Predominant Sources of Pharmacists' Drug Information, and Identification of Drug Information Needs from Pharmacists in Community and Hospital Settings

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ABSTRACT

Background: A major way to achieve improved drug therapy is through effective practice of Drug Information Services (DIS) by pharmacists. **Aim:** The study assessed the drug information needs from community and hospital pharmacists and their predominant sources of drug information in a Nigerian City. **Methods:** Cross-sectional survey involving cluster and convenience sampling methods was used to recruit hospital and community pharmacists respectively, and structured questionnaires were self-administered to them. Data was analyzed using SPSS version 21 ($p \leq 0.05$). **Results:** A total of 102 pharmacists participated in the study and majority 60 (58.8%), had received training on DIS. Reference books (4.58 ± 0.59) and internet (4.44 ± 0.62) respectively, were most consulted sources of drug information for community pharmacists. Similarly, reference books (4.42 ± 0.54) and the internet (4.42 ± 0.55) were also most consulted by hospital pharmacists respectively. Consultation of drug bulletins was significantly higher in hospital pharmacists than community pharmacists ($p = 0.006$). Most frequently demanded drug information were drug cost (4.63 ± 0.52) from community pharmacists and drug dosage (4.61 ± 0.49) from hospital pharmacists. Drug information on pharmacokinetics was significantly more frequently required from the hospital pharmacists than the community Pharmacists ($p = 0.002$). **Conclusion:** Most frequently consulted literature sources among the study participants were the reference books and internet. Drug information most frequently required from community and hospital pharmacists were cost of drugs and drug dosage respectively. This emphasizes the recognized role of pharmacists in DIS, which suggests the need for regular up-to-date DI skills.

Key words: Drug Information Services, Community Pharmacists, Hospital Pharmacists, Practice, Nigeria.

INTRODUCTION

Enhanced drug therapy is of utmost importance in the provision of health care, as it improves quality of life and general well-being. One important way to do this is through the effective practice of Drug Information Services (DIS) by clinical pharmacists. Efficient and adequate provision of appropriate drug information improves patient outcomes.[1] However, the number of existing drugs is huge and new pharmaceuticals are growing regularly and could be overwhelming for drug users, thus representing a risk for the rational use of drugs. This buttresses the relevance of drug information services in clinical decisions[2] and underscores the need for drug information experts who ensure the safe and effective use of drugs by providing timely, accurate and unbiased information on drugs to users.[3,4]

Drug information involves the provision of verbal or written information about drugs to individuals or organizations and this is the responsibility of the pharmacist.[5] Adequate understanding of disease states and therapy, as well as regular up-to-date knowledge, are also essential in DIS and patient care. Drug information centers are generally established for the delivery of DIS within and outside of the hospital setting.[6]

The practice of DIS in Nigeria is not yet a developed concept, with very few drug information centers present. Practicing DIS in Nigeria also does not offer a direct financial reward and this can influence the scope and quality of the practice. As a result, there is a call for effective drug information service, which is an integral part of Pharmaceutical Care in Nigeria.[7]

Community and hospital pharmacists are preferred for this study, because of their direct services and access to patients and other medication users. The perception and use of medications by patients can be inferred from the type and extent of DIS provided by pharmacists in these practice areas.

The study aimed to identify the drug information needs of pharmacists in community and hospital practice in Benin City, Nigeria; by evaluating the requests received periodically. It also assessed the sources of DIS for pharmacists and the difference in drug information queries received between pharmacists of different genders, practice groups, and educational qualifications.

MATERIALS AND METHODS

Study design and Study setting

A cross-sectional descriptive study was conducted in community hospitals and pharmacies in Benin City, south-south Nigeria. The city has a pharmacy school, several community pharmacies, and more than five referral hospitals. The sample size was determined for pharmacists in community and hospital pharmacy practice, respectively, using the Taro Yamane formula. [8]

Study population

The study population comprised community and hospital pharmacists in Benin City, Nigeria based on the following inclusion and exclusion criteria:

Inclusion criteria

* Registered hospital and community pharmacists.
* Pharmacists who practiced in Benin City.
* Only superintendent and locum pharmacists in hospital or community pharmacy practice.

Exclusion criteria

* Intern pharmacists
* Pharmacists from whom informed consent was not obtained.

Samplling/Data collection

A cluster sampling method was used to recruit the hospital pharmacists. Four city hospitals, comprising 2 tertiary and 2 secondary hospitals, were randomly selected for the study among hospital pharmacists. The pharmacists were visited during their weekly clinical meetings and questionnaires were self-administered after obtaining their informed consent. A convenient sampling method was adopted for selecting community pharmacists in which participants were recruited based on ease of access. Data collection was carried out over a period of 2 months.

Study instrument

A questionnaire was designed for the study by the investigators after an extensive literature search and validated through expert evaluations and preliminary tests. Two clinical pharmacists assessed their suitability using face validity, while preliminary testing was conducted among twenty registered hospital and community pharmacists who were randomly selected within the city. This was done to verify proper understanding of the questions and modifications were made to questions that were deemed to be ambiguous.

The questionnaire consisted of 3 sections; section A was used to collect the sociodemographic information of the respondents. Section B had 5 questions that assessed DIS practice on a Likert- type scale of 1 to 5, with 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, and 5 = strongly agree. Section C consisted of 6 questions and was also based on a 5-point Likert-type scale, with 1 = not at all, 2 = rarely, 3 = undecided, 4 = often, and 5 = very often. A mean score greater than 3 was rated as good DIS practice

Data analysis

Data was collected, entered, and analyzed using IBM SPSS version 21.0. Means and standard deviations were calculated and inferential statistics were performed using ANOVA to determine differences in drug information sources and differences in DI requests received from the community and hospital pharmacists. A value of $p < 0.05$ was considered significant.

RESULTS

Demographic characteristics of the respondents

A total of 102 respondents participated in the study, 54 (52.9%) of them were males and 61 (59.8%) were married. Majority of the respondents had a doctor of pharmacy (PharmD) degree 37(38.2%), while 32

(31.4%) had a Bachelor of Pharmacy degree. More of the respondents practiced as community pharmacists 59 (57.8%). Over half of the respondents had received training in providing drug information services 60 (58.8%). Other demographics are as shown in Table 1.

Requestors of drug information services from pharmacists

Table 2 shows the category of clients who request for drug information from pharmacists. High mean scores were seen for all the variables, showing DIS was provided to all the groups. However, the group that received the highest mean score were; general public 4.65 ± 0.50 and patients 4.62 ± 0.51 respectively, indicating that they were provided more DIS than other groups. Pharmacists' specific drug information queries on a scale of 1-5 are presented in Table 5. Drug dosage was reportedly

the most commonly requested drug information from pharmacists as this had the highest mean score 4.50 ± 0.50. This was followed by cost of drugs 4.47 ± 0.66 and drug substitutes 4.24 ± 0.53 respectively. The items with the lowest mean scores were pharmacokinetics 3.46 ±1.06, antidote to poisoning 3.53 ± 0.99 and drug use in elderly 3.95 ± 0.85 respectively. See Table 2.

Differences in drug information requests most commonly received and provided by pharmacists

Differences in drug information queries most commonly received and provided in each practice group showed that hospital pharmacists received more queries on pharmacokinetics than community pharmacists (P = 0.002). Meanwhile, the community pharmacists received more queries on cost of drugs than their hospital counterparts at a significantly higher level (P = 0.004). Differences in other variables were not statistically significant. Findings from the study also showed no significant difference in the drug information queries and requests received by the male and female pharmacists (P > 0.05). Others are as shown in Table 3.

Consultation of literature sources by Pharmacists for DIS

Table 4 shows literature sources consulted by pharmacists for DIS, on a scale of 1-5. The average mean score for consultation of DIS materials was 3.81 ± 0.86. The sources that were most frequently consulted were; Reference books (British National Formulary and EMDEX) (4.5±0.57), Internet (4.43 ± 0.58) and drug information leaflets (4.03± 0.69) respectively. Less frequently consulted sources were Articles 3.28 ±1.09 and Drug bulletins 3.29 ± 1.06 respectively. Reference books (e.g: Emdex, BNF etc.) were the most frequently consulted irrespective of respondents' qualifications, while articles were the least consulted by them, except respondents who had Fellowship of the West African Postgraduate College of Pharmacists. There was however no significant difference in the consultation of the materials by each educational group.

Consultation of literature sources by pharmacist in different practice and sex groups

Table 5 shows that reference books and internet were the most consulted literature sources for community pharmacists (4.42 ± 0.54) and (4.42 ± 0.55) respectively. Similarly, reference books were most consulted by hospital pharmacists (4.58 ± 0.59), followed by the internet (4.44 ± 0.62). Hospital pharmacists also consulted drug bulletins significantly more frequently than the community pharmacists (p = 0.006). Male

Table 1: Socio-demographics.		
Variables	**Frequency (n)**	**Percentage (%)**
Sex		
Female	48	47.1
Male	54	52.9
Marital status		
Married	61	59.8
Single	40	39.2
Divorced	1	1.0
Widowed	0	0.0
Years of Practice		
1-10 years	55	53.9
11-20 years	25	24.5
21-30 years	8	7.8
Above 30 years	14	13.8
Highest educational qualification		
B. Pharm.	32	31.4
Pharm. D	39	38.2
Masters	17	16.7
West African Postgraduate College of Pharmacists	14	13.7
PhD	0	0.0
Place of practice		
Hospital	43	42.2
Community	59	57.8
Received any training on Drug Information Service		
Yes	60	58.8
No	26	25.5
Unsure	16	15.7

Table 2: Requestors of drug information services from pharmacists.

Those who seek DIS from you are:	n	Strongly disagree F (%)	Disagree F (%)	Undecided F (%)	Agree F (%)	Strongly Agree F (%)	Mean ± SD
Patients	102	0 (0.0)	0 (0.0)	1 (1.0)	37 (36.3)	64 (62.7)	4.62 ± 0.51
Physicians	102	1(1.0)	4 (3.9)	12 (11.8)	54 (52.9)	31 (30.4)	4.08 ± 0.82
Pharmacists	100	0 (0.0)	1(1.0)	11 (10.8)	66 (64.7)	22 (21.6)	4.09 ± 0.60
Nurses	102	1 (1.0)	1 (1.0)	9 (8.8)	55 (53.9)	36 (35.3)	4.22 ± 0.73
General public	102	0 (0.0)	0 (0.0)	1 (1.0)	34 (33.3)	67 (65.7)	4.65 ± 0.50
Type of drug information frequently asked	**N**	Strongly disagree F (%)	Disagree F (%)	Undecided F (%)	Agree F (%)	Strongly agree F (%)	Mean ± SD
Drug identification	100	1 (1.0)	6 (6.0)	11 (11.80)	54 (54.0)	28 (28.0)	4.02 ± 0.85
Drug substitute	102	0 (0.0)	0 (0.0)	5 (5.0)	67 (66.3)	29 (28.7)	4.24 ± 0.53
Side effects	101	4 (4.0)	1 (1.0)	2 (2.0)	62 (61.4)	32 (31.7)	4.16 ± 0.85
Antidote to poisoning	100	5 (5.0)	11 (11.0)	20 (20.0)	54 (54.0)	10 (10.0)	3.53 ± 0.99
Drug use in elderly	101	2 (2.0)	7 (6.9)	6 (5.9)	5 (64.4)	21 (20.8)	3.95 ± 0.85
Drug use in pediatrics	101	2 (2.0)	6 (5.9)	3 (3.0)	64 (63.4)	26 (25.7)	4.05 ± 0.84
Drug dosage	101	0 (0.0)	0 (0.0)	0 (0.0)	46 (46.1)	55 (53.9)	4.54 ± 0.50
Drug interactions	101	2 (2.0)	5 (5.0)	3 (3.0)	62 (61.4)	29 (28.7)	4.09 ± 0.83
Cost of drugs	98	0 (0.0)	2 (3.1)	3 (3.0)	40 (40.8)	53 (54.1)	4.47 ± 0.66
Drug use in pregnancy	100	6 (6.0)	14 (14.0)	19 (19.0)	50 (50.0)	11 (11.0)	4.17 ± 0.79
Pharmacokinetics	100	6 (6.0)	14 (14.0)	19 (19.0)	50 (50.0)	11 (11.0)	3.46 ± 1.06

*Multiple responses

pharmacists also consulted drug information leaflets (DIL) significantly more frequently than females ($p = 0.034$).

DISCUSSION

Provision of drug information is an essential duty of pharmacists and as such requires regular practice. Effective practice involves the use of several drug information sources and these resources are reported to be regulated in certain parts of the world.[9] From the study, various groups requested drug information from the pharmacists and these ranged from health professionals to general members of the public and this was done often. All the studied groups frequently sought DIS from the pharmacists, but the lay public most frequently sought DIS more than other groups, while the physicians sought DIS the least. Drug information needs of medicine users in the general public usually comprise adverse drug effects and drug-drug interactions as reported in a study.[10] A study conducted in a tertiary hospital in India reported interns to be the most frequent seekers of DIS followed by nurses.[11] Also, another study in India showed nurses to be the most frequent seekers of DIS compared to other health professionals.[5] An Ethiopian study reported pharmacists to be the most frequent users of DIS.[2] The difference in finding may be attributed to differences in the study settings.

Literature sources are essential in the provision of DIS and in this study, respondents agreed to consulting literature sources, but at varying degrees. The most frequently consulted literature sources were the formularies (Emdex, BNF etc), this was followed by the internet and drug information leaflets respectively while journals were the least consulted literature. Formularies (BNF and Emdex etc) are always available and handy especially in community pharmacies where their availability is one of the conditions for obtaining a license for operation, they also do not require any special facility like power supply or fee, for its use, these may therefore account for their frequent use as seen in the study. The World Health Organization recommends textbooks, journals and databases for efficient discharge of DIS by the pharmacists.[12] Contrary to our finding, a previous study in Nigeria reported the internet to be the most frequently used source.[13]

The internet was the second most frequently consulted source for DIS by the respondents in this study. Another study in the Niger-Delta region of Nigeria however, revealed the internet to be the most frequent source of information for herbal medicines.[13] The availability of mobile phones with internet facility may have largely contributed to this. Although the internet is a major source of health and medical-related information, the ability to select high quality information from it, is of utmost importance.[14] The internet provides a wide range

What type of DI are you frequently asked in your practice?	Hospital		Community		P- value
	N	Mean ± SD	N	Mean ± SD	
Drug identification	42	3.98 ± 0.75	58	4.05 ± 0.93	0.664
Drug substitute	42	4.19 ± 0.51	59	4.27 ± 0.55	0.455
Side effects	42	4.26 ± 0.70	59	4.08 ± 0.93	0.302
Antidote to poisoning	41	3.66 ± 0.85	59	3.44 ± 1.07	0.281
Drug use in elderly	42	4.12 ± 0.45	59	3.83 ± 1.04	0.094
Drug use in pediatrics	42	4.21 ± 0.52	59	3.93 ± 0.99	0.097
Drug dosage	43	4.44 ± 0.50	59	4.61 ± 0.49	0.094
Drug interactions	42	4.26 ± 0.66	59	3.98 ± 0.92	0.097
Cost of drugs	41	4.24 ± 0.77	57	4.63 ± 0.52	0.004*
Drug use in pregnancy	43	4.26 ± 0.54	59	4.10 ± 0.94	0.337
Pharmacokinetics	41	3.85 ± 0.76	59	3.18 ± 1.15	0.002*
How often do you provide drug information?	43	4.12 ± 0.73	59	± 0.51	
What DI do you frequently provide?	**Male**		**Female**		
Drug identification	53	4.02 ± 0.89	47	4.02 ± 0.82	0.989
Drug substitute	53	4.23 ± 0.51	48	4.25 ± 0.56	0.825
Side effects	53	4.15 ± 0.86	48	4.17 ± 0.83	0.926
Antidote to poisoning	53	3.47 ± 0.95	47	3.60 ± 1.04	0.534
Drug use in elderly	53	3.89 ± 0.87	48	4.02 ± 0.84	0.433
Drug use in pediatrics	53	3.91 ± 0.88	48	4.21± 0.77	0.071
Drug dosage	54	4.56 ± 0.50	48	4.52 ± 0.50	0.729
Drug interactions	54	4.02 ± 0.93	48	4.19 ± 0.70	0.311
Cost of drugs	52	4.46 ± 0.50	46	4.48 ± 0.78	0.901
Drug use in pregnancy	54	4.13 ± 0.83	48	4.21 ± 0.77	0.621
Pharmacokinetics	53	3.51 ± 10.1	47	3.38 ± 1.11	0.496
How often do you provide drug information?	54	4.46 ± 0.69	48	4.39 ± 0.63	

Table 3: Difference in drug information requests most commonly received and provided by pharmacists

*Statistically significant
Multiple responses

of literature sources, making it an available source for various kinds of drug information. However; the user must be conversant with the relevant search engines and the appropriate databases for an effective search. The need for familiarity with other professional-based practice enhancing resources on the internet is also encouraged for pharmacists.[15] Additionally, the pharmacist is responsible for critical evaluation of drug information obtained from this source, since the internet is not regulated.[15] This is to ensure delivery of accurate DIS from this source.

Drug information leaflets was the third most frequently used information source by the pharmacists. Drug information leaflets are developed by pharmaceutical companies following established guidelines, and provide accurate information on medication safety and use.[16] This source provides information that relates to only the medicine in focus and the information provided may not be comprehensive enough for the health professional. However, it is usually very handy, easy and quick to consult.

Furthermore, the least most frequently consulted drug information sources in the study were: drug bulletins and published articles respectively. Drug bulletins and journals are not widely and regularly available in community pharmacy settings, as compared to the other sources and sparingly available in the hospital settings; this invariably results in its low utilization. This may however be dependent on location as a similar study in South-Eastern (Enugu) Nigeria reported contrasting findings where the major source of drug information to hospital pharmacists and medical doctors were medical journals, medical representatives and marketers of drug manufacturing companies respectively.[17] Another study however, suggests that internet and medical representatives were poorly utilized by their respondents.[1]

There was a significant difference in the consultation of drug information leaflets between the sexes; male pharmacists consulted this source significantly more frequently than females. There was however no significant difference in the extent of consultation of the other

Table 4: Consultation of literature sources by Pharmacists for DIS.

To what extent do you consult the following:	n	Not at all F (%)	Rarely F (%)	Undecided F (%)	Often F (%)	Very often F (%)	Mean ± SD
Text books	101	5 (5.0)	22 (22.8)	13 (12.9)	50 (49.5)	10 (9.0)	3.37 ± 1.09
Official books	102	2 (2.0)	13 (12.7)	10 (9.8)	56 (54.9)	21 (20.6)	3.79 ± 0.97
Articles (journals)	101	5 (5.0)	25 (24.8)	18 (17.8)	43 (42.6)	10 (9.6)	3.28 ± 1.09
Drug information leaflets	102	0 (0.0)	6 (5.9)	5 (4.9)	71 (69.6)	20 (19.6)	4.03 ± 0.69
Internet	101	0 (0.0)	1 (1.0)	2 (2.0)	50 (50.0)	48 (47.1)	4.43 ± 0.58
Reference books (Emdex, BNF)	102	0 (0.0)	1 (1.0)	1 (1.0)	45 (44.1)	55 (53.9)	4.51 ± 0.57
Drug bulletins	102	6 (5.9)	18 (17.6)	28 (27.5)	40 (39.2)	10 (9.8)	3.29 ± 1.06
Average mean score							3.81± 0.86

VARIABLE	B. Pharm		Pharm. D		Masters		WAPCP		P = value
	n	Mean ± SD	n	Mean ± SD	n	Mean ± SD	n	Mean ± SD	
To what extent do you consult the following:									
Text books	31	3.42 ±1.12	39	3.21 ±1.03	17	3.94 ±1.03	14	3.00 ±1.01	0.063
Official books	32	3.81 ±0.97	39	3.77 ±0.99	17	4.00 1.06	14	3.57 ±0.94	0.685
Articles (journals)	32	3.31 ±1.06	39	3.03 ±1.11	17	3.76 ±0.97	13	3.31 ±1.18	0.140
Drug information leaflets	32	3.94 ±0.71	39	4.05 ±0.66	17	4.12 ±0.78	14	4.07 ±0.73	0.825
Internet	32	4.41 ±0.50	39	4.41 ±0.68	17	4.41 ±0.62	14	4.57 ±0.51	0.825
Reference books (Emdex, BNF)	32	4.60 ±0.67	39	4.51 ±0.51	17	4.41 ±0.51	14	4.43 ±0.65	0.699
Drug bulletins	32	3.09 ±0.93	39	3.26 ±1.16	17	3.59 ±1.06	14	3.50 ±1.02	0.390

Table 5: Consultation of literature sources by pharmacist in different practice and sex groups.

To what extent do you consult the following:		Hospital		Community	p-value
	n	Mean ± SD	N	Mean ± SD	
Text books	43	3.47 ± 1.01	58	3.29 ± 1.15	0.437
Official books	43	3.84 ± 0.89	59	3.76 ± 1.04	0.706
Articles (journals)	43	3.37 ± 1.00	58	3.21 ± 1.17	0.457
Drug information leaflets	43	4.07 ± 0.59	59	4.00 ± 0.77	0.619
Internet	43	4.42 ± 0.55	59	4.44 ± 0.62	0.853
Reference books (Emdex, BNF)	43	4.42 ± 0.54	59	4.58 ± 0.59	0.173
Drug bulletins	43	3.63 ± 0.87	59	3.05 ± 1.12	0.006[*]
To what extent do you consult the following:		Male		Female	
Text books	53	3.36 ±1.19	48	3.38 ± 0.98	0.940
Official books	53	3.74 ± 1.05	48	3.85 ± 0.89	0.562
Articles (journals)	54	3.30 ± 1.18	47	3.26 ± 1.01	0.852
Drug information leaflets	54	4.17 ± 0.64	48	3.86 ± 0.73	0.034[*]
Internet	54	4.44 ± 0.60	48	4.42 ± 0.58	0.813
Reference books (Emdex, BNF)	54	4.54 ± 0.50	48	4.48 ±0.65	0.615
Drug bulletins	54	3.37 ± 1.15	48	3.21 ± 0.94	0.443

reference materials or literature sources between the practice groups and possession of higher pharmacy degree (Postgraduate degree holders). Mean consultation score for each of the literature sources was high across the groups in the study. A study has reported that the female pharmacists used different drug information sources better than their male counterparts.[18] Hospital pharmacists also consulted drug bulletins significantly more frequently than community pharmacists. In the hospital setting, drug information centers and drug bulletins are seen as two ways of medicines information dissemination.[5] This finding may be related to the availability of drug bulletins in hospitals.

The study also showed drug dosage to be the most frequently sought drug information, followed by cost of drugs, drug substitutes, drug use in pregnancy and side effects of drugs respectively. The least sought-after drug information were reported to be pharmacokinetics, antidote to drug poisoning and drug use in elderly respectively. In a study in South-East Nigeria, the most frequently sought after drug information were reported to be drug indication and drug use in special groups respectively.[17] Also, a study in Enugu – Nigeria reports that patient counseling was the most sought-after drug information, followed by drug indication and drug identification respectively.[1] A study in Ethiopia reported that most drug information enquires were targeted at therapeutic indication, adverse drug events, cardiovascular and infectious diseases.[2] Another study in India reported the most asked drug information to be drug indication, followed by side effects of drugs.[11]

Drug information most commonly sought from hospital pharmacists were; drug dosage, drug interactions, side effects of drugs and drug use in pregnancy. However, the most frequently requested from community pharmacists were cost of drugs, drug dosage and drug substitutes respectively. A study has reported cost of drugs to be the most frequently requested drug information for community pharmacists.[19] Another study also reported cost of drugs and drug dosage to be the most frequently requested drug information from community pharmacists.[18] Enquiries on the cost of drugs, was significantly higher for community pharmacists, while enquiries on pharmacokinetics was significantly higher for hospital pharmacists than community pharmacists. There was also no significant gender difference in the type of enquiries received by respondents in the study.

CONCLUSION

The study participants regularly received drug information requests from various groups, among which were;

patients, the general public, nurses, physicians and pharmacists. Pharmacists in the study had reference books (Emdex, BNF) as major source of drug information while journals were the least source. The most common drug information needs from pharmacists in the study were drug dosages, cost of drugs, drug substitutes and side effects. Queries on drug pharmacokinetics were required from the hospital pharmacists significantly more frequently than from community pharmacists. On the other hand, requests on cost of drugs were more frequently required from community pharmacists than hospital pharmacists. There were however, no significant differences in the information needs from male and female pharmacists as well as pharmacists who had various additional higher degrees. This portrays the immense benefit of drug information services to the public, while also suggesting the need for regular up-to-date training on DIS for pharmacists.

Declaration

Ethics approval and consent to participate

Ethics approval was sought and obtained from the ethics and research committee of Faculty of Pharmacy University of Benin, Benin City with the reference number EC/FP/019/09. Individual informed consent was also obtained from the respondents prior to the study.

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CONFLICT OF INTEREST

No conflicts of interest associated with this work

ABBREVIATIONS

ANOVA: Analysis of Variance; **DIS:** Drug Information Services; **DI:** Drug Information; **BNF:** British National Formulary.

SUMMARY

Drug information services are requested from pharmacists by persons across various socio-demographics and there is no preference of the pharmacists' gender. Hospital and community pharmacists most commonly consult same reference materials for DIS, except drug bulletins which are used more by hospital pharmacists. In the provision of the service, information on pharmacokinetics appear to be more frequently requested from hospital pharmacists

than community pharmacists.

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