

AN EVALUATION OF THE KNOWLEDGE AND ROLE OF COMMUNITY PHARMACISTS IN THE MANAGEMENT OF HYPERTENSION (A COMMUNITY BASED STUDY) IN THE CENTRAL BUSINESS DISTRICT OF FREETOWN, SIERRA LEONE

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ABSTRACT

Background: The prevalence of hypertension in Sierra Leone is well established and at an average of 46.2% for females and 43.2% of males based on several studies. The management of hypertension requires a multi-disciplinary effort from healthcare professionals (Doctor, Pharmacist, Nurses) as well as the patient. The first point of contact for most patients is the pharmacist working in a community pharmacy. The role of the Pharmacists in hypertension encompasses medication management, disease state education and patient counseling and is most successful when integrated into the patient's care team. Further validation through larger, prospective trials and evaluation of long-term outcomes, such as mortality, remain viable research opportunities. This study was conducted to assess community Pharmacists knowledge in hypertension, to determine whether community pharmacists are well-acquainted with their roles in managing hypertension as well as to assess how community pharmacists manage or treat hypertensive patients. **Method:** The study was a descriptive cross sectional study conducted at community pharmacies in the central part of Freetown. All Pharmacists working in community pharmacies in central Freetown were included in this study. According to the Pharmacy Board's Gazette of 2018, there is a total of 58 community pharmacists working in this study setting giving a sample size of 58. The outcome measures were demographics, years of experience, knowledge in hypertension, role in management of hypertension, Data was collected using a self-administered questionnaire. The data was analysed using SPSS and Microsoft excel to produce Graphs and Tables. **Result:** The results showed more male pharmacists 42(72.4%) than female community Pharmacists 16 (27.6%). 39.7% has between 2-5 years of experience working in community pharmacies. Most pharmacists showed they were knowledgeable or having a high knowledge on hypertension as 86.2% were able to correctly define hypertension, 82.8% and 63.8% can identify obesity and age as a risk factor for hypertension, however most don't know their roles in the management of hypertension as 13.8% don't take blood pressure measurements of their patients even when they suspect hypertension, 69.0% and 53.4% of community pharmacists never ask patients about laboratory tests such GFR and ECG respectively. Gaps were also identified with respect to how to manage hypertension especially with the right forms of medications with only 20.7% that sometimes asking whether patients are on hypertensive medications and with only 44.8% of Community pharmacists that ask for prescription for new patients. The lack of a pharmaceutical care model or a Pharmacist/Doctor /Physician collaboration in the management of hypertension was also clearly visible

KEYWORDS: Community Pharmacists, Role, Knowledge, Management, Hypertension.

INTRODUCTION

According to M Mehmood *et al.*, (2018), the increasing prevalence of hypertension worldwide has indicated blood pressure (BP) measurement as a primary clinical need for an effective screening of this condition and prevention of its cardiovascular complications.

High blood pressure is the major risk factor for cardiovascular disease, hence in 2003 it was named as the number one killer by the world health organization (WHO) in the world health report.

Hypertension is very common indeed and hence a major public health issue. The prevalence is expected to increase considerably in the coming years and globally to 1.56 billion by 2025 according to the WHO.

There are several factors predisposing to hypertension. The factors vary from country to country and even there are difference between urban and rural regions of the same place. R.Rani *et al.*, (2008).

Hypertension remains a vital, modifiable risk factor in the prevention of cardiovascular disease. However, many patients do not achieve their therapeutic goals for numerous reasons which can include poor disease insight and non-adherence.

Pharmacists can be key players in controlling hypertension, given their medication knowledge and patient counseling skills, yet they remain an underutilized resource in the management of chronic disease states. Various models exist that allow pharmacists to provide direct patient-centered care but practices differ from state to state since pharmacists are not recognized nationally as healthcare providers.

The role of the Pharmacists in hypertension encompasses medication management, disease state education and patient counseling and is most successful when integrated into the patient's care team. Further validation through larger, prospective trials and evaluation of long-term outcomes, such as mortality, remain viable research opportunities. Afia Frimpomaa *et al.*, (2017).

A specific role and duty of the community pharmacist must be patient's education on hypertension and healthy life styles, BP monitoring, training on BP self-monitoring, medication use review, prescription refill reminders and drug safety monitoring Afia Frimpomaa *et al.*, (2017).

Community pharmacists are integral members of the hypertension team management and may support the patient's referring physician in the effort of improving blood pressure (BP) control and adherence to anti-hypertensive drug treatment Stefano Omboni *et al.*, (2019). Team-based care practices including a pharmacist may help expand patient access to screening

of hypertension, improve efficiency of hypertension management, and assure quality of care.

Although neither the pharmacist nor the patient must take decision about treatment and changes in the prescribed therapeutic regimen, without the direct consultation of the referring physician or the specialist, the aforementioned tasks, carried out under the physician's supervision, may help improving the therapeutic outcome of antihypertensive therapy. The highest accessibility to pharmacy may ensure a regular relationship with patients and a better effect on the hypertension management.

Medication dispensing is the well-recognized role of community pharmacists and represents an essential part of their conventional function. Although drug prescription and changes must be regarded as a physician task, a pharmacist may have an additional and active role in offering clinical expertise and useful recommendations on medication use and patient management, as a support to the physician's action, resulting in improved therapeutic safety and humanistic control.

In current daily practice, however, community pharmacists are underutilized as healthcare provider, even though their relevance to healthcare is widely recognized. This is probably because new services are slowly being incorporated into community pharmacy practice S. Kaae *et al.*, (2012)

METHODS

Study Setting

The study was conducted in community pharmacies in the Central part of Freetown. The central part of Freetown has more community pharmacies than other parts of Freetown according to the Pharmacy Board Gazette 2018. It is the commercial business district in Freetown.

Study Design

The study design is a descriptive cross sectional study of community pharmacist working in the central business district of Freetown

Study Population

All pharmacists working in community pharmacies in the central part of Freetown.

Sample Size Determination and Sampling Technique

The study included all community pharmacists working in community pharmacies in central Freetown.

Based on the yearly gazette from the Pharmacy Board of Sierra Leone (PBSL) there are 58 community pharmacies in central Freetown. Each community pharmacy has one pharmacist working in it. The sample size for this study is 58. Therefore all 58 pharmacists working in those pharmacies were targeted.

A convenience sampling technique was used for community pharmacists.

Data Collection

The data collection process involved explaining to respondents the rationale of the study and also seeking their consent to be involved in the study.

The data was collected using a questionnaire assessing the knowledge and role of community pharmacists in managing hypertension. All 58 community pharmacy was visited and in cases where these professionals were absent subsequent visits were made until they were met and the questionnaire filled.

Ethical Consideration

Ethical clearance was obtained from the Sierra Leone Ethics and Scientific Review Committee and permission was given by the National Medicines Regulatory Agency (Pharmacy Board of Sierra Leone) to conduct the study. All information obtained in the study was kept confidential during the collection and processing of data and used only for this study.

Outcome Measures

The outcome measures were demographics, years of experience, knowledge in hypertension and role in management of hypertension.

Data Analysis

The data collected was cleaned, coded, and entered into Statistical Package for Social Scientists (SPSS) version 20 (IBM Statistics, Armonk, NY, USA).

The data was put into SPSS and analysed using descriptive statistics using tables and graphs.

Some data were also analysed using Microsoft excel to bring out graphs and table.

RESULTS

Respondents’ demographic information

The study included a total of 58 respondents – 42(72.4%) males and 16 (27.6%) females (**Figure 1.0**) With regards to respondents’ years of experience, 3(5.2%) of respondents had < 1years experience in community pharmacy practice and 8(13.8%) had one year experience in community practice, 23(39.7%) had 2 – 6 experience, and 8 (13.8%) had over 10 years of working experience (**Figure 2.0**).

With respect to the level of education, 34 (58.6%) has a BPharm degree, 14(24.1%) has an MSc and 3(5.2%) are postgraduate fellows (**Figure 3.0**)

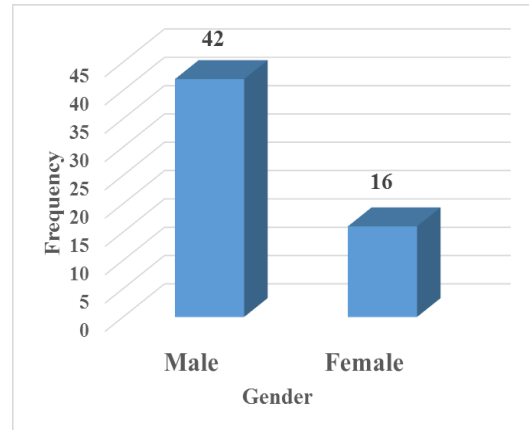


Figure 1.0 Gender of respondents.

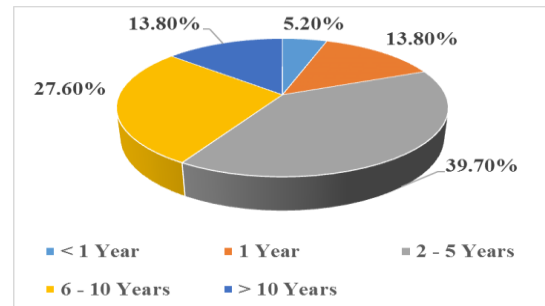


Figure 2.0: Respondents years of experience.

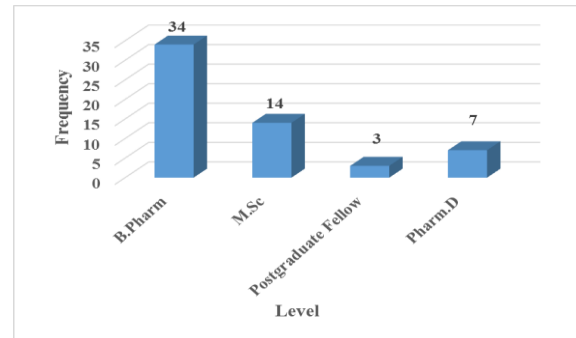


Figure 3.0: Level of education.

Respondents’ knowledge on hypertension

Respondents were assessed on their knowledge on hypertension (**Table 1.0**).

On the definition of hypertension 8 (13.8%) selected an incorrect answer, the remaining 50(85.2%) selected the correct answer.

Respondents were also assessed on the complications of hypertension and 5(8.6%) selected the wrong answers whilst the remaining 53(91.4) selected the correct answers.

Respondents were also assessed on the risk factors for hypertension and 10(17.2%) did not select obesity as a risk factor. 21(36.2%) did not also select age as an hypertensive risk factor. 47(81.0%) selected salt intake as a risk factor for hypertension and 10(17.2%) did not select stress as a risk factor for hypertension. 21(36.2%)

did not select physical inactivity as a risk factor for hypertension.

Table 1.0: Summary of knowledge responses.

Knowledge statement	Responses	Frequency	%
What definition of hypertension would you consider most appropriate	Incorrect answer	8	13.8
	Correct answer	50	86.2
Severe elevations in blood pressure without symptoms or evidence of acute end organ damage, is termed?	Incorrect answer	18	31.0
	Correct answer	40	69.0
Severe elevations in blood pressure that are associated with acute injury to target organs such as the brain, head, kidney, retina is termed	Incorrect answer	31	53.4
	Correct answer	27	46.6
Which of the following do you consider complications of hypertension	Incorrect answer	5	8.6
	Correct answer	53	91.4
Obesity as hypertension risk factor	Incorrect answer	10	17.2
	Correct answer	48	82.8
Age as hypertension risk factor	Incorrect answer	21	36.2
	Correct answer	37	63.8
Cigarette smoking as an hypertension risk factor	Incorrect answer	17	29.3
	Correct answer	41	70.7
Physical inactivity as hypertension risk factor	Incorrect answer	21	36.2
	Correct answer	37	63.8
Salt intake as hypertension risk factor	Incorrect answer	11	19.0
	Correct answer	47	81.0
Stress as hypertension risk factor	Incorrect answer	10	17.2
	Correct answer	48	82.8

Respondents roles on hypertension

Respondents were assessed on their roles in the management of hypertension (Table 2.0) 50(86.2%) of respondents say they always measure a patient's blood pressure if they suspect hypertension, whilst 8(13.8%) say they only sometimes measure blood pressure.

Respondents were also asked about laboratory tests for patients with hypertension and 40(69.0%) never asked about glomerular filtration rate, 31(53.4%) never asked about electrocardiogram, 34(58.6%) always ask patients for blood glucose level results and 4(6.9%) never ask about cholesterol levels.

Respondents were assessed on asking patients about risk factors for hypertension and 53(91.4%) say they always ask about too much salt in the diet, 28(48.35%) sometimes asked about chronic diseases such as diabetes and kidney diseases as a risk factor for hypertension.

Respondents were also assessed on whether they ask patients for symptoms for hypertension and 52(89.7%) always ask about headache 14(24.1%) never asks patients about insomnia, 9(15.5%) always ask about nose bleeding.

Respondents were also asked about family history of certain disease 44(75.9%) always ask about family history of hypertension, 2(3.4%) never ask about family history of diabetes, 28(48.3%) always ask about family history of hypercholesterolemia.

Respondents were also asked about their recommendations to patients with high blood pressure and 45(77.6%) always recommend losing weight to patients, 51(87.9%) always recommend low sodium diet, 50(86.2%) always recommend low fatty foods.

Table 2.0 Summary of role responses.

Roles	Responses		
	Never No. (%)	Sometimes No. (%)	Always No. (%)
If you suspect a patient with hypertension do you measure his or her blood pressure?	0.00	8(13.8%)	50(86.2%)
Community pharmacists ask about GFR	40(69.0%)	15(25.9%)	3(5.2%)
Community pharmacists ask about ECG	31(53.4%)	19(32.8%)	8(13.8%)
Community pharmacists ask about blood glucose level	0.00	24(41.4%)	34(58.6%)
Community pharmacists ask about Haematocrit level	18(31.0%)	36(62.1%)	4(6.9%)
Community pharmacists ask about Potassium level	29(50.0%)	25(43.1)	4(6.9%)
Community pharmacists ask about cholesterol level	4(6.9%)	26(44.8%)	28(48.3%)
Community pharmacists ask about risk factors such as too much salt in diet	0.00	5(8.6%)	53(91.4%)
Community pharmacists ask about risk factors such as blood pressure in pregnancy	1(1.7%)	37(63.8%)	20(34.5%)
Community pharmacists ask about risk factors such as chronic disease such as diabetes or kidney disease	6(10.3%)	28(48.3%)	23(39.7%)
Community pharmacists ask about symptoms such as dizziness	2(3.4%)	27(46.6%)	28(48.3%)
Community pharmacists ask about symptoms such as headache	2(3.4%)	27(46.6%)	28(48.3%)
Community pharmacists ask about symptoms such as shortness of breath	1(1.7%)	5(8.6%)	52(89.7%)
Community pharmacist ask about symptoms such as nose bleedings	18(31.0%)	21(36.2%)	19(32.8%)
Community pharmacists ask about symptoms such as insomnia	31(53.4%)	18(31.0%)	9(15.5%)
Community pharmacists ask about family history of diabetes			
Community pharmacists ask about family history of high cholesterol	14(24.1%)	24(41.4%)	20(34.5%)
Community pharmacists ask about family history of stroke	2(3.4%)	22(37.9%)	34(58.6%)
Community pharmacists ask about family history of angina	6(10.3%)	24(41.4%)	28(48.3%)
Community pharmacists ask about family history of elevated blood pressure	17(29.3%)	30(51.7%)	11(19.0%)
Community pharmacists asked if patient ever experienced M.I as a complication	28(48.3%)	23(39.7%)	7(12.1%)
Community pharmacists asked if patient ever experienced Angina as a complication	0.00	14(24.1%)	44(75.9%)
Community pharmacists asked if patient ever experienced kidney failure as a complication	16(27.6%)	28(48.3%)	14(24.1%)
Community pharmacists asked if patient ever experienced retinopathy as a complication	25(43.1%)	27(46.6%)	6(10.3%)
Community pharmacists asked if patient ever experienced ischemic stroke as a complication	9(15.5%)	40(69.0%)	9(15.5%)
Community pharmacists recommended patient to lose weight	12(20.7%)	33(56.9%)	13(22.4%)
Community pharmacists recommended patient to quit smoking	19(32.8%)	29(50.0%)	10(17.2%)
Community pharmacists recommended low sodium diet	0.00	13(22.4%)	45(77.6%)
Community pharmacists recommended low fatty foods	3(5.2%)	11(19.0%)	44(75.9%)
Community pharmacists recommended stress management	0.00	7(12.1%)	51(87.9%)
Community pharmacists recommended increased physical activity	0.00	8(13.8%)	50(86.2%)
Community pharmacists recommended decrease alcohol use	0.00	14(24.1%)	44(75.9%)
	0.00	26(44.8%)	32(55.2%)
	1(1.7%)	15(25.9%)	42(72.4%)

Respondent's management / treatment of hypertension

Respondents were assessed on how they go about managing patients with high blood pressure. (Table 3.0) 44(75.9%) of respondents always ask patients if they are currently taking antihypertensive medications. 26(44.8%) of respondents ask if patient has ever used antihypertensive drugs before, 26(44.8%) always ask for prescriptions for new cases of hypertension, 23(39.7%) always ask if patients are taking other prescribed

medications, 4(6.9%) never check for drug interactions and 38(65.5%) always explain the importance of adherence. 37(63.8%) always recommend medical checkup for hypertensive patients.

Community pharmacists were asked to recommend medications in a case of hypertensive crisis in their pharmacy. (Figure 4.0) ACE inhibitors was 30%, calcium channel blockers was 25% and Diuretics was only 10%.

Table 3.0 Summary of management responses.

Management	Responses		
	Never No. (%)	Sometimes No. (%)	Always No. (%)
Community pharmacist ask if patient is currently taking any antihypertensive medication	2(3.4%)	12(20.7%)	44(75.9%)
Community pharmacist ask if patient has ever used antihypertensive drugs before	1(1.7%) 0.00	18(31.0%) 32(55.2%)	39(67.2%) 26(44.8%)
Community pharmacists ask for prescription for new patients	1(1.7%)	44(75.9%)	13(22.4%)
Community pharmacists ask for prescription for patients who came for replenishment	14(24.1%)	27(46.6%)	17(29.3%)
Community pharmacists ask if patient is taking OTC drugs	1(1.7%)	34(58.6%)	23(39.7%)
Community pharmacists ask if patient is taking food supplements	0.00	35(60.3%)	23(39.7%)
Community pharmacists ask if patient is taking other prescribed medications	4(6.9%)	32(55.2%)	22(37.9%)
Community pharmacist check for drug interactions			
Community pharmacist ask about adherence	11(19.0%)	23(39.7%)	24(41.4%)
Community pharmacist explain the importance of adherence	0.00	20(34.5%)	38(65.5%)
Community pharmacist recommend medical checkups for hypertensive	0.00	21(36.2%)	37(63.8%)

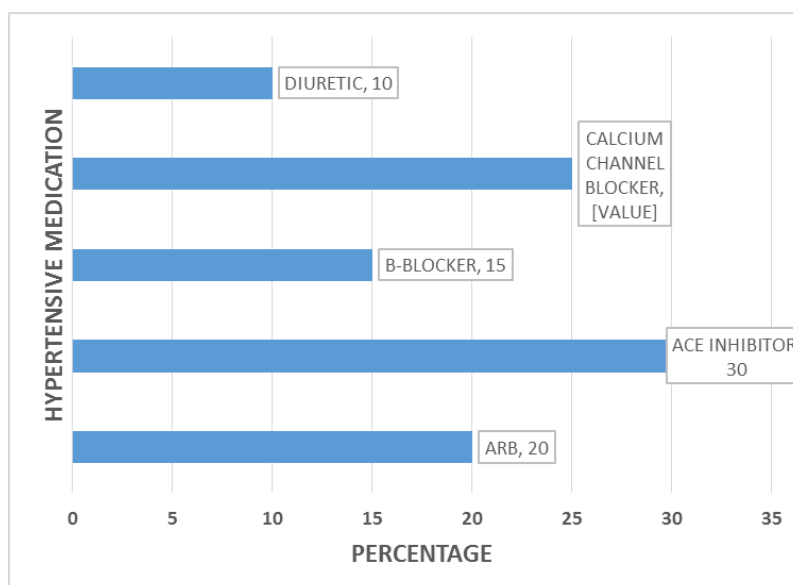


Figure 4.0: Types of medication recommended in case of hypertensive crisis in a pharmacy.

DISCUSSION

Demography

From Figure 1.0, there are more male pharmacists 42(72.4%) than female community pharmacists 16 (27.6%). This is in line with the Pharmacy board gazette which has more male pharmacists countrywide than female pharmacists. According to a study by Tanjung H.R et al., 2015 on the assessment of hypertension knowledge of pharmacists majority of the respondents were female 82.3 %.

From Figure 2.0, 39.7% has between 2-5 years of experience working in community pharmacies whilst 5.20% has less than 5years working experience and only 13.80% has more than 10years of experience. Pharmacy profession in Sierra Leone is relatively new and therefore you expect less Pharmacists to have quite a high number of experience years under their belt. Also most pharmacist leave community practice for other fields in

Pharmacy no sooner they get a year or two years' experience in community practice as community pharmacy is not as developed and organized in Sierra Leone.

From figure 3.0, there are more pharmacists (34%) with BPharm degree, 7% with PharmD, Msc 14% and only 3% are postgraduate fellows. The high number of Pharmacists with BPharm degree is because BPharm is the minimum requirement for a pharmacist compared to PharmD which is not been offered here in Sierra Leone but in some neighbouring countries. 14% with Msc can be explained by the fact that there are no masters degree in pharmacy been offered except in other sciences. Fellowship degrees from the West African Postgraduate College of Pharmacy (WAPCP) only started gaining traction few years ago.

Knowledge on hypertension

From table 1.0, 86.2% were able to correctly select the correct definition for hypertension whilst 13.8% selected the wrong definition. The correct definition according to JNC incorporated both systolic and diastolic pressure whilst the wrong answers had either systolic or diastolic pressure. It could be due to the fact that their understanding of hypertension is elevation of either one of the two. According to a study by Tanjung H.R et al 2015 on the assessment of hypertension knowledge of pharmacists a total of 97.9% of pharmacists knew about the definition of hypertension.

31.0% and 53.4% could not distinguish between hypertensive urgency and emergency respectively. There is always a confusion with these two terms and the catch is always been end organ damage and no end organ damage.

8.6% do not know the complications of hypertension as some people confuse diabetes to be a complication of hypertension which is the other way round.

82.8% of community pharmacists consider obesity as a risk factor for hypertension. 94.8% consider obesity as a risk factor in a similar study by Khairunnisa et al 2015.

36.2% of the respondents did not consider age and physical inactivity as a risk factor for hypertension. Although studies have proved that increasing age is a risk factor together with lack of physical activity, the fact that young people also have hypertension could be a reason for that discrepancy. The same could be said for people who exercise too as having hypertension.

82.8% consider stress as a risk factor for hypertension. In a similar study done by Tanjung H.R et al 2015. 78.1% of pharmacists said that hypertension can be caused by stress.

Role of Pharmacists

From Table 2.0 86.2% of community pharmacists always measure Patients blood pressure if they suspect them to have a high blood pressure. In a similar study by Ramy Zreik in 2017, 74.29% of the respondents answered that they always measure their patients' blood pressure. Most community pharmacies have blood pressure machines in the pharmacy dispensary and so the available of such service represents this high number. As mentioned by Pharmacy based Hypertension management model created by WHO 2005, which states that for early detection of hypertension, pharmacists should measure the blood pressure of a customer and refer possible persons with possible hypertension to the GP 69.0% and 53.4% of community pharmacists never ask patients about GFR and ECG respectively. Most of them don't know how to interpret these laboratory tests. The same can be said about hematocrit 31.0% and potassium level 50.0%. In a similar study by Ramy Zreik in 2017,

48.57% of the respondents answered to never ask their patients about electrocardiography (ECG).

91.4% always asks about risk factors such as too much salt in the diet. This is consistent with the 81% with respect to their knowledge of salt intake as a risk factor for hypertension. Because of this knowledge it is expected that a high percentage will ask about such a risk factor.

89.7% always ask about symptoms such as occipital headache, as headache is one of the most common symptoms of hypertension although hypertension is sometimes asymptomatic.

Only 15.15% always ask about symptoms such as nose bleeding as this is not as common as other symptoms of hypertension.

Only 24.1% never ask about symptoms such as insomnia. This is relatively high as these are questions regularly asked to patients with hypertension 75.9% of community pharmacists always ask about family history of hypertension. This is consistent with the fact that most hypertensive patients have a family history of hypertension.

Only 12.1% of community pharmacist always ask about family history of angina pectoris. Angina is most times over looked even though it is a cardiovascular condition. The same could be said about the fact that only 10.3% of community pharmacist asked about angina as a complication of hypertension.

87.9% of community pharmacists always recommends reduction of dietary sodium, this is also consistent with the high percentage 81% of community pharmacists who consider dietary sodium as a risk factor for hypertension 55.2% always recommends to patients to increase their physical activity. Physical activity helps reduction in blood pressure and also reduction in the incidence of other diseases such as diabetes.

Management of hypertension

From Table 3.0, 75.9% of community pharmacists ask patients whether they are currently taking any other antihypertensive medications. This high number can be explained by the fact that before prescribing any antihypertensives, the current prescription medications must be reviewed before making a decision. Only 44.8% of community pharmacists ask for prescriptions for new patients. This shows that most Pharmacists neglects their roles in asking for prescriptions.

29.3% , 39.7%,39.7% of community pharmacists always ask patients whether they are taking OTC drugs, food Supplements and other prescribed medications respectively.

Like any other pharmacists in developed countries, Sierra Leonean pharmacists lack the ability to prescribe medications. Their role was restricted to ask for prescriptions before giving any antihypertensive medication. In this respect, patients were asked as to whether they are currently using or have used antihypertensive medication, and if other prescribed medication and supplements are being taken with the current antihypertensive medication in order to screen for the drug to drug interactions.

41.4% and 65.5% of community pharmacists always ask about adherence and explain the importance of adherence to their patients. According to the pharmacy based hypertension model by WHO pharmacist should improve their patient's adherence to prescribed medications by using simplified strategies. According to this WHO model pharmacists can also evaluate patients' adherence. In Sierra Leone as mentioned earlier pharmacists can't prescribe based on regulations and so they can only refer or ask their patients to consult their physicians.

63.8% of community pharmacists always recommend medical checkup for patients with high blood pressure. 36.2 % sometimes recommends to specialists. This percentage that only sometimes recommends can be explained by the fact that they want to personally treat these patients in order to increase sales in their pharmacies. This is against the WHO model of referring patients with uncontrolled or suspected hypertension to specialists.

From figure 4.0, community pharmacists recommends ACE inhibitors 30% for hypertensive crisis in the pharmacy, Calcium channel blockers 25%, and diuretic 10%

CONCLUSION

From the results I can conclude that community pharmacists are very much knowledgeable when it comes to hypertension in general.

The very basics with regards hypertension, risks factors, symptoms and complications of hypertension are very well known.

However, there are stills gaps with respect to knowing what their roles really are and their limitations. Quite a number of community pharmacists are not au fait with their roles in the management of hypertension.

Most pharmacists don't know how to interpret laboratory test results which are vital when managing hypertensive patients.

The lack of pharmaceutical care model or a Pharmacists-Physician collaboration in the management of hypertension was also clearly visible.

Quite a number of them don't refer to specialists or physicians as it is recommended by international guidelines. Even in cases of uncontrolled hypertension some would prefer to treat themselves in a bid to improve sales in their pharmacy.

Gaps were also identified with respect to how to manage hypertension especially with the right forms of medications.

Most community pharmacists don't have a postgraduate degree in clinical pharmacy and as such they treat patients based on their general knowledge in pharmacy.

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