

## The Roles of Pharmacists in Optimizing Care for Hypertensive Patients in Hospital and Community Pharmacies in Edo State, South-South Nigeria

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**In recent times, pharmacists' roles have expanded beyond just dispensing activities to include other patient-oriented services. We aimed to evaluate the level of pharmacist involvement in patient care optimization and their relationship with other caregivers in the management of hypertensive patients. A non-randomized study was carried out among pharmacists. Data was collected using a modified questionnaire, measuring pharmacist role, extent of involvement in patient care and the relationship with other caregivers. Data obtained were entered into Microsoft excel, SPSS software version 23 and GraphPad in stat for descriptive and inferential statistics. Out of 155 Pharmacists, 80 (51.9%) were females, 76 (49.4%) had practiced for 1-5 years and 81 (52.6%) practiced in a community setting. Eight five (55.2%) were most of the time involved in identifying, resolving and preventing drug therapy problems, 79 (51.3%) were always providing adequate information on hypertensive therapy, 64 (41.6%) were most of the time involved in developing therapeutic care plans. Inferential statistics showed that gender, qualifications, years of experience, practice setting, affected pharmacists' involvement in therapeutic care planning. Community pharmacists were more involved in hypertensive patients counseling and therapeutic care planning ( $p < 0.05$ ). More than half of the respondents were involved in newer roles of pharmaceutical services. In addition, Pharmacists with additional qualifications and those with more years of service had a better relationship with other healthcare professionals.**

**Key words:** Hypertensive therapy, therapeutic care planning, patients counseling.

### BACKGROUND

There are many causes of poor blood pressure (BP) control besides lifestyle choices, including suboptimal patient medication adherence [1, 2] and failure to intensify therapy (clinical inertia) by clinicians [3]. One of the most effective strategies to improve BP control is team-based care, especially with pharmacists, nurses and physicians [4, 9]. Team-based care that includes the patient, primary care provider, and other healthcare professionals has been recommended as a strategy to improve BP control [5]. One of these care models, the physician-pharmacist collaborative management (PPCM) model, is a

process by which pharmacists work directly with patients' primary care physicians to optimize therapy and supply patient education.

The role of pharmacists in the collaborative management of drug therapy continues to expand. A substantial body of evidence indicates that pharmacists' involvement in collaborative drug therapy management improves outcomes and reduces health care costs in patients with a variety of diseases [6]. Studies outside Nigeria, have shown that pharmacists collaborating with other healthcare team improve positive outcomes in hypertensive patients [4, 8-10]. Teams involving pharmacists or nurses in patient management can significantly improve

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blood pressure control. Meta-analyses and systematic reviews had found that team-based care can reduce systolic blood pressure by 4–10 mmHg over usual care [4]. A recent review study, that included twenty one references, conducted to detect the outcomes of pharmacist-nurse collaboration to enhance patients' adherence to drugs showed that pharmacists and nurses could work together to achieve better outcomes [7]. Although study has described the type and extent of care provided [11].

Within the Nigerian setting in particular, although two studies Jos (North-central Nigeria) and Borno (North-east) have reported pharmacist involvement in medication counseling of schizophrenic patients [12-13]. There is inadequate information on the other roles of pharmacists in providing care for hypertensive patients. Hence, this study aimed at evaluating the extent to which pharmacists working in hospitals and community pharmacies in Edo state, Nigeria, optimized patient care and their relationship with other health caregivers in the management of hypertension

## METHODS

### Design and setting

A descriptive cross-sectional, non-randomized study was carried out between June to August 2018 during the monthly meetings of the Association of Community Pharmacists and Association of Hospital Pharmacists of Nigeria (Edo State Chapter). The Association incorporates pharmacists working in Edo State located in the southern part of Nigeria. The purpose of the study and confidentiality of information to be provided was explained to each participant, after which they all signed informed consent forms. The questionnaire was administered to the participants for completion.

### Survey instrument

Eighteen-item, structured, pretested, self-administered questionnaire utilizing a five-point rating scale (never, rarely, sometimes, most of the time and always) was used for the survey. Questionnaire items were adapted from a previous study [14] and then modified. The

questions were reviewed by hospital and academic clinical pharmacists for face validity and then pretested on 10% of the total population of pharmacists in an alternative similar setting. Appropriate adjustments were made as necessary. The instrument contained four sections. Section one contained questions describing the socio-demographic characteristics of the respondents. Section two contained questions that assessed pharmacists' involvement in the provision of several components of pharmaceutical care. Questions under this domain assessed the extent to which pharmacists developed therapeutic care plans, had access to information on hypertension, assessed antihypertensive therapy, identified, resolved and prevented drug therapy problems, evaluated cost effectiveness of therapy and documented their interventions amongst others. The third section specifically focused on pharmacists' roles in hypertensive patients counseling. Areas assessed included access to current drug literature on hypertension, development of a care friendly and responsible relationship with hypertensive patients, discussing side effects and interactions of anti-hypertensives and conducting seminars for hypertensive patient counseling in addition to others. The final section assessed pharmacists' relationship with other healthcare professionals. This was assessed by the extent to which pharmacists maintained open and effective means of communication with and provided education on the management of hypertensive patients to other healthcare professionals.

### Data analysis

Data obtained were coded and analyzed using Statistical Package for Social Sciences (SPSS) version 22 (SPSS Inc., Chicago, Illinois, USA) for descriptive statistics. Items within each domain were summarized using descriptive statistics such as mean and standard deviation. Two sided independent sample t-test and one-way analysis of variance (ANOVA) were used to compare means across groups with the aid of instat Graph Pad version 3 for inferential statistics, P-values set at  $p < 0.05$ . The negative response was  $< 2.5$  while positive response was  $> 2.5$ .

## RESULTS

Out of 155 pharmacists, 80(51.9%) were females, 59(38.3%) were aged between 31-40 years, 23(14.8%) had an MSc. Degree, 107(69.5%) had a Pharm D degree, 35(22.7%) were senior registered pharmacists, 76(49.4%) had practiced for 1-5 years and 81(52.6%) practiced in a community setting (Table 1).

**Table 1: Social demographic characteristics of respondents**

<b>Variables</b>	<b>Frequency n (%)</b>
<b>Sex</b>	
Male	74 (48.1)
Female	80 (51.9)
<b>Age</b>	
20-30	58 (37.7)
31-40	59 (38.3)
Above 40	35 (22.7)
<b>Educational Qualification</b>	
B.Pharm	45 (29.2)
Pharm D	107 (69.5)
<b>Other Qualifications</b>	
MSC	23 (14.8)
FPC Pharm	1 (0.6)
PhD	7 (4.5)
<b>Position</b>	
Intern	26 (16.9)
Chief Pharmacist	12 (7.8)
Director	1 (0.6)
Reg 1	35 (22.7)
Superintendent	42 (27.3)
<b>Year of Practice</b>	
0-5	76 (49.4)
6-10	42 (27.3)
Above 10	32 (20.8)
<b>Practice Setting</b>	
Hospital	72 (46.8)
Community	81 (52.6)

In table 2, 80 (52.0%) Pharmacists were involved in documenting intervention for hypertensive patients, 64 (41.6%) Pharmacists were most of the time involved in developing therapeutic care plans, 65(42.2%) Pharmacists most of the time had access to information about hypertensive patients, 85(55.2%) Pharmacists most of the time involved in identifying, resolving and preventing drug therapy problems, 75(48.7%) Pharmacists were most of the time involved in evaluating cost-effectiveness of anti-hypertensive drugs.

On hypertension counseling, 79 pharmacists (51.3%) were always providing adequate information on hypertension therapy, while 51 (33.1%) rarely carried out seminars on hypertensive patient counseling. With regard to the relationship with other caregivers, 53 pharmacists (34.4%) maintained an open and effective means of communication with other caregivers regarding hypertension medications, 53(34.4%) most of the time were involved in educating other caregivers on management of hypertensive patients and 81(52.2%) were always involved in documenting the result of each hypertensive patient.

**Table 2: Frequency statistics on Pharmacists Involvement in Therapeutic care planning, counseling and relationship with other caregiver in the management of hypertensive patients**

Items questions Pharmacist's Involvement	Never n (%)	Rarely n (%)	Sometimes n (%)	Most of the time n (%)	Always n (%)
<b>Therapeutic plan Hypertension</b>					
<b>Therapy</b>					
Developing therapeutic care plan	0(0.0)	4 (2.6)	37(24.0)	64(41.6)	49(31.8)
Access to information about hypertensive patients	1(0.6)	2.0(1.3)	24(15.6)	65(42.2)	62(40.3)
Determination of product formulary	7(4.5)	38(24.7)	46(29.9)	43(27.9)	19(12.3)
Assessed Hypertensive therapy	0(0.0)	3(1.9)	30(19.5)	57(37.0)	64(41.6)
Identified, resolved and prevented drug therapy problems	0(0.0)	1(0.6)	24(15.6)	85(55.2)	43(27.9)
Modification of therapy for hypertensive patients	1(0.6)	2(1.3)	46(29.9)	62(40.3)	43(27.9)
Monitor Hypertensive drug regimen	0(0.0)	3(1.9)	24(15.6)	66(42.9)	61(39.6)
Followed up/assessed therapeutic effect of drug used for hypertensive	0(0.0)	3(1.9)	25(16.2)	70(45.5)	56(36.4)
Evaluate cost effectiveness of anti-hypertensive therapy	2(1.3)	4(2.6)	23(14.9)	75(48.7)	50(32.5)
Involved in documenting intervention for hypertensive patients.	0(0.0)	5(3.2)	9(6.0)	80(52.0)	60(39.0)
<b>Hypertensive Patients Counseling</b>					
Access to current drug literature on anti-hypertensive.	0(0.0)	1(0.6)	24(15.6)	74(48.1)	55(35.7)
Adequate information for hypertensive therapy.	0(0.0)	1(0.6)	13(8.4)	61(39.6)	79(51.3)
Care, friendly and responsible relationship with hypertensive patients.	0(0.0)	1(0.6)	22(14.3)	61(39.6)	70(45.5)
Discuss side effects and interaction of anti-hypertensive therapy with patients.	0(0.0)	2(1.3)	28(18.2)	56(36.4)	68(44.2)
Provide medication leaflet to hypertensive patients.	2(1.3)	10(6.5)	63(40.9)	48(31.2)	30(19.5)
Carry out seminars on hypertensive patients counseling.	5(3.2)	51(33.1)	54(35.1)	35(22.7)	9(5.8)
<b>Relationship with other healthcare Professionals managing hypertensive patients</b>					
Maintain open and effective means of communication with other caregivers regarding hypertensive medications.	0(0.0)	14(9.1)	47(30.5)	53(34.4)	40(26.0)
Educate other caregivers on management of hypertensive patients.	0(0.0)	14(9.1)	47(30.5)	53(34.4)	40(26.0)
Involved in documenting the result of each hypertensive patient.	0(0.0)	6(3.9)	6(3.9)	81(52.2)	61(39.6)

The role of Pharmacists involvement in therapeutic plan, Patients counseling and relationship with other caregivers were of mean scores  $3.52\pm 0.8212$ ,  $3.949\pm 0.7983$  and  $3.631\pm$

$0.8937$ , respectively, with a Cronbach alpha for each domain of involvement of 0.801, 0.836 and 0.651, respectively, and factor loading ranges from 0.744 to 0.482 as shown in Table3.

**Table 3: Descriptive statistics on Pharmacists Involvement in Therapeutic plan, counselling and relationship with other caregiver in the management of hypertensive patients**

Items Questions	Mean $\pm$ SD	Factor loading	Cronbach alpha
<b>Pharmacist's Role and Extent of Involvement</b>			
<b>Therapeutic plan of Hypertensive Therapy</b>			<b>0.801</b>
Developing therapeutic care plan	3.026 $\pm$ 0.8161	0.559	
Access to information about hypertensive patients	3.201 $\pm$ 0.7952	0.495	
Determination of product formulary	3.169 $\pm$ 1.1132	0.572	
Assessed Hypertensive therapy	4.182 $\pm$ 0.8121	0.600	
Identified, resolved and prevented drug therapy problems	3.111 $\pm$ 0.6743	0.482	
Modification of therapy for hypertensive patients	3.935 $\pm$ 0.8298	0.623	
Monitor Hypertensive drug regimen	3.201 $\pm$ 0.7702	0.484	
Followed up/assessed therapeutic effect of drug used for hypertensive	4.162 $\pm$ 0.7624	0.585	
Evaluate cost effectiveness of anti-hypertensive therapy	4.084 $\pm$ 0.8329	0.620	
Documenting interventions	3.136 $\pm$ 0.8329	0.585	
<b>Mean score (n = 154)</b>	<b>3.520<math>\pm</math>0.8212</b>		
<b>Hypertensive Patients Counseling</b>			<b>0.836</b>
Access to current drug literature on anti-hypertensive	4.188 $\pm$ 0.7119	0.615	
Adequate information for anti-hypertensive therapy	4.416 $\pm$ 0.6735	0.744	
Care, friendly and responsible relationship with hypertensive patients	4.299 $\pm$ 0.7332	0.617	
Discussed side effects and interactions of anti-hypertensive	4.234 $\pm$ 0.7904	0.543	
Provide medication information leaflet to hypertensive patients	3.614 $\pm$ 0.9186	0.567	
Seminars on hypertensive patients counseling	2.948 $\pm$ 0.9620	0.563	
<b>Mean score (n = 154)</b>	<b>3.9498<math>\pm</math>0.7983</b>		
<b>Relationship with other care Professionals.</b>			<b>0.651</b>
Maintained open and effective means of communication	3.968 $\pm$ 0.8356	0.543	
Educate on the management of hypertensive patients	3.773 $\pm$ 0.9395	0.554	
Documenting the results of each hypertensive patient	3.052 $\pm$ 0.9060	0.573	
<b>Mean score (n = 154)</b>	<b>3.631<math>\pm</math>0.8937</b>		

Inferential statistics (Table 4) showed that male pharmacists, PharmD holders, pharmacists with more years of practice in service, community pharmacists and those with additional qualifications were more involved in therapeutic plan of hypertensive patients with a mean score of  $4.053 \pm 0.8206$ ,  $4.021 \pm 0.8238$ ,  $4.023 \pm 0.8110$ ,  $4.014 \pm 0.8064$ ,  $4.025 \pm 0.8210$  and  $4.024 \pm 0.8285$ , respectively. Community

pharmacists were more involved in patients counseling (mean score  $4.025 \pm 0.8285$ ) than hospital pharmacists (mean score of  $3.615 \pm 0.8292$ ). Pharmacists with additional qualifications and those with more years of service had a better relationship with other healthcare professionals with a mean score of  $4.018 \pm 0.8406$  and  $4.043 \pm 0.8035$ , respectively.

**Table 4: Inferential statistics for demographic variables of Pharmacists involvement**

Variables	n	Therapeutic care Planning (n)	n	Patient Counseling(n)	n	Relationship with Other Healthcare Professionals(n)
<b>Sex</b>						
Male	74	4.053 ± 0.8206	77	3.981 ± 0.7849	74	4.005 ± 0.8750
Female	80	3.791 ± 0.8218	80	3.921 ± 0.8114	80	3.863 ± 0.9067
		<b>P= 0.0497</b>		P =0.6241		P =0.3250
<b>Educational qualification</b>						
B Pharm	45	3.710 ± 0.8645	45	3.837 ± 0.8453	45	3.778 ± 0.9383
Pharm D	107	4.021 ± 0.8238	107	3.950 ± 0.7983	107	3.931 ± 0.8937
		<b>P =0.0379</b>		P =0.4349		P =0.3439
<b>Position</b>						
Intern and Grade I	57	3.701 ± 0.8480	57	3.923 ± 0.8058	57	3.801 ± 0.9997
Senior Pharmacists	97	4.021 ± 0.8110	97	3.959 ± 0.7911	97	3.921 ± 0.8917
		<b>P = 0.0210</b>		P =>0.999		P =0.4049
<b>Years of practice</b>						
Below 5 years	76	3.712 ± 0.8340	76	3.940 ± 0.7976	76	3.742 ± 0.9550
Above 5 years	74	4.014 ± 0.8064	74	3.939 ± 0.7952	74	4.018 ± 0.8406
		<b>P =0.0259</b>		P =0.1098		<b>P =0.0512</b>
<b>Practice setting</b>						
Hospital Pharmacy	72	3.615 ± 0.8292	72	3.795 ± 0.8311	72	3.995 ± 0.8826
Community Pharmacy	82	4.025 ± 0.8210	82	4.061 ± 0.8021	82	4.031 ± 0.7931
		<b>P =0.0025</b>		<b>P =0.0539</b>		P =0.7901
<b>Additional qualifications</b>						
Yes	31	4.024 ± 0.8285	31	3.975 ± 0.7897	31	4.043 ± 0.8035
No	123	3.706 ± 0.7995	123	3.849 ± 0.8164	123	3.612 ± 0.9143
		<b>P =0.0512</b>		P =0.4264		<b>P =0.0200</b>

## DISCUSSION

In recent times, pharmacists' roles have expanded beyond just dispensing activities to include other patient-oriented services such as; patient counseling, therapeutic planning and monitoring, among others. Pharmacists also collaborate with other healthcare professionals to enhance patients' adherence and detect any adverse drug reaction associated with the therapy [15]. Pharmacist involvement in the provision of patient care has several benefits which include reduction in drug related problems, increased patient knowledge and quality of life [11, 16].

Although, our findings revealed that majority of the pharmacists were actively involved in the traditional roles of pharmacists, more than half

of them reported positive involvement in the newer roles of identifying, resolving, preventing drug therapy problems and accessing current literature on antihypertensive drugs. This is in line with the work carried out by Yusuf and colleagues [13]. In their study, pharmacists were also involved in the traditional roles of dispensing of drugs to psychiatric outpatients.

Less than half of the sampled pharmacists reported that they were most of the time involved in developing therapeutic care plans, evaluating cost-effectiveness of anti-hypertension drugs and had access to information about hypertensive patients. Study has shown that Pharmacists spending more time with patients will reduce the cost of management of hypertension [17].

The role of a clinical pharmacist in community pharmacies is to identify and resolve medication problems, such as prescribing errors and problems that develop from patient behavior. Clinical pharmacists have the knowledge and skill base to contribute to improved medication safety and effectiveness through collaborative participation in patient-specific medication and disease management. These activities are critical in providing quality healthcare and require the majority of pharmacist time, attention, and skill [18]. More than half of the pharmacists who participated in our study were most of the time involved in identifying, resolving, preventing drug therapy problems and providing adequate information on hypertension counseling.

Seminars and other educational/training programmes are means through which pharmacists can keep their knowledge up to date [19]. Furthermore, educational trainings for pharmacists within the context of mental health care have been shown to positively impact pharmacists' practices and attitudes [20]. Very few of the participating pharmacists rarely carry out seminars on hypertensive patient counseling, maintain an open and effective means of communication with other caregivers regarding hypertension medications, and educate other caregivers on management of hypertensive patients.

Documentation and other administrative activities are necessary and it is important that these tasks are completed efficiently so the pharmacist can contribute fully to individual patient care. Our study showed that one third of the pharmacists were involved in documentation. Almost half of the pharmacists reported maintaining a caring and friendly relationship with hypertensive patients, and open channels of communication with other health professionals. However, less than half had positive responses to their role in educating other healthcare providers. There is evidence to

show that collaborative care between pharmacists and other health professionals can improve outcomes for patients [16]. Pharmacists can render assistance by helping patients understand their disease condition and medication better, monitoring adverse effects, identifying drug interactions, facilitating adherence to treatment and suggesting changes to therapy to physicians [21]. By so doing, pharmacists can positively affect the behavioral, clinical and economic outcomes associated with drug therapy [22].

The role of pharmacists' involvement in therapeutic planning, patient counseling and their relationship with other caregivers were above a midpoint of 2.5 with a Cronbach alpha for each domain of involvement of 0.801, 0.836, 0.651 and factor loading ranges from 0.744 to 0.482.

Inferential statistics showed that male Pharmacists, pharmacists with PharmD, Pharmacists with longer duration of practice, community pharmacists and pharmacists with additional qualifications showed more involvement in therapeutic plan of hypertensive patients with higher mean scores. In addition, Community pharmacists showed more involvement in patients counseling and therapeutic planning than the hospital pharmacists ( $p < 0.05$ ).

## CONCLUSION

More than half of the respondents were involved in newer roles of pharmacists in pharmaceutical care. Gender, qualifications, years of experience, practice setting, affected pharmacists' involvement in therapeutic planning. In addition, community pharmacists were more involved in patients counseling and Pharmacists with additional qualifications and those with more years of service had a better relationships with other healthcare professionals

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