Evaluation of collaborative care for patient medication management between pharmacists and clinicians in healthcare institutions in Ogun state, Nigeria

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ABSTRACT

Background: Physicians and pharmacists play crucial roles in healthcare delivery systems, each leveraging on their expertise. Effective collaboration between these professionals is therefore essential to delivering optimal patient care.

Aim: This study assessed the perception of physicians and pharmacists on health care collaboration practice.

Methods: Using multi-stage sampling procedure, a cross-sectional survey was conducted. The survey involved 272 healthcare professionals (Physicians and pharmacists) from Olabisi Onabanjo University Teaching Hospital (Shagamu), Federal Medical Centre (Abeokuta), and Neuropsychiatric Hospital Aro (Abeokuta). Data were obtained using a 77-item questionnaire and analyzed with descriptive and Chi-square statistics using SPSS, version 23 software.

Results: Majority (97.1 %) of the respondents (physicians and pharmacists) endorsed teamwork grounded in solid communication. The respondents (97.1%) expressed willingness to collaborate, with 31.3 % dismissing the notion that collaboration rarely improves patient outcomes. The respondents agreed on the necessity of inter-professional relationships in practice, with 93.8 % advocating for its inclusion in professional programs' curricula. Face-to-face communication was most preferred by the respondents (94.1%) for collaborative practice. Both professional groups identified time constraint as the major barrier to collaborative practice ($\mu = 3.13$).

Conclusion: Many participants deemed collaboration as imperative and that it relies on solid communication. Face-to-face communication was most preferred in collaborative practice and time constraint was the major barrier to collaboration.

Keywords: collaboration, healthcare, pharmacist, physician.

Évaluation des soins collaboratifs pour la gestion des médicaments des patients entre pharmaciens et cliniciens dans les établissements de santé de l'État d'Ogun, Nigéria

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RÉSUMÉ

Contexte: Les médecins et les pharmaciens jouent un rôle crucial dans les systèmes de prestation de soins de santé, chacun tirant parti de son expertise. Une collaboration efficace entre ces professionnels est donc essentielle pour prodiguer des soins optimaux aux patients.

Objectif: Cette étude a évalué la perception des médecins et des pharmaciens sur la pratique de la collaboration en matière de soins de santé.

Méthodes: Une enquête transversale a été réalisée à l'aide d'une procédure d'échantillonnage à plusieurs degrés. L'enquête a porté sur 272 professionnels de la santé (médecins et pharmaciens) du centre hospitalier universitaire Olabisi Onabanjo (Shagamu), du centre médical fédéral (Abeokuta) et de l'hôpital neuropsychiatrique d'Aro (Abeokuta). Les données ont été obtenues à l'aide d'un questionnaire de 77 questions et analysées à l'aide de statistiques descriptives et du chi carré en utilisant le logiciel SPSS, version 23.

Résultat: La majorité (97,1 %) des personnes interrogées (médecins et pharmaciens) ont approuvé le travail d'équipe fondé sur une communication solide. Les personnes interrogées (97,1%) ont exprimé leur volonté de collaborer, 31,3 % rejetant l'idée selon laquelle la collaboration améliore rarement les résultats pour les patients. Les personnes interrogées s'accordent sur la nécessité des relations interprofessionnelles dans la pratique, 93,8 % d'entre elles plaidant pour leur inclusion dans les programmes d'études des professions libérales. La communication en face à face a été privilégiée par les répondants (94,1 %) pour la pratique collaborative. Les deux groupes professionnels ont identifié le manque de temps comme le principal obstacle à la pratique collaborative ($\mu = 3,13$).

Conclusion: De nombreux participants considèrent que la collaboration est impérative et qu'elle repose sur une communication solide. La communication en face à face était la plus privilégiée dans les pratiques collaboratives et les contraintes de temps constituaient le principal obstacle à la collaboration.

Mots-clés: collaboration, soins de santé, pharmacien, médecin.

INTRODUCTION

Pharmacy profession has undergone significant transformation and growth over the years. Pharmacists have transitioned (from drug centered) into patient oriented practitioners as drug information consultants, providing evidence-based medication information to other healthcare providers as well as to the patients; thereby optimizing the delivery of medication therapy services.[1]

Over the past years, healthcare professionals face increased burden due to the rising complexity of managing chronic diseases.[2] This underscores the necessity for communication and collaboration among healthcare practitioners as such practices facilitate timely diagnosis and treatment, harness expertise from diverse healthcare disciplines, and ensure comprehensive patient care. Makowsky *et al*. asserted that collaborative care features active communication and continuous interaction between two or more health care professionals, making joint decisions with the objective of improving patient care outcomes and quality of life. It is a practice involving the provision of care based on the knowledge, skills and expertise of multiple health care professionals in order to enhance the outcomes of medication therapy. Collaborative practice involves making the patient the central focus of care.[4] As such, all the healthcare professionals involved in providing such care have to set aside their differences and individual preferences to collectively contribute to the effective management of patients for optimal health achievements.

Collaborative approach to patient care holds immense potential to optimize medication therapy and use, diminish the occurrence of irrational drug use, drug interactions and adverse effects, minimize costs, and alleviate fatigue among professionals.[3] According to the International Pharmaceutical Federation, collaboration with pharmacists may entail joint decisions on the choice, initiation, modification and monitoring of prescription drugs.[5] This will also enhance monitoring the response of patients to medication therapy as well as provision of patient counseling and education services. Although, collaboration could positively impact adherence and treatment outcomes, there are still numerous challenges or barriers that surround effective collaboration between pharmacists and clinicians.[6] Understanding the attitudes and perceptions towards collaboration is essential and would play a valuable role towards recognizing these barriers. This would ultimately be helpful in identifying and implementing solutions that can enhance communication and collaboration and also invariably improve patient care. There is a paucity of information regarding the extent and barriers to collaborative practices among healthcare professionals in Nigeria.

Aim of the study

This study assessed the perception of physicians and pharmacists towards collaborative practices in Ogun State, Nigeria

METHODS

Study location

This survey was carried out in Ogun State located in Southwest, Nigeria. Ogun State possesses a sophisticated healthcare infrastructure. This comprises of three key tertiary medical health facilities (Federal Medical Centre in Abeokuta, Olabisi Onabanjo University Teaching Hospital in Sagamu, Neuropsychiatric Hospital in Abeokuta) and a host of secondary health institutions augmented by many primary healthcare centers.

Study design and study population

A survey approach was adopted for the study. The study population comprised of pharmacists and physicians working in hospitals in Ogun State.

Inclusion and exclusion criteria

Consenting registered physicians and pharmacists with at least one year post qualification work experience, practicing in hospitals in the study sites during the research period were included in the survey. Pharmacists and clinicians with less than one year post qualification work experience as well those that do not practice within the study location were excluded.

Research instrument

The research was conducted with a carefully developed pretested and validated questionnaire. The questionnaire contained consent statement which allows each participant to indicate his/her degree of agreement. The questionnaire consisted of eight sections (A - H) with a total of 77 questions.

Validation/Reliability of questionnaire

The questionnaire content and validity, was confirmed by subject matter specialists and senior colleagues experienced in similar research. A pilot study was conducted at Ring Road State Hospital, Ibadan, involving pharmacists and physicians who met the inclusion

criteria. Adjustments to the questionnaire were made based on the pilot study.

Sample size and sampling technique

The sample size was determined using Yamane's formula from the total potential respondents the tertiary hospitals in Ogun State.

$$n = \frac{N}{[1+N(e^2)]} \quad \text{---------- (i)}$$

where:

n = sample size,

N = population under study (851),

e = margin of error (0.05).

$$\Rightarrow n = \frac{851}{[1+851(0.05^2)]}$$

$$\Rightarrow n = \frac{851}{[1+851(0.025)]}$$

$$\Rightarrow n = \frac{851}{(1+2.1275)}$$

$$\Rightarrow n = \frac{851}{3.1275}$$

$$\Rightarrow n = 272.10 \approx 272$$

The recommended sample size obtained was 272.

Multi-stage sampling technique was adopted in which the first stage involved purposive selection of the tertiary hospitals in Ogun State namely Olabisi Onabanjo University Teaching Hospital in Sagamu (91), Federal Medical Centre in Abeokuta (159), and Neuropsychiatric Hospital, Aro in Abeokuta (22). The second stage involved the purposive selection of physicians and pharmacists with not less than one year of post qualification work experience while the last stage involved a simple random sampling of 272 physicians and pharmacists (the selection was done proportionate to size in the selected hospitals).

Data analysis

The responses in the questionnaires were reviewed for completeness and adequately sorted. Data obtained were entered into Microsoft Excel and analyzed using Statistical Package for Social Sciences (Version 23). Descriptive statistics were used to summarize and Chi-square statistic was used to compare respondents' perceptions of collaboration between pharmacists and physicians.

Ethical considerations

Ethical approval (OOUTH/HREC/710/2023AP) for this study was obtained from Olabisi Onabanjo University Teaching Hospital Health Research Ethics Committee. This research was carried out as stipulated in the ethical guidelines by the institution.

RESULTS

The entire respondents volunteered and participated in the survey (100% response rate). Almost half [133 (48.9%)] of the respondents were aged 20-30 years with 167 (61.4%) having less than 6 years professional experience. Among the Physicians, 79 (29.0%) held M.B.B.S and 98 (36.0%) of the Pharmacists had B.Pharm. Details of respondent's demographic characteristics are in Table 1.

Table 1: Demographic Characteristics of Respondents

Variables	Physicians ny = 155(%)	Pharmacists nr = 117(%)	Total n = 272(%)
Age			
20-30years	96(61.9)	37(31.6)	133(48.9)
31-40years	55(35.4)	25(21.4)	80(29.4)
41-50years	1(0.6)	46(39.3)	47(17.3)
51-60years	3(1.9)	9(7.7)	12(4.4)
Gender			
Male	148(95.5)	25(21.4)	173(63.6)
Female	7(4.5)	92(78.6)	99(36.4)
Marital status			
Single	5(3.2)	91(77.8)	96(35.3)
Married	117(75.5)	23(19.7)	140(51.5)
Widowed	1(0.6)	1(0.8)	2(0.7)
Divorced	6(3.9)	2(1.7)	8(2.9)
Engaged	26(16.8)	0(0.0)	26(9.6)
Academic qualification			
M.B.B.S	79(50.9)	0(0.0)	-
Reg. Doctor	56(36.1)	0(0.0)	-
FPCP	20(12.9)	0(0.0)	-
B.Pharm	0(0.0)	98(83.8)	-
Pharm.D	0(0.0)	8(6.8)	-
FPCPharm	0(0.0)	1(0.9)	-
MSc	0(0.0)	10(8.5)	-
Years of Experience			
<6years	129(83.2)	38(32.5)	167(61.4)
6-10years	20(12.9)	55(47)	75(27.6)
11-20years	0(0.0)	19(16.2)	19(7)
>20years	6(3.9)	5(4.3)	11(4)

Majority (84.6%) of the respondents emphasized the importance of collaboration with other healthcare professionals based on solid communication for effective teamwork. Most physicians (72.0%) and pharmacists (74.0%) recognized the value of collaboration in reducing diagnostic errors. Majority of physicians (88.0%) and pharmacists (82.0%) believed that sole responsibility for patient care is not practical. Details are shown in Table 2.

Table 2a: Opinion towards collaboration with other health care professionals

VARIABLE	PHYSICIAN ny = 155(%)	PHARMACIST nr = 117(%)	X^2	p-value
Team work is based on solid communication among healthcare workers				
Strongly agree	132(57.4)	98(42.6)		
Agree	23(67.6)	11(14.6)		
Neutral	0(0.0)	0(0)	12.19	0.002***
Strongly disagree	0(0)	8(100)		
Disagree	0(0)	0(0)		
Collaboration with health care professionals rarely improve patients' outcomes				
Strongly agree	24(43.6)	31(56.4)		
Agree	14(46.7)	16(53.3)		
Neutral	2(18.2)	9(81.8)	28.24	<0.001***
Strongly disagree	94(72.9)	35(27.1)		
Disagree	21(44.7)	26(55.3)		
I would consider collaborating with pharmacists to improve patients' outcomes				
Strongly agree	128(58.4)	91(41.6)		
Agree	23(51.1)	22(48.9)		
Neutral	4(50.0)	4(50.0)	0.984	0.611
Strongly disagree	0(0)	0(0)		
Disagree	0(0)	0(0)		
Efficient collaboration cannot reduce both Surgical and diagnostic error				
Strongly agree	10(33.3)	20(66.7)		
Agree	16(66.7)	8(33.3)		
Neutral	18(90.0)	2(10.0)	20.64	<0.001***
Strongly disagree	90(60.0)	60(40.0)		
Disagree	21(43.8)	27(56.3)		
It is no longer feasible for one person/single professional to be responsible for the patient care				
Strongly agree	72(52.2)	66(47.8)		
Agree	64(68.1)	30(31.9)		
Neutral	11(84.6)	2(15.4)	25.138	<0.001***
Strongly disagree	5(20.8)	19(79.2)		
Disagree	3(100)	0(0)		
It is practically a waste of resources for health Workers to come together to take care of patient in a hospital setting				
Strongly agree	8(28.6)	20(71.4)		
Agree	4(66.7)	2(33.3)		
Neutral	4(66.7)	2(33.3)	14.45	0.006***
Strongly disagree	112(57.1)	84(42.9)		
Disagree	27(75.0)	9(25.0)		
Working together as a team reduces the number of medical errors and increases patient's safety				
Strongly agree	90(53.6)	78(46.4)		
Agree	32(51.6)	30(48.4)		
Neutral	12(85.7)	2(14.3)	10.50	0.033**
Strongly disagree	19(73.1)	7(26.9)		
Disagree	2(100)	0(0)		

***Statistically significant at p<0.01, **statistically significant at p<0.05

Table 2b: Opinion towards collaboration with other health care professionals

VARIABLE	PHYSICIAN ny = 155(%)	PHARMACIST nr = 117(%)	X^2	p-value
There are many overlapping areas of responsibility between pharmacists and Physicians in drug treatment of the patients				
Strongly agree	56(59.6)	38(40.4)		
Agree	50(49.0)	52(51.0)		
Neutral	26(68.4)	12(31.6)	5.33	0.256
Strongly disagree	14(63.6)	8(36.4)		
Disagree	9(56.3)	7(43.8)		
During their education, pharmacy and medical students should involve in team work in order to understand their respective roles				
Strongly agree	92(61.3)	58(38.7)		
Agree	50(50.0)	50(50.0)		
Neutral	6(40.0)	9(60.0)	10.20	0.037**
Strongly disagree	4(100)	0(0)		
Disagree	3(100)	0(0)		
Physicians and pharmacists should be educated to establish collaborative relationships				
Strongly agree	91(50.8)	88(49.2)		
Agree	61(67.8)	29(32.2)		
Neutral	3(100)	0(0)	9.30	0.010**
Strongly disagree	0(0)	0(0)		
Disagree	0(0)	0(0)		
Inter-professional relationships between Physicians and pharmacists should be included in their professional education programs				
Strongly agree	90(57.7)	66(42.3)		
Agree	57(57.6)	42(42.4)		
Neutral	6(40)	9(60)	3.32	0.345
Strongly disagree	2(100)	0(0)		
Disagree	0(0)	0(0)		

***Statistically significant at p<0.01, **statistically significant at p<0.05

A significant number of physicians (42.5%) and pharmacists (25.6%) reported collaborating frequently with each other, suggesting active interaction. While 33.5% of physicians frequently collaborated mostly with other healthcare providers, 23.1% of pharmacists reported the same, which is suggestive of diverse collaboration experiences. Details are as shown in Table 3.

Table 3: Experience on collaboration with other health workers

VARIABLE	PHYSICIAN ny = 155(%)	PHARMACIST nr = 117(%)	X^2	p-value
Collaboration with others in the past	**I have collaborated with pharmacists**	**I have collaborated with physicians**		
Always	38(24.5)	43(36.8)		
Frequently	66(42.5)	30(25.6)	14.80	0.002***
Sometimes	45(29.0)	44(37.6)		
Rarely/never	6(3.9)	0(0)		
Collaboration with other healthcare providers	**I have collaborated with other health providers but not pharmacists in the past**	**I have collaborated with Other health providers but not physicians in the past**		
Always	30(19.35)	30(25.6)		
Frequently	52(33.5)	27(23.1)	7.58	0.055
Sometimes	42(27.1)	44(37.6)		
Rarely/never	31(20.0)	16(13.7)		
I have feedback on collaboration with others in the past	**Received feed back on collaboration with pharmacists**	**Received feedback on collaboration with physicians**		
Always	38(24.5)	40(34.2)		
Frequently	48(30.9)	37(31.6)	4.00	0.261
Sometimes	54(34.8)	32(27.4)		
Rarely/never	15(9.7)	8(6.8)		

***Statistically significant at p<0.01, **statistically significant at p<0.05

Face-to-face means of communication takes the lead in the method of establishing strong collaboration for both Physicians (91.6%) and pharmacists (97.4%). Phone communication is the second most preferred method by physicians (67.7%) and pharmacists (89.7%). Details are presented in Table 4.

Table 4: Preferred Method of Communication for Collaborative Practice

Variables	Physician ny = 155(%)	Pharmacist nr = 117(%)
Face-to-face		
Yes	142(91.6)	114(97.4)
No	13(8.4)	3(2.6)
Phone		
Yes	105(67.7)	105(89.7)
No	50(32.2)	12(10.3)
Paper		
Yes	104(67.09)	104(88.9)
No	51(32.9)	13(11.1)
Feedback		
Yes	129(83.22)	117(100)
No	26(16.77)	0(0)
Electronics		
Yes	97(62.5)	97(82.9)
No	58(37.4)	20(17.1)

Rigid communication structure ($\mu = 1.91$) takes the prime perceived hurdle to strong collaboration between physicians and pharmacists. This is followed by both overlapping and unclear policies and competitiveness ($\mu = 1.96$ respectively). Details are highlighted in Table 5.

Table 5: Major Barriers to Collaboration

S/N	Item	1	2	3	4	5	Mean ( )
1.	Lack of compensation	90	54	82	22	24	2.40
2.	Requires too much time	28	90	48	30	76	3.13
3.	Need to collaborate with multiple pharmacists / physicians to Provide care to patients	50	76	82	26	38	2.73
4.	Poor welfare	60	112	60	10	30	2.40
5.	Facility and environment not designed or prepared for Collaborative training	76	116	36	8	36	2.31
6.	Lack of trust among professionals	10	128	82	20	32	2.76
7.	Fear of job security and encroachment	90	96	62	8	16	2.13
8.	Lack of appropriate health care facilities	94	104	44	6	24	2.13
9.	Involvement of multiple health care providers resulting in Fragmentation of care	78	82	64	16	32	2.42
10.	Concern regarding liability over shared responsibility	60	74	74	26	38	2.66
11.	Concern regarding liability over shared information	38	120	63	24	27	2.57
12	Lack of facet of ace communication	66	108	52	24	20	2.33
13	Lack of recognition of each professional role, boundary and limits	98	94	46	18	14	2.10
14	Lack of clear job description for every professional	96	102	38	18	18	2.12
15	Lack of mutual respect for individual professional duties /job description	110	80	48	22	12	2.07
16	Disparities in wages of health care professionals	118	68	54	18	14	2.05
17	Overlapping or unclear policies direction	94	118	42	13	5	1.96
18	Rigid communication structure	116	98	34	15	9	1.91
19	Competitiveness	110	98	36	20	8	1.96
20	Confidentiality of patient's information	86	90	38	22	36	2.38
21	Issue of boss syndrome	108	94	28	18	24	2.10
	Weighted Average						**2.32**

Key: 1 = strongly agree, **2** = Agree, **3** = Neutral, **4** = strongly disagree, **5** = Disagree

The key area of collaboration with pharmacists according to the physicians "is the role of pharmacists as reliable advisor for general information about drugs" (= 1.41) as well as being "reliable advisor for clinical information about drugs" (= 1.44). Details are as depicted in Table 6.

Table 6: Areas in Which Physicians Collaborate with Pharmacists to Provide Patient Care

S/N	Item	1	2	3	4	5	Mean ( )
1.	A pharmacist is a reliable advisor for clinical I nformation about drugs	180	68	21	3	0	1.44
2.	Pharmacist routinely consults patients on the advisability of using other over-the-counter medications that should be taken in conjunction with prescribed medications	132	110	27	1	2	1.64
3.	Pharmacists should conduct pharmacy practices such as Measuring blood pressure or blood glucose level	96	78	76	19	3	2.10
4.	Pharmacist is a reliable advisor for general information about drugs	172	90	9	1	0	1.41
5.	Pharmacist routinely consults patients on the proper storage of drugs	114	126	30	2	0	1.71
6.	Pharmacist routinely consult patients on the advisability of using and the mechanism of action of the prescribed drugs	114	60	54	42	2	2.11
7.	Pharmacists provide drug information in order to assist in Decision making regarding a patient's drug therapy	134	112	26	0	0	1.60
8.	Providing advice on how to manage a drug related problem	126	108	36	2	0	1.68
9.	Providing drug information to physicians to help select a medication	139	92	38	3	0	1.65
10.	Assisting in medication dosage adjustment	128	100	42	2	0	1.70
11.	Helping in the management of patient's medication counseling	150	88	34	0	0	1.57
12	Make recommendation to modify a patient's drug therapy	128	102	42	0	0	1.68
13	Facilitate insurance coverage or special authorization approvals	82	66	116	5	3	2.20
	Weighted Average						**1.73**

Key: 1 = strongly agree, **2** = Agree, **3** = Neutral, **4** = Strongly disagree, **5** = Disagree

DISCUSSION

This study revealed that many of the participants agreed that collaboration between health professionals has very good prospects since both physicians and pharmacists agreed that it is no longer feasible for a person/single professional to be solely responsible for patient care. This assertion is in line with the assertion of Mohammed *et al*.[9] that hospital pharmacists demonstrated positive disposition towards teamwork. However, it has been noted by Udoh *et al*.[10] that some health professionals may agree in principle but not in practice.

Majority of the participants were young professionals with less than 6 years of work experience. This could greatly impact on their collaboration spirit between health professionals due to youthful exuberance and inexperience especially the physician. This enthusiastic mindset, that may later change in life as opined by Onah *et al*,[11] may be partly due to increased awareness of professional identify and traditional feeling of not wanting to share authority with other professionals.

There was an insignificant difference in physicians and pharmacists perceptions of overlapping areas of

responsibility in drug treatment; thus, both groups advocated the inclusion of inter-professional relationships between physicians and pharmacists in curricula of the education programs of respective healthcare disciplines. This fact is underscored by Mohammed *et al*.9 who posited that principles and practices of teamwork should be incorporated into the curriculum of each discipline as attitude to collaborative practice among health professionals is reported to be formed well before graduation.[11]

Physicians and pharmacists reported to have collaborated with each other in the past with a good proportion of both (reportedly) receiving feedbacks on the collaboration. The presence of feedback mechanisms is indicative of willingness to evaluate and improve collaborative practices that align with patient care goals. This suggests that there is a foundation for collaboration between physicians and pharmacists, which is beneficial towards positive (patient) treatment outcomes.[7,12,13,14]

A significant majority of physicians and pharmacists prefer face-to-face communication. While there is a preference for phone communication, there is a notable difference in preferences between physicians and pharmacists. This divergence may reflect variations in communication needs and workflows between the two professions.[15,16] Both groups express a significant preference for paper-based communication. This preference might be influenced by the need for physical documentation or specific workflows in healthcare settings. There is a substantial preference for electronic communication, particularly among pharmacists. Electronic communication methods offer efficiency and flexibility, and the variation between the two groups may reflect differences in technological adoption and comfort. These findings highlight the need for flexibility in communication methods to accommodate varied preferences and work settings.

Understanding the perceived barriers provides insights into where efforts should be focused to improve collaboration, and addressing these concerns may contribute to more effective interdisciplinary team work and patient care.

The general consensus that collaboration between physicians and pharmacists leads to better patient care outcomes indicates the appreciation of pharmacists' involvement in advising on over-the-counter medications, which enhances patient safety by minimizing potential drug interactions and ensuring proper medication management.

CONCLUSION

The majority of the participants (physicians and pharmacists) strongly considered collaboration as necessary and essential. Increasing the frequency of collaboration may lead to better communication and synchronized patient care. Despite the significance of direct interpersonal interaction underscoring face-to-face communication as the preferred method among healthcare professionals as well as the consensus on collaborative practice, challenges still exist.

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CONFLICT OF INTEREST

We declare no conflicting interest

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