmless regardless of how they are being used 397 (60.4%), while 443 (67.4%) agree that OTC drugs are safer than prescription drugs. It was reported by 533 (81%) that OTC drugs can cause side effects and 154 (23.4%) agree that it is acceptable for them to share an OTC drug that worked for them with their friend (see table 3).

Reasons for purchasing OTC drugs for self-medication and conditions OTC drugs are purchased for

Most respondents indicated they do not like visiting the hospital 493 (74.9%), going to hospital wastes their time 497 (75.5%) and believe they can take initiative if it is a minor condition 598 (90.9%). Pain and headache were the most frequently reported indications for use of OTC, followed by fever and cough (see table 4 for details).

Factors associated with the consumers practice towards OTC drug usage

Table 5 shows older participants (p=0.013), those with postsecondary education (p=0.024), and those who possess good knowledge (p=0.019), were more likely to practise self-medication with OTC drugs.

DISCUSSION

Self-medication with OTC drugs is a practice that represents a public health problem worldwide.[20] The prevalence of self-medication varies by country and target population, and ranges from 11.2 to 93.7%.[17 21 22] The prevalence of self-medication in this present survey was 85.4%. The variations in self-medication rates could be related to the study population and sociodemographic characteristics, the country's policies, socioeconomic factors, research methodology, data collection tools and the operative definition of self-medication. Self-medication with OTC drugs, when adopted effectively, can be beneficial as it may relieve acute pain and reduce treatment cost and physician interaction time.[21] However, it can also endanger human health and result in severe health-related complications when used inappropriately.

According to the participants, the most common reasons for self-medication with OTC drugs were time-consuming hospital visitations, easy access to the pharmacy and the non-seriousness of the illness. Several studies have reported

Table 2 Consumer risky practices towards handling over-the-counter (OTC) drugs (n=658)

Variables (n=658)	Response	Frequency (%)
Do you buy OTC drugs to keep at home in case there is a use for it later in the future?	Yes	554 (84.2)
	No	104 (15.8)
Do you check the expiry date of an OTC drug before using it?	Yes, I always check	584 (88.8)
	No, I never check	63 (9.5)
	Yes, if I had the drug at home before	11 (1.7)
How long do you keep an OTC drug in your house before you discard it?	<1 year	518 (78.7)
	>1 year	12 (1.8)
	After it has expired	52 (7.9)
	Till I finish it	15 (2.3)
	I don't know	61 (9.3)
Have you ever taken an expired OTC drug?	Yes	77 (11.7)
	No	581 (88.3)
If yes, was it intentional?	Yes	5 (6.5)
	No	72 (93.5)
Do you read drug leaflets before taking the drug?	Yes	357 (54.3)
	No	301 (45.7)
What do you do if you notice a change in colour, shape or odour of your OTC drug?	Keep taking the drug till it expires	30 (4.6)
	Consult the pharmacist	192 (29.2)
	Discard the drug	436 (66.3)
If an OTC drug does not work for your symptoms	Increase the dose	147 (22.3)
	Switch to a more powerful OTC drug	177 (26.9)
	Wait, hoping the symptoms subside	90 (13.7)
	Repeat the medication	36 (5.5)
	Consult a pharmacist or physician	208 (31.6)
Do you practise self-medication?	Yes	562 (85.4)
	No	96 (14.6)
How frequently do you practise self-medication	Often	38 (5.8)
	Occasionally	458 (69.6)
	Seldom	66 (10.0)
Cut-off score	**Frequency (%)**	**Remark**
<6 (<60%)	107 (16.3)	Poor practice
>6 (>60%)	551 (83.7)	Good practice
Mean score	7.4±1.1	

Maximum obtainable score=10, % individual score=score obtained by an individual/total obtainable score×100.

different reasons for self-medication with OTC drugs, including the non-seriousness of the illness, saving time, ease of accessibility and cost-effectiveness.[10 17 21 23 24] This also highlights the importance and centrality of community pharmacies and pharmacists, as we can invariably say that most of the respondents would prefer to get treatment at the community pharmacy, as it would be easier and quicker.

In the current study, pain, headache, fever, cough and the common cold were the most frequent conditions for which OTC drugs were purchased for self-medication. In various other studies conducted on self-medication and OTC drugs, the most prevalent conditions reported were headache, fever and pain.[3 21 25 26]

In terms of consumer's basic knowledge about OTC drugs and their identification, this study found that just about half of the respondents had good knowledge of OTC drugs and the identification of drugs that are classified as OTC. Even though majority of the respondents had good practices in handling OTC drugs, almost all the respondents were involved in risky practices. Moreover, about half of the respondents claimed they do not read drug information leaflets before using an OTC drug. This might be because package inserts are not available for all OTC drugs, especially those that are retailed and sold singly or in counting. A suggestion will be for community pharmacists to make available photocopies of the drug information leaflets for the OTC drugs dispensed outside of the original packs. Overdosing with the intention of improving treatment outcomes and switching to more powerful OTC drugs for symptom alleviation were identified as major risky practices by our study respondents. This finding emphasises the need for pharmacist counselling and education of consumers about OTC drugs and their potential dangers if used inappropriately. In this study, most of the respondents reported that they always check expiration dates before taking OTC drugs and discard OTC drugs when they notice a change

Table 3 Perception of consumers on safety of over-the-counter (OTC) drugs (n=658)

Variables (n=658)	SA n (%)	A n (%)	N n (%)	D n (%)	SD n (%)
All OTC drugs are safe within the recommended dose	243 (36.9)	359 (54.6)	43 (6.5)	10 (1.5)	3 (0.5)
All OTC drugs are safe above the recommended dose	35 (5.3)	134 (20.4)	209 (31.8)	155 (23.6)	125 (19.0)
All OTC drugs are safe below the recommended dose	70 (10.6)	113 (17.2)	209 (31.8)	154 (23.4)	112 (17.0)
OTC drugs are harmless regardless of how they are being used	74 (11.2)	324 (49.2)	164 (24.9)	61 (9.3)	35 (5.3)
OTC drugs can cause side effects	132 (20.1)	401 (60.9)	99 (15.0)	21 (3.2)	5 (0.8)
When prescribed, OTC drugs are safe otherwise, they are not	166 (25.2)	316 (48.0)	138 (21.0)	31 (4.7)	7 (1.1)
OTC drugs are safer than prescription drugs	153 (22.3)	297 (45.1)	134 (20.4)	53 (8.1)	21 (3.2)
OTC drugs pose no harm as long as you follow the directions on the drug leaflet	198 (30.1)	212 (32.2)	224 (34.0)	23 (3.5)	1 (0.2)
It's okay to share an OTC drug that worked for me with my friend that has similar symptoms	15 (2.3)	139 (21.1)	392 (59.6)	90 (13.7)	22 (3.3)
I adhere to the pharmacist's advice when taking prescription drugs than when taking OTC drugs	57 (8.7)	169 (25.7)	383 (58.2)	44 (6.7)	5 (0.8)

Strongly agree (SA), agree (A), neutral (N), disagree (D), strongly disagree (SD).

in colour or odour. However, just about one-third will consult a pharmacist if the OTC drugs do not work for a symptom or if there is a change in colour, odour or shape. These findings suggest that community pharmacists are probably not engaging/educating consumers when selling or giving out these OTC drugs. The role of a community pharmacist cannot be overemphasised in educating and enlightening consumers about OTC

Table 4 Reasons for purchasing OTC drugs for self-medication and conditions OTC drugs are purchased for (n=658)

Why do you purchase OTC drugs for Self-Medication?	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I do not like visiting the hospital	127 (19.3)	366 (55.6)	97 (14.7)	58 (8.8)	10 (1.5)
Going to the hospital wastes my time	116 (17.6)	381 (57.9)	94 (14.3)	55 (8.4)	12 (1.8)
If it's a minor condition, I can take the initiative	256 (38.9)	342 (52.0)	54 (8.2)	5 (0.8)	1 (0.2)
If it is a minor condition, the pharmacy is a reliable place to go	232 (35.3)	353 (53.6)	70 (10.6)	2 (0.3)	1 (0.2)
It is necessary for me to have drugs at home that I can use to treat minor conditions	257 (39.1)	314 (47.7)	69 (10.5)	17 (2.6)	1 (0.2)

Conditions for which OTC drugs are purchased

Variables (n=658)	Always (%)	Often (%)	Sometimes (%)	Rarely (%)	Never (%)
Pain	9.6	26.9	53.5	9.1	0.9
Allergy	2.4	8.7	20.5	29.0	39.4
Fever	4.1	18.1	49.5	16.3	12.0
Abdominal cramps	3.2	6.5	28.9	22.8	38.6
Constipation	2.6	10.6	33.7	24.8	28.3
Headache	8.8	17.8	45.7	17.3	10.3
Dermatological problems	1.4	4.9	15.3	26.1	52.3
Urinary tract infections	1.2	4.3	16.9	25.2	52.4
Cough	4.3	9.4	36.3	19.0	31.0
Diarrhoea	3.0	9.4	33.0	23.4	31.2
Common cold	4.0	11.9	28.9	23.1	32.2
Sexually transmitted diseases	0.8	2.3	14.0	19.1	63.8
Nausea and vomiting	1.5	5.3	13.4	20.1	59.7
Dietary supplements	2.4	6.2	14.6	17.2	59.6

OTC, over-the-counter.

Table 5 Association between relevant sociodemographic characteristics, knowledge of consumers about OTC drugs, using OTC drugs for self-medication and consumer practices towards handling OTC drugs

Variables (n=658)	Good practice (score ≥60%) n (%)	Poor practice (score ≥60%) n (%)
Gender		
Male	253 (82.7)	53 (17.3)
Female	298 (84.7)	54 (15.3)
$\chi 2$=0.471, p=0.493		
Age group		
≤19	33 (68.8)	15 (31.2)
20–29	172 (81.9)	38 (18.1)
30–39	234 (87.0)	35 (13.0)
≥40	112 (85.5)	19 (14.5)
χ^2=10.822, p=0.013*		
Educational level		
Secondary and below	170 (79.1)	45 (20.9)
Postsecondary	381 (86.0)	62 (14.0)
χ^2=5.112, p=0.024*		
Knowledge		
Good	320 (86.7)	49 (13.3)
Poor	231 (79.9)	58 (20.1)
χ^2=5.587, p=0.019*		

*Association statistically significant (p<0.05).
n, number; OTC, over-the-counter.

drugs when used in self-medication. We tend to think the high prevalence of self-medication is due to people with extensive knowledge of pharmaceutical products, such as doctors, nurses, pharmacists and other healthcare professionals. Interestingly, this study found that the prevalence of self-medication was also high in the non-healthcare provider group (85.4%). Furthermore, older participants, having postsecondary education and good knowledge, were more likely to practise self-medication with OTC drugs. This demonstrated that despite the fact that people are not healthcare professionals, they have a tendency to self-medicate with OTC medications. This phenomenon, however, may lead to drug-related problems if the self-medicators do not have accurate information about drug use or if pharmacists at drug stores do not provide adequate recommendations.

Pharmaceutical counselling provided by community pharmacists is particularly crucial when medications are purchased OTC without advice from a physician. In this study, about a quarter of the consumers believe that OTC drugs are safe above the recommended dose, and above half agree that OTC drugs are safe regardless of how they are being used. These findings suggest consumers probably have an incomplete awareness of several risk areas regarding OTC medications, such as those relating to drug–drug and drug–disease interactions.

Previous studies have reported that consumers consider OTC medications harmless and thus often underestimate the potential risks.[27–29]

LIMITATIONS OF STUDY

The results of the study are dependent on the response given by the study participants, thus there may be respondent recall bias, generalisation of study results should be limited. Also, the study did not exactly determine health outcomes after the practice of self-medication with these drugs. This will require future studies to measure the relevant variables. The translated questionnaire was not revalidated, hence caution in generality of the research findings. Despite this, the study still offers a key insight into the consumers knowledge, perception and practices of self-medication with OTC drugs, thereby illuminating the area of focus to bridge the knowledge and practice gaps.

RECOMMENDATION

Policy-makers through the Ministry of Health should introduce measures to enforce community pharmacists counselling practices, and consumer education on handling and use of OTC drugs.

CONCLUSION

The study revealed a high prevalence of self-medication, good practices towards handling OTC drugs and moderate knowledge of OTC drugs by the consumers. This underscores the need for policy-makers to introduce measures to enforce consumer education by community pharmacists to minimise the risks of inappropriate self-medication with OTC drugs. Older participants, having postsecondary education and possession of good knowledge, were significantly associated with the practice of self-medication with OTC drugs, notwithstanding, this act may lead to drug-related problems if the self-medicators do not have accurate information about drug use or if pharmacists at drug stores do not provide adequate recommendations. As a corrective action for improvement, health education through different media outlets and health facilities has paramount importance in advocating for appropriate and responsible self-medication with OTC drugs.

Contributors We declare that this work was done by the author(s) named in this article. WA-S conceived the idea, WA-S and OOA designed the study, contributed in data acquisition, performed data analysis and interpretation. WA-S drafted the manuscript. All authors contributed to the preparation of the manuscript, read and approved the final version. WA-S is responsible for the overall content as guarantor.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval Ethics approval for the study was obtained from the joint University of Ibadan/University College Hospital Institution Review Board with approval number UI/EC/21/0177. Verbal informed consent in accordance with the approved study protocol by the ethics committee was obtained from individual consumers and pharmacists after explaining the objectives and procedure of the study to participant individually. Verbal informed consent was deemed appropriate for our study being a questionnaire-based survey with questions carefully designed without infringement on participants' privacy. Only the consented participants within the study period were enrolled.

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ORCID iD

Wuraola Akande-Sholabi http://orcid.org/0000-0003-0869-1726

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