



Effects of Patients' Perceptions on Hypertension Treatment in the Cape Coast Metropolis, Ghana

Julius Waamsasiko Adong^{1*}

¹*Twifo Praso Hospital, Ghana Health Service, P.O. Box 190, Twifo Praso, Central Region, Ghana.*

Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/IJTDH/2019/v35i330122

Editor(s):

(1) Giuseppe Murdaca, Clinical Immunology Unit, Department of Internal Medicine, University of Genoa, Viale Benedetto XV, n. 6, Genova 16132, Italy.

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Complete Peer review History: <http://www.sdiarticle3.com/review-history/48178>

Original Research Article

Received 04 January 2019

Accepted 25 March 2019

Published 03 April 2019

ABSTRACT

Background: The rising levels of hypertension related complications in Ghana are perceived to be associated with low anti-hypertensive medication adherence, which is attributable to patient wrong perceptions of hypertension.

Aim: To explore the effects of patients' perceptions on hypertension treatment in cape coast, Ghana.

Study Design: Cross sectional survey.

Place and Duration of Study: Cape Coast, Ghana. December 2013 to March 2014.

Methodology: Eight out of 350 patients were selected from a baseline quantitative survey conducted at the Cape Coast Metropolis. The purposive sampling technique was used after baseline analysis with the Morisky Medication Adherence Scale, to select four adherents and four non-adherents to anti-hypertensive medication. In-depth interviews were conducted for the eight patients, data was processed using content analysis procedure based on three specific themes.

Results: Perceived appearance of symptoms was misinterpreted as sign of rising blood pressure. Combination of anti-hypertensive and herbal preparations was prevalent among non-adherents. Perceived side effects of anti-hypertensive particularly, sexual weakness was intense among non-adhering patients.

Conclusion: Hypertensive patients in the Cape Coast Metropolis of Ghana, were at a higher risk of medication non-adherence and uncontrolled blood pressure. The findings underscore the need to change patient orientation about hypertension, by addressing misconceptions of symptoms and medication side effects, while discouraging the use of herbal preparations.

Keywords: Hypertension; patient perceptions; cape coast; Ghana.

1. INTRODUCTION

Available data points to increasing prevalence of hypertension among Ghanaians, with estimates between 19 and 48 percent of the adult population 18 years and over. However, the level of blood pressure control, estimated between 2 and 13 percent of the adult population, remains low in Ghana [1,2,3,4]. Hypertension is one of the leading causes of global morbidity, as well as mortality according to the world health organisation [5]. It is chronic medical condition which is defined when the average of at least two readings of blood pressure consistently exceeds 140/90 mmHg in non-diabetic patients [5,6]. Notable complications of hypertension in Ghana include stroke, heart failure and renal disorders [7].

Though basic anti-hypertensive medicines are available to patients through the free national health insurance policy of Ghana, availability of medicines has not substantially improved medication adherence and blood pressure control levels [8]. Factors including insufficient counselling, ineffective treatment, perceived adverse effects of anti-hypertensive, and availability of herbal preparations, contribute to the low levels of controlled blood pressure in the country [2]. Key factors including perceptions and beliefs about illnesses also affect treatment [9,10]. Consequently, modifying patient's perception about their illnesses might improve treatment in most conditions including hypertension [9].

1.1 Conceptual Perspectives

Specific concepts of the Self-Regulatory Model of the Common Sense model of illness, provided the theoretical basis for assessing the perceptions of patients about hypertension. The fundamental principle of the model is that perceptions influence coping behaviour, which intend affect treatment outcomes [11,12]. The concept of "identity" refers to the name or the symptom used to identify the illness. Patients' perceptions of symptoms may influence their willingness to accept and cope with prescribed

treatment. For example, hypertension is not identified by known symptoms according to medical knowledge, yet patients relate it to many symptoms such as dizziness, headaches, chest pain, sleeplessness, fatigue, and rising heart-beat [13,14]. Therefore, patients with high perceptions of symptoms may avoid medication during the interval they perceive less symptoms [10]. The challenge to health providers has been how to address the notion that relates hypertension to symptoms.

Treatment control is conceptually defined as patients' beliefs in the effectiveness of treatment to cure the disease. There are indications of improved anti-hypertensive adherence with strong treatment control beliefs [14]. Therefore, treatment may be affected when patients hold misconceptions about the effectiveness of treatment. As a chronic condition, treatment could further be affected when patients hold beliefs that hypertension is curable [15]. Causal factors refer to patients' personal ideas about the aetiology of the disease [16]. Perceptions and beliefs about causes of hypertension have been shown to influence adherence to medication, and that, causal beliefs can influence the type of treatment or changes that patients make [17,18].

Treatment guidelines recommend lifestyle modifications including diet control, alcohol control, and physical activity as the first step in the management of hypertension when blood pressure is not excessively high [5]. There are assertions that negative lifestyle practices such as alcohol misuse, tobacco use, and physical inactivity, may lead to low medication adherence among patients [19]. However, the extent to which lifestyles affect medication adherence among hypertensive patients is debatable.

Central Region is among the first four regions in Ghana with high prevalence of hypertension as by 2014 [20]. Cape Coast being the major urban centre in the region is noted for the increasing number of outpatient cases of hypertension [21]. Negative perceptions as well as low patient knowledge of hypertension are factors cited as having effects on hypertension treatment in the

Metropolis [22]. The purpose of the study was to explore the extent to which patients' perceptions of hypertension affect treatment in the Cape Coast Metropolis. The focus of this paper was to provide answers to specific patient issues which include, diagnosis and causes of hypertension, treatment, and the recommended lifestyle modifications. Understanding patients' perceptions may provide necessary insights to address misconceptions about hypertension, which may lead to improvement in medication adherence and blood pressure control.

2. METHODS

2.1 Study Setting

The study was conducted in the Cape Coast Metropolitan area of the Central Region of Ghana. Cape Coast Metropolis is a coastal area bounded to the south by the Gulf of Guinea (Fig. 1). The town is located on latitude 05°05'N and on longitude 01°15'W, occupying approximately

122 km square of land. It had a population of about 169,894 as of 2010 [23]. It is principally a fishing community, with farming, trade and commerce, as well as tourism being important activities.

The baseline study was conducted at the outpatient departments of three main hospitals in the Cape Coast Metropolis, with the capacity to appropriately diagnose and manage hypertension. These were the Cape Coast Teaching Hospital, Cape Coast Metropolitan Hospital, and the University of Cape Coast Hospital (Fig. 1).

2.2 Study Design and Sampling

The study was carved out of a PhD thesis designed as a mixed baseline quantitative with a follow-up qualitative survey. The cross sectional survey was conducted between December, 2013 and March, 2014. The follow-up qualitative study of which this paper refers to was an in-depth

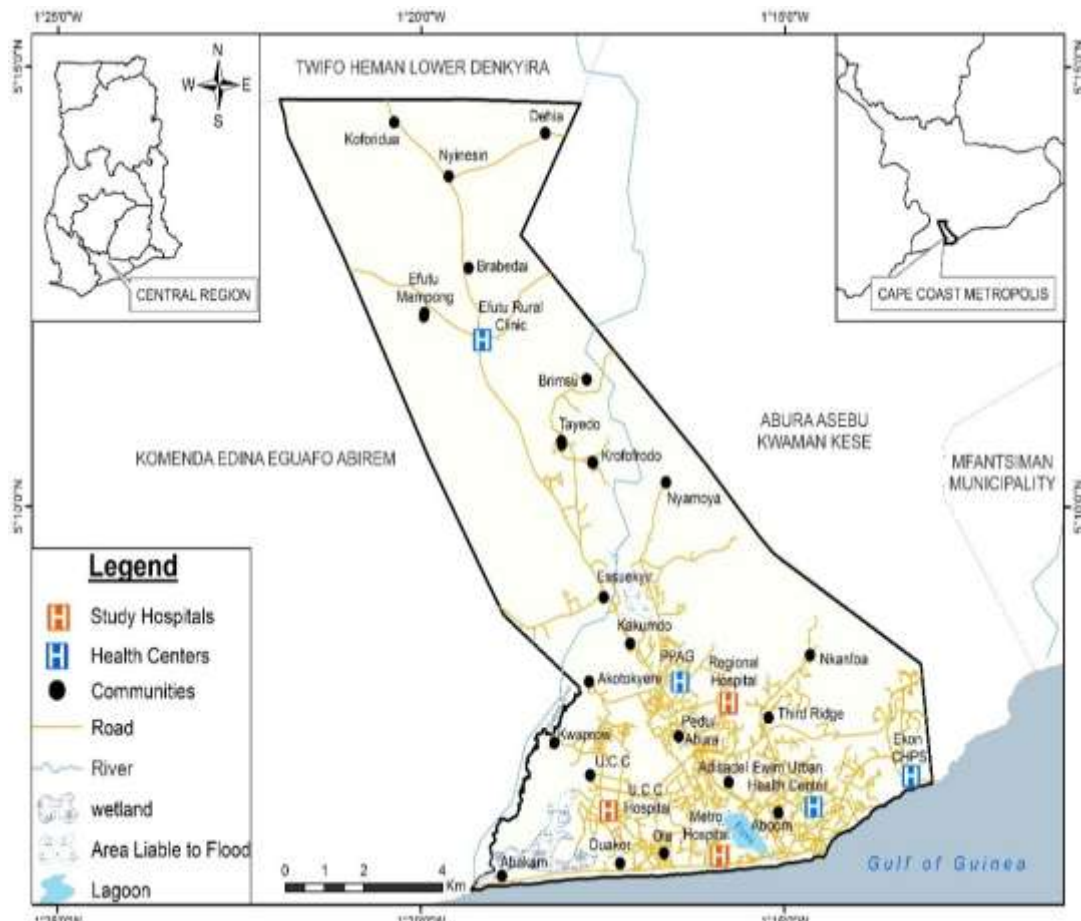


Fig. 1. Map of Cape Coast, showing location of study hospitals
(Source: University of Cape Coast, Department of Geography, 2014)

Table 1. Themes and topics

Theme	Sub-topics
Perceptions about hypertension	<ol style="list-style-type: none"> 1. Views about hypertension diagnosis 2. Perceived Causes of hypertension 3. Perceived symptoms of hypertension
Perceptions about treatment	<ol style="list-style-type: none"> 1. Views about hypertension treatment 2. Perceived side effects of anti-hypertensive
Perceptions about lifestyle	<ol style="list-style-type: none"> 1. Views about lifestyle modifications

interview of eight purposively selected out-patients after data from the baseline interview was analysed using the 8 questions Morisky Medication Adherence Scale. The Scale assesses patients' behaviour regarding the tendency to forget prescriptions, the tendency to stop medication due to perceived improvement in health, suspending medication due to perceived deterioration of one's health, and the difficulties associated with the incessant intake of medicines. The scale is limited to eight behaviour issues and is not intended to assess all other factors associated with patient medication behaviour.

Patients who scored exactly eight points on the Morisky Medication Adherence Scale [24] were considered adherents, those who scored less than eight points were considered non-adherents to medication, according to this study. Patients were purposively selected to ensure that four were adherent and four were non-adherent as shown in Fig. 2 (see Appendix A), and that four were male and four were female in each group. Purposive sampling was done to intentionally identify differences between the adherent and the non-adherent patients.

2.3 Inclusion Criteria

The study targets were patients who had been clinically diagnosed of hypertension, aware of their condition, received routine medication from the three selected hospitals for at least three months, and were 40 years and above, excluding pregnant mothers. Three months of continuous medication was deemed sufficient for patients to appropriately understand the issues and respond to the questions. The age limit was imposed to ensure that only patients who were on permanent treatment were selected, as supported by evidences establishing increasing

incidence of hypertension among older ages beyond 40 years [2,4,25].

2.4 Instruments

An interview guide was used to collect data from the eight selected participants. The guide was prepared using three main themes; patient's perceptions about hypertension, perceptions about treatment, and perceptions about recommended lifestyle practices (Table 1). Open-ended and follow-up questions were used. Similar questions were asked however, other questions were tailored to suit both the adherent and the non-adherent participant. For instance, "What will you consider to have been the factors which have facilitated your ability to adhere to drug instructions?" was asked of the adherent participant, while "What will you consider to be your difficulty with following drug instructions?" was also asked of the non-adherent participants.

2.5 Data Collection Procedure

In-depth interviews took place at the residences of all eight [8] respondents at the Cape Coast Metropolis in March, 2014. Prior to the commencement of the interview sessions, individual patients were again assessed to confirm their statuses as adherents and non-adherents, to ensure that the appropriate questions were asked. Adherence statuses of the eight patients remained same after the second assessment. Patients were engaged on one-on-one bases in the interview sessions, after consent was reaffirmed. Audio and manual recordings were done.

2.6 Analysis

Tape recordings of the data were first transcribed by an independent analyst before the investigator reconciled them with the manual recordings. The issues were categorized into the distinct themes

which were derived from literature (Table 1). The responses were then organised in tables by the themes and topics, further showing responses of the adherent and non-adherent by sex and age. Responses that showed similar ideas were identified under each topic for both the adherent and the non-adherent patient. Implications and conclusions were then drawn from the findings. Though software such as NVIVO (qualitative data software) could have been used, the data was manually analysed because of the small sample.

3. RESULTS

Of the eight patients, seven were between 40 and 60 years, one was above 60 years; among the patients, two had attained senior secondary education, and six with primary level education.

3.1 Perceptions of Hypertension

3.1.1 Views about diagnosis

All eight patients first became aware of the condition at the hospitals. The results further showed that both the adherent and the non-adherent were unaware of the disease until they were told at the hospitals. The narrations of some adherent patients confirm this claim:

I used to feel tired after short work or walk, even after visiting the washroom. I went to see the doctor, and was told I had hypertension (adherent: male, 55);

A female non-adherent narrated her first experience with hypertension in the following lines:

I used to experience dizziness, frequently felt tired and light. I visited the hospital and was told I had hypertension (non-adherent, female, 61).

3.1.2 Perceived causes of hypertension

The results showed that both the adherent and the non-adherent attributed high blood pressure principally, to alcohol use, worries, and marital challenges. A female adherent patient attributed her condition to negative lifestyle practices, as well as inheritance:

I believe my condition was caused by alcohol, and poor diet. Besides, some of my family members have it, so it is also by hereditary (adherent, female, 47);

Similar claims were expressed by the non-adherent participants. Worry about sexual

weakness, stress, and marital problems translated into alcoholism, as the following statement by a female non-adherent patient suggests:

I had marital problems, and my husband beat me frequently, and that caused me to drink much alcohol (non-adherent, female, 61);

3.1.3 Perceived symptoms of hypertension

The symptoms identified by patients include, tiredness (fatigue), severe headache, fast heartbeat, sleeplessness, and body weaknesses. These perceptions were made by both the adherents and non-adherents as shown in the following narration by a male adherent:

I experience severe headache, loss of libido and fatigue after short walk or work (adherent, male, 55).

Similar complaints were made by non-adherent patients.

A female non-adherent on her part had experiences with fast heartbeat or palpitation, sleeplessness, and body heat:

I experience fast heartbeat, difficulty sleeping, and body heat (non-adherent: female, 56);

The following were narrations by both adherents and non-adherents to support their beliefs in appearance of symptoms: A female adherent associated appearance of symptoms with hypertension, arguing that her symptoms were not experienced until she was told of the condition, as stated in the following narration:

When I had no high blood pressure, those symptoms were not observed. It is after I was told that I observed them (adherent: female, 50);

A non-adherent participant corroborates the notion of symptoms and hypertension:

I was not experiencing those symptoms until I was diagnosed (non-adherent: male, 44);

Both adherents and non-adherents used various remedies to control perceived appearance of symptoms. For example, some adherents were found to have repeated doses of the medication in order to control symptoms, others simply took rest (apparent stress) with the aim of stabilising blood pressure. A female adherent patient repeats the dose whenever she perceived symptoms:

When I experience restlessness or sleep difficulty, I repeat the medication even when I had taken some (adherent: female, 47);

In contrast, a number of the non-adherent patients took their medications together with herbal supplements when they perceived symptoms. A 44 year old non-adherent for instant said:

When the symptoms occur, I take my prescription, as well as herbal preparations to control the headache and fast heart beat (non-adherent: male, 44);

Furthermore, other non-adherents intentionally did not take medication but prefer to rest until the symptom stops as reported by a 56 year old non-adherent:

I sit down quietly when I experience the symptoms. I don't take any medicine (non-adherent, female, 56).

There were perceptions of sudden occurrences of severe symptoms, which sometimes led to complications and hospital admission. A non-adherent male patient narrated in the following statement how he ended at the admission ward:

I experienced difficulty breathing, as well as severe headache. I suddenly became helpless and was rushed to the hospital without the knowledge of my wife. I was admitted at the hospital (non-adherent, male 44);

A second non-adherent 61 year old female patient was rushed to the hospital after she felt dizzy:

I don't remember what happened to me, but I realised I was not myself at the time. I experienced dizziness and heat. I was rushed to the hospital and admitted. The nurse checked on me every two hours (non-adherent: female, 61).

3.2 Perceptions of Treatment

3.2.1 Views about treatment

Patients were found to have engaged in various remedies depending on their beliefs in the efficacy of treatment. Both adherents and non-adherents observed therapy differently. Those who remained adherent kept faith with anti-hypertensive medicines, observed diet modifications, and were careful to avoid

complications. A male adherent fears complications as said in the following statement:

I need to take the drugs to avoid problems (adherent, male, 55);

On benefits of treatment, patients who were found to be adherent claimed that the medicines were effective, relieved pain, and restored their health as demonstrated in the following statement:

A female adherent patients observed that:

The pills have helped subside my head pain. The drugs are necessary, I should have died (adherent, female, 47).

In contrast, some non-adherents showed preference for herbal preparations. The Chinese and the local herbal preparations were sources of strength for some of the non-adherents as explained by a 44 year old male non-adherent patient:

The local herbal medicine and the Chinese herbs make me strong (non-adherent, male, 44).

3.2.2 Perceived side effects of anti-hypertensive

The results revealed that some adherents and non-adherents received prior information about possible side effects of the anti-hypertensive. A 55 year old male adherent had prior information about the side effects of the medicine:

I was told the medicine causes cough (adherent: male, 55).

A female non-adherent was also informed about the adverse effect of the medicines:

I was told by the nurse that the drug induces frequent urination (non-adherent: female, 61).

The non-adherents in particular, raised concerns about symptoms of sexual weaknesses, attributing it to the anti-hypertensive use. It was evident that perceptions of sexual weakness due to anti-hypertensive use remained a key factor for non-adherence behaviour among the patients. A non-adherent patient defended his preference for herbs in the following statement:

When I take the pills I experience sexual weakness, finds it difficult to sleep. I am also

worried about taking hospital medicine every day. So I don't take the hospital's pills always. The local and Chinese herbs make me potent and strong (non-adherent, male, 53);

A second male non-adherent corroborated the perception of sexual weakness, attributing it to anti-hypertensive use as in the following narration:

I experience sexual weakness when I take hospital pills. Honestly, I do sometimes avoid the hospital drugs. There are chemicals in the medicines, it gives side effects. I am also a diabetic, and taking additional drugs makes me angry (non-adherent, male, 44);

Other non-adherents simply stopped medication when they felt better (intentional non-adherence), as illustrated by the following comments from a female non-adherent patient:

When I take the pills and become normal, then I stop for some time (non-adherent, female, 61).

3.3 Perceptions of Lifestyle Modifications

3.1 Views about lifestyle

It is evident from the following statements that both adherents and non-adherents were counselled to adhere to lifestyle practices such as increased fruit intake, reduced alcohol use, and increased physical exercise.

A 47 year old female patient who was found to be adherent corroborated this claim:

I was told by the Nurse to do moderate exercise, and avoid fatty food (adherent: female, 47)

Non-adherent patients were also instructed on appropriate lifestyle changes as was observed by a 44 year old patient in the following statement:

I was advised by the nurse to take fruits and vegetables regularly (non-adherent: male, 44);

However, the patients encountered challenges with lifestyle changes. Some were not able to maintain the changes they had embarked on, for various reasons including lack of interest, lack of energy, resistance from friends, and physical challenges.

A 56 year adherent expressed how lack of interest affected his ability to keep to exercise schedules in the following narration:

I am not able to keep doing the exercise prescribed for me because I am no more interested (adherent: male, 56).

Others were not capable of observing dietary control measures because that was to be the only food available. A 53 year old non-adherent explained his challenge in the following statements:

I was told to avoid oily food, groundnut and palm oil, but it is difficult for me to do. Sometimes I eat them because, that is what I have. Besides, I was told to avoid eating late, but that is difficult because my wife prepares the meal late in the evening (non-adherent: male, 53).

Lack of support and peer pressure may affect patients' efforts at adhering to lifestyle changes. A 44 year old non-adherent expressed how peer pressure affected his efforts at maintaining recommended lifestyle changes in the following:

My friends tease at me for stopping alcohol and refusing to go out with them (non-adherent, male 44).

Both groups of patients adopted skills to cope with expected lifestyle changes. Following fitness exercise sessions on television, and lessons learnt from negative experiences of life events, were identified as interventions among the two categories of patients.

A 56 year male adherent explained how his personal encounter with the death of a friend helped change his behaviour towards medication, as narrated:

I witnessed the sudden collapse and death of a friend, as we walked together. I was told he died of hypertension, this has frightened me into observing treatment (adherent: male, 56);

A 47 year old female adherent planned his aerobic exercise sessions alongside what is shown on television:

I watch aerobic sessions on television every morning and follow what they do, the exercise keeps me healthy (adherent: female, 47).

4. DISCUSSION

The study examined the effects of patient perceptions on hypertension treatment in an urban centre of Ghana. According to the findings,

patients were first told about their condition in the hospitals, affirming that hospitals are main sources for diagnosing hypertension [26]. Alcohol use, poor diet, worry, and marital problems, were perceived as having caused the rise in blood pressure among the patients. A related study in Ghana to understand perceptions of illnesses, similarly attributed the causes of hypertension to stress, fear, and “over thinking” [27]. It has been explained that patients with more causal attribution of hypertension to psychological factors are less likely to be adherent, but those with strongly held beliefs in the lifestyle causes are more likely to be adherent to treatment with appropriate interventions [17]. In Ghana, patients who are more likely to attribute their illnesses to psychological causes such as spiritual factors, would normally seek care from spiritualists as the first option [28]. It suggests the patients in this study are less likely to adhere to treatment, in view of the inclination towards psychological causal beliefs.

There was a general perception among both groups of patients that high blood pressure could be detected through appearance of specific symptoms, which include difficulty sleeping, fast heartbeat, and headache. The result affirms the Self-regulatory Theory’s position that patients assign symptoms to hypertension just to make sense of the condition [12,14,18]. These perceptions are inconsistent with established medical knowledge, that hypertension is symptomless [14]. The misconceptions about appearance of symptoms is a notable cause of non-adherence in patients with hypertension. Therefore, medication adherence could negatively be affected, if patients believe in appearance of symptoms as indication of rising blood pressure [29]. The effect of the high perceptions of symptoms in this study is that patients are likely to stop treatment when symptoms appear to subside

The results further showed differences between adherent and non-adherent patients regarding treatment. The highly adherent patients preferred the anti-hypertensive medicines. On the contrary, the non-adherents were fond of alternate treatment, specifically that of herbal preparations. There are reports indicating increased adherence among patients who hold high beliefs in the effectiveness of anti-hypertensive treatment [14, 30]. For example, adolescent hypertensive patients in Slovenia who showed high beliefs in the treatment were found to have increased adherence to medication [30]. The implication in

this study is that the non-adhering patients were at higher risk of complications from overdose of anti-hypertensive medication with herbal preparations.

In spite of prior counselling on the possible adverse effects of the medicines, complaints of perceived side effects of anti-hypertensive, including cough, sexual weakness, and palpitation were frequently made among the non-adherents. Reports relating perceived side effects to poor medication adherence have been cited in Ghana, Nigeria, and Pakistan [8,31,32]. Misconceptions about side effects of anti-hypertensive in this study led some of the non-adherent patients to intentionally stop their prescribed medication for herbal preparations. The implication is that patients are less likely to remain adherent to treatment, but are prone to developing complications from use of unorthodox remedies.

It was revealed that patients were counselled to observe lifestyle changes which include alcohol abstinence, limiting oils and fat intake, and increased physical activity. However, adapting to the expected changes was difficult to many, as some could not maintain the changes they had embarked on. In a related study, though knowledge about lifestyle modifications was rated as average among some Ghanaian hypertensive patients, some have difficulty avoiding salt, smoking, and alcohol consumptions [33]. Similar reasons such as lack of interest and energy, resistance from friends, and physical challenges were made in this study. Medication adherence has been shown to correlate with lifestyle practice, and that patients who do not take medication are less likely to change lifestyle [19]. This suggests that the challenges patients face with lifestyle modifications may hamper efforts at managing hypertension in the Cape Coast Metropolis.

5. CONCLUSION

The effects of patient misconception of hypertension, are that patients may abandon treatment when perceived symptoms subside; perceptions of adverse effects of anti-hypertensive may lead to complications and increased hospital admissions. Furthermore, patients’ difficulty with lifestyle changes may affect blood pressure control efforts. Subsequently, patients’ level of misconceptions about hypertension could affect medication adherence and blood pressure control in the Cape Coast Metropolis.

6. IMPLICATIONS FOR PRACTICE

There is a need for healthcare professionals to intensify counselling to address perceptions of symptoms, side effects of anti-hypertensive, use of herbal preparations, and negative lifestyle practices.

7. LIMITATION

A sample size of eight out of the 350 patients, may not be sufficient to draw inferences about hypertensive patients in the Cape Coast Metropolis. Secondly, the study was based on three defined themes, thus failing to ensure a broader discussion on the subject. However, the findings serve as pointers to existing challenges with anti-hypertensive medication adherence. For future research, the methodology may be useful for uncovering further factors of non-adherence to hypertension medication.

CONSENT

All the patients signed written consent forms, or thumb-printed informed consent forms, before the interviews were conducted.

ETHICAL APPROVAL

The ethics committee of the Ghana Health Service, approved the procedures used in the study (Appendix B). Management of the three hospitals gave final approval for the study.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. World Health Organisation. Global status report on non-communicable Diseases. Geneva, World Health Organisation; 2014. Available:http://www.who.int/about/licensing/copyright_form/en/index.html
2. Addo J, Agyemang C, Smeeth L, De-Graft Aikins A, Edusei AK, Ogedegbeel A. Review of population-based studies on hypertension in Ghana. *Ghana Medical Journal*. 2012;46:4-11.
3. Agyemang C, Attah-Adjepong G, Owusu-Dabo E, De-Graft Aikins, A, Addo J, Edusei, AK, et al. Stroke in Ashanti Region of Ghana. *Ghana Medical Journal*. 2012;46:12-17.
4. Bosu WK. Epidemic of hypertension in Ghana: A systematic review. *BMC Public Health*. 2010;10:418.
5. World Health Organization. World brief of hypertension. Silent killer, global public health crisis. Geneva, World Health Organisation; 2013. Available:http://www.who.int/about/licensing/copyright_form/en/index.html
6. Ministry of Health. Standard treatment guidelines. Sixth edition. Accra, Ghana; Ministry of Health; 2010.
7. Addo J, Smeeth L, Leon DA. Hypertensive target organ damage in Ghanaian civil servants with hypertension. *PLoS One*. 2009;8:e6672.
8. Boima V, Ademola AD, Odusola A, Agyekum F, Nwafor CE, Cole H, et al. Factors associated with medication non-adherence among hypertensives in Ghana and Nigeria. *International Journal of Hypertension*. 2015;1-8.
9. Petrie KJ, Jago LA, Devcich DA. The role of illness perceptions in patients with medical conditions. *Current Opinion in Psychiatry*. 2007;20:163-67. Available:<http://www.ncbi.nlm.nih.gov>
10. Ross S, Walker A, MacLeod MJ. Patient compliance in hypertension: Role, of illness perceptions and treatment beliefs. *Journal of Human Hypertension*. 2000;18: 607–613.
11. Browning KK, Wewers ME, Ferketich AK, Otterson GA, Reynolds NR. The self-regulation model of illness applied to smoking behavior in lung cancer. *Cancer Nurs*. 2009;32:15-25.
12. Leventhal H, Leventhal EA, Contrada RJ. Self-regulation, health, behaviour: A perceptual-cognitive approach. *Psychology & Health*. 1998;13:717-733.
13. Marshall IJ, Wolfe CDA, McKeivitt C. Lay perspectives on hypertension and drug adherence: Systematic review of qualitative research. *BMJ*. 2012;345. Available:<http://www.bmj.com/content/345/bmj.e3953>
14. Horne R, Clatworthy J, Hankins M. High adherence and concordance within a clinical trial of anti-hypertensive. *Chronic Illness* 2010;6:243-245. Available:<http://chi.sagepub.com/content/6/4/243>
15. Spencer J, Phillips E, Ogedegbe G. Knowledge, attitudes, beliefs, and blood

- pressure control in a community-based sample in Ghana. *Ethnicity & Disease*. 2005;15:748-752.
16. Petrie JK, Weinman J. Why illness perceptions matter. *Clin Med*. 2006;6:536-539.
Available:[http:// www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov)
 17. Chen SL, Tsai JC, Lee WL. The impact of illness perception on adherence to therapeutic regimens of patients with hypertension in Taiwan. *Journal of Clinical Nursing*. 2009;18:2234-2244.
 18. Petrie JK, Weinman J. Why illness perception matter. *Clinical Med*. 2006;6: 536-539.
 19. Bryson CL, David H, Sun H, Williams EC, Kivlahan DR, Bradley KA. Alcohol screening scores and medication non adherence. *Ann Intern Med*. 2008;149:795-803
 20. Ghana Health Service. Annual report, Accra, Ghana Health Service; 2015.
Available:<http://www.ghanahealthservice.org/publications.php>
 21. Central Regional Health Directorate. Out patients morbidity returns, District Health Information Management System-DHIS, Centre for Health Information Management-CHIM; 2014.
 22. Anowie F, Darkwa S. The knowledge, attitudes and lifestyle practices of hypertensive patients in the Cape Coast Metropolis-Ghana. *JSRR* 2015;8:1-15.
Available:www.sciencedomain.org
 23. Ghana Statistical Service. 2010 Population and housing census. Accra, Ghana; 2012.
Available:<http://www.statsghana.gov.gh>.
 24. Morisky DE, Alfonso A, Krousel-Wood M, Ward H. Predictive validity of a medication adherence measure for hypertension control in an outpatient setting. *Journal of Clinical Hypertension*. 2008;10:348-354.
 25. Gupta K. High blood pressure; causes, prevention and treatment. New Delhi: Orient Paper backs; 2011.
 26. Tsiantou V, Pantzou P, Pavi E, Koulierakis G, Kyriopoulos JI. Factors affecting adherence to anti-hypertensive medication in Greece: Results from qualitative study. *Patient Preference and Adherence*. 2010; 4:335-343
 27. Aikins AD, Addo A, Ofei F, Bosu WK, Agyemang C. Ghana's burden of chronic non-communicable diseases: Future directions in research, practice and policy. *Ghana Medical Journal*. 2012;46:1-3.
 28. Kretchy IA, Owusu-Daaku FT, Danquah SA. Spiritual and religious beliefs: Do they matter in the medication adherence behaviour of hypertensive patients? *Bio Psycho Social Medicine*. 2013;7:15.
Available:<http://bpsmedicine.com/content/7/1/15>
 29. Granados-Gámez G, Jesús G, Roales-Nieto JG, Gil-Luciano A, Pedro EM, Márquez-Hernández VV. A longitudinal study of symptoms beliefs in hypertension. *International Journal of clinical and Health Psychology*. 2015;15:200-207.
 30. Z'ugelj U, Zupanc M, Komidar L, Kenda R, Varda N, Gregoric A. Self-reported adherence behaviour in adolescent hypertensive patients: The role of illness representations and personality. *Journal of Pediatric Psychology*. 2010;35:1049-1060.
 31. Botchway LC. Perception of antihypertensive drugs and compliance among patients attending Achimota hospital. MPH, University of Ghana, Legon; 2014.
Available:<http://ugspace.ug.edu.gh>
 32. AL-Ramahi R. Adherence to medications and associated factors: A cross-sectional study among Palestinian hypertensive patients, *J Epidemiol Global Health*. 2014; 5:125-132
 33. Marfo AFA, Owusu-Daaku FT, Addo MO, Saana I. Ghanaian hypertensive patients understanding of their medicines and life style modification for managing hypertension. *Int J Pharm Sci*. 2014;6:165-170.

APPENDIX A

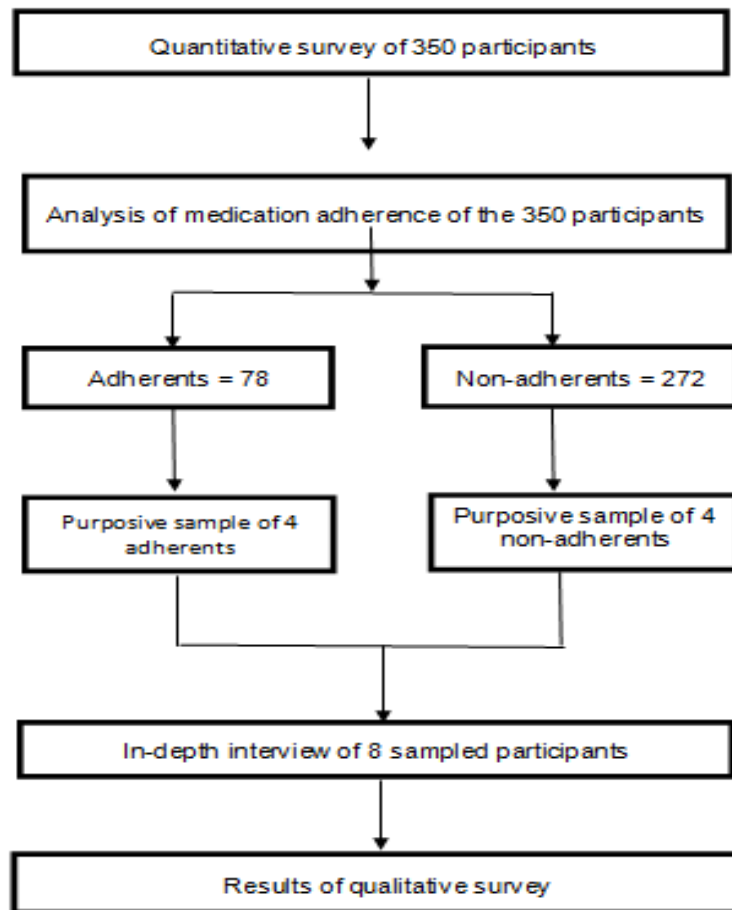



Fig. 2. Flow diagram showing procedure for the selection of eight participants

APPENDIX B

GHANA HEALTH SERVICE ETHICAL REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted.

*My Ref. :GHS-ERC:020713-1
Your Ref. No.*



Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
Tel: + 233-302-681109
Fax - 233-302-685424
Email: nanatusadaykad@yahoo.com

1st October, 2013

Julius Waamsasiko Adong
Ankaful Psychiatric Hospital
Cape Coast

ETHICAL CLEARANCE - ID NO: GHS-ERC; 02/07/13

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol titled:

“Adherence to hypertension therapies in Cape Coast metropolis, Ghana”


This approval requires that you submit an Inception and Mid-term reports of the study to the Ethical Review Committee (ERC) for continuous review. The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Please note that any modification of the project must be submitted to the ERC for review and approval before its implementation.

You are also required to report all serious adverse events related to this study to the ERC within seven days verbally and fourteen days in writing.

You are requested to submit a final report on the study to assure the ERC that the project was implemented as per approved protocol. You are also to inform the ERC and your mother organization before any publication of the research findings.

Please always quote the protocol identification number in all future correspondence in relation to this protocol

SIGNED.....
PROFESSOR FRED BINKA
(GHS-ERC - CHAIRMAN)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra

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Peer-review history:
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