Doctor-pharmacist collaborative role in patient management: perception of patients, doctors and pharmacists

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ABSTRACT

Background: The evolution of pharmacy practice from product-focused to patient-focused orientation is ongoing. Patient care is a complex activity that demands health care professionals to work together in an efficient and effective manner. Collaboration, as a joint communication and decision-making process is based on the belief that quality patient care is achieved by the contribution of expertise from all care providers.

Objective: To determine the perception of Patients, Doctors and Pharmacists on doctor-pharmacist collaboration in patient management.

Method: A survey using different questionnaires designed to document the perception of respondents on collaboration between doctors and pharmacists. The questionnaires were administered to all the doctors, pharmacists and some patients that consented to participate in the research and SPSS Version 17.0.1 was employed to analyze the obtained data.

Results: With a response rate of 98.6%, there was statistical difference in the respondents’ perception score on effect of doctor–pharmacist collaboration on treatment outcome. There was no statistical difference on the need to encourage collaboration. The respondents indicated that doctors' and pharmacists' roles in patient management are complementary with shared responsibility.

Conclusion: Doctor-pharmacist collaboration is necessary, desired and should be encouraged as perceived by the respondents. Collaborative care practice is an important element of effective patient-focused health care delivery.

Keywords: Perception, Patient, Doctor, Pharmacist, Collaborative-role, Patient-management
**RÉSUMÉ**

**Contexte:** L'évolution de la pratique de la pharmacie de l'orientation centrée sur le patient axée sur les produits à est en cours. Les soins aux patients est une activité complexe qui exige des professionnels de la santé à travailler ensemble de manière efficace et efficiente. Collaboration, une communication conjointe et processus de prise de décision est basée sur la conviction que des soins de qualité est obtenue par l’apport de l’expertise de tous les fournisseurs de soins.

**Objectif:** déterminer la perception des patients, les médecins et les pharmaciens sur la collaboration médecin - pharmacien dans la gestion des patients.

**Méthode:** Une étude utilisant différents questionnaires conçus pour documenter la perception des répondants sur la collaboration entre les médecins et les pharmaciens. Les questionnaires ont été administrés à tous les médecins, les pharmaciens et certains patients qui ont accepté de participer à la recherche et SPSS version 17.0.1 a été utilisé pour analyser les données obtenues.

**Résultats:** Avec un taux de 98,6 % de réponse, il n’y avait de différence statistique dans le score des répondants de perception sur l’effet de la collaboration médecin - pharmacien sur l’issue du traitement. Il n’y avait pas de différence statistique sur la nécessité d’encourager la collaboration. Les répondants ont indiqué que les médecins et de pharmaciens des rôles dans la gestion des patients sont complémentaires avec une responsabilité partagée.

**Conclusion :** la collaboration médecin- pharmacien est nécessaire, souhaitée et doit être encouragée telle que perçue par les répondants. La pratique de soins en collaboration est un élément important de la prestation efficace de soins de santé axé sur le patient.

**Mots clés :** Perception, patient, médecin, pharmacien Collaboratif - rôle, le patient gestion

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**Docteur-pharmacien rôle de collaboration dans la gestion des patients: la perception des patients, les médecins et les pharmaciens**

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Doctor-pharmacist collaborative role

INTRODUCTION

The health care setting is a dynamic and complex work environment made of different health professionals of varied expertise. Patient care is a complex activity which demands that health and social care professionals work together in an effective manner. \(^1,2\) Numerous definitions are currently used to describe practices in which health professionals work together to provide care. Collaborative care is the most common, but the terms multidisciplinary, inter-professional, shared or team care are often used interchangeably. \(^3\) The basis of collaboration is the belief that quality patient care is achieved by the contribution of all care providers. A true collaborative practice has no hierarchy. It is assumed that the contribution of each participant is based on the knowledge or expertise brought to the practice. The collaborative model is an extension of the concept of team practice. \(^4\) It has been noted that some of the most important forms of professional learning and problem solving occur in group settings which often deepens with interpersonal support and synergy necessary for creatively solving complex problems. \(^5\) Traditionally, medication therapy involves clearly defined, static roles for health care providers where physicians prescribe and pharmacists dispense drugs. The physicians evaluate the effect of the medications and answer any patient questions while the pharmacist’s role focuses on dispensing services linked to the drug product. This approach frequently resulted in avoidable drug-related problems that contributed to poor patient outcomes and increased medical costs. \(^6-8\) Increasingly complex medication use in hospitals and health systems results in many preventable Adverse Drug Events. \(^9\) Emphasis is now placed on delivering healthcare to patients by integrating services through a network of providers. There is a shift from the pharmacist as product dispenser to the pharmacist as a medication therapy expert on the healthcare team to resolve complex patient treatment issues (cognitive services) that help to assure the appropriateness, safety, effectiveness and convenience of the patient’s drug regimen. \(^10-11\)

A truly collaborative health care team (with the patient as an integral member) is the optimal model of care. \(^12\) The expansion of pharmacists’ responsibilities beyond the dispensing role provides an avenue for using their clinical knowledge and specialized skills to help physicians address the complexities of drug therapy in their roles as interceptor, detector and reporter of medication errors. \(^13\) This empowers patients by providing guidance to clinicians and insight into strategies for building an integrated medical team. \(^14\) The physician in practice performs medication risk assessment prior to prescribing while medication risk management is performed by both the physician and the pharmacist which describes the safety net of overlapping responsibilities of healthcare providers necessary to provide good patient care \(^15\) thereby justifying the need for physician-pharmacist collaborative practice.

Collaboration between professionals enhances efficiency and effectiveness of service delivery. \(^16\) It has also been shown to increase satisfaction of healthcare professionals and save cost for the health system \(^17\) with shared risk and responsibility for patient outcomes. \(^12,17\) Enhancing collaboration between different health and social care professionals is a key aspect of modernizing health and social care systems. However, in practice many factors such as insufficient time for team building, confused team roles, the effects of professional socialization, power and status differentials, and the vertical management of professions can all undermine attempts to work collaboratively. \(^18\)

Modern healthcare service delivery focuses on interdisciplinary teams with greater involvement of healthcare providers that require a change in role perception and acceptance although these have been challenged by some resistance to change. \(^19\) A healthcare system that supports effective teamwork can improve the quality of patient care, enhance patient safety and reduce workload issues among healthcare professionals. \(^20\) Teamwork is most effective when there is clear purpose, good communication and coordination with active participation of all members. \(^21\)

The recognition of professional and personal contributions of all members promotes individual development and team interdependence. The higher the interdependency needed to serve the patient, the greater the need for collaboration among team members with team members recognizing the benefits of working together and see accountability as a collective responsibility. \(^22\)

Physician-pharmacist collaboration relationships are driven by three groups of relationship characteristics. These include participant (demographics), context (practice environment and professional interactions) and exchange (nature of social exchange such as relationship initiation, trustworthiness and role specification) characteristics with exchange characteristics being the most influential relationship driver. \(^23-27\)

It is clear that effective deliberate doctor pharmacist collaboration significantly improves patient care particularly those with chronic illness and/or requiring
regular medication reviews. Doctor-pharmacist collaboration improves prescription quality through increased efficiency and safety. A growing body of empirical studies has demonstrated the impact of integrating pharmacist in practice-based collaborative interventions that improves healthcare processes and outcomes. Doctor-pharmacist collaborative practices has improved and optimized treatment outcomes in hypertension, heart failure, pain management, chronic dermatologic conditions, diabetes mellitus, cancer management, asthma, peptic ulcer disease and dyslipidemia. Patients’ perspective on team based care reveals a preference for an innovative combined prescribing and dispensing practice between doctors and pharmacists which will foster a better quality relationship and positive interaction. Physicians’ beliefs and attitudes play an important role in their intentions to collaborate with pharmacists. There is always a need for role clarification when professionals work together. Also professional and interpersonal relationships highlights a pathway to more collaborative practice. In some healthcare settings, professional relationship between doctors and pharmacists is collaborative while in others it is faced with barriers among which may be acute shortage of qualified pharmacists, lack of standard practice guidelines, attitudes of healthcare providers and their willingness to collaborate. Evidence abounds that greater collaboration between doctors and pharmacist can improve patient care. Therefore the traditional relationship between the doctor as prescriber and pharmacist as dispenser is no longer appropriate for ensuring safe, effective and improved patient care. The understanding of the factors or challenges that can facilitate the improvement of collaborative relationship to enhance service delivery in patient management is important for the optimization of patient care. This study aims to determine and document the perception of patients, doctors and pharmacists on collaboration between doctors and pharmacists.

METHODS
Design
The study employed a descriptive survey method to determine the perceptions of the respondents on collaboration between the doctors and pharmacists in patient management in the Plateau State Specialist Hospital, Jos using pre-tested self administered questionnaires. The hospital is a tertiary health institution with bed capacity of 176 (124 adult and 52 children) and staff strength of 633 personnel consisting of Pharmacists (23) and Doctors (60) with an average daily patient flow or visits of about 176 per day. Separate questionnaires were designed to get the perceptions of the respondents (patients, doctors and pharmacist) on Physician-Pharmacist collaboration in practice. The questionnaires employed the 7-point Likert Scale which offers the respondents a reasonable range of choice based on the extent to which they agree or disagree with a particular question or statement. The concept and format of the questionnaires is original, however reference was made to a validated questionnaire.

The questionnaire for patients (13 items) sought to obtain demographic information on each patient as well as their responses to the research question including perception of roles and satisfaction with services provided by Doctors and Pharmacists, as well as actual collaboration between Doctors and Pharmacists.

The questionnaire for doctors (12 items) sought to obtain their demographic information (areas of specialty, years of practice, qualifications etc) and responses to the research questions.

The questionnaire for pharmacists (12 items) sought to obtain their demographic information (rank, years of practice, qualifications etc) and responses to the research questions.

The Research Proposal was submitted to the Plateau State Specialist Hospital Institutional Review Board (IRB) for ethical approval which was granted.

The questionnaire was pre-tested at the Air Force Military Hospital, Jos (similar setting as target institution) to determine user friendliness and reliability of the tool in the final study. The pre-tested questionnaires (see appendix) were then administered to the study population that consented to respond.

Target Population / Sample Size
The required sample size for the patients to be included in this study was determined employing a mathematical formula for calculating sample size as below:

\[ n = \frac{N}{1+N_0}\] 2

Where \( n \) = sample size
\( N \) = population size
\( e \) = precision level

From calculation, Sample size \( (n) = 200 \)

The sample size was further verified using an online sample size calculator to obtain 196.

The study population therefore included all the doctors.
all the pharmacists (23) and patients (200) made up of adult in-patients and out-patients who visited the hospital within the study period and consented to take part in the study.

Data Analysis
The data obtained from the questionnaires were sorted, coded and analyzed using a computer based analytical software called statistical package for the social sciences (SPSS Version 17.0.1). Data analysis involved descriptive statistics (frequencies) and bivariate statistics (means, t-test and ANOVA). A descriptive statistical analysis for all the questionnaire items was carried out.

RESULTS
Response Rate
A total of 283 questionnaires were administered (200 patients, 60 doctors and 23 pharmacists) as determined above out of which 279 were completed and returned giving an overall response rate of 98.6%.

Patients
The occupational frequency distribution of the patients was students (30.5%), unemployed (9.5%), private business (16.5%) and civil servants (43.5%). The distribution for educational status was primary education (2%), secondary education (28.5%), National Diploma/National Certificate of Education (39.5%), graduate (28.5%) and postgraduate (1.5%) with gender distribution of male (49%) and female (51%). The descriptive statistics for age (group) of the patients revealed ages 18-24 years (16.5%), 25-30 years (30.5%), 31-35 years (20.5%), 36-40 years (12%), 41-45 years (7%), 46-50 years (4%), 51-55 years (4%) and 56-60 years (5.5%).

The responses of the patients to the research questions are as summarized in Table (1) below.

<table>
<thead>
<tr>
<th>Item</th>
<th>SA (%)</th>
<th>MA (%)</th>
<th>SA (%)</th>
<th>N (%)</th>
<th>SD (%)</th>
<th>MD (%)</th>
<th>SD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I trust and have confidence in the Doctors</td>
<td>52.5</td>
<td>30</td>
<td>7</td>
<td>4.5</td>
<td>1.5</td>
<td>2.5</td>
<td>2</td>
</tr>
<tr>
<td>I trust and have confidence in the Pharmacists</td>
<td>58</td>
<td>27</td>
<td>6.5</td>
<td>4</td>
<td>0.5</td>
<td>2.5</td>
<td>1.5</td>
</tr>
<tr>
<td>I am satisfied with care received from Doctors</td>
<td>45.5</td>
<td>31</td>
<td>9</td>
<td>6</td>
<td>2.5</td>
<td>3.5</td>
<td>2.5</td>
</tr>
<tr>
<td>I am satisfied with care received from Pharmacist</td>
<td>61</td>
<td>20</td>
<td>7.5</td>
<td>5.5</td>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Doctors and Pharmacists have entirely separate roles</td>
<td>42.5</td>
<td>13</td>
<td>11.5</td>
<td>14.5</td>
<td>3</td>
<td>5</td>
<td>10.5</td>
</tr>
<tr>
<td>Doctors and Pharmacists roles are equally important</td>
<td>77</td>
<td>9.5</td>
<td>4.5</td>
<td>4</td>
<td>0.5</td>
<td>1.5</td>
<td>3</td>
</tr>
<tr>
<td>Doctors’ and Pharmacists’ roles are complementary</td>
<td>60.8</td>
<td>16.7</td>
<td>7.5</td>
<td>9</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Doctors and Pharmacists work closely (collaborate)</td>
<td>64</td>
<td>17</td>
<td>7.5</td>
<td>4.5</td>
<td>1</td>
<td>4.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Doctors and Pharmacists collaboration be encouraged</td>
<td>84.5</td>
<td>7</td>
<td>1.5</td>
<td>2.5</td>
<td>0</td>
<td>1.5</td>
<td>3</td>
</tr>
<tr>
<td>Collaboration will reduce medication problems</td>
<td>65.5</td>
<td>15.5</td>
<td>3</td>
<td>4.5</td>
<td>1.5</td>
<td>3.5</td>
<td>6.5</td>
</tr>
<tr>
<td>Collaboration will reduce mistakes and risk</td>
<td>75</td>
<td>12.5</td>
<td>4.5</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Collaboration will improve service quality and wellbeing</td>
<td>74</td>
<td>14</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Collaboration will waste time and add to treatment cost</td>
<td>15</td>
<td>2</td>
<td>1.5</td>
<td>2.5</td>
<td>2.5</td>
<td>10.5</td>
<td>66</td>
</tr>
</tbody>
</table>

Key: SA = strongly agree, MA = moderately agree, SA = slightly agree, N = neutral, SD = slightly disagree, MD = moderately disagree and SD = strongly disagree

Doctors
The distribution of the doctors based on their specialty or area of practice was; family medicine (34.5%), surgery (20.7%), paediatrics (19%), obstetrics and gynaecology (17.2%), ophthalmology (5.2%) and psychiatry (3.4%), whereas the distribution based on position or rank was; Interns or House officers (19%), Medical officers (12.1%), Residents (32.8%) and Consultants (36.2%). The distribution based on number of years in practice for the doctors which were grouped revealed 0-5 years (27.6%), 6 – 10 years (12.1%), 11-15 years (32.8%), 16-
20 years (17.2%) and 21 years and above (10.3%). The distribution based on educational status was; graduate or first degree (63.8%) and postgraduate (36.2%) with a gender distribution of male (86.2%) and female (13.8%).

Table 2: Doctors’ responses to the research questions

<table>
<thead>
<tr>
<th>Item</th>
<th>SA (%)</th>
<th>MA (%)</th>
<th>SA (%)</th>
<th>N (%)</th>
<th>SD (%)</th>
<th>MD (%)</th>
<th>SD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have trust and confidence in Pharmacists</td>
<td>69</td>
<td>19</td>
<td>3.4</td>
<td>1.7</td>
<td>0</td>
<td>0</td>
<td>6.9</td>
</tr>
<tr>
<td>Enjoy working relationship with Pharmacists</td>
<td>79.3</td>
<td>12.1</td>
<td>0</td>
<td>5.2</td>
<td>0</td>
<td>0</td>
<td>3.4</td>
</tr>
<tr>
<td>Patient management is sole responsibility of the Doctor</td>
<td>8.6</td>
<td>8.6</td>
<td>3.4</td>
<td>3.4</td>
<td>5.2</td>
<td>8.6</td>
<td>62.1</td>
</tr>
<tr>
<td>Pharmacists share in responsibility of patient management</td>
<td>82.8</td>
<td>10.3</td>
<td>3.4</td>
<td>1.7</td>
<td>0</td>
<td>0</td>
<td>1.7</td>
</tr>
<tr>
<td>Pharmacists’ role equally important in patient management</td>
<td>77.6</td>
<td>12.1</td>
<td>3.4</td>
<td>1.7</td>
<td>0</td>
<td>0</td>
<td>5.2</td>
</tr>
<tr>
<td>Doctors’ and Pharmacists’ role are complementary</td>
<td>75.9</td>
<td>8.6</td>
<td>8.6</td>
<td>1.7</td>
<td>0</td>
<td>0</td>
<td>5.2</td>
</tr>
<tr>
<td>I collaborate with Pharmacists in patient management</td>
<td>74.1</td>
<td>10.3</td>
<td>5.2</td>
<td>6.9</td>
<td>1.7</td>
<td>0</td>
<td>1.7</td>
</tr>
<tr>
<td>Collaboration is necessary and should be encouraged</td>
<td>87.9</td>
<td>6.9</td>
<td>1.7</td>
<td>1.7</td>
<td>0</td>
<td>0</td>
<td>1.7</td>
</tr>
<tr>
<td>Collaboration will improve treatment outcome</td>
<td>86.2</td>
<td>8.6</td>
<td>1.7</td>
<td>1.7</td>
<td>0</td>
<td>0</td>
<td>1.7</td>
</tr>
<tr>
<td>Collaboration will improve service quality</td>
<td>81</td>
<td>13.8</td>
<td>1.7</td>
<td>1.7</td>
<td>0</td>
<td>0</td>
<td>1.7</td>
</tr>
<tr>
<td>Collaboration will improve interdisciplinary relationship</td>
<td>81</td>
<td>12.1</td>
<td>3.4</td>
<td>1.7</td>
<td>0</td>
<td>0</td>
<td>1.7</td>
</tr>
<tr>
<td>Collaboration will waste time and add to treatment cost</td>
<td>8.6</td>
<td>0</td>
<td>0</td>
<td>1.7</td>
<td>1.7</td>
<td>3.4</td>
<td>84.5</td>
</tr>
</tbody>
</table>

Key: SA = strongly agree, MA = moderately agree, SA = slightly agree, N = neutral, SD = slightly disagree, MD = moderately disagree and SD = strongly disagree

Pharmacists
The distribution frequency based on position or rank for the pharmacists was Interns (13%), Pharmacist 1 (26.1%), Senior Pharmacist (30.4%), Principal Pharmacist (13%), Chief Pharmacist (13%) and Director of Pharmaceutical Services (4.3%). The distribution based on number of years in practice which were grouped was; 0 -5 years (39.1%), 6 – 10 years (26.1%), 11-15 years (21.7%), and 16-20 years (13%). The distribution based on educational status was graduate or first degree (91.3%) and postgraduate (8.7%) while the gender distribution was male (69.6%) and female (30.4%).
Table 3: Pharmacists’ responses to the research questions

<table>
<thead>
<tr>
<th>Item</th>
<th>SA (%)</th>
<th>MA (%)</th>
<th>SA (%)</th>
<th>N (%)</th>
<th>SD (%)</th>
<th>MD (%)</th>
<th>SD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have trust and confidence in Doctors</td>
<td>30.4</td>
<td>52.2</td>
<td>8.7</td>
<td>8.7</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Enjoy working relationship with Doctors</td>
<td>30.5</td>
<td>56.5</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Patient management sole responsibility of Pharmacists?</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4.3</td>
<td>0</td>
<td>17.4</td>
<td>78.3</td>
</tr>
<tr>
<td>Doctors share in responsibility of patient management</td>
<td>87</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Doctors’ role equally important in patient management</td>
<td>87</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Doctors’ and Pharmacists’ role are complementary</td>
<td>87</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I collaborate with Doctors in patient management</td>
<td>60.9</td>
<td>39.1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Collaboration is necessary and should be encouraged</td>
<td>91.3</td>
<td>8.7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Collaboration will improve treatment outcome</td>
<td>91.3</td>
<td>8.7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Collaboration will improve service quality</td>
<td>82.6</td>
<td>17.4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Collaboration will improve interdisciplinary relationship</td>
<td>73.9</td>
<td>26.1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Collaboration will waste time and add to treatment cost</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8.7</td>
<td>91.3</td>
</tr>
</tbody>
</table>

Key: SA = strongly agree, MA = moderately agree, SA = slightly agree, N = neutral, SD = slightly disagree, MD = moderately disagree and SD = strongly disagree

Inferential Statistics
From the t-test (Table 4) there is no significant difference between the general perception of doctors and pharmacists on the doctor-pharmacist role in patient management.

Table 4: Group Statistics (doctors and pharmacists) Perception Score on collaboration in practice

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Mean</th>
<th>df</th>
<th>Std. Error</th>
<th>P-value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors</td>
<td>58</td>
<td>75.14</td>
<td>79</td>
<td>0.8729</td>
<td>0.948*</td>
<td>NS</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>23</td>
<td>75.04</td>
<td></td>
<td>0.6785</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(NS) = Not Significant at 0.05 level

From the one way ANOVA (Table 5), there is significant difference in the perception of patients, doctors and pharmacists on the influence of doctor-pharmacist collaboration on treatment outcome.

Table 5: Group Statistics (doctors, pharmacists and patients) Perception score on treatment outcome

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Mean</th>
<th>Df</th>
<th>Std. Error</th>
<th>P-value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors</td>
<td>58</td>
<td>19.8793</td>
<td>2</td>
<td>0.3255</td>
<td>0.000*</td>
<td>Sig.</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>23</td>
<td>20.4783</td>
<td></td>
<td>0.1872</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patients</td>
<td>200</td>
<td>17.965</td>
<td></td>
<td>0.2811</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.05 level

From the one way ANOVA (Table 6) there is no significant difference in the perception of patients, doctors and pharmacists on the need to encourage doctor-pharmacist collaboration.
DISCUSSION

The demographic distribution for the patients cuts across the general population in terms of gender, occupation, educational status and age distribution which serve the purpose of the required sample. The patients showed more confidence and trust in pharmacists which corroborates the reference to pharmacists as “the most trusted” professionals and the rating of pharmacists above doctors in the list of Australia’s most trusted professionals. The patients expressed greater satisfaction with care received from pharmacists which is known to be influenced by trust and confidence, though the concept of satisfaction is complicated as noted in an earlier report. This finding however, does not agree with a report that patients perceive a better quality of relationship with physicians. To enhance confidence and trust, it is pertinent that the range and quality of services provided by the doctors and pharmacists is patient focused.

The patients indicated that doctors and pharmacists have separate roles in their management and that these roles are equally important and complementary. This indicates that they appreciate the difference in roles of the professionals and role specification is noted to be a key factor that affects collaborative care and supports collaborative working relationship. They strongly believe that such collaboration will reduce medication problems, mistakes and risks in their care hence support encouragement of the collaboration. They disagree completely that collaboration will waste time and add to the cost of their treatment which is in line with other findings that reveal doctor-pharmacist collaboration to improve patient treatment outcomes and help address the complexities of drug therapy.

The demography for doctors and pharmacists show that they are experienced in practice, and experience has been shown to impact on the responses which influence the perception of a group. Doctors showed more trust and confidence in pharmacists which corroborates the patients’ response and they enjoy a good working relationship with the pharmacists. Trustworthiness is a key factor that promotes and support collaborative working relationship. However the absence of optimum trust, confidence and/or good working relationship between the doctors and pharmacists could stem from the expanding roles of pharmacists which is often confronted with resistance from the doctors. This is reflected in their responses on responsibility of patient management; while all pharmacists agree that patient management is a shared responsibility, some doctors believed that patient management is their sole responsibility and that pharmacists’ role is not equally important. Such reasoning by some doctors conflicts the expectations of modern healthcare service delivery which focus on interdisciplinary teamwork and greater involvement of healthcare providers requiring a change in role perception and acceptance. It shows that some doctors are not very open to accept the role of the pharmacists in patient management which is very important to establish a co-operative relationship that is vital for effective collaboration. Doctors and pharmacists should be willing to work together collaboratively with each respecting the others’ contributions. The understanding and acceptance of individual roles, effective communication, accessibility, trust and mutual respect are key for effective collaboration.

The expansion of pharmacists’ responsibilities beyond the dispensing role provides an avenue for them to use their clinical knowledge and specialized skills to assist the physician address the complexities of drug therapy in their roles as interceptor, detector and reporter of medication errors. Collaborative practice takes maximum advantage of the physicians’ training and expertise in disease diagnosis and the pharmacists’ expertise in drug therapy allowing them share the risk and responsibility for patient outcomes. The doctors indicated that they are collaborating and enjoying a good relationship with the
pharmacists but the pharmacists are not enjoying such as much. Literature supports the fact that pharmacists are usually the ones seeking to develop collaborative relationships with doctors\textsuperscript{14,25} which could be from their dissatisfaction with the status-quo hence seeking change to a practice that will benefit the patient. Though the pharmacists are more zealous for collaboration, they in this case seem not to be proactive or initiative for such collaboration. This could be linked to the low number (23) of pharmacists compared to the recommended minimum of sixty four (64) pharmacists as prescribed by the Pharmacists council of Nigeria for a hospital of that status or capacity\textsuperscript{49} which limits their activities to drug dispensing, procurement and inventory control with little or no time for clinical and collaborative activities.

All respondents agree that doctor-pharmacist collaboration will improve service quality, interdisciplinary relationship and treatment outcome in line with the findings of a growing body of empirical studies\textsuperscript{29,32-49} that demonstrates the impact of integrating pharmacists in disease case management. However the degree to which they agree on improvement of treatment outcomes vary as revealed by statistics with the highest perception score for pharmacists followed by doctors then the patients. This rating could be attributed to patients' low understanding of the need to evaluate treatment outcome and the pharmacists' zealousness and anticipation towards their expanding roles into patient-centered care\textsuperscript{10-11} whereas for doctors, it could be their reluctance\textsuperscript{8} to accept the expanding roles of the pharmacists.

Most doctors and pharmacists strongly disagree that collaboration will waste time and add to treatment cost, the few that do not share the opinion may be thinking of increase time factor and human resource requirement that will invariably introduce additional costs to the organization. However the benefits of collaboration as expressed will justify such anticipated cost additions.

The respondents equally agreed on the need to encourage doctor-pharmacist collaboration which is in line with the increasing demand in literature for the encouragement of such collaboration.\textsuperscript{3,20,25, 70-71}

The willingness of the doctors and pharmacists to improve patient care will establish the basis and create the platform for the development of doctor-pharmacist collaborative patient care. Healthcare systems will be more effective when there is a willingness to facilitate collaboration among professionals

**CONCLUSION**

The research revealed that patients have trust and confidence in the doctors and pharmacists whom they indicated collaborate in their care with roles equally important and complementary. They agreed that collaboration will reduce medication problems, mistakes and risks as well as improve the quality of care. Most of the doctors strongly agree that they trust and enjoy working with the pharmacists. They agree that pharmacists share in the responsibility of patient management with equally important and complementary roles. They also agreed that collaboration will improve treatment outcome, quality of healthcare service and interdisciplinary relationship. Many of the pharmacists moderately agree that they trust and have good working relationship with the doctors, noting that patient management is a shared responsibility and believing that collaboration will improve treatment outcome, quality of service and interdisciplinary relationship.

All the respondents strongly agreed that collaboration will not waste time nor add to cost of treatment but should rather be encouraged. In terms of improvement in treatment outcome, the perception was highly positive but varied statistically with the pharmacists having the highest perception score followed by the doctors and then the patients. The general perception of doctors and pharmacists on collaboration was positive and similar between the professions with no statistically significant difference.

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