

Knowledge and Perceptions Related to Hypertension, Lifestyle Behavior Modifications and Challenges That Facing Hypertensive Patients

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Abstract:

Background: Hypertension is one of the most common health problems in the world. Although hypertension can be modified, it is a leading risk factor for mortality, and there is a large proportion of elderly patients whose blood pressure remains uncontrolled. Knowledge and life style modifications of patients play an important role in the controlling of hypertension and preventing their long-term complications.

Aim: This study was conducted to assess level of knowledge and perceptions related to hypertension, lifestyle behavior modifications and challenges that facing hypertensive patients.

Design and Setting: Cross Sectional study was used and data were collected from Medical outpatient Clinic at Tanta University Hospital and Primary Health Care Unites in Sebrbay and Mehalla Roh Villages at Tanta City.

Sample: A convenience sample of (101) male and female hypertensive patients which newly diagnosed for hypertension who were attending to the previous settings.

Tools: Data collection tools consisted of; sociodemographic data, a structured knowledge questionnaire sheet to gather knowledge regarding hypertension and perceptions sheet of patients toward lifestyle behavior modifications.

Results: This study was revealed that general knowledge about hypertension was inadequate. Patients lacked of understanding some points of risk factors, manifestation and lifestyle modifications of hypertension. Also there was high poor level of perceptions about lifestyle behaviors modifications among hypertensive patients.

Conclusion and Recommendation: This study has shown high poor level of knowledge about hypertension and perceptions toward lifestyle-modification. So educational program that can enhance patients' awareness regarding hypertension disease are urgently needed among these patients. Also theses program are required to change the perceptions about lifestyle behavior modifications to control hypertension.

Key words: hypertension, knowledge, perceptions and challenges.

I. Introduction

Hypertension is a major worldwide public health problems because of its high prevalence with vascular disease, premature death, stroke, renal diseases and retinopathy (¹). It is the most important risk factor for cardiovascular diseases which kill about 12 million annually worldwide, more than any other disease (²). According to American Heart Association, the estimated prevalence of hypertension was 73,600,000 (35,300,000 males and 38,300,000 females) (³). Hypertension affects about one billion individuals' worldwide and 60 million persons in the United States. In Egypt, the prevalence of hypertension is usually high (30.4%) in developing countries and was highest among elderly adults (71% in female and 55% for male) (⁴). Poorly controlled hypertension is a significant public health concern all over the world, in terms of morbidity, mortality and economic burden especially among older adults (⁵).

Hypertension is defined as a medical condition in which the blood pressure in the arteries is elevated exceeding 140 over 90 mmHg. This elevation makes the heart work harder than usual to circulate blood through the blood vessels (^{6,7}). Many patients suffer from this disease are not aware about this condition early because it is usually occur without any symptoms. Hypertension takes a long time before diagnosed thereby causing major health problems as damage to organs as the brain and kidneys and so on are the long term effect of hypertension disease (⁸). Various risk factors have been associated with hypertension including; age where majority of cases of uncontrolled hypertension are amongst elderly people, sex, race, decrease physical activity, obesity, smoking, dietary, hormonal changes which play key role in the development of hypertension (⁹). Identifying these risk factors may help in create strategizing modalities for reducing preventable risk factors such as weight, excess salt intake, cigarette smoking and alcohol use (¹⁰).

The goal of hypertension management is to prevent short and long term complications by achieving and maintaining the blood pressure at 140/90 mm Hg or lower (^{11,12}). These patients need to be aware of various aspects of hypertension, especially of risk factors which may be modified. This will assist for bringing necessary

modifications in lifestyle behaviors⁽¹³⁾. Lifestyle behavior modifications are the first line of intervention for all patients with hypertension, in combination with pharmacological treatment which is also important for the disease management to control its progress and prevent short and long term complications⁽¹²⁾. Therefore, lifestyle modifications should be actively performed not only before but also after starting of antihypertensive medications to improve patients controlling outcomes⁽¹⁴⁾.

Lifestyle modifications help to control hypertension disease for hypertensive patients and prevent high blood pressure from developing in non-hypertensive people. Also they are instrument which is important to improve effective risk reduction for hypertension complications through controlling of some modifiable risk factors as; smoking, raised cholesterol level, obesity, decrease physical activity, and diet⁽¹⁵⁾. Lifestyle modifications were including; weight control, limitation of alcohol consumption, increased physical activity, increased fruit and vegetable consumption, reduced total fat and saturated fat intake, and smoking cessation⁽¹⁶⁾.

Also dietary approach to control hypertension, (DASH) eating plan which are effectively lower hypertension should be encouraged for these patients. It emphasizes fruits, vegetables, and low-fat dairy products and reduces in fat and cholesterol, other dietary factors, such as a greater intake of protein or monounsaturated fatty acids, may also reduce blood pressure^(17, 18).

Because hypertensive patients are facing many health care issues and challenges such as less awareness and health education which increase difficulties to change their lifestyle behaviors such as; modification of diet, stop smoking, increase physical activity and decrease weight⁽¹⁹⁾. Therefore these patients should be targeted for specific assessment and interventions to overcome any challenges and obtain adequate health awareness about hypertension and understanding of lifestyle behavior modifications which play an important role in the ability to successfully control of disease, its symptoms and prevent short and long term complications⁽²⁰⁾. So the aim of this study was to assess level of knowledge and perceptions related to hypertension, lifestyle behavior modifications and challenges that facing hypertensive patients

II. Aim of the study

Assessment of knowledge and perceptions related to hypertension, lifestyle behavior modifications and challenges that facing hypertensive patients.

Significance of the study:-

In the area of the study, hypertensive patients are facing many problems such as; less awareness and health education in the health units, illiteracy, low income and distance away from health units which increase difficulties to change their lifestyle behaviors as diet, activity, weight ect... So it is necessary to conduct our study to collect hypertensive patients' learning needs, determine their perceptions toward lifestyle behavior modifications and challenges that facing them. The outcomes of the study results can be used in the future as a tool for further prevention and controlling programs aimed at overcome problems and improve community knowledge and lifestyle practices and diet modifications.

Research question

- 1-What is the level of hypertensive patients' knowledge about hypertension?
- 2- What is the level of hypertensive patients' perceptions regarding lifestyle modifications?
- 3-what are the challenges that facing hypertensive patients in the area of the study?

III. Design and Setting:-

3.1 Research design;

Cross sectional study was used to assess level of knowledge and perceptions related to hypertension, lifestyle behavior modifications and challenges that facing hypertensive patients

3.2 Settings;

This study was carried out in the Medical Outpatient Clinic at Tanta University Hospital and Primary Health Care Units in Sebrbay and Mehalla Roh Villages at Tanta City.

3.3 Subjects;

A convenience sample of (101) male and female hypertensive patients with newly diagnosed hypertension who attending to the previous settings over a period during of August 2015. The criteria for sample selection were; age of the patient ≥ 45 , patients should have been diagnosed as hypertensive and patients should currently receive treatment for hypertension.

3.4 Study Tools:

The current study was used two tools which was developed by the researchers after reviewing the related literature based on **Boulle A. (2009)** ⁽²¹⁾, **M.D. Rakumakoe (2011)** ⁽²²⁾ and **Hanula G.M. (2009)** ⁽²³⁾. They were consisted of the following;

Tool (I): Structured knowledge questionnaire: It was consisted of two parts;

Part (1): Sociodemographic data of the hypertensive patients such as; age, gender, marital status, qualification, diseases which are present in their family, did they smoke?, did they experience stress?, and challenges that facing hypertensive patients such as (insufficient income, lack of personal education, age and distance of house away from health units, lack of health education about disease in the units and shortage of resources in the health units).

Part (2): Knowledge questionnaire sheet: which was developed to gather hypertensive patients' level of knowledge regarding hypertension disease; this part was consisted of three sections that included (33) questions.; the first section of the knowledge questionnaires was covered risk factors of hypertension (10) items, the second section was covered symptoms and complications of the hypertension (10) items and the third section was covered knowledge regarding lifestyle modifications (13) items.

Scoring system of these questionnaires: -

The researchers were used two point scales to measure each statement of the knowledge sheet: (0) for wrong or don't know answer and (1) for right answer. Total scoring of total levels of knowledge equal 33 points.

- For the first section, the total right answer equal 10 points. The level of right answer divided into three levels. Poor level range from (1-3), moderate level range from (4-6), and good level range from (7-10).

- For the second section, the total right answer equal 10 points. The level of right answer divided into three levels. Poor level range from (1-3), moderate level range from (4-6), and good level range from (7-10).

- For the third section, the total right answer equal 13 points. The level of right answer divided into three levels. Poor level range from (1-4), moderate level range from (5-8), and good level range from (9-13).

Tool (II): Perceptions sheet toward lifestyle behavior modifications; this tool was consisted of (28) statements which divided into two parts:- **The first part** was covered patients' perceptions regarding diet modifications which involved (15) items. **The second part** was covered perceptions regarding weight, physical activity, stress, smoking, alcohol consumption and medication modifications which involved (13) items.

Scoring system of this perceptions sheet: - Respondents were asked to indicate their level of agreement using a three points Likert type scale with fix values ranging from agree = 3, uncertain = 2 and disagree = 1. The general level of hypertensive patients' perceptions toward lifestyle behavior modifications divided into three levels; Low level of perceptions ranges from (1-9), moderate level of perceptions ranges from (10- 19), and good level of perception ranges from (20- 28).

The developed tools were tested for its content validity and relevance by a jury of five expertises in different fields of nursing at Tanta University, Faculty of Nursing. The experts' responses were represented in four points rating score ranging from (4-1); 4= strongly relevant, 3= relevant, 2= little relevant, and 1= not relevant. Validity of the questionnaires based on experts opinions were calculated and found to be = (97.9%). A few changes were made for a few unclear words. The subscales' reliability values of these factors measured by Cronbach's coefficient Alpha.

Methods of data collection:

Official permission was obtained from the responsible authorities to carry out the study. Privacy of the study sample and confidentiality of the collected data were assured. Oral consent from the sample to participate in the study was obtained after explanation purpose of the study. They were given the opportunity to decide not to be in the research, or to stop participating in the research at any time. A pilot study was conducted on (10) hypertensive patients from the Medical Outpatient Clinic at Tanta University Hospital and Primary Health Care Units in Sebrbay and Mehalla Roh Villages at Tanta City to test the tools for its clarity, organization, applicability and to determine the length of time needed to collect the data. The necessary modifications were done. These patients were excluded from the study sample. To assess reliability, the study tools were given to previous 10 patients two weeks later and test re-test reliability was computed and found to be= (0.9681). Internal consistency reliability = (0.9519). Two tools of the study were used one time to assess patient's knowledge of the hypertension and perceptions toward lifestyle behavior modifications.

Procedure of data collection

-Patients were invited to participate in the research while they were waiting blood pressure verification or inter-professional consultations in the Outpatient Clinic or Primary Health Care Units. The researchers were contacted with each patient who arrived to clarify the importance of the research for them.

-The data were collected in the private room, knowledge sheet about hypertension disease and perceptions sheet toward lifestyle behavior modifications were distributed to the attending hypertensive patients,

each of them was asked to complete two assessment sheets and return them to the researchers in the same visiting.

-Instructions were provided to the hypertensive patients about how the questions should be answered. Each question answered and a mark was allocated for each correct answer. The researchers were presented to answer any questions regarding the assessment sheets.

-In the case of patients were illiterate, the sheets were filled by the researchers through in-depth interview by reading each question to the hypertensive patients and take answer from them.

-The researchers were collected the questionnaire sheets personally at the end of time. Each participant was taking approximately 30 minutes to complete the knowledge questionnaire sheet and 30 minutes to complete the perceptions sheet toward lifestyle behavior modifications.

IV. Statistical analysis

The collected data were organized, tabulated and statistically analyzed using statistical package for social studies (SPSS) version 19. Descriptive measures, including frequency, percentage were used in the study.

V. Results:

Table (1): Shows the distribution of the studied hypertensive patients according to their socio-demographic characteristics. As regard to age, the table shows that the highest percentages of the hypertensive patients (60.4%) were in the age group (55-64) years old. In relation to gender the table shows that (54.5%) from the patients were female whereas (45.5%) were male. Regarding marital status and education, the table shows that more than three quarters of patients were married and (59.4%) from them were illiterate. The table also shows that there was more history between families of the patients towards hypertension and high cholesterol level (74.3%). As regard to smoking and stress, the table also shows that (76.2%) from the patients were smoking and more than three quarters from them were experienced stress.

Figure (1): Shows that the challenges that facing hypertensive patients related to lifestyle modifications, the figure shows that the highest percentages of challenges those face patients were; lack of health education about the disease in the units, insufficient income and lack of personal education for about (79.2, 60.0 and 59.4%) respectively and the lowest percentage were age and distance of house from health unit for about (39.6%).

Table (2): Shows that the distribution of the hypertensive patients regarding knowledge about risk factors of hypertension, the table shows that about 62.4%, 58.4% and 82.2% from hypertensive patients were aware about; the family history, smoking and excessive salt intake increase risk for developing hypertension respectively, While 42.8%, 51.5%, 63.4% from them had wrong answer about; overweight, inactivity, stress are at greater risk for developing hypertension respectively. On the other hand about 41.6%, 66.3%, 99.0% and 93.1% from hypertensive patients were not aware about; older age, drinking alcohol, high cholesterol level and some drugs increase risk for hypertension respectively.

Figure (2): Shows that the level of hypertensive patients' knowledge regarding symptoms and complications of hypertension, the figure shows that most of the patients (67.3%) had fair level of knowledge regarding symptoms and complications of hypertension, whereas low percentage of them (19.8%) and (12.9%) were had poor and good level of knowledge respectively.

Figure (3): Shows that the level of hypertensive patients' knowledge regarding lifestyle behavior modifications to control hypertension, the figure shows that most of the patients (67.3%) had fair level of knowledge regarding life style modifications to control hypertension, whereas low percentage of them (23.8%) and (8.9%) were had poor and good level of knowledge respectively .

Table (3): Shows that the distribution of hypertensive patients according to their perceptions regarding diet modifications, the table shows that about; 43.6%, 64.4%, 60.4%, 49.5%, 44.6% , 47.5% and 45.5% from patients were disagree that; it is easy for them to modify their diet, healthy diet alone effective to control hypertension, they feel they eat healthy diet, fruit only could help them to control hypertension, try to eat fruits most days , try to eat Omega-3 fatty acids such as fish oil weekly and they regularly decrease caffeine by reducing their caffeine intake e.g. coffee, tea respectively. While 52.5%, 66.3%, 74.3%, 53.5%, 63.4 % and 59.4% from them were agree about; they feel they could use & enjoy low fat meal, try to eat vegetables daily, think that they will enjoy by foods without salt, they like to add less salts in their food, they try regularly to decrease animal fats from their meal and think that they will like to decrease intake of saturated fats respectively. Also about 54.5% and 44.6% from them were uncertain about; a high-fiber diet is main thing for their diet continuously and they like to replace whole milk with Low-fat milk to reduce total fat intake.

Table (4): Shows that the distribution of hypertensive patients according to their perceptions regarding weight and physical activity, stress, smoking, alcohol and medication modifications, **As regard to weight and physical activity**, the table shows that about 65.3%, 70.3% and 62.4% from patient were disagree that; exercises can help them to control hypertension, try to increase their daily activity in their home & work and try to check their body weight regularly respectively, while 87.1%, 64.4% and 89.1% from them were agree about; they do not

have time to do exercise, don't able to decrease their body weight and they need advice to lose their body weight respectively. **Regarding stress, smoking, alcohol and medication**, the table shows that about 73.3%, 67.3%, 99%, 82.1%, 39.6% and 72.3% from patients were agree about; they have more nervousness in all their life, try to reduce stress in their work, believe that they are thinking too much, try to go away from cigarette smoker, does not like to follow medication and believe that medication will help them feel better respectively, while about 75.2% from them were disagree about; they cannot avoid smoking and alcohol intake.

Figure (4): Shows that the general level of hypertensive patients' perceptions toward lifestyle behavior modifications, the figure shows that most of the hypertensive patients (70.3%) had low level of perceptions regarding lifestyle behavior modifications, whereas (26.7%) and (2.9%) from them were had moderate and good perceptions level of perceptions respectively .

Table (1): Distribution of studied hypertensive patients regarding their socio-demographic characteristics.

Socio-demographic characteristics	sample (n=101)	
	N	%
Age in years(n=101)		
45-54	30	29.7
55 – 64	61	60.4
65- 75	10	9.9
Mean Age ± SD	56.7±13	
Gender:		
Male	46	45.5
Female	55	54.5
Marital status		
Single	-	-
Married	90	89.1
Other	11	10.9
Qualification		
illiterate	60	59.4
Educated	41	40.6
Which of the following diseases are present in your family?		
1-Hypertension	75	74.3
2-Diabetes	40	39.6
3-Stroke	-	-
4-Coronary Artery Disease	-	-
5-other, specify	-	-
Do you smoke		
Yes	77	76.2
No	24	23.8
Do experience Stress		
Yes	88	87.1
No	13	12.9

Figure (1): Challenges that facing hypertensive patients related to lifestyle behavior modifications

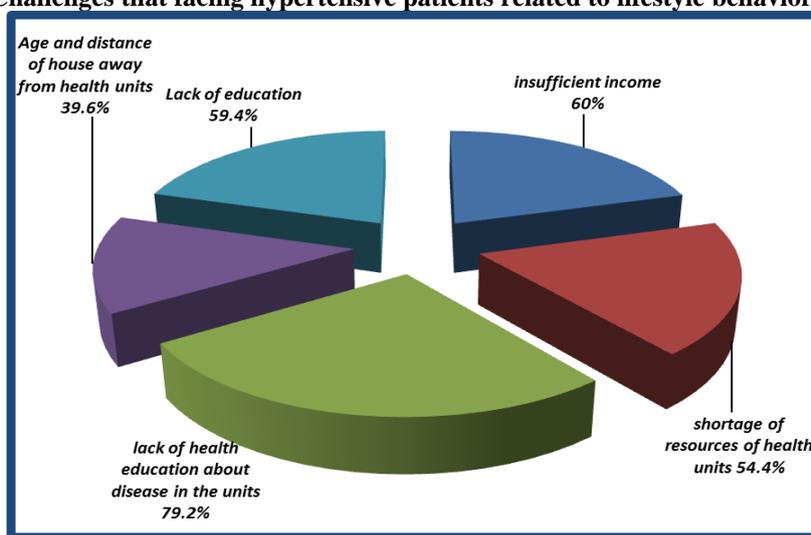


Table (2): Distribution of the studied hypertensive patients according to their knowledge regarding risk factors of hypertension

Items	Sample (101)		
	Yes N (%)	No N (%)	Do not know N (%)
1- Family history of hypertension increase risk for developing it	63 (62.4)	5 (4.9)	33 (32.7)
2- Being older is at greater risk for hypertension.	33 (32.7)	26 (25.7)	42 (41.6)
3- Smoking increases risk for hypertension.	59 (58.4)	30 (29.7)	12 (11.9)
4- Overweight increases risk for hypertension	37 (36.6)	43 (42.8)	21 (20.8)
5- Inactivity lead to hypertension	10 (9.9)	52 (51.5)	39 (38.6)
6- Stress can cause hypertension?	6 (5.9)	64 (63.4)	31 (30.7)
7- Drinking alcohol is a risk for hypertension.	16 (15.8)	18 (17.8)	67 (66.3)
8- High cholesterol is a risk for hypertension and heart disease	1 (0.9)	---	100 (99.0)
9- Some drugs can cause hypertension	7 (6.9)	-----	94 (93.1)
10- excessive salt intake can cause hypertension	83 (82.2)	6 (5.9)	12 (11.9)

Figure (2): level of hypertensive patients' knowledge regarding symptoms and Complications of hypertension

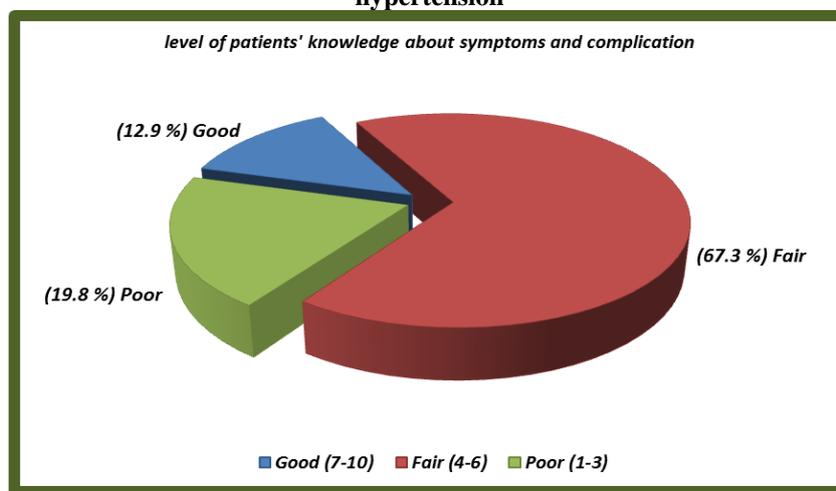


Figure (3): level of hypertensive patients' knowledge regarding lifestyle behavior modifications

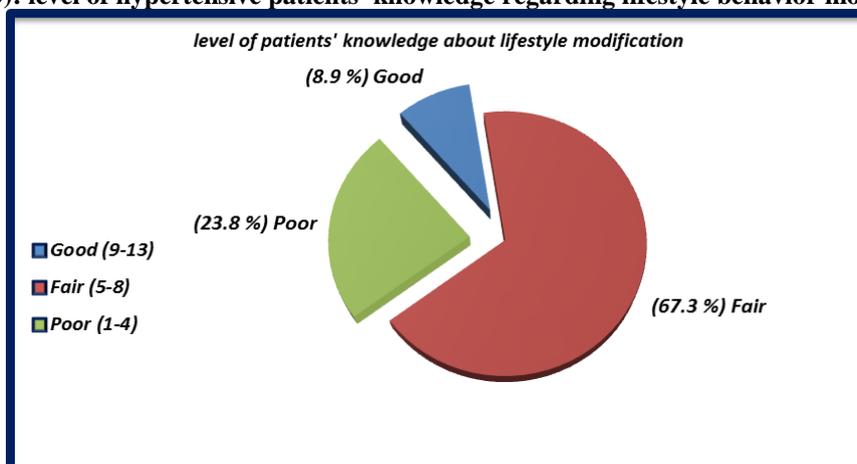


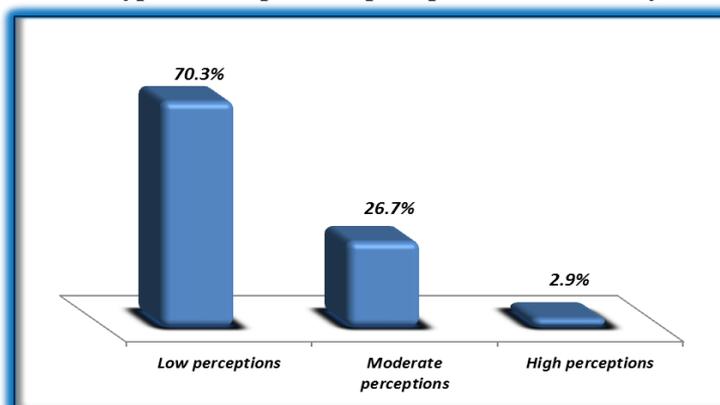
Table (3): Distribution of the studied hypertensive patients according to their Perceptions regarding diet modifications

Items	Sample (101)		
	Agree N (%)	uncertain N (%)	Disagree N (%)
1- I think that healthy diet alone effective to control hypertension.	12 (11.9)	24 (23.8)	65 (64.4)
2- I think that it is easy for me to modify my diet.	43 (42.6)	14 (13.9)	44 (43.6)
3- I think that I eat healthy diet	23 (22.8)	17 (16.8)	61 (60.4)
4- I feel I could use & enjoy low fat meal.	53 (52.5)	30 (29.7)	18 (17.8)
5- I feel fruit only could help me to control hypertension	22 (21.8)	29 (28.7)	50 (49.5)
6- I try to eat fruits most days.	30 (29.7)	26 (25.7)	45 (44.6)
7- I try to eat vegetables daily.	67 (66.3)	14 (13.9)	20 (19.8)
8- I think that I will enjoy by foods without salt	75 (74.3)	19 (18.8)	7 (6.9)
9- I like to add less salts in my food	54 (53.5)	26 (25.7)	21 (20.8)
10- A High-fiber diet is main thing for my diet continuously.	30 (29.7)	55 (54.5)	16 (15.8)
11- I try regularly to decrease animal fats from my meal.	64 (63.4)	25 (24.8)	12 (11.9)
12- I think that I will like to decrease intake of saturated fats.	60 (59.4)	25 (24.8)	16 (15.8)
13- I try regularly to eat Omega-3 fatty acids such as fish oil weekly.	43 (42.6)	10 (9.9)	48 (47.5)
14- I like to replace whole milk with Low-fat milk to reduce total fat intake.	32 (31.7)	45 (44.6)	24 (23.8)
15- I regularly decrease caffeine by reducing my caffeine intake e.g. coffee, tea, coke.	28 (27.7)	27 (26.7)	46 (45.5)

Table (4): Distribution of the studied hypertensive patients according to their Perceptions regarding weight and physical activity, stress, smoking, alcohol and medication modification

Items	Sample (101)		
	Agree N (%)	uncertain N (%)	Disagree N (%)
weight and physical activity			
1- I think that exercises can help me to control my hypertension	9 (8.9)	26 (25.7)	66 (65.3)
2- I try to increase my daily activity in my home and work	15 (14.9)	15 (14.9)	71 (70.3)
3- I do not have time to do exercise.	88 (87.1)	12 (11.9)	1 (0.9)
4- I try to check my body weight regularly.	5 (4.9)	33 (32.7)	63 (62.4)
5- I think that I don't able to decrease my body weight	65 (64.4)	20 (19.8)	16 (15.8)
6- I think I need advice to lose my body weight	90 (89.1)	10 (9.9)	1 (0.9)
stress, smoking, alcohol and medication			
1- I have more nervousness in all my life.	74 (73.3)	-----	27 (26.7)
2- I try to reduce of stress in my work	68 (67.3)	10 (9.9)	26 (25.7)
3- I believe that I am thinking too much.	100 (99)	-----	1 (0.9)
4- I try to go away from cigarette smoker.	83 (82.1)	10 (9.9)	8 (7.9)
5- I Cannot avoid smoking and alcohol intake.	4 (3.9)	21 (20.8)	76 (75.2)
6- I do not like to follow any type of medication.	40 (39.6)	30 (29.7)	31 (30.7)
7- I believe that medication will help me feel better.	73 (72.3)	22 (21.8)	6 (5.9)

Figure (4): General level of hypertensive patients' perceptions toward lifestyle behavior modifications



VI. Discussion

Hypertension is one of the world's most common chronic health conditions and is a leading risk factor for mortality and disease burden⁽²⁴⁾. Controlling hypertension by changing lifestyle habits could decrease the cost of health care by decreasing the use of pharmacological and invasive cardiovascular treatments. Disease prevention and controlling should be the main stay for public health and treatment of diseases^(25, 19). The study was conducted to assess level of knowledge and perceptions related to hypertension, lifestyle behavior modifications and challenges that facing hypertensive patients.

Related to socio-demographic characteristics of the hypertensive patients, the study results revealed that the majority of the patients (60.4%) were in 55-64 years/old. This was in agreement with **Tam C.F., et al. (2014)**⁽²⁶⁾ and **Wright J.D., et al. (2011)**⁽²⁷⁾ who said that in their studies which carried out in USA to investigate the prevalence of hypertension by age group and gender, they found a high prevalence of hypertension were occurred among older adults. Also highly percentage of them (54.45%) were female. This may be due to the effect of postmenopausal hormones deficiency and some risk factors as obesity, stressful situation which have more influence on females rather than males. This was in the same line with **Al-Wehedy A., et al. (2014)**⁽⁴⁾ who reported that in their study, hypertension was encountered more among females than males due to many risk factors as change in hormones that affect more on females.

As regard to educational level and smoking among hypertensive patients, the table showed that more than half of the patients were illiterate and more than three quarter from them were smoking. This was in the same line with **Bani I.A. (2011)**⁽¹⁾ who found that hypertension in their study be more prevalent among illiterate persons, retired persons, and persons with large family size. Also **Bani I.A. (2011)**⁽¹⁾ found that the prevalence of hypertension disease was higher among the smokers than non-smokers.

Regarding Challenges that facing hypertensive patients related to lifestyle behavior modifications, the study results revealed that the highest percentages of challenges that facing patients were; lack of health education about the disease in the units, insufficient family income and lack of personal education (**Fig.1**). This was in the same line with **Li X., et al. (2013)**⁽²⁸⁾ who mentioned that in their study, about 77.3% of hypertensive patients were illiterate. Those who were illiterate had problems in acceptance hypertension knowledge. In addition to **Piresi C.G. and Mussi F.C. (2012)**⁽²⁹⁾ who said that most of the patients agreed that it is very hard to follow a healthy diet and not be allowed to eat everything due to a lack of choice, they have to eat what is available and that it is difficult to change due to lack of cost. Also according to **Azubuike S.O. and Kurmi R. (2014)**⁽³⁰⁾ who found that most of the hypertensive patients had no information at all about disease due to decrease of educational sources.

For about knowledge about risk factors for hypertension, the study results revealed that more than half of hypertensive patients were aware about; the family history, smoking and excessive salt intake increased risk of hypertension. While most of them were not aware about; older age, overweight, inactivity, stress, drinking alcohol, high cholesterol and some drugs are risk for hypertension (**Tab.2**). this may be due to poor educational level among patients and also it may be due to the fact that patients have other life concerns than spending time for follow up of their disease in clinics. This was in agreement with **Demaio A.R., et al. (2013)**⁽³¹⁾ who said that the most risk factors for hypertension known to the subjects were excessive salt intake (77.4%), followed by family history (73.4%), the least was alcohol intake (47.6%).

On the other hand **Shaikh R.B., et al. (2011)**⁽³²⁾ said that in their study more than 70% of patients were aware that stress, high cholesterol and obesity were the risk factors of hypertension and 52.7% from them were not aware that physical activity were risk factors for hypertension. In addition to **Ali S., et al. (2006)**⁽³³⁾ who reported that the participants in their study were aware that stress, excessive salt intake and obesity as risk factors of hypertension. But there was poor awareness with regards to excessive alcohol intake, smoking and a sedentary lifestyle. In the same line **Akter, et al. (2014)**⁽¹³⁾ said that in a community study done on Hispanic subjects regarding knowledge about hypertension on risk factors, treatment, diagnosis and prognosis showed that only 28% knew the correct definition of hypertension and 3% aware that etiology was unknown.

Regarding knowledge of hypertensive patients about symptoms and complications of hypertension. The study results revealed that more than half the patients were had fair level of knowledge. On the other hand low percentage from them (12.9, 19.8%) were had poor and good level of knowledge respectively (**Fig.2**). This may be attributed that many patients in the initial of the hypertension not aware about this condition because it has been called a silent killer, as it is usually without any symptoms, also hypertension takes a long time before diagnosed which may cause complications as damage of organs and the patients not informed about this. The result was in agreement with **Kumar S., et al. (2015)**⁽³⁴⁾ who said that most of the hypertensive patients don't know any knowledge about signs & symptoms and complications of hypertension which is a worrying finding in their result.

In contrast with **Kofi J.O. (2011)**⁽³⁵⁾ who said that most patients had the knowledge that headache, dizziness and tiredness were the symptoms of hypertension. But only 6% knew that common symptoms of hypertension were tense feeling in the chest. The result also was in agreement with **Abdullahi A. A. and Amzat**

J. (2011) ⁽³⁶⁾ who said that, patient considered hypertension very serious health problem and they believed that hypertension if not managed properly could lead to complications and death. In addition to **Lin J. (2008)** ⁽³⁷⁾ said that the majority of the patients had formal education, but only one third correctly identified hypertension as the major risk factor of stroke and coronary heart disease. Also **Li X. et al. (2013)** ⁽²⁸⁾ reported that a majority of the patients were unaware of possible hypertension complications, whereas 18% of the hypertensive knew hypertension could cause kidney disease.

As regard to knowledge about lifestyle behavior modifications, The study results revealed that more than half of the patients were had fair knowledge, 23.8% from them were had poor knowledge and only 8.9% from them were had good knowledge about lifestyle behavior modifications (**Fig.3**). This may be attributed to lack of information of the patients about the importance of different life style behaviors as diet, smoking, weight, and activity as modifiable risk factors in controlling hypertension which will help in preventing complications. This was in agreement with **Awotidebe T.O., et al. (2014)** ⁽³⁸⁾ who said that knowledge of the participants about lifestyle modifications such as activity and exercises to control hypertension was poor, this may be due to lack of awareness about these as complementary management in early mild hypertension other than medication.

Also **Ni H. (1999)** ⁽³⁹⁾ showed that 80% of the hypertensive patients knew that they should limit their salt intake in the food to control hypertension; but only one third always avoided salty foods. This also in the same line with **Okwuonu C.G., et al. (2014)** ⁽¹⁸⁾ who reported that up to 80% from hypertensive subjects were not aware about the role of lifestyle modifications of the diet to control of hypertension such as; importance of vegetables, fruits, unsaturated oil and reduced dairy food intake and decrease body weight. In contrast to **Bhandari B., et al. (2012)** ⁽⁴⁰⁾ who mentioned that in their study most of hypertensive patients were doing regular follow up and 74% monitoring their blood pressure regularly in the clinic and 40% were using blood pressure control measure to avoid complications.

Regarding perceptions of patients toward diet modifications, the study results showed that most of the patients disagree that; healthy diet alone effective to control hypertension, they feel they eat healthy diet, fruit only could help them to control hypertension, try to eat fruits most days, try regularly to eat Omega-3 fatty acids such as fish oil weekly and regularly decrease caffeine. While more than half of them agree about; they enjoy low fat meal, try to eat vegetables daily, will enjoy by foods without salt, like adding less salts in their food, trying regularly to decrease animal fats and like to decrease intake of saturated fats. (**Tab.3**). This results could be attributed to that some patients considered cost of some types of diet is a barrier to modify their usual meal due to limited resources for them such as increase eating of fruits and vegetables daily.

This was in agreement with **Burke V., et al. (2007)** ⁽⁴¹⁾ Who found 89% of the studied subjects after 4 months follow up reported change in perceptions about dietary behaviors than before whereas they start to decrease dietary fat, decrease weight, and increase fish and vegetable in diet to control hypertension. Also **Piresi C.G. and Mussi F.C. (2012)** ⁽²⁹⁾ said that most of patients partially and totally agreed that it is very hard to follow a healthy diet and not be allowed to eat everything due to a lack of choice, they have to eat what is available and that it is difficult to change due to lack of cost. In addition to **Kofi J.O. (2011)** ⁽³⁵⁾ who mentioned that most of the hypertensive patients believed that avoiding stress could prevent and control hypertension. However, a few from these patients also believed that balanced diet can contribute to the control of hypertension.

Also **Anthony H., et al. (2012)** ⁽⁴²⁾ found that in their study many patients did not follow to the suggested lifestyle modifications such as; did not change their diet, manage their stress, decrease their weight because patients did not understand the importance and why they needed to change lifestyle. In contrast **Piresi C.G. and Mussi F.C. (2012)** ⁽²⁹⁾ who said that although participants hardly disagreed on the negative effects of salt, they perceived more beliefs regarding barriers to tasteless food when prepared with little salt, confirming the feeling of pleasure when consuming salty food.

Regarding perceptions of the hypertensive patients toward weight, physical activity, stress, smoking, alcohol modification and medications. The study results showed that more than half of the patients disagree that exercises can help to control hypertension; they try to increase their daily activity, try to check their body weight regularly and cannot avoid smoking and alcohol intake. While majority of them agree about they do not have time to do exercise, don't able to decrease body weight and need advice to lose weight. they have more nervousness in their life, try to reduce of stress in their work, believe that they are thinking too much, try to go away from cigarette and does not like to follow medication (**Tab. 4**). Low perceptions about physical activity and exercises among patients could be attributed to patients are not considered these as a part of their daily routine and most jobs today demand sitting behind the desks for long hours during the day.

This was in agreement with **Bollu M., et al. (2015)** ⁽⁴³⁾ who said that 68% from patients agree that exercise can be beneficial in reducing hypertension, 42% think that regular checking of BP is important and 32% think that regular use of medication is beneficial for controlling hypertension. Also **Chavez M., (2000)** ⁽²⁾ said that more than 70% of all patients answered positively on the following items: avoid smoking (71%); avoid

excessive alcoholic intake (76%), and BP checked (71%). Only 53% of the population had monitored their weight before the intervention. In addition to **Abdul Rahman A., et al. (2015)**⁽⁴⁴⁾ who mentioned that hypertensive patients agreed that successful hypertension management was not defined by reaching a target blood pressure, but rather, involved taking their medication regularly, attending scheduled check-ups with their doctor, having their blood pressure measured, and experiencing a lack of symptoms (such as dizziness....

For about general level of hypertensive patients' perception toward lifestyle behavior modifications, the study results showed that about most of the hypertensive patients have low perceptions regarding lifestyle behavior modifications, whereas 2.9% from them were had good perceptions level (**Fig. 4**). This result was in agreement with **So I., et al (2010)**⁽⁴⁵⁾ who found that a poor level of perceptions about hypertension and its lifestyle-modification measures between hypertensive patients through the mass media, but there is high level of willingness to adopt the lifestyle measures. In contrast with **Kofi J.O. (2011)**⁽³⁵⁾ who said that most participants (97%) believed that change of lifestyle behaviors could help to prevent and control hypertension.

VII. Conclusion:

These study findings has demonstrated inadequate knowledge among patients with hypertension. And also there is a poor level of awareness about lifestyle behavior modifications which is needed in the control of hypertension among a representative sample of patients. Also study has shown high poor level of perceptions toward lifestyle behavior modification measures. Since lifestyle and diet-related factors are often modifiable, perceptions of their effects have specific importance in control of hypertension. The results also revealed that most Challenges that facing hypertensive patients were; lack of health education about the disease in the units, insufficient family income and lack of personal education.

VIII. Recommendations

Based on the results of the study, the following recommendations are suggested:

1. Increase awareness of hypertensive patients about risk factors of hypertension is essential to motivate them to adopt healthy lifestyle behaviors to control the disease.
2. It necessary to emphasized that building a trusting relationship between the healthcare workers and the patient which is most important aspects when motivating patients to change their lifestyle behaviors.
3. Encouraging hypertensive patients for essential lifestyle behaviors modifications that including adopting regular physical activity, controlling proper body weight, following a proper dietary regimen, quitting smoking and alcohol ,reducing stress as much as possible.
4. Focus should be on the public's education in understanding high blood pressure and its effect on their life to help for controlling it.
5. It is important to understand the current status of the patient knowledge and perceptions towards lifestyle behavior modifications as an important factor in controlling hypertension.
6. Findings of the study can assist in developing health planning programmes for hypertensive patients to control disease and prevent its complication and prevention for non-hypertensive people.
7. Challenges that face hypertensive patients such as lack of health education, lack of income and distance away from the house must be determined and controlled.

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