

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



**Shendi University**



**Faculty of Graduate Studies and Scientific Research**

**Assessment of Patients Knowledge about  
Hypertension and Adherence to Anti  
Hypertensive Medications in Bier  
Alshreef Village**

*A thesis Submitted for Fulfillment as Partial Requirement*

*For M.Sc. degree In Medical Surgical nursing sciences*

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# الآية



بسم الله الرحمن الرحيم

﴿وَأَيُّوبَ إِذْ نَادَىٰ رَبَّهُ أَنِّي مَسَّنِيَ الضُّرُّ وَأَنْتَ أَرْحَمُ  
الرَّاحِمِينَ \* فَاسْتَجَبْنَا لَهُ فَكَشَفْنَا مَا بِهِ مِنْ ضُرِّ ٥  
وَأَتَيْنَاهُ أَهْلَهُ وَمِثْلَهُمْ مَعَهُمْ رَحْمَةً مِّنْ عِنْدِنَا وَذِكْرَىٰ  
لِّلْعَابِدِينَ﴾

سورة الأنبياء الآية 83 - 84

# Dedication

To the source of kindness and compassion ,to whom he shared a  
warmth and love ,on obliges me to from here on weakness, thee  
o sun diurnal to moon night and light eyes

My beloved Mother

Followed by the word and Judy and rejoice with my sadness ,oh  
I carry your name with pride my angle in my life and the  
meaning of love and affection and devotion

My Dear Father

If I can touch the rainbow wrote your name on top of mark  
people know how much is my life colors you goodness

My Dear Husband

If you despaired Emil sculpture you from pure gold statue which  
to express my love to you

My brothers and Sisters

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Thanks to God ,not a pleasure ,but the night thanking you ,and do not perfumed bzkirk moments only, and do not perfumed here after bavuk only ,and do not perfumed paradise only to see you .God Almighty to sent as a mercy to the worlds messenger Hidey

## **Mohammed bin Abdullah Allah**

Bless him and all Fulfillment and appreciation extend my sincere thanks and gratitude to the family of University of Shendi, and the candles burned out and illuminated the darkness of our lives and candles still burning remains tender without borders you are the sun and the sun does not increase in the orient the praise of mankind where I'm not bmncefd particularly

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(professor of medical and surgical in nursing )

## **List of abbreviation**

<b>Abbreviation</b>	<b>Term</b>
FBC	Full blood count
U&Es	Urea and electrolytes
ECG	Electrocardiogram
BHS	British hypertension society
MNT	Medical Nutrition Therapy
WHO	World Health Organization
BP	Blood pressure

## ملخص البحث

ارتفاع ضغط الدم هو الضغط الانقباضي أكثر من أو يساوي 140مليمتر زئبقي والضغط الانبساطي أكثر من أو يساوي 90 (7)

عدم الالتزام بأخذ العلاج يؤدي الي ارتفاع ضغط الدم ،فهم المريض لطريقة اخذ العلاج يساعد في منع حدوث مضاعفات مرض الضغط (6)

أجريت هذه الدراسة الوصفية بقرية بئر الشريف احدي قري المسيكتاب شمال بمدينة شندي ولاية نهر النيل السودان لتقييم مدى معرفة مرضى ضغط الدم بأهمية الالتزام بالعلاج في الفترة من أغسطس إلى ديسمبر 2016م استخدمت فيها الاستبيانات المغلقة مكونة من ثمانية وعشرون سؤال حيث تم جمع المعلومات من ستين مريضا ثم تم تحليلها بواسطة التحليل الإحصائي الحزم الإحصائية للعلوم الاجتماعية إصدار 21 وتم عرضها في شكل جداول وأشكال بيانيه.

أظهرت النتائج أن معظمهم في الأعمار أكبر من خمسين سنة وأغلبهم غير متعلمين ومعظمهم لا يلتزم بأخذ علاجه عند نسيانه ولا يهتم بالمتابعة الدورية ولا يعرف المعالجة غير الدوائية والفحوصات اللازمة لمرضي الضغط والعوامل المؤهبه ومعظمهم لديه مرض السكر ومشاكل في القلب والنظر وذلك لعدم معرفتهم التامة بمرض الضغط بالمخاطر الناتجة عن عدم الالتزام بأخذ العلاج.

توصلت الدراسة إلى العديد من التوصيات أهمها أن يعطي الأطباء والممرضين الإرشادات اللازمة بأهمية الالتزام بالعلاج لمدي الحياة والمضاعفات التي تحدث من عدم الالتزام بأخذ العلاج.

أن تقوم وزارة الصحة بإرشاد المرضى استخدام خطه إستراتيجية لتحسين الالتزام بالعلاج وذلك باستخدام الملصقات ووسائل الأعلام والمحاضرات لتوضيح أهمية الالتزام بالعلاج.

## **Abstract**

Hypertension is a systolic blood pressure equal or greater than 140mmHg and diastolic blood pressure equal or greater than 90 mmHg<sup>(7)</sup>.

Uncontrolled hypertension is caused by non adherence to the antihypertensive drugs, patients understanding their drug regimens help to improve their adherence, thus will help prevent the complications of hypertension which are debilitating and if not prevented can increase the burden of a disease that is already on increase<sup>(6)</sup>.

This study was descriptive study done in Bier Alshreef village, Shendi town, in river Nile state, in Sudan, to assess the knowledge of patients about hypertension and importance of adherence to medications of hypertension, from Augusts to December 2016. Closed questionnaire, composed of 28 questions filled by sixty patients and analyzed by statistical package for social sciences.

The result showed that most of the patients age were above 50 years and most of them illiterate. They have poor knowledge about hypertension and importance of adherence to medications and they have no regular follow up, they have poor knowledge about non pharmacological treatment, laboratory evaluation for hypertension and risk factors of hypertension. Most of patients suffering from diabetes mellitus, heart and vision problems as a result of poor knowledge about complications of hypertension and the importance of adherence to medications.

The study recommended that doctors/nurse have to educate hypertensive patients about their disease and the importance of adherence to anti hypertensive medications and the consequences of non-adherence with treatment. Patients should be told that the drugs are for long term use (for life) and the disadvantage of skipping the dose.

Ministry of health and social welfare should plan strategies to improve adherence to antihypertensive by improving education by using media, posters, and lectures to explore the importance of adherence to medications.



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# Chapter One

*Introduction*

*Justification*

*Objectives*

## **1.1 Introduction**

The number of people living with hypertension is predicted to be 25% billion worldwide by the year 2025. In the USA, around 75million of people have hypertension with more people dying of hypertension related cardiovascular disease than from the next three deadliest diseases combined in 2011 – 2012 in the USA.

About a third of all people over the age of 20 years had hypertension, based on high blood pressure assessments and the number of people taking antihypertensive or medications <sup>(1)</sup>.

Control of hypertension has become a key Rational primary in the US as part of the million hearts initiative from department of health and human services, which aims to prevent 1 million heart. Attacks and strokes in the US by 2017 <sup>(2)</sup>.

In half of African countries, women have a higher hypertension prevalence than men. The just-released world health statistics 2015 turns this commonly held assumption in Africa completely on its head, showing that Africa <sup>(2)</sup>.

The average prevalence of hypertension among adult African men is 29.71 while the corresponding global prevalence is 24%; the average rate in women is 29.5% while globally the prevalence 20.5%.

According to the latest WHO data published in May 2014, hypertension deaths in Sudan reached 2.630 1.01% of total deaths. The age adjusted Death Rate is 14.5% per 100.000 of population.

Hypertension is defined as blood pressure higher than 140 over 90 mm Hg, diagnosis of hypertension may be made when one or both readings are high systolic or diastolic <sup>(3)</sup>.

Modern life style are responsible for a growing burden of hypertension; physical inactivity salt-rich diet with processed and fatty foods and alcohol and tobacco use <sup>(3)</sup>.

Life style changes and medications can lower blood pressure and decreases the risk of health complications, it include weight loss, decreased salt intake, physical exercise and a healthy diet <sup>(4)</sup>.

Several classes of medications, collectively referred to as antihypertensive medications are available for treating hypertension <sup>(4)</sup>.

Adherence (compliance) to prescribed medication is important for effective medical therapy, not taking own medicines as prescribed can lead to less therapeutic effect or overdose-related problems that in turn can result in further additional medication intake, unnecessary investigations or hospitalization <sup>(5)</sup>.

Uncontrolled hypertension is caused by non adherence to the antihypertensive drugs, patients understanding their drug regimens help to improve their adherence, thus will help prevent the complications of hypertension which are debilitating and if not prevented can increase the burden of a disease that is already on increase <sup>(6)</sup>.

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

## **1.2 Justification**

- Due to its high prevalence, severe complications and lack of adequate control, hypertension is a major health problem throughout the world. Globally, hypertension affects over one billion people, seven million of whom die annually as direct result of the disease <sup>(18)</sup>.
- According to the latest WHO data published in May 2014, hypertension deaths in Sudan reached 2.630 1.01% of total deaths. The age adjusted Death Rate is 14.5% per 100.000 of population <sup>(3)</sup>.
- Adherence to antihypertensive medication is an effective step for controlling blood pressure and preventing complications <sup>(19)</sup>.



## **1.3 Objectives**

### **1.3.1 General objectives:**

To assess patients knowledge about hypertension and adherence to antihypertensive medications.

### **1.3.2 Specific objectives:**

- To assess hypertensive patients knowledge about signs and symptoms of hypertension.
- To assess hypertensive patients knowledge about risk factors and complications of hypertension.
- To assess hypertensive patients knowledge about medications of hypertension.
- To identify social demographic factors that affect treatment adherence among hypertensive patients.
- To identify factors affecting adherence to medications among hypertensive patients.

## **2. Literature review**

### **2.1 Definition:**

Hypertension is a systolic blood pressure equal or greater than 140mmHg and diastolic blood pressure equal or greater than 90 mm Hg <sup>(7)</sup>.

The World Health Organization latest guidelines define hypertension with three grades of severity that reflect the fact that systolic and diastolic hypertensions are independent risk factors for complications of hypertension:

Grade 1 (mild): A systolic BP of  $\geq 140$  mmHg or a diastolic BP of  $\geq 90$  mmHg.

Grade 2 (moderate): A systolic BP of  $\geq 160$  mmHg or a diastolic BP of  $\geq 100$  mmHg.

Grade 3 (severe): A systolic BP of  $\geq 180$  mmHg or a diastolic BP of  $\geq 110$  mmHg <sup>(8)</sup>.

High blood pressure is classified as either primary (essential) high blood pressure and secondary high blood pressure <sup>(9)</sup>.

### **2.2 Causes of hypertension:**

-Modifiable: Obesity, alcohol intake, diet (especially high salt intake) Secondary hypertension

- Non modifiable: Genetic (racial and familial), Gender (male high).

Secondary hypertension is also a common secondary to renal Endocrine such as thyroid, acromegaly, Cushing' syndromes, Conn's syndrome and phaeochromocytoma, Cardiovascular (uncommon) Coartication of the aorta, renal artery stenosis, Pregnancy (pre-eclampsia), Drugs Oral contraceptives, NSAIDs, steroids, Car- benoxalone and liquorice mimic aldosterone <sup>(9)</sup>.

### **2.3 Diagnosis of hypertension:**

Hypertension is diagnosed on the basis of a persistently high blood pressure, the National Institute of Clinical Excellence recommends three separate sphygmomanometer measurement at monthly intervals. The American

Heart Association recommends at least three measurements on at least two separate health care visits <sup>(10)</sup>.

## **2.4 Clinical manifestation:**

Hypertension can present with; Headaches, vertigo, tinnitus, altered vision or fainting episodes, bloody nose, severe anxiety, or shortness of breath, although it is usually impossible for a patient to correlate the absence or presence of symptoms with the degree of blood pressure <sup>(11)</sup>.

## **2.5 Complications:**

Strokes, heart disease, renal failure, peripheral vascular disease, in patients with malignant hypertension which is there is risk of cerebral edema, in severe hypertension, retinal hemorrhages, exudates and papilloedema are features of malignant hypertension (is high blood pressure with acute impairment of one or more organ system that can result in reversible organ damage ) <sup>(11)</sup>.

## **2.6 Investigations:**

Routine investigations must include fasting plasma glucose, serum total cholesterol and lipid Profile, U&Es, FBC, urinalysis (dipstick), ECG and serum uric acid, Other tests may include echocardiogram, carotid ultrasound, micro albuminuria (essential test in diabetics) quantitative proteinuria (if dipstick test positive) and fundoscopy in severe hypertension <sup>(11)</sup>.

## **2.7 Treatment:**

There Should be a period of assessment with repeated blood pressure measurements, combined with advice and non-pharmacological measures prior to the initiation of drug therapy. the guidelines of the British Hypertension Society (BHS) suggest the following:

Use of non-pharmacological therapy in all hypertensive and borderline hypertensive people:

- weight reduction - BMI should be  $< 25 \text{ kg/m}^2$
- low-fat and saturated fat diet

- low-sodium diet - < 6 g sodium chloride per day
- limited alcohol consumption -  $\leq 21$  units/week for men and  $\leq 14$  units/week for women
- dynamic exercise - at least 30 minutes' brisk walk per day
- increased fruit and vegetable consumption
- Reduce cardiovascular risk by stopping smoking and increasing oily fish consumption.
- Pharmacological therapy should be based on the following:
- The initiation of antihypertensive therapy in subjects with sustained systolic blood pressure (BP)  $\geq 160$  mmHg, or sustained diastolic BP  $\geq 100$  mmHg.

Decide on treatment in subjects with sustained systolic blood pressure between 140 and 159 mmHg, or sustained diastolic BP between 90 and 99 mmHg, according to the presence or absence of target organ damage or a 10-year

- cardiovascular disease risk > 20%.
- In patients with diabetes mellitus, the initiation of antihypertensive drug therapy if systolic BP is sustained  $\geq 140$  mmHg, or diastolic BP is sustained  $\geq 90$  mmHg.
- In non-diabetic hypertensive subjects, treatment goals: BP < 140/85 mmHg. In some hypertensive subjects these levels may be difficult to achieve.
- The main determinant of outcome following treatment is the level of blood pressure reduction that is achieved rather than the specific drug used to lower blood pressure.
- Most hypertensive patients will require a combination of antihypertensive drugs to achieve the recommended targets.

- In most hypertensive patients therapy with statins and aspirin to reduce the overall cardiovascular risk burden. Glycemic control should be optimized in diabetics ( $HbA_{1c} < 7\%$ )<sup>(11)</sup>.

## 2.8 Drug treatment:

Several classes of drugs are available to treat hypertension:

- ACE inhibitors or angiotensin receptor antagonists.
- Diuretics
- Calcium-channel blockers.

These agents effectively reduce blood pressure by causing arteriolar dilatation, and some also reduce the force of cardiac contraction useful in patients with concomitant ischemic heart disease, such as nifedipine (10-20 mg three times daily), amlodipine 5-10mg daily, felodipine (5-20 mg daily) and long-acting nifedipine (20-90 mg daily).

## 2.9 Alpha-blockers:

These agents cause postsynaptic  $\alpha_1$ -receptor blockade with resulting vasodilatation and blood pressure reduction these include doxazosin (1-4 mg daily), Labetalol is an agent that has combined alpha- and beta-blocking properties, but is not commonly used, except in pregnancy-induced hypertension  
Other vasodilators: These include hydralazine (up to 100 mg daily) and minoxidil (up to 50 mg daily).

Centrally acting drugs: Reserpine is used in a low dose of 0.05 mg per day. Clonidine and moxonidine provide all the benefits of methyldopa with none of the rare (but serious) autoimmune reactions<sup>(11)</sup>.

## 2.10 Adherence:

Is most commonly defined as ‘the extent to which a person’s behavior taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a healthcare provider’ This definition emphasizes the requirement of agreement, reflecting a trend towards seeing the patient as a partner in a therapeutic alliance<sup>(12)</sup>.

## **2.11 Basic components of the health belief model:**

The Health Believe Modal is an approach that is used to describe social behavior as well as individual's cognition. It was introduced in 1950s by Social psychologists so as to facilitate in reasoning individuals participation in health programmers such as health check up and immunization, it was also widely used to explain a range of health behavior <sup>(7)</sup>.

It also bases on studying compliances with lifestyle modification and antihypertensive medication, it is bases on understanding that high blood pressure involves both drug treatment and lifestyle changes, to an extent it was applied in areas that included tuberculosis, dental problems ,contraceptive practices ,alcohol use and driving, dietary behavior ,smoking exercises and physical activities . However the application of this Model had widely based on developed countries. While, there is little research evidenced of the implications in health behavior from low income countries <sup>(7)</sup>.

In this study the behavior examined is compliance with prescribed antihypertensive medication and lifestyle modifications <sup>(7)</sup>.

## **2.12 The variables of the health belief model:**

-Perceived susceptibility to uncontrolled hypertension:

It refers to patients risk awareness of diseases like hypertension or the complications of uncontrolled hypertension like heart attack, kidney failure, or stroke. However the Health Belief Model believed that a patient who feels susceptible to hypertension and its complication is more likely to abide to treatment rather than the one who does not belief this concept.

-Perceived severity of hypertension:

Is the concept by which a disease can cause morbidity, disability or mortality.

-Perceived barriers of taking ant hypertension medications:

It refers to the outstanding hindrances towards the way of accessing to the required health behavior like compliances health behavior. However some of the

perceived barriers ever observed in ant hypertension medication in literatures are like problems associated with frequent changes of medications, high costs involved, medication side effects and complex dosing. Model hypothesises that patients who perceive benefits from adopting particular health behavior are more likely to demonstrate the required health behavior than those who do not <sup>(7)</sup>.

### **Cues to action:**

The Cues to action (reminders) are factors that can initiate an individual to take action. according to Green & Kreuter, (2000), they refer to cues as a “precipitating force that makes the person feels the need to take action” cue to action can be internal or external factors. Internal factors may be the appearance of the signs and symptoms of a disease. External factors can be mass media advertising or effective health education directed at a target group. These are important cues that can play an important role in compliance behavior by reminding patients to take their medications <sup>(7)</sup>.

### **2.13 Measurement of adherence:**

An accurate measure of adherence is necessary in order to identify which patients are non adherent and to quantify the effects of any intervention. However there is no universally accepted ‘gold standard’ of adherence measurement. All measures have strengths and weaknesses in terms of practicality, accuracy, and acceptability <sup>(12)</sup>.

Measuring adherence can be broken down into direct and indirect methods measurement <sup>(13)</sup>.

#### **-Direct methods of measurement of adherence:**

Directly observed therapy, measurement of concentrations of a drug or its metabolite in blood or urine, and detection or measurement in blood of a biologic marker added to the drug formulation, direct approaches are expensive, burden- some to the health care provider, and susceptible to distortion by the patient. However, for some drugs, measuring these levels is a good and commonly used means of assessing adherence <sup>(13)</sup>.

### **- Indirect methods of measurement of adherence:**

Include asking the patient about how easy it is for him or her to take prescribed medication, assessing clinical response, performing pill counts, ascertaining rates of refilling prescriptions, collecting patient questionnaires, using electronic medication monitors, measuring physiologic markers, asking the patient to keep a medication diary, and assess of medicine <sup>(13)</sup>.

### **- Pill counts:**

One of the most popular methods of assessing adherence rates has been to determine how many pills patients have in their possession compared to how many they would have if they had perfect adherence. At least until the development of electronic monitoring systems, pill counts were considered the reference standard for all other adherence measures , the measure is simple, requiring no advanced technology and pill counts can also be adapted to other preparation modes by weighing powder or liquid preparations. There is also no indication of the pattern of non adherence a patient may display <sup>(12)</sup> .

### **-Prescription refill rates:**

Refill rates estimate adherence based upon either how much time patients had medication available to them or else estimating non a day's patients did not have access to medication, they are easy to quantify by various methods, this can make them adaptable, as they can measure total adherence rates over a whole regimen, or else provide a picture of the pattern of adherence over a long period of time if regular measurement intervals are used for patient had taken a medication holiday <sup>(12)</sup> .

### **-Electronic monitoring devices:**

Electronic monitors works by recording the time and date of each opening of a medicine container, records can also be transmitted remotely to prevent data loss. Electronically monitoring adherence offers the possibility of adherence, based upon how many collecting the exact pattern of adherence participants exhibit and used electronic monitors to compare two antihypertensive medicines, and although the proportion of medicines taken for each was



comparable, use of electronic monitors was able to show how one medicine was more readily taken on schedule than another. Moreover, it can be seen whether a patient regularly misses a specific dose, misses' doses sporadically, or has taken a longer break from medication <sup>(12)</sup>.

**-Physician estimates of adherence:**

In the clinical setting physicians must determine whether or not treatment non-response is due to treatment failure or non adherence. However, physician estimates barely diff from chance.

**-Patient self-reports of adherence:**

Questionnaires, interviews and diaries can be used to obtain a subjective assessment of adherence directly from patients. Self-reports are inexpensive because they do not require any advanced technology, and they are generally easy to process argue that self-reports can only adequately identify non adherence and not adherence, because the authenticity of high self-reported adherence cannot be verified.

Also argues that patients are more likely to remember positive events than negative events, such as not taking medication. Mental health and emotions are also known to influence memory and bias recall.

**-Adherence diaries:**

They are an uncommon method of adherence measurement. Diaries take longer to process than questionnaires and are highly susceptible to reactivity biases because patients must fill them in after each medication dosing event which may enhance adherence. However, diaries are reported to correlate better to objective measures of adherence than do interviews.

**-Interviews:**

All self-reports are subject to patients wishing to present themselves in the best possible way. Being in the same room as a clinician or researcher, heightens the motivation of the participant to appear socially desirable Haynes et al. (1980) found that interviews overestimated clinically measured adherence by

17%. It has been argued that interviews can feel like an “interrogation” to participants, exaggerating any self-presentation bias <sup>(12)</sup>.

### **-Questionnaires:**

Is the most common form of patient self-report and share many weaknesses of interviews including social desirability and recall biases.

The process of completing a questionnaire may also make patients reflect upon their adherence and change their behavior <sup>(12)</sup>.

### **2.14 Poor adherence to medications:**

Understanding of the disease, medications and lifestyle modifications for the management of hypertension might be responsible factor for this situation. Hypertension treatment requires a high level of self-management (e.g., taking medications) and knowledge is a component of the ability to successfully control the blood pressure, it's in turn, has been linked with adverse events and hospital re-admissions.

It is especially common when a patient has poor knowledge, understanding and perception of hypertension or when a complex anti-hypertensive drug regimen is prescribed . there is no doubt that knowledge of patients has impact on the management of their illnesses and the knowledge of patients can influence compliance, the blood pressure control, morbidity and mortality of the patient <sup>(14)</sup>.

### **-Poor Adherence Factors That Contribute to the Problem:**

Poor adherence encompasses much more than medicines as directed. Numerous behavioral, social, economic, medical and policy-related factors contribute to the problem and must be addressed if adherence rates are to improve. and understand the interplay of these issues, the research community has categorized the factors underlying non-adherence as medication-related, patient-related, prescriber-related, and pharmacy- Additionally, federal and state government policies can also serve as impediments to adherence improvement, the following describes these factors and the challenges they represent. Patients' medication adherence is influenced by a large number of interacting factors but

their exact impact is not well understood, partly because it is difficult to measure adherence. Uncontrolled high blood pressure increases individual's risk of heart disease and stroke.

High blood pressure is one of the most prevalent chronic diseases for which treatment is available. (WHO) describes poor adherence as the most important cause of uncontrolled blood pressure and estimates that 50-70% of people do not take their antihypertensive medication as prescribed<sup>(14)</sup>.

Adherence is dependent on numerous factors and has been shown to vary from 0 to 100% in different populations studied. Factors such as age, gender low socioeconomic status and severity of disease, class of drug prescribed, number of pills per day, side effects of medication, patient's inadequate understanding of the disease and importance of the treatment, co-morbid medical conditions, lack of social support, poor patient provider relationship, cost, forgetfulness, and presence of psychological problems, especially depression have all been shown to affect adherence in various populations<sup>(14)</sup>.

## **2.15 Factors influencing adherence to antihypertensive medication:**

The WHO further developed five categories to classify potential reasons for non adherence, including patient-centered, condition-centered, therapy-centered, socioeconomic, and health-care system-related factors. These categories can be more parsimoniously described as patient-related, provider-related, and system-related. Some risk factors are non modifiable, while others are modifiable and offer a means for improving adherence<sup>(15)</sup>.

### **-Non modifiable Risk Factors:**

Characteristics such as age, sex, race, and severity of medical co morbidity are risk factors for poor adherence<sup>(15)</sup>.

### **-Modifiable Risk Factors:**

-Patient Knowledge:

Patient knowledge is critical for medication adherence. If a patient is to adhere to their prescribed medication schedule, they should have a fairly comprehensive understanding of their treatment, including the medications they take, how to follow prescribed behaviors, and the importance of adherence. Most interventions to improve medication adherence include a prominent education component with the goal of improving patient knowledge about cardiovascular risk and their perceptions regarding the importance of medication adherence.

A recent systematic review reported that education interventions with behavioral support have the most voluminous and consistent evidence for improving adherence to self-administered medication including antihypertensive medication. To ensure uptake and implementation, education content must be appropriately matched to the patient's level of health literacy <sup>(15)</sup>.

**-Patient-Provider Communication:**

Increasing recognition is being paid to the impact of health-care system factors on patient adherence to prescribed medication. For example, the quality of the patient-provider relationship, including the way the provider communicates and builds trust, is associated with favorable medication adherence patterns <sup>(15)</sup>.

**-Patient Autonomy, Motivation, and Self-Efficacy:**

Patients are most likely to engage in health behavior change, such as taking medication as prescribed, when they are engaged in the process, motivated to do so, and have confidence in their abilities. Evidence indicates that medication adherence depends on a strong therapeutic relationship and informed collaborative choice (i.e., shared decision-making), two important ingredients when fostering autonomy and self-efficacy <sup>(15)</sup>.

**-Side Effects:**

Antihypertensive medications may produce a variety of side effects, depending on the specific agent, including frequent urination, fatigue, erectile dysfunction, muscle weakness, and sleep disruption. While specific side effects

of antihypertensive drugs (e.g., fatigue with beta-blockers, cough with angiotensin-converting enzyme inhibitors, peripheral edema with dihydropyridine calcium channel blockers) remain a factor in patient non adherence<sup>(15)</sup>.

**-Health-Care Provider Counseling:**

Most patients find it difficult to remember their medical recommendations and have trouble identifying the medications they take and the specific purpose of each. Utilizing a variety of health-care providers can provide practical supports to improve, patient adherence with their antihypertensive medication, and the absence of which is a potent predictor of medication non adherence. Pharmacists are one of the most likely health-care providers to lead interventions and offer patient counseling<sup>(15)</sup>.

**-Regimen Complexity:**

The majority of hypertensive patients require a combination of antihypertensive medications to achieve optimal BP control, the chance of forgetting to take one medication increases, as the number of doses per day or number of prescribed medications increases. Simplifying antihypertensive regimens using fixed dose combination pills blister packing, it improves patient adherence.

**-Adherence to Regimens:**

Behavioral models suggest that the most effective therapy prescribed by the most careful clinician will control hypertension only if the patient is motivated to take the prescribed medication and to establish and maintain a health-promoting lifestyle. Motivation improves when patients have positive experiences with and trust in their clinicians. Empathy both builds trust and is a potent motivator. Patient attitudes are greatly influenced by cultural differences, beliefs, and previous experiences with the health care system, these *attitudes must be* understood if the clinician is to build trust and increase communication with patients and families<sup>(15)</sup>.

## **2.16 Take-home message:**

Poor adherence to treatment of chronic diseases is a worldwide problem of striking magnitude:

Adherence to long-term therapy for chronic illnesses in developed countries averages 50%. In developing countries, the rates are even lower. It is undeniable that many patients experience difficulty in following treatment recommendations.

**-The consequences of poor adherence to long-term therapies are poor health outcomes and increased health care costs:**

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

**-Improving adherence also enhances patients' safety:**

Because most of the care needed for chronic conditions is based on patient self-management (usually requiring complex multi-therapies), use of medical technology for monitoring, and changes in the patient's lifestyle, patients face several potentially life-threatening risks if not appropriately supported by the health system.

**-Adherence is an important modifier of health system effectiveness:**

Health outcomes cannot be accurately assessed if they are measured predominantly by resource utilization indicators and efficacy of interventions. The population health outcomes predicted by treatment efficacy data cannot be achieved unless adherence rates are used to inform planning and project evaluation.

**-Increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any improvement in specific medical treatment:**

Studies consistently find significant cost-savings and increases in the effectiveness of health intervention that are attributable to low-cost interventions for improving adherence. Without a system that addresses the determinants of adherence, advances in biomedical technology will fail to realize their potential to reduce the burden of chronic illness. Access to medications is necessary but insufficient in itself for the successful treatment of disease.

**-Health systems must evolve to meet new challenge:**

In developed countries, the epidemiological shift in disease burden from acute to chronic diseases over the past 50 years has rendered acute care models of health service delivery inadequate to address the health needs of the population. In developing countries, this shift is occurring at a much faster rate. .

**-Patients need to be supported, not blamed:**

Despite evidence to the contrary, there continues to be a tendency to focus on patient-related factor as the causes of problems with adherence, to the relative neglect of provider and health system-related determinant these latter factors, which make up the health care environment in which patients receive care, have a major effect on adherence.

**-Adherence is simultaneously influenced by several factors:**

The ability of patients to follow treatment plans in an optimal manner is frequently compromised by more than one barrier, usually related to different aspects of the problem. These include: the social and economic factors, the health care team/system, the characteristics of the disease, disease therapies and patient-related factors. Solving the problems related to each of these factors is necessary if patient's adherence to therapies is to be improved.

**-Patient tailored interventions are required:**

There is no single intervention strategy, or package of strategies that has been shown to be effective across all patients, conditions and settings. Consequently, interventions that target adherence must be tailored to the particular illness-related demands experienced by the patient. To accomplish

this, health means of accurately assessing not only adherence, but also those factors that influence it systems and providers need to develop process that needs Adherence is a dynamic to be followed up: Improving adherence requires a continuous and dynamic process. Recent research in the behavioral sciences has revealed that the patient population can be segmented according to attempts at intervention means that treatments are frequently prescribed to patients who are not ready to follow them. Health care providers should be able to assess the patient's readiness to adhere, provide and follow up the patient's progress at every contact.

**-Health professionals need to be trained in adherence:**

Health providers can have a significant impact by assessing risk to optimize adherence. To make this practice a reality practitioners must have access to specific, training in adherence management, and the systems in which they work must design and support delivery systems that respect this objective. For empowering health professionals an “adherence counseling toolkit” adaptable to different socioeconomic settings is urgently needed. Such training needs on adherence), thinking (the clinical decision-making process) and action (behavioral tools for health professionals.

-Family, community and patients organizations, a key factor for success in improving adherence:

Necessary that the patient, the family and for the effective provision of care for chronic conditions, it is the community who support him or her all play an active role. Social support, i.e. informal or formal support received by patients from other members of their community.

An important factor affecting health outcomes and behaviors has been consistently reported as. There is substantial evidence that peer support among patients can improve adherence to therapy while reducing the amount of time devoted by the health professionals to the care of chronic conditions <sup>(16)</sup>.



### **-A multidisciplinary approach towards adherence is needed:**

A stronger commitment to a multidisciplinary this will require coordinated action from health professionals, researchers, health planners and policy Improving adherence also enhances patient safety: Because most of the care needed for chronic conditions is based on patient self-management (usually requiring complex multi-therapies the use of medical technology for monitoring and changes in the patient's lifestyle, patients face several potentially life-threatening risks if health recommendation are not followed as they were prescribed <sup>(16)</sup>.

### **2.17 Role of Health Care Professionals:**

A multidisciplinary, health care team is essential for delivering patient-centered, coordinated, and effective health care given the complexity of clinical practice and the rapid emergence of new scientific information it is essential that a team-based approach to patient care be embraced. Inter professional, team-based care is an effective strategy for achieving optimal patient care.

Adherence is a complex issue that requires an “all hands on deck” approach. The health care team often begins with the physician, who plays an integral role in establishing a trusting- relationship with a patient. This patient physician trust has been shown in several studies to be more important than treatment satisfaction in predicting adherence and overall satisfaction with care. Equally important are the other members of the health care team pharmacists, nurses, nurse practitioners, and registered dietitian nutritionists. Several studies have demonstrated the effectiveness of pharmacist and nurse-led interventions. Furthermore, medical nutrition therapy provided by a registered dietitian nutritionist has been shown to improve health and well being, and decrease doctor visits hospitalizations and reduce prescription drug use. The significant demand on physicians' time requires a physician to collaborate with these health care professionals to help prevent, identify, and manage non-adherence <sup>(17)</sup>.

## **3.Methodology**

### **3.1 Study design:**

This study was descriptive cross sectional community based research done to patient's knowledge about hypertension and adherence to antihypertensive medications in Bier Alshreef village.

### **3.2 Study duration:**

Period extended from August to December 2016.

### **3.3Study area:**

This research in the Elmesiktab Area which is located northern Shendi city, in the river Nile State, most of population are farmers.

### **3.4 Study setting:**

In Bier Alshreef, it is a part of village of Elmesiaktab village, it locality the northern of Shendi about 8km from Shendi, contain big hospital, it has a population of about 2000 people according to the latest population census in 2001 ,most population work in agriculture and commerce .

### **3.5 Study population:**

The study involves all hypertensive patients living in Beer Alshreef village period of study.

### **3.6 Inclusion criteria:**

- Patients of age 20 years and above.
- Participants with a diagnosis of hypertension, with or without other co-existing medical conditions.
- who have been taking antihypertensive treatment for at least one years ago.
- Patients who agreed and verbally consented to participate in the study.

### **3.7 Exclusion criteria:**

- Patients hypertensive not on antihypertensive drug
- less than 20years of age.

### **3.8 Sample technique:**

Total coverage sample was used.

### **3.9 Sample size:**

Total sample 60 patients selected from total number of hypertensive patients living in Bier Alshreef village.

### **3.10 Data collection tool:**

The data was, collected by standard close questionnaire designed by the researcher based on available literature review it is composed of 28 questions.

### **3.11 Scoring system:**

Scoring system was established by researcher the data was distributed in three categories to measure the level of patient knowledge about important adherence to medications: if the patient respond to (4-3 choice it consider good knowledgeable); (2-1 choices consider faire knowledge); (1-0 choice consider poor knowledge).

### **3.12 Data collection technique:**

Data was collected within 3 weeks by questionnaire fill by researcher by interview of patients.

### **3.13 Data analysis technique:**

Data was analyzed by statistical package for social sciences (SPSS version 21) and presented in tables and figures.

### **3.14 Ethical consideration:**

The permission has been approved from faculty board of research to conduct the study, Purpose of study was explained verbally to each participate patient and who accept to participate, they have chance to continue or to stop any time they know that the information is confidentially and for purpose of study.

## **4. Results**

**Table (1): Distribution of patients according Socio demographic data:**

<b>Age</b>	<b>Frequency</b>	<b>Percent</b>
20-30 years	1	1%
31-40 years	5	8%
41-50 years	14	23%
Over 50 years	40	68%
Total	60	100%
<b>Sex</b>	<b>Frequency</b>	<b>Percent</b>
Male	17	28%
Female	43	72%
Total	60	100%
<b>Marital status</b>	<b>Frequency</b>	<b>Percent</b>
Single	2	3%
Married	38	63%
Separated	0	0
Divorced	1	3%
Widowed	19	31%
Total	60	100%
<b>Level of education</b>	<b>Frequency</b>	<b>Percent</b>
Illiterate	22	36%
Khalwa	2	4%
Primary School	16	27%
Secondary School	14	23%
University	6	10%
Post graduate	0	0
Total	60	100%

Table above showed 68% of patients above 50year 72% of patients are female s, 63% of patients were married, 36% of patients were illiterate.

**Table (2): Distribution of patients according to their occupational status and income:**

<b>Occupation</b>	<b>Frequency</b>	<b>Percent</b>
Employee	8	13%
Non Employee	0	0
Student	0	0
Labor	4	7%
Retired	12	20%
House wife	36	60%
Total	60	100%
<b>Income</b>	<b>Frequency</b>	<b>Percent</b>
< 500 SDG	15	25%
500 -1000SDG	29	48%
1001-1500 SDG	5	8%
Morethan 1500SDG	11	19%
Total	60	100%

Table above showed 60% of patients were house wife, 48% were have (500-1000) SDG income.

**Table (3): Distribution of patients according to their duration of hypertension:**

	<b>Frequency</b>	<b>Percent</b>
Less than one years	4	7%
1-2years ago	3	5%
3-4 years	5	8%
5-6years ago	8	14%
>6years ago	40	66%
Total	60	100%

Table above showed 66% of patients were have high blood More than 6 years ago.

**Table (4): Distribution of patients according to associated disease:**

<b>Associated disease</b>	<b>Frequency</b>	<b>Percent</b>
Diabetes mellitus	12	20%
Kidney disease	9	15%
TIA\Stroke	3	5%
Heart problems	7	12%
Poor vision	10	17%
None of the above	19	31%
Total	60	100%

Table above showed 31% were not have any one from associated disease

**Table (5): Distribution of patients according to their hypertensive medications and others:**

<b>Medications</b>	<b>Frequency</b>	<b>Percent</b>
Diuretics	12	20%
Beta blocker	22	37%
Ca channel blocker	10	17%
ACE inhibitor	16	26%
Total	60	100%

Table above showed 37% were taking beta blocker

**Table (6): Distribution of patients according to their knowledge of definition of hypertension:**

<b>Definition of hypertension</b>	<b>Frequency</b>	<b>Percent</b>
Good	1	2%
Fair	10	16%
Poor	49	82%
Total	60	100%

Table above showed 82% of patients were poor knowledge about definition of hypertension.

**Table (7): Distribution of patients according to their knowledge of types of hypertension:**

<b>Types of hypertension</b>	<b>Frequency</b>	<b>Percent</b>
Primary Hypertension	45	75%
Secondary Hypertension	12	20%
I don't Know	3	5%
Total	60	100%

Table above showed 75% of patients were knowledge about primary hypertension.

**Table (8): Distribution of study group according to their knowledge of risk factors of hypertension:**

<b>Risk factors of hypertension</b>	<b>Frequency</b>	<b>Percent</b>
Good	21	35%
Fair	10	17%
Poor	29	48%
Total	60	100%

Table above showed 48% of patients were poor knowledge about risk factors of hypertension



**Table (9): Distribution of the study group according to their knowledge of signs and symptoms of hypertension:**

<b>Signs and symptoms</b>	<b>Frequency</b>	<b>Percent</b>
Good	16	27%
Fair	26	43%
Poor	18	30%
Total	60	100%

Table above showed 43% of patients were fair knowledge about Signs and Symptoms of hypertension

**Table (10): Distribution of patients according to their knowledge of laboratory evaluation of hypertension:**

<b>Laboratory evaluation</b>	<b>Frequency</b>	<b>Percent</b>
Good	22	37%
Fair	17	28%
Poor	21	35%
Total	60	100%

Table above showed 37% of patients were good knowledge about laboratory evaluation of hypertension

**Table (11): Distribution of patients according to their knowledge of complications:**

<b>Complications</b>	<b>Frequency</b>	<b>Percent</b>
Good	25	42%
Fair	16	27%
Poor	19	31%
Total	60	100%

Table above showed 42% of patients were good knowledge about complications of hypertension.

**Table (12): Distribution of patients according to their knowledge of normal blood pressure:**

<b>Normal of blood pressure</b>	<b>Frequency</b>	<b>Percent</b>
120/80 mmHg	43	71%
110/70 mmHg	6	10%
100/60 mmHg	1	1%
I don't know	10	18%
Total	60	100%

Table above showed 71% of patients group normal blood pressure 120/80mmHg.

**Table(13): Distribution of patients according to their knowledge of High blood pressure reading:**

<b>High blood pressure</b>	<b>Frequency</b>	<b>Percent</b>
140/90 mmHg	33	55%
140/100 mmHg	10	17%
160/100 mmHg	6	10%
I don't know	11	18%
Total	60	100%

Table above showed 55% of patients high blood pressure 140/90mmHg

**Table (14): Distribution of patients according knowledge of Non pharmacological treatment of hypertension:**

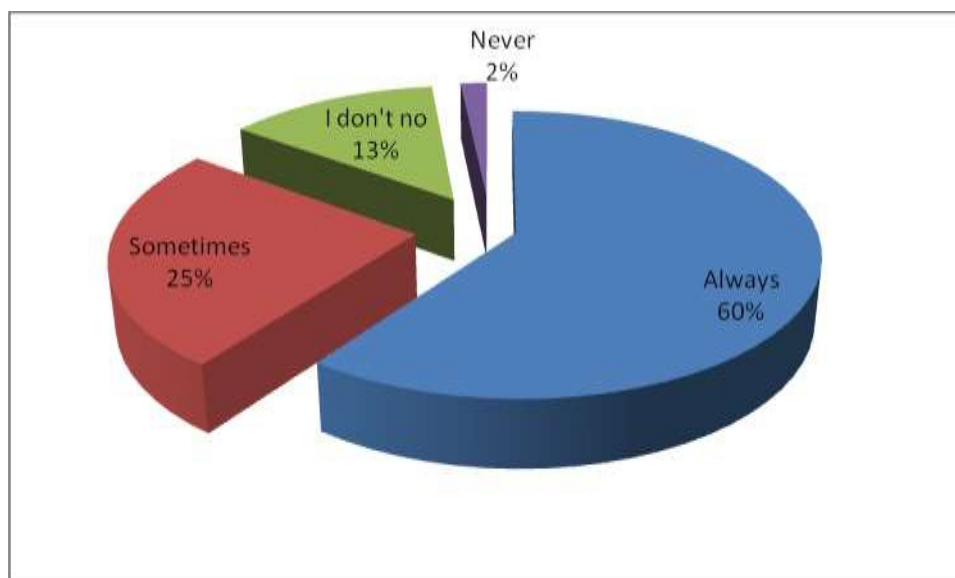
<b>Non pharmacological treatment of hypertension</b>	<b>Frequency</b>	<b>Percent</b>
Good	14	23%
Fair	15	25%
Poor	31	52%
Total	60	100%

Table above showed 52% of patients were poor knowledge about Non pharmacological treatment of hypertension.

**Table( 15): Distribution of patients according to their regular follow up:**

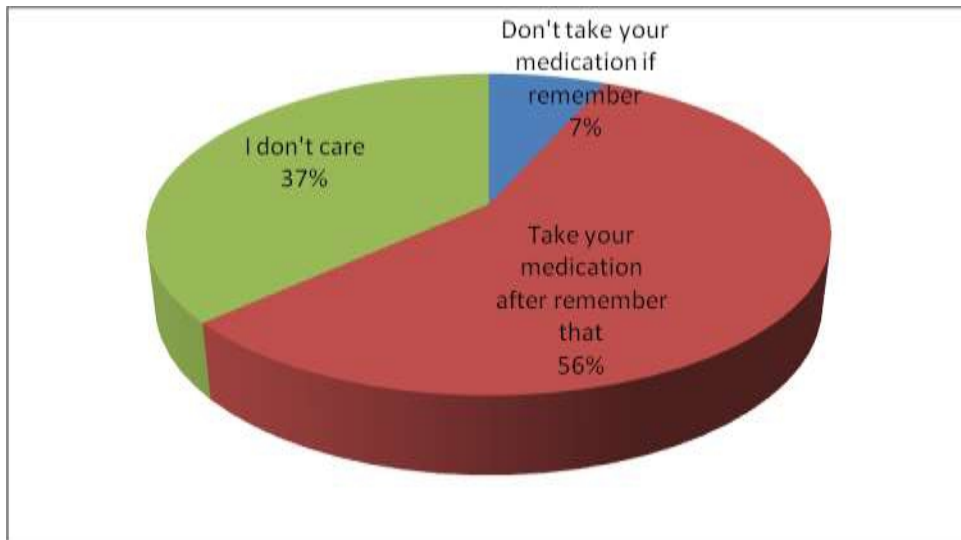
<b>Regular follow up</b>	<b>Frequency</b>	<b>Percent</b>
Always	36	60%
Sometimes	19	31%
I don't care	4	7%
Never	1	2%
Total	60	100%

Table above showed 60% of patients on regular follow up



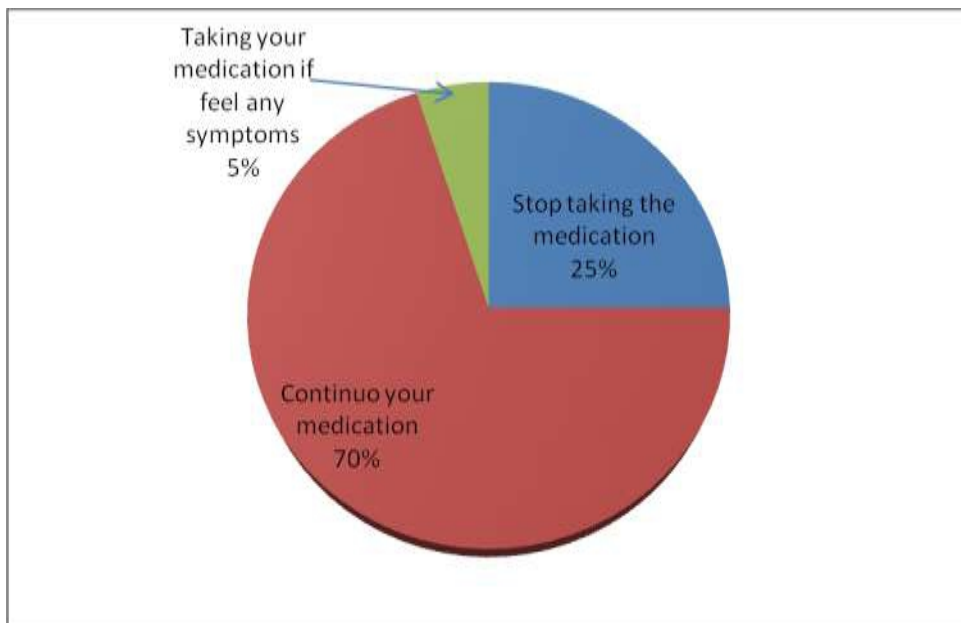
**Figure (1) Distribution of patients according to their follow doctor order in adherence to medications:**

The figure showed that (60%) of patients follow doctor order in adherence to antihypertensive medications



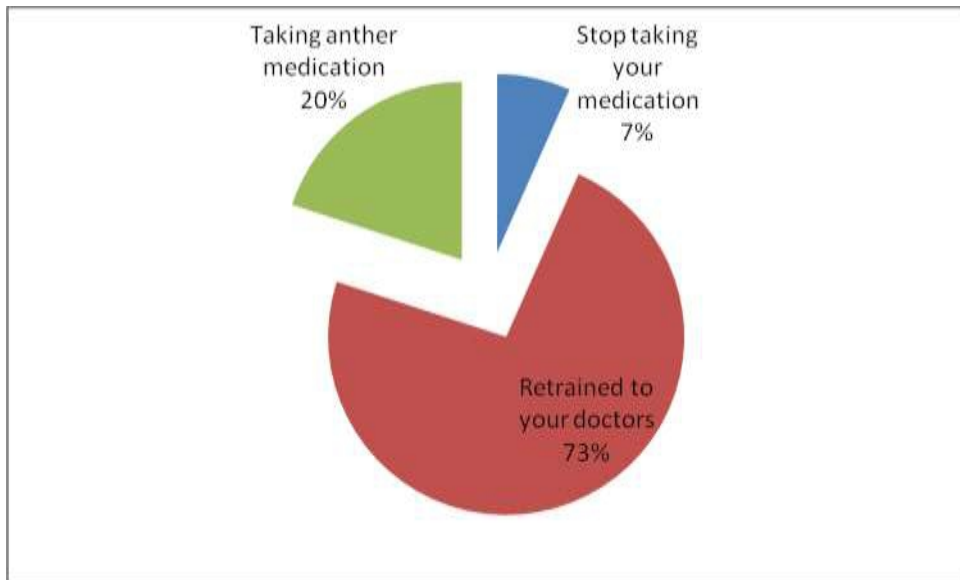
**Figure (2) Distribution of patients according to their action if forget to take medications:**

The figure showed that ,(56%) of patients forget to take antihypertensive medications.



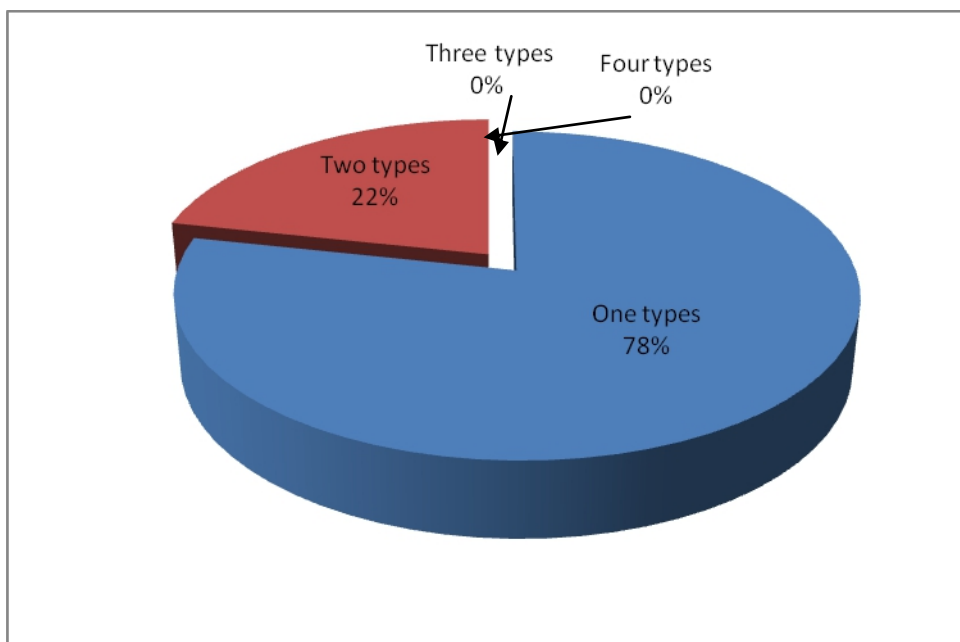
**Figure (3) Distribution of patients according their stop medications if feel better.**

The figure showed that, (70%) of patients stop antihypertensive medications if feel better.



**Figure (4) Distribution of patients according their stop medications if feel worse.**

The figure showed that ,(73%) of patients retained to doctor if feel worse



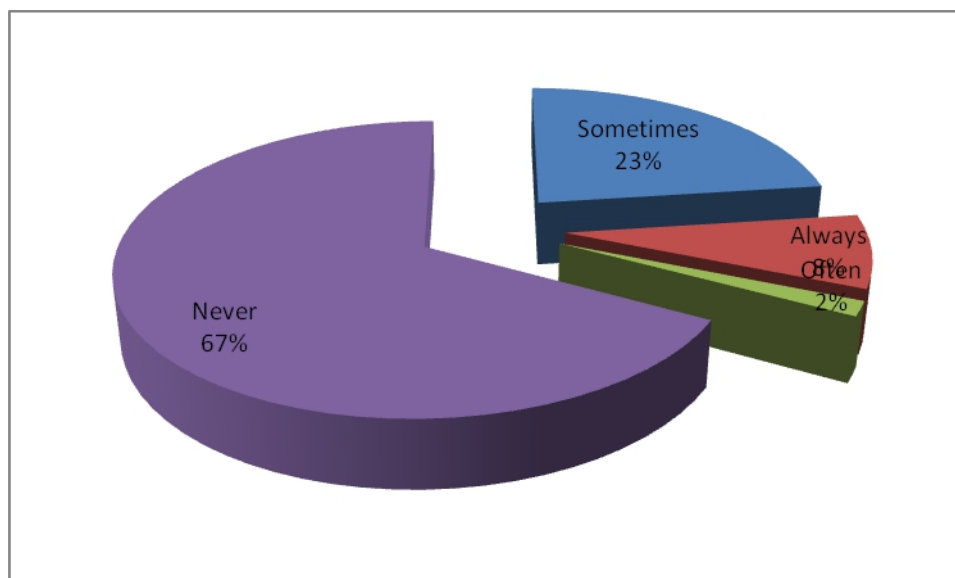
**Figure (5) Distribution of patients according to number of drugs taking for hypertension.**

The figure showed that, (78%) of patients take one type of anti hypertensive medications.

**Table (16) Distribution of patients according to their knowledge about medication taking.**

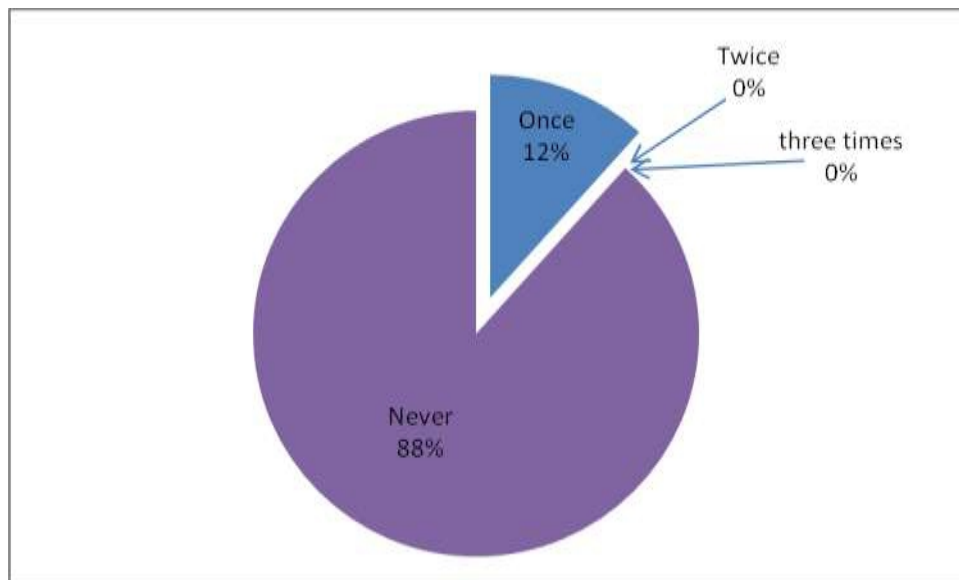
Medications	Frequency	Percent
Name	30	50%
Color	4	7%
packet	26	43%
Total	60	100%

Table above Showed 50% of patients know their medication by name.



**Figure (6) Distribution of study group according to their stopping medication fear of side effect.**

The figure showed that, (67%) of patients never stop medications fear of side effect.



**Figure (7) Distribution of patients according to their increase dose of medications.**

The figure showed that, (88%) of patients never increase dose of medications.

**Table (17) Distribution of patients according to their increase dose of medication cause hypotension.**

Increase dose of medication	Frequency	Percent
Once	6	10%
Twice	1	2%
three times	0	0
Never	53	88%
Total	60	100%

Table above showed 88% of patients never increase dose of medications and not cause hypotension.



**Table (18) Correlation between gender and signs and symptoms of hypertension.**

Signs and Symptoms			Gender		Total	P value
			Male	Female		
	Good	Count	3	13	16	.540
		% of Total	5%	21.7%	26.7%	
	Fair	Count	9	17	26	.529
		% of Total	15%	28,3%	43.3%	
	Poor	Count	5	13	18	.588
		% of Total	8.3%	21.7%	30.0%	
<b>Total</b>		Count	17	43	60	
		% of Total	28.3%	71.7%	100%	

Correlation is significant if the P value less than 0.05, highly significant if the p.value at 0.00, not significant if the p.value more than 0.05, the relation between gender and knowledge of patients about sign and symptoms. value ( = 0.540)

**Table (19) Correlation between gender and complications:**

Complications		Gender			Total	P value
		Male	Female			
	Good	Count	4	21	25	.201
		% of Total	6.7%	35%	41.7%	
	Fair	Count	6	10	16	.186
		% of Total	10.0%	16.7%	26.7%	
	Poor	Count	7	12	9	.116
		% of Total	11.7%	20.0%	31.7%	
<b>Total</b>		Count	17	43	60	
		% of Total	28.3%	71.7%	100.0%	

The relation between gender and knowledge of patient about complication was not significant P value 0.201.

**Table (20) Correlation between educational level and signs and symptoms:**

Signs and Symptoms		Education level					Total	P value	
		Illiterate	Khalwa	Primary school	Secondary school	University			
	good	Count	4	0	5	2	5	16	.095
		% of Total	6.7%	0.0%	8.5%	3.3%	8.3%	26.7 %	
	fair	Count	11	1	6	8	0	26	.076
		% of Total	18.3%	1.7%	10.0%	13.3%	0.0%	43.3%	
	poor	Count	7	1	5	4	1	18	.140
		% of Total	11.7%	1.7%	8.3%	6.7%	1.7%	30.0%	
<b>Total</b>	Count	22	2	16	14	6	60		
	% of Total	36.7%	3.3%	26.7%	10.0%	10.0%	100.0%		

The relation between educational level and knowledge of patients about sign and symptoms of hypertension was not significant P value (0.095).

**Table (21) Correlation between educational level and complications:**

Complications		Education level					Total	P value
		Illiterate	Khalwa	Primary	Secondary	University		
Good	Count	7	0	7	5	6	25	.171
	% of Total	11.7%	0.0%	11.7%	8.5%	10.0%	41.7%	
Fair	Count	6	1	4	5	0	16	.073
	% of Total	10.0%	1.7%	6.7%	8.3%	0.0%	26.7%	
Poor	Count	9	1	5	4	0	19	.034
	% of Total	15.0%	1.7%	8.3%	6.7%	0.0%	31.7%	
<b>Total</b>	Count	22	2	16	14	6	60	
	% of Total	36.7%	3.3%	26.7%	23.3%	10.0%	100.0%	

The relation between educational level and knowledge of patient about complication of hypertension was not significant P value (0.171).

## 5.1 Discussion

The World Health Organization (WHO) has estimated that about 62% of cerebrovascular disease and 49% of ischemic heart disease burden worldwide are attributable to suboptimal blood pressure levels where by high blood pressure is estimated to cause 7.1 million deaths annually, accounting for 13% of all deaths globally <sup>(7)</sup>.

This is descriptive study, it was conducted to assess knowledge of patients in Elmisiktab Bier Alshreef village regarding hypertension and adherence to hypertensive medications.

(60) patients were included in this study ,in the period of (Augustus to December 2016). Questionnaire consisting of three part was used, the present study showed that sixty eight (68%) were above 50 years, also more than seventy of patients (72%) were females, (60%) were house wives and (66%) were diagnosed to have hypertension for more than five years.

The study reflected that more than third (36%) of patients were illiterate and the majority of patients (82%) had poor knowledge about definition of hypertension "hypertension is a systolic blood pressure greater than 140 mmHg or diastolic blood pressure equal or greater than 90 mmHg" <sup>(7)</sup> Less than half of patients (48%) have poor knowledge about risk factors of hypertension, Risk factor include " obesity ,smoking ,alcohol intake" <sup>(9)</sup> also more than third of patient (37%) have good knowledge about laboratory investigation of hypertension, investigation include " fasting plasma glucose, serum total cholesterol and lipid profile "<sup>(11)</sup>, less than half of patients (42%) have good knowledge about complications which include" strokes, heart disease, renal failure "<sup>(11)</sup>, about (71%) have good knowledge about normal reading of blood .

The study reflected that more than half of patients (52%) have poor knowledge about non pharmacological treatment, more than half (60%) of patients on regular follow up and (60%) were following doctor order in

adherence to medications, more than half (56%) of patient take medications if they remember that and about (36%) don't care to take medications.

The majority of patients (73%) continue medications if they feel better but about (25%) stop medications if they feel better.

Most of patients (73%) retrain to doctor if they feel worse and about (20%) of patients take alternative medications, the majority of patients (78%) were taking one type of medications.

Half of patients (50%) know medications by name and less than half of patients (43%) know medications by packet.

Most of patients (68%) never stop taking medications ,they fear of side effect and about (23%) sometimes stop medications and majority of patients (88%) never increase dose of medications and hypotension does not occur.

There was no statistical significant relationship between study group gender and their knowledge regarding signs and symptoms of hypertension ( $p=.540$ ), in spite of complications hypertension, also there was no statistical significant relationship between gender and complications ( $p=.201$ ), as indicate that patients poor knowledge about complications of hypertension, while there was no statistical significant relationship between the educational level and signs and symptoms of hypertension ( $p=.095$ ) this is mean that all patients educated and non educated had poor knowledge about signs and symptoms of hypertension, also there was no statistical significant relationship between the educational level and complications of hypertension as indicate on that all study group educated and non educated had poor knowledge about complications of hypertension.

## **5.2 Conclusion**

**Based on the finding of present study, it was concluded that:**

- More than third of patients were illiterate
- More than half of study population had poor knowledge regarding hypertension, and the importance of adherence to antihypertensive medications.
- Poor knowledge about non pharmacological treatment of hypertension.
- More than third of patients don't care take medication if forget take medications and more than third of patients were not have associated disease.
- More than forty of patients had poor knowledge about risk factors of hypertension.
- Two third of patients were following doctors order in adherence to medications.

### **5.3 Recommendations**

**Based on the study finding and conclusion, come the following recommendation:**

1. Doctors/Nurse have to educate hypertensive patients about their disease and the importance of adherence to anti hypertensive medications and the consequences of non-adherence with treatment. Patients should be told that the drugs are for long term use (for life) and the disadvantage of skipping the dose.
2. Family member and caregiver should have a role in helping patient adhere to medications.
3. Ministry of health and social welfare should plan strategies to improve adherence to antihypertensive by improving education by using media, posters, and lectures to explore the importance of adherence to medications.
4. Patients need advice, support and information from health professionals in order to be able to understand the importance of using drugs as prescribed, patients should be counseled every time whenever they visit to physician to improve adherence to anti hypertensive drugs, salt restriction and to do exercise daily, so that they should have better control of hypertension.
5. More research should be done to assess why people are having perceived barriers to adherence to treatment, and why people with low education are more compliant than those with high education.



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# Shendi University

## Faculty of Graduate Studies and Scientific research

### Master in medical and surgical in nursing

#### Questionnaire about assessment of hypertensive patient knowledge about hypertension and adherence to medications in Elmisiktab Beer Alshreef village

#### **Part one: Demographic characteristic:**

(1) **Age:** 1.(20-30 Y) ( ) 2.(31-40 Y) ( ) 3.(41-50 Y) 4.(over 50Y)( )

(2) **Gender:** 1.Male ( ) 2.Female ( )

(3) **Marital status:**

1.Single ( ) 2.Married ( ) 3.Seprated ( ) 4.Divorced ( ) 5.Widowed ( )

(4) **Level of education:**

1. Illiterate ( ) 2.Khalwa ( ) 3.Primary school ( )  
4.Secondary school ( ) 5.Unversity ( ) 6.post graduate ( )

(5). **Occupation:**

1.Employee ( ) 2.Non employee ( ) 3.Student ( ) 4.Labor ( )  
5.Retired ( ) 6. House wife ( )

(6) **Income:**

1.<500SDG\M ( ) 2.500-1000 SDG\M ( ) 3.1001-1500SDG\M ( )  
4.more than1500SDG\M ( )

(7) **The diagnosis to have high blood pressure before.....**

1.less than one years( ) 2.(1-2)years ago ( ) 3.(3-4) years ago ( )  
4.(5-6) years ago ( ) 5.More than 6 year ago( )

(8)**Have you any of the following conditions.....**

1.Diabetes mellitus ( ) 2.Kidney disease( ) 3.TIA\Stroke ( )  
4.Heart problems ( ) 5.poor vision ( ) 6.Non of the above ( )

(9) **Hypertensive medication did you take .....**

1.Duretics ( ) 2.Beta blocker( ) 3.Ca channel blocker ( ) 4.ACE inhibitor ( )

**Part two: Knowledge of patient about hypertension :**

**(10). Hypertension defined as.....**

- 1.A systolic blood pressure and diastolic blood pressure is 120/80mmHg ( )
- 2.Asystolic blood pressure and diastolic blood pressure is140/90mmHg ( )
- 3.Asystolic blood pressure and diastolic blood pressure is 160/100mmHg( )
- 4.Idont know ( )

**(11)Types of hypertension are .....**

- 1.Primary hypertension ( )
- 2.Secondary hypertension ( )
- 3.Isolated hypertension ( )
- 4.Idont know ( )

**(12) Risk factors of hypertension are.....**

- 1.Genetic factors ( )
- 2.Diabetes mellitus ( )
- 3.Renal failure ( )
- 4.Arthrosclerosis ( )
- 5.Obesity ( )
- 6.Smoking and alcohol ( )
- 7.Idont know ( )

**(13) Sign and Symptoms of hypertension is.....**

- 1.Asymptomatic ( )
- 2.Headache ( )
- 3.Vertigo ( )
- 4.Altered vision or fainting episodes( )
- 5.Epistasis ( )
- 6.Idont know ( )

**(14) Laboratory Evaluation of hypertension are.....**

- 1.Urine analysis( )
- 2.Fasting blood glucose( )
- 3.ECG ( )
- 4.Blood chemistry(potassium ,sodium and creatinine) ( )
- 5.Serum total cholesterol and lipid profile ( )
- 6.Idont know ( )

**(15) Complications of hypertension are.....**

- 1.Strokes ( )
- 2.Heart disease ( )
- 3.Renal failure ( )
- 4.Retinal hemorrhages ( )
- 5.Idont know ( )

**(16) Normal reading of blood pressure is ....**

- 1.120/80mmHg ( )
- 2.110/70mmHg ( )
- 3.100/60 mmHg ( )

**(17) High blood pressure is.....**

- 1.140/90 mmHg ( )
- 2.140/100mmHg ( )
- 3.160/100 mmHg ( )

**Part three: Knowledge of hypertensive patient about life style modifications**

**(18)Non pharmacological treatment of hypertension is.....**

1. weight reduction - BMI should be < 25 kg/m<sup>2</sup> ( )

2. Low fat and saturated fat diet ( )
3. Dynamic exercise at least 30 minutes brisk walk per day ( )
4. Stop smoking and alcohol ( )
5. Increased fruit and vegetable consumption ( )
6. I don't know ( )

**(19) Do you follow up regularly....**

1. Always ( )
2. Sometimes ( )
3. I don't care ( )
4. Never ( )

**Part four: Knowledge of hypertensive patients about adherence of medications:**

**(20) Follow doctor order in adherence to medications.....**

1. Always ( )
2. Sometimes ( )
3. I don't care ( )
4. Never ( )

**(21) If you forget to take your medication .....**

1. Don't take your medication if remember ( )
2. Take your medication after remember that ( )
3. I don't care ( )

**(22) You feel better ,do you ....**

1. Stop taking the medication ( )
2. Continue your medication ( )
3. Taking your medication if you feel any symptoms ( )

**(23) You feel worse do you .....**

1. Stop taking your medication ( )
2. Retrained to your doctors ( )
3. taking another medication ( )

**(24) Types of medicine are you taking for hypertension;**

1. one ( )
2. two ( )
3. three ( )
4. four ( )
5. Five ( )

**(25) You know medication by :**

1. name ( )
2. Color ( )
3. Paket ( )

**(26) Stop you take medication fear of side effect :**

1. sometimes ( )
2. Always ( )
3. often ( )
4. Never ( )

**(27) Do you Increase dose of medication :**

1. once ( )
2. two time ( )
3. Three times ( )
4. Never ( )

**(28) Do you increased dose of medication cause hypotension:**

1. once ( )
2. Two times ( )
3. three times ( )
4. Never ( )

*Thank you*

جامعة شندي

كلية الدراسات العليا والبحث العلمي

ماحستير التمريض الباطني والجراحي

استبيان لتقييم معرفة مرضى الضغط بالالتزام بالعلاجات في قرية المسيكتاب بئر الشريف

رقم ( )

(1)/العمر:

1/ 20-30 سنة ( ) 2/ 31-40 سنة ( ) 3/ 41-50 سنة ( ) 4/ أكثر من 50 سنة

(2). الجنس: 1/ ذكر ( ) 2/ أنثى ( )

(3). الحالة الاجتماعية:

1/ عاذب ( ) 2/ متزوج ( ) 3/ منفصل ( ) 4/ مطلق ( ) 5/ أرمل ( )

(4). المستوى التعليمي:

1/ أمي ( ) 2/ خلوة ( ) 3/ أساس ( ) 4/ ثانوي ( ) 5/ جامعي ( )

6/ فوق الجامعي ( )

(5) المهنة:

1/ موظف ( ) 2/ غير موظف ( ) 3/ طالب ( ) 4/ عامل ( ) 5/ متقاعد ( )

6/ ربة منزل ( )

(6) الدخل الشهري:

1/ أقل من 500 جنيه سوداني ( ) 2/ 500-1000 جنيه سوداني ( ) 3/ أكثر من 1000 جنيه سوداني ( )

4/ أكثر من 1000 جنيه سوداني ( )

(7) زمن تشخيص مرض الضغط:

1/ أقل من سنة ( ) 2/ سنة ( ) 3/ سنتين ( ) 4/ 3 سنوات ( ) 5/ أكثر من 4 سنوات ( )

(8) لديك أي من الحالات التالية:

1/ مرض السكر ( ) 2/ أمراض الكلي ( ) 3/ السكتة الدماغية ( ) 4/ أمراض القلب ( )

5/ ضعف في النظر ( )

(9) أدوية مرض الضغط التي تأخذها :

1/ مدرات البول ( ) 2/ حاصرات بيتا ( ) 3/ حاصرات قناة الكالسيوم ( ) 4/ مثبطات الرنين

الجزء الثاني: معرفة المريض عن مرض الضغط :

(10) مرض الضغط هو:

1/ الضغط الانقباضي والانبساطي 80/120 ملم زئبقي ( )

2/ الضغط الانقباضي والانبساطي 90/140 ملم زئبقي ( )

3/ الضغط الانقباضي والانبساطي 100/160 ملم زئبقي ( ) 4/ لا اعرف ( )

( 11 ) أنواع ارتفاع ضغط الدم :

1/ الأولي ( ) 2/ الثانوي ( ) 3/ لا اعرف ( )

( 12 ) العوامل المؤهبة للإصابة بمرض الضغط:

1/ العوامل الوراثية ( ) 2/ مرض السكر ( ) 3/ الفشل الكلوي ( ) 4/ تصلب الشرايين ( )

5/ السمنة ( ) 6/ التدخين والكحول ( ) 7/ لا اعرف ( )

( 13 ) أعراض وعلامات مرض الضغط هي:

1/ لا توجد أعراض وعلامات ( ) 2/ الصداع ( ) 3/ الدوخة ( ) 4/ زغلة في الرؤية ( )

5/ نزيف الأنف ( ) 6/ لا اعرف ( )

( 14 ) الفحوصات لتقييم مرض الضغط هي :

1/ فحص البول ( ) 2/ فحص وظائف الكلي ( ) 4/ قياس مستوي السكر بالدم والمريض صائم ( )

5/ قياس نسبة الدهون في الدم ( ) 6/ رسم القلب ( )

( 15 ) مضاعفات مرض الضغط هي:

1/ السكتة الدماغية ( ) 2/ أمراض القلب ( ) 3/ الفشل الكلوي ( ) 4/ نزيف الشبكية ( )

( 16 ) المعدل الطبيعي لضغط الدم هو :

1/ 80/120 ملم زئبقي ( ) 2/ 70/110 ملم زئبقي ( ) 3/ 60/100 ملم زئبقي ( )

( 17 ) ارتفاع ضغط الدم:

1/ 90/140 ملم زئبقي ( ) 2/ 100/140 ملم زئبقي ( ) 3/ 100/160 ملم زئبقي ( )

القسم الثالث: معرفة مرضي الضغط عن الإرشادات العامة وأسلوب الحياة والالتزام بالعلاج:

( 18 ) المعالجة غير الدوائية لمرض الضغط:

1/ تقليل الوزن ( ) 2/ تقليل الدهون والملح في الطعام ( )

3/ التمارين الرياضية مثل المشي لمدة نصف ساعة ( ) 4/ إيقاف التدخين والكحول ( )

5/ زيادة تناول الخضروات والفواكه ( ) 6/ لا اعرف ( )

( 19 ) المتابعة بانتظام :

1/ دائماً ( ) 2/ أحيانا ( ) 3/ لا اهتم ( ) 4/ أبداً ( )

( 20 ) تلتزم بإرشادات الطبيب في الالتزام بالعلاج :

1/ دائماً ( ) 2/ أحيانا ( ) 3/ لا اهتم ( ) 4/ أبداً ( )

( 21 ) عند نسيانك اخذ علاجك :

1/ لا تأخذ علاجك عندما تتذكر ( ) 2/ تأخذ علاجك عندما تتذكر ( ) 3/ لا تهتم ( )

( 22 ) عند شعورك بالتحسن تفعل :

- 1/ إيقاف اخذ العلاج ( )  
2/ تواصل العلاج ( )  
3/ اخذ علاجك عندما تشعر بأي أعراض ارتفاع ضغط الدم ( )

(23) عن شعورك بأسوأ حال:

- 1/توقف العلاج ( ) 2/ ترجع إلي طبيبك المعالج ( ) 3/تأخذ علاجات أخرى ( )  
(24) كم نوع من أدوية تأخذ لعلاج الضغط:

- 1/نوع واحد ( ) 2/ نوعين ( ) 3/ ثلاثة أنواع ( ) 4/ أربعة أنواع ( )  
(25) تتعرف علي علاج الضغط عن طريق:

- 1/اسم العلاج ( ) 2/ لون العلاج ( ) 3/ شكل العلاج ( )  
(26) هل حدث أوقفت علاجك خوفا من الأعراض الجانبية :

- 1/ أحياناً ( ) 2/ دائماً ( ) 3/ لا أهتم ( ) 4/ أبداً ( )  
(27) هل قمت بزيادة جرعة علاجك

- 1/ مرة ( ) 2/ مرتان ( ) 3/ ثلاث مرات ( ) 4/ أبداً ( )  
(28) هل حدث زدت جرعة علاجك وحدث لك انخفاض في الضغط:

- 1/ مرة ( ) 2/ مرتان ( ) 3/ ثلاث مرات ( ) 4/ أبداً ( )

شكراً