

Assessment of pharmacist's knowledge on use of non-steroidal anti-inflammatory drugs in hypertensive patients with co-morbid arthritis and pharmaceutical services rendered in Ibadan, Nigeria.

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ABSTRACT

Background: hypertension and arthritis are two co-morbid diseases that require pharmaceutical care (PC) services. Non-steroidal anti-inflammatory drugs (NSAIDs) are commonly used for treatment of arthritis.

Objectives: The study evaluated the knowledge of pharmacist on the use of NSAIDs in this set of patients and the PC services rendered to them.

Methods: structured tested questionnaires were distributed to pharmacists working in public hospitals and community pharmacies in Ibadan metropolis. The questionnaire elicited information on the demographics of respondents, identification of drug related problems and ways of resolving them, knowledge on pharmacotherapy of arthritis and hypertension. Data was analysed with descriptive analysis using statistical package for the social sciences (SPSS) version 16 for windows.

Results: a total of 165 questionnaires were distributed with 124 properly filled and returned giving a response rate of 75.2%. Majority (64.5%) were females, the mean year of graduation of the respondents was 9.12 years and 50.8% practice as Community pharmacists. Common PC activities include; counseling (84.4%), monitoring of patients B.P (53.3%), blood glucose measurement (53.3%), monitoring patient's using available laboratory results (44.3%). Majority (85.5%) resolved side effects complaint from patients by reassuring the patients that side effect will subside as therapy continues while 77.4% took full medication history and 65.3% consulted physician for a change of medication. Majority (88.7%) agreed that they encountered prescriptions containing NSAIDs for arthritis in their practice. Good numbers of the respondents had no idea of what measure to take when a patient diagnosed of arthritis and hypertension was prescribed NSAIDs if the blood pressure was control or when it was uncontrolled. Few 16.9% and 8.9% indicated they monitored B.P of such patients with controlled or uncontrolled B.P, while more than half (55.6%) of the respondent indicated that COX2 inhibitor are safer in hypertension as compared to COX1 and that NSAIDs effects on hypertension is dose dependent. Most (77.4%) of them indicated that NSAIDs can exacerbate hypertension while 55.6% indicated that NSAIDs can induce hypertension.

Conclusion: Respondents' knowledge of the pharmacotherapy with antihypertensives and NSAIDs use in patients with hypertension co-morbid arthritis need to be improved. Good and well established pharmacist-physician relationship, refresher courses and remuneration of pharmacist for the PC services will also improve services provided by the pharmacist.

Key words: Pharmacist, hypertension, arthritis, pharmaceutical care

Évaluation des connaissances du pharmacien sur l'utilisation de médicaments anti-inflammatoires non-stéroïdiens chez des patients hypertendus atteints d'arthrite concomitante et de services pharmaceutiques qui leur sont rendus à Ibadan, au Nigeria.

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RESUME

Contexte: l'hypertension et l'arthrite sont deux maladies co-morbides qui nécessitent des soins pharmaceutiques (SP). Les anti-inflammatoires non-stéroïdiens (AINS) sont couramment utilisés pour le traitement de l'arthrite.

Objectifs: L'étude a évalué les connaissances du pharmacien sur l'utilisation des AINS dans ce groupe de patients et les services de SP qui leur ont été rendus.

Méthodes: Des questionnaires structurés ont été distribués aux pharmaciens travaillant dans les hôpitaux publics et les pharmacies communautaires de la métropole d'Ibadan. Le questionnaire a permis d'obtenir des informations sur la démographie des répondants, l'identification des problèmes liés aux médicaments et les moyens de les résoudre, les connaissances sur la pharmacothérapie de l'arthrite et de l'hypertension. Les données ont été analysées à l'aide d'une analyse descriptive utilisant le logiciel statistique pour les sciences sociales (SPSS) version 16 pour Windows.

Résultats: un total de 165 questionnaires ont été distribués avec 124 correctement remplis et retournés donnant un taux de réponse de 75,2%. La majorité (64,5%) étaient des femmes, l'année moyenne de l'obtention du diplôme des répondants était de 9,12 ans et 50,8% étaient des pharmaciens communautaires. Les activités courantes de SP incluent; l'assistance par des conseils (84,4%), la surveillance de la tension artérielle des patients (53,3%), la mesure glycémique (53,3%), la surveillance des patients en utilisant les résultats de laboratoire disponibles (44,3%). La majorité (85,5%) a résolu les effets secondaires des patients en rassurant les patients que l'effet secondaire diminue au fur et à mesure que le traitement se poursuit alors que 77,4% ont pris l'historique complet des médicaments et 65,3% ont consulté un médecin pour un changement de médicament. La majorité (88,7%) a reconnu avoir rencontré des prescriptions contenant des AINS pour l'arthrite dans leur pratique. Un bon nombre de répondants n'avaient aucune idée de la mesure à prendre lorsqu'un patient diagnostiqué d'arthrite et d'hypertension avait reçu une prescription d'AINS si la pression artérielle était contrôlée ou quand elle était incontrôlée. Peu, c'est-à-dire 16,9% et 8,9% ont qui ont surveillé la tension artérielle de tels patients avec tension artérielle contrôlée ou incontrôlées, alors que plus de la moitié (55,6%) des répondants ont indiqué que l'inhibiteur de la COX2 est plus sûr dans l'hypertension que celui de la COX1 et que les effets des AINS sur l'hypertension sont dépendants de la dose. La plupart (77,4%) d'entre eux ont indiqué que les AINS peuvent exacerber l'hypertension tandis que 55,6% ont indiqué que les AINS peuvent induire l'hypertension.

Conclusion: Il faut améliorer les connaissances des répondants sur la pharmacothérapie avec les antihypertenseurs et l'utilisation des AINS chez les patients atteints d'arthrite d'hypertension artérielle co-morbide. Une bonne relation pharmacien-médecin établie, des cours de recyclage et une rémunération du pharmacien pour les services de SP amélioreront également les services offerts par le pharmacien.

Mots-clés: Pharmacien, hypertension, arthrite, soins pharmaceutiques

INTRODUCTION

Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcome that is, elimination or reduction of a patient symptom, arresting or slowing a disease progress and preventing a disease or symptom in order to improve patient's quality of life.¹ Beyond the hospital pharmacy set up, the concept of pharmaceutical care has influenced community pharmacy practice.² In many countries community pharmacies are places where individuals may obtain health advice and assistance in managing their disease states with medication.³

Hypertension is one of the major health problems affecting about one billion people across the globe.⁴ and it is a common medical condition in older people.⁵ Similarly, arthritis is also the disease of elderly people, for which Non-Steroidal Anti-inflammatory Diseases (NSAIDs) are prescribed frequently.⁶ In other words, the use of NSAIDs and development of hypertension are both associated with old age.

NSAIDs are commonly used and are the first-line treatment in arthritis.⁵ However, their long term use can contribute to high blood pressure either by antagonizing antihypertensive drugs or by affecting the renal functions and subsequent stimulation of renin-angiotensin system leading to hypertension.⁵ NSAIDs block both cyclooxygenase-1 (COX-1) and cyclooxygenase-2 (COX-2) enzymes, which leads to a reduction in prostaglandin formation. Drug-induced hypertension has been found to be associated with NSAIDs due to the renal effects of these drugs.^{7,8,9}

Specifically, NSAIDs cause dose-related increase in sodium and water retention and this effect is also seen with COX-2 selective drugs such as Celecoxib.¹⁰ Because NSAIDs block the production of the COX-1 and COX-2 prostaglandins, renal side effects are not uncommon, occurring in 1-5% of NSAID users.^{9,11} All NSAIDs have risk of increased fluid retention due to inhibition of COX-2's natriuretic effect and increased sodium retention.¹² Many studies have reported the negative effect of NSAIDs on blood pressure control properties of Angiotensin Converting Enzyme Inhibitor (ACEI).^{13,14} Polonia (1997)¹⁵ reported that NSAIDs affect the efficacy of antihypertensive drugs but they have little or no effect on calcium channel blockers, therefore, suggested the use of calcium channel blockers for patient using NSAIDs concurrently.

A lot of studies have been carried out on pharmaceutical care services in Nigeria ranging from pharmaceutical care standards¹⁶ and attitude of pharmacist towards PC¹⁷ but due to the widespread

use of NSAIDs with/without prescription by the populace¹⁸ and being one of the medications used in management of arthritis which occur as a common comorbid condition with hypertension¹⁹, patients with hypertension may be at risk for aggravated blood pressure and renal "insufficiency effects" caused by these drugs.^{5,8} This study was aimed at assessing pharmacist's knowledge of the interactions between these classes of medications, identification of the drug related problems in such patients taking these medications and their methods of resolving such problems.

METHODS

The study was a cross sectional study involving administration of a structured questionnaire to pharmacists practicing in community and hospital in Ibadan, Oyo State Nigeria. The sites of the study were registered community pharmacy premises and government owned hospitals in Ibadan which included State hospitals, University College Hospital and the University Health Services (UHS), Ibadan.

Study population

According to the Pharmaceutical Society of Nigeria (PSN), Oyo state branch, there were 278 pharmacists in Ibadan at the time of the study, comprising of all pharmacists in public hospitals and community pharmacies.

Study design

The study was a cross sectional study using a structured questionnaire.

Sample size

The population size is approximately 278 Raosoft sample size calculator²⁰ was used to determine the sample size, with a margin error and confidence level put at 5% and 95% respectively a total sample size of 162 was calculated. However, a total of 165 questionnaires were administered and 124 were retrieved and analyzed.

Pretest of questionnaire

The questionnaire was pretested before it was administered for the study. The pretest was carried out among 2 community and 3 hospital pharmacists who did not participate in the main study. The questionnaire was later restructured and edited based on the response from the pretest.

Inclusion and exclusion criteria

This study included public hospital pharmacists and community pharmacists practicing in Ibadan metropolis. It excluded every other pharmacist in other areas of pharmacy practice and those outside the city of Ibadan.

Study period

The questionnaires were administered and retrieved within four months (October 2014-January 2015).

Instruments for data collection and data collection techniques

A pretested structured questionnaire was used to collect demographics and relevant information on knowledge of pharmacists in the pharmaceutical care of patients with co-morbid hypertension and arthritis in Ibadan. Information such as; methods of identification of drug related problems, method of follow-up of patient, respondents' knowledge on side effects of antihypertensives, methods of handling such side effects complaints by patients, action taken on concomitant use of NSAIDs and antihypertensives, measure of intervention carried out by respondent in handling NSAIDs use in patients controlled and uncontrolled hypertension, knowledge of respondents on pharmacotherapy of arthritis and hypertension and hindrances encountered by respondents in the delivery of PC to hypertensive patients with co-morbid arthritis.

Statement of confidentiality of data collected from the subjects. All data collected were treated with utmost confidentiality. Names of respondents were not included in the questionnaire.

Data analysis and management

Data was analysed with descriptive statistics using Statistical Package for the Social Sciences (SPSS) version 16 for Windows.

Ethical approval

This study was approved by the Ethical Review committee of the Ministry of Health Oyo State with an ethical number of AD 13/479/779.

RESULTS

A total of 165 questionnaires were distributed with 124 completely filled and returned giving a response rate of 75.2%. Forty four (35.5%) of the respondents were males and eighty (64.5%) were females. The mean year of graduation of the respondents was 9.12years. Community pharmacists were 63 (50.8%) while those who practiced in hospital were 61 (49.2%). Few of them had post graduate degree of which 28 (22.6%) had postgraduate degree in pharmacy discipline.

Majority of the respondents 92 (74.2%) defined pharmaceutical care correctly. One hundred and twenty two (98.5%) of the respondents claimed they practiced pharmaceutical care in their settings, 103 (84.4%) asked patients to describe their medical condition. More than two-third (76.8%) of this took place in the hospital while 60 (98.4%) occurred in community pharmacies. However, 119 (96%) of the respondents counseled patients further to ascertain actual or potential drug-related problems. However, only 63 (51.6%) respondents documented patient's medication history out of which 26 (45.6%) were hospital pharmacists and 37 (62.7%) were community pharmacists. As a way of follow-up, 81 (66.4%) respondents monitored blood pressure, 61(50.0%) monitored blood glucose level, 65(53.3%) measured weight and while 54 (44.3%) respondents made use of laboratory results to monitor the patients.

The list of common side effects of anti-hypertensive patient complaints as noted by the pharmacists is shown in Table 1.

Table 1: Common side effect complaints of anti-hypertensives from patients noted by pharmacists N=124

Anti-hypertensive side effects	Frequency of Respondents (%)
Decreased libido with methyldopa	80 (64.5%)
Cough with ACEIs	101 (81.5%)
Hypokalemia with Amiloride	25 (20.2%)
Palpitations with Calcium channel blockers	50 (40.3%)
Angioedema with Thiazide diuretics	22 (17.7%)
Frequent urination with diuretics	105 (84.7%)
Hypoglycaemia and bronchoconstriction with beta blockers	38 (30.6%)
Rashes with ACEIs	2 (1.6%)
Redness of the eye with high dose Nifedipine	1 (0.8%)
Decreased libido with Nifedipine	1 (0.8%)

In handling the side effect complaints, which could involve more than one measure, most of the respondents indicated that they usually reassured patients that the side effect will reduce as the therapy continues (Table 2).

Table 2: Measures taken by pharmacists to resolve complaints of side effects by patients

Measures of resolving side effect complaint by patients	Frequency (%)
Reassure the patient that side effect will subside as therapy continues	106 (85.5%)
Take full medication history of patient	96 (77.4%)
Ask the patient to consult the physician for a change	81 (65.3%)
Ask patient to stop the offending drug without the consent of the prescriber	29 (23.4%)
Document interventions made on such complaints	52 (41.9%)
Counsel patients on the side effect and arrange a follow-up appointment with the patient within a reasonable time	45 (36.3%)
Consult the physician personally for a change	50 (47.6%)

One hundred and ten (88.7%) of the respondents indicated they encountered prescriptions containing NSAIDs for osteoarthritis together with antihypertensives in their respective places of practice. Majority of them 76(69.1%) were certain that these prescriptions were commonly seen by them in their places of practice.

Action taken by respondents in handling concomitant use of NSAID and antihypertensive medications in patients with arthritis is shown in Table 3.

Table 3: Intervention measure carried out by pharmacists in handling NSAID use to manage arthritis in patient diagnosed of hypertension

Intervention measure	Frequency controlled hypertension N=124	Frequency uncontrolled hypertension N=124
No response	49 (39.5%)	40 (31.5%)
Consult physician for a change	2 (1.6%)	4 (3.2%)
Monitor just the blood pressure	12 (9.7%)	10 (8.1%)
Withdraw the use of NSAID	13 (10.5%)	28 (22.6%)
Monitor blood pressure and stop NSAID use	4 (3.2%)	4 (3.2%)
Recommend use of potassium salt NSAIDs in place of sodium salt	10 (8.1%)	1 (0.8%)
Recommend NSAIDs for a short period	3 (2.4%)	8 (6.5%)
Recommend using the lowest possible dose of NSAID	8 (6.5%)	8 (6.5%)
Ask patient to space the drugs administration	7 (5.6%)	4 (3.2%)
Recommend use of topical NSAID	1 (0.8%)	3 (2.4%)
Recommend food supplement and glucosamine, chondroitin and skeletal muscle relaxant	-	4 (3.2%)
Change antihypertensive to calcium channel blockers and diuretic	2 (1.6%)	1 (0.8%)
Use Naproxen because it is safer than other NSAIDs	2 (1.6%)	-
Replace NSAIDs with opioids analgesics	1 (0.8%)	4 (3.2%)
Use of COX 2 is better	-	4 (3.2%)
Ensure lifestyle modifications, exercise and short duration of NSAID use	1 (0.8%)	1 (0.8%)

Respondent's knowledge on the pathophysiology and pharmacotherapy of arthritis and co-morbid arthritis and hypertension is shown in Table 4.

Table 4: Knowledge of respondents on co-morbid arthritis and hypertension pharmacotherapy and pathophysiology N=124

Items	Yes	No	I don't know
The predominant drug of choice for the symptomatic relief of arthritic pain is NSAIDs	112(90.3%)	9(7.3%)	3 (2.4%)
NSAIDs are contraindicated in all controlled hypertension	16(12.9%)	83(66.9%)	25(20.2%)
NSAIDs cannot induce hypertension	38(30.6%)	69(55.6%)	17(13.7%)
NSAIDs can exacerbate hypertension	96(77.4 %)	18(14.5%)	10(8.1%)
NSAIDs effects on hypertension are dose dependent	73(58.9%)	23(18.5%)	28(22.6%)
New generation of NSAIDs (COX 2 selective inhibitors) are safer in hypertension	69(55.6%)	29(23.4%)	26(21.0%)
All hypertensive patients taking NSAIDs should be counseled on adherence to the recommended dose	119(96%)	2(1.6%)	3(2.4%)
Fish oil at anti-inflammatory doses is not a safe alternative to NSAIDs in treating arthritis in hypertension	53(42.7%)	32(25.8%)	39(31.5%)
Hypertensive patients with arthritis on ACEIs, diuretics and NSAIDs are not at risk of renal damage	29(23.4%)	70(56.5%)	25(20.2%)

Hindrances to the delivery of pharmaceutical care to hypertensive patients with arthritis were also assessed. The responses are shown in Table 5

Table 5: Hindrances to the delivery of pharmaceutical care services to hypertensive patients with arthritis in Ibadan

Hindrance	Agree	Neutral	Disagree
There is usually no time to adequately attend to every hypertensive patient with arthritis that requires pharmaceutical care. (n=123)	52(42.3%)	17(13.8%)	54(43.9%)
Most patients in this category are old and find it hard remembering things thus making the taking medication history difficult. (n=123)	72(58.6%)	15(12.2%)	36(29.2%)
Difficult in communication with patients arising from language barrier. (n=122)	30(24.6%)	15(12.3%)	77(63.1%)
Pharmacists are not taking up the service of rendering pharmaceutical care to these patients because they lack clinical knowledge of co-morbid hypertension and arthritis. (n=124)	41(33%)	27(21.8%)	56(45.2%)
Some of these patients do not value pharmaceutical care services. (n=118)	46(39%)	14(11.9%)	58(49.1%)
There is a lack of motivation from the administration (or boss) or from co-workers. (n=122)	47(38.5%)	32(26.2%)	43(35.3%)
Rendering pharmaceutical care to these patients properly is often opposed by the physician (n=122)	51(41.8%)	18(14.8%)	53(43.4%)
There is a lack of remuneration by the government or the hospital management (For hospital pharmacists n=61)	37(60.7%)	11(18.0%)	13(21.3%)
The patients are not willing to pay for pharmaceutical care services (For community pharmacists n=60)	22(36.7%)	15(25%)	23(38.3%)

DISCUSSION

Pharmacist's responsibilities are shifting from product related to focusing on patient care as claimed by majority of the respondents and one of the major activities they carried out in implementing PC is interacting with the patients to have information on their medical condition(s). Most of the respondents had good knowledge of side effects from antihypertensive use (Table 1). The strategy employed by the pharmacists in handling drug-related problems in chronic diseases varied. Less than one third of the respondents claimed they asked patient to stop taking the offending drug without the consent of the prescriber and this may be due to the limited contact between community and hospital pharmacists and physicians.^{21,22} However, less than half of the respondents claimed they counseled patients on the side effects of their medication(s) and in addition arranged a follow-up appointment with the patients within a reasonable time. This method of addressing side effects is appropriate and has been tried in other part of the world with success.²³ Majority of the respondents claimed prescriptions containing anti-hypertensives and NSAIDs were commonly seen in their respective places of practice.

This is contrary to a study by Awodele *et al*¹⁸ carried out in a tertiary health care facility Lagos which indicated a lower percentage of this combination in prescriptions in the facility studied. However, respondents' knowledge of handling NSAID use in hypertension appears poor because many did not respond to the questions asked while few of their responses were inadequate. Some indicated they usually recommended replacement of a sodium salt NSAID with a potassium salt. This may not have a significant effect reduction on the B.P because the mechanism of salt and water retention caused by NSAIDs is not due to the salt form but by its blocking of COX-2 natriuretic effect in the kidney.^{12,24} Topical NSAID and glucosamines and/chondroitin has been recommended by American College of Rheumatology²⁵ for patients with osteoarthritis. Initiation of NSAIDs at minimal effective dose is recommended for hypertensive patients who require oral NSAID for pain control²⁶; however, such patient should be adequately followed-up.

Few of the respondents informed the physician of the possible side effects of NSAIDs in hypertension. This suggests a poor pharmacist-physician relationship which could probably be as a result of doctors being

uncomfortable with pharmacists providing direct patient care²⁷, a lack of self confidence in the pharmacists¹⁶ or a lack of one-on-one encounter between pharmacists (especially community pharmacist) and physician²¹ despite other health professionals seeing the importance of the role of the pharmacists in PC.²⁸ Whatever may be the reason, pharmacist-physician relationship is important in PC and this relationship is most often initiated by the pharmacists²⁹ by improving their inter-professional communication techniques in order to communicate more effectively with the other members of the health care team.²⁸

The idea of substituting non selective COX -1 NSAID with selective COX-2 NSAID as indicated by some of the respondents and its choice as being a safe option compared to COX-1 (Table 4) may not produce appreciable beneficial effect on the B.P of such patients because studies have shown COX-2 selective NSAIDs implicated in increase B.P although rofecoxib was noted to have a greater effect on increased B.P^{30,31}

It is also worrisome that good number of the respondents did not know that hypertensive patients with arthritis on ACEIs, diuretics and NSAIDs ('the triple whammy') are at risk of renal damage. This is an established information^{32, 33}, that a pharmacist who offer PC services to hypertension with comorbid arthritis should know. American Family Physician guideline recommends that the serum creatinine of any patient using combination of ACEI or ARB at the initiation of NSAID should be monitored³¹

The use of topical NSAID in place of oral/parenteral NSAIDs in these patients as indicated by few of the respondents is a good alternative as study has shown that topical NSAIDs achieve about 15-20% of plasma concentration of those achieved with equivalent oral NSAID dose.³⁴ This concentration does not have a significant effect on the B.P of the patient.³⁵

One quarter of the respondents had the knowledge that fish oil, at anti-inflammatory doses, is a safe alternative in treating arthritis in hypertensive patients.³⁶ None of the respondents indicated other topical therapies such as capsaicin and rubefacients that may be of benefit to some patients with osteoarthritis.²⁴

One of the major hindrances to offering effective pharmaceutical care services to these patients was poor communication resulting from patient's age. The comorbid of hypertension and arthritis is common in the elderly,³⁷ some find it difficult to remember things thus making communication and taking medication

history difficult. Poor communication between the patient and healthcare practitioner has been associated with drug adverse effect in the elderly.³⁸ The study also showed that lack of remuneration by patients (community pharmacists) and government (hospital pharmacists) is one of the major hindrances to carrying out PC services. Farris et al³⁹ study in assessing PC practice around the world revealed that a major hindrance to the practice of pharmaceutical care in Europe is a lack of reimbursement of the pharmacists.

Some of the community pharmacists were not found at their duty post despite repeated visits therefore, the questionnaires were, most of the time, not completed. The strike by the Nigerian Joint Health Sector Unions (JOHESU) during the study period also affected the retrieval of some of the questionnaires administered to hospital pharmacists.

CONCLUSION

Respondents' knowledge of the pharmacotherapy with antihypertensives and NSAIDs use in patients with arthritis co-morbid hypertension need to be improved. Pharmacists need to improve their knowledge on current management of different diseases they encounter so as to be able to prepare themselves for proper counseling and intervention that will be required of them to improve the quality of life of the patients. Good and well established pharmacist-physician relationship and remuneration of pharmacist for the PC services they provide for patients will also improve the PC services provided by the pharmacist.

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