

Compliance to Anti-Hypertensive Treatment and Associated Factors among Hypertensive Patients on Follow Up in Hospitals of Gamo Gofa Zone, South West Ethiopia



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Abstract

Introduction: Hypertension is one of the most important cardiovascular risk factor but its control is still a challenge all around the world. Control of blood pressure can reduce cardiovascular morbidity and mortality, so the compliance to antihypertensive drugs and life style modification play an important role for the control of hypertension. Long-term compliance with treatment is always a problem, which requires a change in behavior, which may be extremely difficult. Introducing individual behavioral change is often met with some difficulty and skepticism, which are attributable to personal characteristics such as beliefs, attitudes, knowledge and motivation regarding the behavior.

Objective: The aim of this study was to assess compliance to anti-hypertension treatment and associated factors among hypertension patients on follow up in hospitals in Gamo Gofa Zone.

Methods: Institution based cross sectional study was conducted in three hospitals in Gamo Gofa Zone namely Arebaminch general hospital, Chench hospital and Sawula hospital. The study population was hypertensive patients who are using antihypertensive treatment that attended the hypertensive clinics. 416 patients were included in the study; the study used simple random sampling. A pre-tested structured questionnaire was used. Data was entered by using Epidata3.1 and exported to SPSS version 16 for analysis. Frequency distributions was used to organize the data and present the responses obtained. Measures of central tendency was calculated and utilized for appropriate variables to describe the data. Binary logistic regression was used to see the association between independent variable and dependent variable.

Result: In this study the proportion of participants with treatment compliance was

61.5%, the mean age (SD) of participants was 48.6 ± 11.0 years. 22.4% were compliant in making lifestyle modifications. Knowledge about HTN and its treatment (AOR = 3.2, 95%CI = 2.2, 6.3), distance from the hospital ((AOR = 7.5, 95% CI = 3.3, 17.1). variables were found significantly associated with treatment compliance.

Conclusion: In this study, compliance with antihypertensive medication reported by 61.5% of patients, and compliance with lifestyle modifications only reported by 22.4% of patients. The findings from this study can be used to isolate the factors that are contributing to poor treatment compliance among patients in three Gamo Gofa Zone Hospitals and to teach them about suitable management of hypertension.

Background

Hypertension is defined as systolic blood pressure greater than 140 mm Hg and a diastolic blood pressure greater than 90 mm Hg over a sustained period, based on the average of two or more blood pressure measurements taken in two or more contacts with the health care provider after an initial screening [1]. Hypertension (HTN), or high blood pressure is an overwhelming global challenge which ranks third as a cause of disability-adjusted life-year [2-10]. Hypertension is the single most common and most important risk factor for cardiovascular

disease. It has been well documented that uncontrolled blood pressure increases the risk of ischemic heart disease 3 to 4 fold and the overall cardiovascular risk by 2 to 3 fold [10,3]. Treating SBP and DBP to targets that are <140/90 mmHg is associated with a decrease in CVD complications. In patients with hypertension and diabetes or renal disease, the BP goal is <130/80 mmHg [4]. Antihypertensive therapy has been associated with reductions in [1] stroke incidence, averaging 35–40 percent; [2] myocardial infarction (MI), averaging 20–25 percent; and [3] HF, averaging

>50 percent.90. It is estimated that in patients with stage 1 hypertension (SBP 140–159 mmHg and/or DBP 90–99 mmHg) and additional cardiovascular risk factors, achieving a sustained 12 mmHg reduction in SBP over 10 years will prevent 1 death for every 11 patients treated. In the added presence of CVD or target organ damage, only nine patients would require such BP reduction to prevent one death [1]. Therefore, access to treatment with antihypertensive medication and compliance with treatment are key factors in the control of hypertension.

Despite the availability of effective treatment, hypertension, the leading cause of mortality and the third largest cause of disability, is poorly controlled worldwide over half of the patients being treated for hypertension drop out of care entirely within a year of diagnosis and of those who remain under medical supervision only about 50% take at least 80% of their prescribed medications [5-6]. Compliance is defined as “the extent to which a person’s behavior (taking medicines, or executing lifestyle changes) coincides with medical or health advice” [7]. On the other hand, World Health Organization defines adherence as “the extent to which a person’s behavior - taking medications, following a diet and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider. The main difference with compliance is that adherence requires the patient’s agreement to the recommendations [3]. Compliance consists of three components namely, acceptance of medication prescribed, adhering to it and continuing with it [8]. Thus, compliance is a complex and dynamic health enhancing behavior that involves acts of appointment keeping, obtaining and ingesting medications and persisting with health provider recommendations such as lifestyle changes. Non-compliance on the other hand represents the opposite of compliance behavior and is defined as a constant neglect of treatment or advice rather than mere temporary forgetfulness [9].

The failure to control hypertension takes an unacceptable toll on patients and their families. In addition to the personal cost, to the individual patient, uncontrolled hypertension creates huge, avoidable economic burdens when viewed in terms of the general population. Uncontrolled blood pressure has been demonstrated to be a major risk factor contributing to more than 500,000 cases of stroke and one million myocardial infarction cases reported each year in the United States alone [10]. Poor compliance with treatment is the most important cause of uncontrolled blood pressure [8]. Long-term compliance with treatment is always a problem that requires a change in behavior that may be extremely difficult. Introducing individual behavioral change is often met with some difficulty and skepticism which are attributable to personal characteristics such as beliefs, attitudes, knowledge and motivation regarding the behavior [11]. However, evidence to support any specific approach or intervention for improving patient adherence to antihypertensive drugs or prescribed lifestyle changes is lacking [12]. Multiple factors contribute to poor compliance with long-term antihypertensive therapy. Many patients have negative attitudes towards taking medication, especially if

they ‘feel well’ [13]. Some factors reported to have a significant effect on compliance are: poor socioeconomic status (poverty), low level of education, unemployment, lack of effective social support networks, unstable living conditions, long distance from treatment centre, high cost of transport, cultural and lay beliefs about illness and treatment, and forgetfulness [14]. A lack of knowledge about the severity of the disease and the importance of adhering to the prescribed treatment, and a lack of motivation to make some lifestyle changes in terms of diet and physical exercise may constitute barriers to compliance behavior [15]. Thus, such factors must be understood, however to the investigator knowledge there is no study done particularly in the study area. Therefore, this study was to assess compliance to anti hypertension treatment and associated factors.

Methods and Material

Study Area

The study was conducted in three Gamo Gofa Zone hospitals, which is located about 505 km southwest from Addis Ababa, and about 275 km from Hawassa, the capital of the SNNPRS. According to the 2013 zonal health department report it has a population of 1,960, 417 and of this 960,604.33 were males and 999, 812.67 were females. Gamo Gofa zone has 15 Woreda and 2 town administrations. Within these, there are 3 hospitals and 68 health centers offering health care services for the population in the zone.

Study Period

The study was conducted from September 2015- June 2016

Study Design

An institution based cross sectional quantitative study used.

Source Population

All hypertensive patients attending hypertension clinic in three Gamo Gofa Zone hospitals who are on follow up.

Study Population

The study population were patients with hypertension, who were using antihypertensive treatment and attending at Arebaminch, Chencha and Sawula Hospitals in hypertension clinics.

Inclusion Criteria

- a) Patients of age 18 years and above
- b) Participants with a diagnosis of hypertension for at least three month with or without other co-existing medical conditions.

Exclusion Criteria

- a) Patients who had not started antihypertensive treatment
- b) Patients less than 18 years of age
- c) Patients who are too sick to be interviewed

d) Patients who have a disease that affects their perceptions like mental illness

Sampling Technique/ Procedure

All patients attending hypertension clinics from 2:30am -11:00pm from Monday to Friday in the selected hospitals, who met the inclusion criteria, were eligible for inclusion in the sampling list for the study and patients card was used as a sampling frame and individual patients' was selected by using simple random sampling procedure to get a total of 416.

Data Collection Instrument

The data was collected from hypertensive patients using pre tested structured questionnaires, standard measurement scales to measure patients height and weight and by reviewing patient chart. Questions was developed for this study to assess socio demography, clinical characteristics, knowledge about hypertension treatment, compliance to lifestyle modification, perceptions of the patients, locus of control, and service related factors. Compliance to medication regimen was assessed by using the revised morisky 8 item medication adherence scale which has a high reliability (Alpha Reliability=0.83) [16]. The response of the study participants for perception of severity, perception on susceptibility, perception of benefit, perception of barrier, locus of control and service related factor noted on a 4-point Likert scale.

Data Collection Procedure

Eight nurses working in hospitals of Gamo Gofa Zone other than chronic illness department collected the data. Three supervisors assigned at the time of data collection. The data was collected every day hypertension patient comes for follow up by using a pre tested structured questionnaire. The patient interviewed after they get the service they required from the hypertension clinic. In addition, patient's weight and height measured. Patient chart reviewed by using structured instrument. The items formulated in a manner that elicits the required data from the chart.

Data Analysis Procedure

Data entered by using Epidata3.1 and exported to SPSS version 16 for analysis. Frequency distributions used to organize the data and present the responses obtained. Measures of central tendency was calculated and utilized for appropriate variables to describe the data. Binary logistic regression used to see the association between independent variable and dependent variable. Those variables with a p value ≤ 0.25 in bivariate analysis were a candidate for multivariate analysis and those variables with a p value ≤ 0.05 considered as significant in multivariate analysis. Backward stepwise regression method used to test the model fitness.

Data Quality Management

Questionnaire was prepared in English and translated to Amharic and re translated back to English. Eight BSc nurse data

collectors trained ahead of the actual data collection period. The training focused on familiarizing interviewers with the questionnaire and giving them the opportunity to practice using it. This was also include holding discussion about different sections of the questionnaire, using question-by-question description of the questionnaire. Questionnaire were pre-tested on 5% of sample a week before actual data collection period in Sikela health center after pre-test necessary modification will be done. At time of data collection, filled questionnaires checked for completeness and consistency of information by the supervisor on daily basis and typographic errors manually edited. Any ambiguity and other problems of data collectors addressed by communicating with the data collectors before the following week.

Study Variables

Dependent Variables

Compliance to anti -hypertensive medications

Independent Variables

Socio - Demographic Variables: Age, Sex, Marital status, Ethnicity, Income, Distance

Clinical Factors: Type of hypertension, degree of control, history and presence of compliant and complication, co morbidity, type and dose of medication, medication side effects, medication skipped, duration of treatment, number of pills per day, frequency of dosage

Knowledge About Hypertension Treatment

Locus of Control:

a) Perception on Service Related Factors: Waiting time, Patient confidence, Health care provider respect and Availability of medicine

Limitations of the Study

This study have the following limitations: self-reporting used as the only method of measuring compliance. This method has the disadvantages of recall bias and eliciting only socially acceptable responses and hence, may overestimate the level of compliance. In addition, cause and effect cannot be ascertained since it is a cross sectional study.

Ethical considerations

Ethical clearance obtained from Arba Minch University, research and community service core process ethical committee. Participants informed about the objectives and importance of the study. Verbal and written consent acquired from each participant before proceeding with the interviews. The respondents informed about the purpose of the study, and their oral consent obtained. The respondents' right to refuse or withdraw from participating in the interview fully maintained and the information provided by each respondent kept strictly confidential.

Results

Socio Demographic Characteristics

Out of 416 four hundred-hypertensive patients planned to participate in a study out of which 408 participated thus giving a response rate of 98%. The mean age of the hypertensive patients who participated was 48.6 ± 11.0 years. More than half of the patients (53.7%) were male and 380(93.1%) had primary education. More than three-quarter (85.5%) of the patients were married and 52.7% of them were of the Gamo in their ethnicity. Majority of them (37.0%) were government worker and 49.5% of the patients were Orthodox Christians.

Clinical characteristics

Regarding medication, nearly half (46.3%) of the participants took two drugs and those participants who took their medication once daily were 176 (43.1%). The mean duration of hypertension diagnosis for patients was 3.5 ± 2.01 years. Blood pressure was controlled in 46.1% of the patients (that is systolic and diastolic blood pressure was less than 140/90 mmHg).

Knowledge and Perceptions of the Study Participants

Considering the participant's knowledge about hypertension treatment only 196 (48.1%) was knowledgeable. Three hundred fifteen (77.2%) study participants found to have a high perception of the benefits of compliance to anti-hypertensive treatment. The majority of participants, around 285 (69.9%) had higher perceptions of susceptibility to hypertension related complications while 123 (30.1%) had low perceptions. In this study, more than half (58.2%) of the participants perceived their

disease as severe. In addition, this study showed that 71.7% of the participants had a good perception of service related factors.

Compliance to Anti-Hypertension Medication

According to 80% cutoff level using MMAS, 251 (61.5%) of the study participants complied with anti-hypertension medication regimen while the rest 157(38.5%) were non-compliant with antihypertensive medication regimen. Factors of noncompliance were 56.8% missed doses due to forgetfulness, 12.7% deliberately missed their doses, 11.6% could not take the medicine due to side effects, 10.4% did not take the dose due to increased number of tablets, the physician did not properly counsel 4.6% and 3.48% did not take medicines due to cost issues.

Compliance with Lifestyle Interventions

Out of 408 hypertensive patients participated in the study only 7.1% of them were smokers, 340 (83.3%) were not having salt restriction, 45.3% adapted DASH plan, 64.7% maintained their normal weight and 37.7% use to do regular physical exercise. In this study, the overall compliance to lifestyle instructions was noted only on one-fourth (22.4%) of the participants, the others 236 (77.6%) are non-compliant with lifestyle instructions.

Factors Associated with Compliance with Anti-Hypertensive Medications

From socio-demographic variables in bivariate analysis sex, age, family monthly income, and time to reach hospital (single trip) found to be significantly associated with compliance to anti hypertension medications (Table 1).

Table 1: Association of socio-demographic characteristics of anti-hypertension medication among hypertension patient in three Gamo Gofa hospitals, 2016.

Variable	Category	Compliance to Anti- Hypertension Medication		COR (95%)
		Compliant	Non-compliant	
Age in years	18-40	55(21.9)	39(24.8)	1
	41-60	143(57.0)	49(31.2)	2.0(1.2,3.4)
	>=60	53(21.1)	69(43.9)	0.5(0.3,0.9)
Ethnicity	Gamo	135(53.8)	80(51.0)	1
	Gofa	57(22.7)	42(26.8)	0.8(0.5,1.3)
	Amhara	34(13.5)	18(11.5)	1.1(0.6,2.1)
	Wolayita	19(7.6)	9(5.7)	1.2(0.5,2.9)
	Others	6(2.4)	8(5.1)	0.5(0.2,1.3)
Religion	Muslim	17(6.8)	9(5.7)	1
	Orthodox	124(49.4)	78(49.7)	0.8(0.3,1.9)
	Protestant	107(42.6)	67(42.7)	0.9(0.4,2.0)
	Catholic	3(1.2)	3(1.9)	0.5(0.1,3.1)
Occupational status	Government employer	96(38.2)	55(35.0)	1
	Merchant	37(14.7)	24(15.3)	0.8(0.4,1.6)
	Farmer	41(16.3)	25(15.9)	0.9(0.5,1.7)
	Housewife	67(26.7)	46(29.3)	0.8(0.5,1.3)
	Others	10(4.0)	7(4.5)	0.8(0.2,2.2)

Sex	Female	160(63.7)	120(76.4)	1.8(1.1,2.8)
	Male	91(36.3)	37(23.6)	1
Educational status	Illiterate	79(31.5)	51(32.5)	1
	Grade 1-8	47(18.7)	26(16.6)	1.2(0.6,2.1)
	Grade 9-12	32(12.7)	20(12.7)	1.0(0.5,1.9)
	12 and above	93(37.1)	60(38.2)	1.0(0.6,1.6)
Marital status	Married	215(85.7)	134(85.4)	0.5(0.2,1.9)
	Single	11(4.4)	4(2.5)	1
	Divorced	4(1.6)	3(1.9)	0.5(0.1,3.1)
	Widowed	21(8.4)	16(10.2)	0.4(0.1,1.8)
Family income	<500ETB	103(41.0)	92(58.6)	1
	500-1000ETB	64(25.5)	31(19.7)	1.8(1.1,3.0)
	>1000ETB	84(33.5)	34(21.7)	2.2(1.3,3.5)
Time to reach the				
hospital (single trip)	<1hour	83(33.1)	77(49.0)	1.9(1.2,2.9)
	>1hour	168(66.9)	80(51.0)	1
Cost covered	Myself	181(72.1)	112(71.3)	1
	Family	39(15.5)	26(16.6)	0.8(0.4,1.5)
	Free	2(0.8)	0(0.0)	1.3(0.5,3.2)
	Employer organization	27(10.8)	17(10.8)	0.9(0.4,1.7)
	Others	2(0.8)	2(1.3)	0.2(0.1,0.6)

Table 2: Association of socio-demographic characteristics of anti-hypertension medication among hypertension patient in three Gamo Gofa hospitals, 2016.

Variable	Category	Compliance to Anti- Hypertension Medication		COR (95%)
		Compliant	Non-Compliant	
Duration on treatment	1year or less	35(13.9)	23(14.6)	1.1(0.4,2.9)
	1-3 years	103(41.0)	67(42.7)	1.2(0.5,2.6)
	3-5 years	70(27.9)	33(21.0)	1.6(0.6,3.8)
	5-7 years	28(11.2)	23(14.6)	0.9(0.3,2.3)
	>7 years	15(6.0)	11(7.0)	1
Presence of health compliant	No complain	8(3.2)	12(7.6)	0.2(0.1,0.7)
	One complain	79(31.5)	78(49.7)	0.4(0.2,0.6)
	2 and above complain	164(65.3)	67(42.7)	1
Number of drugs	One drug	107(42.6)	69(43.9)	1.0(0.3,3.0)
	Two drug	119(47.4)	70(44.6)	1.1(0.3,3.3)
	Three drugs	16(6.4)	12(7.6)	0.9(0.2,3.1)
	Four and above	9(3.6)	6(3.8)	1
Drug Dosage	Once daily	130(51.8)	80(51.0)	1.0(0.7,1.5)
	Twice daily	119(47.4)	76(48.4)	1
	Three times a day	2(0.8)	1(0.6)	1.3(0.1,14.3)
Type of hypertension	Secondary	16(6.4)	12(7.6)	1
	Primary	235(93.6)	145(92.4)	1.2(0.6,2.6)
BP status	Controlled	167(66.5)	75(47.8)	2.1(1.4,3.2)
	Uncontrolled	84(33.5)	82(52.2)	1
History of hospital admission (n=408)	Yes	211(84.1)	133(84.7)	0.9(0.5,1.7)
	No	40(15.9)	24(15.3)	1

Hypertension related Complication	Yes	91(36.3)	81(51.6)	0.5(0.3,0.8)
	No	16(63.7)	76(48.4)	1
Alcohol	Compliant	234(93.2)	148(94.3)	0.8(0.3,1.9)
	Non compliant	17(6.8)	9(5.7)	1
Khat Use	Yes	61(24.3)	11(7.0)	1
	No	190(75.7)	146(93.0)	0.2(0.1,0.5)
BMI	Normal	185(73.7)	79(50.3)	1
	Over weight	66(26.3)	78(49.7)	0.4(0.2,0.6)

In bivariate analysis regarding the clinical factors and life style factors presence of health complain, experiencing hypertension related complication, blood pressure status. BMI and khat use found to be significantly associated with compliance of anti-hypertension medication (Table 2).

All variables considered in the bivariate analysis and those variables with a p value < 0.2 in bivariate analysis were included in the multivariate analysis. The association between compliance to anti-hypertension medication and certain explanatory

variables further investigated using multivariate logistic regression. Those variables with P-value < 0.05 considered as predictors of compliance to anti hypertension medication. The multivariate logistic regression showed that as the distance from the hospital decreased, the compliance to treatment of HTN was improved (AOR = 7.5, 95% CI = 3.3, 17.1). The odds of compliance to anti hypertension treatment among age group between 41 to 60 years (OR= 2.1 95 CI 1.2, 4.2) and above 60 years (OR= 4.395% CI 2.2, 8.2) than those who are between age 18 to 40 years.

Table 3: Multivariate logistic regression model showing predictors of compliance of anti hypertension medication among hypertension patient in three Gamo Gofa hospitals, 2016.

Variable	Category	Compliance to Anti- Hypertension Medication	AOR (95% CI)
Age	18-40	55(21.9)	1
	41-60	143(57.0)	2.1(1.2,4.2)
	>=60	53(21.1)	4.3(2.2,8.2)
Sex	Female	160(63.7)	1
	Male	91(36.3)	0.5(0.2,0.9)
Family income	<500ETB	103(41.0)	1
	500-1000ETB	64(25.5)	1.6(0.9,2.6)
	>1000ETB	84(33.5)	3.2(1.9,5.2)*
Distance from the hospital (in hour)	Less than one hour	83(33.1)	7.5(3.3,17.1)
	Greater than one hour	168(66.9)	1
Hypertension related complication	Yes	91(36.3)	1
	No	16(63.7)	2.9(1.1, 7.4)*
Presence of health complain	No complain	8(3.2)	0.2(0.1,0.5)*
	One complain	79(31.5)	0.3(0.2,0.6)*
	Two and above complain	8(3.2)	1
Knowledge level	Knowledgeable	89(45.3)	3.2(2.2, 6.3)
	Less Knowledgeable	116(54.7)	1
Perception of severity	High	162(68.3)	5.9(2.1,7.7)
	Low	61(35.8)	1
Perception of benefit	High	238(75.8)	7.1(3.1,15.7)
	Low	22(24.3)	1

The odds of compliance to anti-HTN treatment among knowledgeable Clients was 3 times (AOR =3.2, 95%CI = 2.2, 6.3) higher than the odds of compliance among HTN patients who were not knowledgeable. The odds of compliance among study participants with no health complain were 0.2 and 0.3 times higher than the odds compliance among those who had

one health complain (adjusted OR = 0.2 95% CI 0.1,0.5) or more than two health complain (adjusted OR = 0.3, 95% CI 0.2,0.6), respectively. In this study, patient perception about the disease severity and benefits of compliance to the treatment had a positive association with compliance with antihypertensive medication. The odds of compliance to antihypertension

medication was higher among hypertensive patients who highly perceived their disease, severe (OR= 5.9 95% CI 2.1, 7.7) and benefits of compliance to antihypertensive treatment (OR= 7.1 95% CI 3.1, 15.7) than those who have lower perceptions (Table 3).

Discussion

61.5% of the study subjects found to be compliant to their treatment. It is comparable to a study done in Gondar (64.6%) and Tikur Anbesa Ethiopia (69.2%) but level of compliance with antihypertensive medications lower compared to other studies done in Nigeria (50.5%). This might be due to better access and care to patients in these countries [16]. Longer distance was a big barrier for compliance to treatment recommendations especially when it accompanied by poor infrastructure (e.g. lack of transportation) and poverty. Distance from the hospital was another variable found to be significantly and independently associated with the compliance status of the respondents. Those patients from distant areas were less likely to be compliant as compared to study subjects who are closer. This finding supported by the study done in India. Patients who take long to come to the clinic have certain characteristics that promote non-compliant, which also delayed them from coming for review and possibly collecting drugs from the hospital when they refill the antihypertensive.

Co-morbidities can worsen the conditions of the patient and make them unable to compliant to their antihypertensive medications. This study revealed that the numbers of co morbidities among HTN patients had significant associations on compliance behavior. Patients with no and one co morbidities more likely to compliant to their treatment than those with two and above co morbidities. Patients with more number of co morbidities could suffer from serious complications and complex treatment regimens that were favorable conditions not to compliant to their medications [17].

Right knowledge about HTN and its treatment creates a clear understanding and avoids confusion about the treatment and the disease condition. Knowledge about HTN and its treatment found to be positively associated with compliance behavior. Patients with better awareness were more likely to compliant to their treatment. A similar study from Pakistan and Gaza demonstrated that patients who were aware of their diseases and treatments had better compliance compared to those who did not [15]. Patient's age group greater than or equal to 60 presented lower levels of compliance compared to those in patients (41-60) age groups. The fact that HTN is a silent disease and, thus, leads to certain reluctance in middle-aged individuals regarding the control of the disease, who only give importance to adequate treatment when there is a worsening of symptoms. This finding is consistent with the study done in Brazil [18].

In this study, blood pressure control level was associated with compliant behavior. Those with controlled blood pressure observed to be compliant. This finding is in line with the study

done in Greece. It might be attributable to better outcome of the treatment, may offer the patient good satisfactions and creates strong motivation towards the treatment. However, bad outcome (uncontrolled BP) could make the patient hopeless and low satisfaction and hence urged them to stop their treatment.

Conclusions

In conclusion, more than half of the study participants were found to be compliant to their treatment. Factors such as sex, distance from the hospital, number of co morbidities, and presence of health complain, Knowledge about HTN and its treatment were associated with compliant behavior of patients. Early diagnosis and management of co morbidities, counseling and patient education about the disease and its treatment are important to improve compliance status of patients. This study have the following limitations: self-reporting was used as the only method of measuring compliance. This method has the disadvantages of recall bias and eliciting only socially acceptable responses and hence, may overestimate the level of compliance. In addition, it did not consider HTN patients who did not visit the hospital during the time of the study. Hence, the extent of generalizability is limited only to those similar patients who are on chronic illness follow up care.

Recommendation

To improve the current level of compliance to antihypertensive therapy, all stakeholders should be involved to develop plans and strategies to improve compliance. In order to increase contact time with hypertensive patients, highly skilled professionals like Pharmacists should also be allowed front line positions in the management of patients with hypertension. Launching a comprehensive approach involving health care providers, patients and the public especially with the aim of educating patients on the need to take their drugs regularly and in the manner prescribed. Prescribing an effective, inexpensive, one daily medication with minimal side effects will improve patient compliance considerably. Patients should be provided with adequate information to understand the causes of hypertension, possible complications if treatment is not adhered to and to increase their knowledge on the medications prescribed for them. Patients should be provided with effective adherence counseling services before the commencement of their treatment and continuous counseling on each review day. They should know that treatment is for life and have to continue taking the medications even if they feel well. Improving the treatment service process, maintaining close relationship between providers and patients, reducing co morbidity will have a positive outcome on reducing poor adherence to antihypertension treatment. Health care providers working in the clinic must pay special attention to patient education and counseling about their disease with specific emphasis on its causes, the severity of the disease, how their medications work and the consequences of non-compliance with treatment when treating hypertensive patients. Health care providers must also encourage and motivate their patients to adopt lifestyle changes.

References

1. Chobanian A BG, Black H (2003) The seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure the JNC 7 report. *JAMA* 289(19): 2560-2572.
2. Kearney P, Whelton M, Reynolds K, Muntner P, Whelton PK (2005) Global burden of hypertension: Analysis of worldwide data. *Lancet* 365: 217-223.
3. WHO (2003) Adherence to long term therapies: evidence for action. Geneva, American Diabetes Association, Treatment of hypertension in adults with diabetes. *Diabetes Care* 26: 80-82.
4. Sackett D (1975) Randomised clinical trial of strategies for improving medication compliance in primary hypertension. *Lancet* 1: 1205-1207.
5. Chrostowska M, Narkiewicz K (2010) Improving patient compliance with hypertension treatment mission possible? *Curr Vasc Pharmacol* 8: 804-807.
6. Spence J (2001) Actual practice in hypertension: implications for persistence with and effectiveness of therapy. *Current Hypertension Reports* 3(6): 481-487.
7. Garfield F, Caro J (2000) Achieving patient buy in long term compliance with antihypertensive treatment. *Disease Management and Health Outcomes* 7(1): 13-20.
8. Lahdenpera T, Kyngas H (2000) Compliance and its evaluation in patients with hypertension. *International Journal of Clinical Nursing* 9(6): 826-833.
9. Gu Q, Burt V, Paulose Ram R, Yoon S, Gillum R (2008) High blood pressure and cardiovascular disease mortality risk among US adults: the third national health and nutrition examination survey mortality follow up study. *Ann Epidemiol* 18(4): 302-309.
10. Ashford J, Eccles M, Bond S, Hall L, Bond J (1999) Improving health care through professional behaviour change. *British Journal of Clinical Governance* 4(1): 14-23.
11. Ebrahim S (1998) Detection, adherence and control of hypertension for the prevention of stroke. *Health Technology Assessment* 2(11): 1-80.
12. Hashmi S, Afridi M, Abbas K, Sajwani R, Saleheen D, et al. (2007) Factors associated with adherence to antihypertensive treatment in Pakistan. *PLoS One* 2(3): 280.
13. Akpa MR, Agomuoh DI, Odia OJ (2005) Drug compliance among hypertensive patients in Port Harcourt, Nigeria. *Niger J Med* 14(1): 55-57.
14. Campbell N, Petrella R, Kaczorowski J (2006) Public education on hypertension: a new initiative to improve the prevention, treatment and control of hypertension in Canada. *Canadian Journal of Cardiology* 22(7): 599-603.
15. Morisky (2008) Morisky 8 item medication adherence scale. *J Clin Hypertens* 10(5): 348-54.
16. Iskedjian M, Einarson T, MacKeigan L (2002) Relationship between daily dose frequency and adherence to antihypertensive pharmacotherapy: evidence from a meta-analysis. *Clin Ther* 24(2): 302-316.
17. Sabate E (2003) Adherence to long term therapies Evidence for action. Geneva Switzerland: WHO 35(3): 207.



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