

## Compliance to Antihypertensive Treatment and Causes of Partial or Poor Compliance in Patients Attending Ali-Kamal Consultation Center in Suliamania

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### ABSTRACT

**Background and Objectives:** Hypertension is common chronic disease, its prevalence increases with age, the goal of treating hypertension is to control blood pressure below the target level (140/90 mm Hg). Poor or non compliance is one of the biggest and modifiable obstacles in controlling high blood pressure.

**Methods:** Descriptive study was conducted on a 418 hypertensive patients at Ali Kamal consultation clinics in Suliamania city, from 3<sup>rd</sup> May 2008 to 2<sup>nd</sup> July 2008. During interview questionnaires were used to evaluate patient's compliance. SPSS version 13 was used for analysis.

**Results:** In studied sample (30.4%) were males and (69.6%) were females, the mean age $\pm$ SD (58 $\pm$ 10). Compliance to antihypertensive treatments was (58%), Fair compliance (30%), and poor compliance (12%). Significant association ( $P < 0.05$ ) were found between good compliance and older age, Unemployed 353(84.4%), longer duration of hypertension 221(52.9%), doing follow up in private clinics 37(69.8%), Depending on both Governmental and private pharmacy to get medications 206(52.4%), knowledge of patient and home blood pressure checking 90(73.2%). While gender, illiterate 263(62.9), medium economic state 294 (70.3), positive family history of hypertension 250(59.8), No previous hospital admission 261(62.4) and number of prescribed drugs do not affect compliance ( $P > 0.05$ ).

**Conclusions:** Younger age, poor hypertension awareness and employment adversely affect compliance to antihypertensive medication. Regular blood pressure checking increases compliance, while numbers of drugs and gender not affect compliance rate.

**Key words:** Hypertension, Compliance. Unemployed, Follow-up, private pharmacy .

### INTRODUCTION:

Hypertension (HT) is a chronic disease, defined as persistently elevated blood pressure (BP) of 140/90 mm Hg or higher, and 130/80 mmHg or higher for those with diabetes or chronic renal disease<sup>1, 2</sup>. Worldwide prevalence estimates for hypertension is as much as 1 billion individuals, and approximately 7.1 million deaths per year may be attributable to hypertension. According to 7<sup>th</sup> report of Joint National Committee (JNC) on Prevention, Detection, Evaluation and Treatment of high blood pressure, HT is classified to two stages with adding

identify those individuals in whom early intervention needed by adoption of healthy lifestyles to reduce BP<sup>1</sup>. Hypertension remains a major modifiable risk factor for cardiovascular disease, Despite important advances in understanding of its causes and the availability of effective treatment strategies<sup>3</sup>. Studies worldwide indicate that despite the availability of effective medical therapy, over half of all hypertensive do not take any medication<sup>4</sup>. WHO defined compliance as the extent to which a person's behavior in taking medication, following a diet, and/or executing lifestyle changes corresponds with agreed recommendations from a health care

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describes poor compliance as the most important cause of uncontrolled blood pressure and estimates that 50–70% of people do not take their antihypertensive medication as prescribed<sup>6</sup>. It has been suggested that the distribution of compliance with antihypertensive medication would be roughly U-shaped, i.e. one-third of patients would take practically no drugs at all, one-third would take nearly all drugs, and one-third would fall between these extremes<sup>4</sup>. The methods available for measuring compliance are either direct or indirect methods. Each method has advantages and disadvantages and no method is considered the gold standard<sup>7</sup>.

**Aims of this study:** To assess client's compliance to antihypertensive treatments (AHT) in Sulaimani city and causes of fair or non compliance.

#### PATIENTS & METHODS:

Descriptive study of hypertensive patients attending Ali Kamal governmental consultation Clinic in Sulaimani city. A sample of 460 patients were interviewed between 3<sup>rd</sup> May 2008 to 2<sup>nd</sup> July 2008, only 418 patients met inclusion criteria (Diagnosed since at least two months and have booklet for hypertension, patients' age of 18 years and above and from inside Suliamania while newly diagnosed cases of less than two months and those living out side Suliamania were excluded. The questionnaire include information regarding patient demographics characteristics like age, sex, education, occupation, economic status, duration of HT, family history of HT and presence of other chronic diseases. Blood pressure checking was done for every hypertensive patients included in the study by the interviewer. We classify compliance to AHT to three types as exactly always according to the doctor's prescriptions, represent good compliance, sometime according to the doctor's prescription represent fair compliance and never according to the doctor's prescription represent poor

using SPSS, Chi-square and fisher's exact test was used to find the associations between variables,  $P < 0.05$  was regarded statistically significant,

#### RESULT:

Table (1) shows that among 418 studied cases, 127 (30.4%) were males and 291 (69.6%) were females, the mean age group is within 45-64 years (61.5%), Most of the cases were illiterate 263 (62.9%) and 353 (84.4) were unemployed, Economically 294 (70.3%) were from medium state level, Duration of 221 (52.9%) of cases of hypertension were longer than 5 years, Positive family history of HT is present in 250 (59.8%) of the cases. About 159 (38%) of them have other chronic diseases for which they take treatment like diabetes. History of hospital admission due to high blood pressure or its complication present in 157 (37.6%) of the cases also the association between socio-demographic characters and taking AHT according to the doctors' direction shows that 242 (58%) patients were good complier, 125 (30%) were fair complier and 51 (12%) were poor complier (Figure 1). There were no significant association except with old age, Occupation (unemployed), duration of HT (1-5 years) and not having other chronic diseases ( $P < 0.05$ ),

Table(2) shows that half of patients have two prescribed AHT 199 (50.6%), 129 (32.8%) have one drug with no significant association between drug numbers and compliance ( $P > 0.05$ ). while there are highly significant association ( $p < 0.01$ ) with way of getting treatment as 206 (52.4%) depend on both Governmental and private pharmacy, Not have any AHT side effect 327 (83.2%), And barrier to follow physician's order. Forgetfulness is main cause of fair compliance 34 (100%) while not understanding how to use AHT is main cause of poor compliance 1 (100%).

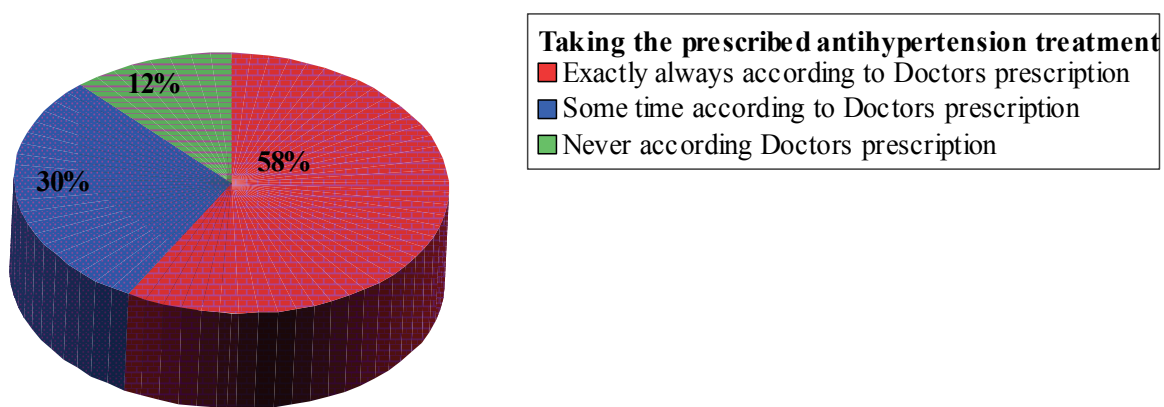
Table (3) demonstrates that there is highly significant association ( $p < 0.01$ ) between good compliance and the patient's

awareness of HT complication, taking AHT for the rest of life , Health education about HT, Do regular follow up, visiting same doctors in private clinic and home blood pressure checking while belief regarding

cure of HT is not significant ( $p > 0.05$ ). 80% of poor compliance were not doing follow up while only 30% of fair compliance were doing the follow up irregularly in the health center ( $p < 0.01$ ).

**Table 1:** Association between socio-demographic characters and AHT compliance

Variables		(%) 418	Compliance			p-value
			Good No (%)	Fair No (%)	Poor No (%)	
Age (years)	25-44	38(9.1)	14(36.8)	14(36.8)	10(26.3)	0.001
	45-64	257(61.5)	147(57.2)	74(28.8)	36(14.0)	
	64<	(29.4)123	(65.9)81	(30.1)37	5(4.1)	
Gender	Female	291(69.6)	161(55.3)	93(32.0)	37(12.7)	0.266
	Male	(30.4)127	(63.8)81	(25.2)32	(11.0)14	
Education	Illiterate	263(62.9)	147(55.9)	86(32.7)	30(11.4)	0.138
	Primary school	92(22.0)	48(52.2)	28(30.4)	16(17.4)	
	Intermediate	23(5.5)	15(65.2)	5(21.7)	3(13.0)	
	Secondary school	17(4.1)	12(70.6)	3(17.6)	2(11.8)	
	Institute and University	(5.5)23	(81.3)13	(18.8)3	-----	
Occupation	Employed	65(15.6)	30( 46.2 )	22(33.8)	13(20.0)	0.011
	Unemployed	( 84.4)353	( 60.0)212	(29.2)103	38(10.8)	
Economic state	Low	62(14.8)	35(56.5)	21(33.9)	6(9.7)	0.168
	Medium	294(70.3)	164(55.8)	88(29.9)	42(14.3)	
	High	(14.8)62	(69.4)43	(25.8)16	(4.8)3	
Family history of hypertension	Positive	250(59.8)	145(58.0)	74(29.6)	31(12.4)	0.980
	Negative	(40.2)168	(57.7)97	(30.4)51	20(11.9)	
Duration of HT	< 1 year	14(3.3)	5(35.7)	4(28.6)	5(35.7)	0.001
	1-5 years	183(43.8)	96(52.5)	(28.4)52	35(19.1)	
	5 <years	221(52.9)	(63.8)141	(31.2)69	(5.0)11	
Having other chronic diseases	No	259(62.0)	135(52.1)	79(30.5)	45(17.4)	0.001
	Yes	(38.0)159	(67.3)107	(28.9)46	(3.8)6	
Admission to Hospital	No	261(62.4)	142(54.4)	82(31.4)	37(14.2)	0.122
	Yes	(37.6)157	(63.7)100	(27.4)43	(8.9)14	

**Figure 1:** Compliance in the studied sample**Table 2:** Knowledge of patient's regarding Antihypertensive treatment(AHT)

Variable	418 (%)	Compliance			p-value
		Good	Fair	Poor	
<b>Number of prescribed AHT</b>					
One drug	129(32.8)	72(55.8)	42(32.6)	15(11.6)	0,082
Two drug	199(50.6)	129(64.8)	60(30.2)	10(5.0)	
Three and more	90(21.6)	51(56.7)	33(36.7)	6(6.7)	
<b>Way of getting AHT</b>					
Private pharmacy	83(20.0)	32(38.5)	26(31.3)	25(30.2)	<b>0,001</b>
Governmental	119(28.5)	66(55.5)	40(33.5)	13(11.0)	
Both	216(51.5)	144(66.7)	59(27.3)	13(6.0)	
<b>Having AHT side effect</b>					
No	327(83.2)	206(63.0)	89(27.2)	32(9.8)	<b>0.014</b>
Yes	91(21.8)	36(39.5)	36(39.6)	19(20.9)	
<b>Barrier's to follow physician's order</b>					
Feeling well and control	95(54.0)	----	69(72.6)	26(27.4)	<b>0.001</b>
Forgetfulness	34(19.3)	----	34(100)	---	
Use herbs and diet	27(15.3)	----	8(29.6)	19(70.4)	
Drug side effects	15(8.3)	----	13(86.7)	2(13.3)	
Cost	4(2.3)	----	1(25.0)	3(75.0)	
Not understanding how to use AHT	1(0.6)	----	----	1(100)	

**Table 3** : Patient's awareness and compliance

Variables	Compliance			
	Good N (%)	Fair N (%)	Poor N (%)	P Value
<b>Belief regarding cure of HT</b>				
Not cure	(56.7)97	(33.3)57	(9.9)17	0.608
Cure	(59.8)58	(27.8)27	(12.4)12	
Do not know	(58.0)87	(27.3)41	(14.7)22	
<b>Awareness of HT complications</b>				
Do not know	(50.9)109	(33.6)72	(15.4)33	0.009
Know	(65.2)133	(26.0)53	(8.8)18	
<b>Taking AHT for the rest of the life</b>				
Not need	(50.0)13	(34.6)9	(15.4)4	0.001
It should be taken	(64.1)195	(27.0)82	(8.9)27	
Do not know	(38.6)34	(38.6)34	(22.7)20	
<b>Health education about H.T.</b>				
No	(37.3)28	(37.3)28	(25.4)19	0.001
Yes	(62.4)214	(28.3)97	(9.3)32	
<b>Follow up treatment</b>				
No	—	(20.0)2	(80.0)8	0.001
Yes	(59.3)242	(30.1)123	(10.5)43	
<b>Follow up system</b>				
Irregular visits	(53.1)144	(33.6)91	(13.3)36	0.001
Regular visits	(66.7)98	(23.1)34	(10.2)15	
<b>Follow up setting</b>				
Health center	(61.8)105	(32.4)55	(5.9)10	0.001
Private clinic	(69.8)37	(24.5)13	(5.7)3	
Paramedics	(42.5)37	(29.9)26	(27.6)24	
More than one place	(64.3)63	(29.6)29	(6.1)6	
<b>Follow up physician order</b>				
Same physician	(79.7)59	(17.6)13	(2.7)2	0.005
Different physician	(59.1)146	(34.0)84	(6.9)17	
<b>Checking blood pressure at home</b>				
No	(51.5)152	(32.5)96	(16.0)47	0.001
Yes	(73.2)90	(23.6)29	(3.3)4	

**DISCUSSION:**

The finding of this study revealed that majority of sample were older than 44 year, this can be explained by increasing prevalence of HT by increasing age<sup>8</sup>. Females are more predominant than males as most of them are unemployed having time to come to consultation clinic in the morning and it is not costly. The proportion of good compliance to AHT was 58% which is near to the result of the study been done

(56%)<sup>9</sup>. and higher than what has been reported in Malaysia (44.2%)<sup>10</sup>. and lower than study in Egypt(74.1%)<sup>12</sup>. This could be due to the measurements of compliance based on different criteria, Age was significantly associated in this study with Compliance of client's (p<0.01), and that is observed by better Compliance in older patients, while poor compliance is more in younger age group (25-44) years which is agree with result of study done in Finland<sup>11,12</sup>. And disagree with result that done in

Egypt which show that there is no association between age and compliance to AHT<sup>11</sup>. Gender has no effect on compliance ( $p>0.05$ ), which is in agreement with study done in Saudi Arabia<sup>13</sup>. And disagree with result that been done in Slovakia show that compliance is more in women than men<sup>14</sup>. No relationship was observed between compliance and the level of patient's education ( $p>0.05$ ) which is in line with study done in Kuwait<sup>15</sup>. Occupation affects compliance ( $p<0.05$ ) in which most of unemployed patients are good compliers, while higher percentage of fair and poor compliance are present among employed patients respectively which is in agreement with a study done in US<sup>16</sup>. This may be due to inability to take time off from work to follow medical arrangements. Economic status also do not affect compliance in the studied patients ( $p>0.05$ ), one reason is that AHT are offered to hypertensive patients by booklet in the health centers monthly with cheap prices, which is in agreement with studies done in Kuwait<sup>15</sup>. Family history of HT is not related to compliance ( $p>0.05$ ), in contrast to the study which is done in Saudi Arabia which shows lower compliance rate among those with positive family history of HT<sup>13</sup>. Duration of HT has significantly affect compliance in studied sample ( $p<0.01$ ), nearly 64% of those who have HT for more than five years are good compliers to AHT, while poor compliance is more among those who have HT for less than one year which is consistent with study done in Boston<sup>17</sup>. Patients having other chronic diseases are good compliers to AHT ( $P<0.05$ ). No significant association was found between previous hospital admission due to HT or complication and client's compliance ( $p>0.05$ ), while study done in Italy mentioned that poor compliance associated with low previous hospital admission<sup>18</sup>. No significant relationship was observed between compliance and number of AHT prescribed as patients on one drug had a lower compliance (55.8%) compared to

patients on two drugs and three and more, respectively but these differences are not significant ( $P>0.05$ ). One reason for this could be that patients on multiple pills feel that their disease is significant and hence become more cautious with taking their treatment and less likely to forget them. Poor compliance is more common among those who depend on private pharmacy for getting AHT, due to the price of the drugs<sup>16</sup>. while lowest percentage of Poor compliance and higher compliance is observed among those who depend on governmental and private pharmacy, Side effects of AHT negatively associated with compliance ( $P>0.05$ ) which is in line with studies on factors affecting compliance<sup>19</sup>. Most commonly reported causes for fair compliance in studied sample was forgetfulness (100%) as has been reported by other studies including a study done in Pakistan<sup>20</sup>. While for poor compliance patient's lack of understanding the usage of the medications is the most common cause (100%) which is supported by a study done in US<sup>16</sup>. Knowledge of hypertension significantly affected compliance in the studied sample ( $P<0.01$ ). Patients who aware of complication of HT and aware that AHT should be taken life long, had better compliance compared to those who have less awareness, which is supported by a study done in Pakistan<sup>20</sup>. Patients who receive health education about HT have higher compliance ( $P<0.01$ ) and is in agreement with study done on effect of health education on compliance<sup>21</sup>. Follow up positively and significantly affects compliance ( $P<0.01$ ) while poor compliance is more prevalent (80%) in patients not doing follow up whereas (59.3%) of patients who do follow up are good complier which is supported by study done in US<sup>22</sup>. Nearly (70%) of patients who go to private clinics for follow up, same doctors of follow up and checking home blood pressure are good compliers to AHT and have lowest rate of partial and poor compliance ( $p<0.01$ ) as private clinics

have more time to communicate with patients which is in line with study done on adherence to AHT<sup>13</sup>.while higher percentage of poor compliance are found among patients who go to paramedics for follow up ( $p < 0.01$ ) because of inadequate knowledge of paramedics about HT.

### CONCLUSION:

Compliance to AHT increase with increasing age, long duration of illness, Presence of chronic diseases, better patient's awareness, follow up regularly in private clinics and home blood pressure checking. Poor compliance is more among employed patients and buying AHT from private pharmacy while genders, education, economic state, family history of HT and number of drugs prescribed have no effect on compliance. We recommend increasing patients' awareness about hypertension by the doctors or health providers and through special program in mass media (TV, Radio, and posters)

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