



## Original Article

# Knowledge of Elderly Hypertensive Patients Regarding Dash Diet (Dietary Approaches to Stop Hypertension) for Controlling Blood Pressure at Teaching Hospital Lahore, Pakistan

Rukhmah Afzal<sup>1</sup>, Muhammad Asim Amin<sup>1</sup>, Anum Batool<sup>1</sup>, Zunaira Aziz<sup>1</sup> and Kabir Ozigi Abdullai<sup>1</sup>

<sup>1</sup>Lahore School of Nursing, The University institute of Public Health, The University of Lahore, Lahore, Pakistan

## ARTICLE INFO

## Key Words:

Knowledge, DASH Diet, Elderly Patient, Hypertensive, Regarding

## How to Cite:

Afzal, R., Asim Amin, M., Batool, A., Aziz, Z., & Ozigi Abdullai, K. (2021). Knowledge of Elderly Hypertensive Patients Regarding Dash Diet (Dietary Approaches to Stop Hypertension) For Controlling Blood Pressure at Teaching Hospital Lahore, Pakistan: Knowledge of Elderly Hypertensive Patients Regarding Dash Diet. NURSEARCHER (Journal of Nursing & Midwifery Sciences), 1(02), 11-16. <https://doi.org/10.54393/nrs.v1i02.9>

## \*Corresponding Author:

Rukhmah Afzal  
 Lahore School of Nursing, The University institute of Public Health, The University of Lahore, Lahore, Pakistan  
[rukhamahafzal2@gmail.com](mailto:rukhamahafzal2@gmail.com)

Received Date: 13<sup>th</sup> July, 2021

Acceptance Date: 26<sup>th</sup> August, 2021

Published Date: 31<sup>st</sup> December, 2021

## ABSTRACT

**Objective:** To assess knowledge of Elderly Hypertensive Patients Regarding Dash (dietary approaches to stop hypertension) Diet for controlling Blood Pressure at Teaching Hospital Lahore. **Methods:** This descriptive cross section study was conducted at University of Lahore Teaching Hospital Lahore, Lahore Pakistan. Data were collected by self-administered questionnaire, question related to DASH (dietary approaches to stop hypertension) diet. Purposive sampling technique was used to collect data. Structured questionnaire was administered to the patients to collect data for assessing knowledge regarding DASH diet of elderly hypertensive patients. The collected data were analyzed through descriptive as well as inferential statistics using SPSS software (22). The descriptive analysis was performed by using frequencies and percentages. **Results:** Most of the patients who are diagnosed with hypertension are above the age of 50. People who are graduates have good knowledge instead of illiterate and primary educated people. Majority of the people have very poor knowledge regarding DASH diet and only fewer people have knowledge about the Dash diet. Some people have good knowledge about the meaning of hypertension but very poor knowledge about the use of fresh fruits and vegetables in their diet. **Conclusion:** It is concluded that elderly hypertensive patients have inadequate knowledge about DASH diet but a very few patients who are graduated know about the DASH diet.

## INTRODUCTION

Health is a basic human right and primary function of health for the humans. Health is essential part of life for all human beings. A person with a healthy mind and healthy body can be strength of the family and can play an important role in the society. Health cannot be purchased by money but it can be decayed with bundles of diseases [1, 2]. For a healthy body, everybody should take balanced diet. The people of the rural community are more vulnerable to the infectious diseases due to lack of bad sanitation and their poor economic status. The people of urban community are more vulnerable to get other diseases like diabetes mellitus and hypertension etc, it could be due to their

modern life activities. Therefore, hypertension has been become most common risk factor of death among the people of industrialized countries [3]. Worldwide, about 22% of the individuals of 25 years have been reported with elevated blood pressure. In 2014 about 7.5 million people died due to raised blood pressure. Due to hypertension, 60% deaths reported in heart failure patients and 40% deaths in end stage renal disease [4]. Hypertension is a problem of an experience of raised blood pressure of individual. In an adult high blood pressure or hypertension is diagnosed when at least average two visits shows same reading with systolic blood pressure 140mmHg and

diastolic blood pressure 90 mmHg or above [5]. According to WHO hypertension is a condition of continuous elevation of blood pressure. Heart provides blood to the all parts of body through vessels. Whenever heart beats per minute, blood pumps to the vessels. Systolic blood pressure greater than 120mmHg and diastolic blood pressure greater than 80mmHg after counting more than two continuous reading is known as hypertension. There are many people who do not have knowledge regarding hypertension symptoms, even hypertension can cause trauma, stroke, angina attacks and many other organs damage by blocking and bursting of blood vessels. Two ways can be used for the hypertension management (pharmacological and non-pharmacological). Diuretics, Beta blockers, calcium channel blockers, centrally acting drugs, ACE inhibitors and alpha adrenoreceptor blockers are those drugs which can be used in high blood pressure. Healthy diet and better lifestyle are a non-pharmacological treatment. Modification in the lifestyle can be helpful in prevention and controlling high blood pressure. By including fruits and vegetables in diet, low fat diet, maintenance of less weight, avoidance of smoking, salt restriction are the daily use of the dietary management. DASH diet is the ideal dietary management of the hypertension. In actual, USDA suggested that DASH diet is an ideal dieting plan [6, 7]. DASH stands for Dietary Approaches to Stop Hypertension. The US National Heart Lung and Blood Institute suggested the DASH diet for people with high blood pressure. Research shows that if hypertensive patients initiate the DASH diet in eating plan saw fall in blood pressure after using two weeks. DASH is a balanced eating plan which is used among hypertensive patients, institute sponsored by research studies and stated that, reduces elevated blood pressure, helps in maintenance of blood lipid levels, reduces the risk factor of causing cardiovascular disease [8, 9]. National Heart, lung and Blood institute has been encouraged the DASH diet in controlling blood pressure among hypertensive patients. DASH diet promotes the patient to avoid salt, use more magnesium and fat free diet for lowering the blood pressure. The DASH diet includes more fruits, vegetables, fat free products, and whole grains, as well as some legumes, poultry and fish, very small quantity of red meat, fats and sweets. It is low in saturated fat, total fat and cholesterol. It includes intake of approximately 2,000 calorie per day. Based on the evidence of the action of DASH diet in controlling hypertension, a structured teaching programmed regarding DASH diet may help the patient to improve the knowledge of DASH diet and to practice it to control the hypertension [10, 11]. In 1991, National institute of health started research on dietary approaches to stop hypertension. According to NIH there

are several dietary methods to stop hypertension and their research studies shows that 9 to 11mmHg systolic blood pressure can be reduced by following this diet chart. This diet not only helps in controlling in blood pressure, it has also been noticed that it helps in controlling diabetes [12, 13]. This diet includes legumes, whole grains, fruits and vegetables, fat free dairy products and carbohydrates. DASH diet is a combination of both modern and old products of dietary patterns. According to their research it has been observed that DASH diet has helped a lot to manage the diseases for the health team members. This non pharmacology therapy is very useful therapy for tackling the disease. Nurses and pharmacists should aware the patient regarding DASH diet to control blood pressure and its importance before discharge the patients. From following this diet plan this will drive optimal outcomes for the patient [14, 15].

## METHODS

The cross-sectional descriptive study design was used in the study. This study was conducted in the University of Lahore Teaching Hospital. All the patients of elderly diagnosed with the elevated blood pressure were participants. Inclusion criteria were the patients who have elevated blood pressure and the age between 20 to 80 years. All other patients of young ages were excluded in the study. Non diagnosed people with hypertension have been also excluded from the study. The goal was to gather a representative sample of each level of qualification within the target population using a purposive sampling approach. The formula used for sampling was ( $n = N/1 + (e)^2$ ). Collected data by all the outdoor patients of the Hospital who were diagnosed with hypertension through DASH diet questionnaire. Data were analyzed on the Statistical Package for the Social Sciences (SPSS) version 21.

## RESULTS

The data were analyzed by questionnaire and results are interpreted with the frequency and percentages.

Demographics	Variable	Frequency (%)
Age	20-35	30(27.5)
	30-35	19(17.4)
	Greater than 50	60(55)
Gender	Male	44(40.4)
	Female	65(59.6)
Religion	Muslim	100(91.7)
	Christian	5(4.6)
	Others	5(4.6)
Education	Illiterate	34(31.2)
	Primary school	46(42.2)
	Graduate	29(26.6)
Occupation	Labor	29(26.6)
	Medical personnel's	15(13.8)

	Others	65(59.6)
Type of diet	Non-Vegetarian	99(90.8)
	Vegetarian	10(9.2)
History of hypertension	Yes	68(62.4)
	No	41(37.6)

**Table 1:** Sociodemographic of participants N=109

The table 2 describes the knowledge questionnaire of participants. 68(62.4%) people recognized the meaning of hypertension while, 15(13.8%) people stated that increase level of respiration is called hypertension and 18(16.5%)

The table 2 describes the knowledge questionnaire of participants. 68(62.4%) people recognized the meaning of hypertension while, 15(13.8%) people stated that increase level of respiration is called hypertension and 18(16.5%) people called the increase level of body temperature is hypertension and 8(7.3%) among them called increase level of stress is called hypertension. Among 109 participants, 75(68.8%) knows about the range of the elevated blood pressure and others do not know the range of high blood pressure. Only 11(10.1%) patients have knowledge related to causes of hypertension, 30(27.5%) says that chronic stress is a cause of hypertension, 40(36.7%) stated that alcohol and tobacco is cause of hypertension. Out of 109 participants, 18(16.5%) patients stated that DASH diet is an abbreviation of direct activity to stop hypertension, 44(40.4%) says that DASH diet is an abbreviation of direct approaches to stop hepatitis, 38(34.9%) knows about the abbreviation of DASH diet and says that DASH diet is an abbreviation of dietary approaches to stop hypertension, only 9(8.3%) participants stated that direct activity to stop hemorrhage. Only 29(26.6%) patients have knowledge related to uses of DASH diet, 32(29.4%) patients stated that it only reduces the body weight. Among 109 participants, only 34(31.2%) patients have knowledge about the main aim of the DASH diet and says that it reduces the amount of sodium in diet as compared to routine diet. 42(38.5%) stated that it reduces amount of sugar in diet, 23(21.1%) patients says that it increases amount of fat in diet and only 10(9.2%) says that none of the above. 9(8.3%) patients out of 109 participants said that high fats should be taken in in the DASH diet, 60(55.0%) patients says that medium fats should be taken in the DASH diet, 37(33.9%) patients stated that low fats should be taken in the DASH diet and only 3(2.8%) says that none of above. From the 109 participants, 36(33.0%) patients says that T.B disease can be prevented up to 10 years with use of DASH diet. 38(34.9%) said Heart attack can be prevented up to 10 years with use of DASH diet, 26(23.9%) stated that hepatitis can be prevented and only 9(8.3%) said that gastritis can be prevented up to 10 years by use of DASH diet. Out of 100% elderly hypertensive patients, only 33.9% patients give correct answer and I analyze that only fewer patients have knowledge related to

DASH diet. 66.1% of elderly hypertensive patients give incorrect answer and I analyzed that majority of patients do not have knowledge about the DASH diet.

Questions	Responses	Frequency (%)
What is the meaning of hypertension?	Increase level of blood pressure	68(62.4)
	Increase level of body temperature	18(16.5)
	Increase level of respiration	15(13.8)
	Increase level of stress	8(7.3)
What is the normal range of blood pressure?	100/60 mm Hg	5(4.6)
	120/80 mm Hg	75(68.8)
	140/90 mm Hg	20(18.3)
	200/120 mm Hg	9(8.3)
How much blood pressure consider as hypertension?	140/90 mm Hg or above	19(17.4)
	120/80 mm Hg	35(32.1)
	100/60 mm Hg	36(33)
	Below 100 mm Hg	19(17.4)
Which are the causes of hypertension?	Salt rich diet and fatty diet	11(10.1)
	Chronic stress	30(27.5)
	Alcohol and tobacco use	40(36.7)
	All above	28(25.7)
Which disease can be controlled by use of DASH diet?	Hepatitis	57(52.3)
	Hypertension	21(19.3)
	T.B.	23(21.1)
	Malaria	8(7.3)
What is the abbreviation for the DASH diet?	Direct Activity to Stop Hypertension	57(52.3)
	Direct Approach to Stop Hepatitis	21(19.3)
	Dietary Approach to Stop Hypertension	23(21.1)
	Direct Activity to Stop Hemorrhage	8(7.3)
Which types of food included in DASH diet?	Fruits & Vegetables	43(39.4)
	Whole grains & Nuts and Beans	23(21.1)
	Low fat dairy & Poultry	7(6.4)
	All above	36(33)
Which are the uses of DASH diet?	It helps to control the blood pressure	32(29.4)
	Helps to lower the cholesterol	37(33.9)
	Helps to reduce body weight	11(10.1)
	All above	29(26.6)
What is the main aim of DASH diet?	Reduce the amount of sodium in diet compared to routine diet.	34(31.2)
	Reduce amount of sugar in diet	42(38.5)
	Increase the amount of fat in diet	23(21.1)
	None above	10(9.2)
How much of daily intake of calories the DASH diet allows?	5,000 Calories	25(22.9)
	3,000 Calories	47(43.1)
	2,000 Calories	34(31.2)
	10,000 Calories	3(2.8)
Which type of nutrients / minerals are present in the DASH diet, that helps to lower the blood pressure	Magnesium	9(8.3)
	Potassium	38(34.9)
	Calcium	37(33.9)
	All above	25(22.9)
What are the items the person can take in servings of grains?	Rice	15(13.8)
	Grains	29(26.6)
	Bread	23(21.1)
	All above	42(38.5)

Which kind of vegetables should be eaten by person following DASH diet?	Fibre - rich	15(13.8)
	Vitamin - rich	40(36.7)
	A & B both	39(35.8)
	Iron rich	15(13.8)
What are the examples of fiber rich vegetables?	Green leafy vegetables	31(28.4)
	Sweet potatoes	25(22.9)
	Peas	12(11)
	All above	41(37.6)
What are the examples of vitamin rich vegetables?	Tomato	27(24.8)
	Carrot	29(26.6)
	Lemon	28(25.7)
	All above	25(22.9)
How many servings of fruits to be taken by person in one day?	1 - 2 servings	33(30.3)
	4 - 5 servings	30(27.5)
	10 - 12 servings	40(36.7)
	0 serving	6(5.5)
Which kind of dairy item should be taken in DASH diet?	High fat	9(8.3)
	Medium fat	60(55)
	Low fat	37(33.9)
	None above	3(2.8)
Which one of following is the example for nuts & seeds that can be use in DASH diet?	Almonds & Peanuts	26(23.9)
	Mung & Bengalgram	15(13.8)
	Chickoo & Lemon	44(40.4)
	None Above	24(22)
How many servings of sweets person should take in DASH diet?	Up to 10 servings per week	28(25.7)
	Up to 5 servings per day	40(36.7)
	Up to 5 servings per week	33(30.3)
	Unlimited servings	8(7.3)
Which disease can be prevented up to 10 years with use of DASH diet?	T.B.	36(33)
	Heart attack	38(34.9)
	Hepatitis	26(23.9)
	Gastritis	9(8.3)
Total Score	Correct	678(33.9)
	Incorrect	1322(66.1)

**Table 2:** DASH diet responses among elderly hypertensive patients

## DISCUSSION

This study was conducted in outdoor elderly hypertensive patients at University of Lahore Teaching Hospital where more than 31.2% were uneducated, 42.2% were from primary education and 26.6% are graduated. Educational status was directly proportional to the knowledge of the DASH diet of hypertensive patients as those patients who were graduated have better knowledge of DASH diet rather than those patients who were illiterate, and the primary educated patients have very little knowledge about DASH diet. Johnson *et al.*, study showed that many socio-economic factors including lack of education and poverty were the main cause of illiteracy and poor knowledge of patients about DASH diet among elderly hypertensive patients. Patients have inadequate knowledge about the risk factors, causes and awareness of hypertension [16]. Dietary modification is a complicated procedure that

necessitates a step-by-step approach. Food flavour profiles can be disrupted by abrupt changes in traditional recipes, contributing to failing to conform to them. Food in Pakistani culture is rich in flavours and spices, and sharing food is a vital part of communicating and making relationships. Consumption of the same meal by all family members is a significant component of their cultural values; so, change may be a hurdle for some people. That's why some people do not change their eating habits and face difficulty in following DASH diet. Patients' age, education level, and employment situation all influence their diet in this study. The Pakistani population needs clear instructions from its healthcare staff that are inexpensive, clear, simple, and accessible for a target audience that is mainly older and under-educated. But when these patients get dietary plans from the health staff only few of them follows this plan due to poverty and ignorance [17]. Some people cannot afford only fruits and vegetables in their diet and some people eat whatever they like to eat and do not quit spices and fat rich diet. Among 109 elderly hypertensive, 99(90.8%) participants were vegetarian and eat simple vegetables. Only 10(9.2%) patients were non-vegetarian and do not eat vegetables in their diet. Some people use mixed. So, people eat mostly whatever has been cooked at the home and do not care about their dietary pattern. Thomopoulos *et al.*, studied that diet is an important aspect of self-care for hypertension control, with a low-sodium, low-cholesterol, and low-saturated-fat diet being recommended [18]. In this investigation, more educated patients demonstrated greater adherence to diet and weight management than those who were less educated, similar to earlier findings. Furthermore, higher education was frequently linked to a higher socioeconomic level, which may enhance patients' access to healthier dietary options and physical exercise programs, which may improve self-care activity [19]. Out of 109 elderly hypertensive patients, 68(62.4%) have family history of hypertension and 41(37.6%) do not have family history of hypertension. The patients who do not have family history of hypertension may be hypertensive due to many other causes like obesity, smoking, tobacco, increased level of stress and high level of alcohol consumption. Educated patients quits highly sodium consumption and cholesterol in from their diet and eat fruits and vegetables which are the part of the DASH diet [20]. But uneducated patients who do not have knowledge of DASH diet do not follow healthy eating patterns due to illiteracy and poverty and that's why more vulnerable to hypertension. I assessed knowledge of 109 elderly hypertensive patients regarding DASH diet in which only 33.9% give correct answer who were well educated and 66.1% give incorrect answer who were illiterate and from



primary education. It means that people give attention on the pharmacological treatment for the hypertension and do not know about the DASH diet. DASH diet can control blood pressure through diet and due to illiteracy hypertensive patients have very poor knowledge about it.

## CONCLUSIONS

This study shows that patients have very poor knowledge related to DASH diet. This can be used in the hospital for the healthcare provider as a guidance to aware and educate the hypertensive people regarding the importance and benefits of DASH diet. This study helped the hypertensive patients to eat healthy dietary pattern in which reduced sodium use in the diet and including of fruits and vegetables in the diet. This is concluded that patients have very poor knowledge, and it should be improved to adequate knowledge in posttest. It can only be improved by educating the patients about DASH diet.

## Conflicts of Interest

The authors declare no conflict of interest.

## Source of Funding

The authors received no financial support for the research, authorship and/or publication of this article.

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