

Adherence to anti-hypertensive medication and contributing factors among non-comorbid hypertensive patients in two hospitals of jimma town, south west ethiopia.

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SUMMARY

Background: The main objective of this study was to assess adherence to anti-hypertensive medication and contributing factors among non-comorbid hypertensive patients in two hospitals of Jimma town, South West Ethiopia.

Method: A prospective cross-sectional study was conducted using structured standard questionnaire (morisky green test) after slight modification.

Results: A total of 120 non-co morbid hypertensive patients were interviewed at chronic follow up clinic of two hospitals in Jimma town during the study period with the response rate of 100%. The mean age of the respondents was 53.85 ±12.00 years and 60% of participant were found to be adherent to their medication. Adherence was found to be significantly associated with marital status, age, sex, educational level, and perceived severity of hypertension, condition at Health institution and health professionals. The study participants pointed out forgetfulness (39.58%), feeling better (22.92%), cost of medications (14.58%), being busy and forgot to take pills (12.5%) as the main reason for non-adherence. The respondents also raised financial problem, kidney problem, visual problem, death and stroke and heart problem as the major consequence of non adherence.

Conclusion: Generally magnitude of medication adherence at the study site is very low. Attention should be paid on creating awareness about the impact of non-adherence on health and promoting appropriate medicine usage habit to earn desirable outcome.

Key words: Hypertension, Non-Comorbid Hypertension, Adherence, Non-Adherence, Medication Refill

Introduction

Hypertension is a chronic disease affecting blood vessels resulting in cardiovascular morbidity and mortality. As a result, it is the third leading cause of disability worldwide. High blood pressure was also associated with 13% of all deaths globally (7.1 million deaths annually). Hence, it seeks high attention in order to prevent and treat the disease [1-4].

Previously hypertension was assumed to be disease of developed nations. However, developing countries are also facing the problem to greater extent due to life style change and population size [5-8]. The basic step in the control of hypertension so as to decrease hospitalizations and the risk of complications is to enhance patient's adherence to medications [9, 10]. Most research output prove that blood pressure control by aiming at adherence improvement play a significant role through primary prevention (of risk factors) and secondary prevention of adverse health outcomes [11].

Adherence is defined by WHO as "the extent to which a person's behavior taking medication, following a diet, and/or executing lifestyle changes-corresponds with agreed recommendations from a health care provider" [4]. However, being adherent is very difficult than the definition because several factors such as culture, life habits, lifelong nature of the disease, side effects of drugs, patient's satisfaction with the healthcare system, income and lack of medical insurance may be associated with adherence [9, 11-16]. Literature survey on level of adherence to chronic illness like hypertension indicates 50% of adherence in developed nations and very much lower in low income countries including Ethiopia. This is an evidence of how complex being adherent is [3].

Despite a number of drugs for hypertension, the outcome is not proportional due to lack of adherence to therapy [15]. Non adherence to medication affects patients' health, health expenditure, and resources' utilization [13, 14, 17, 18].

Despite being the major public health problem in Ethiopia, antihypertensive medication adherence studies are few. Above all, the many researches across the world done on adherence didn't come up with desired outcome. As a result this study aimed to assess adherence to anti-hypertensive medication and contributing factors among non-comorbid hypertensive patients in two hospitals of Jimma Town, South West Ethiopia.

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Methods and Participants

Study design and sampling

A prospective cross sectional study was conducted by interviewing and reviewing the cards of non-comorbid hypertensive patients attending ambulatory clinic of two hospitals from February 24 to March 16, 2014. The two selected hospitals were Jimma University Specialized Hospital and Shanan Gibe Hospital. The two hospitals were chosen because of referral of majority of hypertensive patients from private clinic and health centers to these hospitals for expertise and antihypertensive drugs.

The inclusion criteria were: 1) All patients > 18 years 2) Participants with non-comorbid hypertension for at least one time and on follow up for treatment 3) Participants who have been taking at least one antihypertensive drug for the past 3 months 4) Patients who were able to hear, communicate and normal mentally. Since the number of patients' with non-comorbid hypertension was very small, we included all patients who were fulfilling the inclusion criteria and attending chronic follow up clinic of two hospitals during the study period.

Data collection and analysis

The information from non-comorbid hypertensive patients was taken by interviewing using questionnaire after reviewing the card of patients. Open and closed ended question which had four sections were used being classified into two parts. Socio demographic characteristics, disease severity, condition at health institution, and consequence of non-adherence were part one while eleven question of which four essential question were chosen to form standard questionnaire which is called Morisky Green Test (TMG) grouped under part two [15, 19]. The four major questions (also called TMG) used were:

- Have you ever forgotten to take your medication?
- Are you, at times, careless regarding the time to take your medication?
- When you have felt good, have you ever stopped taking your medication?
- Have you ever failed to take the medicine when you felt ill?

Using TMG method "0" value was used for positive response "Yes" while "1" was for negative response "No". The values were summed up and patients score of four was considered adherence with the treatment, and those who presented at least one 'Yes' for an answer were considered non-adherent. The TMG analysis classified patients into two groups: adherent and non-adherent

The Collected data was interpreted and presented using tables and graphs. Finally the data was fed into Statistical Package for Social Sciences (SPSS) version 20 for further analysis. Chi- square and Fisher exact test were used to test statistical significance. A p-value of ≤ 0.05 was considered statistically significant. Online Graph Pad Prism 3.0 program was also used for confirmation of the reality of this exact p value. There was no difference in the p value obtained by the two software.

Operational Definition

Non-co morbid hypertension: Hypertension without confirmed diagnosis of diabetes, chronic obstructive pulmonary disease, chronic kidney disease and other cardiovascular disease like angina, arrhythmia, heart failure and myocardial infarction

Hypertensive patient:-In this study hypertensive patient is patient with high blood pressure (>140/90) with non-comorbidity and has already been on antihypertensive medication.

Adherence: is defined as patients' score of >3 according to Morisky Green Test.

Ethical consideration

Ethical clearance was obtained from department of pharmacy, college of Public health and medical sciences, Jimma University. The study subjects gave their consent prior to the interview after the purpose of the study was explained to them. Confidentiality of the information was assured and privacy of the respondent was maintained.

Results

Magnitude of adherence

Of 120 non-comorbid hypertensive patients with the response rate of 100%, 72 responded greater than three from four of essential morisky green tests which resulted in 60% adherence to their medications (Table I).

Socio-demographic Characteristics

The demographic characteristics and their association with adherence are demonstrated in table I. Majority of the respondents were females, have mean age of 53.85 ± 12 years, Muslim by religion, married and Oromo in ethnicity. And 73 (60.8%) of the respondents walk more than 30 minutes to reach hospital.

The association between socio-demographic factors and treatment compliance was explored with 95% CI and alpha value of less than or equal to 0.005. Statistically significant ($p=0.005$) adherence to medications was observed in patients within the age of 41-60 as compared to participants with less than 40 and >60 years of age, respectively. Furthermore, the study revealed also significant ($p=0.01$) adherence to medication among females than males. Married participants had high proportion of treatment adherence than those who didn't. ($p=0.003$). Level of education affected treatment adherence as evidenced by peoples with higher level of education were more adherent ($P < 0.05$) compared to those with primary school education and illiterate.

However, there were no differences in groups with respect to religion, ethnicity, residence, monthly income, work status and distance from hospital.

Table I. Socio demographic characteristics and adherence cross tabulation at chronic follow up clinic of two hospitals in Jimma town, Feb 2014

Variables		n (%)	Patients adherence status		P-Value
			Adherent	Non Adherent	
Sex	Male	44 (36.7)	18	26	0.01
	Female	76 (63.3)	54	22	
Age	18-40	24 (20)	10	14	0.005
	41-60	64 (53.3)	47	17	
	>60	32 (26.7)	15	17	
Religion	Orthodox	28 (23.3)	18	10	0.781
	Muslim	77 (64.2)	46	31	
	Others	15 (12.5)	8	7	
Marital status	Married	63 (52.5)	47	16	0.003
	Single/Divorced	17 (14.2)	7	10	
	Widowed	40 (33.3)	18	22	
Educational level	Illiterate	39 (32.5)	18	21	0.047
	Primary school (1-8)	36 (30)	20	16	
	Secondary school (9-12)	24 (20)	18	6	
	College/university	21 (17.5)	16	5	
Ethnicity	Amhara	17 (14.2)	11	6	0.786
	Oromo	70 (58.3)	43	27	
	Dawuro	13 (10.8)	8	5	
	Others	20 (16.7)	10	10	
Residence	Urban	69 (57.5)	42	27	0.821
	Rural	51 (42.5)	30	21	
Monthly Income	No regular income	57 (47.5)	34	23	0.584
	<150	13 (10.8)	6	7	
	151-600	15 (12.5)	8	7	
	601-1000	16 (13.3)	10	6	
	>1000	19 (15.8)	8	7	
Work status (occupation)	Farmer	29 (24.2)	14	15	0.324
	House wife	45 (37.5)	29	16	
	Civil servant	24 (20)	17	7	
	Other	22 (18.3)	12	10	
Distance from hospitals (duration in time)	≤ 0.5hrs	47 (39.2)	29	18	0.76
	>0.5 hrs	73 (60.8)	18	26	

Perception of severity

The effect of participants' thought about their condition on adherence was depicted in table II. Most of the participants were on treatment for more than 5 years and taking one antihypertensive medication (40.8%). According to association study of the disease condition and perception

of severity with adherence, duration of treatment ($p>0.05$) & number of antihypertensive drugs currently the patient is taking ($p>0.05$) has no significant relation. But more patients who perceived that their disease condition is severe were not compliant and there was highly significant association between perceived severity and adherence as shown in

Table 2 below.

Table II. The disease condition with perception of severity and Adherence cross tabulation at chronic follow up clinic of two hospitals in Jimma town. Feb 2014.

About Disease condition		Adherent	Non-adherent	P- value
Duration of treatment	3 months to 1 year	19	11	0.642
	1-3yr	8	8	
	3-5yr	22	11	
	≥5yr	23	18	
Number of antihypertensive drugs currently the patient is taking	1	35	14	0.105
	2	20	18	
	≥3	17	16	
Do you think that your condition is serious	Yes	65	23	0.000
	No	7	25	
Could you worry about BP?	Yes	61	22	0.000
	No	11	26	
Can the disease cause severe consequence	Yes	51	25	0.037
	No	21	23	

Condition at health institution and health professionals

Table III demonstrate general association between waiting time and adherence, confidence to doctor, pharmacist & other health professionals and adherence. Majority of the participants were satisfied with health professionals and condition at health institution. Most of the participants responded by agreeing to questions stating the waiting time at the clinic acceptability, confidence to doctor, pharmacist and other health professionals. Except those who reported 'yes' for happiness to all health professionals, there was significant association between patients' who responded 'yes' for each condition at health institution questionnaires and adherence.

Table III. Condition at health institution & health professionals and Adherence cross tabulation at chronic follow up clinic of two hospitals in Jimma town, Feb 2014.

How would you respond to the following questions		Adherence (in number)	Non-adherence (in number)	P- value
The waiting time at the clinic is acceptable	Yes	47	20	0.011
	No	25	28	
The doctor who attend me at the clinic is experienced and knowledgeable	Yes	50	21	0.005
	No	22	27	
The doctor listen me my concern	Yes	49	21	0.008
	No	23	27	
The doctor threats me with respect	Yes	63	27	0.000
	No	9	21	
I am satisfied with pharmacists advise during medication collection	Yes	60	17	0.000
	No	12	31	
The pharmacist threats me with respect	Yes	60	23	0.000
	No	12	25	
I am happy to all health professionals	Yes	47	23	0.059
	No	25	25	

Reason for non-adherence

Among the major reason for missing medication, forgetfulness was the leading one which accounts for 19 patients as shown in figure 1 below followed by feeling better, cannot afford to buy medications and busy of work, respectively.

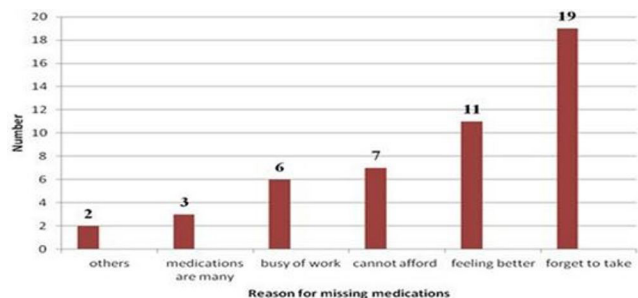


Figure 1 Reason for missing medications at chronic follow up clinics of two hospitals in Jimma town, Feb 2014.

Of non adherent patients who missed the dose, most took the dose of their medication if the time was not closer to the next dose (89%) but some didn't took it completely (forget completely) (7%) and few took double dose of their medication the following day (4%) as it was clearly demonstrated in Figure 2 below.

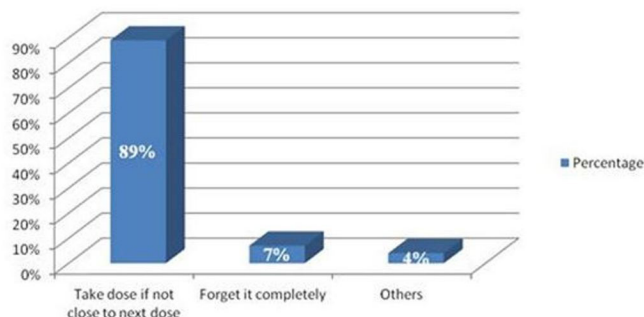


Figure 2 Measures respondents took when they miss the dose of medication at chronic follow up clinic of two hospitals in Jimma town, Feb 2014.

Consequence of non adherence

The most serious consequence of non adherence according to patients' view was financial problem (Figure 3).

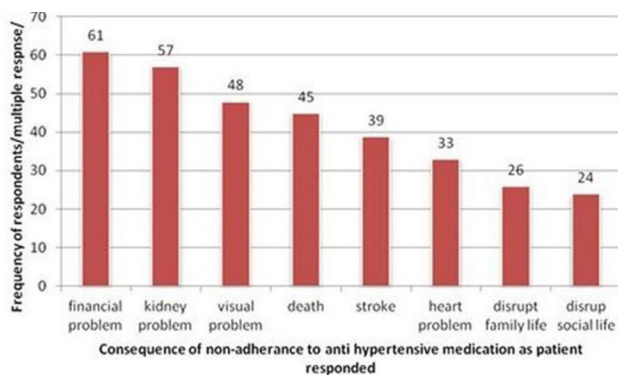


Figure 3 Consequence of non adherence as perceived by patients at chronic follow up clinic of two hospitals in Jimma town, Feb 2014.

Discussion

Magnitude of adherence

Based on the present study about 60% of the study participants were adherent to their medication which is comparable with the study done at Adama Referral Hospital (59.5%) [20], but lower than study done at different hospitals of Ethiopia [Gonder Hospital (64.6 %) [6], Black Lion Hospital (69.2%) [7], Dessie Referral Hospital (74%) [21], Ghana (68.6%) [14], and Antonioparado Southern Brazil (65.7%) [22]. The possible reason for the difference may be due to difference in methodology in which BP measurement and the patient's drug class were not categorized during our study. Beside this, those studies used MMAS-4 while ours was TMG. However, the difference in adherence level is very much higher when compared with the finding of Nigeria 85.5% [3] and Zambia 83% [23]. In Nigeria and Zambia, the patients may be more knowledgeable and the patient to health professionals' ratio may be lower as compared to our study site. The adherence level of our study participants was better than what has been reported from city of Maringa southern Brazil [15] and Zimbabwe (40.2%) [24].

Socio demographic factors that affect treatment compliance

Age is one of risk factor for hypertension. The organs will be exhausted and their function will decrease as age increases. As reported by WHO the prevalence of hypertension in older population was 35%. On average our study participants were 53.85 ±12.00 years which was a bit higher than Black Lion Hospital (52±13) [7] and Nigeria (49.29±1.04) [3] but lower than the mean ages reported from Zambia (57.8±12.0), Tanzania (56.3±13.1), Gondar University (56.9) and Zimbabwe (68.5) [6, 23, 24, 25]. Patients aged 60 and below adhere more than those with above 60 years of age. The findings of some parts of Ethiopia [Adama, Black Lion Hospital (BLH)], Tanzania, and Nigeria [3, 7, 20, 25] were almost comparable to our results. Occurrence of more than one diseases, cognitive and functional impairment in elderly patients increases their risk of poor drug compliance, [11].

Based on association study on marital status and treatment compliance, married participants were more compliant with treatment than non-married participants. This result was comparable with result of study done in Tanzania, Nigeria and Black Lion Hospital [3, 7, 25]. One of the spouses may help and support their partner towards adherence.

A study done in Black Lion Hospital, Tanzania and Nigeria [3, 7, 25] indicated no association between education and adherence. However, the finding of our study showed significant association between education level and treatment compliance which was similar to study done by Jokisalo et al & WHO [11, 26]. This could be due to awareness about hypertension, its management and medications in this study area.

Perception of severity

Even though a study done in Tanzania [25] reported absence of significant association between perception of severity and compliance, in our study site we found significant association with perceived severity and adherence. Our results agrees with WHO report in which the patient understandings and perception of hypertension affects treatment compliance [11].

Health professionals and condition at health institution

Study participants who believed health professionals and condition at health institution was good were more compliant than those who didn't. This result was very similar to what reported from BLH in Ethiopia, Dessie referral hospital in Ethiopia, Schafheutle EI et al, WHO 2003, and Brazil [7, 11, 15, 21, 27, 28]. Health systems-related issues also play an important role in the promotion of adherence. In most low income Countries like Ethiopia supplies of medications are limited and they often have to be bought out-of-pocket from private pharmacy which results in non-adherence because most medication are expensive in private pharmacy.

Reason for non-adherence

Forgetfulness (39.58%) was the leading reason for non-adherence in a similar fashion to study done in USA [29] and Gondar University Hospital [forgetfulness (45.4%); 6]. It was in contrast to what has been reported from UMTH, Maiduguri, Nigeria where non-adherence were mainly attributed to felt worse due to side effects of medications (60.0%) [3].

Consequence of non-adherence to antihypertensive medications

The major consequence of non-adherence as respondent's point of view includes financial problem, kidney problem, visual problem, death, and stroke and heart problem. This result has similarities to reports from Anthony et.al, Brenda W, Bronwyn and Rachel, 2010 and South Africa [16, 18, 30, 31].

Conclusions

Adherence to antihypertensive medication among non comorbid hypertensive patients was more than half (60%) in the study area. However, it is found to be significantly lower compared to expected index of 80% medication adherence (WHO standard). Several cause of medication non adherence, reason for missing medication, and the consequence of medication non adherence were identified in this study. Generally variables that has significant association with adherence includes marital status, age, sex, educational level, perceived severity of hypertension, condition at Health institution and health professionals.

Competing interests

The authors do not have competing interest.

Authors' contributions

Both authors contribute equally.

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