Compliance of Hypertensive Patients to Their Therapeutic Regimen in Health Facilities in Baghdad City

Mazin Gh. AlRubaey* Emad Mohammed Rasheed
PhD (CM) PhD
Rasha kh. Ahmed**
FIBMS (FM)

Abstract

Background: Hypertension forms a major public health problem worldwide. Good compliance to antihypertensive drugs is a key factor in controlling blood pressure.

Aim of the study: To study compliance of patients toward management of hypertension in Baghdad city, Iraq.

Patients and Methods: a descriptive study was conducted during four months period in 2016. The study involves patients eighteen years of age and above who were known to be hypertensive for at least one year. Data were obtained by direct interview using structured questionnaire.

Results: A total of 306 patients were included in the study. The study revealed that a compliance rate was 54%. Older patients were more compliant to their prescribed medication than younger patients. Highly educated patients were more compliant to their medication than illiterate patients 69.2% vs 50%. Monotherapy and single dose therapy (59.3% and 58.5%) respectively have more compliance to their therapy. Patients having longer duration of the disease more than eight years (78%) were more compliant than other patients have short duration.

Conclusions: The compliance of hypertensive patients was highly associated with old age, high level of education, monotherapy, single dose, long history of disease

Introdaction

Hypertension is an important public-health challenge worldwide. Prevention, detection, treatment, and control of this condition should receive high priority [(1)]Hypertension is a major health problem in developing and developed countries [(2)]. A steady increase in the
prevalence of hypertension had also been reported in developing countries; mainly due to westernization of life style [(3)].In the Eastern Mediterranean Region hypertension affects more than 20-26% of adult population above 35 years of age [(4)]. In Iraq, a survey about risk factors of non-communicable disease conducted in 2006 showed a prevalence of 40.4 %[(5)].

Compliance means the adherence by the patient to the directions given by the healthcare providers for medication dosage and adherence to follow-up appointments and maintaining the recommended lifestyle modifications [(6)]. In fact, it has been estimated that only 60% of patients take medication as prescribed [(7)].

National health surveys in various countries have shown a high prevalence of poor control of hypertension [(8)]. In the US around 30% of patients treated with antihypertensive drugs do not achieve their target blood pressure [(9)]; poorly controlled hypertension confers a high risk of stroke, myocardial infarction, heart failure, and end-stage kidney disease. Non adherence to antihypertensive therapy is believed to be a major cause of unsatisfactory blood pressure control [(10)].

Researchers who have tried to measure drug adherence have realized that there is no gold standard by which adherence can be quantified; methods for evaluation of adherence can be categorized as either direct or indirect. Direct methods include measurement of plasma drug concentrations. Plasma drug levels may be difficult to interpret, depending on the time interval between drug intakes and when the blood samples are taken, and inter individual differences in absorption and metabolism [(11, 12)]. Direct approaches are expensive, burdensome to the health care provider while indirect methods of measurement of adherence include asking the patient about how easy it is for him or her to take prescribed medication, performing pill counts, collecting patient questionnaires, and assessment of clinical response which are all methods that are relatively easy to use, but questioning the patient can be susceptible to misrepresentation [(11)]. Factors affecting compliance to therapy may be grouped into several categories, namely, patient-centered factors, therapy-related factors, healthcare system factors, social and economic factors, and disease factors [(13)].

Patient-centered factors include patient's age, ethnicity, gender, education, and marital status [(14)]. Patient's beliefs, motivation and negative attitude towards therapy were identified as factors to be included in this category [(15)]. Compliance is good when doctors are emotionally supportive, giving reassurance or respect, and treating patients as an equal partner [(16)]. Patient's knowledge about their disease and treatment is not always adequate. Patient education is very important to enhance compliance [(17)]. Healthcare providers should give patients enough education about the treatment and disease [(18)].

Therapy-related factors include: treatment complexity, duration of treatment period, medication side effects, and degree of behavioral change required [(19)]**.** Economic and social factors include: cost of therapy, and social support [(20)].

The main factor identified relating to healthcare systems include availability and accessibility. Lack of accessibility to healthcare, long waiting time for

clinic visits, and unsatisfied clinic visits, all contributed to poor compliance [21].

Patients who are suffering from diseases with absence of symptoms (at least at the initial phase), such as hypertension, might have a poor compliance [22]. Patients who had marked improvement in symptoms with the help of treatment normally had better compliance [23].

This study was conducted to assess compliance of patients with hypertension with therapeutic regimen and modification life style, and the factors affecting their compliance. It is essential for such a group of patients to comply with the prescribed regimen to prevent complications and to save their life.

Patients and methods

Adescriptive cross- sectional design was conducted during four months period in 2016, in the health facilities of Baghdad city. In two teaching hospitals (Al- Yarmouk Teaching Hospital and Baghdad Teaching Hospital) which are consider tertiary care hospital. Also two primary health care centers (PHCs) were selected by simple random sampling from one from Al-Resafa and one from Al-Karkh health directorate.

A convenient sample of patients attending these health facilities who had been previously diagnosed as having hypertension and who were under medical treatment for at least one year for both gender.

Data were obtained by direct interviews of the patients using structured questionnaire. The questionnaire sheet consists of two parts:

First part: Socio-demographic data that include patient's age, gender, occupation, marital status, level of education and family history.

The second part: Is concerned with patients' compliance about therapeutic regimen, which includes: Medication regimen compliance was composed of 7 items, compliance was measured by direct questioning of the patient and it depends on the patients answer if he/she was taking the medication daily or not. Lifestyle modification was having 4 items, participants were asked to respond to the single question as yes or no (smoking, regular physical exercise**,** Salt free diet daily, and low fat diet daily).

Analysis of data was carried out using the available statistical package of SPSS-22 (Statistical Packages for Social Sciences- version 22). Data were presented in simple measures of frequency, percentage, mean and standard deviation. The significance of difference of qualitative data was tested using Pearson Chi-square test (χ^2-test). Statistical significance was considered whenever the P value was equal or less than 0.05 [24].

Ethical issue: The researcher clarified the objective and the aim of the study to the participants and informed that they are allowed to choose to participate or not in the study and withdraw at any time, verbal consent was taken. In addition, the researcher assured maintaining anonymity and confidentiality of the subjects` data.

Results

Table (1) shows the socio-demographic characteristics of the sample (306 hypertensive patients), 53.9% were females and 46.1% were males, age ranged between 22 to 81 years with mean age of 56.8±12.2 years. The age group from 50-59 years represents the largest group (34.3%).

The compliance was found among 166 of the patients i.e. the compliance rate was 54% as shown in figure 1.

Table 1: The distribution of the study sample according to some demographic variable (n=306)=

		No.	%
Age (years)	<50	61	19.9
	50---59	105	34.3
	60---69	85	27.8
	=>70	55	18.0
	Mean±SD (Range)	56.8±12.2	(22-81)
Gender	Female	165	53.9
	Male	141	46.1
Marital status	Married	221	72.2
	Unmarried (widower, separate and never married)	85	27.7
Educational level	College & higher	78	25.5
	Illiterate	82	26.8
	Primary	67	21.9
	Secondary	79	25.8
Employment	Governmental employee	61	19.9
	Self-employee	88	28.7
	No employment	134	43.8
	Retired	23	7.5
Family history		192	62.7

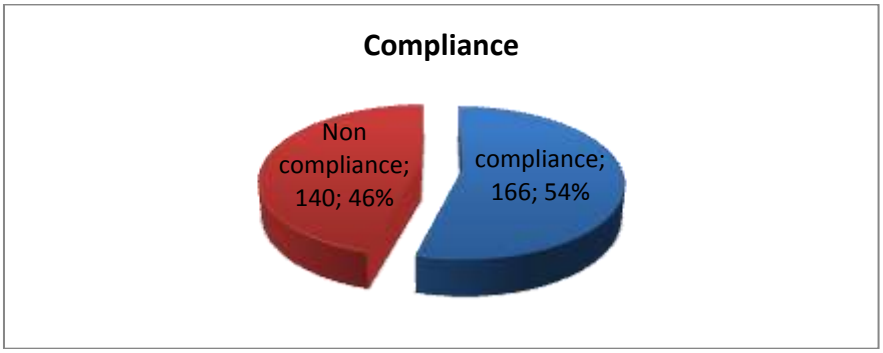

Figure 1: The distribution of the sample according to the compliance.

Table (2) shows the reasons for non compliance among patients to treatment. 38.5% reported stop medication when feeling well (when there is no symptom), 31.4% reported stop medication and use traditional medicine.

Table(3) shows the pattern of life style modification among patients.

Table (4) shows that there was significant association between age and education with compliance rate to therapy.

Table 2: The distribution of the non compliance patients to their reason (n=140).

Reasons for irregular drug intake (non-compliance)	**No**	**%**
Forget	9	6.4
Feel better	54	38.5
Ineffective	2	1.4
Side effect	5	3.5
Avoid addiction	22	15.9
Herbal medicine	44	31.4
Cost	4	2.9
*compliance patients (n= 166) were not included in this table		

Table 3: The distribution of the study sample according to their life style modification regimen (n=306).

Practice of lifestyle modification	No %
Do not smoke	261(85%)
Regular Physical exercise	8(2.6%)
Salt free diet	86(28.1%)
Low fat	79(25.8%)
*The patient answers all question.	

Table 4: The distribution of the study sample by socio-demographic characteristics and compliance to therapy

Age(years)	Compliance No. (%) n=166	Non-compliance No. (%) n=140	Total N=306	χ^2	p-value
Age in years					
<50	24(39.3%)	37(60.7%)	61		
50-59	56(53.3%)	49(46.7%)	105	9.339	0.025*
60-69	55(64.7%)	30(35.3%)	85		
≥70	31(56.4%)	24(43.6%)	55		
Gender					
Female	91(55.2%)	74(44.8%)	165	0.118	0.732
Male	75(53.2%)	66(46.8%)	141		
Marital status					
Married	121(54.8%)	100(45.2%)	221	0.081	0.776
Non married	45(52.9%)	40(47.1%)	85		
Education level					
Illiterate	41(50.0%)		82		
Primary	27(40.3%)	40(44.3%)	67	12.981	0.005*
Secondary	44(55.7%)	35(44.3%)	79		
College	54(69.2%)	24(30.8%)	78		
Employment					
Employ	84(58.3%)	60(41.7%)	144	1.829	0.176
Non-employ	82(50.6%)	80(49.4%)	162		
Family history					
Positive	107(55.7%)	85(44.3%)	192	0.46	0.449
Negative	59(51.8%)	55(48.2%)	114		
*Significant at 0.05 level					

Table 5 shows that there was a highly significant association between number of drugs, drug regimen, and duration of hypertension with compliance rate to therapy.

Table 5: The distribution of study sample by their compliance to therapy and drugs therapy and duration of the diseases

	Compliance No. (%) n=166	Non-compliance No. (%) n=140	Total N=306	χ^2	p value
Number of drugs					
One drug	147(59.3%)	101(40.7%)	248	13.31	0.0002*
More than one drug	19(32.7%)	39(67.2%)	58		
Drug regimen					
Single	120(58.5%)	85(41.5%)	205	4.60	0.031*
Multiple	46(45.5%)	55(54.5%)	101		
Duration of the disease since diagnosis (years)					
1---3	28(36.4%)	49(63.6%)	77	23.904	0.0001*
4---6	37(50.7%)	36(49.3%)	73		
7---9	46(78.0%)	13(22.0%)	59		
≥10	55(56.7%)	42(43.3%)	97		
*Significant at 0.05 level					

Discussion

Hypertension is a serious public health problem due to its high prevalence and good control of the disease has always considered to be essential for reducing its morbidity and mortality [25].Many researchers believe that one of the major causes of uncontrolled blood pressure is failure to take medication as prescribed and this recognized as a major public health concern and contributes to patient morbidity, mortality and healthcare costs [26].

The compliance rate was 54%, this result was similar to that result done in Pakistan (2006) [27] and (2008) [28] but lower than that reported in Saudi Arabia (2015) [29], Mosul (2001) [30] and in Baghdad (2000) [31]. This difference might be due to health education difference between different countries.

According to the causes of non compliance, about 38.5% believed that medication should take on need only "when there are symptoms" and this mean a poor concept about hypertension disease in our population. This result similar to that study done in Babylon (2015) [32], but consider higher than the study done by Benson and Britten UK in (2002) [33].

Herbal medicine was the second causes for non compliance in our study, 31.4% stop medication and use traditional medicine, this is similar to the study done in Jordan (2003) [34] and United Arab Emirate (2008) [35] that patients have faith and confidence in herbal medicines and are consequently high users of them despite the country's progressive adoption of western approaches to health care. Costs play no role in the causes of non compliance (2.9%), as the drugs of chronic diseases are available in public clinic under low price supported by government. This result against a study was done in Sudan (2000) [36].

Moderate exercise and dietary restrictions were a part of the management recommendation for the participants in this study, but many of them do not understand the relevance of these non-drug therapies in the management of hypertension. 28.1% and 25.8% never take salt and fat in their daily meal respectively while only 2.6% did regular physical exercise. These result appear the importance of health education about lifestyle modification and this point reported by Moore et al, in (2004) [21]

The current study shows that participants who were 60 and more years of age had higher level of treatment compliance. This result was in agreement to the compliance rate found in Saudi Arabia (2015) [29] and Iran (2004) [37]. The possible explanation of this might be due to the fact that the older patients have more concern about their health than younger patients.

In this study, it was found that gender had no effect on the compliance to the therapy. Similar results were found by the other researcher in Mosul (2001) [30], Saudi Arabia (2015) [29], and Iran (2004) [37]. But this result was in disagreement with that found in other studies in European countries (2005) that show that female patients had better compliance [15].

The relationship between marital status and treatment compliance was not significant, and this result was comparable with result of the study in Iran (2004)[37]. This means that marriage does not relatively serve as a form of social support for compliance with medication. This result was disagreeing with study that found marital status might influence patient's compliance with medication positively in USA (2005) [38].

The compliance rate was significantly higher among educated than illiterate patients. This can be explained by the fact that patients with higher educational level have better knowledge about the disease and therapy and therefore be more compliant. This finding was agree with study done in Babylon (2015) [32], but against to that found by study in Saudi Arabia (2015) [29], Al Mosul (2001) [30] and Seychelles (2002) [39].

In addition, it was found that patients with monotherapy and once daily medication had significantly a positive role in adherence compared to polytherapy and more than once a day which is similar to the results in China(2013)[25] and Kirkuk (2010)[40].

Regarding the duration of the disease since diagnosis, it was found that compliance rate in patients who had hypertension for long time was higher than those who were newly diagnosed. This might be due to the fact that young patients are more afraid of taking a lifelong medication than older patients. It might also be that the course of the disease is usually more severe in old age group [26]. This is against the result reported in USA (2012) [41] but similar to that observed in Iran (2004) [37].

In conclusion, the study showed that compliance to antihypertensive treatment was low (54%), Poor concept of the disease and incorrect information about the usage of drugs represented the most causes for non compliance to their medical therapy. Usage of herbal medicine had increased in our society which affects the compliance to medical therapy. In addition, the compliance of hypertensive patients was highly associated with old age, high level of education, monotherapy, single dose, and long duration of disease.

We recommended emphasis on health education of hypertensive patients to improve patient's knowledge about importance of complying with hypertensive medications. The anti-hypertensive regimen preferred to be monotherapy and single dose to promote compliance.

References

1- Chobanian AV, Bakris GL, Black HR, *et al*. Seventh Report of the Joint National Committee on

Prevention, Detection, Evaluation, and Treatment of High Blood Pressure.Hypertension, 2003; 42: 1206-52.
2- Sharifirad G, Mostafavi F, Kamran A, *et al*. perceptions of the hypertensive patients from disease and its treatment: A review article. J Health Syst Res. 2013; 9:1-10.
3- Maziak W, Rastam S, Mzayek F, *et al*. Cardiovascular health among adults in Syria: a model from developing countries. Ann Epidemiol.2007; 17:713-20.
4- Abdulrahman O. and Hazzaa M. Prevalence and risk factors associated with nutrition-related noncommunicable diseases in the Eastern Mediterranean region. Int J Gen Med. 2012; 5: 199–217.
5- Alwan A. Monitoring and surveillance of chronic noncommunicable diseases: progress and capacity in high-burden countries. The Lancet, 2010, 376:1861-68.
6- Burnier M. Medication adherence and persistence as the cornerstone of effective antihypertensive therapy. Am J Hypertens, 2006; 19:1190–96.
7- Nichols-English G, Poirier S. Optimizing adherence to pharmaceutical care plans. J Am Pharm Ass, 2000; 40**:** 475–85.
8- World Health Organization-International Society of Hypertension Guidelines for the Management of Hypertension 2013.Available at http://www.who.int/cardiovascular_diseases/publications/global_brief_hypertension/en/.
9- Egan BM, Zhao Y, Axon RN. US trends in prevalence, awareness, treatment and control of hypertension, 1998–2008. JAMA, 2010; 303: 2043-50.
10- Ho PM, Magid DJ, Shetterly SM, *et al*. Importance of therapy intensification and medication nonadherence for blood pressure control in patients with coronary disease. Arch Intern Med. 2008; 168:271–76.
11- Osterberg L, Blaschke T. Adherence to medication. New Engl J Med,2005; 353:487–97.
12- Ho PM, Bryson CL, Rumsfeld JS. Medication adherence: Its importance in cardiovascular outcomes. Circulation, 2009; 119: 3028–35.
13- Jing J, Grant E, Vernon M, *et al*. Factors affecting therapeutic compliance: A review from the patient's perspective. J Hypertens, 2008; 4 (1): 269-86.
14- Mar J, Rodriguez-Artalejo F. Which is more important for the efficiency of hypertension treatment: hypertension stage, type of drug or therapeutic compliance? J Hypertens, 2001;19(1):149–55.
15- Fodor GJ, Kotrec M, Bacskai K, *et al*. Is interview a reliable method to verify the compliance with antihypertensive therapy? An international Central-European study. J Hypertens, 2005; 23: 1261–66.
16- Patal RP & Taylor SD. Factors affecting medication adherence in hypertensive patients. Ann Pharmacother, 2012; 36:40–5.
17- Ponnusankar S, Surulivelrajan M, Anandamoorthy N, *et al*. Assessment of impact of medication counseling on patients' medication knowledge and compliance in an outpatient clinic in South India. Patient Educ Couns,2004;54:55–60.
18- Gascon JJ, Sanchez-Ortuno M, Llor B, *et al*. Treatment Compliance in Hypertension Study Group. Why hypertensive patients do not comply with the treatment: results from a qualitative study. Fam Pract, 2004;21:125–30.
19- Svensson S, Kjellgren KI & Linell P. Negotiating side effects in follow-up appointments for hypertension. Manuscript, 2013;45(2):203-8.
20- DiMatteo MR. Social support and patient adherence to medical treatment: a meta-analysis. Health Psychol, 2004; 23: 207–18.
21- Moore PJ, Sickel AE, Malat J, *et al.* Psychosocial factors in medical and psychological treatment avoidance: the role of the doctor-patient relationship. J Health Psychol, 2014; 9:421–33.
22- Vlasnik JJ, Aliotta SL & DeLor B. Medication adherence: factors influencing compliance with prescribed medication plans. Case Manager. 2005; 16 : 47–51.
23- Hashmi S, Afridi M, Abbas K, *et al*. Factors Associated with Adherence to Anti-Hypertensive Treatment in Pakistan. Plos one, 2007; 2(3): e280.
24- Daniel W. Biostatistics; A foundation for analysis in the health sciences 10th edition. Hoboken, NJ : Wiley, 2013.
25- Dong CH, He MM, Fan CS, Wang D. Medication compliance status in patients with hypertension and its associated factors in urban China. Value in Health, 2013; 16(3): A290.
26- Ong KL, Cheung BM, Man YB, Lau CP, Lam KS. Prevalence, awareness, treatment, and control of hypertension among United States adults 1999-2004. Hypertension, 2007; 49(1):69-75.
27- Almas A, Hameed A, Ahmed B, *et al*. Compliance to antihypertensive therapy. JCPSP, 2006;16:23-26.
28- Nazir, A., Muhammad ,A., Syed, H. S. *et al.* Compliance to antihypertensive drugs, Salt restriction, Exercise and Control of systemic hypertension in hypertensive patients at Abbottabad. Ayub med, 2008; 20(2): 66-68.
29- Fatmah Alsolami, Ignacio Correa-Velez, Xiang-Yu Hou. Factors Affecting Antihypertensive Medications Adherence among Hypertensive Patients in Saudi Arabia. Am J of Med and Medical Sci, 2015; 5(4): 181-89.
30- Shindala ZM . Compliance and knowledge of hypertensive patients in Mosul. Annals of the College of Medicine, 2001; Mosul, 27(2): 77-82.
31- Altawil NG. Hypertension control among a group of Iraqi patients. Iraqi J Med Sci, 2000;1(1):71-77.

32- Safaa H. and Ali A. Hypertensive Patients Compliance with Medications in Marjan Teaching Hospital/ Babylon. Medical Journal of Babylon, 2015; 12: 3, 592-602.
33- Benson J, Britten N. Patients' decisions about whether or not to take antihypertensive drugs: qualitative study. Br Med J, 2002;325:873.
34- Abu-Irmaileh, B.E. and Afifi, F.U. Herbal Medicine in Jordan with Special Emphasis on Commonly Used Herbs. Journal of Ethnopharmacology, 2003; 89, 193-197.
35- AlBraik, F.A., Rutter, P.M. and Brown, D. A Cross-Sectional Survey of Herbal Remedy Taking by United Arab Emirate (UAE) Citizens in Abu Dhabi. Pharmacoepidemiology and Drug Safety,2008; 17, 725-32.
36- Elzubier AG, Husain AA, Suleiman IA, Hamid ZA. Drug compliance among hypertensive patients in Kassala, Eastern Sudan. East Mediterr Health J, 2010; 6: 100–05.
37- Hadi N, Rostami-Gooran N. Determinant factors of medication compliance in hypertensive patients of Shiraz, Iran. Arch Iranian Med, 2004; 7(4): 292-96.
38- Cooper C, Carpenter I, Katona C, *et al*. The AdHOC study of older adults' adherence to medication in 11 countries. Am J Geriatr Psychiatry, 2005; 13: 1067–76.
39- Bovet P, Burnier M, Madeleine G, *et al*. Monitoring one-year compliance to antihypertension medication in the Seychelles. Bulletin of the World Health Organization, 2002; 80(1): 33-39.
40- Al-Banna HI, Mohmed LH. Compliance and Knowledge of Hypertensive Patients Attending Shorsh Hospital in Kirkuk Governorate. The Iraqi Postgraduate Medical Journal, 2010; 9 (2): 145-50.
41- Cutrona SL, Choudhry NK, Fischer MA, *et al*. Targeting cardiovascular medication adherence interventions. J Am Pharm Assoc, 2012; 52: 381–97.