ORIGINAL ARTICLE

ISSN: 0331 - 670X

https://doi.org/10.51412/psnnjp.2026.007

The Nigerian Journal of PHARMACY
AS MEN OF HONOUR WE JOIN HANDS
THE OFFICIAL ORGAN OF THE PHARMACEUTICAL SOCIETY OF NIGERIA FOUNDED 1927

Knowledge and practices of medication dispensing and counselling of older people among pharmacists in Ogun State, Southwest Nigeria: A cross-sectional survey

Sule Ajibola Saka[1], Kofoworaola Hilda Ajao[2], Fatimah Adebukola Sanusi[3]

[1]Department of Clinical Pharmacy & Bio-Pharmacy, Olabisi Onabanjo University, Ago-iwoye, Sagamu Campus, Ogun State, Nigeria.
[2]Department of Clinical Pharmacy & Bio-Pharmacy, Olabisi Onabanjo University, Ago-Iwoye, Sagamu Campus, Ogun State, Nigeria.
[3]Department of Clinical Pharmacy & Bio-Pharmacy, Olabisi Onabanjo University, Ago-Iwoye, Sagamu Campus, Ogun State, Nigeria.

ARTICLE INFO

Article history:

Received 16th December 2025
Revised 16th March 2026
Accepted 18th March 2026
Online Published

Keywords:

Medication;
Dispensing;
Older person;
Community Pharmacist.

**Corresponding Author:*
Sule Ajibola Saka,
Email: sulsak03@gmail.com;
ajibola.saka@oouagoiwoye.edu.ng
Tel: +2348055448123

ABSTRACT

Background: Older persons (OPs) may have challenges navigating complex medication regimens due to impairments. These challenges must be addressed during medication dispensing if OPs are to adhere to their medications and benefit maximally from them. This study explored pharmacists' knowledge and practice of dispensing medication to OPs in Ogun State, Nigeria.
Methods: A quantitative cross-sectional study was conducted out among 430 consecutively sampled pharmacists in clinical settings (hospital, n=204, community pharmacists, n=226). A validated 29-item self-administered questionnaire, including sociodemographic information, was used to assess the participants' knowledge and practice of dispensing to OPs. The total knowledge score ranged between 0 and 11 and was graded as ≥9.0-11.0 (adequate), 6.0 <9.0 (fair) and <6.0 (poor). The Kruskal-Wallis test was used to determine the differences in responses to knowledge questions among the groups on a Likert scale.
Results: The majority of the participants, 322 (74.9%), had B. Pharm as the highest qualification, and 256 (59.5%) scored between 6.0 <9.0. One hundred and fifty-eight (36.7%) participants did not always provide medication information about doses and duration to OPs. The participants' opinions differ regarding the statement "Only trained pharmacists should be delegated to provide medication information to older persons" (p=0.02).
Conclusions: Many participants had a fair knowledge of dispensing to OPs. More than one-third did not always provide information on the doses and duration of medicines to OPs. There was no consensus among the participants on whether only trained pharmacists should provide medication information to older persons.

Introduction

Medication dispensing is considered a traditional role of pharmacists. However, as simple as it appears, it can be challenging and fraught with errors that can predispose older persons (OPs) to morbidity and mortality[1]. Medication dispensing "is the systematic review of prescriptions, physical check of the preparation, proper packaging and labelling, and transfer of the prescribed medicine. It includes counselling of a patient, their agent, or another person who is responsible for the administration of the medicine to that patient[2]. A systematic review of prescriptions should include confirming the clinical indications for prescribed medicines and the appropriated doses, identifying inappropriate medicines, and ensuring effective communication with the patients or their caregivers[3,4]. Counselling of OPs should include educating

them about the available generics of the medication they are taking, potential side effects and how to minimize medication administration errors[5]. They should be encouraged to seek clarification before refilling their medications at pharmacies. Pharmacists should also discuss the possibility of de-prescribing medications that may no longer be necessary for the OPs' well-being[6].

The World Health Organization following the United Nations defines OPs as an individual aged 60 years or older[7]. Older persons are the largest consumers of medications globally and are more predisposed to adverse drug reactions[7]. It is estimated that approximately one-tenth of hospital admissions of OPs are medication-related, while the likelihood of rehospitalization of OPs discharged within 30 days to one year is high[8,9]. Inappropriate medication prescriptions by physicians and dispensing by pharmacists are responsible for many of the avoidable causes of adverse drug reactions in OPs[6,10].

Older persons typically have barriers that prevent them from obtaining the best outcome from their medications, including physical and cognitive impairments, complex medication regimens, differences in health beliefs, and deficiencies in knowledge of medicines and clinical conditions[11,12]. A study in Australia reported that OPs, especially community-dwelling individuals, expressed difficulty comprehending information about their medication and were confused about brands of medicine[13]. The removal of medications from packages and administration of complex dose forms such as patches and inhalers may also present challenges due to poor grip strength and poor vision[12]. These barriers must be addressed during medication dispensing if OPs are to adhere to and benefit maximally from their medications. Older persons, therefore, require special attention, and pharmacists require skills in dispensing medication to this category of people[3].

In Nigeria, community pharmacies are the most prominent field of pharmacy practice, employing approximately 42% of pharmacists[14]. Community and hospital pharmacists (CPs) are responsible for dispensing medications to outpatients and ensuring safe use at home[15,16]. Many OPs procure over-the-counter (OTC) and prescribed medicines for their ailments in community pharmacies and consider the medication guidance provided by CPs to be authoritative[17]. Thus, CPs are a veritable avenue for improving medication safety. However, evidence suggests that systematized dispensing practices are disregarded in community pharmacies and hospitals, resulting in suboptimal clinical outcomes for clients[18].

The demographic shift towards ageing on the African continent, including Nigeria, is now more apparent than before[19]. Ageing is associated with chronic medication use, and the challenges of medication safety in the OPs are enormous[3,11,12]. Medication dispensing is a vital component of pharmacy practice that facilitates the safe provision of medications. Many studies on the dispensing of medications to OPs have characteristically focused on effective communication between pharmacists and OPs[20-22]. Studies on pharmacists' knowledge and practice of good dispensing to OPs are rare in the literature[23]. In Nigeria, studies have shown inappropriate medication dispensing practices and counselling among pharmacists[24,25]. These studies, however, focused on the general population and the peculiarity of ageing in dispensing was not considered. This study aimed to evaluate pharmacists' knowledge of and practices related to dispensing medication and counselling older persons in Ogun State, Nigeria.

Methods

Study design and setting

A quantitative cross-sectional study was carried out among consecutively sampled hospital and community pharmacists in Ogun State, Nigeria. A 29-item self-administered questionnaire was used to assess the participants' knowledge and practices of dispensing medications to OPs. Ogun State is considered the hub of the pharmaceutical industry in Nigeria and has the sixth-largest concentration of community pharmacists in the country[14]. There are pharmacists employed in other strata of the State's healthcare system.

Study population, inclusion and exclusion criteria

This study included consecutively sampled pharmacists in clinical practice settings (hospital and community retail pharmacies) in Ogun State. Intern pharmacists who had been on internship for at least 6 months before the commencement of the study were included. This was provided to participants in the information and verbally emphasised before the administration of the questionnaire. Older CPs who had diploma certificates in pharmacy were included. This is because a few older pharmacists who graduated with a Diploma in Pharmacy before 1966 (before the introduction of a Bachelor of Pharmacy degree) were still in community practice[26]. Eligible participants who were not available at the study sites between October 2022 and February 2023 were excluded from the study.

Sample size estimation

The minimum sample size was determined using Fisher's formula[27]. The total population of community and hospital pharmacists and the interns could not be determined precisely in Ogun State at the time of the study. Using a 50%

response rate, a power of 95% and a 5% margin of error, an infinite population, sample size of 384 was obtained. A 10% addition was calculated for non-response resulting in a sample size of 423.

Questionnaire design

A 29-item self-administered questionnaire was developed following a review of previous studies[15,28,29]. The questionnaire was designed by a clinical pharmacist with 18 years of experience and was validated by two academic pharmacists. The questionnaire was pretested among 10 CPs and eight hospital pharmacists in Ogun State, who were subsequently excluded from the main study. The responses from the pre-test were used to reword some statements considered ambiguous.

The questionnaire was divided into two sections. Section A comprised six sociodemographic questions, including questions about age, qualifications, and years of professional experience. Section B was divided into 3 subsections based on the objectives of the study. Eleven questions on a 5-point Likert scale ranging from "strongly agree (5)" to "strongly disagree (1)" were used to evaluate participants' perceived knowledge of medication dispensing to OPs. Two items were negatively worded to prevent response bias.

Seven questions assessed the dispensing practice for OPs while the remaining five evaluated the frequency and quality of information provided by the participants to OPs during the dispensing of medication using the 4-item Likert scale: "Never" "Rarely", "Sometimes", and or "Always".

Data collection

Data was collected between 2nd October 2022 and 28th February 2023 by a trained research assistant with a Bachelor of Pharmacy degree. Hard copies of the questionnaire were distributed to eligible participants in their workstations and at pharmacists' gatherings in Abeokuta, the State capital. These gatherings include the Mandatory Continuing Professional Development (MCPD) programme organised by the Pharmacy Council of Nigeria (PCN), between the 12th and 14th of December 2022, the Association of Community Pharmacists of Nigeria meeting (December 2022), and the Pharmaceutical Society of Nigeria (PSN) Ogun State branch monthly meetings held in January and February 2023. At these gatherings, a caveat was put that any eligible participants who had previously answered the questionnaire at their workstations or at the aforementioned gatherings should not respond to the questionnaire but return it to the research assistant. The eligibility criteria were strongly emphasized at the gatherings before the questionnaire was administered. The questionnaire was collected back before the end of the gatherings.

Data management and statistical analysis

The completed questionnaire was sorted, carefully cross-checked for completeness and responses were subsequently entered into Microsoft Excel® 365. The entry was double-checked for errors by a co-researcher. The data were coded and exported into SPSS Version 25 (IBM SPSS Statistics 25), analysed using descriptive statistics and the results presented as frequencies and percentages.

The correct response for each of the positively-worded questions was scored "1" and the incorrect response "0". The scoring was reversed for the negatively worded questions. Neutral responses were scored as "0". The mean correct score was calculated. Total scores ranged from 0 to 11 and were categorized into three levels of knowledge (adequate, fair and poor). A total knowledge score of ≥9.0 was considered adequate, 6.0 -<9.0 was considered fair and <6.0 was considered poor using Bloom Cut-off point[30]. In discussing the knowledge both fair and poor marks were considered inadequate. The Kruskal-Wallis test was used to determine the differences in participants' responses to the knowledge and practice questions on a Likert scale based on sociodemographic variables of interest. $P<0.05$ was considered to indicate statistical significance.

Ethical considerations

Approval to conduct this study was granted by the Ethics Committees of the Federal Medical Centre and Olabisi Onabanjo University Teaching Hospital under the approval numbers FMCA/470/HREC/01/2022/17 and OOUTH/HREC/494/2022AP respectively. The gatekeeper's permission was obtained from the hospitals head and coordinators of the gatherings. Written consent from participants was obtained using a consent form attached to the questionnaire after the study's goal was explained to them. Returning the completed questionnaire was also considered consent.

Results

Table 1 presents the sociodemographic characteristics of the participants. Of the 455 copies of the questionnaire distributed, 14 (3.1%) were not returned, giving a response rate of 96.9%. Eleven (2.4%) contained missing sociodemographic data and 430 (94.5%) were considered valid and analyzed. The majority of the participants, 322 (74.9%) had BPharm as the highest qualification, while almost two-thirds of the participants (277; 64.4%) were between the ages of 21 and 30years (modal age=25 years; Range=21-67 years).

Table 1: The sociodemographic of the participants (n=430)

Variables	Group	Frequency	Percentage
Age (years)	21-30	277	64.4
	31-40	77	18.0
	41-50	41	9.5
	51-60	28	6.5
	>60	7	1.6
Gender	Male	210	48.8
	Female	220	51.2
Marital Status	Single	246	57.2
	Married	184	42.8
Highest Qualification	Diploma	10	2.3
	B.Pharm	322	74.9
	M.Sc	62	14.4
	Postgrad Fellowship	18	4.2
	Ph.D	18	4.2
Years of Experience	<1 yr	120	27.9
	1-10 yrs	235	54.7
	11-20 yrs	66	15.3
	>20 yrs	9	2.1
Area of Practice	Hospital	204	47.4
	Community	226	52.6

B.Pharm = Bachelor of Pharmacy; M.Sc = Master of Science; PhD = Doctor of Philosophy.

Table 2 presents the participants' knowledge of dispensing among older persons. The majority of the participants (309; 71.9%) agreed or strongly agreed that OPs should be given special consideration during medication dispensing. Of the 11 knowledge questions, 52 (12.1%) of the participants scored ≥ 9.0, 256 (59.5%) scored 6.0- <9.0 and 122 (28.4%) scored <6.0. The mean total score for knowledge of medication dispensing was 6.44±2.15.

Table 2: Assessment of knowledge of medication dispensing to older persons.

Questions	SD/D (n%)	N (n%)	SA/A (n%)	Mean correct score (±SD)
Older persons should be given special treatment in medicine dispensing.	69 (16.0)	52 (12.1)	309 (71.9)*	0.72 ±0.45
Medicine containers must always be open to show the older persons the colour or shape of the medicine.	85 (19.8)	104 (24.2)	241 (56.0)*	0.56±0.49
Older persons or their caregivers should be given written information or a summary of instructions about their medication at the end of the visit.	52 (12.1)	52 (12.1)	326(75.8)*	0.76±0.43
There are no guidelines to check the appropriateness of medicines for older persons before dispensing**	48 (11.2)*	49 (11.4)	333 (77.4)	0.11±0.31

Only trained pharmacists should be delegated to provide medicine information to the older persons	65 (15.1)	61 (14.2)	304 (70.7)*	0.71±0.46
Older persons should be taught how to use special techniques for the use of certain drugs (inhalers, patches)	43 (10.0)	46 (10.7)	341 (79.3)*	0.79±0.41
Providing trade names of medication to older persons or their caregivers constitutes information overload for them	86 (20.0)*	117 (27.2)	227 (52.8)	0.20±0.4
Information about available brands of medicine should be provided to older persons.	58 (13.5)	94 (21.9)	278 (64.7)*	0.65±0.48
Giving information about diseases to older persons is not a statutory duty of a pharmacist.**	189 (44.0)*	101 (23.5)	140 (32.5)	0.33±0.47
Older persons must be informed about what to do when they experience any side effect	46 (10.7)	45 (10.5)	339 (78.8)*	0.79±0.41
Older persons must be informed about drug-drug interaction and food-drug interaction.	34 (7.9)	36 (8.4)	360 (83.7)*	0.84±0.37

SD =Strongly Disagree, D = Disagree, N=Neutral, A =Agree, SA = Strongly Agree
*correct answer ** negatively worded questions

Table 3 shows the pharmacists' medication dispensing practices for OPs. One hundred and fifty-eight participants (36.7%), always asked about the use of herbal remedies from OPs, while 182 (42.3%) always requested to see other medicines (OTCs) and nutritional supplements that OPs used with their chronic medicines at every visit. More than one-third of the participants, 147 (34.2%) claimed that OPs sometimes found it difficult to understand their instructions.

Table 3: Assessment of pharmacists' dispensing practices.

Questions	Never (n%)	Rarely (n%)	Sometimes (n%)	Always (n%)
I request to see other medicines (OTCs) and nutritional supplements my older persons are using with their chronic medicines at every visit.	21(4.9)	40 (9.3)	187 (43.5)	182 (42.3)
I design the dosage regimen to fit the lifestyle of older persons.	19(4.4)	50 (11.6)	178 (41.4)	183 (42.6)
I discuss medication adherence strategies with my older persons before dispensing.	18(4.2)	40 (9.3)	156 (36.3)	216 (50.2)
I enquire about the use of herbal remedies by my older persons.	27 (6.3)	67 (15.6)	178 (41.4)	158 (36.7)
I give my older patients the opportunity to ask questions.	11 (2.6)	28 (6.5)	95 (22.1)	296 (68.8)
My schedule allows me to patiently attend to the medicine information needs of my older persons.	14 (3.3)	43 (10.0)	200 (46.5)	173 (40.2)
My older persons find it difficult to understand my instructions.	70(16.3)	127 (29.5)	147 (34.2)	86 (20.0)

Table 4 presents the frequency of medication information provided to OPs by the participants. Marginally, half of the participants (226; 52.6%) always provided information about the outcome of therapy to the patients, while 222 (51.6%) always provided information about the possibility of discontinuing certain medications in the future.

Table 4: Assessment of frequency of information provided by pharmacists.

Questions	Never (n%)	Rarely (n%)	Sometimes (n%)	Always (n%)
I ask my older persons the manner they have been using their medicine.	17 (4.0)	48 (11.2)	141 (32.8)	224 (52.1)
I provide information about doses and duration of medicines to older persons.	7 (1.6)	30 (7.0)	121 (28.1)	272 (63.3)
I provide information about the outcome of therapy to my older persons.	13 (3.0)	30 (7.0)	161 (37.4)	226 (52.6)
I provide information about the action to be taken in case of a missed dose.	7 (1.6)	34 (7.9)	184 (42.8)	205 (47.7)
I provide information to older persons about the possibility of discontinuing certain medications in future.	9 (2.1)	38 (8.8)	161 (37.4)	222 (51.6)

Table 5 shows the differences in dispensing knowledge among the participants by highest qualifications. The participants had differences of opinion on whether "Only trained pharmacists should be delegated to provide medicine information to OPs" (p=0.02).

Table 5: The differences in knowledge of medication dispensing based on the participants' highest qualifications

Variable	SD/D (n%)	N (n%)	SA/A (n%)	Mean Rank	KW p-value
Older persons should be treated specially in medicine dispensing.					
Diploma	1 (0.23)	1 (0.23)	8 (1.86)	233.85	
BPharm	43 (10.00)	34 (7.90)	245 (56.98)	224.76	
MSc	16 (3.72)	16 (3.72)	30 (6.98)	167.23	0.001*
Postgrad Fellowship	5 (1.16)	1 (0.23)	12 (2.79)	199.03	
PhD	4 (0.93)	0 (0.00)	14 (3.25)	222.44	
Medicine containers must always be open to show the older persons the colour or shape.					
Diploma	4 (0.93)	2 (0.46)	4 (0.93)	168.70	
B.Pharm	59 (13.72)	83 (19.30)	180 (41.86)	216.61	
MSc	16 (3.72)	30 (6.98)	62 (14.41)	196.58	0.096
Postgrad Fellowship	3 (0.69)	3 (0.69)	12 (2.79)	236.75	
PhD	3 (0.69)	0 (0.00)	15 (3.48)	265.50	
The older persons or their caregivers should be given written information or a summary of instructions about their medications at the end of the visit.					
Diploma	1 (0.23)	1 (0.23)	8 (1.86)	224.50	
B.Pharm	29 (6.74)	34 (7.90)	259 (60.23)	225.84	
M.Sc	17 (3.95)	11 (2.55)	34 (7.90)	167.89	<0.001*
Postgrad Fellowship	2 (0.46)	4 (0.93)	12 (2.79)	198.72	
PhD	3 (0.69)	2 (0.46)	13 (3.02)	206.33	
There are no guidelines to check the appropriateness of medicines for older persons before dispensing.					
Diploma	1 (0.23)	0 (0.00)	9 (2.09)	240.05	
B.Pharm	30 (6.97)	34 (7.90)	258 (60.00)	221.52	
M.Sc	8 (1.86)	4 (0.93)	40 (9.30)	189.97	0.082
Postgrad Fellowship	5 (1.16)	0 (0.00)	13 (3.02)	197.47	
PhD	4 (0.93)	1 (0.23)	13 (3.02)	200.17	

Only trained pharmacists should be delegated to provide medicine information to older persons.					
Diploma	2 (0.46)	1 (0.23)	7 (1.62)	211.15	
B.Pharm	41 (9.53)	40 (9.30)	241 (56.04)	222.75	
M.Sc	14 (3.25)	14 (3.25)	34 (7.90)	181.85	0.020*
Postgrad Fellowship	3 (0.69)	5 (1.16)	10 (2.32)	186.89	
PhD	5 (1.16)	1 (0.23)	12 (2.79)	200.17	
Older persons should be taught how to use special techniques for the use of certain drugs (inhalers, patches					
Diploma	2 (0.46)	1 (0.23)	7 (1.62)	193.05	
B.Pharm	26 (6.04)	30 (6.97)	266 (61.86)	222.55	
M.Sc	8 (1.86)	10 (2.32)	44 (10.23)	198.08	0.053
Postgrad Fellowship	2 (0.46)	5 (1.16)	11 (2.56)	179.08	
PhD	5 (1.16)	0 (0.00)	13 (3.02)	193.89	
Providing trade names of medication to older persons or their caregivers constitutes information overload for them					
Diploma	5 (1.6)	2 (0.46)	3 (0.69)	145.85	
B.Pharm	55 (12.79)	89 (20.7)	178 (41.39)	222.74	
M.Sc	16 (3.72)	16 (3.72)	30 (6.97)	202.03	0.070
Postgrad Fellowship	3 (0.69)	6 (1.39)	9 (2.09)	214.08	
PhD	7 (1.62)	4 (0.93)	7 (16.28)	172.42	

SD = strongly disagree; D = disagree; N = neutral; SA = strongly agree; A = agree; KW = Kruskal-Wallis.
*significant at p<0.05

Table 5: The differences in knowledge of medication dispensing based on the participants' highest qualifications (Contd.)

Variable	SD/D (n%)	N (n%)	SA/A (n%)	Mean Rank	KW p-value
Information about available brands of medicine should be provided to the older persons					
Diploma	3 (0.69)	1 (0.23)	6 (1.93)	194.30	
BPharm	37(8.60)	69(16.05)	216 (50.2)	221.54	
MSc	11 (2.55)	16 (3.7)	35 (8.13)	197.02	0.350
Postgrad Fellowship	3 (0.69)	4 (0.93)	11 (2.55)	206.50	
PhD	4 (0.93)	4 (0.93)	10 (2.32)	191.94	
Giving information about diseases to the older persons is not a statutory duty of a pharmacist.					
Diploma	2 (0.46)	1 (0.23)	7 (1.62)	193.05	
B.Pharm	172 (40.0)	85 (19.76)	65(15.11)	222.55	
MSc	8 (1.86)	10 (2.32)	44 (10.23)	198.08	0.004*
Postgrad Fellowship	2 (0.46)	5 (1.16)	11 (2.55)	179.81	
PhD	5 (1.16)	0 (0.00)	13 (3.02)	193.89	
Older persons must be informed about what to do when they experience any side effect					
Diploma	1 (0.23)	0 (0.00)	9 (2.09)	273.25	
B.Pharm	32(5.34)	25 (5.81)	265 (61.62)	222.49	
MSc	5 (1.16)	16 (3.72)	41 (9.53)	192.30	0.008*
Postgrad Fellowship	2 (0.46)	2 (0.46)	14 (3.25)	213.28	
PhD	6 (1.39)	2 (0.46)	10 (2.32)	160.50	
Older persons must be informed about drug-drug interactions and food-drug interactions.					
Diploma	2 (0.46)	0 (0.00)	8 (1.46)	203.90	
B.Pharm	21 (4.88)	27 (6.27)	274 (63.72)	218.70	
MSc	4 (0.93)	7 (1.62)	51 (11.86)	213.11	0.279
Postgrad Fellowship	3 (0.69)	0 (0.00)	15 (3.48)	211.67	
PhD	4 (0.93)	2 (0.46)	12 (2.79)	176.72	

SD = strongly disagree; D = disagree; N = neutral; SA = strongly agree; A = agree; KW = Kruskal-Wallis.
*significant at p<0.05

The differences in dispensing practices by participants' age are presented in Table 6. There was a significant difference in responses to the assertion "My OPs find it difficult to understand my instructions" (p=0.036).

Table 6: The differences in dispensing practices based on the participants' ages

Variables	Never (n%)	Rarely (n%)	Sometimes (n%)	Always (n%)	Mean Rank	KW p-value
I request to see other medicines (OTCs) and nutritional supplements my older persons are using with their chronic medicines at every visit						
21-30yrs	15 (3.48)	26 (6.04)	127 (29.53)	109 (25.34)	209.15	
31-40yrs	1 (0.23)	10 (2.32)	36 (8.37)	30 (6.90)	210.75	
41-50yrs	5 (1.16)	1 (0.23)	14 (3.25)	21 (4.88)	229.17	0.074
51-60yrs	0 (0.00)	2 (0.46)	7 (1.62)	19 (4.41)	272.09	
>60yrs	0 (0.00)	1 (0.23)	3 (0.69)	3 (0.69)	217.86	
I design the dosage regimens to fit the lifestyle of older persons.						
21-30yrs	12 (2.79)	29 (6.74)	115 (26.74)	121 (28.14)	218.98	
31-40yrs	3 (0.69)	12 (2.79)	34 (7.90)	28 (6.51)	200.58	
41-50yrs	0 (0.00)	4 (0.93)	20 (4.65)	17 (3.95)	222.22	.576
51-60yrs	4 (0.93)	3 (0.69)	9 (2.09)	12 (2.79)	202.43	
>60yrs	0 (0.00)	2 (0.46)	0 (0.00)	5 (1.16)	254.80	
I discuss the medication adherence strategies with the older persons before dispensing						
21-30yrs	11 (2.55)	26 (6.04)	104 (24.18)	136 (31.62)	213.58	
31-40yrs	6 (1.39)	7 (1.62)	28 (6.51)	36 (8.37)	204.66	
41-50yrs	0 (0.00)	5 (1.16)	15 (3.48)	21 (4.88)	219.62	0.367
51-60yrs	1 (0.23)	2 (0.46)	7 (1.62)	18 (4.18)	244.54	
>60yrs	0 (0.00)	0 (0.00)	2 (0.46)	5 (1.16)	269.36	
I enquire about the use of herbal medicines by the older persons						
21-30yrs	20 (4.65)	46 (10.69)	116 (26.97)	95 (22.09)	208.54	
31-40yrs	3 (0.69)	13 (3.02)	33 (7.67)	28 (6.51)	217.31	
41-50yrs	4 (0.93)	3 (0.69)	18 (4.18)	16 (3.72)	223.56	.221
51-60yrs	0 (0.00)	4 (0.93)	9 (2.09)	15 (3.48)	256.00	
>60yrs	0 (0.00)	1 (0.23)	2 (0.46)	4 (0.93)	262.00	
I give my patients the opportunity to ask questions						
21-30yrs	8 (1.86)	17 (3.95)	52 (12.03)	200(46.51)	222.04	
31-40yrs	3 (0.69)	4 (0.93)	24 (5.58)	46 (10.69)	197.44	
41-50yrs	0 (0.00)	4 (0.93)	15 (3.48)	22 (5.11)	185.90	.028*
51-60yrs	0 (0.00)	2 (0.46)	2 (0.46)	24 (5.58)	250.18	
>60yrs	0 (0.00)	1 (0.23)	2 (0.46)	4 (0.93)	189.93	
My schedule allows me to patiently attend to the medicine information needs of the older persons						
21-30yrs	11 (2.55)	24 (5.58)	137 (31.86)	105 (24.41)	221.71	
31-40yrs	2 (0.46)	11 (2.55)	33 (7.67)	31 (7.20)	211.33	
41-50yrs	1 (0.23)	6 (1.39)	18 (4.18)	16 (3.72)	208.84	.137
51-60yrs	0 (0.00)	2 (0.46)	8 (1.86)	18 (4.18)	268.71	
>60yrs	0 (0.00)	0 (0.00)	4 (0.93)	3 (0.69)	237.43	
My older patients find it difficult to understand my instructions						
21-30yrs	47 (10.93)	89 (5.58)	90 (20.93)	51(11.86)	208.47	
31-40yrs	15 (3.48)	17(3.95)	33 (7.67)	12 (2.79)	213.03	
41-50yrs	5 (1.16)	10 (2.32)	15 (3.48)	11 (2.55)	240.12	.036*
51-60yrs	3 (0.69)	11 (2.55)	6 (1.39)	8 (1.86)	225.23	
>60yrs	0 (0.00)	0 (0.00)	3 (0.69)	4 (0.93)	337.57	

*significant at $p<0.05$

Discussion

This study aimed to determine pharmacists' knowledge and practices in medication dispensing to OPs in Ogun State, Nigeria. This study showed that although the majority of participants agreed that OPs require special consideration in medication dispensing, many had inadequate knowledge of the act of dispensing to this group of patients. Some essential acts and information were sometimes omitted by the participants when dispensing to OPs.

Many of the participants in this study had inadequate knowledge of proper dispensing to OPs. This observation is similar to a report from Brazil, which indicated that 80% of the community pharmacists lacked satisfactory knowledge of dispensing drugs to the general population[31]. The majority of the study participants erroneously believed that there were no guidelines for assessing the appropriateness of the medication being dispensed to OPs. This finding was previously reported among Nigerian and Saudi Arabian

pharmacists[28,32]. Many guidelines have been developed to assist healthcare workers in screening for inappropriate medications among OPs. These tools include the American Geriatrics Society Beers Criteria, the Screening Tool of Older Persons' Potentially Inappropriate Prescriptions (STOPP), and the Screening Tool to Alert Doctors to the Right Treatment (START)[33,34], but these tools are not widely adopted or used among pharmacists in Nigeria[6,32].

In this study, many participants agreed or strongly agreed that providing trade names of medication to OPs or their caregivers constitutes information overload. This is a knowledge gap that might have been caused by the stereotyping of the OPs' "geriatric syndrome", believing that because of their old age, they may not be able to process information. Pharmacists must continuously educate OPs about the generic and brand names of the medications they are taking and how to avoid errors when taking the medications[4].

A substantial proportion of participants reported that OPs found it difficult to understand their instructions. This finding indicates ineffective communication. Although this opinion varies across age groups, younger participants (21-30 years) expressed it more than the elderly. This study appears to be in tandem with another study in Canada, which reported a positive correlation between the increase in age of clinical pharmacists and good geriatric care practice[35]. Nonetheless, effective communication is a sine qua non in medication dispensing to OPs. Communication with OPs requires skills and the use of technical aids. This is because many OPs may have physical, visual, and hearing impairments. To provide effective communication to OPs, information must be updated and simplified, and there may be a need to provide a written medication information or a summary of information for the OPs or their caregivers at the end of the visit[4,36].

Fewer than half of the participants in this study always requested to see other medicines (OTCs) and nutritional supplements that OPs are using with their chronic medicines at every visit. Ideally, a pharmacist should educate OPs about the need to keep personal medication records and at least, encourage them to bring packs/bottles of medication to the pharmacy. This will ensure optimal therapy and prevent unnecessary medication duplication [37]. The majority of the participants in this study asked about the use of herbal medicines by OPs. This approach is commendable. The findings of the present study contradict a report among Lebanese consumers of herbal medicines that indicates that many OPs take herbal medicines and OTCs along with their prescribed medications, which may be detrimental to their health[38,39.]

A key component of dispensing medication to OPs is information about treatment outcomes and strategies to enhance medication adherence and the possibility of discontinuing certain medications that may not be needed in the future (Deprescribing)[40]. The participants' practices in this study appear to vary as half reported always doing this in their practices. The inadequate provision of information to OPs on adherence strategies and treatment outcomes may be due to time constraints on the part of dispensing pharmacists[41].

Limitations and strengths of the study

This study elucidates critical issues that professionals often overlook when dispensing medications to OPs. However, this cross-sectional study could have suffered from several limitations, including the use of a survey and the possibility of recall bias. The use of consecutive sampling methods and a single State of the Federation in the study could limit the generalizability of the results to all pharmacists in Nigeria. Due to limited studies in this area, the comparison of the present study results with others may be inadequate.

Conclusions

Many of the participants had a fair knowledge of dispensing to OPs. Essential information about medications, including deprescribing and disease states was not always provided by the participants during medication dispensing to OPs. It appears that there is lack of effective communication between pharmacists and OPs. There was no consensus among the participants on whether only trained pharmacists should provide medication information to OPs. Policies to enhance good dispensing practices for OPs should be encouraged in Ogun State healthcare facilities. Such policies include the adoption of Beers' Criteria to screen for potential inappropriate medication and provision of technical aids, including pictograms that can assist in effective communication with OPs. There is a need for specialized training in the mandatory continuing professional development curriculum for pharmacists to improve their capacity in drug information, communication and guidelines for managing medications to OPs. Interventional studies on the best approach to enhance good dispensing practices for OPs in resource-limited health systems, such as Nigeria, are recommended.

Competing interests

All the authors declare that there are no conflicts of interest in the study

Funding statement

This study received no funding from any organization whether public, private or non-governmental.

Acknowledgements

The authors acknowledge the study participants, the Pharmaceutical Society of Nigeria, the Ogun State Branch and the staff of the Pharmacy Council of Nigeria Ogun State for their support and understanding during the period of data collection.

References

1. Ibrahim OM, Ibrahim RM, Meslamani AZA, Mazrouei NA (2020). Dispensing errors in community pharmacies in the United Arab Emirates: investigating incidence, types, severity, and causes. *Pharmacy Practice* (Granada), 18(4):2111. https://doi.org/10.18549/PharmPract.2020.4.2111
2. The Pharmaceutical Society of Australia. Dispensing Practice Guidelines.2019. https://www.psa.org.au/wp-content/uploads/2019/06/5574-PSA-Dispensing-Practice-guidelines_FINAL.pdf
3. Ceballos M, Llano Y, Salazar-Ospina A, Madrigal-Cadavid J, Pino-Marín D, Amariles P (2021). Skills and practices of pharmacy staff for dispensing of drugs with fiscalized substances in drugstores and pharmacies. *Revista de Saude Publica*, 55:44. https://doi.org/10.11606/s1518-8787.2021055003103
4. International Federation of Pharmacists. Use of medicines by the elderly. The role of pharmacy in promoting adherence. https://www.fip.org/files/fip/publications/Use_of_medicines_by_the_elderly_The_role_of_pharmacy_in_promoting_adherence.pdf. (accessed 2 October 2023)
5. Svensberg K, Khashi M, Dobric S, Guirguis M, Ljungberg Persson C (2022). Making medication communication visible in community pharmacies-pharmacists' experience using a question prompt list in the patient meeting. *Research in Social and Administrative Pharmacy*, 18(12):4072-4082. https://doi.org/10.1016/j.sapharm.2022.07.011
6. Akande-Sholabi W, Fafemi A (2022). Potentially inappropriate medication use in the elderly: physicians' and hospital pharmacists knowledge, practice, confidence, and barriers. *Journal of Pharmaceutical Health Care and Science,* 8(1):36. https:// doi.org/10.1186/s40780-022-00267-6
7. Saka SA, Oosthuizen F, Nlooto M (2017). Interventions towards reducing adverse drug reactions among geriatric population in Africa: A scoping review of the literature from 1990-2016. *PULA: Botswana Journal of African. Studies*, 31(1):180-194.
8. Oscanoa TJ, Lizaraso F, Carvajal A (2017). Hospital admissions due to adverse drug reactions in the elderly. A meta-analysis. *European Journal of Clinical Pharmacology,* 73(6):759-770. https://doi.org/10.1007/s00228-017-2225-3
9. Linkens AEMJH, Milosevic V, van der Kuy PHM, Damen-Hendriks VH, Mestres Gonzalvo C, Hurkens KPGM (2020). Medication-related hospital admissions and readmissions in older patients: an overview of literature. *International Journal of Clinical Pharmacy,* 42(5):1243-1251. https://doi.org/10.1007/s11096-020-01040-1
10. Saka SA, Nlooto M, Oosthuizen F (2018). American Geriatrics Society-Beers Criteria and adverse drug reactions: a comparative cross-sectional study of Nigerian and South African older inpatients. *Clinical Interventions in Aging,* 13:2375-2387. https://doi.org/10.2147/CIA.S176899
11. Elliott RA, Booth JC (2014). Problems with medicine use in older Australians: A review of recent literature. *Journal of Pharmacy Practice and Research*, 44(4), 258-271. https://doi.org/10.1002/jppr.1041
12. Notenboom K, Beers E, van Riet-Nales DA, Egberts TC, Leufkens HG, Jansen PA, and Bouvy ML. (2014). Practical problems with medication use that older people experience: a qualitative study. *Journal of American Geriatrics Society,* 2014;62(12):2339-2344. https://doi.org/10.1111/jgs.13126
13. Etty-Leal MG (2017). The role of dose administration aids in medication management for OPs. *Journal of Pharmacy Practice and Research*, 47 (3) 241-247. https://doi.org/10.1002/jppr.1344
14. Ekpenyong A, Udoh A, Kpokiri E, Bates I (2018). An analysis of pharmacy workforce capacity in Nigeria. *Journal of Pharmaceutical Policy and Practice,* 11:20. https://doi.org/10.1186/s40545-018-0147-9
15. Beuscart JB, Petit S, Gautier S. Wierre P, Balcaen T, Lefebvre JM, Kambia N, Bertoux E, Mascaut D,

Barthélémy C, Cuny D, Puisieux F, and Décaudin B (2019). Polypharmacy in Older Patients: identifying the need for support by a community pharmacist. *BMC Geriatrics*, 19; 277. https://doi.org/10.1186/s12877-019-1276-y

16. World Health Organizations (2019). The legal and regulatory framework for community pharmacies in the WHO European Region. https://iris.who.int/bitstream/handle/10665/326394/9789289054249-eng.pdf (accessed 3 October 2023)
17. Gilson AM, Xiong KZ, Stone JA, Jacobson N, Phelan C, Reddy A and Chui MA (2020). Improving Patient-Pharmacist Encounters with Over-The-Counter Medications: A Mixed-Methods Pilot Study. *Innovations in Pharmacy,* 11(1):10.24926/iip.v11i1.2295. https://doi.org/10.24926/iip.v11i1.2295
18. Siddique, A. Ahmed, E. Al zoghabi, M. Alsaif, E. Alhawshani, F (2022). Exploring Community Pharmacist's Knowledge, Attitude, and Practice toward the Provision of Pharmaceutical Care. A Prospective Cross-sectional Study from Saudi Arabia. *Journal of Pharmacy and Bioallied Sciences*, 14 (1); 13–18. https://doi.org/10.4103/jpbs.jpbs_16_21
19. World Health Organizations (2022). Ageing and health https://www.who.int/news-room/fact sheets/detail/ageing-and-health (accessed 4 October 2023)
20. Pelicano-Romano J, Neves MR, Amado A, Cavaco AM (2015). Do community pharmacists actively engage elderly patients in the dialogue? Results from pharmaceutical care consultations. *Health Expectations*, 18(5):1721-1734. https://doi.org/10.1111/hex.12165
21. Ozavci G, Bucknall T, Woodward-Kron R, Hughes C, Jorm C, Joseph K, and Manias E (2021). Knowledge and Power Relations in Older Patients' Communication About Medications Across Transitions of Care. *Qualitative Health Research*, *31*(14), 2678–2691. https://doi.org/10.1177/10497323211043494
22. Widyakusuma NN, Suryawati S, Wiedyaningsih C, Probosuseno, Padmawati RS (2023). Equipping pharmacists for delivering pharmaceutical care to seniors: a qualitative systematic review of Asian seniors' social support. *Journal of Pharmaceutical Policy and Practice*, 16(1):75. https://doi.org/10.1186/s40545-023-00576-7
23. Kallio S, Eskola T, Pohjanoksa-Mäntylä M, Airaksinen M (2020). Medication Risk Management in Routine Dispensing in Community Pharmacies. International Journal of Environmental Research and Public Health, 17(21):8186. https://doi.org/10.3390/ijerph17218186
24. Abdu-Aguye SN, Labaran KS, Danjuma NM, Mohammed S (2021). Hospital pharmacy outpatient medication dispensing and counselling practices in North-Western Nigeria: an observational study. *International Journal of Pharmacy Practice*, *29*(5), 480–485. https://doi.org/10.1093/ijpp/riab052
25. Olasupo J, Taiwo F, Aje A, Fakeye TO (2023). Knowledge and dispensing practice of community pharmacists towards antipsychotic medicines in a Nigerian metropolitan city– a cross-sectional study. *BMC Health Services Research*, 23, 1450 (2023). https://doi.org/10.1186/s12913-023-10480-0
26. Ogaji JI, Ojabo CE (2014). Pharmacy education in Nigeria: The journey so far. Archives of Pharmacy Practice, 5:47-60. https://doi.org/10.4103/2045-080x.132644
27. Charan J, Biswas T (2013). How to calculate sample size for different study designs in medical research? *Indian Journal of Psychological Medicine*, *35*(2), 121–126. https://doi.org/10.4103/0253-7176.116232
28. Alfahmi AA, Curtain CM, Salahudeen MS (2023). Assessment of Knowledge, Attitude and Practices of the Hospital and Community Pharmacists in Saudi Arabia (Jeddah) towards Inappropriate Medication Use in Older Adults. *International Journal of Environmental Research and Public Health*, *20*(2), 1635. https://doi.org/10.3390/ijerph20021635
29. Kallio S, Eskola T, Airaksinen M, Pohjanoksa-Mäntylä M (2021). Identifying Gaps in Community Pharmacists' Competence in Medication Risk Management in Routine Dispensing. *Innovations in Pharmacy,* 12(1):10.24926/iip.v12i1.3510. https://doi.org/10.24926/iip.v12i1.3510
30. Blooms BS, ed. Taxonomy of educational objectives: the classification of Educational Goals, Handbook I, Cognitive Domain. London: Longmans, Green; 1956.
31. Reis TM, Guidoni CM, Girotto E, Rascado R, Radigheri M, Patrícia C, Cruciol, Joice M and

Pereira LR (2015). Knowledge and conduct of pharmacists for dispensing of drugs in community pharmacies: A cross-sectional study. *Brazilian Journal of Pharmaceutical Sciences,* 51 (3): 733-744. https://doi.org/10.1590/S1984-82502015000300025

32. Saka SA, Oosthuizen F, Nlooto M, Odusan O (2020). The knowledge, awareness, and perception of healthcare professionals about appropriate prescribing in the elderly: Findings from Nigeria and South Africa. *Journal of Evaluation in Clinical Practice*, *26*(5), 1512–1521. https://doi.org/10.1111/jep.13347
33. American Geriatrics Society (2023). Updated AGS Beers Criteria® for potentially inappropriate medication use in older adults. Journal of American Geriatrics Society, 71(7): 2052-2081. https://doi.org/10.1111/jgs.18372
34. O'Mahony D, Cherubini A, Guiteras AR, Denkinger M, Beuscart JB, Onder G, Gudmundsson A, Cruz-Jentoft A.J, Knol W, Bahat G, van der Velde N, Petrovic M and Curtin D (2023). STOPP/START criteria for potentially inappropriate prescribing in older people: version 3. *European Geriatric Medicine*, *14*(4), 625–632. https://doi.org/10.1007/s41999-023-00777-y
35. Karis Allen T, Mayo P, Koshman S, Gray M, Babar A, Sadowski CA (2021). Clinical Pharmacists' Knowledge of and Attitudes toward Older Adults. *Pharmacy,* 9(4):172. https://doi.org/10.3390/pharmacy9040172. PMID: 34698246; PMCID: PMC8544685.
36. Tan YW, Suppiah SD, Chan A, Koh GC, Tang WE, Tay SSC, Malhotra R and PROMISE Study Group (2021). Older adult and family caregiver experiences with prescription medication labels and their suggestions for label improvement. *Exploratory Research in Clinical and Social Pharmacy*, *4*, 100087. https://doi.org/10.1016/j.rcsop.2021.100087
37. Sherman, J.J. Davis, L. Daniels, K (2017). Addressing the Polypharmacy Conundrum. *US Pharm*, 42 (6): HS-14-HS-20
38. Hijazi MA, Shatila H, Omeich Z, El-Lakany A, Ela MA, Naja F. The role of pharmacists in complementary and alternative medicine in Lebanon: users' perspectives. *BMC Complementary Medicine and Therapies*, *21*(1), 81. https://doi.org/10.1186/s12906-021-03256-8
39. Taneri PE, Akis N, Karaalp A (2021). Herbal product use patterns and possible herb-drug interactions among older adults in Turkey. Journal of Herbal Medicine, 29: 100487. https://doi.org/10.1016/j.hermed.2021.100487
40. Elbeddini A, Zhang CXY (2019). The pharmacist's role in successful deprescribing through hospital medication reconciliation. Canadian Pharmacy Journal, 2019;152(3):177-179. https://doi.org/10.1177/1715163519836136
41. Maxwell-Smith C, Breare H, Dominguez Garcia A, Sim TF, Blackford K and Mullan BA (2025). Pharmacists' barriers and enablers to delivering health behaviour recommendations for patients with behavioural determinants of disease: Application of the COM-B model. *Research in Social and Administrative Pharmacy*, *21*(12), 1079-1089. https://doi.org/10.1016/j.sapharm.2025.07.004