The National Ribat University
Faculty of Graduate Studies and Scientific Research

The Effect of Health Educational Program on Patients' Knowledge About Hypertension and Its' Management
(In Sudan - White Nile State)

A thesis submitted For Fulfillment of the requirements for the PHD degree in Nursing Science

By: Ahmed Abdalla Ahmed Jarelnape
Supervisor  Dr. Nader T. Mohammed Abdullah

2016
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2016
Committee decision

The effect of health educational program on patients' knowledge about hypertension and its' management (In Sudan - White Nile state) was successfully defended and approved.

Examination Committee
Dr. El-Tijani Mohammed Ahmed (External Examiner)
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Dr. Nader T. Mohammed Abdullah (Supervisor)
I would like to dedicate this work to my family and friends who supported and encouraged me throughout this academic journey.

I dedicate my dissertation work to my father and to soul my mother.

I am deeply and forever grateful to my parents for their love, support and encouragement throughout my entire life.

Thanks also to my wife and daughter, without their encouragement and understanding, it would have been impossible for me to finish this work.
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ABSTRACT

BACKGROUND: Hypertension is one of the most crucial health problems and the most common chronic disease in developed and underdeveloped countries.\(^1\) It is called the silent killer which is usually diagnosed incidentally.\(^2\) Although hypertension is a preventable and treatable condition but without treatment it leads to serious and life threatening complications such as heart, kidney and brain disorders which in most cases result in patient's disability. Prevention and management plays significant role in controlling this disease which is achieved by increasing the knowledge and awareness of the public and changing their attitude and practice.\(^5\)

PURPOSE: This study aimed to examine the hypertensive patient knowledge who receive health education program about hypertension and its management.

METHOD: Was a Quasi-experimental research design pre-test/post-test with control group was used. Data was collected using structured interview questionnaire for the Patient’s knowledge. It contains (physical assessment sheet, patients’ knowledge. Regarding hypertension and its management was measured by independent t-test was used. The study carried out on 150 hypertensive patients attending outpatient clinics of the two health centers, the subjects were divided into two equal groups; (study group n=75 and control group n=75) The study group received the educational program.

RESULTS: The study results showed that an educational program improves patients' knowledge about hypertension and its management. The mean knowledge scores improved from 1.73±1.17 to 3.41±1.07 after 3 months which significantly different (P = 0.000 < 0.05). Also showing the most source of knowledge related to information about hypertension for the patients found from friends/Relatives (41.3%) followed by mass media: Television/Newspaper (30.7 %). In only 21.3% cases the knowledge was obtained from medical and paramedical professionals.

CONCLUSION: The result of present study revealed that the health educational intervention program were effective on the hypertensive patient’s knowledge. Important of education program to continue it’s important and
effect on knowledge about hypertension and his managements. Also, this study proves that educational program can play an important role in the controlling blood pressure and prevent long term complications.
المقدمة: ضغط الدم هو قوة دفع الدم لجدران الأوعية الدموية التي ينتقل خلالها أثناء تغذيته كافة أنسجة الجسم وأعضائه فيما يعرف بالدورة الدموية. تبين الإحصاءات الطبية الأهمية الكبرى للحفاظ على ضغط الدم بحيث يكون في المتوسط 75/115 مليمتر زئبقي، وأن زيادة عن هذا الحد تؤدي إلى إجهاد القلب والكلى، وقد يؤدي ارتفاعه إلى سكتة دماغية ومضاعفات كثيرة.

ويجب على مريض ارتفاع ضغط الدم أن يشارك ويتعلم أن يجيد نظام المتابعة.

الثقيف الصحي للمريض هو دائماً جزء لا يتجزأ من جودة الرعاية الصحية وخاصة في مجال مرضى ارتفاع ضغط الدم ورعاية المريض وقد تداخلت في علاج مرض ارتفاع ضغط الدم القلب عوامل عديدة، وبعد التثقيف الصحي للمريض من العناصر الضرورية في خطة العلاج لهؤلاء المرضى وفضلاً عن ذلك فقد حقق التثقيف الصحي آثراً إيجابياً في النتائج الصحية مثل انخفاض معدلات المرض والوفاة، قلة السلوكيات الخاطئة وزيادة الوعي الصحي. وإن الهدف من تثقيف المريض هو تشجيعه على المشاركة في علاجه وتأهيله حيث أنه جزء مهم جداً وكمكن للحصول على الكفاءة الجيدة للرعاية الصحية. يتمثل الدور الرئيسي للممرضين في العمل على تطوير مشاركة المريض في علاجه والتغيير الصحي في سلوك المريض.

الهدف من الدراسة: تهدف هذه الدراسة إلى قياس أثر برنامج تثقيفي لمرضى ارتفاع ضغط الدم في ولاية النيل الأبيض من خلال إعطاء المرضي المعلومات والارادجاب الصحية السليمة التي هم في حاجة إليها.

مكان البحث: تم عمل هذه الدراسة على كل المرضى المتدردين على مركز صحي التجاني محمد خير ومركز صحي ابوبكر سأتي للرعاية الصحية الأولية بولاية النيل البيض وعددهم منة وخمسين مريض تم تقسيمهم إلى مجموعتين (مجموعة الدراسة 75 مريض و مجموعه المقارنة 75 مريض).

طريقة إجراء البحث: أجريت دراسة تداخلية شبه تجريبية من برنامج التثقيف الصحي مع إجراء اختبار قبل وبعدي لمجموعة الدراسة، تم استخدام استمارة استبيان لهذه الدراسة وذلك لمعرفة معلومات وممارسات مرضي ارتفاع ضغط الدم. هذه الاستمارة تتكون من جزئين: ー
الجزء الأول: ويشتمل على أسئلة خاصة بالبيانات الشخصية لمرضى ارتفاع ضغط الدم مثل
الاسم، السن، التعليم، الحالة المادية، الخ. الجزء الثاني: ويشتمل على أسئلة الاختبار خاصة
بمعلوماتهم عن مرض ارتفاع ضغط الدم مثل التعريف العادات الغذائية، ممارسة الرياضة، إتباع
نظام العلاج، الخ. تم تصميم وتنفيذ برنامج تثقيفي لمرضى عدم انتظام ضربات القلب. تم تنفيذ
البرنامج على 75 مريض من خلال المقابلة الشخصية و متابعة المريض بمركز صحي التجاني
محمد خير. وبعد ذلك تم عمل فصول تعليمية على مجموعات صغيرة و ذلك مرتين في الشهر
لعدة شهر ونص و تم بعدها تقييم البرنامج. و توجد المجموعة الضابطة و تتكون من 75 مريض.
وتم المقابلة الشخصية لهم و تم وثقي المتابعة والتلاقي. و هذه المجموعة لم
تنلقي برنامج التثقيف الصحي وتم مقارنتها بالمجموعة السابقة.

النتائج: تم عرض النتائج من خلال جداول إحصائية، وذلك بعد تحليل البيانات بالطرق
الإحصائية المناسبة. أوضحت نتائج هذه الدراسة أن هناك ارتفاع كبير في مستوى
المريض، وحجم الموارد الصحية من حيث توزيع الجنس، العمر، الوزن، المستوي التعليمي
والوظيفي. وأظهرت نتائج الدراسة أن البرنامج التعليمي يحسن المعرفة والمعلومات لدى
المريض حول ارتفاع ضغط الدم وعلاجه. يظهر الفجوة المتوقعة للمعرفة والمعلومات قبل البرنامج
التعليمي 1.17 ± 1.73 في حين كانت المعرفة والمعلومات المرضي تحسنت بعد البرنامج
التعليمي إلى 1.07 ± 3.41، والتي تعتبر ذات دالة إحصائية (0.05) = 0.000. وقد
أسفرت نتائج هذا البرنامج بنجاح مرضى ارتفاع ضغط الدم و ذلك عن طرق استخدام العلاج
والинтерفون من الوزن عن طريق ممارسة التمرينات الرياضية وإتباع النظام الغذائي والتقليل من
مضاعفات مرض ضغط الدم. هناك عدد من التوصيات التي أسفر عنها هذا البحث:

- يجب أن يكون لكل من الطب والتمريض دور للتثقيف الصحي لمرضى ارتفاع ضغط الدم.
- ضرورة إعداد برامج تدريبية بالمرتكز الصحي المختلفة لمرضى ارتفاع ضغط الدم لتدويرهم
بالممارسات عن الرعاية الذاتية.
- يجب على أجهزة الإعلام (راديو، تلفزيون، صحف) أن تكرس جهودها في تثقيف مرضى ارتفاع
ضغط الدم.
- زيادة الاهتمام والتوعية عن طريق عمل برامج تثقيف صحي في مختلف المناطق في السودان
لمرضى ارتفاع ضغط الدم حتى يقلل من حدوث المضاعفات للمرض على المدى البعيد.
CHAPTER ONE

INTRODUCTION
Introduction

1.1. Background

Hypertension is one of the most crucial health problems and the most common chronic disease in developed and underdeveloped countries (1,2) and can be a significant cause of mortality due to coronary artery disease, brain stroke, and renal failure (3,4). It is the most common incidentally diagnosed chronic disease (5). Although it is a preventable and usually treatable disease but without treatment it leads to serious and life threatening complications such as heart, kidney and brain disorders (1).

Blood pressure tends to increase with age in most countries, and the actual prevalence of hypertension in the elderly population is estimated to be as high as 65% in persons aged 65-74 years (6). In the United States (2003), it is estimated that, 50% in people aged 60-70 years and 75% among those aged 75 years have hypertension (7). In Europe, the prevalence of hypertension in elders ranges from 53 to 72% (8). In Australia, hypertension reported by 11% (2.1 million) (9). The goal of hypertension treatment is to prevent death and complications by achieving and maintaining the blood pressure at 140/90 mm hg or lower (10).

Lifestyle modification is the first line of intervention for all patients with hypertension, but pharmacological is the cornerstone for the disease treatment to reduce the high blood pressure and prevent complications such as cardiovascular and renal morbidity and mortality (11). Health care professionals must not only identify and treat patients with hypertension but also promote a healthy lifestyle and preventive strategies to decrease the prevalence of hypertension in the general population (12). Current recommendations for the prevention and treatment of high blood pressure emphasize lifestyle modification. Lifestyle modifications that effectively lower blood pressure (BP) include weight loss, reduced sodium intake, increased physical activity (12).

In addition, a diet rich in fruit, vegetables, and low-fat dairy products reduced in total and saturated fat, has also proved to lower BP (13). This goal achieved through supporting and teaching the patients to adhere to treatment
regimen, importance of staying on medications even though they do not feel any difference, or perhaps feel worse because of side effects, and by implementing necessary lifestyle changes (4). Therefore, the aim of the study was to determine the effect of educational program for hypertensive patient’s knowledge towards hypertension treatment. (4)

Hypertension is a crucial problem in developing countries where there is movement from communicable disease to chronic non-communicable conditions. (110) In addition, hypertension and its complications (i.e. heart failure, stroke, and renal failure) are increasingly associated with older age. (111) In the developed countries, one out of four people aged 18 years or more have hypertension. (112,113)

Considering its prevalence and complications, it seems that several factors and barriers are associated with controlling this disease. The most important barrier in diagnosis and control of this condition is the lack of knowledge and awareness about various aspects of hypertension. (114)

In addition, there are several reasons for uncontrolled hypertension including undiagnosed hypertension, inappropriate or insufficient medication, and wrong combination of drugs. (5) it is indicated that hypertensive patients had adequate general knowledge and awareness about hypertension but they did not have comprehensive understanding of their condition. For example, they did not recognize the importance of systolic blood pressure (SBP) control and did not care about regular blood pressure (BP) measurement which suggested that an educational and interventional program for hypertensive patients is necessary. (115) Another study showed that poor perception of good health and irregular visits to physician doctor are some of the most important factors for unawareness, untreated and uncontrolled hypertension especially among black men. (116)
1.2. Significance of the study

Hypertension is becoming a major health problem in Sudan. Its incidence is increasing year after year (14). Hypertension is the most common cause of morbidity and disability and incur great economic costs. For some, the diagnosis of IHD will lead to dramatic changes in their lifestyle, while others may need help to adjust to their diagnosis and to gain confidence in carrying on as normal a life as possible. Therefore, nurses should be encouraged to attend cardiac rehabilitation program and discuss all the modifications to lifestyle and prevention methods’ that may be necessary in order to improve their quality of life, reduce their disability that caused by this disease, and avoid deterioration in their health. (15)

Also, the current study provides an opportunity to evaluate patients’ knowledge about hypertension and its management employing quasi experimental methods which contribute to research evidence in this area of practice.
1.3. The aim of this study:

This study aimed to examine the hypertensive patient knowledge who receive health education program about hypertension and his management.

1.4. Specific objectives:

- To assess the knowledge of hypertensive clients.
- To develop and implement the health educational program for hypertension.
- To evaluate the impact of the health educational program on hypertensive patients and maintain patient’s knowledge regard hypertension disease.

1.5. Research questions

- Is there a difference in patient’s knowledge towards hypertension prevention and treatment based on selected demographic variables?
- What are patient’s knowledge on hypertension and its management?
- Will an educational program on hypertension improve patient’s knowledge about the hypertension and its management?

1.6. Research Hypotheses

- H0: No statistical significance difference in patient’s knowledge about hypertension and its management?
- H2: The educational program for hypertension will improve patient’s knowledge about hypertension and its management?
CHAPTER TWO
LITERATURE REVIEW
This chapter aims at reviewing the literature on the effect of patient education on hypertension in relation to several outcomes including knowledge, self-management, and behaviors (dietary habits, physical activity, adherence to medical treatment, and monitoring of blood pressure) clinical outcomes (blood pressure control, lipids and body weight), psychosocial outcomes (well-being, quality of life, depression, anxiety, empowerment), Long-term outcomes mortality complications (cardiovascular, end stage renal failure, diabetes multiuse and retinopathy).

One of the most important aspects of hypertension management is hypertension education which is considered as key component of prevention of hypertension related complications. In addition to improve the blood pressure control, hypertension education improves patients and their family’s self-care knowledge, health beliefs skills and confidence, enabling them to take increasing control of their lives. hypertension education also promote the patients in making therapeutic decision in order to manage their hypertension through instituting life-style changes to minimize the impact of chronic complications of hypertension .

Literature suggesting that, patient education improves hypertension knowledge and its management as well as physiological measures such as body weight and blood pressure. Of equal importance, the literature suggests that patient education improves the quality of life for hypertensive patients when it is appropriate to the culture context of the population. This chapter will briefly review some of the studies done to evaluate the effectiveness of hypertension health educational intervention program in managing hypertension as shown in the following previous studies:

2.1. Previous studies

In 2011, a cross-sectional, correlation-descriptive study was conducted in one stage, by one group. Two hundred and thirty four patients were recruited by random sampling among hypertensive patients referring to public health care centers in Khoor & Biabanak in Isfahan province, IRAN. Data gathering was
carried out with a questionnaire. Results: Our findings indicate that there is significant relationship between awareness and knowledge; awareness and attitude; awareness and practice. There is no significant relationship between knowledge and attitude or knowledge and practice. In addition, there is a significant relationship between attitude and practice of the patients. Conclusions: Although patients relatively had high awareness, knowledge, attitude and practice about their disease but their hypertension was not still under control. Several barriers are associated with uncontrolled hypertension particularly treatment-related barriers. Findings suggest further studies to determine new effective strategies to solve this problem \(^{(19)}\).

The Effect of Educational Programs on Hypertension Management according to the study by Mohammad Ali Babaee Beigi, et al in (2014 Sep 1). For Iranian hypertensive patients this study aimed to determine the effectiveness of a short-term educational program on the level of knowledge, lifestyle changes, and blood pressure control among hypertensive patients. Patients and Methods: This quasi-experimental study was conducted on the hypertensive patients attending Shiraz Healthy Heart House. In this study, 112 patients were selected via systematic random sampling. The study data were collected using a data gathering form which consisted of baseline characteristics and measurements of blood pressure. Multivariate analyses were used to assess the relationship between education and hypertension. Results: At baseline, the scores of aware, treated, and controlled hypertensive patients were 21%, 20%, and 12%, respectively. However, these measures were increased to 92%, 95%, and 51%, respectively at the end of the study. The mean knowledge scores improved from 2.77 ± 2.7 to 7.99 ± 1.78 after 3 months (\(P < 0.001\)). Also, the mean lifestyle scores changed from 3.15 ± 1.52 to 4.53 ± 1.23 (\(P < 0.001\)). Conclusions: The results of this study indicated that the educational programs were effective in increasing knowledge, improving self-management, and controlling detrimental lifestyle habits of the patients with hypertension \(^{(20)}\).

In 2015, this was a randomized, non-blinded trial by. Chu-Hong Lu et al, in Dongguan city, china. Involving 360 hypertensive patients enrolled in the community health service center of Liaobu Town, Dongguan City, China. Participants were randomized to receive one of the three community-based
health education programs over two years: self-learning reading (Group 1), monthly regular didactic lecture (Group 2), and monthly interactive education workshop (Group 3). Outcomes included the changes in the proportion of subjects with normalized blood pressure (BP), hypertension-related knowledge score, and adherence to antihypertensive treatment, lifestyle, body mass index and serum lipids. Results after the 2-years intervention, the proportion of subjects with normalized BP increased significantly in Group 2 (from 41.2% to 63.2%, p<0.001), and increased more substantially in Group 3 (from 40.2% to 86.3%, p<0.001), but did not change significantly in Group 1. Improvements in hypertension-related knowledge score, adherence to regular use of medications, appropriate salt intake and regular physical activity were progressively greater from group 1 to group 2 to group 3. Group 3 had the largest reductions in body mass index and serum LDL cholesterol levels. Conclusion. Interactive education workshops may be the most effective strategy in community-based health promotion education programs for hypertensive patients in improving patients’ knowledge on hypertension and alleviating clinical risk factors for preventing hypertension-related complications (21).

In 2014, Randomized controlled trials by, Cibele D Ribeiro et al in Norte, Brazil including patients over 18 years of age, regardless of sex and ethnicity, with a diagnosis of hypertension (either treated or not treated with antihypertensive medications) will be assessed in our analysis. We will electronically search four databases: MEDLINE, CINAHL, PEDro and Science Direct. There will be no language restrictions in the search for studies. The data was extracted independently by two authors using predefined criteria. Disagreements will be resolved between the authors. The risk of bias will be assessed using the Cochrane risk of bias tool. After searching and screening of the studies, we will run a meta-analysis of the included randomized controlled trials. We will summarize the results as risk ratio for dichotomous data and mean differences for continuous data (22).

A non-clinical randomized control trial by Fahd Saleem. et al, 20 June 2013, to evaluated whether a pharmaceutical care intervention can result in better understanding about hypertension, increase medication adherence to
antihypertensive therapy and improve overall health-related quality of life. In Pakistan was conducted whereby participants received an educational intervention through hospital pharmacists. Hypertension knowledge, medication adherence and health-related quality of life were measured by means of self-administered questionnaires. Descriptive statistics were used to describe the demographic and disease characteristics of the patients. Inferential statistics were used for inter- and intergroup comparisons. SPSS 17 was used for data analysis. Results Three hundred and eighty-five hypertensive patients were randomly assigned (192 in the control group and 193 in the intervention group) to the study. No significant differences were observed in either group for age, gender, income, locality, education, occupation or duration of disease. There was, however, a significant increase in the participants' levels of knowledge about hypertension and medication adherence among the interventional group after completing the intervention. Significantly lower systolic and diastolic blood pressure levels were also observed among the interventional group after completion of the intervention. The interventional group, however, reported decreased yet significant health-related quality of life at the end of the interventional program. Conclusion Pharmacist intervention can significantly increase disease-related knowledge, blood pressure control and medication adherence in patients with hypertension. However, further research is needed to address the decreased health-related quality of life after completion of the study (23).

A cross-sectional survey for relationship of functional health literacy to patients' knowledge of their chronic disease study of patients with hypertension. By: Williams and Parker 1998, on Atlanta this study aimed to examine among patients with hypertension or diabetes the relationship between their functional health literacy level and their knowledge of their chronic disease and treatment. We conducted a cross-sectional survey of patients with hypertension and diabetes presenting to the general medicine clinics at 2 urban public hospitals. Literacy was measured by the Test of Functional Health Literacy in Adults. Knowledge of their illness was assessed in patients with diabetes or hypertension using 21 hypertension and 10 diabetes questions based on key elements in educational materials used in our clinics. Results A total of 402
patients with hypertension and 114 patients with diabetes were enrolled. Mean (±SD) knowledge scores for patients with hypertension with inadequate (n=189), marginal (n=49), or adequate (n=155) literacy were 13.2±3.1, 15.3±2.2, and 16.5±2.3, respectively (range, 4-20; P<.001). A total of 92% of patients with hypertension and adequate literacy levels knew that a blood pressure reading of 160/100 mm Hg was high compared with 55% of those in the lowest reading level (P<.001). Mean (±SD) knowledge scores for patients with diabetes with inadequate (n=50), marginal (n=13), or adequate (n=51) literacy were 5.8±2.1, 6.8±1.9, and 8.1±1.6, respectively (range, 1-10; P<.001). A total of 94% of patients with diabetes and adequate functional health literacy knew the symptoms of hypoglycemia compared with 50% of those with inadequate literacy (P<.001). Conclusions Inadequate functional health literacy poses a major barrier to educating patients with chronic diseases, and current efforts to overcome this appear unsuccessful (24).

2.2. Health Education Program

Health Education Program The society's most valuable resource is its people. By protecting and promoting the health of its members, the best interferes of society will be severed. The higher level of health in a population, the most likely that individuals will be productive. They can share in the responsibilities of family life and they can contribute to the wellbeing of the communities in which they live and the country as a whole. Health education is the way for achieving this, (25).

2.3. Health Education is an Integral Part of Nursing Roles

Nursing is a dynamic, therapeutic and educative process in meeting the health needs of society. Today education about preventive health practices and health promotion is considered an essential component of comprehensive health care. Education is also a mean of improving health status of the public (26).

2.4. Definition of Health Education Program

Health education is the process of providing learning experiences for the purpose of influencing knowledge, practices and attitudes relating to health. It is
the part of health care which concerned with promoting healthy behavior, \(^{(27)}\). In other words, health education is the instruction that addresses physical, mental, emotional and social dimensions of health; develop health knowledge, attitudes, and skills; and is tailored to each age level, \(^{(28)}\). Health educational program is a planned sequential program of experience that is designed to motivate people to maintain and improve their health, prevent disease, and reduce health related risk, \(^{(28)}\).

2.5. Aim and Subjects of Health Education Program

The aim of health education program is to make people will be able to achieve health by their own action and efforts and available resources and develop the sense of responsibility for their better health as individuals, members of families and communities and governments in additionally to the objectives of health education. They are informing into action, \(^{(27,28)}\).

2.6. Principles of Health Education

To conduct health education, certain principles should be followed. They include motivating the learners a motivation is the key to learning it people benefit from an action, they will be encouraged to repeat that action. Fear is not a motivator, it destroys the learning process. Other principles are: helping learners to define and specify learning needs; encouraging the learning process by using all senses; assessing and alleviating learning difficulties among precipitants; conforming to beliefs and culture; creating a willing atmosphere for learning; reinforcing progress; having fun; giving feedback; presenting the message clearly; encouraging the active participation of the learners; avoiding prejudice and bias; deciding on priorities; objectives and actions, \(^{(27,28,29)}\).

Suggested three factors work in client health education. The first one is health education includes a variety of strategies, such as lecturing, modeling, or providing printed material, and all methods are effective in increasing skills or knowledge level. The second one is the individualization and the adult learner. Individual characteristics such as age, social status, cultural issues, and educational level influence teaching effectiveness and long-term health behavior
so it should be put into consideration when health teaching and the educational program should be individualized to meet learner's needs. In addition, the health educator needs to assess the learner's learning-teaching style and other andragogy principles. \(^{(30)}\)

Finally, the third factor is the support system. The presence of a peer group can enhance learning by providing encouragement to the learners. Additionally, teaching a supportive family instead of just one family member is more effective in achieving learning objectives and modifying behavior. For groups of community learners, special efforts to include culturally appropriate information and the use of culturally sensitive materials may enhance participation and learning. \(^{(30)}\)

### 2.7. Barrier Facing Health Education of People

Receiving information does not, in and of itself, guarantee that learning will occur. Several barriers can impede the learning of healthy behavior. They stop against achieving health education and changing of people's behavior into a healthy one. Some of these barrier are general such as illiteracy, faulty values and beliefs, place and environment, the influential practice of key persons, such as older family member, friends. In addition to absence or inadequacy of infrastructure such as water and sanitary conditions, other factors are considered. They are related to the human behavior as feelings ideas, knowledge, experiences, values and traditions, cultures and attitudes. Besides absence or inadequacy or resources such as low budget, health team, time certain skills health service and educational skills, equipment and supplies, \(^{(29,31)}\).

On the other hand, other specific factors are identifies to learning, teaching process. In nursing situation, learning barriers can be classified as either internal (psychological and physiological) or external (environmental and socio-cultural). The psychological barriers are anxiety, fear, anger, depression, and inability to comprehended, compared to the physiological barriers. They are pain, fatigue, sensory deprivation and oxygen deprivation.
Whereas, the environment are interruption lack of privacy and multiple stimuli compared to socio-cultural barriers, they are language, value system, and educational background.(26) Large-print materials, good lightening and appropriate are a few easy modifications than can reduce or eliminate barriers to learning, (30, 31).

2.8. Steps of Health Educational Program

Health educational program is a systematic ongoing process involving four sequential but interrelated steps which begins with identifying learners' learning needs, planning of the program (formulating objectives, selecting and organizing learning, learning materials, selecting teaching stratifies and evaluation policies), planning budget and finance, designing systems of reports and records, implementing the program, and evaluating the program. The development of content, strategies for teaching and evaluation of the effectiveness of health educational program should be carried out in a systematic manner to achieve the most effective results. This systematic method is the teaching learning process. The teaching learning process parallels the nursing process. The nurse will use both the nursing process and the teaching learning process to intervene for community health process. Both usually should start with needs assessment, (30).

2.9. Learning Needs Assessment

To create a health education program for a community, both the needs of the community and the learning needs of individual participants should be assessed. The assessment of the community is based on epidemiologic and demographic data, observations of health care personnel in the community and survey and conversations with community members. A real need is one that is based on a deficiency that actually exists, an educational need is one that can be met by a learning experience; a real educational need indicates that specific skills, knowledge, and attitudes are required to assist the client in attaining a more desirable condition; a felt need is recognized as important by the leaner, (30).
Assessment of the learner is essential to planning the educational program. It is also helps facilitate the learner's acceptance and use of the information being offered. Within the community, the learner may be individual, family or group. Initial assessment of the learner is often referred to assessment of the learner's readiness to learn. In the group of learners, background, skills, abilities, and motivation are different for each group's members. In addition several factors need to be considered during assessment including: learning style, potential learning needs, ability to learn, client strengths, previous experience and knowledge base. (26,30)

2.10. Planning the Education Program

The next step in developing educational program is the planning which based on certain facts. Budget is the major factor put into consideration when planning health educational program, and the cost of resources whether human or UN human. Also planning includes determining the time needed to complete the program whether period of sessions and their starting time. In addition to determining the actions phases, the responsible persons whether administrative or health educators, the setting and learning environment with certain characteristics and the construction of health education lessons plan, (29, 30, 31).

In the initial phase of planning teaching. Learning process in the assessment of needs which is followed by creating the behavior goals and objectives which reflect changes in the learner's behavior that are observable and measurable. When the behavioral objectives are properly written, they will be useful tools in evaluating educational outcomes. Behavioral objectives are classified into here domains of learning cognitive, psychomotor and affective. All three domains of learning are usually necessary to incorporate a new health behavior into the learner's life. Behavior objectives lead to development of the content of the program. The health educator needs to be selective in planning content so the most important concepts and knowledge about how to use the information are included in outset of the educational program. Additional content is included if time or money permit. The nurse also needs to plan using educational materials the suitable methods of teaching and audiovisual maternal
and degree of patient participation in his learning in addition to evaluation of learner progress and teaching performance. (26, 30)

2.11. Implementing the Program

Implementation phase is put the program into action. During this phase the learning teaching process is going on the health educator uses suitable teaching technique that is congruent with size, composition, and learning abilities of the group. Consideration of cultural differences, barriers of learning and community values are necessary. (26, 30)

2.12. Evaluation of the Program

Evaluation of health education program has two focuses. The first one is geared toward the learning teaching process itself. This evaluation has two types of evaluation: outcome evaluation and evaluation of teacher performance. Assessment of learner outcomes has traditional been based on achievement of the behavioral objectives. Evaluation includes determining if the teaching session was successful and if the client learned the intended information. This can be observed, there is a change in client behavior related to learning activities. The evaluation of teaching performance is geared toward assess the effectiveness of the teaching activities and decided which modifications, if any, are necessary. Several activities can evaluate teaching effectiveness, including feedback from learner and colleagues and self-evaluation, (26, 30).

On the other hand, the second focus of health education program is geared toward evaluate all steps of developing the health educational program, such as the educational objectives, the resources, budget and cost, the time, the evaluation tools for learning teaching process, the learning environment, evaluation of performance of all responsible persons. Satisfaction questionnaires, chart audits and budget reviews are examples of evaluation tools of educational and program, (26,30).

2.13. Educational Tools

Facilitating the learning process and retraining the learned information and stills are related to the educational materials. Educational materials may be
classified into printing and non-printing materials. The printing group includes photographs, sketches, booklet, and pamphlets, whereas the non-printing materials include the audiovisual materials such as overhead transparencies, slides, motion pictures, videotapes. Each group has its specific different purpose and selection, (30).


Learners often need to have the teaching experience supplemented with printing materials. Printing materials can serve to reinforce teaching and provide reminders about new behaviors after the leaner has left the educational setting. Selection of printing materials that the learner can understand is a challenge for health educators. There are factors should be considered when choosing printing materials. They include analysis of the content, format and appropriateness of the printing material for the target group. The content of the printing material should be assessed to determine the information that accurate, is up to date, and presents all the information which a leaner need to know for change behavior. Also, the format should be assessed but against other characteristics. These characteristics are the type and size of printing. Many researchers recommended using bold print to highlight important aspects and to use upper and lower case letters in the text. Heading should be used for paragraphs. Each paragraph should present one idea and be about four sentences long, in addition to enough space should be inserted between paragraphs or sections, (30, 31).

2.15. Nonprinting Materials

Nonprinting materials, often called audiovisual, enhance learning through clarification and reinforcement and provide the convince and cost effectiveness of being used over and over without using the health educator's time. Audiovisual materials can often be adjusted to the learner's own pace to meet individual learning needs. Audiovisual can be used to provide experience that might not be possible otherwise. These experiences include bringing an expert into the community via videotape for example; the health educator should preview the audiovisual aid and determine whether meeting the
educational objectives are necessary when selecting the audiovisual materials. Also, the appropriateness of audiovisual aid should be assessed/determined based on the reading and comprehensive abilities of the target group, (29, 30, 31).

2.16. Sessions of Health education program

Table 2.1 Sessions of Health education program for hypertensive patients

<table>
<thead>
<tr>
<th>Specific objectives</th>
<th>Content</th>
<th>Teaching methods</th>
<th>Media</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Session: 1 Time: 45-60 minutes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Define Hypertension</td>
<td>Definition of Hypertension</td>
<td>Discussion</td>
<td>Booklet</td>
<td>Oral exam</td>
</tr>
<tr>
<td>Classify Hypertension</td>
<td>Hypertension major types &amp; others types.</td>
<td>Discussion</td>
<td>Booklet</td>
<td>Oral exam</td>
</tr>
<tr>
<td>Identify etiology of Hypertension</td>
<td>Etiology of Hypertension</td>
<td>Discussion</td>
<td>Booklet</td>
<td>Oral exam</td>
</tr>
</tbody>
</table>

Session: 2 Time: 45-60 minutes

<table>
<thead>
<tr>
<th>Specific objectives</th>
<th>Content</th>
<th>Teaching methods</th>
<th>Media</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mention clinical manifestation of Hypertension</td>
<td>Clinical manifestation of Hypertension</td>
<td>Discussion</td>
<td>Booklet</td>
<td>Oral exam</td>
</tr>
<tr>
<td>Identify common laboratory investigation of Hypertension</td>
<td>Common laboratory investigation of Hypertension</td>
<td>Discussion</td>
<td>Booklet</td>
<td>Oral exam</td>
</tr>
</tbody>
</table>

Session: 3 Time: 45-60 minutes

<table>
<thead>
<tr>
<th>Specific objectives</th>
<th>Content</th>
<th>Teaching methods</th>
<th>Media</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differentiate between Hypertension and Hypotension</td>
<td>Differentiate between Hypertension and Hypotension</td>
<td>Discussion</td>
<td>Booklet</td>
<td>Oral exam</td>
</tr>
<tr>
<td>Immediate action Taken by patients.</td>
<td>- Definition - Causes - Singe &amp; symptoms - Management</td>
<td>Discussion</td>
<td>Booklet</td>
<td>Oral exam</td>
</tr>
</tbody>
</table>

Session: 4 Time: 45-60 minutes

17
Identify chronic complications of Hypertension

Session: 5 Time: 45-60 minutes
List important of Hypertensive diet

Session: 6 Time: 45-60 minutes
Enumerate of the important of exercise.

Session: 7 Time: 45-60 minutes
Intervention related to important complication

Session: 8 Time: 45-60 minutes
BP measurement

2.17. Definition of hypertension

A force exerted by the blood against the walls of blood vessels, and the magnitude of this force depends on the cardiac output and the resistance of the blood vessels (32). Hypertension is defined as having a blood pressure higher than 140 over 90 mmHg, with a consensus across medical guidelines (33, 34). This means the systolic reading (the pressure as the heart pumps blood around the body) is over 140 mmHg (millimeters of mercury) and/or the diastolic reading (as the heart relaxes and refills with blood) is over 90 mmHg. This threshold has been set to define hypertension for clinical convenience as patients experience benefits once they bring their blood pressure below this level (35). However, medical experts consider high blood pressure as having a continuous relationship to cardiovascular health (33, 35) they believe that, to a point, the lower the blood pressure the better (down to levels of 115-110 mmHg systolic,
and 75-70 mmHg diastolic). They believe that, to a point (down to levels of 115-110 mmHg systolic, and 75-70 mmHg diastolic) the lower the blood pressure the better. This view has led the American Heart Association (AHA), for example, to define the following ranges of blood pressure (in mmHg): hypertension also known as high blood pressure (HBP), is a long term medical condition in which the blood pressure in the arteries is persistently elevated. This view has led the American Heart Association (AHA), for example, to define the following ranges of blood pressure (in mmHg): hypertension also known as high blood pressure (HBP), is a long term medical condition in which the blood pressure in the arteries is persistently elevated.

Hypertension usually requires a lifelong management plan and people with hypertension have a central role in this plan. In fact behavior modification through education together with regular monitoring and appropriate management of blood pressure control is essential to improvement the health of people with hypertension. Increasingly it has been realized that person with hypertension who plays the most crucial role in this process, and hence their motivation is essential. Effective education, which is matched to the patient's ability and capacity to learn, can enable people with hypertension to take responsibility for their own health, Lifestyle changes and medications can lower blood pressure and decrease the risk of health complications.

High blood pressure usually does not cause symptoms. 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.

### 2.18. Pathophysiology of hypertension

In most people with established essential hypertension, increased resistance to blood flow (total peripheral resistance) accounts for the high pressure while cardiac output remains normal. There is evidence that some younger people with pre hypertension have high cardiac output, an elevated heart rate and normal peripheral resistance, termed hyperkinetic borderline hypertension. These individuals develop the typical features of established essential hypertension in later life as their cardiac output falls and peripheral resistance rises with age. Whether this pattern is typical of all people who ultimately develop hypertension is disputed. The increased peripheral
resistance in established hypertension is mainly attributable to structural narrowing of small arteries and arterioles, although a reduction in the number or density of capillaries may also contribute. Hypertension is also associated with decreased peripheral venous which may increase venous return, increase cardiac preload and, ultimately, cause diastolic dysfunction.

Pulse pressure (the difference between systolic and diastolic blood pressure) is frequently increased in older people with hypertension. This can mean that systolic pressure is abnormally high, but diastolic pressure may be normal or low a condition termed isolated systolic hypertension. The high pulse pressure in elderly people with hypertension or isolated systolic hypertension is explained by increased arterial stiffness, which typically accompanies aging and may be exacerbated by high blood pressure. Many mechanisms have been proposed to account for the rise in peripheral resistance in hypertension. Most evidence implicates either disturbances in the kidneys’ salt and water handling (particularly abnormalities in the intrarenal renin-angiotensin system).

2.19. Classification of blood pressure for adults

Table 2.2 Classification of blood pressure for adults (JNC7)

<table>
<thead>
<tr>
<th>Category</th>
<th>Systolic mmHg</th>
<th>Diastolic mmHg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>90–119</td>
<td>60–79</td>
</tr>
<tr>
<td>High normal[7=59] (Pre hypertension)</td>
<td>120–139</td>
<td>80–89</td>
</tr>
<tr>
<td>hypertension Stage 1</td>
<td>140–159</td>
<td>90–99</td>
</tr>
<tr>
<td>hypertension Stage 2</td>
<td>160–179</td>
<td>100–109</td>
</tr>
<tr>
<td>hypertension[72=60][73=61] (Hypertensive emergency)</td>
<td>≥180</td>
<td>≥110</td>
</tr>
<tr>
<td>Stage 3</td>
<td>≥140</td>
<td>&lt;90</td>
</tr>
</tbody>
</table>
2.20. Epidemiology of hypertension

As of 2000, nearly one billion people or 26% of the adult population of the world had hypertension.\(^{(50)}\) It was common in both developed (333 million) and undeveloped (639 million) countries.\(^{(51)}\) However, rates vary markedly in different regions with rates as low as 3.4% (men) and 6.8% (women) in rural India and as high as 68.9% (men) and 72.5% (women) in Poland.\(^{(52)}\) In Europe hypertension occurs in about 30-45% of people as of 2013.\(^{(53)}\) In 1995 it was estimated that 43 million people in the United States had hypertension or were taking antihypertensive medication, almost 24% of the adult United States population.\(^{(54)}\) The prevalence of hypertension in the United States is increasing and reached 29% in 2004.\(^{(55)}\) As of 2006 hypertension affects 76 million US adults (34% of the population) and African American adults have among the highest rates of hypertension in the world at 44%.\(^{(56)}\) It is more common in blacks and Filipinos and less in whites and Mexican Americans, rates increase with age, and is greater in the southeastern United States.\(^{(57,58)}\) Hypertension is more common in men (though menopause tends to decrease this difference) and in those of low socioeconomic status.\(^{(57)}\)

2.21. Causes of hypertension

Secondary hypertension results from an identifiable cause. Kidney disease is the most common secondary cause of hypertension.\(^{(58)}\) Hypertension can also be caused by other condition, regarding history of associated conditions as endocrine conditions, such as Cushing's syndrome, hyperthyroidism, hypothyroidism and diabetes, smoking, dyslipidemia \(^{(58, 59)}\). Other causes of secondary hypertension include obesity \(^{(58, 60)}\). As acute stress, intense exercise and other factors can briefly elevate blood pressure even in people whose blood pressure is normal, a diagnosis of hypertension requires several readings showing high blood pressure over time.\(^{(61)}\) Having high blood pressure for a short amount of time is a normal physiological response to many situations. However, a systolic reading of 180 mmHg or higher or a diastolic reading of 110 mmhg or higher could be a sign of a hypertensive crisis that warrants immediate medical attention.
Anyone who gets such a reading when testing their own blood pressure should wait a couple of minutes and repeat the test. If the reading remains at that level or increases, seek emergency medical treatment (call an ambulance or have someone drive you to the hospital immediately, blood pressure does vary throughout the day, lowering during sleep and rising on awakening. It also rises in response to excitement, anxiety and physical activity (61). Blood pressure also increases steadily with age as arteries become stiffer and narrower due to plaque build-up. Vascular and heart disease also contribute to rising blood pressure in older adults, and a high systolic reading is a major risk factor for cardiovascular disease in adults over 50 years old. The disease burden of high blood pressure is a growing problem worldwide, in part because of a rapidly aging population. Other key contributors include lifestyle factors, such as : (33) Physical inactivity. A salt-rich diet associated with processed and fatty foods, Alcohol and tobacco use. Certain diseases and medications (as described below) can cause high blood pressure, and there are a number of general risk factors for hypertension, including (61). Age - everyone is at greater risk of high blood pressure as they get older. Prevalence of hypertension is higher in people over 60 years of age. Race - African-American adults are at higher risk than white or Hispanic American adults. Size - being overweight or obese is a key risk factor for hypertension. Sex - males and females have different risk profiles. While lifetime risk is the same for everybody, men are more prone to hypertension at a younger age and women have a higher rate of hypertension at older ages. Lifestyle - greater intake of dietary salt, excessive alcohol, low dietary potassium, and physical inactivity all contribute to an increased risk of hypertension. Other risk factors include a family history of the disease, and chronic, poorly managed stress. (33)

2.21.1. Specific causes of hypertension

High blood pressure that is not caused by another condition or disease is termed primary hypertension (or essential hypertension). This is more common than secondary hypertension, which has an identified cause such as chronic kidney disease. (32) Primary hypertension is unlikely to have a specific cause but is instead usually a result of multiple factors, including blood plasma volume and activity of the renin-angiotensin system, the hormonal regulator of blood
volume and pressure. Primary hypertension is also influenced by environmental factors, including lifestyle-related issues as outlined above. Secondary hypertension has specific causes - that is, it is secondary to another problem. One example, now thought to be one of the most common causes of treatment-resistant hypertension, is primary aldosterone’s, a hormone disorder causing an imbalance between potassium and sodium levels, thus leading to high blood pressure. (32)

Primary aldosterones may account for some 5-15% of cases of hypertension. It is important that physicians determine if the condition is caused by hyperplasia of the adrenal gland(s) or an adrenal gland tumor as treatments differ between the two. Common reversible causes are excessive intake of alcohol and use of oral contraceptives, which can cause a slight rise in blood pressure; hormone therapy for menopause is also a culprit. Secondary hypertension can also result from: Diabetes (both due to kidney problems and nerve damage), Kidney disease, Pheochromocytoma (a cancer), Cushing syndrome (which can be caused by use of corticosteroid drugs), Congenital adrenal hyperplasia (disorder of the adrenal glands, which secrete the hormone cortisol), Hyperthyroidism (overactive thyroid gland), Hyperparathyroidism (which affects calcium and phosphorous levels), Pregnancy, Sleep apnea, Obesity.

2.22. Signs and symptoms of hypertension

High blood pressure itself is usually asymptomatic, meaning that patients do not experience any direct symptoms of the condition. This is why hypertension is often referred to as "the silent killer," as it can quietly causes damage to the cardiovascular system. Hypertension can also lead to problems in the organs affected by high blood pressure. Long-term hypertension can cause complications through arteriosclerosis, where the formation of plaques results in narrowing of blood vessels.

Hypertension is rarely accompanied by any symptoms, and its identification is usually through screening, or when seeking healthcare for an unrelated problem. Some with high blood pressure report headaches (particularly at the back of the head and in the morning), as
well as lightheadedness, vertigo, tinnitus (buzzing or hissing in the ears), altered vision or fainting episodes.\textsuperscript{(62)} These symptoms, however, might be related to associated anxiety rather than the high blood pressure itself.\textsuperscript{(63)} The severity of the changes typical of hypertensive retinopathy is graded from I–IV; grades I and II may be difficult to differentiate.\textsuperscript{(64)} The severity of the retinopathy correlates roughly with the duration and/or the severity of the hypertension \textsuperscript{(62)}.

\section*{2.23. Diagnosis and tests for hypertension}

Diagnosis of hypertension is made by measuring blood pressure over a number of clinic visits, using a sphygmanometer - the familiar upper-arm cuff device. An isolated high reading is not taken as proof of hypertension. Rather, diagnosis can be made after elevated readings are taken on at least three separate days.\textsuperscript{(32)} Measurements may be taken at the doctor's office while a patient is seated and after standing; this helps the doctor to look for orthostatic or postural hypotension.\textsuperscript{(35)} The reliability of blood pressure readings may be improved by having a patient or someone else take a series of measurements outside the doctor's office using standardized devices.\textsuperscript{(35)} We have more detailed information about measuring blood pressure. In addition to measuring blood pressure using sphygmanometers, a doctor will take a history (ask questions, such as about cardiovascular problems) and do a physical examination before diagnosing hypertension.\textsuperscript{(32)} These questions and additional tests can help to identify the cause of high blood pressure and determine whether there have been any complications. Such tests may include urine tests, kidney ultrasound imaging, blood tests, an electrocardiogram (ECG) and/or an echocardiograph.\textsuperscript{(32)}

\section*{2.24. Complication of hypertension}

The complications associated with hypertension-related arteriosclerosis can include:\textsuperscript{(56,57)} An enlarged or weakened heart, to a point where it may fail to pump enough blood (heart failure) \textsuperscript{,} Aneurysm - an abnormal bulge in the wall of an artery (which can burst, causing severe bleeding and, in some cases, death) \textsuperscript{,} Blood vessel narrowing - in the kidneys this can lead to possible kidney failure; in the heart, brain and legs, this can lead to heart attack, stroke or the

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need for amputation, respectively, Blood vessels in the eyes may rupture or bleed, leading to vision problems or blindness (hypertensive retinopathies classified by worsening grades one through four).

2.25. Treatments for hypertension

The main goals of hypertension treatment are to achieve blood pressure control as near normal as possible and to prevent or delay the onset of complications. Reduce cardiovascular and renal morbidity and mortality. Lifestyle changes are important for both treatment and prevention of high blood pressure, and they can be as effective as a drug treatment. These lifestyle changes can also have wider benefits for heart health and overall health, the lifestyle measures shown to reduce blood pressure and recommended by experts include:

- **Salt restriction** - typical salt intake is between 9 and 12 g a day and modest blood pressure reductions can be achieved even in people with normal levels by lowering salt to around 5 g a day - the greatest effects are seen in people with hypertension. Moderation of alcohol consumption - expert guidelines say moving from moderate to excessive drinking is "associated both with raised blood pressure and with an increased risk of stroke". High consumption of vegetables and fruits and low-fat - people with, or at risk of, high blood pressure are advised to minimize intake of saturated fat and total fat and to eat whole-grain, high-fiber foods, at least 300 g of fruit and vegetables a day, beans, pulses, and nuts, and omega-3-rich fish twice a week. Reducing weight and maintaining it - hypertension is closely correlated with excess body weight, and weight reduction is followed by a fall in blood pressure. Regular physical exercise - guidelines say "hypertensive patients should participate in at least 30 min of moderate-intensity dynamic aerobic exercise (walking, jogging, cycling or swimming) on 5 to 7 days a week". Stress reduction - avoiding sources of stress, where possible, and developing healthy coping strategies for managing unavoidable stress can help with blood pressure control, especially as many people turn to alcohol, drugs, smoking and unhealthy foods or overeating to cope with stress. Smoking can also raise blood pressure, and because of its wider effects on heart health and the rest of the body, giving up smoking is highly recommended for people with high blood pressure.
2.26. The Dietary Approaches to Stop Hypertension (DASH) diet.

The US National Heart Lung and Blood Institute recommends the (DASH) diet for people with high blood pressure. Standing for Dietary Approaches to Stop Hypertension, (DASH) has been specially formulated to help people lower blood pressure. It is a flexible and balanced eating plan based on research studies sponsored by the institute, which says the diet (Lowers high blood pressure, Improves levels of blood lipids (fats in the bloodstream) and Reduces the risk of developing cardiovascular disease). There is a National Institute cookbook called Keep the Beat Recipes with cooking ideas to help achieve these results. There is some evidence that probiotic supplements may be beneficial for people with hypertension.

2.27. Prevention of hypertension

Much of the disease burden of high blood pressure is experienced by people who are not labeled as hypertensive. Consequently, population strategies are required to reduce the consequences of high blood pressure and reduce the need for antihypertensive drug therapy. Lifestyle changes are recommended to lower blood pressure, before starting drug therapy. The 2004 British Hypertension Society guidelines proposed the following lifestyle changes consistent with those outlined by the US National High BP Education Program in 2002 for the primary prevention of hypertension. (maintain normal body weight for adults (e.g. body mass index 20–25 kg/m²) , reduce dietary sodium intake to <100 mmol/ day (<6 g of sodium chloride or <2.4 g of sodium per day) , engage in regular aerobic physical activity such as brisk walking (≥30 min per day, most days of the week) , limit alcohol consumption to no more than 3 units/day in men and no more than 2 units/day in women and consume a diet rich in fruit and vegetables (e.g. at least five portions per day) Effective lifestyle modification may lower blood pressure as much as an individual antihypertensive drug. Combinations of two or more lifestyle modifications can achieve even better results.
2.28. Drug treatments for hypertension

Lifestyle measures are standard first-line treatment for hypertension, although doctors will prescribe medication alongside lifestyle measures to lower blood pressure in people with a level above 140 over 90.(32) Drugs are usually started as immunotherapy (just one drug) and at a low dose.(32) Side-effects associated with antihypertensive drugs are usually minor.(56) A number of different classes of drug are available to help lower blood pressure:(32,61,66) (diuretics (including thiazides, chlorthalidone and indapamide) cornerstone of treatment since 1977, Beta-blockers (and alpha-blockers), Calcium-channel blockers, Central agonists, Peripheral adrenergic inhibitors, vasodilators, angiotensin-converting enzyme (ACE) inhibitors and Angiotensin receptor blockers.

The choice of drug depends on the individual and any other conditions they may have. While a single drug is usually tried in immunotherapy first, a combination of at least two antihypertensive drugs is usually required.(70) Anyone taking antihypertensive medications should be sure to carefully read labels before taking any over-the-counter medications such as decongestants as these may interact with medications used to lower blood pressure.(70)

2.29. Lifestyle modifications

The first line of treatment for hypertension is lifestyle changes, including dietary changes, physical exercise, and weight loss. Though these have all been recommended in scientific advisories,(70) a review by Cochrane found no evidence for effects of weight loss diets on death or long-term complications and adverse events in persons with hypertension.(72) The review did find a decrease in blood pressure.(71) Their potential effectiveness is similar to and at times exceeds a single medication.(63) If hypertension is high enough to justify immediate use of medications, lifestyle changes are still recommended in conjunction with medication.

Dietary changes shown to reduce blood pressure include diets with low sodium,(72) the (DASH) diet, vegetarian diets(73) and high potassium diets.(74) Physical exercise regimens which are shown to reduce blood pressure
include isometric resistance exercise, aerobic exercise, resistance exercise, and device-guided breathing. Stress reduction techniques such as biofeedback or transcendental meditation may be considered as an add-on to other treatments to reduce hypertension, but do not have evidence for preventing cardiovascular disease on their own.\(^\text{(75,76,77)}\)

### 2.30. Nursing process for patient with hypertension

When hypertension is initially detected, nursing assessment involves carefully monitoring the blood pressure at frequent intervals and then, after diagnosis, at routinely scheduled intervals. The American Heart Association and the American Society of Hypertension have defined the standards for blood pressure measurement, including conditions required before measurements are made, equipment specifications, and techniques for measuring blood pressure to obtain accurate and reliable readings.\(^\text{(78)}\) When the patient begins an antihypertensive treatment regimen, blood pressure assessment are needed to determine the effectiveness of medication therapy and to detect any changes in blood pressure that indicate the need for a change in the treatment plan. A complete history is obtained to assess for symptoms that indicate target organ damage (whether other body systems have been affected by the elevated blood pressure). Such symptoms may include angina pain; shortness of breath; alterations in speech, vision, or balance; nosebleeds; headaches; dizziness; or nocturnal. During the physical examination, the nurse must also pay specific attention to the rate, rhythm, and character of the apical and peripheral pulses to detect effects of hypertension on the heart and blood vessels. A thorough assessment can yield valuable information about the extent to which the hypertension has affected the body and about any other personal, social, or financial factors related to the condition.\(^\text{(78)}\)

### 2.31. Nursing diagnoses

Based on the assessment data, nursing diagnoses for the patient may include the following: (Deficient knowledge regarding the relation between the treatment regimen and control of the disease process and noncompliance with therapeutic regimen related to side effects of prescribed therapy.\(^\text{(78)}\)
2.31.1 Collaborative problems/potential complications

Based on the assessment data, potential complications that may develop include the following: (Left ventricular hypertrophy, myocardial infarction, heart failure and cerebrovascular accident (stroke or brain attack) (78)

2.31.2 Planning and Goals

The major goals for the patient include understanding of the disease process and its treatment, participation in a self-care program, and absence of complications. (78)

2.31.3. Nursing Interventions

The objective of nursing care for hypertensive patients focuses on lowering and controlling the blood pressure without adverse effects and without undue cost. To achieve these goals, the nurse must support and teach the patient to adhere to the treatment regimen by implementing necessary lifestyle changes, taking medications as prescribed, and scheduling regular follow-up appointments with the health care provider to monitor progress or identify and treat any Complications of disease or therapy. (78)

2.31.4. Increasing knowledge

The patient needs to understand the disease process and how lifestyle changes and medications can control hypertension. The nurse needs to emphasize the concept of controlling hypertension rather than curing it. The nurse can encourage the patient to consult a dietician to help develop a plan for weight loss. The program usually consists of restricting sodium and fat intake, increasing intake of fruits and vegetables, and implementing regular physical activity. Explaining that it takes 2 to 3 months for the taste buds to adapt to changes in salt intake may help the patient adjust to reduced salt intake. The patient should be advised to limit alcohol intake, and tobacco should be avoided—not because smoking is related to hypertension, but because anyone with high blood pressure is already at increased risk for heart disease, and smoking amplifies this risk. (79)
Support groups for weight control, smoking cessation, and stress reduction may be beneficial for some patients; others can benefit from the support of family and friends. The nurse assists the patient to develop and adhere to an appropriate exercise regimen, because regular activity is a significant factor in weight reduction and a blood pressure–reducing intervention in the absence of any loss in weight. (80)

2.31.5. Promoting home and community-based care

Blood pressure screenings with the sole purpose of case finding are not recommended by the National High Blood Pressure Education Program because approximately 70% of persons with hypertension are already aware of their blood pressure levels (80). If asked to participate in a blood pressure screening, the nurse should be sure that proper blood pressure measurement techniques being used, that the manometers used are calibrated, and that provision has been made to provide follow-up for any person identified as having an elevated blood pressure. Adequate time should also be allowed to teach people what the blood pressure numbers mean. Each person should be given a written record of his or her blood pressure at the screening. (80)

2.32. Teaching Patients Self-Care

The therapeutic regimen is the responsibility of the patient in collaboration with the health care provider. Education about high blood pressure and how to manage it, including medications, lifestyle changes of diet, weight control, and exercise, setting goal blood pressures, and assistance with social support, can help the patient achieve blood pressure control. Involving family members in education programs enables them to support the patient’s efforts to control hypertension. The American Heart Association and the National Heart Lung and Blood Institute provide printed and electronic patient education materials. Written information about the expected effects and side effects of medications is important. When side effects occur, patients need to understand the importance of reporting them and to whom they should be reported. Patients need to be informed that rebound hypertension can occur if antihypertensive medications are suddenly stopped. Female and male patients should be
informed that some medications, such as beta-blockers, may cause sexual dysfunction and that, if a problem with sexual function or satisfaction occurs, other medications are available. The nurse can encourage and teach patients to measure their blood pressure at home. This practice involves patients in their own care and emphasizes the fact that failing to take medications may result in an identifiable rise in blood pressure. Patients need to know that blood pressure varies continuously and that the range within which their pressure varies should be monitored. (80)

2.32.1. Continuing Care and follow-up

Regular follow-up care is imperative so that the disease process can be assessed and treated, depending on whether control or progression is found. A history and physical examination should be completed at each clinic visit. The history should include all data that pertain to any potential problem, specifically medication related problems such as postural (orthostatic) hypotension (experienced as dizziness or lightheadedness). Deviation from the therapeutic program is a significant problem for people with hypertension and other chronic conditions requiring lifetime management. It is estimated that 50% discontinue their medications within 1 year of beginning to take them. Blood pressure control is achieved by only 27% (JNC VI, 1997). However, when patients actively participate in self-care, including self-monitoring of blood pressure and diet, compliance increases—possibly because patients receive immediate feedback and have greater sense of control. (80)

2.33. Monitoring and managing potential complications

Symptoms suggesting that hypertension is progressing to the extent that target organ damage is occurring must be detected early so that appropriate treatment can be initiated accordingly. When the patient returns for follow-up care, all body systems must be assessed to detect any evidence of vascular damage. Examining the eyes with an ophthalmoscope is particularly important because retinal blood vessel damage indicates similar damage elsewhere in the vascular system. The patient is questioned about blurred vision, spots in front of the eyes, and diminished visual acuity. The heart, nervous system, and kidneys
are also carefully assessed and examined. Any significant findings are promptly reported to determine whether additional diagnostic studies are required. Based on the findings, medications may be changed to improve blood pressure control. (80)

2.34. Maintains adequate tissue perfusion

Maintains blood pressure at less than 140/90 mm Hg (or less than 130/85 mm Hg for persons with diabetes mellitus or proteinuria greater than 1 g per 24 hours) with lifestyle modifications, medications, or both, demonstrates no symptoms of angina, palpitations, or vision changes and has stable BUN and serum creatinine levels Has palpable peripheral pulses(80)

2.35. Complies with the self-care program

Adheres to the dietary regimen as prescribed: reduces calorie, sodium, and fat intake; increases fruit and vegetable intake, exercises regularly, takes medications as prescribed and reports any side effects, measures blood pressure routinely, abstains from tobacco and excessive alcohol intake and keeps follow-up appointments. (80)

No complications reports no changes in vision, exhibits no retinal damage on vision testing, maintains pulse rate and rhythm and respiratory rate within normal ranges, reports no dyspnea or edema, Maintains urine output consistent with intake, has renal function test results within normal range, demonstrates no motor, speech, or sensory deficits, reports no headaches, dizziness, weakness, changes in gait, or falls. (80)

2.36. Nursing Diagnosis

2.36.1 Nursing Interventions

Monitor location, duration, intensity, and radiation of pain; use a scale of 0 to 10, monitor blood pressure, pulse, and respiration, obtain ECG as ordered, administer oxygen as ordered, instruct patient to report pain at first onset, instruct patient to rest during pain, remain with patient during chest pain until it is relieved, assist with alternative pain relief measures: related to positioning, divisional activities, relaxation techniques, medicate as order. (81)

2.37. Nursing Diagnosis

Decreased cardiac output related to ischemia or infarction, changes in heart rate and rhythm, and decreased contractility. Expected Outcomes Patient will maintain adequate cardiac output and tissue perfusion. Patient will exhibit signs of improved cardiac output and tissue perfusion. Evaluation of Outcomes Does patient have heart rate greater than 60 and less than 100, blood pressure greater than 90/60 and less than 140/90, and urine output greater than 30 mL/hr.?

2.37.1 Nursing Interventions

Monitor blood pressure, heart rate, and urine output, listen to lung sounds, monitor peripheral circulation, pulses, capillary refill, edema, color, and temperature, monitor ECG. Administer medications as ordered by physician, such as vasodilators, beta blockers, calcium channel blockers, and cardiac glycosides, promote and provide for adequate rest, quiet environment, bed rest; place in semi-Fowler’s position. (81)

2.38. Nursing Diagnosis

Fear related to threat of death, changes in lifestyle, chest pain, and procedures. Expected Outcome Patient verbalizes reduced fear. Patient demonstrates effective coping mechanisms. Evaluation of Outcomes Does patient verbalize reduced fear?
2.38.1 Nursing Interventions

Assess level of fear and note, non-verbal communication, ask the patient’s usual coping pattern, Orient the patient and family to surroundings and equipment, oxygen, cardiac monitoring, IVs, and explain procedures, assure patient he/she will be closely monitored, allow patient to verbalize fear of dying, provide divisional materials such as newspapers, music, and television, Offer family support.\textsuperscript{(81)}
CHAPTER THREE
MATERIALS AND METHODS
Materials and methods

3.1. Study design

A quasi-experimental study with pre and post-test with control group was carried out through the hypertension health centers in Kosti based on educational intervention program to evaluate the effect of health education program on hypertensive patient’s knowledge regarding hypertension prevention and his management. On February, 2013

3.2. Study Setting

This study was carried out in two health centers at White Nile state Kosti city (Tijani Mohammed Khari and Abu-Bakr Sati health center). Randomly selected Tijani Mohammed Khari center was chosen to act as intervention group as a follow up clinic for hypertensive patients. Abu-Bakr Sati health center will act as control group.

3.3. Study population

The population of this study was all hypertensive patients’ were the target population in this study and visiting the clinic monthly or biannually, registered in the hypertension clinic at Kosti.

3.3.1. Study Sample

Group I intervention group (n= 75).
Group II control group (n= 75).
We’ll be measured by equation = \( \frac{z^2pq}{d^2} \)

Where,
N is the sample size. Z is the standard normal deviation at 95% confidence level (is a standard figure set to 1.96). P is the prevalence or proportion in the target population estimated to have a particular characteristic or disease (Or 50%, 0.5 in case it is not known). q is 1 – p .d is the degree of accuracy desired (or the accepted margin of error and is usually set to 0.05) =5% chances i.e.95% confidence . n= (1.96)^2 *0.5(1-0.5) /0, 05)^2=350
The all number of patients in above health center is about 150 so the sample size will be total coverage of patients in study area. (n=150).

3.3.2. Subjects

The study subjects composed two groups {Group I intervention group (n= 75), Group II control group (n= 75) hypertensive patients} attending the study settings.

3.3.3. Inclusion Criteria

- Registered hypertension patients
- Age 30 years and above
- Both sexes (male and female), diagnosed with hypertension, able to communicate
- Visiting the clinic regularly for treatment or follow up. (Monthly or Biannually).

3.3.4. Exclusion criteria

- Not registered in the diabetic clinic.
- Unable to visit the clinic for any reason during the period of the study.
- Pregnant women.

3.4. Recruitment

- Patients were recruited by the researcher through facilitators in civil society organizations and sport clubs in different locations (place of residence) in the district and given an appointment for the session.

- Each patient was recruited by the researcher through their mobile number one day before the date of the session and immediately before the session and through their routines visit to the diabetic clinic.
Pilot sample (10 hypertensive Pt.) was chosen from one health center and not included in study and they completed the questionnaire

Patients attend to the health centers. (Hypertensive patients) are the accessible population N = (220)

Eligible patients were randomly selected to participate in the study (150 hypertensive patients)

Intervention group

Control group

Pre-Test

Intervention (HTN Education)

Post-Test 1 after 3 month intervention

Post-Test 3 after 6 months Follow-up

Test-1

No Intervention (No Education)

No Intervention

Test-2 after 6 months

Figure 3.1: Flow chart of the study
3.5. Pilot study:

Pilot study was done on a sample of ten hypertensive patients who attended the centers. The aim was to test the feasibility of the study tools. According to the results obtained, some questions were restructured and rephrased to give the most accurate response.

The pilot study was carried out in order to identify the possibility of problems to revise the data collection methods before starting the actual research which were the following: -
1. Decide if the selected tools are appropriate.
2. Testing the questionnaire to find out if the questions are understood and easily answered.
3. Assess if the sequence of the questions is logical, clear and translation accurate.

The pilot study was carried out at the hypertension clinic during the patient’s routine visit with two weeks interval. A total of 10 registered hypertensive patients were asked to answer the basic information questionnaire and knowledge evaluation questionnaire, although, those patients were not included in the study.

The type, sequence, misunderstanding, rephrasing and removing of the questions in both questioners were changed three times after finishing the pilot study.

3.6. Data collection

Data were collected by the researcher over the period of three months between 12/09/2013 to 12/12/2013 during the patient’s routine visit (monthly and biannually) to the hypertension clinic at the health center.

Patients were interviewed by the researcher using a basic information questionnaire on demographic data, anthropometric measurement and other health variables after their informed consent to take part in the study.
3.7 Study Tools

(A) A basic information questionnaire (Appendix 1A) was developed with informed consent and validated by nurse educator and then tested on 10 patients. The questionnaire was filled by the researcher through using a clear Arabic language.

The questionnaire includes the following sections:

1. Patients file number, place of residence and telephone number.
2. Socio-demographic data: including sex, age, marital status educational level, income level
3. Anthropometric measurements: including height, weight, body mass index, blood pressure.
4. Hypertension related data: Duration of disease, family history of hypertension, other treatment, and presence of complications.
5. Health Education data: Previous health education programs.
6. Lifestyle data: including smoking, daily and previous physical activity and dietary history.

(B) A Knowledge evaluation questionnaire (Appendix 1B) was designed and implemented by the researcher to measure the degree of knowledge and understanding of patients in managing their hypertension. The questionnaire was filled by the patients before starting the session and after two to three months at the end of the study. The questionnaire consists of 40 multiple choice questions covering different aspects of hypertension disease including definition, types, risk factors, symptoms, complications, main aspects of self-care, and main aspects of dietary management and importance of physical activity for hypertension patients.

Total knowledge of patients was divided into 4 levels: those who correctly answered less than 15 to 25 hypertension knowledge questions were considered to have poor knowledge, those who answered 25 to 50 of questions as having moderate knowledge, those who answered 51 to 75 of questions as having good knowledge and those who answered more than 76 as having Very good knowledge. (84)
3.8. Intervention Program Components

A group-based educational intervention session about hypertension disease was conducted by a researcher. This session is a four hours education program. It was presented once at the patient’s place of residence according to a previous appointment with patients in the location. A plain flip chart was used as a teaching aid while presenting the session at all locations. The program includes definition of hypertension, symptoms, risk factors, types, treatment and complications, main aspects of dietary management, weight reduction, blood pressure, smoking, periodic investigations, home monitoring and importance of physical activity) for hypertension patients.

At the beginning of the session a pre-test knowledge evaluation questionnaires were distributed to the hypertensive patient’s attendance. And at the end of the session a colored educational materials printed in Arabic language were distributed (Appendix 2).

The educational materials include the following:

- Flip Chart about dietary management for hypertensive patients.

- Booklets, brochures and handbooks about definition, types, symptoms and risk factors of hypertension disease, complications, and self-management of hypertension and hypotension, importance of exercise and investigations. (Appendix 3).

In addition, hypertensive patients were allowed to ask questions about the topic being presented. The researcher was in a continuous direct contact with the patients through their phone and via e-mails to answer any question for two to three months before starting the post-test.

3.9. Reliability and Validity

Testing of the knowledge questionnaire for reliability and validity yielded positive results. Content validity of an original 40 items knowledge evaluation questionnaire was evaluated by nurse educator specialists. Based on their feedback, three items were dropped, one item was added, four items were
changed and several items were rephrased for clarity. This results in a new version of the instrument which was administered to a pilot sample of 10 patients.

3.10 Anthropometric Measurements

- Anthropometric measurements were measured at the beginning and at the end of the study by the researcher and the same clinic nurse.

- The following anthropometric measurements were obtained twice each time for the hypertensive patients and then calculating the average of the two readings (at the beginning and at the end of the study).

3.10.1. Height (HT)

Patients were measured stand with heels together without shoes, eyes directed forward and reduced the measuring plate on the scalp to provide the correct level using a mechanical column scale without changing the scale location after adjusting it prior to use in order to ensure accuracy of measurements.

3.10.2. Weight (WT)

Patients were measured wearing light clothes without shoes and standing with their weight balanced on both feet using a mechanical column scale without changing the scale location after adjusting it prior to use in order to ensure accuracy of measurements.

3.10.3. Body Mass Index (BMI)

Calculate body mass index is a value derived from the mass (weight) and height of an individual (81). BMI ranges are (underweight: under 18.5 kg/m², normal weight: 18.5 to 25, overweight: 25 to 30, obese: over 30) (82) It has taken measurements of height and weight of patients used (kuanyi scale) (BMI = weight ÷ squared height)(83) calculated for the participants using international classification as shown in table 3.3.
3.10.4. Blood Pressure (BP)

Systolic blood pressure (SBP) and diastolic blood pressure (DBP) was measured by the researcher using a mercury Sphygmomanometer (Appendix 4). Patients were asked to sit in a relaxed position and adult size cuff was used.

Table 3.1. The international Classification of adult underweight, overweight and obesity according to BMI. \(^{85}\)

<table>
<thead>
<tr>
<th>Classification</th>
<th>BMI(kg/m(^2))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt; 18.5</td>
</tr>
<tr>
<td>Normal Weight</td>
<td>18.5 - 24.9</td>
</tr>
<tr>
<td>Overweight</td>
<td>25 - 29.9</td>
</tr>
<tr>
<td>Obese</td>
<td>(\geq 30)</td>
</tr>
</tbody>
</table>

3.11. Data Analysis

The data obtained from the questionnaire (basic information and knowledge evaluation) were entered into the Statistical Package for Social Sciences, (SPSS) Windows version 16) program using the Independent sample \(t\)-test to determine whether there is a significant difference at the level 0.05 in the categories listed in the questionnaire. Descriptive statistics (mean, Standard deviation, percentage) was used to describe the study samples and variables. And knowledge scores before and after the educational intervention at \(p\)-value <0.05.

3.12 Ethical consideration

1- Written official letters were issued from the National Ribat University to the directors of health center to obtain approval to carry out the study, explaining the aim of the study (Appendix 5)

2- Patients were informed and consented for the intervention about the purpose of the study before conducting the interview were told that their participation will be voluntary.
3- The researcher was in a continuous direct contact with the patients through their phone and via e-mails to answer any question for two to three months before starting the post-test.
CHAPTER FOUR

RESULTS
4. Results

Table 4.1: The socio-demographic characteristics {Intervention group & Control groups}

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention group (n=75)</th>
<th>Control group (n=75)</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-</td>
<td>17</td>
<td>23</td>
<td>22</td>
<td>29</td>
</tr>
<tr>
<td>40-</td>
<td>30</td>
<td>40</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>50-</td>
<td>28</td>
<td>37</td>
<td>23</td>
<td>31</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>2.15±0.77</td>
<td>2.01 ± 0.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>45</td>
<td>60</td>
<td>43</td>
<td>57</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>40</td>
<td>32</td>
<td>42</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.40 ± 0.49</td>
<td>1.43 ± 0.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>14</td>
<td>19</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>Married</td>
<td>54</td>
<td>72</td>
<td>55</td>
<td>73</td>
</tr>
<tr>
<td>Divorce</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Widow</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.95 ± 0.63</td>
<td>1.97 ± 0.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working</td>
<td>55</td>
<td>73</td>
<td>56</td>
<td>75</td>
</tr>
<tr>
<td>Not working</td>
<td>20</td>
<td>27</td>
<td>19</td>
<td>25</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.27 ± 0.45</td>
<td>1.25 ± 0.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>17</td>
<td>23</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Primary</td>
<td>22</td>
<td>29</td>
<td>29</td>
<td>39</td>
</tr>
<tr>
<td>Secondary</td>
<td>30</td>
<td>40</td>
<td>21</td>
<td>28</td>
</tr>
<tr>
<td>University</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>2.33 ± 0.92</td>
<td>2.35 ± 0.95</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4.1 shows the demographic characteristics and other variables of the 150 subjects. Most of the subjects (40%) were 40–40 years old. The mean ± standard deviation of age was 2.15 ± 0.77 for intervention group and 2.01 ± 0.78 for control group. Among all subjects, 45(60%) were males and 30(40%) were females on control group is likely same above value 43(57%) were males and 32(42%) were females. The majority of subjects (72%) were married in intervention group and (73%) for control group. Most of subjects (73%) were working in intervention group and (70%) on control group. There is no significant difference between intervention group and control group on the demographic characteristics at the level of (P > 0.05).

Table 4.2: Distribution of correct knowledge about hypertension disease aspects between the intervention and control groups before education program (N=150)

<table>
<thead>
<tr>
<th></th>
<th>Intervention group</th>
<th>Control group</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test</td>
<td>Test-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No (%)</td>
<td>Mean ± SD</td>
<td>No (%)</td>
<td>Mean ± SD</td>
<td></td>
</tr>
<tr>
<td>Definition of hypertension</td>
<td>31 (41) 0.41 ± 0.50</td>
<td>28 (37) 0.37 ± 0.49</td>
<td>0.50</td>
<td>0.619</td>
</tr>
<tr>
<td>Causes of hypertension</td>
<td>19 (25) 0.25 ± 0.44</td>
<td>22 (29) 0.29 ± 0.46</td>
<td>-0.55</td>
<td>0.586</td>
</tr>
<tr>
<td>Signs symptom of hypertension</td>
<td>24 (32) 0.32 ± 0.47</td>
<td>23 (31) 0.31 ± 0.46</td>
<td>0.17</td>
<td>0.861</td>
</tr>
<tr>
<td>Signs symptom of hypotension</td>
<td>30 (40) 0.40 ± 0.49</td>
<td>26 (35) 0.35 ± 0.48</td>
<td>0.67</td>
<td>0.503</td>
</tr>
<tr>
<td>Importance of compliance types of drugs</td>
<td>24 (32) 0.32 ± 0.47</td>
<td>27 (36) 0.36 ± 0.48</td>
<td>-0.51</td>
<td>0.608</td>
</tr>
<tr>
<td>Importance of compliance to medication regimen</td>
<td>9 (12) 0.12 ± 0.33</td>
<td>9 (12) 0.12 ± 0.33</td>
<td>0.02</td>
<td>0.941</td>
</tr>
<tr>
<td>Importance of compliance to dietary program</td>
<td>17 (23) 0.23 ± 0.42</td>
<td>20 (27) 0.27 ± 0.45</td>
<td>-0.57</td>
<td>0.573</td>
</tr>
<tr>
<td>Importance of compliance to exercise</td>
<td>24(32) 0.32 ± 0.47</td>
<td>23 (31) 0.31 ± 0.46</td>
<td>0.17</td>
<td>0.861</td>
</tr>
</tbody>
</table>

Table (4.2): The result of the mean value of patient's knowledge regarding definition of hypertension before attending of educational program was 0.41±0.50 while the mean knowledge of the patients in control group on the same dimension was 0.37±0.49. There is no significant difference (P = 0.619 > 0.05).
The mean value of patient's knowledge regarding causes of hypertension before attending of educational program was 0.25±0.44 while the mean knowledge of the patients in control group on the same dimension was 0.29±0.46. There is no significant difference (P > 0.05).

The mean value of patient's knowledge regarding signs & symptoms of hypertension before attending of educational program was 0.32±0.47 while the mean knowledge of the patients in control group on the same dimension was 0.31±0.46. No significantly different (P > 0.05) The mean value of patient's knowledge regarding signs & symptoms of hypotension before attending of educational program was 0.40±0.49 while the mean knowledge of the patients in control group on the same dimension was 0.35±0.48. There is no significant difference (P > 0.05)

The mean value of patient's knowledge regarding importance of compliance types of drugs about hypertension before attending of educational program (n=75) was 0.32±0.47 while the mean knowledge of the patients in control group on the same dimension was 0.36±0.48. No significantly different (P > 0.05). The mean value of patient's knowledge regarding importance of compliance to medication regimen about hypertension before attending of educational program was 0.12±0.33 while the mean knowledge of the patients in control group on the same dimension was 0.12±0.33. There is no significant difference (P > 0.05).

The mean value of patient's knowledge regarding importance of compliance to dietary program about hypertension before attending of educational program was 0.23±0.42 while the mean knowledge of the patients in control group on the same dimension was 0.27±0.45. There is no significant difference (P > 0.05).

The mean value of patient's knowledge regarding importance of compliance to exercise about hypertension before attending of educational program was 0.32±0.47 while the mean knowledge of the patients in control group on the same dimension was 0.31±0.46. There is no significant difference (P = 0.861 > 0.05).
Table 4.3: Distribution of correct knowledge about hypertension disease aspects in Intervention group (before Intervention and after intervention) (N=75)

<table>
<thead>
<tr>
<th></th>
<th>Intervention group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test before Intervention (n=75)</td>
</tr>
<tr>
<td></td>
<td>No (%) Mean ± SD</td>
</tr>
<tr>
<td>Definition of hypertension</td>
<td>31(41) 0.41 ± 0.50</td>
</tr>
<tr>
<td>Causes of hypertension</td>
<td>19(25) 0.25 ± 0.44</td>
</tr>
<tr>
<td>Signs symptom of hypertension</td>
<td>24(32) 0.32 ± 0.47</td>
</tr>
<tr>
<td>Signs symptom of hypotension</td>
<td>30(40) 0.40 ± 0.49</td>
</tr>
<tr>
<td>Importance of compliance types of drugs</td>
<td>24(32) 0.32 ± 0.47</td>
</tr>
<tr>
<td>Importance of compliance to medication regimen</td>
<td>9(12) 0.12 ± 0.33</td>
</tr>
<tr>
<td>Importance of compliance to dietary program</td>
<td>17(23) 0.23 ± 0.42</td>
</tr>
<tr>
<td>Importance of compliance to exercise</td>
<td>24(32) 0.32 ± 0.47</td>
</tr>
</tbody>
</table>

Table 4.3: The result of the mean value of patient's knowledge regarding definition of hypertension before attending of educational programs was 0.41±0.50 while the mean knowledge of the patients after the program on the same dimension was 0.87±0.34; there is a significant difference (P = 0.001 < 0.05).

The mean value of patient's knowledge regarding causes of hypertension before attending of educational program was 0.25±0.44 while the mean knowledge of the patients after the program on the same dimension was 0.92±0.27, there is a significant difference (P = 0.002 < 0.05).

The mean value of patient's knowledge regarding signs & symptoms of hypertension before attending of educational program was 0.32±0.47 while the mean knowledge of the patients after the program on the same dimension was 0.93±0.25, there is a significant difference (P = 0.003 < 0.05).
The mean value of patient's knowledge regarding signs & symptoms of hypotension before attending of educational program was 0.40±0.49 while the mean knowledge of the patients after the program on the same dimension was 0.88±0.33, there is a significant difference (P = 0.007 < 0.05). The result of The mean value of patient's knowledge regarding Importance of compliance to types of drugs about hypertension before attending of educational program was 0.32±0.47 while the mean knowledge of the patients after the program on the same dimension was 0.55±0.50, there is a significant difference (P = 0.005 < 0.05).

The mean value of patient's knowledge regarding Importance of compliance to medication regimen about hypertension before attending of educational program (n=75) was 0.12±0.33 while the mean knowledge of the patients after the program on the same dimension was 0.65±0.48, there is a significant difference (P = 0.004 < 0.05).

The mean value of patient's knowledge regarding Importance of compliance to dietary program about hypertension before attending of educational program was 0.23±0.42 while the mean knowledge of the patients after the program on the same dimension was 0.73±0.45, there is a significant difference (P = 0.004 < 0.05).

The mean value of patient's knowledge regarding Importance of compliance to exercise about hypertension before attending of educational program was 0.32±0.47 while the mean knowledge of the patients after the program on the same dimension was 0.80±0.40, there is a significant difference (P = 0.004 < 0.05).
Table 4.4: Distribution of correct knowledge about hypertension disease aspects in Intervention group (post-test after intervention and after 6 months Follow-up)(n=75)

<table>
<thead>
<tr>
<th></th>
<th>Intervention group</th>
<th></th>
<th></th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Post-test 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No (%)</td>
<td>Mean ± SD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Definition of hypertension</td>
<td>65(87)</td>
<td>0.87 ± 0.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Causes of hypertension</td>
<td>69(92)</td>
<td>0.92 ± 0.27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signs symptom of hypertension</td>
<td>70(93)</td>
<td>0.93 ± 0.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signs symptom of hypotension</td>
<td>66(88)</td>
<td>0.88 ± 0.33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance of compliance types of drugs</td>
<td>41(55)</td>
<td>0.55 ± 0.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance of compliance to medication regimen</td>
<td>49(65)</td>
<td>0.65 ± 0.48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance of compliance to dietary program</td>
<td>55(73)</td>
<td>0.73 ± 0.45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance of compliance to exercise</td>
<td>60(80)</td>
<td>0.80 ± 0.40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Post-test 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No (%)</td>
<td>Mean ± SD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Definition of hypertension</td>
<td>51 (75)</td>
<td>0.75 ± 0.44</td>
<td></td>
<td>1.5</td>
<td>0.139</td>
</tr>
<tr>
<td>Causes of hypertension</td>
<td>58 (85)</td>
<td>0.85 ± 0.36</td>
<td></td>
<td>1.1</td>
<td>0.293</td>
</tr>
<tr>
<td>Signs symptom of hypertension</td>
<td>62 (91)</td>
<td>0.91 ± 0.29</td>
<td></td>
<td>0.3</td>
<td>0.756</td>
</tr>
<tr>
<td>Signs symptom of hypotension</td>
<td>51 (75)</td>
<td>0.75 ± 0.44</td>
<td></td>
<td>1.7</td>
<td>0.085</td>
</tr>
<tr>
<td>Importance of compliance types of drugs</td>
<td>30 (44)</td>
<td>0.44 ± 0.50</td>
<td></td>
<td>1.6</td>
<td>0.104</td>
</tr>
<tr>
<td>Importance of compliance to medication regimen</td>
<td>45 (66)</td>
<td>0.66 ± 0.48</td>
<td></td>
<td>-0.5</td>
<td>0.604</td>
</tr>
<tr>
<td>Importance of compliance to dietary program</td>
<td>50 (74)</td>
<td>0.74 ± 0.44</td>
<td></td>
<td>-0.4</td>
<td>0.710</td>
</tr>
<tr>
<td>Importance of compliance to exercise</td>
<td>49 (72)</td>
<td>0.72 ± 0.45</td>
<td></td>
<td>0.8</td>
<td>0.439</td>
</tr>
</tbody>
</table>

Table 4.4: shows the result of the mean value of patient's knowledge regarding definition of hypertension after educational program was 0.87±0.34 while the mean knowledge of the patients Follow up 6 month after the program on the same dimension was 0.75±0.44. There is no significant difference (P > 0.05).

The mean value of patient's knowledge regarding causes of hypertension after educational program was 0.92±0.27 while the mean knowledge of the patients follow up 6month after the program on the same dimension was 0.85±0.36. There is no significant difference (P > 0.05).

The mean value of patient's knowledge regarding signs &symptoms of hypertension after educational program was 0.93±0.25 while the mean knowledge of the patients Follow up 6 month after the program on the same dimension was 0.91±0.29. There is no significant difference (P > 0.05).
The mean value of patient's knowledge regarding signs & symptoms of hypotension after educational program was 0.88±0.33 while the mean knowledge of the patients follow up 6 month after the program on the same dimension was 0.75±0.44. There is no significant difference (P > 0.05).

The result of the mean value of patient's knowledge regarding importance of compliance types of drugs about hypertension after educational program was 0.55±0.50 while the mean knowledge of the patients follow up (6 month) on the same dimension was 0.44±0.50. There is no significant difference (P > 0.05).

The mean value of patient's knowledge regarding Importance of compliance medication regimen about hypertension after education program was 0.65±0.48 while the mean knowledge of the patients follow up (6 month) on the same dimension was 0.66±0.48. There is no significant difference (P > 0.05).

The mean value of patient's knowledge regarding Importance of compliance to dietary program about hypertension after education program was 0.73±0.45 while the mean knowledge of the patients follow up (6 month) on the same dimension was 0.74±0.44. There is no significant difference (P > 0.05).

The mean value of patient's knowledge regarding Importance of compliance to exercise about hypertension after education program was 0.80±0.40 while the mean knowledge of the patients follow up (6 month) on the same dimension was 0.83±0.38. There is no significant difference (P > 0.05).
Table 4.5: Distribution of correct knowledge about hypertension disease aspects between Intervention group before education & control group after 6 month. (n=150)

<table>
<thead>
<tr>
<th></th>
<th>Pre-test before Intervention (n=75)</th>
<th>Test-2 control group after 6 month (n=75)</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No (%)</td>
<td>Mean ± SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Definition of hypertension</td>
<td>31(41)</td>
<td>0.41 ± 0.50</td>
<td>26(35)</td>
<td>0.44 ± 0.50</td>
</tr>
<tr>
<td>Causes of hypertension</td>
<td>19(25)</td>
<td>0.25 ± 0.44</td>
<td>23(31)</td>
<td>0.48 ± 1.32</td>
</tr>
<tr>
<td>Signs symptom of hypertension</td>
<td>24(32)</td>
<td>0.32 ± 0.47</td>
<td>27(36)</td>
<td>0.37 ± 0.49</td>
</tr>
<tr>
<td>Signs symptom of hypotension</td>
<td>30(40)</td>
<td>0.40 ± 0.49</td>
<td>23(31)</td>
<td>0.35 ± 0.48</td>
</tr>
<tr>
<td>Importance of compliance types of drugs</td>
<td>24(32)</td>
<td>0.32 ± 0.47</td>
<td>22(29)</td>
<td>0.44 ± 0.50</td>
</tr>
<tr>
<td>Importance of compliance to medication regimen</td>
<td>9 (12)</td>
<td>0.12 ± 0.33</td>
<td>12(16)</td>
<td>0.17 ± 0.38</td>
</tr>
<tr>
<td>Importance of compliance to dietary program</td>
<td>17(23)</td>
<td>0.23 ± 0.42</td>
<td>17(23)</td>
<td>0.32 ± 0.47</td>
</tr>
<tr>
<td>Importance of compliance to exercise</td>
<td>24(32)</td>
<td>0.32 ± 0.47</td>
<td>21(16)</td>
<td>0.25 ± 0.44</td>
</tr>
</tbody>
</table>

The result of the mean value of patient's knowledge regarding definition of hypertension before attending educational program was 0.41±0.50 while the mean knowledge of the patients in control group after 6 month on the same dimension was 0.44±0.50. There is no significant difference (P > 0.05).

The mean value of patient's knowledge regarding causes of hypertension before attending educational program was 0.25±0.44 while the mean knowledge of the patients in control group after 6 month on the same dimension was 0.48±1.32. There is no significant difference (P > 0.05). The mean value of patient's knowledge regarding signs & symptoms of hypertension before attending educational program was 0.32±0.47 while the mean knowledge of the patients in control group after 6 month on the same dimension was 0.37±0.49. No significantly different (P > 0.05). The mean value of patient's knowledge regarding signs & symptoms of hypotension before attending educational program was 0.40±0.49 while the mean knowledge of the patients in control group after 6 month on the same dimension was 0.35±0.48. No significantly different (P > 0.05). The result of the mean value of patient's knowledge
regarding importance of compliance to types of drugs about hypertension before attending educational program was 0.32±0.47 while the mean knowledge of the patients in control group after 6 month on the same dimension was 0.44±0.50. There is no significant difference (P > 0.05).

The mean value of patient's knowledge regarding importance of compliance to medication regimen about hypertension before attending educational program was 0.12±0.33 while the mean knowledge of the patients in control group after 6 month on the same dimension was 0.17±0.38. There is no significant difference (P > 0.05).

The mean value of patient's knowledge regarding importance of compliance to dietary program about hypertension before attending educational program was 0.23±0.42 while the mean knowledge of the patients in control group after 6 month on the same dimension was 0.32±0.47. There is no significant difference (P > 0.05).

The mean value of patient's knowledge regarding importance of compliance to exercise about hypertension before attending educational program was 0.32±0.47while the mean knowledge of the patients in control group after 6 month on the same dimension was 0.25±0.44. There is no significant difference (P > 0.05).

Table (4.6): Distribution of correct knowledge of the intervention group about hypertension complications before and after educational program (n=75)

<table>
<thead>
<tr>
<th>Intervention group</th>
<th>Pre-test before Intervention (n=75)</th>
<th>Post-test 1 after intervention (n=75)</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vascular complications</td>
<td>N=9 12.0</td>
<td>N=47 62.7</td>
<td>7.48</td>
<td>0.000*</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.88 ± 0.33</td>
<td>1.37± 0.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renal complications</td>
<td>N=13 17.3</td>
<td>N=50 66.7</td>
<td>7.02</td>
<td>0.000*</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.83 ± 0.38</td>
<td>1.33± 0.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eye complications</td>
<td>N=11 14.7</td>
<td>N=59 78.7</td>
<td>10.2</td>
<td>0.000*</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.85 ± 0.36</td>
<td>1.21± 0.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiac complications</td>
<td>N=14 18.7</td>
<td>N=60 80.0</td>
<td>9.45</td>
<td>0.000*</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.81 ± 0.39</td>
<td>1.20± 0.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strokes complications</td>
<td>N=11 14.6</td>
<td>N=50 66.7</td>
<td>7.59</td>
<td>0.000*</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.85 ± 0.36</td>
<td>1.33± 0.47</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table (4.6): shows The result of the mean value of patient's correct knowledge regarding vascular complications of hypertension before attending of educational programs was 1.88±0.33 while the mean knowledge of the patients after the program on the same dimension was1.37±0.49,there is a significant difference (P < 0.05).

The mean value of patient's correct knowledge regarding renal complications of hypertension before attending of educational programs was 1.83±0.38 while the mean knowledge of the patients after the program on the same dimension was 1.33±0.47, there is a significant difference (P < 0.05).

The mean value of patient's correct knowledge regarding eye complications of hypertension before attending of educational programs was1.85±0.36while the mean knowledge of the patients after the program on the same dimension was 1.21±0.41, there is a significant difference (P < 0.05).

The mean value of patient's correct knowledge regarding cardiac complications of hypertension before attending of educational programs was1.81±0.39while the mean knowledge of the patients after the program on the same dimension was 1.20±0.40, there is a significant difference (P < 0.05).

the mean value of patient's correct knowledge regarding strokes complications of hypertension before attending of educational programs was 1.85±0.36while the mean knowledge of the patients after the program on the same dimension was1.33±0.47, there is a significant difference (P = 0.000 < 0.05).
Table (4.7): Distribution of correct knowledge of the Intervention group about hypertension dietary program before and after educational program (n=75)

<table>
<thead>
<tr>
<th></th>
<th>Intervention group</th>
<th></th>
<th></th>
<th></th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test Before Intervention (n=75)</td>
<td>Post-test 1 after intervention (n=75)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>t</td>
</tr>
<tr>
<td>Change in diet program</td>
<td>0</td>
<td>0.0</td>
<td>45</td>
<td>60.0</td>
<td>10.54</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>2.00±0.00</td>
<td>1.40±0.49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decreasing the salt intake</td>
<td>5</td>
<td>6.7</td>
<td>60</td>
<td>80.0</td>
<td>13.38</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.93±0.25</td>
<td>1.20±0.40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Following general dietary guidelines</td>
<td>10</td>
<td>13.3</td>
<td>59</td>
<td>78.7</td>
<td>10.93</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.87±0.34</td>
<td>1.20±0.40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintaining healthy dietary habits</td>
<td>6</td>
<td>8.0</td>
<td>68</td>
<td>90.7</td>
<td>17.89</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.92±0.27</td>
<td>1.09±0.29</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintaining continuous follow up</td>
<td>23</td>
<td>30.7</td>
<td>56</td>
<td>74.7</td>
<td>-5.97</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>0.31±0.46</td>
<td>0.75±0.44</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table (4.7): shows the result of the mean value of patient's correct knowledge about change the diet program for hypertension disease before attending of educational programs was 2.00±0.00 while the mean knowledge of the patients after the program on the same dimension was 1.40±0.49, there is a significant difference (P = 0.000* < 0.05).

The result of the mean value of patient's correct knowledge about decrease the salt intake for hypertension disease before attending of educational programs was 1.93±0.25 while the mean knowledge of the patients after the program on the same dimension was 1.12±0.40. There is a significant difference (P = 0.000* < 0.05).

The result of the mean value of patient's correct knowledge about following general dietary guidelines for hypertension disease before attending of educational programs was 1.87±0.34 while the mean knowledge of the patients after the program on the same dimension was 1.20±0.40. There is a significant difference (P = 0.000* < 0.05).

The result of the mean value of patient's correct knowledge about maintaining healthy dietary habits for hypertension disease before attending of educational programs
was $1.92 \pm 0.27$ while the mean knowledge of the patients after the program on the same dimension was $1.09 \pm 0.29$. There is a significant difference ($P = 0.000* < 0.05$).

**Table (4.8): Distribution history associated conditions of hypertensive patients (n=150)**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Intervention group (n=75)</th>
<th>Control group (n=75)</th>
<th>$t$</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td>29</td>
<td>38.67</td>
<td>26</td>
<td>34.67</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.61 ± 0.49</td>
<td>1.65 ± 0.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking</td>
<td>43</td>
<td>57.33</td>
<td>46</td>
<td>61.33</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.43 ± 0.50</td>
<td>1.39 ± 0.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>32</td>
<td>42.67</td>
<td>33</td>
<td>44.00</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.57 ± 0.50</td>
<td>1.56 ± 0.50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table (4.8) shows The history of association conditions among the hypertension patients in both studied groups were taken in the count, 38.67% suffered from Diabetes Mellitus in intervention group and 34.67% for controls, more than half patients were smokers for both intervention and control groups (57.33% for intervention and 61.33%) for controls). For Dyslipidemia, More than 42.67% of patients in intervention group are Dyslipidemia, while 44.00% for controls. There is no significant difference.

**Table (4.9) Distribution of Sources of knowledge for hypertension-related information. (Intervention group and Control group)**

<table>
<thead>
<tr>
<th>Source of Knowledge</th>
<th>Intervention group (n=75)</th>
<th>Control group (n=75)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Friends/Relatives</td>
<td>31</td>
<td>41.3</td>
</tr>
<tr>
<td>Media: TV/News paper</td>
<td>23</td>
<td>30.7</td>
</tr>
<tr>
<td>Medical professionals: Physicians, Nurses, Nutritionist…</td>
<td>16</td>
<td>21.3</td>
</tr>
<tr>
<td>Others</td>
<td>5</td>
<td>6.7</td>
</tr>
</tbody>
</table>

Table (4.9) Show The most common source of knowledge related to information about hypertension for the patients in (Intervention group) was found to be Friends/Relatives (41.3%) followed by Mass media: Television/Newspaper (30.7%).
In only 21.3% cases the knowledge was obtained from medical and paramedical professionals. And (6.7) from others sources, the percentage is similar for the control group. There is no significant difference (p > 0.05).

Table (4.10): distribution of anthropometric measurements (controlled and Uncontrolled blood pressure) for the intervention group before and after educational program (n=75)

<table>
<thead>
<tr>
<th></th>
<th>Pre-test Before Intervention (n=75)</th>
<th>Post-test 1 After intervention (n=75)</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Hypertensive patients controlled blood pressure</td>
<td>24</td>
<td>32%</td>
<td>69</td>
<td>92%</td>
</tr>
<tr>
<td>Hypertensive patients Uncontrolled blood pressure</td>
<td>51</td>
<td>68%</td>
<td>6</td>
<td>8%</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.68 ± 0.47</td>
<td>1.08 ± 0.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.32 ± 0.47</td>
<td>1.91 ± 0.29</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table (4.10): shows the result of the mean value of patient's controlled blood pressure before attending of educational programs was 1.68 ± 0.47 while the mean value after the program on the same dimension was 1.08 ± 0.27. Significantly different (P = 0.000 < 0.05).

The mean value of patient's Un-controlled blood pressure before attending of educational programs was 1.32 ± 0.47 while the mean value after the program on the same dimension was 1.91 ± 0.29. There is a significant difference (P = 0.000 < 0.05)
Table (4.11): distribution of anthropometric measurements (BMI) for the intervention group before and after intervention 6 month follow-up (N=75)

<table>
<thead>
<tr>
<th>BMI</th>
<th>Pre-test Before Intervention (n=75)</th>
<th>Post-test 1 after intervention(n=75)</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>18.5-24.99</td>
<td>29</td>
<td>38.7</td>
<td>52</td>
<td>69.3</td>
</tr>
<tr>
<td>25-29.99</td>
<td>21</td>
<td>28.0</td>
<td>14</td>
<td>18.7</td>
</tr>
<tr>
<td>&gt;30</td>
<td>25</td>
<td>33.3</td>
<td>9</td>
<td>12.0</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.94 ± 0.85</td>
<td>1.43 ± 0.70</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table (4.11): was use independent samples -test to compare the (BMI) was decreased significantly (p =0.000) after educational intervention, where the mean BMI becomes 1.43 ± 0.70 after educational intervention from 1.94 ± 0.85 before intervention, there is a significant difference (P = 0.000 < 0.05).

Table 4.12: Distribution of the Knowledge score among hypertensive patients (intervention Group) Before intervention and Post intervention (n=75)

<table>
<thead>
<tr>
<th>Knowledge Level</th>
<th>Pre-test Before intervention</th>
<th>Post-test After intervention</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Poor (0 &lt; score &lt; 25)</td>
<td>51</td>
<td>68.0</td>
<td>9</td>
<td>12.0</td>
</tr>
<tr>
<td>Moderate (25 &lt; score &lt; 50)</td>
<td>5</td>
<td>6.7</td>
<td>6</td>
<td>8.0</td>
</tr>
<tr>
<td>Good(51 &lt; score &lt; 75)</td>
<td>7</td>
<td>9.3</td>
<td>5</td>
<td>6.7</td>
</tr>
<tr>
<td>Very good (76 &lt; score &lt; 100)</td>
<td>12</td>
<td>16.0</td>
<td>55</td>
<td>73.3</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.73 ± 1.17</td>
<td>3.41 ± 1.07</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.12: table show the mean knowledge score was 1.73 ± 1.17before starting the program, improved to 3.41 ± 1.07after the program. There is a significant difference (P = 0.000 < 0.05).
Table 4.13: Distribution of the Knowledge score among hypertensive patients (intervention Group) after Education and post follow up (6 Month) after education) (n=75)

<table>
<thead>
<tr>
<th>Knowledge Level</th>
<th>Post-test After intervention</th>
<th>follow up (6 Month) after education</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Poor (0 &lt; score &lt; 25)</td>
<td>9</td>
<td>12.0</td>
<td>10</td>
<td>13.3</td>
</tr>
<tr>
<td>Moderate (25 &lt; score &lt; 50)</td>
<td>6</td>
<td>8.0</td>
<td>7</td>
<td>9.3</td>
</tr>
<tr>
<td>Good (51 &lt; score &lt; 75)</td>
<td>5</td>
<td>6.7</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Very good (76 &lt; score &lt; 100)</td>
<td>55</td>
<td>73.3</td>
<td>57</td>
<td>76.0</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>3.41 ± 1.07</td>
<td></td>
<td>3.40 ± 1.12</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.13: show that, the change in the mean knowledge score at the different time of health programs, for patients' knowledge, the mean score was 3.41 ± 1.07 after the education program, and 3.40 ± 1.12 after 6 months, there is a significant difference.

Table 4.14: Distribution of the Knowledge score among hypertensive patients (intervention group before education and control group) (n=75)

<table>
<thead>
<tr>
<th>Knowledge Level</th>
<th>Intervention group No</th>
<th>%</th>
<th>Control group No</th>
<th>%</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor (0 &lt; score &lt; 25)</td>
<td>51</td>
<td>68.0</td>
<td>49</td>
<td>65.3</td>
<td>-0.913</td>
<td>0.363</td>
</tr>
<tr>
<td>Moderate (25 &lt; score &lt; 50)</td>
<td>5</td>
<td>6.7</td>
<td>3</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good (51 &lt; score &lt; 75)</td>
<td>7</td>
<td>9.3</td>
<td>3</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very good (76 &lt; score &lt; 100)</td>
<td>12</td>
<td>16.0</td>
<td>20</td>
<td>26.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>1.73 ± 1.17</td>
<td></td>
<td>1.92 ± 1.33</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.14: table shows the mean knowledge score before starting the program was 1.73 ± 1.17 on Intervention group and 1.92 ± 1.33 for Control group, there is no significant difference (P = 0.363 > 0.05)
CHAPTER FIVE

DISCUSSION

CONCLUSION

RECOMMENDATIONS
5.1. Discussion

The present study aims to examine the hypertensive patient knowledge who receive health education program about hypertension and his management. In order to accomplish this aim, the researcher followed the health education principles which emphasize the importance of assessing the patients' learning needs for health education. Several studies have demonstrated that patients believe that they have a right to have health education and that health care providers are responsible for provide instructions to help patients to know about their condition and its prognosis. (Tgba) said that the learning needs should be assessed, to diagnose the information and content which should be covered qualitatively and quantitatively.

Regarding socio-demographic characteristics among the studied sample, this study did not reveal any significant associations between intervention and control with demographic characteristics such as age, gender, marital status, educational level and work status etc. This finding is supported by several studies throughout the world have demonstrated that demographic factors and other conditions such as age, low education status, increase the risk of uncontrolled hypertension among hypertensive patients.

Concerning correct knowledge of the intervention group about the definition of hypertension signs and symptoms and causes results of the study showed more half of the hypertensive patients had average or poor knowledge about hypertension, whereas only 16.0% patients had very good knowledge about the disease and his management. Improved to 73.3 after intervention education program. This finding is supported by Williams MV et al. in their study in 402 hypertensive patients, also found 189 patients (47.02%) did not have adequate knowledge about hypertension. Similar inadequacy of knowledge, awareness and practice of hypertension among Indian patients has been reported by (Hemant Mahajan).

Regarding Knowledge score among hypertensive patients about the present study was a well-organized educational model which involved the patients in their own health care, according to the study findings, the knowledge
Importance of compliance to (drugs, medication regimen, dietary program and exercise) it was improve after educational intervention. However, the scours of knowledge was significantly increased after the educational intervention, demonstrating the beneficial effects of education on the patient’s knowledge. This result supported by (Falaschetti E, et al) He said hypertension control signifies a greater need to increase the awareness of hypertension related information among the patients. \(^{(109)}\) The possible reasons to lower knowledge may be because of lower literacy, inappropriate perception of medical advice, irregular sources of health related information, or inadequate counselling regarding hypertension possibly due to skewed doctor patient ratio in government run hospitals. \(^{(91)}\)

Regarding sources of knowledge for hypertension the patients reported to have derived their knowledge about Hypertension majorly from non-medical sources like friends/relatives and mass media communications. \((72\%)\) and only \((21.3\%)\) of sources were from medical professionals like doctors, specialist Paramedical staff, which form the more reliable source to provide health related information. Therefore the patient has to be alerted to scrutinize the information received, from their doctors and work in collaboration with health providers to get valid information. The knowledge from such unreliable sources may be the cause of lower awareness among the population. Considering the influence of mass media on the population, a possible alternative to increase awareness may be by means of delivery of such information using mass media. This findings supported by (Hroscikoki MC, et al) reported that positive role of pharmacist mediated counseling of hypertensive patients, regarding risk factor and associated co-morbidities, while some other studies suggest that knowledge transferred from medical staff is an important factor in inducing patient to comply with lifestyle modification. \(^{(91)}\) Nevertheless; low counseling rates were reported in similar studies. \(^{(92, 93)}\)

Regarding history of associated conditions as diabetes mellitus, smoking, dyslipidemia. The result of the present study revealed that, more than one third half of both intervention and control group were Diabetic, more than half of both were smokers and more than two fifth of both groups have
dyslipidemia. These associated conditions are considered risk factors for developing coronary artery diseases, renal disease ....etc. This finding is supported by the 2013 joint European Society of Hypertension (ESH) and the European Society of Cardiology (ESC) guidelines recommend that ambulatory blood-pressure monitoring (ABPM) be incorporated into the assessment of cardiovascular risk factors and hypertension.\textsuperscript{94,95} Detailed history should extract the following information: (Extent of end-organ damage examples heart, brain, kidneys, eyes). Patients may have undiagnosed hypertension for years without having had their BP checked. Therefore, a careful history of end-organ damage should be obtained. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) identifies the following as targets of end-organ damage .\textsuperscript{96} Heart: left ventricular hypertrophy, angina/previous myocardial infarction, previous coronary revascularization, and heart failure ,Brain: stroke or transient ischemic attack, dementia, Chronic kidney disease, Peripheral arterial disease and Retinopathy.

Regarding knowledge about lifestyle modifications (change the diet program and maintaining continuous follow up) study showed most of hypertensive patients knowledge about lifestyle modifications (32.0\%) before intervention education improve to (74.7\%) after program intervention. These result supported by many authors (Chiu CW, Ostovan MA) They said Patient’s involvement in self-monitoring and management, together with continuous follow up has also been recommended by others \textsuperscript{97,98}. Similarly, Wang YR et al. emphasized that the most important points for BP control were lifestyle modifications, home BP monitoring, reinforcement of healthy behaviors, and continuous follow up \textsuperscript{99}. In (Aubert et al) study, most patients believed that salty diet, obesity and smoking are important factors in hypertension. They mentioned that physical activity and exercise are very important factor in hypertension management. \textsuperscript{100}

Regarding hypertension complications the study showed patient's knowledge (15\%) before attending of educational programs was (75\%) immediately after health education intervention. These findings were supported
by previous study results shown a positive relationship between patients' knowledge about the hypertensive complications and adherence.\textsuperscript{(101)} In addition, they are aware of hypertension complications and advantages of lowering blood pressure. Most cases agreed that decreasing blood pressure (even a little bit) could be effective on health and decrease there complications.\textsuperscript{(102)} and also another study support the notion that improving the knowledge base and gaining an understanding of the long-term risk of hypertension, it is unclear, however, whether this improved knowledge translates to improvement in the control of hypertension, or how generalizable the results are to different settings of care. The long-term uncontrolled BP predisposes individuals to greatly elevated risk of cardiovascular and cerebrovascular morbidity and mortality. Because there are also some questions about the impact of adherence on BP control, I reviewed all articles to determine whether outcomes were collected and whether adherence did affect BP control.\textsuperscript{(103,104,105)}

Regarding anthropometric measurements (controlled and uncontrolled blood pressure) the result showed controlled blood pressure before attending of educational programs was (32\%) improve immediately after the program to (92\%) Significantly different (P < 0.05). And showed knowledge about controlled blood pressure was higher in the BP controlled after education intervention. These results proved by the American Heart Association recommends home BP monitoring for all people with hypertension and also that they keep their healthcare providers aware of their actual BP levels. Both previous studies.\textsuperscript{(106,107)}

Results of the present study about modified body mass index indicate that (38.7\%) Normal (healthy weight) before intervention education improvement to (69.3) after intervention program. These findings were similar to that a study done in Germany where the overall knowledge of risk factors was good, but less people could tell the association between physical activity (58\%) and hereditary factors (48\%) with hypertension.\textsuperscript{(108)}
5.2. Conclusion

After the analysis of the study variables the researcher justify the findings and conclude that:

- The results from this short educational intervention program on hypertensive patients in health clinic in Kosti City indicated that knowledge changes in a positive results in all the variables related to patients knowledge.

- In the current study, the majority of the patients did not have sufficient knowledge to complications of hypertension at the pretest phase, education program effect and improve their knowledge about complication posttest there is a significant difference (P < 0.05).

- Also in the current study, the majority of the patients get information about hypertension and its management from non-medical sources (from friends/Relatives (41.3%) followed by mass media: Television/Newspaper (30.7 %). In only 21.3% cases the knowledge was obtained from medical and paramedical professionals.

- In the current study, the most of the patients did not have controlled blood pressure at the pretest phase only 32% of patients controlled blood pressure, Post-test After intervention 92% of patients controlled blood pressure and good knowledge to adjust their blood pressure

- Lifestyle changes involving dietary and exercise being effective in significant decrease in weight, and effective in improving patient’s knowledge.

5.3. Recommendations

After obtaining the study findings based on the conclusion, the researcher recommended that:

- The educational intervention program should be developed in hypertension clinics in primary health care centers in Sudan. Since primary health care providers have a better chance to meet with patients, promotion of hypertension education intervention programs by these centers will increase the effectiveness of hypertensive therapy and will delay the onset or the progression of
complications, improve the quality of life for hypertensive patients and reduce the associated medical costs.

• Educating the patients about importance of maintaining their weight and monitoring their daily blood pressure, and the need to follow the suitable dietary management for the disease.

• Educating the patient’s family about hypertension disease meal planning and their dietary management and the relationship between obesity and the chance of disease occurrence.

• Educating the family about the importance of involvement of hypertensive patient’s food with family food. The ideal treatment would consist of a comprehensive and multidisciplinary Hypertension disease team. (Physician, Nurse, Nutritionist, Pharmacist, Social worker, foot specialist and others).

• Training of the hypertensive care team on the management of hypertension and how to educate the hypertensive patients

• Establishment of regional records for hypertensive patients in order to facilitate health care and health education for them.
CHAPTER SIX
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جامعة الرباط الوطني
كلية لدراسات العليا والبحث العلمي

استمارة بحث حول (تأثير برنامج التثقيف الصحي عن مرض ارتفاع ضغط الدم)
حو معرفة المرضى عنه وعلاجه

أخي/ أختي مريض/ة ارتفاع ضغط الدم

السلام عليكم ورحمة الله:

إنا أحمد عبد الله احمد جار النبي طالب دكتوراه في علوم التمريض بجامعة الرباط الوطني لدى دراسة حول (تأثير برنامج التثقيف الصحي عن مرض ارتفاع ضغط الدم حول معرفة المرضى عنه وعلاجه في مدينة كوتسي) لنيل درجة الدكتوراه بالجامعة تتكون الاستمارة من جزئين:

بعض المعلومات الديموغرافية (العمر، التعليم، و غير ذلك) ومعلومات مرضية، غذائية، إذا أمل منكم المشاركة الفعالة والتعاون في تعبئة هذه الاستمارة والإجابة على تساؤلاتها وتوخي الدقة والوضوعية وذلك للمساعدة في وضع الحلول لهذه المشكلة الصحية التي يعاني منها الكثير من إبائنا وأمهاتنا وإخواننا، علمًا بأن هذه البيانات سيتم التعامل معها بمنهجي السرية والخصوصية والأمانة.

نشكر لكم حسن تعاونكم معنا واتمنى لكم دوام الصحة وموفر الصحة بإذن الله تعالى.

الباحث: الطالب / أحمد عبد الله جار النبي

الإقرار

أنا الموقع أدناه أوافق على المشاركة في هذه الدراسة بعد أن تم شرح هدف وتعليمات الدراسة اللازمة لتعبئة الاستمارة.

الاسم (اختياري): ..........................................................................................................

التوقع: ............................................................................................................................

التاريخ: .............................................................................................................................

الرمز (وذلك للمقارنة بين نتيجة الفحص القبلي و البعدي): ........................................................................

Appendix 1A
Basic Information Questionnaire
استمارة بحث حول (تأثير برنامج التثقيف الصحي عن مرضاً ارتفاع ضغط الدم حول معرفة المرضى عنه وعلاجه)

رقم الاستبيان: .............................................. جوال: ........................................
رقم الملف: ..............................................
بيانات ديموغرافية:

1. الجنس: ذكر ( ) أنثى ( )
2. العمر: 30-39 ( ) 40-49 ( ) 50-59 ( ) 60-69 ( )
3. الحالة الاجتماعية: أعزب ( ) متزوج ( ) أرمل ( ) مطلق ( )
4. المستوى التعليمي: أمي ( ) ابتدائي ( ) ثانوي ( ) جامعي ( )
5. حالة العمل: أعمل ( ) لا أعمل ( )
6. الدخل الشهري: أقل من 1000 ج ( ) 1000-1500 ج ( ) 1500-2000 ج ( ) أكثر من 2000 ج ( )

قياسات انثروبومترية

<table>
<thead>
<tr>
<th>القياس 1</th>
<th>القياس 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. قياس ضغط الدم الانقباضي/الانبساطي:.................</td>
<td>..............</td>
</tr>
<tr>
<td>8. الطول:..............................................</td>
<td>..............</td>
</tr>
<tr>
<td>9. الوزن:..............................................</td>
<td>..............</td>
</tr>
<tr>
<td>10. مؤشر كتلة الجسم:...................................</td>
<td>..............</td>
</tr>
</tbody>
</table>

بيانات صحية

11. هل يوجد أحد من أفراد الأسرة لديه مرض ارتفاع ضغط الدم: نعم ( ) لا ( )
12. هل تعاني من مرض آخر مصاحب إلى مرض ارتفاع ضغط الدم: نعم ( ) لا ( )
   إذا كانت الإجابة نعم: مرض السكري ( ) أمراض العيون ( )
أمراض الدماغ والشرايين ( ) أخري اذكر...

بيانات تتعلق بالتكوين الصحي:

13. هل سبق وأن تلقبت برنامج تثقيفي عن مرض ارتفاع ضغط الدم:
   - نعم ( )
   - لا ( )

14. ماهية مصادر المعلومات لديك عن مرض ضغط الدم:
   - أصدقاء/ أقارب ( )
   - وسائل الإعلام ( التلفزيون/ ورقة الأخبار ( )
   - من أشخاص في الحقل الطبي ( الأطباء، ممرضين، أخصائيي التغذية) ( )
   - من مصادر أخرى أذكر .........

بيانات تتعلق بنمط الحياة:

15. هل كنت مدخنًا حالياً نعم ( )
   - لا ولكن دخنت في السابق ( )
   - لم أدخن أبداً ( )

16. هل تقوم بشاشيات رياضية منتظمة تستمر علي الأقل 20 دقيقة متواصلة:
   - نعم ( )
   - لا ( )

بيانات غذائية

17. هل تقوم بإتباع نظام غذائي معين بخصوص علاج ارتفاع ضغط الدم:
   - نعم ( )
   - لا ( )

18. هل قمت بتبخير في النظام الغذائي بعد تشخيص المرض لديك:
   - نعم ( )
   - لا ( )

19. عندما تم تشخيص مرض ضغط الدم لديك هل قمت بتنفظ تناول الملح في الطعام:
   - نعم ( )
   - لا ( )

20. هل تتناول أنواع من الأطعمة معينة لنقص ضغط الدم:
   - نعم ( )
   - لا ( )

شكراً لحسن تعاونكم.
Appendix 1B
Knowledge Evaluation Questionnaire

الاختبار التقويمي القبلي والبعدي المتصل بمدى معرفة مريض ارتفاع ضغط الدم بالمرض وكيفية التعامل معه

عزيزي/عزيزة اجب هن الأسئلة أدناه بكل شفافية:

1. هل لارتفاع ضغط الدم مضاعفات على أعضاء الجسم الأخرى؟
   ( ) نعم ( ) لا ( ) لا أعلم

2. هل يؤثر مرض ارتفاع ضغط الدم على الأجهزة التالية (الأوعية الدموية في الدماغ/القلب/الكلى/عين): ( ) نعم ( ) لا ( ) لا أعلم

3. هل توجد أدوية لمرض ارتفاع ضغط الدم؟
   ( ) نعم ( ) لا ( ) لا أعلم
   إذا كانت إجابتك نعم هل يجب الالتزام بم uomo هذه الأدوية؟
   ( ) نعم ( ) لا ( ) لا أعلم

4. أي الطرق التالية تساعد على الوقاية من مرض ارتفاع ضغط الدم؟
   ( ) تناول الأطعمة المالحة مثل الأسماك المملحة والمكسرات
   ( ) ممارسة التمارين الرياضية
   ( ) زيادة الوزن
   ( ) إتباع نظام غذائي يحتوي على الكثير من الدهون
   ( ) لا أعلم

5. إن ضغط الدم الطبيعي عند البالغين الأصحاء هو 120/80 أو أقل.
   ( ) نعم ( ) لا ( ) لا أعلم

6. خفضات ضغط الدم عبارة عن أدوية تستخدم لعلاج فرط ضغط الدم.
   ( ) نعم ( ) لا ( ) لا أعلم

7. المدرات عملها في الكلية حيث تخلص الجسم من الماء والملح الزائد
   ( ) نعم ( ) لا ( ) لا أعلم
8. ملح الطعام هل له علاقة بارتفاع ضغط الدم.
( ) نعم ( ) لا ( لا أعلم)
9. هل تؤثر الوراثة في مرض ارتفاع ضغط الدم.
( ) نعم ( ) لا ( لا أعلم)
10. ارتفاع ضغط الدم يمكن أيضا أن يتسبب بعدة عوامل وأليات مختلفة مرتبطة بتقدم السن وتتضمن خفاض المتطاوعة الواعية أي
( ) نعم ( ) لا ( لا أعلم)
11. أمراض الكلى والسكري لا يعتبران عوامل خطورة لحدوث ارتفاع ضغط الدم الثانوي.
( ) نعم ( ) لا ( لا أعلم)
12. ارتفاع ضغط الدم الثانوي والذي يحدث نتيجة لسبب طبي واضح مثل أمراض الكلى.
( ) نعم ( ) لا ( لا أعلم)
13. يمكن الوقاية من فرط ضغط الدم (ارتفاع ضغط الدم) عن طريق تخفيف الوزن.
( ) نعم ( ) لا ( لا أعلم)
14. التمارين الرياضية المنتظمة تحسن من تدفق الدم ويساعد في تخفيف ضغط الدم.
( ) نعم ( ) لا ( لا أعلم)
15. استعمال بديل الملح لتخفيض كمية الصوديوم لا يعتبر من عوامل الوقاية.
( ) نعم ( ) لا ( لا أعلم)
وضع علامة √ أمام العبارة الصحيحة وعلامة × أمام العبارة الخاطئة في ما يلي:

16. ما هو ارتفاع ضغط الدم الأساسي؟
(a) هو ارتفاع ضغط الدم المبهم بسبب بحيث لا يمكن التعرف على سبب طبي معين وواضح يمكن أن يفسر وجوده.....( )
(b) لا أعلم................................. ( )

17. ما هو تأثير السمنة على ارتفاع ضغط الدم الأساسي؟
(a) إن خطر ارتفاع ضغط الدم عند البدينين بالمقارنة مع أولئك ذوي الوزن الطبيعي أعلى...( )
(b) لا يوجد خطر عن ارتفاع ضغط الدم عند البدينين بالمقارنة مع ذوي الوزن الطبيعي..........................( )
(c) يتكون ضغط الدم من رقمين هما الضغط الانقباضي والضغط الانبساطي.............................................. ( )
(d) يعتبر ضغط الدم مفرطا إذا كانت قيمته تبلغ أو تزيد عن 140/90 مم زئبقي باستمرار.................................................. ( )

18. فرط ضغط الدم الأولي (الأساسي) هو النوع الأكثر شيوعا تتمثل عوامل الخطورة في الأتي:
(a) إمكانية الإصابة بفرط ضغط الدم في المراحل المتقدمة من العمر................................................................. ( )
(b) حدث فرط ضغط الدم نتيجة لتجاوزات معقدة بين الجينات والعوامل البيئية............................................................... ( )
(c) التقدم في العمر لا يعتبر عامل خطرة للإصابة بفرط ضغط الدم................................................................. ( )
(d) لا أعلم عن عوامل الخطورة للإصابة بفرط ضغط الدم.................................................................................. ( )
فرط ضغط الدم - أهم عوامل الخطورة التي يمكن الوقاية منها لتجنب الوفاة المبكرة:

( ) أمراض القلب التاجية وأمراض الأوعية الدموية ........ (a)
( ) اعتلال الكلية ................................................. (b)
( ) اعتلال الشبكية ............................................. (c)
( ) جميع مذاكر أعلاه ........................................... (d)
( ) لا أعلم عن عوامل الخطورة لفرط ضغط الدم ................. (e)

مرض ارتفاع ضغط الدم هو:

( ) حالة مرضية مزمنة يكون فيها ضغط الدم في الشرايين مرتفعًا ................ (a)
( ) القلب يعمل بجهد أكبر من المعتاد ليتمكن من دفع الدم في الأوعية الدموية..... (b)
( ) اعتلال تحدث فيه زيادة مستمرة في الضغط داخل الأوعية الدموية............ (c)
( ) لا أعلم................................................................. (d)

ضغط الدم المرتفع من أخطر أمراض العصر، وقد أطلق عليه "سالب الأعمار" و"الفتات الصامت" لماذا:

( ) لا يعرف سببه في 90% من الحالات ويطلق عليه النوع الابتدائي أو الأساسي...(a)
( ) السبب الحقيقي لارتفاع الضغط غير معروف لدى المرضى .......................(b)
( ) تناول ملح الصوديوم، زيادة الوزن، التوتر والكبت والقلق هي عوامل رئيسة تلعب دوراً هاماً في جعل المريض أكثر تعرضاً لهذا المرض.................................(c)
( ) لا أعلم.................................................................(d)

النظام الغذائي الصحي هو:

( ) تعزيز إتباع نمط حياة صحي مع التركيز على التغذية السليمة........ (a)
( ) تقليل الملح إلى أقل من 5 غرامات في اليوم ................................. (b)
( ) تناول أملاح في فترات متباعدة كثيرة ........................................... (c)
( ) تقليل مدخول الدهون الكلية والمشبعة.................................(d)
( ) لا أعلم ...............................................................(e)
أهمية الامتثال للعلاج تتمثل في؟

( ) اخذ أكثر من نوع من العلاج. (a)
( ) إتباع إرشادات الطبيب المعالج و الاهتمام بالعلاج واخزه في الوقت المحدد. (b)
( ) لا أعلم. (c)

أهمية الامتثال إلى النظام الغذائي العلاج يتمثل في؟

( ) ليس لدي نظام غذائي محدد. (a)
( ) إتباع الغذاء حسب وصف أخصائي التعزية. (b)
( ) لا أعرف. (c)
 программа التثقيفي الصحي عن مرض ارتفاع ضغط الدم حول معرفة المرض وعلاجه

المقدمة:
عرفَ مرضُ ارتفاع ضغط الدم بمرض العصر، فهو القاتلُ الصامتُ الذي يفتكُ بالجسم في كثير من الحالات دون إبداء أي علامات تدل عليه، فهنا مكمن الخطر الأول، وذلك لعدم وجود إرساليات لطلائع التنبيه الأولي التي تنذر بخطر وجوده في الجسم، لذا لا بد من إيلاء هذا الجانب قدراً من الاهتمام والعناية والرعاية والمتابعة، وذلك من خلال الفحص الدوري، وأخذ القراءات اللازمة ضغط الدم.
وتعتبر متابعة مؤشرات ضغط الدم ضرورة ملحة بين الفينة والأخرى، حيث أن متابعة هذا الضغط يساعد في تلافي المضاعفات الناتجة والتأثيرات الجانبية عن أي خلل في الضغط، سواء أرداد أم نقص، وهذ هرمان البحث إلى دراسة مدى تأثير البرنامج التثقيفي في تحسين وانتظام ضغط الدم.
ويشمل البرنامج على تحديد كمية ونوعية الغذاء والوزن المثالي لمرض ارتفاع ضغط الدم، وتناول كمية أقل من السكريات والحلويات والنشويات المعقدة حيث أثبتت الدراسات أن ارتفاع السكر أحد أهم الأسباب للإصابة بضغط الدم المرتفع والأنشطة اليومية التي يقوم بها المريض وكيفية التعرف على المضاعفات في بدايتها.
يؤدي ارتفاع ضغط الدم إلى زيادة مخاطر الإصابة بالنوبات القلبية والسكريات الدماغية والفشل الكلوي، وإذا ترك دون سيطرة يمكن أن يسبب العمي وعدم انتظام ضربات القلب وقصور القلب. ويزداد احتمال حدوث هذه المضاعفات في حالة وجود أي من عوامل الخطر الأخرى المسببة لأمراض القلب والأوعية الدموية، مثل داء السكري. ويعاني واحد من كل ثلاثة باليغين علي مستوى العامل من ارتفاع ضغط الدم.
وتنظام هذه النسبة مع التقدم في العمر، حيث تبدأ بواحد من كل عشرة أشخاص في العشرينات والثلاثينات من أعمارهم وترتفع إلى خمسة من كل عشرة أشخاص في الخمسينات من أعمارهم. وسجلت أعلى معدلات انتشار مرض ارتفاع ضغط الدم في
البلدان المنخفضة الدخل في إفريقيا حيث يعتقد أكثر من 40% من البالغين في بلدان إفريقية عديمة يعانون من هذه الحالة.

على صعيد العالم:

- هناك حوالي 1 مليار شخص حول العالم يعانون من ضغط الدم المرتفع 60% منهم في الدول النامية.
- بحلول عام 2025 سيكون هناك أكثر من 6.1 مليار بالغ يعيشون مع ضغط الدم المرتفع.

ما هو مرض ارتفاع ضغط الدم؟

ضغط الدم " هو قوة دفع الدم على جدران الشرايين، ارتفاع ضغط الدم هو ضغط الدم الانتقاضي أكبر من 140 مم زئبقي والضغط الانبساطي أكثر من 90 ملم زئبقي على استدامة الفترة، على أساس متوسط من اثنين أو أكثر من قياسات ضغط الدم.

تصنيفات ارتفاع ضغط الدم أو أنواع ارتفاع ضغط الدم

1- ارتفاع ضغط الدم الأولي: يصنف المريض أنه مصاب بمرض ضغط الدم الأولي عندما يعرف سبب ارتفاع ضغط دم المريض ويشكل الغالبية العظمى من المرضى.

2- ارتفاع الضغط الثاني: وهو ارتفاع ضغط الدم ناتج عن حالة مرضية أخرى في جسم الإنسان مثل اعتلال وظائف الكلي أو ورم في الغدة الكظرية أو اعتلال في وظيفة الغدة الدرقية أو الحمل أو استخدام بعض أنواع الأدوية وغيرها من المسابات. ويصنف فرط ضغط الدم إما فرط ضغط الدم الأولي (الأساسي) أو فرط ضغط الدم الثانوي.

وتصنف نحو 90-95% من الحالات على أنها "فرط ضغط دم أساسي"، مما يعني ارتفاع ضغط الدم دون وجود حالة طبية واضحة مسببة له. الحالات الأخرى سببها تأثير الكليتين أو شرايين القلب أو جهاز الغدد الصم، والتي تسبب الحالات المتبقية من فرط الضغط والتي تشكل نسبة 5 – 10% من الحالات (فرط الضغط الثاني).
جدول 1) تصنيفات ارتفاع ضغط الدم

<table>
<thead>
<tr>
<th>الفئة</th>
<th>ضغط الدم الانقباضي</th>
<th>ضغط الدم الانبسطي</th>
</tr>
</thead>
<tbody>
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<td>الطبيعي</td>
<td>90-119 و 60-79</td>
<td></td>
</tr>
<tr>
<td>المرحلة 1</td>
<td>140-159</td>
<td>90-159</td>
</tr>
<tr>
<td>المرحلة 2</td>
<td>160</td>
<td>100</td>
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<tr>
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</tbody>
</table>

- العوامل الخطرة التي تسبب ضغط الدم:

1. العوامل الرئيسية للإصابة بالضغط:
   1. العامل الوراثي
   2. السمنة والكحول
   3. مثاليّة محاولة الأنسولين
   4. الأشخاص المثاليّة بالتوتر وضغط العمل الشديد

2. العوامل الثانوية للإصابة بالضغط:

   1. التهاب الكبيبات الكلويّة المزمن
   2. اعتلال الكلى
   3. السكري

- أعراض وعلامات ارتفاع ضغط الدم:

1. انتفاخ في الرجليين والجسم
2. انحسار في نبضات القلب
3. صعوبة في التنفس
4. الدوخة
5. الضعف العام في الجسم
6. فقدان الشهية
7. تراجع في الإبصار
8. صداع حاد
9. غثيان وتقيؤ

- الفحوصات التي يجب عملها إلى مريض ضغط الدم

الطريقة الوحيدة لمعرفة ضغط الدم هي قياسه بواسطة الجهاز المعايد لذلك.

إذا كان لديك أي نوع من ارتفاع ضغط الدم، قد يوصي طبيبك بأجراء اختبارات روتينية، مثل:

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قياس ضغط الدم, تحليل البول, تحليل الدم للدهون, اختبارا لكولسترول.

4- الفرق بين ارتفاع ضغط الدم و انخفاضه:

ارتفاع ضغط الدم, ويُسمى في بعض الأحيان فرط الضغط الشرياني, هو حالة مرزية مزمنة يكون فيها ضغط الدم في الشرايين مرتفعا. هذا الارتفاع يتطلب من القلب العمل بجهد أكبر من المعتاد لكي يتمكن من دفع الدم في الأوعية الدموية يتكون ضغط الدم من رقمين هما الضغط الانقباضي والضغط الانبساطي, وهذا يعتمد على الضغط الحاصل والمقياس أثناء تقلص عضة القلب) الانقباض (أو استرخائها بين الضاهر (الانبساط. يتراوح ضغط الدم الانقباضي الطبيعي أثناء الراحة بين 100-140 مم زئبقي (القراءة العليا) والانبساطي بين 60-90 م م زئبقي (القراءة السفلى). يعتبر ضغط الدم مفرطا إذا كانت قيمته تبلغ أو تزيد عن 140/90 مم زئبقي باستمرار.

يعتبر أن هناك انخفاض في ضغط الدم بشكل عام عندما يكون ضغط الدم الانقباضي أقل من 90 ملم من الزئبقي (ملم زئبقي) أو الانبساطي أقل من 60 ملم زئبقي (3).

عوامل الخطر والسبب:

تاريخ العائلة لمريض ارتفاع ضغط الدم, عدم ممارسة الرياضة, السمنة, زيادة الوزن.

الإصابة بداء السكري, التدخين, المشروبات الكحولية, زيادة نسبة الملح في الطعام.

العيش أو العمل في بيئة متوترة. نقص مستوى فيتامين د.

مضاعفات ارتفاع ضغط الدم:

1- حصلب الشرايين. 2- زيادة القابلية للإصابة بأمراض الكلى. 3- زيادة الضغط العالي بالجهاز العصبي نتيجة الضغط الحاصل عليه. 4- تشوش الرويا. 5- نزيف الدماغ. 6- ذبحة صدرية. 7- نقص مستوى فيتامين D. 8- كليو.

5- الأطعمة والطعام: مريض ضغط الدم:

يعود إجراء تغيير على النظام الغذائي مثل نظام غذائي منخفض الصوديوم أمرًا مفيدًا. كان

النظام الغذائي منخفض الصوديوم طويلاً (أو بعد 4 أسابيع) فعالًا في تخفيف ضغط الدم لدى كل من المصابين بارتفاع ضغط الدم أو ذو ضغط الدم الطبيعي.
أتي اسم حمية داش (DASH Diet) كاختصار ل"النظام الغذائي لوقف ارتفاع ضغط الدم". وتعرف هذه الحمية بأنها نظام غذائي متوازن تم إنشاؤه بمساعدة المعهد الوطني للقلب والرئة والدم، وتهدف هذه الحمية إلى منع ارتفاع ضغط الدم مع فقدان الوزن، ولكن الهدف الأخير يعد ثانوياً. وتشير حمية داش إلى أن الأكل الصحي هو المفتاح لخفض ارتفاع ضغط الدم. وأن فقدان الوزن هو مجرد أثر جانبي مرحب به لهذه الحمية. ووفقاً لحمية داش، فإنه من الممكن لأي شخص يريد إتباعها أن يخفض ضغط الدم لديه وينخفض وزنه ببساطة عن طريق تناول جميع الأطعمة التي تعد جيدة بالنسبة له. وهذا يشمل الأطعمة الغنية بالبوتاسيوم والكالسيوم والبروتين والالياف. وتشير حمية داش إلى أنه يجب أيضاً التثقيف من الحلويات والملح.

كيفية عمل حمية داش:

تنقسم حمية داش إلى نوعين: أحدهما مختصر والأخر مطول. ويشار إلى أن النوعين يقولان نفس الشيء، وهو النصح بأكل كل الأشياء التي يعلم الشخص بأنها مفيدة خلال مراحل النمو. ويشمل ذلك الفواكه والخضروات واللحوم الخالية من الدهون. كما تدعو إلى الابتعاد عن الأطعمة المحرومة التي تعتبر سيئة للصحة. منها الأطعمة السكرية والدهنية وكذلك الكميات الكبيرة من اللحوم الحمراء. كما يجب الابتعاد عن الملح.

وتاليًا عرض بسيط لنوعي هذه الحمية:

- تناول المزيد من الفواكه والخضروات والمنتجات الألبانية قليلة الدسم.
- تقليل تناول الأطعمة التي تحتوي على نسبة عالية من الدهون المشبعة والكولسترول والدهون التفاعلية.
- تناول المزيد من الأطعمة والحبوب الكاملة والأسماك والدواجن والمكسرات.
- الحد من الصوديوم والحلويات والمشروبات السكرية، فضلاً عن اللحوم الحمراء.

وقد وجدت الأبحاث أن الالتزام بهذه الحمية قد أدى إلى تخفيض ضغط الدم خلال أسبوعين، أما الحمية الأخرى، والتي تعرف بحمية داش صوديوم، فهي تدعو إلى التخفيض من تناول الملح إلى 1500 ملغ في اليوم الواحد. أي نحو ثلثي ملعقة شاي صغيرة.
فقد وجدت الدراسات أن ضغط الدم قد انخفض بالفعل لدى الملتزمين بهذا النوع أيضا من حمية داش.

**كيفية تخفيف حمية داش للوزن**

لقد ثبت أن حمية داش فعالة لفقدان الوزن إن اتبعت بشكل صحيح. ومع ذلك، فهذا الأمر ليس سهلاً دائماً كما يبدو. فاختصاصيو الحميات الذين يضعون خططاً للوجبات يحرصون على أن تكون سعراتها الحرارية قليلة، مما يؤدي إلى فقدان الوزن، غير أن هذه الحمية تهدف بشكل رئيسي إلى مهاجمة ارتفاع ضغط الدم. وبعد فقدان الوزن، في الحقيقة، الهدف الثاني لهذه الحمية. ولذلك، فأي فقدان للوزن نتيجة لهذه الحمية لن يكون كبيراً، على الأرجح، مقارنة بالحميات الأخرى التي تهدف بشكل أساسي إلى فقدان الوزن.

**هل حمية داش توافق المبادئ التوجيهية الغذائية المقبولة؟**

بناءً على المبادئ التوجيهية الغذائية لعام 2010، فإن حمية داش تتفق بسهولة معها في ما يتعلق بالبروتينات والدهون الكربوهيدرات. كما ويمكن أن يبقى الملح في المستويات المقبولة عندما تتبع حمية داش بشكل الصحيح.

وينذكر أيضاً أن العديد من المواد الغذائية الأخرى، منها الألياف والبوتاسيوم والكالسيوم وفيتامين (ب-12) وفيتامين (د) هي أيضاً متوافقة مع تلك المبادئ. وبما أن حمية داش مصممة لتكون صحية أكثر من كونها خاصة بفقدان الوزن، فإنها أكثر من الحميات الأخرى اللاتي تهدف إلى فقدان الوزن فقط.

**هل حمية داش سهلة الإتباع؟**

تعد حمية داش نظامًا غذائيًا متوازناً جداً وصحياً جداً. ومع ذلك، فقد لا يعني أنها سهلة الإتباع.

فعلى الرغم من أن قواعد حمية داش ليست معتدلة، إلا أن الالتزام بتعليماتها يحتاج إلى الكثير من الصبر في بعض الأحيان. وذلك يعود إلى أن هذه الحمية توجب الاستغناء عن الكثير من الحلويات وغيرها من المواد الغذائية المفضلة، ما قد يؤدي إلى بعض "الاختلالات" والكثير من "الاختلافات" يؤدي إلى الإخلال بالحمية المذكورة.
6- أهمية حمية داش وممارسة النشاطات الرياضية:

تشجع حمية داش على ممارسة الرياضة. وذلك لأغراض صحية وليس كوسيلة إضافية لإزالة الوزن.

توصي حمية داش أولئك الذين لم يعتادوا على ممارسة النشاط البدني أن يبدؤوا بمارسة نشاطات خفيفة وسهلة، ومن ثم البناء عليها. ويمكن أن تشمل هذه النشاطات المشي أو البئسنت أو حتى التدريبات الهوائية الخفيفة.

فحمية داش تهدف إلى جعل متبعيها أكثر نشاطا وحركة. وتجدر الإشارة إلى أن حمية داش هي من أكبر الدعاة لتحديد الأهداف ومن ثم التمكين بها. سواء أكانت تلك الأهداف في مجال الطعام أو ممارسة الرياضة.

7- ما هو تأثير مرض ضغط الدم على العين؟

ارتفاع ضغط الدم يمكن أن يسبب لضرر في الأوعية الدموية الصغيرة التي في شبكة العين.

8- متى تقوم بزيارة طبيب العيون؟
- عندما أشعر بزغللة في عيني.
- عند حدوث ضعف في النظر.

9- معلومات مرضى ارتفاع ضغط الدم عن قياس ضغط الدم:

يمكن قياس ضغط الدم بعدة طرق وذلك باستخدام بعض الأجهزة الحديثة كجهاز الزيت ArrayList الذي يتكون من شريط قماشي وكرة مطاطية وعمود زئبقي، وهناك أيضاً نوع شهير آخر وهو الجهاز الإلكتروني، يتم فحص ضغط الدم عن طريق قياس ضغط الدم المتغير في الشرايين، ويقسم إلى مترابط هما الضغط المرتفع (الانقباضي) أو (Systolic pressure)، والضغط المنخفض (الانبساطي) أو (Diastolic pressure)، علماً بأن النتيجة التي تظهر تكون بوحدة قياس ضغط الدم وهي مليمترات الزيت (mmHg).

يفضل أخذ قسط من الراحة قبل إجراء الفحص وتجنب بذل أي جهد وذلك حتى لا يتأثر ضغط الدم وتنتج قيمة الفحص بطريقة مقلة.
10- طريقة استعمال جهاز قياس الضغط الزئبقي:

- يتم لف الشريط العريض أو الحزام حول اليد وتحديداً فوق منطقة المرفق بحوالي ستيني مترات بسيطة جداً.
- يتم وضع سماعة الطبيب في الأذن من الجهة الخاصة بذلك، أما الجزء الذي يشبه القرص المعدني فوضع بين اليد والحزام (الحزام).
- بدأ الشخص الذي يجري الفحص بالضغط عدة مرات على كرة المطاط المتصلة بالحزام (الحزام) وذلك لإدخال الهواء للحزام ونفخه حتى يصل إلى ضغط معين وهو 180 مثلاً.
- بدأ بعد ذلك بإخراج وتحرير الهواء من الحزام بشكل تدريجي.
- بدأ الشخص الفاحص بسماع أصوات تصدر عن عملية نبض القلب ليبدأ بتسجيل القيمة الظاهرة عند أول نبض يتم سماعه، وعند بدأ اختفاء النبض ستكون القيمة الثانية.
- إن الرقم الأول الذي يظهر في اليسار هو الرقم الذي يشير إلى الضغط الانقباضي، أما الرقم الثاني فيشير إلى الضغط الانبساطي.
- يعتبر ضغط الدم الطبيعي بقيمة 120/80 أو أقل من ذلك. يعتبر الشخص تحت خطر ارتفاع ضغط الدم إذا كانت القيمة في الانقباضي أعلى من 140 ملي لتر زئبقي، وقيمة الانبساطي أعلى من 90 ملي لتر زئبقي.
- يعتبر ضغط الدم مرتفعاً إذا كانت القيمة في الانقباضي تتراوح بين 120 و139 ملي لتر زئبقي، وقيمة الانبساطي تتراوح بين 80 و89 ملي لتر زئبقي. يعتبر الضغط منخفضاً إذا كانت القيمة 100/70.

11- إذا تفعل في حالة ارتفاع ضغط الدم:
- الإكثار من تناول الأغذية الغنية بالبوتاسيوم والتي تساعد على طرد الكمية الزائدة من الصوديوم في الجسم مثل الموز، التمر، البطاطا الحلوة
- تغيير نظام الحياة
- تناول الأطعمة الصحية
- قد يحتاج بعض المرضى لأخذ أدوية ضغط الدم من أجل ضبط ارتفاع ضغط الدم عندهم. وغالباً ما يفي دواء واحد أو أكثر بالغرض أكثر من دواء واحد. تعمل الأدوية ضغط الدم بطرق مختلفة لخفض ضغط الدم. ويمكن أن تختلف الأدوية من طريقة إراحة وتوزيع الأوعية الدموية.
- سحب الملح والسوائل الزائدة من الجسم.
إبطاء ضربات القلب.

12- ماذا تفعل في حالة انخفاض ضغط الدم؟

عندما ينخفض ضغط الدم بشكل واضح، يمكن أن يشعر الإنسان بالدوخة أو كما لو أنه سبق وعنه، وينصح المعهد القومي الأمريكي للقلب والرئة والدم بإتباع الخطوات التالية لمساعدة الأشخاص الذين يعانون من انخفاض ضغط الدم النهوض ببطء من بعد الجلوس أو الاستلقاء، مع تحريك الساقين قبل البدء بالنعوض. تناول وجبات أصغر وتحتوي على كميات قليلة من الكرboleيرات. تجنب الوقوف لفترات طويلة.

13- ما هي الطريقة الصحيحة لرعاية مريض ارتفاع ضغط الدم

إن الحرص على التغذية الصحية والتسلية وعلى ممارسة النشاط البدني هي الطريقة المثلى من أجل علاج ضغط الدم المرتفع.

- إتباع نظام الطعام والحفاظ على مواجهته.
- إتباع إرشادات الطبيب المعالج والاهتمام بالعلاج.
- المواطنة على تحليل الدم للدهون باستمرار على حسب إرشادات الطبيب.
- متابعة وزنك باستمرار ومارسسة الرياضة.

14- فكم مرة تقوم بوزن نفسك؟

العمل على وزن نفسك باستمرار مرة كل أسبوع ونفس الميزان.

15- كيف تتصرف عندما يحدث تغير في وزنك؟

- ممارسة الرياضة بعد استشارة الطبيب.
- الانتظام في كمية و نوعية الطعام إن أمكن.

16- ما هي فوائد ممارسة الرياضة بالنسبة لمريض ارتفاع ضغط الدم؟

وتيرة عمل القلب لدى الأشخاص الذين لا يمارسون نشاطاً بدنياً هي أعلى منها لدى الذين يمارسونه. وكلما زادت سرعة عمل القلب، كان القلب بحاجة إلى بناء جهد أكبر عند كل انقباض، مما يزيد الضغط على الشرايين. بالإضافة إلى ذلك، فإن انعدام النشاط البدني يزيد خطر السمنة.

تعتبر المواطنة على ممارسة التمارين الرياضية باستمرار، وسيلة ممتازة لخفض الوزن. وعلاوة على ذلك، فقد تبين أن النشاط البدني يساهم بشكل كبير ومحترف في خفض قيم ضغط الدم.
17- متى تأخذ علاج لخفض ضغط الدم؟
يأخذ علاج لخفض ضغط الدم على حسب إرشادات الطبيب.
ارتفاع ضغط الدم، أو ضغط الدم المرتفع، هو إحدى قضايا الصحة العالمية ويسمى ارتفاع ضغط الدم في عبء أمراض القلب والسكتة الدماغية، والفشل الكلوي، والوفاة المبكرة، والإعاقة. ويتفاوت تأثير ارتفاع ضغط الدم على السكان في البلدان المنخفضة ومتوسطة الدخل، التي تعاني من ضعف في نظامها الصحية.

نصائح مهمة لمريض ارتفاع ضغط الدم:
- تلعب المؤثرات الاجتماعية والنفسية دوراً مهماً في انتشار حالات ارتفاع ضغط الدم. فالقلق والتوتر والانفعالات والضغوط النفسية والعصبية وغيرها لها علاقة بإصابة الفرد بارتفاع ضغط الدم.
- تناول الأطعمة الصحية: تناول الأغذية الصحية، وزيادة حجم الأكلات المفيدة مثل الحبوب، الفاكهة، الخضروات والألبان المنخفضة الدسم.
- التمارين الرياضية تساعد على خفض معدل الضغط عند بعض الناس. على سبيل المثال المشي لمدة 30 دقيقة معظم أيام الأسبوع يخفض من معدل ضغط الدم ويساعد على إنقاص الوزن.
- الإقلاع عن التدخين: التدخين يتسبب في رفع نسبة الكولسترول في الدم، وتجمع الكتل الذهنية على جدار الشرايين، وبالتالي يسبب انقباض الأوعية الدموية.
- تجنب الكحوليات والكافيين: بالنسبة للشخص السليم، فإن تناول الكحوليات والكافيين يمكن أن يرفع معدل ضغط الدم في الجسم. لذلك فإن تقليل تناول الكحوليات والكافيين يساعد على خفض معدل ضغط الدم ويمكن خفض الرقم العلوي 5 درجات على الأقل، والرقم السفلي 3 درجات.
- التحكم في الضغط العصبي: تأثير الضغط العصبي يكون تأثيراً مؤقتاً في غالب الأحوال ولكن الضغط العصبي المستمر يمكن أن يسبب ارتفاعاً في ضغط الدم ومع مرور الوقت يدمر الشرايين، القلب، الكلى والعين.

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أخذ القسط الكافي من النوم: يجب أن تنام بالقدر الكافي الذي يجعلك نشيطا طوال اليوم وتستطيع حل المشاكل التي تواجهك في الحياة. وبالتالي تستطيع التعامل والتآقلم مع الظروف التي قد تؤدي إلى حدوث ضغط عصبي.
Appendix: 3

Educational Materials

Booklet of information designed in Arabic language
لا تتكيف الجهد الدموي الإجمالي عند الانخفاض في ضغط الدم من المستويات العادية إلى مستويات منخفضة، بل يتطلب وقتًا لكي ينخفض الجهد الدموي.

الجهاز التنفسي:
الجهاز التنفسي يتكون من الجهاز التنفسي الهوائي، وهو جزء من الجهاز التنفسي الذي يشمل الرئتين والأنف. الرئة هي الجهاز التنفسي الذي يوفر الأوكسجين إلى الجسم واليخلوط في الدم.

الجهاز الهيكلي:
الجهاز الهيكلي هو جزء من الجهاز الهيكلي الذي يشمل الجهاز الهيكلي الغير الرئوي، وهو جزء من الجهاز الهيكلي الذي يشمل الجهاز الهيكلي الرئوي والجهاز الهيكلي البصري.

الجهاز العصبي:
الجهاز العصبي هو جزء من الجهاز العصبي الذي يشمل الجهاز العصبي الцентрالي والجهاز العصبي الصارغي، وهو جزء من الجهاز العصبي الذي يشمل الجهاز العصبي الцентрالي والجهاز العصبي الصارغي.

الجهاز العصبي المركز:
الجهاز العصبي الцентрالي هو جزء من الجهاز العصبي الذي يشمل الجهاز العصبي الцентрالي والجهاز العصبي الصارغي، وهو جزء من الجهاز العصبي الذي يشمل الجهاز العصبي الцентрالي والجهاز العصبي الصارغي.

الجهاز العصبي الصارغي:
الجهاز العصبي الصارغي هو جزء من الجهاز العصبي الذي يشمل الجهاز العصبي الцентрالي والجهاز العصبي الصارغي، وهو جزء من الجهاز العصبي الذي يشمل الجهاز العصبي الцентрالي والجهاز العصبي الصارغي.

الجهاز العصبي خلفي:
الجهاز العصبي خلفي هو جزء من الجهاز العصبي الذي يشمل الجهاز العصبي الцентрالي والجهاز العصبي الصارغي، وهو جزء من الجهاز العصبي الذي يشمل الجهاز العصبي الцентрالي والجهاز العصبي الصارغي.

الجهاز العصبي الامامي:
الجهاز العصبي الامامي هو جزء من الجهاز العصبي الذي يشمل الجهاز العصبي الцентрالي والجهاز العصبي الصارغي، وهو جزء من الجهاز العصبي الذي يشمل الجهاز العصبي الцентрالي والجهاز العصبي الصارغي.
Appendix 4
Mercury Sphygmomanometer
الموضوع / طالب الدكتوراه أحمد عبد الله أحمد

- في البدء يطيب لنا إن تشكر لكم حسن تعاونكم معنا في مجال البحث العلمي
- بالإضافة للموضوع أعلان نفي سبتككم بأن الطالب المذكور ضمن طالب درجة الدكتوراه في

علوم التمريض لديه دراسة ميدانية بطرقكم نرجو التكرم بتسهيل مهمته.

ولكم الشكر.

عميد كلية الدراسات العليا والبحث العلمي