Factors Affecting Treatment Compliance of Hypertensive Patients in Erbil City

العوامل المؤثرة على التزام المرضى المصابين بارتفاع ضغط الدم للعلاج في مدينة اربيل

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الخلاصة
خلفية البحث : إن عدم التزام المريض بالعلاج يعتبر من العقبات الرئيسية لنجاح علاج ارتفاع ضغط الدم وعدم السيطرة ارتفاع ضغط الدم في جميع أنحاء العالم.
الهدف : تهدف الدراسة إلى تقييم مستوى امتثال المريض المصاب بارتفاع ضغط الدم إلى للعلاج والتعرف على العوامل المؤثرة في امتثال المريض يُساهمُ في إلتزامِ سيّئِ بين إرتفاع ضغط الدمِّ في مدينةِ أربيل
المنهجية: دراسة مقطعية اجريت على200 مريض مصاب ضغط الدم في عام 2014، ولجمع البيانات تم تصميم استبانة لغرض تحقيق الهداف الدراسة وتم جمع المعلومات من المرضى من خلال المقابلة الشخصية . وشمل الاستبيان على ذلك المعلومات الديموغرافية والامتثال لنموذج علاج ضغط الدم تم تحليل البيانات باستعمال الإحصاء الوصفي والاستنتاجي
النتائج : تيجة الدراسةِ أشارتْ إلى 45٪ من مرضى ارتفاع ضغط الدم كانت الامتثال للعلاج في حين أن 55٪ منهم عدم الامتثال .العامل الرئيسي لعدم الامتثال هو النسيان .كان هناك علاقة معنوية بين مستوى الامتثال والعمر (P = 0.000)، والجنس (P = 0.003)ومستوى التعليم (P = 0.000)، ومدة العلاج (P = 0.000)، ومدة ارتفاع ضغط الدم (P = 0.003
وكان هناك علاقة مهمة وإيجابية عالية بين الامتثال و فائدة من العلاج و مانع من العلاج و وشدة المرض و التعرض للمضاعفات . أخيرا أقوى مؤشر هو تذكير من خلال النصيحة من الممرضات.
الاستنتاج: حسب نتائج الدراسة أن أكثر من نصف مرضى ارتفاع ضغط الدم عدم الالتزام للعلاج
التوصيات: يجب أن الممرضات إعطاء برنامج تعليمي لمرضى ارتفاع ضغط الدم على الامتثال للعلاج
الكلمات الرئيسية: ارتفاع ضغط الدم، والامتثال، مدينة أربيل

Abstract
Background and objectives:
Non-compliance to treatment is the major obstacles to the success of the treatment of hypertension and poor control of hypertension in worldwide. The objective of this study was to assess the level of compliance to treatment and identified factors contributing to poor compliance among hypertensive in Erbil city.
Materials and Methods: a cross sectional study design was undertaken among 200 hypertensive in 2014, to collect the data, patients who met the inclusion criteria were selected and questionnaires were filled through interviewing. The questionnaire including demographic information and compliance to treatment, data analysis though descriptive and inferential statistical tests.
Result: shows that 45% of hypertensive patients were compliance to the treatment while 55% of them were non-compliance. Major factor for non-compliance is forgetfulness. There was a significant association between level of compliance and age (p=0.000), gender (p=0.003), level of education (p=0.000), duration of treatment (p=0.000), and duration of hypertension (p= 0.003) .also there was highly significant and positive relationship between compliance and benefit of treatment, barrier of treatment, severity of disease and susceptibility to complication. Finally the strongest predictor was reminder (cues of action) by advice from nurses.
Conclusion: According result of the study more than half of hypertensive patients were not compliance to treatment
Recommendation: Nurses should give education program to hypertensive patients about treatment compliance
Key words: hypertension, compliance, Erbil city

INTRODUCTION

Hypertension is an important public health challenge worldwide. Prevention, detection, treatment, and control of this condition should receive high priority. Hypertension is defined as an average systolic blood pressure 140 mm Hg or greater, diastolic blood pressure 90 mm Hg or greater [1, 2]. It is a silent killer disease, a time bomb in both the developed and developing nations of the world. It is bone of the most significant risk factors

for cardiovascular (CV) morbidity and mortality resulting from target-organ damage to blood vessels in the heart, brain, kidney, and eyes [3.] The World Health Organization (WHO) has estimated that the high blood pressure cause 7.1 million deaths annually, accounting for 13% of all deaths globally [4].

Uncontrolled hypertension is caused by non adherence to the antihypertensive drugs, patients understanding their drug regimens help to improve their adherence, thus will help prevent the complications of hypertension which are debilitating and if not prevented can increase the burden of a disease that is already on the increase [5]. Non-adherence to prescribed drugs schedule has been continues to be a major problem in the world over. Studies on this subject show that adherence is about 50% for medications in chronic diseases including hypertension and much lower for lifestyle prescriptions [6].

Poor adherence to long-term therapies severely compromises the effectiveness of treatment making this a critical issue in population health both from the perspective of quality of life and health economics. Interventions aimed at improving adherence would provide a significant positive return on investment through primary prevention of risk factors and secondary prevention of adverse health outcomes [7].

Little studies has been documented on the cause of poor compliance, therefore this study aimed to assess factors affecting treatment compliance which guided by the use of Health Belief Model variables among hypertensive patients in Erbil city .The findings of this study will be used to increase the scientific knowledge base to the scientific world, also, the findings will be used to in practice with the aim of planning interventions to improve patient compliance to antihypertensive therapy to reduce the impact of hypertension and complications.

PATIENTS AND METHODS:

A cross sectional study design was used to assess factors affecting treatment compliance among hypertensive patients in General Teaching Hospitals in Erbil city. To find out the factor affecting on patients compliance for treatment, a non probability (purposive) sample was used to select among hypertensive patients who are using antihypertensive treatment according to the following criteria patients who agreed to participate the study, medical diagnosis of hypertension, age more than 18 years old and have been taking antihypertensive treatment for at least past one month ago. Data were collected through the use of questionnaire; it was developed by the researcher that adapted health believes model and review literature .It was modified based on advice of experts to applicable and specific to hypertension. The questionnaire consist of demographic data of the patients such as age, gender, level of education, marital status, residential area and medical data include number of medication, duration of treatment per year , duration of disease, frequency of medication intake per day.

Treatment compliance was composed of 8 items, each item are rated four point scales (never, rarely, sometime and regularly). The total score for each patient could range from 8 (minimum) and 32 (maximum). Lower scores would reflect compliance to treatment. Also, the questionnaire highlighted perception of severity; perception of susceptibility; perception of benefits; perception of barriers and cues to action each part consist of five items that participants were asked to respond: (1) strongly agree, (2) agree, (3) disagree and (4) strongly disagree [8].Data analysis was performed using SPSS 19 version information was summarized using frequency tables and cross tabulations. The chi-square test was used to compare proportions; bivariate correlation (Pearson correlation) analysis was done. Multivariate analysis was done using Linear Multiple regression to obtain strongest predictor variable

between variables of HBM (health believe model), P-value of equal or less than 0.05 was considered a statistically significant.

RESULTS

Table 1: Distribution of patients by Characteristics data

Demographic and medical data		N (%)
Age	≤45	39 (19.5)
	46-55	46(23)
	56-65	71(35.5)
	>65	44(22)
Gender	Male	132(66)
	Female	68(34)
Level of education	Illiterate	131(65.5)
	Read & Write	14(7)
	Primary	41(20.5)
	Secondary	14(7)
Blood pressure	<120/<80	4(2)
	120-139/85-89	31(15.5)
	140-159/90-99	71(35.5)
	≥160/≥=100	94(47)
Family history	yes	88(44)
	no	112 (56)
Number of medication	one	140(70)
	two or more	60(30)
Duration of treatment	≤ 10	116(58)
	>10	84(42)
Frequency of medication	once	153(76.5)
	twice or more	47(23.5)
Duration of hypertension	≤10	108(54)
	>10	92(46)

Table 1. revealed that the 200 hypertensive patients were assessed. There were 66% male and 34 % female with a mean age of 58.07±12.39 age range from (≤45->65) years and (65.5%) were illiterate in contrast (7%) of them their education was secondary school. More than half of patients were had no family history of hypertension. Concerning measurement of blood pressure the highest percentage (47%) of patients had hypertension stage I (>160/>100 mmHg) while lowest percentage (2%) had normal blood pressures (<120/<80). Most of hypertensive patients their duration of disease were less than ten years. More than half of them used one medication per day for more than ten years.

Table 2: Distribution of patients by reason of not compliance with medication

Treatment Compliance N 200	Never No%	Rarely No%	Sometime No%	regularly No%	Mean
Forget to take your medicine	8(4)	63(31.5)	22(11)	107(53.5)	3.14
Stop medicine when feel better	11 (6.5)	180 (90)	3(1.5)	6(3)	1.94
Stop medicine to avoid addiction	127 (63.5)	17 (8.5)	35(17.5)	21(10.5)	1.75
Stop medicine by side-effects	113(56.5)	9(4.5)	46(23)	32(16)	1.99
Try out alternative remedies	31(15.5)	61(31.5)	72(36)	36(18)	1.85
Lack of discipline to comply dietary	24 (12)	88 (44)	76 (36)	12(6)	2.38
Lack of motivation to stop smoking	121(60.5)	14(7)	39(19.5)	26(13)	2.56
Not having enough time to exercise	31(15.5)	66(33)	70(35)	33(16.5)	2.52

Table 2. shows the level of treatment compliance among hypertensive patients. Higher mean score consider non-compliance to treatment include forget to take your medicine , lack of discipline to comply dietary, not having enough time to exercise, lack of motivation to stop smoking (3.14, 2.56, 2.52,2.38) respectively.

Table 3.Multivariate linear regression of Health Believe Model

Health believe model variables	Beta	Sig.
Benefit	-.080	.526
Barrier	.138	.324
Severity	.155	.204
Susceptibility	.265	.055
Cues of action (reminder)	-.181	.017
R =0.16 F=7.42, p=000		

Table 3. Shows multivariate analysis indicated significant model fit for the data (F = 7.42 and P value = 0.000). The amount of variance in treatment compliance that is explained by the predictors is (R^2 = 0.16) with cues of action being the strongest predictor of treatment compliance (β = -0.181; P = 0.017). Beta coefficient indicates a negative association between cues of action and treatment compliance. Other predictor variables were not statistically associated with treatment compliance.

Table 4.Multivariate linear regression of cues of action (reminder) variable

Cues of action (reminder) variables	Beta	Sig.
TV programmers about high blood pressure	.199	.090
Advice from family member	-.012	.897
Advice from doctor	-.029	.691
Advice from nurse	-.253	.002
Advice from friends	-.114	.208
R =0.05, F=2.32 , p=004		

Table 4. show finding of study indicated significant model fit for the data (F = 2.33 and P value = 0.004). The amount of variance in treatment compliance that is explained by the predictors is R^2 = 0.05 with advice from nurse being the strongest predictor of treatment compliance (β = -0.253; P = 002). Beta coefficient indicates a negative association between

advice from nurse and treatment compliance. Other variables were not statistically associated with treatment compliance.

Table 5. Pearson correlation between compliance and Health believe model

Variables	1	2	3	4	5	6
1-Compliance	-	.225**	.321**	.315**	.286**	-.053
		.001	.000	.000	.000	.453
2-Benefit		-	.520**	.476**	.818**	.316**
			.000	.000	.000	.000
3-barrier			-	.780**	.627**	.341**
				.000	.000	.000
4-severity				-	.406**	.096
					.000	.175
5-Susceptibility					-	.344**
						.000
6-Cues of action						-

HBM (health believe model) ** High significant

Table 5. The findings revealed that there were relationship between the compliance and perceived benefit(r = 0.225; P= 0.001), perceived barrier to treatment (r = 0.321; P = 0.000), severity of disease (r= 0. 315; P = 0,000) and perceived susceptibility to complication (r = 0.286; P= 0.000) . Also, there were relationship between the benefit to treatment and barrier to treatment (r = 0.52; P= 0.000), severity of disease (r = 0.47; P= 0.000), susceptibility to complication (r = 0.81; P= 0.000) and cues of action (r = 0.31; P= 0.000) . Moreover, there were relationship between barrier to treatment and severity of disease (r = 0.78; P= 0.000), susceptibility to complication (r = 0.62; P= 0.000) and cues of action (r = 0.34; P= 0.000). Furthermore, there were relationship between the severity of disease with susceptibility to complication (r = 0.40; P= 0.000) and cues of action (r = 0.96; P= 0.000). Finally there were relationship between susceptibility to complication and cues of action (r = 0.34; P= 0.000)

Table 6. Distribution of patient's data by treatment compliance

Characteristics N 200		Non compliance	Compliance	df	Sig Chi-square
Age	<45	23 (59)	16(41)	3	.000 20.03
	46-55	23(50)	23(50)		
	56-65	37(52.1)	34(47.9)		
	>65	7(16)	37(84)		
Gender	Male	48(30.3)	84(63.7)	2	0.01 11.70
	Female	42(61.7)	26(38.3)		
Level of education	Illiterate	39(30)	92(70)	3	.000 48.77
	Read & Write	5(36)	9(64)		
	Primary	37(90.2)	4(9.8)		
	Secondary	9(64)	5(36)		
Family history	yes	43(48.9)	45(51.1)	1	0.33 0.94
	no	47(42)	65(58)		
Number of medication	one	65(46.4)	75(53.6)	1	0.53 0.38
	two or more	25(42)	35(58)		
Duration of treatment	≤ 10	34(29.3)	82(70.7)	1	000 27.47
	>10	56(67)	28(33)		
Frequency of medication	once	71(46.4)	82(53.6)	1	0.47 0.51
	twice or more	19(40.4)	28(59.6)		
Duration of hypertension	≤10	37(34.2)	71(65.8)	1	.001 10.94
	>10	53(58)	39(42)		

Table 6. illustrate that the there was a significant association between highest percentage (84%) participants who were in the age group of more than 65 years which had higher treatment compliance compared to lowest percentage (41%) were age group of less than 45 years .Also, the study revealed that there was a significant association between gender and treatment compliant, male had higher proportion of treatment compliant (63.7%) than female (38.3%). Moreover, there was statistically significant proportion observed between treatment compliance and level of education, (70%) participants had no formal education which higher proportion of treatment compliance compared to lowest percentage (9.8%) those with primary school education. Furthermore, the result of study shows that there was a significant proportion between duration of treatment and treatment compliance; highest percentage (65.8%) patients had disease from less than 10 years which higher treatment compliance as compare lowest percentage (42%) patients had the disease from more than 10 years.

DISCUSSION

The result of present study revealed the proportional of non treatment compliance was 55%. It is supported with study which showed that 51.7 % of hypertensive patients were non compliant to treatment [9]. Forget to take your medicine is most of the factor for non compliance to treatment, it is possible means should be taken to enhance patients' memory, to keep to the dosing regimen for their medications. Steps should be taken by health care professionals through counseling sessions to help patients organize their medication taking. For example, this could be achieved by planning for medication taking to correspond with

certain activities, such as eating meals, or by setting alarms to go off at medicine-taking time during the initial stages of their therapy.

Also, the study showed that patients older than 65 years were more compliance than younger patients. This probably reflects the traditional emphasis on family care for the elderly in the community when the disease is more frequently associated with more severe symptoms and complications. Similar result has been observed in studies [10,11]. The result revealed that male patients were more compliant than female. This is inconsistent with another study on patients' adherence to hypertensive medication by Schoberberger in 2002 who found that the incidence of adherence was significantly lower in male patients[12]. Nevertheless, identifying groups of patients in a population that tends to have more problems with medication adherence enables more targeted efforts toward improvement, for example, from this study, male or very old patients (above 70 years old) can be targeted.

Compliance rate was higher among patients with a low level of education, this result supported by study have been observed that uneducated patients or those with lower educational level might have more trust in physician's advice. From these results, it seems that educational level may not be a good predictor of therapeutic adherence[13]. But the reverse was found in developed countries[14], this might indicate that poor people with low education might be more easily motivated to treatment by doctors, media and colleagues in developing countries. The present study showed that compliance score was higher in those patients who had hypertension for less than 10 years. The rate of compliance was low in the newly diagnosed patients. This might partially be due to the fact that young patients are more afraid of taking a life long medication than patients in older age group. It might also be, as mentioned earlier, that the course of the disease is usually more severe in old age group [15.]

CONCLUSION

The study showed that higher proportion of treatment compliant among older age, female, low level of education, lesser duration of treatment and longer duration of hypertension. There was a significant association between level of compliance and age, gender, level of education, duration of treatment, and duration of hypertension and there was highly significant and positive relationship between compliance with benefit, barrier to treatment, severity of disease and susceptibility to complication.

RECOMMENDATION:

1. Nurses should give heath education to patients about treatment compliance in discharge planning.
2. Further research should be integrated qualitative study to gain deeper insight about each factor and increase mass media.

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