

Impact of hypertension education on treatment compliance among hypertensive patients in Baghdad 2017

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Abstract

Objective: To determine the effect of short education session on drug compliance on hypertensive patients visiting primary healthcare centres.

Methods: The interventional study was conducted from January to May, 2017, at 10 primary healthcare centres that were selected through multi-stage random sampling from those functioning under the Baghdad/Al-Rusafa Health Directorate, Baghdad, Iraq. Those included were patients aged 20-79 years diagnosed with hypertension with a history of at least one year. The subjects were divided into two intervention, and control groups. After baseline interviews regarding compliance with medical treatment. In each visit, 3-4 patients were selected, and were exposed to the education session about the risks of untreated hypertension, and they were given an appointment for one month later to measure their compliance rate. In the control group, the compliance rate was measured twice within a month. Data was analysed using SPSS 24.

Results: Of the 600 subjects, there were 300(50%) in each of the two groups. The compliance rate increased significantly within the intervention group ($p=0.0001$) and also in comparison with the controls ($p=0.0001$). Apart from medicines per day, all other factors showed non-significant association with compliance rate.

Conclusions: The health education session caused significant improvement in the rate of compliance with drug regimen in hypertensive patients.

Keywords: Compliance, Education session, Hypertension. (JPMA 69: S-9 (Suppl. 3); 2019)

Introduction

Hypertension (HTN) is a major public health problem in both the developed and the developing countries,¹ and good control of the disease has always been considered essential for reducing the related morbidity and mortality.²

Many researchers believe that one of the major causes of uncontrolled blood pressure (BP) is failure to take medication as prescribed and this has been recognised as a major public health concern which contributes to patient morbidity, mortality and healthcare costs.³

In the Eastern Mediterranean region, HTN affects 20-26% of adult population >35 years of age.⁴ In Iraq, a survey about the risk factors of non-communicable diseases conducted in 2006 showed HTN prevalence of 40.4%,⁵ while the last survey conducted in 2015 showed the prevalence at 35.6%.⁶

HTN is not only the most common, but is also one of the most important modifiable risk factors for coronary heart disease, stroke, congestive heart failure, chronic renal

disease, and peripheral vascular disease.^{7,8}

A study demonstrated that educational interventions increased participants' levels of knowledge about HTN and had a positive influence on their beliefs about medicines.⁹ Through specific education, misconceptions that the patients have about their therapy can be clarified. This can influence adherence to the therapy, and, therefore, may potentially lead to improved BP control.^{10,11}

The current study was planned to assess the effect of short education sessions about HT on improving compliance with medical treatment among HTN patients attending primary healthcare centres (PHCs).

Patients and Methods

The interventional study was conducted from January 2 to May 31, 2017, at 10 PHCs functioning under the Al-Rusafa Health Directorate, Baghdad, Iraq. The PHCs were selected through multi-stage random sampling. The Baghdad Governorate has two directorates: Al-Rusafa, and Al-Karkh. The former was chosen by simple random sampling technique. The Directorate has 10 health sectors, and each sector has 10-12 PHCs. From each sector, a single PHC was chosen using simple random sampling, and from each PHC, a similar number of

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patients were chosen in order to ensure similarity, and to avoid selection bias.

Patients of either gender were selected using convenience sampling from among those aged 20-79 years and diagnosed with HTN with a history of at least one year of receiving medical treatment. Females with pregnancy-induced HTN were excluded. The subjects were divided into intervention and control groups that were matched for age, gender, education level and marital status.

After written informed consent from the participants, data was obtained through direct interviews. Socio-demographic data included age, gender, marital status, level of education, family history and smoking status, as well as any history of other chronic diseases and duration of the disease. Also noted were the number of drugs, and the number of doses per day. Compliance was recorded as 'good' when the patient was found to be taking all medications in accordance with the prescription; 'medium' if 1-3 doses per month were missed; and 'poor' when more than three doses per month were missed.

Patients' medical files were subsequently scrutinised to see the date of their previous visits and whether he/she had attended the clinic on the committed date.

The patients who finished the interview were put together in groups of 3-4 patients. They researcher were given a short education session about the nature, HTN, and the benefit of compliance with medical treatment on their health. The session was in the form of a short video

lasting about 5 minutes, and the patients were encouraged to ask questions that were answered by the researchers. All such patients were given an appointment for one month later when the compliance rate was re-assessed.

In the control group, compliance to medical treatment was assessed in a similar way as illustrated in the intervention group, but they were given the appointment for one month later without being exposed to the education session.

Data was analysed using SSPS 24, and was presented as frequencies and percentages. The significance of difference in qualitative data was tested by using Pearson Chi-square test and statistical significance was set at $p < 0.05$.¹²

Results

Of the 600 subjects, there were 300(50%) in each of the two groups. There was no significant difference at the baseline, but at one-month follow-up, there was a significant difference between the two groups ($p=0.0001$) (Table-1). There was highly statistically significant improvement in the intervention group compliance rate within the group itself as well as in comparison with the control group which showed non-significant improvement on its own ($p=0.87$) (Table-2).

The number of drugs taken daily by the patients was the only factor showing significant improvement in terms of compliance rate (Table-3).

Table-1: The distribution of intervention and control groups according to compliance rate with medical treatment (n=600).

		Intervention group		Control group		P value
		No	%	No	%	
Compliance	Poor-Medium	115	38.3	132	44	0.158
	Good	185	61.7	168	56.0	
Improve after education programme	Good	268	89.3	170	56.7	0.0001*
	Medium -poor	32	10.7	130	43.3	

*Significant association using Pearson Chi-square test at 0.05 levels.

Table-2: The distribution of intervention group according to compliance rate before and after education, in comparison with the control group at baseline and at one-month follow-up.

		Intervention group		Control group	
		No	%	No	%
Compliance	Good	185	61.7	168	56
	Medium-poor	115	38.3	132	44
Improve after education programme	Good	268	89.3	170	56.7
	Medium-poor	32	10.7	130	43.3
p-value		0.0001		0.87	

*Significant association using Pearson Chi-square test at 0.05 levels.

Table-3: Follow-up findings in both the intervention and control groups.

After education program	Intervention group	Control group									
		Improved		Not		Improved		Not		Loss of follow-up	
		No	%	No	%	No	%	No	%	No	%
Smoking status	Smoker	11	13.3	6	18.75	1	5.6	14	18.9	8	20.0
	Non-smoker	72	86.7	26	81.25	17	94.4	60	81.1	32	80.0
	P value	0.457	0.357								
Family history of Hypertension	Yes	54	65.1	20	62.5	12	66.7	44	59.5	28	70.0
	No	29	34.9	12	37.5	6	33.3	30	40.5	12	30.0
	P value	0.797	0.514								
History of chronic diseases	Yes	55	66.3	23	71.9	12	66.7	45	60.8	29	72.5
	No	28	33.7	9	28.1	6	33.3	29	39.2	11	27.5
	P value	0.564	0.453								
Number of drugs taken daily	One	64	77.1	28	87.5	13	72.2	59	79.7	32	80.0
	Two	18	21.7	2	6.25	5	27.8	13	17.6	7	17.5
	Three more	1	1.2	2	6.25	-	-	2	2.7	1	2.5
	P value	0.05	0.835								
Number of doses of drugs taken daily	Single	63	75.9	26	81.25	13	72.2	59	79.7	32	80.0
	Twice	19	22.9	4	12.5	5	27.8	13	17.6	7	17.5
	Multiple	1	1.2	2	6.25	-	-	2	2.7	1	2.5
	P value	0.166	0.835								
Duration of disease (years)	<5 y	40	48.2	15	46.9	8	44.4	37	50.0	17	42.5
	5-9 y	18	21.7	10	31.2	7	38.9	20	27.0	12	30.0
	=>10 y	25	30.1	7	21.9	3	16.7	17	23.0	11	27.5
	P value		0.487					0.796			

Discussion

The results showed there was a significant increase in the compliance rate of patients in the intervention group, as 'good' compliance rate increased from 61.7% to 89.3%, proving that the education session was effective. This result is in agreement with results reported from China,¹³ Egypt¹⁴ and the United Kingdom.¹⁵ The smoking status was not significantly associated with compliance rate in the current study. This result is in agreement with results found in Iraq,¹⁶ Central Europe¹⁷ and Iran.¹⁸ However, a study in Saudi Arabia showed contrasting results.¹⁹ Also, HTN family history did not show any significant association with compliance rate in the current study which is in disagreement with earlier results.²⁰ This is an indication that family history did not serve as a source of motivation to encourage the patients to increase their compliance with medical treatment.

Also, there was non-significant association between histories of other chronic diseases with the compliance rate. This result is in disagreement with results reported from the United States²¹ and Canada.²²

There was a significant association between the number of drugs taken daily by the patients and the compliance rate. The current result is in agreement with those of studies done in Central Europe and Pakistan.²³ Before the intervention, the compliance rate in the current study was nearly equal in all patients whether they were taking one, two or more drugs, but after the education session, compliance rate increased in most patients but the highest compliance rates were recorded in patients on a single drug. In fact, HTN patients using one type of drug treatment are usually more compliant than patients taking two or more drugs due to many reasons that include forgetfulness and depressive mood that make patients feel tired from ingestion of several drugs.

Concerning the number of drug doses taken daily by the patients, there was non-significant association between the number of doses taken daily with the compliance rate. The finding is in agreement with earlier results from Pakistan.²⁴

Moreover, there was non-significant association between duration of the disease and the compliance rate, which is

in agreement with results reported from Pakistan, but in contrast with a study in Iran.²⁵ The explanation is that after the education sessions, most patients with different durations responded well to the intervention, and the compliance rate was raised significantly in all duration-based sub-groups.

Conclusion

The education session led to increase in the compliance rate significantly, proving the importance of health education in increasing patients' compliance with the medical treatment of HTN.

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Conflicts of Interest: None.

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References

1. Al-Gareeb AI. Effect of hawthorn extract on blood pressure and lipid profile in patients with stage I hypertension: A placebo-controlled, double-blind randomized trial. *Mustansiriya Med Journal* 2018;11:52-7.
2. Nguyen Q, Dominguez J, Nguyen L, Gullapalli N. Hypertension management: an update. *Am Health Drug Benefits* 2010;3:47-6.
3. Osamor PE, Owumi BE. Factors associated with treatment compliance in hypertension in southwest Nigeria. *J Health Popul Nutr* 2011;29:619-28.
4. Alwan A, Maclean DR, Riley LM, d'Espaignet ET, Mathers CD, Stevens GA, et al. Monitoring and surveillance of chronic non-communicable diseases: Progress and capacity in high-burden countries. *Lancet* 2010;376:1861-8.
5. The World Health Organization. Chronic Non-Communicable Diseases Risk Factors Survey in Iraq 2006: A Stepwise Approach. [Online] 2006 [Cited 2019 January 12]. Available from URL: <https://www.who.int/ncds/surveillance/steps/iraq/en/>
6. Al-Badri HJA. National STEPs survey of non-communicable diseases risk factors in Iraq. Directorate of Public Health, Ministry of Health (MOH). [Online] 2015 [Cited 2019 January 12]. Available from URL: <https://www.who.int/ncds/surveillance/steps/iraq/en/>
7. Waheed HJ, Hadi HAR, Shafek MA. Vascular Endothelial Growth Factor as Predictive Marker for Hypertension in Iraqi Adults Patients. *Mustansiriya Med J* 2018;15:4.
8. The World Health Organization. In: Khatib OM, El-Guindy MS, eds. *Clinical guidelines for the management of hypertension: EMRO Technical Publications Series 29th*. Cairo: Egypt, WHO Press, 2005; pp 97.
9. Ramezankhani A, Pooresmaeili A, Rakhshandehrou S, Khodakarim S. Impact of educational intervention on high blood pressure-related knowledge, attitude and preventive behavior among women in Islamshahr City. *J Health in the Field* 2016;4:28-34.
10. Ribeiro CD, Resqueti VR, Lima Í, Dias FA, Glynn L, Fregonezi GA. Educational interventions for improving control of blood pressure in patients with hypertension: a systematic review protocol. *BMJ Open* 2015;5:e006583.
11. Zhang K, Eastwood D, Ertl K, Whittle J. Educational attainment does not modify the effect of educational interventions on blood pressure control: a secondary analysis of data from a randomized trial. *JRSM Open* 2016;7:e2054270416654359.
12. Daniel WW, Cross CL. *Biostatistics: A Foundation for Analysis in the Health Sciences* 10th ed. Hoboken NJ: John Wiley & Sons, 2013; pp 777.
13. Lu CH, Tang ST, Lei YX, Zhang MQ, Lin WQ, Ding SH, et al. Community-based interventions in hypertensive patients: a comparison of three health education strategies. *BMC Public Health* 2015;15:33.
14. Awad EY, Gwaied BE, Fouda LM, Essa HAE. Compliance of hypertensive patients with treatment regimen and its effect on their quality of life. *Nurs Health sci (IOSR-JNHS)* 2015;4:26-36.
15. White H. The role of patient education in improving treatment compliance in hypertension. *Medicographia* 2010;33:290-93.
16. Abdul?Ridha H, Al?Ruba'ee HF, Abdul Wahab HA. The effect of smoking on some microvascular complications in type 2 diabetics. *Mustansiriya Med J* 2010;9:35-9.
17. Fodor GJ, Kotrec M, Bacskai K, Dorner T, Lietava J, Sonkodi S, et al. Is interview a reliable method to verify the compliance with antihypertensive therapy? An international central-European study. *J Hypertens* 2005;23:1261-6.
18. Kamran A, SadeghiehAhari S, Biria M, Malepour A, Heydari H. Determinants of patient's adherence to hypertension medications: application of health belief model among rural patients. *Ann Med Health Sci Res* 2014;4:922-7.
19. Mahmoud MIH. Compliance with treatment of patients with hypertension in AlmadinahAlmunawwarah. A community-based study. *J Taibah Univ Sci* 2012;7:92-98.
20. Jeong H, Kim H, Lee K, Lee JH, Ahn HM, Shin SA, et al. Medical visits, antihypertensive prescriptions and medication adherence among newly diagnosed hypertensive patients in Korea. *Environ Health Prev Med* 2017;22:10.
21. Wang PS, Avorn J, Brookhart MA, Mogun H, Schneeweiss S, Fischer MA, et al. Effects of noncardiovascular comorbidities on antihypertensive use in elderly hypertensives. *Hypertension* 2005;46:273-9.
22. Natarajan N, Putnam W, Van Aarsen K, Beverley Lawson K, Burge F. Adherence to antihypertensive medications among family practice patients with diabetes mellitus and hypertension. *Can Fam Physician* 2013;59:e93-e100.
23. Bilal A, Riaz M, Shafiq NU, Ahmed M, Sheikh S, Rasheed S. Non-compliance to anti-hypertensive medication and its associated factors among hypertensives. *J Ayub Med Coll Abbottabad* 2015;27:158-63.
24. Almas A, Hameed A, Ahmed B, Islam M. Compliance to antihypertensive therapy. *J Coll Physicians Surg Pak* 2006;16:23-6.
25. Hadi N, Gooran NR. Determinant factors of medication compliance in hypertensive patients of Shiraz, Iran. *Arch Iranian Med* 2004;7:292-96.