



**PREVALENCE OF NON-COMPLIANCE AMONG PATIENTS WITH HYPERTENSION (HTN)
ATTENDING AL JAFFAR GENERAL HOSPITAL IN AL AHSA REGION OF SAUDI ARABIA: 2019**

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ABSTRACT

Purpose: The purpose of the study was to measure non-compliance and the factors contributing to non-compliance among the hypertensive patients attending the chronic clinic of Al Jaffar Hospital of Al Ahsa region of Saudi Arabia.

Materials and Methods: A cross-sectional survey was conducted in the Al Ahsa district of Saudi Arabia. All the hypertensive patients who were attending the chronic disease clinic of Al Jaffar hospital and were getting medication on regular basis were the study population. Random sampling was carried out for the selection of 282 hypertensive patients from chronic OPD of Al Jaffar hospital. The data were collected by means of interviewing questionnaires and file records. Any patient who had been prescribed optimum treatment and was properly advised on diet and exercise for his / her hypertension, but did not follow the medical advice and whose hypertension level on the higher side of the normal at the time of interview, was considered as non-compliant.

Results: The overall prevalence of therapeutic non-compliance, that is, Blood pressure of 120-140/80-90 with the optimum treatment among the participants was 54 % (n =, 95% CI 51.59 - 58.02%). Factors found to be significantly associated with non-compliance on hypertensive treatment on bivariate analysis were male gender (OR=1.76, CI=1.32-2.32), education level (Literacy) (OR = 2.3, CI = 3.63-4.19), irregularity of follow up (OR = 6.41, CI = 3.90-9.92), non-adherence to instruction on exercise (OR = 4.55, CI = 3.26-5.86), multiple drug regimen for hypertension (OR = 1.29, CI = .71-1.87), Age, marital status, duration of hypertension, associated chronic disease, were not significantly associated with non-compliance. Compliance with the treatment was better among the patients who attended the clinic on the day of appointment (OR=0.5, CI=0.2-0.8) and non-compliance was more among the patients who did not attend the clinic due to forgetfulness followed by non-availability of transport and those who thought it unnecessary as they were taking medicine from other source (62.00%, 66.7% and 60% respectively, p=0.03) Patient-doctor interaction factors, such as, the patients' perception of the physician's understanding of their health problems were not significantly associated with the compliance rate

Conclusion: The findings indicate that there is a high rate of non-compliance among the hypertensive patients attending the chronic clinic of Al Jaffar hospital Al Ahsa region of Saudi Arabia and there is necessity for improvement in the healthcare system, health education, and training of hypertensive patients.

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INTRODUCTION

Compliance in health care is defined as the extent to which a patient's behavior (in terms of taking medication, executing the life style changes, undergoing medical tests or keeping appointment with the physicians) coincide with health care provider's recommendations for health and medical advice [1]. Non-compliant patients are those whose health seeking or maintenance behavior lacks congruence with the recommendations as prescribed by a healthcare provider. [2]

Patient non compliance is a serious health care concern and is posing a great challenge to the successful delivery of the healthcare.

Patient non compliance is widespread and has been reported from all over the world. According to one study by New England Health Care institute, one third to one half of the American patients is non-compliant [3]. Some of them do not take their medications as the physicians prescribed; some don't take their medicine with proper dose and on schedule while some stop taking them completely. Patient non compliance is not only limited to the failure of taking of medicine but it also

involves the failure of making life style changes, undergoing tests or keeping the appointments with the physicians.

The non compliant patients especially with chronic diseases are more prone to serious consequences. The rate of non compliance in the patients with chronic diseases in developed countries on long term treatment is on the order of 50% which can even be more in developing countries (WHO) [4,5]. A compliance study conducted in Saudi Arabia with short term medication has found 67.8% compliance. However, the compliance of the patient decreases with time and it is lower in long term medication than in short term medication [6]. This fact is confirmed by another study done in Saudi Arabia in which L.S. Al-Sowielem & A.G. Elzubier has found an overall 65.8% non compliance among patients suffering from hypertensive disease [9].

The non compliance to long term therapy severely compromises the effectiveness of treatment and adversely affects the health condition of the patient. The prevalence of non compliance creates a critical issue in population health both from the prospective of quality of life and of health economics. In USA it costs between \$396 and \$792 million each year with just 10 drugs while \$ 100bn has been estimated towards the total cost of non-compliance [5].

Non compliance is a dynamic phenomenon and its degree varies from time to time. There are many factors which contribute to the non compliance which vary from country to country. They can be the patient's centered factors, therapy related factors and the health care system factors. The patients centered factors can be demographic (age, Gender, Educational level and Marital status) and Psychological (Patients' beliefs and motivation about the therapy, Negative attitude towards therapy, Patient-pre scriber relationship, Health literacy and Patient knowledge) [7]. The therapy related factors include: route of medication, treatment duration, complexity of treatment and the side effects of the medicines. The factors associated with the health care system include availability, accessibility of the health care facility and also patient physician relationship.

Hypertension is one of the major global health concerns and an important treatable public health problem. Its role in causation of CHD, stroke and other vascular complications poses a major public health challenges to the population at large. A recent data shows 30% prevalence of hypertension in Saudi Arabia [10].

MOH Saudi Arabia provides a full range of antihypertensive drugs to its population suffering from Hypertension which is free of cost. The development in antihypertensive treatment has resulted in marked reduction in morbidity and mortality due to Hypertension. But the effectiveness of therapy largely depends on the compliance of the hypertensive patients with the ingestion of drugs and the life style modification as suggested by their physician. One study conducted in Al Khobar area of Saudi Arabia has found drug non-compliance among the hypertensive patient to be as high as 65% which badly affected the control of hypertension [9].

The current study was undertaken to estimate the magnitude of non compliance and to explore the factors contributing to non compliance among the chronic patients suffering from Hypertension and attending the chronic disease clinic of AL Jaffar general hospital in Al Ahsa region.

Subjects and Methods

A cross sectional study was conducted at Al Jaffar general hospital serving four primary health care sectors of Al Ahsa district of Saudi Arabia. The study population included all the hypertensive patients who were attending the chronic disease clinic of Al jaffar hospital and were getting medication on regular basis. The inclusion criteria was the adult subjects with essential hypertension and who had least 1 years of history of Hypertension and who had been undergoing a fixed drug therapy for at least the last 6 months. The assumption for sample size determination was 65% prevalence of noncompliance (as observed by one study in Saudi Arabia), a 95% confidence level with a deviation of +_ 4% from the true prevalence. The study population included all the hypertensive patients attending the chronic disease clinic of Al Jaffar general hospital which is around 850 cases. To calculate representative sample, we used Epi Info (version 6; November, 1993). With the assumption that the non compliance in the patients with diabetes could be between 65% and 69% and to achieve the confidence level of 95% we needed 282 persons with hypertension. A systematic random sampling was used to select every third hypertensive patient from the appointment list attending the chronic disease clinic at the Al jaffar general hospital of Al Ahsa. The patient who were having appointment and attending the clinic on the day of appointment were included in the study. They were approached and questionnaires were completed. Those who did not attend the clinic on the day of appointment were called and asked the reason for absent and the questionnaires were filled by telephonic interview. The data were collected on compliance, demographic variables (age, sex, marital status and education level), duration of hypertension, presence of complications, status of blood pressure control and reasons for non-compliance. Apart from that the data also included one structured questionnaire consisting of both open and close ended questions for the patient. The nurse specially trained for this research filled the questionnaires on behalf of the patient. The patient's questionnaire included questions relating to patients' knowledge of hypertension, noncompliance behaviors, extent of information about medicine they are getting from the physicians and the presence of difficulty in complying with the treatment. Noncompliance was assessed using patients self-report of how they had been taking their medication in the week preceding the interview and whether they are attending the clinic regularly or not. Patients were asked to recall if they missed any doses of medication on a day by day basis over a period of one week. The number of tablets missed was calculated basing on the prescribed dose. Patients who reported taking less than 80% of their prescribed antihypertensive medicines will be considered to be non-compliant to the therapeutic regime. The subject's hypertension was considered as uncontrolled if the mean of systolic blood pressure was ≥ 140 mm Hg and /or mean diastolic blood pressure was ≥ 90 mmHg. SPSS 21 versions were used for all statistical calculations. All the data were inserted in SPSS 21 and analyzed. Results were expressed as mean values \pm SD. For nonparametric distributions the chi square test will be used. A $p < 0, 05$ was considered significant all statistical calculations. This research provided a well documented information about the prevalence of non compliance among the chronic diseases especially hypertensive cases attending the chronic clinic of Al jaffar general hospital of Al Hasa region of Saudi Arabia. This will

guide the Ministry of Health to take appropriate action for increasing the compliance among the patients suffering from different chronic diseases and improving the health care facility and thus prevent the unnecessary cost arising due to non compliance

RESULT

A total of 282 patients participated in this study. The mean age of the participants was 51.73 years (SD ± 10.57) and more than half of them were male (56.38%). The majority of the participants were uneducated (37.59%, n =106) while more than nineteen percent were primary educated (N=55), about 14 percent were secondary school educated (N=39) and twenty nine percent (N=82) were graduate. Most were married (84.04%, n = 237). The median duration of hypertension was 10 years (range two years - thirty-two years). The mean Systolic Blood pressure was 152 mm (Range 120-175mm of Hg) while the mean Diastolic pressure was 83 mm of Hg (Range 60-111 mm of Hg) More than fifty one percent of these hypertensive patients were also suffering from diabetes mellitus (N=145) while thirty nine percent were suffering from hyperlipidemia (N=111), two percent from Asthma (N=6) and seven percent from multiple diseases (N=20). Regarding the regularity in the follow up clinic more than seventy two percent of the participants (N=205, 72.3%) stated that they never missed the appointment while sixteen percent (N=47, 16.66%) missed the appointment once or twice and more than eight percent (8.54%, N=24) missed the appointment more than 2 times. Only 2 percent of the participants stated that they missed the appointment most of the time. More than twenty-seven (n = 78) of the participants did not attend the clinic on the day of interview; majority of them 89.7% (n = 70) of them mentioned forgetfulness as the excuse for non- attendance while 6.41% (n=5) blamed non availability of transport, and 3.85% (n = 3) of them considered it unnecessary as they were taking medicine from other sources. As far as the anti-hypertensive treatment is concerned more than forty percent of the participants were using amlodipine while more than nine percent were using losartan and more than seven percent were using atenolol. Captopil, Lisinopil, Irbasartan and Coversil were used by 2.23%, 3.91%, 6.75% and 5.67% of the participants respectively. Multiple drug regimens were used by twenty four percent of the participants. Almost thirty four percent of participants (33.9%, n = 89) did not adhere to the anti-hypertensive medication from time to time as advised by the clinician. Likewise forty eight percent of the participants did not follow exercise instructions given by the clinician. However, the instructions on diet were followed by 64.7% (n = 303) of the participants. The details of the demographic characteristics are shown in table1.

Table 1 showing the sociodemographic characteristics of the participants

V ariable	Number	%
Gender		
Male	159	56.38
Female	123	43.62
Age	51.73 years (SD ± 10.57)	
Duration of hypertension	10 years (range two years - thirty-two years).	
Educational Level		
Illiterate	106	37.59
Primary educated	55	19.50

Secondary educated	39	13.83
Graduate	82	29.08
Marital Status		
Unmarried	30	10.64
Married	237	84.04
Divorced	8	2.84
widow	7	2.48
Associated Chronic Disease		
Diabetes	145	51.42
Hyperlipidemia	111	39.36
Asthma	6	2.13
Multiplediseases	20	7.09
Attendance on the day of appointment		
Attended	204	72.34
Not attended	78	27.66
Forgot the appointment	70	89.74
Non availability of transport	5	6.41
Did not think it necessary as he is taking medicine regularly	3	3.85
Mean	152 mm (Range 120-175mm og Hg)of Hg	
Systolic Pressure	83 mm of Hg (Range 60-111 mm of Hg)	
Diastolic Pressure		
Follow up in the clinic		
Never missed the appointment	205	72.69
Missed the appointment once or twice	47	16.66
Missed the appointment more than twice	24	8.52
Never attended the clinic	6	2.13
Medicine prescribed for Blood Pressure		
Amlodopin	113	40.08
Losartan	27	9.58
Aenolol	21	7.44
Captopil	6	2.23
Lisinopil	11	3.91
Irbasartan	19	6.75
Coversil	16	5.67
Multiple drugs	68	24.34
Diet instruction		
Patients who followed the diet instruction	165	58.51
Patients who did not follow the diet instruction	97	41.49
Exercise instruction		
Patients who followed the exercise instruction	231	81.91
Patients who did not follow the exercise instruction	51	18.09

Regarding the information received from the general physician, most of the patients reported that they had got enough information on 'how to take the medicine' (91%), 'how long it would take to act', (68.6%), and 'how long the medicine should be taken' (69%), but this was not true with the information regarding the side effects. Sixty-one percent of the participants did not receive any information on the side effects of the medicine and 64% did not know what to do if there were any side effects from the medicine. Most of the participants (96%, n = 448) agreed that the attending physicians completely understood their health problem on the day of appointment, and 90% (n = 421) were comfortable with the multiple drug prescriptions. The response is shown in table no. 2.

Table 2 Showing the response of the participants on the information given to them by the treating clinician.

variables	Enough	Little	Did not get any
Information on anti-hypertensive medicine like How to take your medicine [1] Its doses. [2] Its frequency	132	132	18
How long it will take to act?	62	200	20
Regarding the side effects of antihypertensive treatment	80	20	182

Information on as how long the medicine should be taken'	194	64	24
The doctor seemed warm and friendly to youn	254	18	8

Lisinopil	6(54.54)	5(45.46)
Irbasartan	8(42.10)	11(57.90)
Coversil	9(56.25)	7(43.75)
Multiple drug	28(41.18)	40(58.83)

Prevalence of noncompliance and the factors contributing to it: The overall prevalence of therapeutic non-compliance, that is, Blood pressure of 120-140/80-90 with the optimum treatment among the participants was 54 % (n =, 95% CI 51.59 - 58.02%). The non-compliance of the males (55.15%) was higher than that of the females (52.85%, $P = .003$). There was a statistically significant difference in the prevalence rate of non-compliance among the participants of different educational levels. It was highest among the illiterates (56.15%, $P = .001$), falling as the level of education rose. It was, 54.60% among those with primary school education, 51.61% among those with secondary school education, and 45.83% in those educated beyond high school. Patients who were regular on follow-up had a significantly higher compliance rate than those who were irregular (56.88% for those who never missed an appointment, 34.53% for those who had missed an appointment once or twice in a year, 28.40% for those who had missed the appointment more than twice in a year and 17.50 who never attended the clinic, $P = .039$). The non-compliance was higher among the patients who did not follow the exercise regime than those who followed it (58.66% vs. 46.7%5, $P = .012$). However, this did not hold for instructions on diet where non-compliance was statistically insignificant (49.49% Vs 48.49, $P=0.34$).The details is shown in table 3.

Table 3 Showing prevalence of non-compliance among different variables

Variable	Compliance No. (%)	Non compliance No.(%)	P value
Gender			
Male	71 (44.85)	88(55.15)	0.003
Female	58(47.15)	65(52.85)	
Marital Status			
Un married	12(41.3)	18(58.7)	0.12
Married	136(57.21)	101(42.79)	
Divorced	2(30.2)	6(59.80)	
Widow	3(37.6)	5(62.40)	
Attendance on the day of appointment			
Attended	114(55.88)	90(44.12)	0.012
Not attended	32(41.02)	46(58.98)	
Forgot the appointment	27(38.00)	43(62.00)	
Non availability of transport	1(33.33)	2(66.67)	
Did not think it necessary as he is taking medicine regularly	2(40.00)	3(60.00)	
Education			
Illiterate	46(43.40)	60(56.60)	P=0.001
Primary education	25(45.45)	30(54.55)	
Secondary education	19(48.71)	20(51.29)	
Graduate	44(53.66)	38(46.34)	
Follow up in the clinic			
Never missed the appointment			0.038
Missed the appointment once or twice	117(57.07)	88(42.93)	
Missed the appointment more than twice	16(34.04)	31(65.96)	
Never attended the clinic	7(29.16)	17(70.84)	
Diet instruction			
Patients who followed the diet instruction	85(51.51)	80(48.49)	0.34
Patients who did not follow the diet instruction	49(50.51)	48(49.49)	
Exercise instruction			
Patients who followed the exercise instruction	123(58.24)	108(41.76)	0.012
Patients who did not follow the exercise instruction	21(41.17)	30(58.83)	
Drug regimen			
Amlodopin	63(55.75)	50(44.25)	0.023
Losaan	14(51.85)	13(48.15)	
Aenolol	11(52.38)	10(47.62)	
Captopil	3(50.00)	3(50.00)	

Factors found to be significantly associated with non compliance on hypertensive treatment on bivariate analysis were male gender (OR=1.76,CI=1.32-2.32), education level (Literacy) (OR = 2.3, CI = 3.63-4.19),, irregularity of follow up (OR = 6.41, CI = 3.90-9.92),, non -adherence to instruction on exercise (OR = 4.55,CI = 3.2 6-5.86), multiple drug regimen for hypertension (OR = 1.29, CI = .71-1.87), Age, marital status, duration of hypertension, associated chronic disease, were not significantly associated with non-compliance. Compliance with the treatment was better among the patients who attended the clinic on the day of appointment (OR=0.5, CI=0.2-0.8) and non compliance was more among the patients who did not attend the clinic due to forgetfulness followed by non-availability of transport and those who thought it unnecessary as they were taking medicine from other source (62.00%,66.7% and 60% respectively , $p=0.03$)Patient-doctor interaction factors, such as, the patients' perception of the physician's understanding of their health problems were not significantly associated with the compliance rate

DISCUSSION

Hypertension is a major health problem throughout the world. Uncontrolled hypertension has contributed to a rise in mortality among the population. Availability of the quality antihypertensive treatment and regular exercise and diet control is the key in the control of hypertension and prevention of complication due to it. Therefore patients' compliance towards medical treatment, diet control and exercise is critical in controlling the hypertension. Measuring compliance is a complex issue since many methods and factors are involved to determine it. Our study explored the therapeutic noncompliance and the factors contributing to it. Our study has found that fifty four percent of the study population was non-compliant to the anti-hypertensive management. However this finding is lower than that of the similar study conducted in other part of Saudi Arabia^[11](72%) ,Ghana^[12] (58.6%),Brazil^[13] (85.29%) and Ethiopia^[14] (68.8%) but higher than that found in southern India ^[5] (16.4%), Ethiopia^[16](26.4%), Nigeria^[17] (45.8%), Vietnam^[18] (50.2%) and Romania^[19] (30.2%) and Bahrain^[20] (49.2%).The differences in the prevalence in different countries might be different methods of research, better access and skilled health care professionals or due to participants better knowledge towards hypertension and its management. A significant gender difference in the noncompliance rate was found in our study. Noncompliance to the antihypertensive treatment was significantly higher among the male population. The same result was found in Indian, Vietnam and Ethiopian study where the compliance rate among female was significantly better than their male counterpart. However in Bahrain study the noncompliance was significantly higher among female (52.5% vs. 49.2%, $P=0.001$) and the same was true in other Saudi study ^[21] where male counter were better therapeutic compliant than their female counterpart.

Other factors found to be significantly associated with non-compliance on hypertensive treatment were education level irregularity of follow up, multiple drug regimes, forgetfulness of the appointment date and non -adherence to instruction on exercise, Education level of the participant played a crucial

role in noncompliance in our study. The noncompliance rate was significantly higher among illiterate participants while it was least among the graduate participant. The same result has been documented in other similar studies in Ethiopia, Nigerian, and Indian and Saudi study. It is well understood that irregularity of the follow up will increase the non-compliance since the patient will not visit the clinician and not take refill treatment. The same result has been found in Ghana, Brazil and Ethiopian study. Our study has found that the patients who were on single drug therapy were more compliant than those with multiple drug therapy. This has been found in Vietnam and Nigerian study also. Prescribing combined drug can improve the compliance. Forgetfulness was the main reason of not attending the clinic in our study and so noncompliance. Forgetfulness of not attending the clinic as well as of not taking medicine has been the major cause of noncompliance in other studies done in Ethiopia, Vietnam, India and Saudi Arabia. Exercise is an important part of the treatment plan for hypertensive patients. On adherence to exercise advice may prevent the optimal control of hypertension. More than fifty eight percent of the patients did not follow the exercise instruction by the clinician in our study. Noncompliance to exercise instruction has also been revealed by various studies. Ref

CONCLUSION

This study has provided vital information on the factors influencing the compliance of hypertensive patients to medication and non-medication regimes in Al Ahsa region of Saudi Arabia. This study reported a comparatively low level of compliance among the hypertensive patients for anti-hypertensive treatment. The treating physicians must be aware of the noncompliance status of their hypertensive patients and must address the contributing factors and facilitates the health authority in the measures helping the compliance among the hypertensive patients.

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