

Effect of performing Collaborative Care Model on Controlling High Blood Pressure in patients referred to Semnan city's clinics, 2013.

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ABSTRACT

High blood pressure has become increasingly common between people and also it takes a major risk factor for many diseases. The present study is done to perform the collaborative care model in patients with high blood pressure. Hypertension is defined as: Systolic blood pressure (SBP) ≥ 140 mmHg or diastolic blood pressure (DBP) ≥ 90 mmHg. A collaborative care model is a native educating method based on patient's participation in the management of chronic disease. In this quasi-experimental study, 40 patients with high blood pressure (two equal groups of test and control) selected from two clinics in the city of Semnan in 2013, and they were evaluated using the targeted and simple random sampling. The checklists included demographic information (5 items), medical and smoking history (13 items), anthropometric parameters (3 items), laboratory measurements (6 items), diet (5 items), activities (7 items), dependent variables (5 items), cardiac complications (6 items), and frequency of doctor visits. The test group participated in intervention and participatory meeting every week. Collaborative care model, is comprised of 4 stages; motivation, preparation, involvement, and evaluation over 3 months of intervention. Evaluation was based on the following criteria: Hypertensive patients (systolic blood pressure higher than 140 mmHg and diastolic blood pressure above 90 mmHg, measured and approved in two different visits), to improve patient health and knowledge, to decrease risk factors for disease, and to increase satisfaction and quality of health care services before and after intervention. Descriptive statistics, the independent t-test, and chi-square test were calculated at a significance level of 5%. Body mass index, triglyceride level, diastolic blood pressure, and salt intake declined in the test group after intermediation. Although the consumption of bread and rice was decreased in the control group, but not in the test group. As previously described, performing the collaborative care model resulted in less catching high blood pressure, thus it can act as an efficient and cost-effective method for preventing and controlling high blood pressure.

Keywords: collaborative care model; high blood pressure; participation

INTRODUCTION

Hypertension, or high blood pressure (HBP), represents the leading single risk factor for overall mortality and in getting many diseases globally [1,2]. In 2014, statistics indicated that more than 26.6% of the Iranian population have got HBP, which is significantly higher than global statistics [3]. A mere three mmHg reduction in systolic blood pressure can decrease mortality caused by coronary artery disease and cerebral apoplexy by 5% and 8%, respectively [4].

The need of controlling HBP is of a great importance [5]. The annual consensus conference reviewing the world literature, including JNC7

program and the Cochrane database, has introduced lifestyle modification as a fundamental principle for HBP control [6]. In the other hand, Team-based approaches, which is composed of doctors and nurses can significantly enhance the quality of taking care of the patients and, more importantly, prognoses [7]. Moreover, these methods allow doctors to save extra time in order to do their duties perfectly [8]. Participation is the key to empower the patient's quality of life which is performed by training health providers [9]. The collaborative care model [10] was designed and utilized to control HBP for the first time in 2012. It is a native educating method based on

participation that is especially applicable to nursing [11]. Because of the high prevalence of HBP in Semnan-Iran, the present study is done to investigate the effect of collaborative care model on controlling HBP in patients [12].

METHODS

This quasi-experimental study examined 40 patients with HBP selected from two clinics in the city of Semnan in 2013. They were divided into test and control groups of equal size based on the same factors using targeted simple random sampling methods of encryption and random allocation. The criteria include: patients who have got HBP at least for 1 year and have records in the health centers. Also those who have no hearing and communication problems or patients who do not have an acute or advanced disease, such as cancer (that would affect the blood pressure control program) are included as criteria. In addition patient's willingness to participate in the intervention and repeated surveys within three months, was fully accentuated.

Patients who became deceased or those were diagnosed with a new disease during the study were excluded. The data instruments were checklists containing demographic information (5 items), medical and smoking history (13 items), anthropometric parameters (3 items), laboratory measurements (6 items), diet (including proteins, lipids, consumption of bread, rice, vegetables and fruits) and daily salt intake (5 items), activity (7 items). The dependent variable checklists were for blood pressure during the 3 months of intervention, neurological symptoms and complications (5 items), cardiac symptoms and complications (6 items), frequency of doctor visits, and hospitalization. The reliability and scientific validity of the questionnaire were confirmed by Cronbach's alpha at 0.76 and content validity, respectively.

First, test and control group's checklists were distributed among patients and were completed separately by reach of them. Performing the collaborative care model in the test group, involved intervention and participatory meetings each week to determine the conditions of the patients and the care team at Tadayyon Health Center in Semnan. The stages of collaborative care model implementation, which

lasted for three months, included phases of motivation, preparation, involvement, and evaluation. The motivation phase was conducted in three sessions for a total of three hours to: (a) review and correct understanding of the conditions and problems by help-seekers; (b) create equal awareness and understanding of the objectives; (c) familiarize members with their responsibilities in the care process; and (d) encourage the participants.

Also, the preparation phase was conducted in two sessions to: (a) set objectives for care problems and diagnoses; (b) plan participatory education and follow-up visits to coordinate care problems with the diagnoses; (c) prepare care intervention programs; and (d) pursue care and treatment programs. The involvement phase was carried out in four visits. In the first visit, the groups were trained by doctors and nurses for a maximum of 45 to 60 min after pressure control. After answering to questions, the time and place of the next visit were announced. Each training session was set up for four groups of five patients from the intervention group. In the second visit, blood pressure was measured, issues raised in the previous session were reviewed, questions were plotted, the importance of proper recording of blood pressure was taught, blood pressure record forms were handed out, and help-seekers were recommended to record their blood pressure at least once in a week. In the third, fourth and fifth visits, blood pressure was measured, issues from the previous meeting were reviewed, and questions were answered. In this 3-month period, the control group recorded blood pressure every month. Two participatory follow up meetings were held for the test group with the following goals: (a) determination of the primary responsibilities for the care and participatory team; (b) cooperation with the head of the group; and (c) training and follow-up visits.

The evaluation stage was based on patient's health improvements and knowledge, reduction in the incidence of the HBP risk factors, and promotion in satisfaction and the quality of treatment services before and after intervention for both groups using the checklists. Data analysis was implemented by applying descriptive statistics, independent t-test, chi-square, and SPSS (version 11) software with a significance level of 5%.

RESULTS

In this study, the test and control groups are included of 20 people with mean ages of 54.9 ± 5.97 and 55.0 ± 5.78 years ($p = 0.398$). The personal, social, and therapeutic characteristics of the participants are presented in Table and Figure 1. There is a significant relationship between the two groups. In Table and Figure 2 the effect

of the collaborative care model is displayed for the intervention and control groups according to different parameters.

The body mass index (BMI), triglyceride level, systolic and diastolic blood pressure significantly decreased in the test group after completion of intervention and increased in the control group.

Table 1. the personal, social, and therapeutic characteristics of the participants

		cases		Controls		p
		n	%	n	%	
Sex	Male	5	25	5	25	0.002
	Female	15	75	5	25	
marital status	Married	11	55	14	70	0.001
	Single	1	5	0	0	
	Widow	8	40	6	30	
education	Primary	2	10	1	5	0.001
	Tips	7	35	4	20	
	high School	11	55	15	72	
knowledge of the disease	Yes	11	55	10	50	0.002
	No	9	45	10	50	
treatment	Yes	10	50	12	60	0.001
	No	10	50	8	40	
control level	150-140 / 90-65	4	20	3	20	0.023
	160-150/95-90	14	70	13	65	
	≥160/95	2	10	4	15	
chief complaint	Headache	6	30	6	30	0.042
	Heartthrob	5	25	4	20	
	Random	9	45	10	50	
Blood pressuredrugs	Non	8	40	8	40	0.025
	≤1 year	4	20	6	30	
	>1 year	8	40	8	40	
pharmaceutical group	Diuretics	9	45	8	40	0.044
	beta-blockers	3	15	3	15	
	alpha-blocker	1	5	0	0	
	calciumchannelblockers	1	5	1	5	
	Other	6	30	12	60	
underlying disease	Diabetes	8	40	12	60	0.031
	kidney failure	1	5	0	0	
	Asthma	1	5	0	0	
	Angina	2	10	0	0	
	visual impairment	7	35	0	0	
	Other	1	5	8	40	

Table 2. Theeffect of the collaborative care model for the intervention and control groups according to different parameters

		before				after				p
		cases		controls		Cases		controls		
		means	s.d	means	s.d	means	s.d	means	s.d	
anthropometric	Height	160.05	6.65	160.15	6.47	160.05	6.65	160.15	6.47	0.760
	Weight	75.73	11.69	65.05	15.77	72.05	11.93	66.60	9.21	0.155
	BMI	28.70	5.58	26.35	2.62	24.80	5.37	26.45	2.50	0.026
laboratory	cholesterol	298.15	483.06	185.10	39.81	161.35	32.93	184.65	52.08	0.068
	LDL	85.95	26.91	86.20	29.74	76.25	27.69	91.15	28.69	0.409
	HDL	45.80	7.90	44.35	8.01	50.35	10.19	46.15	8.42	0.149
	TG	166.00	46.91	160.90	44.55	139.95	32.34	163.40	50.02	0.010
	FBS	134.40	26.44	126.05	31.15	124.25	17.40	125.10	25.98	0.102
diet	Proteins	17.25	1.77	17.65	1.63	19.75	1.29	18.00	1.21	0.682
	Fats	10.05	1.50	10.30	1.38	9.95	1.54	10.50	1.39	0.399
	bread and rice	3.00	0.00	3.05	0.22	3.00	0.00	2.85	0.67	0.041
	Vegetables	2.55	0.69	2.65	0.67	3.10	0.79	2.75	0.72	0.832
	Salt	2.80	0.77	2.50	0.83	1.05	0.22	2.50	0.83	0.001
	Activity	4.95	1.64	5.50	1.76	8.90	2.02	5.50	1.47	0.162
blood pressure	Systolic	165	7.77	158	9.51	139	8.97	152.5	12.61	0.254
	Diastolic	83.25	6.54	77.5	8.02	65	6.66	71.5	9.74	0.016

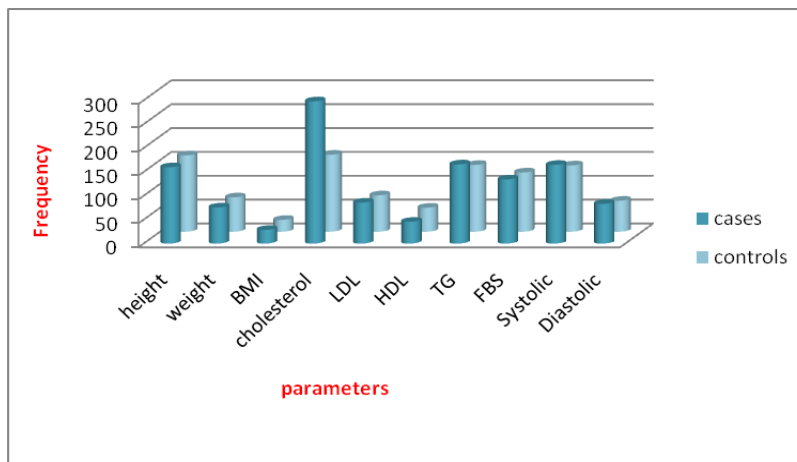


Figure 1. The effect of the collaborative care model for the intervention and control groups according to different parameters

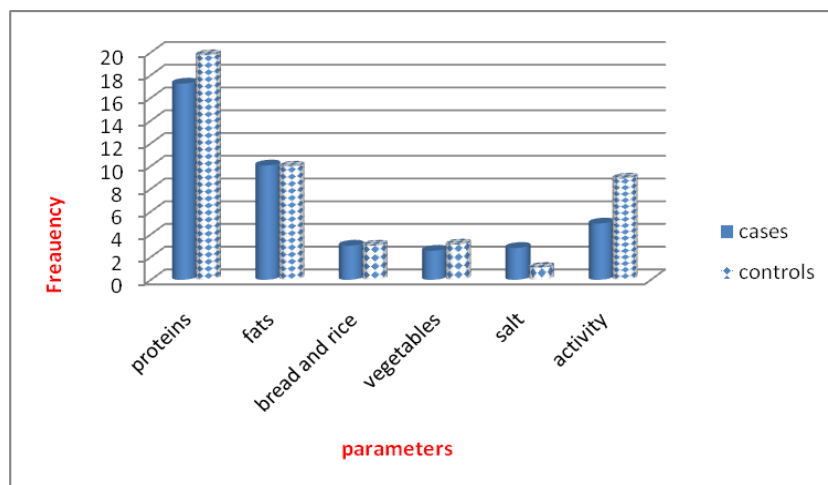


Figure 2. The effect of the collaborative care model for the intervention and control groups according to different parameters

But also no significant differences were seen in items such as eating vegetables, cereals and proteins in test group after intervention. Bread and rice consumption did not change in the test group, but decreased in the control group. Salt intake significantly decreased in the intervention group, but no difference was observed for the control group. According to above, the collaborative care model will cause better control and less risk of catching high blood pressure by reducing TG, BMI indirectly and salt intake directly.

DISCUSSION

To increase the effectiveness of preventive and therapeutic treatments of hypertension, health officials have suggested a variety of solutions, such as screening, providing advice to people at risk, and training and monitoring of the proper management of HBP risk factors [11, 13]. Moreover, monitoring HBP is necessary because of its prevalence [12]. As a result, the present study assessed the effect of collaborative care model on controlling or decreasing the risk of getting high blood pressure in patients referred to health centers in Semnan.

The results of several studies [11, 13-15] have shown that the association between drug treatments and methods such as collaborative care models significantly decreases HBP in patients. A similar study used intervention with a collaborative care model that led to a significant reduction in diastolic blood pressure [16]. McConnell et al. [5] stated that collaborative care models lowered blood pressure by 16 mmHg in patients in the intervention group. But in our study, the described model caused an average of 26 mmHg decrease in blood pressure. Thus, as reported, the blood pressure decrease in our study is obviously more than McConnell's research. The reason, is the effectiveness of training for HBP, including lifestyle modification, more interactive care and patient participation in HBP control, and increased awareness through a collaborative care model.

Dean et al. [7] have shown that 53 percent of patients, do not have proper control on their blood pressure while they have received general educations for. That this percentage is more than our study. Authors have believed variety of

barriers in performing methods to control blood pressure as the essential reason for this issue. They pay little attention to attend to meetings with a physician, regarding the study as suspicious and distrustful plan, lack of information about the nature of the disease and its complications, and lack of adequate treatment [17-19]. Also, participation and education of HBP patients are important for controlling their blood pressure [8]. The results of the present study demonstrated that salt intake, triglyceride level, and BMI were the factors affecting HBP patients which were decreased significantly in those who underwent training. In addition to emphasis on a decrease in blood pressure using a collaborative care model, Mohammadi et al. [9] reported a reduction in HDL and BMI levels, as well. Drabsch et al. [10] found that the use of team-centered models, based on following the guidelines were useful for controlling HBP and also recovering patients.

The distinction of this study was that it's unprecedented in Iran and specially Semnan. According to a study by Ghorbaniet al. [12], the prevalence of HBP between adults in Semnan, was evaluated considerably high (44.2 in male and 35.9 in female) and in more than 90% of the HBP cases, there were at least one of the risk factors of coronary diseases. Therefore, this study suggested to design some predictive and therapeutic plans in order to decrease the amount of HBP and its complications in this region. So, we were inspired to think of performing collaborative care model here in Semnan.

This study attempted to assess the factors affecting HBP, including anthropometric parameters, laboratory parameters, nutritional indicators, and blood pressure indices in the intervention and control groups using the results of different studies when possible. Some limitations, such as the relatively small statistical sample size and restricted measurement instrument, cannot be overlooked.

The results of this research showed that the use of a collaborative care model can be a beneficial, affordable and effective method for the prevention and control of HBP. Nevertheless, further studies are required by other researchers to confirm the results, for the restrictions of this investigation.

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