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Adherence to practice, management regulations, and quality improvement activities in community pharmacies in Bayelsa State and rivers State, Nigeria

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Abstract

Community pharmacist had suffered more intrusions from allied health care professionals and non-health professionals in the fields of practice/or endeavor, in history and even lately. Efforts in improving on its tenets of practice in Nigeria are still at the seeding states. This study determines the extent of practice carried out in pharmacy administrative areas such as premises and structure, practice management and quality improvement domains in community pharmacies in Bayelsa State and Rivers States as at the year 2017. Of three hundred and thirty-seven (337) questionnaires distributed, three hundred and twelve (312) were successfully retrieved (92.58% response rate), and results were analyzed using SPSS VERSION 27. The study reveals involvement of more male pharmacists (161; 51.6%) most of whom are below age 30 (177; 56.7%) having B.Pharm (177; 56.7%) having 6 to 10 years' experience (140; 44.9%) in self-owned premises (190; 60.8%) located mostly in Rivers States (172; 55.1%). There was a significant adherence to premises and structure regulations ($p < 0.0001$, $MWU = 0.000$, $U' = 196.00$), and a significant positive trend (always, $p < 0.0001$) in patient management (39.3%, $KW = 42.855$, $F = 62.098$, $CFT = 81.252$). However, a significant negative trend "rarely" ($p < 0.0001$) was observed in quality improvement (33.8%, $KW = 24.37$, $CFT = 6.94$). Community pharmacy practice is below the recommended standards in the two States. Interventions are strongly recommended on the failing trends of community pharmacy and community pharmacists to be encouraged and regulated on improving their practice.

Keywords: Community pharmacy, community pharmacy administration, premises and structure, practice management, quality improvement

Introduction

Community pharmacies are establishments that are privately owned, and whose functions are in four parts; serving society needs for drug products, pharmaceutical services (dispensing of drugs, prescribing of Pharmacy Only Medicines), disease prevention (patients' drug consultations) and health promotion activities. They are also described simply as retail pharmacies [1-4]. The last two, disease prevention and health promotion have become a business of concern for all healthcare professionals, and this has become the hub of business for allied health and non-health fields of endeavor, both in history and even now [5-12]. This fold has reported a sigh of relieve [13-19] partly because of the presence of recommended minimum standards [20, 21], the regulatory and controlling efforts of the National Agency for Food and Drug Administration and Control (NAFDAC), the Pharmacists' Council of Nigeria (PCN) and the Association of Community Pharmacists of Nigeria (ACPN) [19].

The drug and pharmaceutical services provided to society involves more of managerial functions which are products of the pharmacy's premises and structure, practice management and that of the quality improvement strategies. The design and layout of the pharmacy tells all about the status of the pharmacy. Though differences in size may occur country wise, in consideration of population in the trading area, distribution of the income among the population, type of industry and the competitive climate, the preference for locations are the same. Defined minimum standards exist in all countries concerning its designs [22]. In Nigeria, the minimum standards are set out in the 4-part compendium [20].

The Pharmacy ethics and the compilation of pharmacy, drugs and related laws and rules in Nigeria play home to specifying dos and don'ts in the wordings in practice and publicity [21].

Practice management must be done appropriately to allow for efficient, safe, and effective delivery of services. Marialice *et al.*, 2012 [23] identified that the instances of such services should include the organizational structures, mission statements, annual appraisal system, job descriptions, descriptions of services provided, short term objectives, procedures and policies for hiring and/or credentialing personnel, the services and operations, adequate/appropriate facilities that could deliver quality services, sufficient and appropriate support, professional and technical staffs to deliver quality services, resources available to deliver the needed level of services in the practice. Others, according to them included the availability of systems that could document pharmacy workload, the financial performance, and patient care outcomes data of the practice, and a process which will be in place to prevent and deal with fraud, waste, and abuse. Practice management activities have been reported to have fared well in the study region [23].

Analysis and communication of quality-related events (QREs) to persons internally, on national databases, peer-review committees, or to patient safety organizations when observed will be geared at improving the quality of patient health and healthcare. For instance, routine training and education of pharmacy staff on quality improvement initiatives, and consumer surveys regarding pharmacy staff and patient care services with the intent of improving patient satisfaction and outcomes of care will suffice. This standard has been identified to be a necessary [24, 25], though requires enforcement most of the time [26]. Quality improvement activities have been reported to be poorly performed in the study region [27-29].

The present study aims to determine the quality of pharmacy administration carried out in community pharmacies in Bayelsa and Rivers state of Nigeria.

Method

Instrument description/validation

A questionnaire based cross sectional descriptive study was carried out with the consent of three hundred and twenty pharmacies in Bayelsa and Rivers state of Nigeria. The questionnaire used was in four (4) sections; section A comprising demographics of the community pharmacies whereas section B to section D entailing questions evaluating adequacy of contents of the community pharmacy's practice administration in such domains. Section B consisted of fourteen (14) questions on premises and structure domain, were constructed nominally to give

responses as "yes" or "no". This section had a factor score loading of 0.677 and chronbach's alpha of 0.531. Section C consisted of ten (10) questions in practice management domain, with 0.632 factor loading and 0.890 chronbach's alpha. Section D was made up of six (6) questions in quality improvement domain. A factor score loading of 0.706 and chronbach's alpha of 0.795 was recorded in this section. The construct and content of the questionnaire in the different domains were adapted mainly from other scholar activities [29]. The questionnaires scored average of 0.67 factor loading and 0.79 chronbach's alpha during its pilot.

Instrument distribution

After obtaining ethical averageageeval from the Deputy Pharmaceutical Services in the Ministry of Health in the two states, the questionnaires were distributed to community pharmacies, situated both in rural and urban settings, operating in the two states as at the year 2017, after explanation of the essence of the research on the visits to the premises. A later date was scheduled for collection of the instrument. Three hundred and twelve (312) were retrieved in total.

Data analysis

Data was subject to descriptive and non-parametric analysis using SPSS version 27, Excel and GraphPad Instat3. Specific questions were reported with descriptive statistics. Columns of specific domains were reported with measures of central tendency values, and cross tabulations done with the demographic data against that of the practice specific data to evaluate lines of significant relationship between them.

Since the questions were in likert form and are ordinal, two sample T-test and Mann-Whitney test, ordered logistic regression and/or multinomial logistic regression were used. Also, the responses collapsed into two forms; activity (Always+Often+Sometimes) and inactivity (Rarely+Never) and binary logistic regression was run. Chi-square goodness-of-fit was also run at 5% alpha level to test for fitness into the expected best performance.

Result

Demographics of community pharmacies/pharmacists in Bayelsa and Rivers state of Nigeria

Respondents were more of B.Pharm holders (56.7%), males (51.6%), aged below 30years (56.7%), with 6 to 10 years' experience in self-owned premises (44.9%). For those pharmacies that participated in the study, a greater number was from River's State compared to Bayelsa State (55.1%), in the urban areas (63.1%) with 0 to 5 staff (70.5%). (See table 1). Strong correlations were also reported between the demographic data and the domains of practice. (See table 2)

Table 1: Demographics of community pharmacies/ pharmacists in Bayelsa and Rivers state of Nigeria (N=312)

Demographics of community pharmacies/pharmacists in Bayelsa and Rivers state of Nigeria			
S/N	Question	Response label	Freq. (%)
1	Gender	Male	161(51.6)
		Female	151(48.4)
2	Age range	<30	177(56.7)
		31-40	115(36.8)
		>41	20(6.4)
3	Years of graduation	0-5	77(24.7)
		6-10	178(57.1)
		11-20	44(14.1)
		>21	13(4.1)
4	Years of experience	0-5	128(41.0)
		6-10	140(44.8)
		11-20	36(11.5)
		>21	8(2.6)
5	Qualification	B.Pharm	177(56.7)
		Pharm.D	98(31.4)
		MSc	31(9.9)
		MPH/MBA	6(1.9)
6	Ownership	Self	190(60.9)
		Employee	120(38.5)
7	Pharmacy age	0-5	116(37.2)
		6-10	110(35.3)
		11-20	36(11.5)
		>21	50(16.0)
8	Premises address	Bayelsa State	140(44.8)
		River's State	172(55.1)
9	Pharmacy location	Urban	197(63.1)
		Semi-urban	87(27.8)
		Rural	23(7.4)
10	Number of staff in the pharmacy	0 -5	220(70.5)
		6 – 10	80(25.6)
		above 11	12(3.8)

Table 2: T-test of community pharmacies/pharmacists demographics and domain averages in Bayelsa State and Rivers State of Nigeria

Item	Response	Gender		Age				Experience				Degree				Ownership		Location					
		Male	Female	Below 30 years	31 - 40 years	41 - 50 years	Above 51 years	0 - 5 years	6 -10 years	11 - 20 years	21 - 30 years	31 - 40 years	Above 41 years	B. Pharm	Pharm D	MSc	MPH/ MBA	PhD	Self	Employee	Urban	semi-urban	rural
Premise	No	19	18	20	15	1	1	19	13	4	1	0	0	23	10	3	1	0	19	17	23	10	2
	Yes	142	133	157	100	15	3	109	127	32	7	0	0	154	88	27	5	0	170	103	173	76	21
Practicing	always	12	11	14	8	0	1	10	11	2	0	0	0	12	7	4	1	0	14	9	14	8	1
	Often	30	34	34	27	3	0	22	29	9	4	0	0	28	28	6	2	0	38	26	32	24	8
	Sometimes	83	64	92	49	3	3	37	96	10	4	0	0	97	36	14	0	0	101	45	83	51	11
	Rarely	66	69	73	52	8	3	59	56	21	0	0	0	81	37	14	3	0	90	45	83	43	6
	Never	130	125	143	93	17	2	128	88	31	8	0	0	136	88	24	7	0	138	116	182	48	20
Quality improvement	always	37	54	63	25	2	2	42	35	10	4	0	0	54	23	12	3	0	48	42	55	9	3
	Often	66	39	60	40	4	2	32	58	11	4	0	0	63	26	14	3	0	69	35	67	9	6
	Sometimes	16	26	14	25	4	0	19	16	7	0	0	0	22	19	1	0	0	24	18	21	9	7
	Rarely	12	13	12	11	2	1	8	14	2	0	0	0	12	11	1	1	0	20	5	13	9	3
Never	30	19	29	15	5	0	27	17	5	0	0	0	27	20	2	1	0	30	19	41	9	5	

Premises and Structure Domain

There was a high significant appreciable adherence to this domain (88.1%, $p < 0.0001$, MWU-statistic=0.000, $U' = 196.00$). Chi-square Goodness-of-fit test gives unfit results to the standards set with $p < .000$ exact significant probability levels, thus revealing substandard level of practice in this domain. Though the study revealed positive trend in all the fourteen (14) items studied. For instance, the dimensions of the premises are more than or equal to 10sqft by 20sqft (233;74.7%), with designs and layouts permitting a logical flow of work (281 (90.1%). The pharmacists on duty were reported to usually wear name tags (254, 81.5%) and their names displayed over the main entrances (232, 74.4%). The external appearances of the pharmacies were reported to inspire confidence to the public (294, 94.2%), with entrances accessible to disabled persons (253, 81%). Most pharmacies were observed to be lockable to exclude

unauthorized entries (291, 93.2%). Fire extinguishers (271, 86.9%), refrigerators (291, 93.2%), toilet facilities (269, 86.2%), waste disposal systems (292, 93.5%), reference books (300, 96.1%), private areas (295, 94.6%) and seating areas (292, 93.6%) were observed to be available in the community pharmacies in the states of the study. The cross tabulation of demographic data with that of specific items in the premises and structure domain indicated significant difference among pharmacies and pharmacists observed in the practice in Bayelsa and Rivers states in the Niger Delta region. On average, it was observed that more male pharmacist (81) below the age of 30 (89), with 6-10 years' experience (70) having B.Pharm degree (89) in self-owned new pharmacies (95) in the urban areas (99) having 0-5 staff (110), performed better compared to the others in the domain. The difference of such observed practice to that of the other demographics was significant (Table 3)

Table 3: Response patterns of community pharmacies/pharmacists in Bayelsa and Rivers state of Nigeria concerning premises and structure domain (N=312)

Response patterns of community pharmacies/pharmacists in Bayelsa and Rivers state of Nigeria concerning premises and structure domain			
S/N	Question item	Response	
		No (%)	Yes (%)
1	Dimension of premises are more than or equal 10sqft by 20sqft	78(25.3)	234(74.7)
2	Design and layout permit a logical flow of work	30(9.9)	282(90.1)
3	Pharmacist's name is displayed over the main entrance	79(25.6)	233(74.4)
4	The pharmacist on duty wore a name tag	57(18.5)	255(81.5)
5	External appearance inspires confidence	17(5.76)	294(94.2)
6	Entrance is accessible to disabled persons	58(18.9)	253(81)
7	Pharmacy is lockable and can exclude any unauthorized entry	20(6.73)	291(93.2)
8	There is a fire extinguisher	40(13.1)	272(86.9)
9	There is a refrigerator	20(6.73)	291(93.2)
10	Toilet and other hygienic conditions are available	42(13.7)	269(86.2)
11	Adequate means of waste disposal is available and in use	19(6.4)	292(93.5)
12	Reference books are available	12(3.9)	300(96.1)
13	There is a private area	16(5.4)	296(94.6)
14	There is seating area for patients	19(6.4)	293(93.6)
	Average score	37(11.9)	275(88.1)

Mean (no 37.1, yes 274.9), median (no 26, yes 286), $p < 0.0001$, MWU-statistic = 0.000, $U' = 196.00$

Practice Management Domain

Chi-square goodness-of-fit reveals exact significance and point probabilities of $p < 0.000$ and unfitness into expectations of the practice management domain. This means the occurrence of suboptimal practice management practices in the study environment. The modal pattern of response was “always” (39.3%), with all the ten (10) items studied in this domain showing increasingly positive trends in practice. Pharmacies in the region were observed to always have mission statements, organizational structure, job description

for each category, and performance appraisal activities. Documentation of provided services, establishment of procedures for hiring/credentialing personnel and provision of appropriate facilities to deliver qualitative services were seen to be done by pharmacies. Professional staff are employed to deliver quality services, processes are put in place to prevent fraud, waste, and medication abuse. The demographic variances were like that observed in the premises and structure domain (Table 4).

Table 4: Response patterns of community pharmacies/pharmacists in Bayelsa and Rivers state of Nigeria concerning practice management domain (N=312)

Response patterns of community pharmacies/pharmacists in Bayelsa and Rivers state of Nigeria concerning practice management domain									
Domain	S/n	Question item	Response in frequency and percentage						
			Never	Rarely	Sometimes	Often	Always	Negative	Positive
Practice management domain	1	Mission statement reflects services	4(1.3)	67(21.5)	72(23.1)	52(16.7)	84(27.2)	72(22.8)	209(66.9)
	2	Having defined organizational structure	35(11.2)	44(14.1)	76(24.4)	67(21.5)	105(33.9)	79(25.3)	249(79.7)
	3	Having job descriptions for staff	19(6.1)	44(14.1)	74(23.7)	71(22.8)	107(34.3)	63(20.2)	252(80.8)
	4	Doing annual performance appraisal	16(5.1)	64(20.5)	81(26.0)	57(18.3)	99(31.7)	80(25.6)	237(75.9)
	5	Documenting descriptions of services	11(3.5)	27(8.7)	70(22.4)	82(26.3)	118(37.8)	38(12.2)	270(86.5)
	6	Establish procedures for hiring personnel	15(4.8)	27(8.7)	79(25.3)	70(22.4)	110(35.5)	42(13.5)	260(83.3)
	7	Having facilities to deliver quality services	25(8.0)	17(5.4)	79(25.3)	77(24.7)	135(43.3)	42(13.5)	292(93.3)
	8	Professional staff to deliver quality service	4(1.3)	23(7.4)	76(24.4)	66(21.2)	145(46.4)	27(8.7)	287(91.9)
	9	Process in place for preventing fraud	2(0.6)	17(5.4)	77(24.7)	75(24.0)	141(45.2)	19(6.1)	294(93.9)
	10	Process in place to prevent med. Abuse	2(0.6)	17(5.4)	54(17.3)	59(18.9)	180(57.7)	19(6.1)	294(93.9)
	average	13(4.3)	35(11.1)	74(23.6)	68(21.7)	122(39.3)	48(15.4)	264(84.6)	

Practice management; $w = 42.855$, $f = 62.098$ and $p < 0.0001$, chi-squared test for trend = 81.252 (1)

Quality Improvement Domain

Imperfections in the level of quality improvement as also indicated because of observed significant unfitness to the expected standard observed (exactp.000). Participants reported negative trend “rarely” as level of practice in this domain. This was played out in the way strategies were employed in improving patient satisfaction (29.8%), in

conducting performance measurements to develop plans (36.2%), identifying trends in QREs and developing plans to address such trends (31.7%), holding quality self-audits staff meetings to review workflows (31.7%), Communicating QREs to appropriate agencies (36.2%), and conducting periodic audits of QREs (36.9%). See table 5 for details.

Table 5: Response patterns of community pharmacies/pharmacists in Bayelsa State and Rivers State of Nigeria concerning quality improvement domain (N=312)

Response patterns of community pharmacies/pharmacists in Bayelsa and Rivers state of Nigeria concerning quality improvement domain									
Domain	S/n	Question item	Response pattern in frequency and percentage						
			Never	Rarely	Sometimes	Often	Always	Negative	Positive
Quality improvement domain	1	Conducting periodic audits of QRES	83(26.6)	115(36.8)	59(18.9)	17(5.4)	38(12.2)	198(63.4)	114(36.5)
	2	Communicating QRES to agencies	98(31.4)	113(36.2)	46(14.7)	22(7.0)	33(10.5)	211(67.6)	101(32.3)
	3	Holding quality self-audits meetings	98(31.4)	99(31.7)	39(12.5)	25(8.0)	51(16.3)	197(63.1)	115(36.8)
	4	Identifying trends in QRES	108(34.6)	99(31.7)	51(16.3)	17(5.4)	37(11.8)	207(66.3)	105(33.6)
	5	Measuring performances	87(27.8)	113(36.2)	29(9.2)	26(8.3)	57(18.2)	200(64.1)	112(35.9)
	6	Improving on patient satisfaction	72(23.0)	93(29.8)	30(9.6)	40(12.8)	77(24.6)	165(52.8)	147(47.1)
			Average	91(29.1)	105(33.7)	42(13.5)	24(7.8)	49(15.6)	196(62.9)
Quality improvement; mode "rarely" (33.8%), $p < 0.0001$, kw 24.36, cft 6.937, exact $p.000$									

Discussions

The successes of the practice domains can be attributed greatly to the efforts of young pharmacists with 6-10 years' experience in new pharmacies, having less than five men staffing, as was observed during cross tabulation. Suboptimal pharmacy practice administration was indicated in the study. On individual basis, high level of adherence ($p < 0.0001$) to premises and structure regulations (88.1%). Inadequate premises regulation compliance^[30], non-compliance to structural regulation^[31], and poor regulation and control by health authorities on the sale and dispensing of medicines^[32] has been reported earlier in literature.

The positive practice management (39.3% "always") reported was similar with other scholarly works. The practice in this domain was described as deep-rooted in the traditional approach in Moldova^[33], unsatisfactory in Iran^[34], with disparities in Turkey^[35], and poor and having negative knowledge patterns in Kathmandu^[36] Quality improvement activities were also poor as reported. According to Wong, *et al.* 2015^[28], improvement and enforcement is needed in quality standards of community pharmacies.

Other authors have also indicated that over 80% of respondent's use HRQoL with their patients, 66% attempts to assess HRQoL by patients, and only 53.7% familiarity with the concept of HRQoL but less than 5% familiarity with formal instruments. Chintamani, *et al.*, 2017^[37], in the United State, reported statistically significant quality improvement in staff, training, and skill ($p = 0.017$); patient counseling ($p = 0.043$); communication about mistakes ($p < 0.001$); response to mistakes ($p < 0.001$); organizational learning/continuous improvement ($p < 0.001$); and overall patient safety perceptions ($p = 0.033$). Farah *et al.*, 2016^[38], in the United Arab Emirates, also revealed patient satisfaction regarding communication quality with Arabic speaking patients only but low on non-Arabic population.

Conclusion

This study revealed that the pharmacy practice management in community pharmacies in Bayelsa and Rivers State in the Niger Delta area of Nigeria is suboptimal. Individually the arrangement and management of the premises depicted an improving trend but not on quality improvement activities. Enforcement by the Pharmacists' council of Nigeria and sponsoring of scholarly works of this nature in a more global scale, and more flexibility of the Mandatory

Continuous Professional Development (MCPD), among other avenues is recommended.

Declarations

Acknowledgement

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Conflict of interest

No conflict of interest is associated with this work.

Contribution of Authors

We declare that this work was done by the author(s) named in this article and all liabilities pertaining to claims relating to the content of this article will be borne by the authors. All authors read and approved the manuscript for publication.

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