Effect of an educational Program on Self-Care for Hypertensive Patients attending Soba University Hospital and Omdurman Military Hospital –Sudan

Dr. Hayat Fadlallah Mukhtar[1]

Associate professor of medical surgical nursing, faculty of applied health and nursing science, Karrary University [1]

Abstract

Hypertension is one of the most common chronic diseases and considered as a major risk factor for many medical conditions. The self-management is an effective approach for controlling of hypertension. **Aim of study** to assess the effectiveness of an educational program on self-management among hypertensive patients. **Methods:** A quasi experimental research design one group was conducted in Soba University Hospital and Omdurman Military Hospital. Convenient sample 121 participants of adult hypertensive patients were selected. An educational program was intervened then all subjects followed up for six months. The pre and post data collected through the questionnaire and sphygmomanometer for measurement of blood pressure. **Result**: There is significantly increase in compliance to antihypertensive drugs P value 0.006, adherence to lifestyle modifications significantly elevated P value 0.003 , the basic knowledge of patients was significantly increased P value 0.003 , means of the baseline systolic and diastolic blood pressure were 148 mmHg and 93 mmHg where reduced to 144 mmHg and 89 mmHg at post-test respectively.

Conclusion: The program significantly enhanced the patients to practice the self-care activities and led to reduction of the blood pressure.

KEYWORDS: Education program, Self-management, Hypertension, patients

Background

Hypertension is one of the most prevalent chronic diseases for which treatment is available; however, most patients with hypertension are untreated due to many obstacles. This factor worries both healthcare providers and patients themselves. Hypertension known as high blood pressure (HBP), is a long-term medical condition in which the blood pressure in the arteries is persistently elevated above 140/90 mmHg (1-*2)*. High blood pressure usually does not cause symptoms(*3)*.Long-term high blood pressure, however, is a major risk factor for coronary artery disease, stroke, heart failure, peripheral vascular disease, vision loss, and chronic kidney disease(*4-5*). A recent study reported that hypertension is the most important preventable risk factor for premature death worldwide (*6)*. Furthermore, the World Health Organization has identified hypertension, as the leading cause of cardiovascular mortality (*7)*.

Globally cardiovascular disease accounts for approximately 17 million deaths a year (*8*), recent study showed that the prevalence of high blood pressure was raised up to 37% of the population worldwide (*2).*

The therapeutic regimen is the responsibility of the patient in collaboration with the health care provider (*11).* High blood pressure can be lowered through adhering to the lifestyle changes and regular taking of antihypertensive medications. These measures effectively lead to decrease the risk of health complications (*12*). Most of hypertensive patients don't follow the healthcare providers' instructions regarding disease management approaches. The nurses can play an effective role to solve this problem through educating the clients about the disease process, risk factors, and importance of adhering to diet plan, weight control, exercise, blood pressure monitoring, and scheduling regular follow-up. The nurse can encourage and teach patients to measure their blood pressure at home. Additionally involving family members in education programs enables them to support the patient's efforts to control hypertension (*11).* Health care professionals including nurses need to recognize each patient's way of complying with his/her treatment and his/her attitude toward the illness. Self-care program is the one of the most effective methods in controlling of chronic medical conditions involving high blood pressure because patients will participate actively in the treatment regimen. To support and enhance this method of hypertension management the healthcare providers including nurses should follow a different kind of educational and teaching plan.

The prevalence of hypertension in Sudan was approximately 20.1% to 20.4%. The control rates were very poor and there was a high prevalence of target-organ damage (19). The lack of awareness about hypertension, its associated risk factors, changes in lifestyle and adherence to the medication may be major factors in the prevalence of uncontrolled hypertension in Sudan (20).

The success of blood pressure management strongly depends upon patient self-management, or the ability and willingness of the patient to change and maintain certain behavior. The therapeutic regimen is the responsibility of the patient in collaboration with the health care providers. Consequently, supporting patient self-management is the one of the most important aspects of high quality hypertension care(*24)*..

Implementation of the self-management is a one of effective tools that can contribute in control of blood pressure through the encouraging of the hypertensive patients to adhere to the treatment plan strictly**.**

METHOD

Study design: A Quasi-experimental research design one group used for this study. The study was conducted 2016 and 2017.

Objectives

The main objective of the study was to assess the effect of the designed educational program on self-management for hypertensive patients regarding lifestyle modification, medications regimen, blood pressure, and knowledge of patients.

Setting The study conducted at major hospitals in Khartoum state in Sudan.

It was conducted in two of the main known Khartoum state hospitals; the Soba University Hospital (Khartoum) and Omdurman Military Hospital (Omdurman). The patients of such hospitals are on regular follow up and the hospitals are organized.

3.3 Study sample:

Sample of patients diagnosed as hypertensive with age 18 years old and above, mentally well and have no severe complications, were selected conveniently. Eighty two subjects were chosen from Omdurman Military Hospital and seventy subjects from Soba University Hospital. From the total number of 152 participants who have been selected only one hundred and twenty one (121) subjects completed the study; fifty one participants from Soba University and sixty subjects from Military Hospital and the rest were dropped out due to many reasons.

Tools

The data was collected by using structured questionnaire to assess sociodemographic, patient's compliance to antihypertensive medications, patients' adherence to life style modification regimen, the knowledge of hypertensive patients about hypertension and its management. The data collection tools validated through the conducting of a pilot study and consultation of two experts. The sphygmomanometer used to measure the blood pressure to assess outcome.

Educational program:

The program involved two parts; face-to- face instruction and manual hand out material. The delivered information was about the hypertension, the compliance to antihypertensive medications and adherence to the healthy behavior regarding the lifestyles modifications such as daily exercise, smoking cessation, weight reduction.

Data collection:

Firstly, the baseline data were collected from each study subject by using face to face administered questionnaire and the blood pressure was measured three times a week interval and the mean was taken as a baseline reading. After that each group of patients received the required information by the researcher with stressed on the importance of the self-management measures and the follow up appointment. The educational program sessions were conducted monthly up to six months. The blood pressure of each participant was measured and documented during each

session for assessing the control of the hypertension. The questionnaires were refilled after completion of the entire period of the study after three months.

Ethicalclearance

The researcher took approval from National Elribat University and ethical committee of ministry of health of Khartoum state. An official written permission from the administrative of Soba University Hospital and Omdurman Military Hospitals to conduct the study was obtained. The researcher explained extensively to the participants about the all aspects of the study and verbal consent was obtained. The participants were told that they have a right to refuse or accept the to participate.

Dataanalysis

Data were entered and analyzed using Statistical Package for Social Sciences (SPSS). Results were presented in figures and table. Demographic findings and general information were analyzed descriptively. Mean, and T-independent test were used as statistical tests. A p-value was used to evaluate the effect of teaching program by comparing the findings of pretest and posttest. P-value of 0.05 or less was considered as indicative of statistical significance between pre and post program differences where more than this value was called no significance. Patients' response 1and 2 were considered poor compliance and knowledge while responses 3, 4, and 5 were defined as good compliance and knowledge.

Results: -

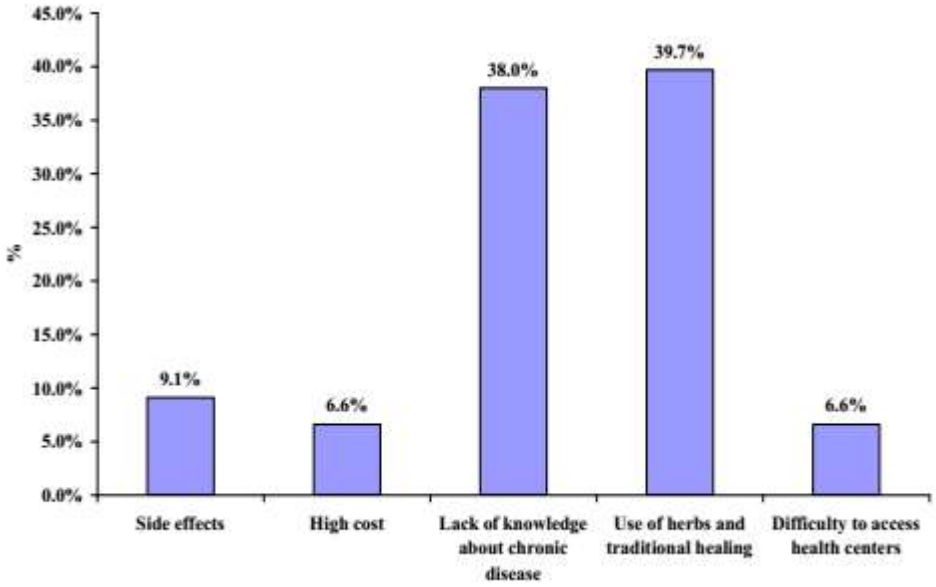

Figure (1) reasons behind no compliance with antihypertensive medication regimen (n=121)

Table (1) Distribution of the study population according to differences in compliance with medication regimen before and after the program (n=121)

Items	Pre		Post		SE	CI 95%		T value	P value
	Mean	SD	Mean	SD		Lower	Upper		
Use the same prescribed drugs	0.38	0.49	0.93	0.25	0.05	-0.65	-0.46	-11.1	0.002
Comply with the prescribed dose	0.40	0.49	0.97	0.18	0.05	-0.66	-0.48	-12.0	0.002
Take the drugs according to prescribed time	0.24	0.43	0.98	0.16	0.04	-0.82	-0.65	-17.7	0.003
Taking the drugs at required amount	0.26	0.44	0.96	0.20	0.04	-0.78	-0.61	-15.7	0.003
Keeping drugs according to instruction of care providers	0.17	0.38	0.98	0.16	0.04	-0.88	-0.73	-21.4	0.003
Taking the drugs and prescription when travelling	0.32	0.47	0.94	0.23	0.05	-0.71	-0.53	-13.0	0.003
Consult the doctor before taking any other drug	0.20	0.40	0.98	0.16	0.04	-0.85	-0.70	-19.9	0.006
Look on the date of expiry before using of the drug	0.82	0.39	0.93	0.25	0.04	-0.20	-0.03	-2.8	0.006
Consult the doctor in case of abnormal side effects	0.75	0.43	0.93	0.26	0.05	-0.26	-0.08	-3.8	0.014
Comply with the determined appointment date	0.83	0.38	0.93	0.26	0.04	-0.18	-0.02	-2.4	0.010
Continue to take the drug even during improvement	0.70	0.46	0.93	0.26	0.05	-0.32	-0.13	-4.6	0.014
Continue to take the drugs even when i feel it is not effective	0.67	0.47	0.93	0.25	0.05	-0.36	-0.17	-5.4	0.011
I will not replace the prescribed drugs with traditional medicine	0.69	0.46	0.91	0.29	0.05	-0.31	-0.12	-4.3	0.012
Continue to buy the drugs even if it highly cost	0.71	0.46	0.85	0.36	0.05	-0.24	-0.04	-2.7	0.001
Ask the doctor about the side effects of the drugs	0.61	0.49	0.78	0.42	0.06	-0.28	-0.05	-2.8	0.001

Items	Pre		Post		SE	CI 95%		T value	P value
	Mean	SD	Mean	SD		Lower	Upper		
Measuring blood pressure periodically according to instructions of doctor	0.48	0.50	0.77	0.42	0.06	-0.41	-0.17	-4.85	0.009
Record the blood pressure readings in the specified note	0.49	0.50	0.90	0.30	0.05	-0.52	-0.31	-7.77	0.009
Avoid the factors that cause tension and psychological stress	0.46	0.50	0.76	0.43	0.06	-0.42	-0.18	-4.97	0.009
Practicing of relaxation two techniques times per day or more	0.48	0.50	0.90	0.30	0.05	-0.53	-0.32	-7.93	0.009
Try to main the ideal body weight	0.45	0.50	0.69	0.47	0.06	-0.36	-0.12	-3.86	0.009
Practicing aerobic exercise such as walking	0.71	0.46	0.88	0.32	0.05	-0.27	-0.07	-3.43	0.001
Ask the doctor about the required practices	0.72	0.45	0.74	0.44	0.06	-0.14	0.09	-0.43	0.001
Comply to the diet system prescribed by doctor and dietician	0.74	0.44	0.89	0.31	0.05	-0.25	-0.05	-3.04	0.001
Perform all investigations as required	0.65	0.48	0.92	0.28	0.05	-0.36	-0.17	-5.27	0.001
Consult the doctor in case of complications	0.64	0.48	0.86	0.35	0.05	-0.32	-0.11	-3.98	0.001
Decrease the amount of salt intake in the meals	0.65	0.48	0.81	0.39	0.06	-0.27	-0.05	-2.79	0.001
Avoid smoking or setting near to smokers	0.48	0.50	0.83	0.38	0.06	-0.46	-0.23	-6.07	0.003
Avoid al alcohol consumption	0.60	0.49	0.85	0.36	0.06	-0.37	-0.15	-4.63	0.003
Decrease tea and coffee intake	0.60	0.49	0.78	0.42	0.06	-0.30	-0.07	-3.09	0.001
Avoid soft drinks	0.58	0.50	0.79	0.41	0.06	-0.33	-0.10	-3.69	0.001
Avoid canned foods	0.55	0.50	0.97	0.18	0.05	-0.51	-0.32	-8.57	0.001
Avoid foods with high fat content	0.55	0.50	0.83	0.38	0.06	-0.39	-0.17	-4.92	0.001
Read the content of foods before taking it	0.55	0.50	0.87	0.34	0.05	-0.43	-0.21	-5.86	0.001
Consume the natural juices	0.31	0.47	0.90	0.30	0.05	-0.69	-0.49	-11.64	0.001
Increase intake of vegetables and fruits	0.31	0.47	0.83	0.37	0.05	-0.63	-0.41	-9.59	0.009
Comply with periodical follow up	0.27	0.45	0.70	0.46	0.06	-0.54	-0.31	-7.38	0.001

DISCUSSION

This study was conducted to investigate the effect of educational program on the self-management among hypertensive patients and reducing of high blood pressure. The study indicated that most of participants (51.2%) their monthly income ranged between 1000 to 3000 Sudanese pounds. While (33.1%) of subjects had high monthly income which was more than three thousand. (Figure4.4). low monthly income may

make the patients unable to buy the antihypertensive medications, and also may affect the process of patient transportation so the patients not comply to follow up appointment.

The results of this study revealed that (11.6%) of participants were not educated, while (15.7%) of subjects had primary school level, near to half of respondents(47.9%) their educational level was secondary school, and about (24.8%) were graduated (figure4.5). This finding is not similar to one of the previous Sudanese studies which documented that the majority of hypertensive patients were of low educational qualification (29). Low educational level greatly affects the patients' awareness, which may make them don't adherence to the treatment regimen.

Study findings indicated that most of the study subjects believed that non-adherence to the prescribed antihypertensive medications is either due to lack of knowledge or high cost of the drugs or because of using of herbs (figure 4.7). This result is similar to the situation in the Nigeria, where the main reasons for non-compliance were miscellaneous factors (60%) related to both patient's attitudes and beliefs, and consultation failure on the part of clinicians. Lack of finances and side effects of medications accounted for (23.8%) and (16.2%) of non-compliances respectively (30).

The hypertensive patients need orientation about the necessity of adhering to the prescribed drugs and about the harmful effect of the herbal therapy.

This study result showed that the majority of respondents (81%) didn't practice the measurement of blood pressure at home; while a few of them (19%) were did it (figure4.9). The patients may be unaware about the importance of measurement of the blood pressure at home or may be due lack of money, which make them unable to buy their own blood pressure measurement devices.

A major finding of the study was that the degrees of compliance with antihypertensive drugs regimen significantly increased after attendance of educational program where the mean values of the patients on all items significantly higher at post test ($P < 0.05$) than at pretest measurement (table 4.2). This result agrees with a previous study about the monitoring one-year compliance to antihypertensive medication in the Seychelles, which showed that in the first month (46%) of the new hypertension patients achieved satisfactory compliance, and only about (26%) achieved this level by the twelfth month their blood pressure was controlled(32). This result indicated the effectiveness of the designed educational program because before application of the program the compliance to antihypertensive drugs was poor.

Consequently, the result reflects that the educational program significantly ($P < 0.05$) enhance the practices of healthy lifestyle behaviors by the study subjects (table 4.4). This result agrees with a study which revealed lay-led self-management education programs may lead to small, short-term improvements in participants' self-efficacy, self-rated health, cognitive symptom management, and frequency of aerobic exercise (37).

Another important finding was that the knowledge of studied patients regarding the hypertension and its management significantly ($P < 0.05$) increased after attendance of educational program (table 4.6). This result contrast to the finding of a study

carried out in Sudan which showed that two-thirds of patients showed a high score of knowledge about the etiology and complications of hypertension. Half of the patients knew about treatment of hypertension. Patients have a very low score regarding knowledge of symptoms of hypertension (38.8%).(29). At the same time the result of the study before the intervention supports the finding of a study that showed the knowledge of the possible complications of hypertension was very poor as 58.9% of the patients scored less than average. Only 41.1% and 1.8% of the patients were aware that excessive salt and fat intake could adversely affect the control of hypertension respectively (28).

The main result of the study was that the blood pressure readings (systolic & diastolic) measurement decreased significantly at the end of the study indicating that educational program contributed in the practices of the patients that help in reducing the blood pressure (table 4.7) and (table 4.8). One of the previous studies reported that recognizing patient non adherence to medical therapy as a factor leading to poor blood pressure control and adverse outcomes remains a key challenge for clinicians caring for patients with hypertension (31). Consequently, this result supported the recent hypertension intervention study which was reported that, after 6 months, change in multiple risk factors improved systolic blood pressure 26). Furthermore, the study result contrast to a study which showed that the trials of educational interventions directed at patients or health professionals appeared unlikely to be associated with large net reductions in blood pressure by themselves(25). One of the most common barriers which faced the researchers is lack of patients' willingness to wait and complete the educational session. To solve this problem the researcher motivated the patients by money, purchasing medications, and emotional support to let them to complete the all educational session

Conclusion

The researcher identified strong evidence that educational intervention focusing on behaviour modification and supporting self-efficacy were associated with greater change.and more sustained levels of behavioural and clinical benefits. So the researcher concluded that the designed educational program significantly changed the behaviors of the patients and motivated them to practice the self-care activities which represented in their good adherence to the antihypertensive medication plan and life style modifications and also the designed educational program improved the knowledge of the hypertensive patients regarding the hypertension and it treatment. Ultimately the designed educational program led to significant reduction in systolic and diastolic blood pressure, but didn't reach the level of hypertension control. So supporting of self-management through the educational intervention significantly enhanced the management of hypertension.

Recommendations

According to the findings of the study the researcher recommended the following:

6.2.1 Encouragement of hypertensive patients by the health care providers to practices the healthy lifestyle activities such as daily physical exercise, low salt diet, stop of smoking and alcohol, avoidance of noisy areas and stressors, as well as, green and

watery areas should be provided.
6.2.2 Teaching of hypertensive patient about the necessity of compliance to antihypertensive drugs after discharge from the hospital.
6.2.3 Establishment of multidisciplinary hypertension clinics directed by team members that involves family physicians, nurses, clinical pharmacists, psychosocial worker to provide special care for hypertensive patients under supervision of medical physician and nurses.
6.2.4 Instruction of hypertensive patients about the importance of follow up appointments.
6.2.5 Application of screening programs that adopted ministry of health which includes the following:
— Twice measurement of blood pressure every two years for those > 50 years.
— Two blood pressure measurements per year for those > 60 years.
— Monthly measurements for those over 70 years.
6.2.6 Providing of green and watery areas within or near to the houses.
6.2.7 Through the ministry of finance, the government should decrease the cost of antihypertensive drugs so as to enable poor hypertensive patients to buy their medications.
6.2.8 Customs exemption for the blood measurement devices (sphygmomanometers).

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