

# A study to assess nutritional status of hypertensive patients admitted in tertiary care hospital Karad

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## **ABSTRACT**

**Background:** The incidence of hypertension is found to be large in the growing country. Overweight and obesity are now becoming a public health concern and hypertensive conditions have been associated with obesity and overweight. **Aim:** Nutritional Assessment of hypertensive patients. Hypertension patients are not fully cautioned about their daily recommended intake. Adequate prevention is mandatory to prevent or manage such health problems. So It is important to assess the nutritional status of hypertension patients. This suggests that the patients deliberately reduced the number of consumed foodstuffs. **Objective:** 1. To assess the nutritional status of hypertension patients .2. To find out association between the nutritional status of the hypertensive patients with demographic variables. **Material and Method:** The research approach used for the study was a Quantitative research approach, Descriptive study design was used for the study was conducted at a tertiary care hospital in western Maharashtra. The sample size should be chosen with the help of Simple random sample. 80 hypertension patients were selected by purposive sampling technique. The data were collected by structured questionnaires. The data were analyzed using descriptive & inferential statistics. **Result:** The result showed that among all study participants Patients diagnosed with hypertension are 52 normal, 26 overweight, 1 obese and 1 underweight which was also confirmed by observations. At the same time, dietary energy intake was found to be insufficient about the recommended allowances. 66 hypertension patients belong to a poor category and only 14 hypertension patients belong to a good category.

**Keywords:** - Hypertension, Nutrition, Assessment, Status.

## **I. Introduction**

Better health is central to human being's happiness and well-being. It also makes a very important contribution to economic progress, as healthy populations live longer, are more productive, and save more. Many factors influence health status and a country's ability to provide quality health services for its people<sup>1</sup>.

Hypertension is one of the biggest health-related issues in our growing country India, as India is said to be 2nd largest population country, and even all over the world including India, overweight and obesity are now becoming a major problem regarding public health concern and hypertension conditions have been associated with obesity and overweight. High blood pressure is defined as systolic blood pressure (BP) > 140 mmHg and diastolic blood pressure > 90 mmHg obtaining two different readings which is taken been since one week <sup>2</sup>.

Hypertension is often described as a silent killer. Although symptoms are usually absent, persistently elevated blood pressure causes long term damage to numerous organs and can result in over cardiovascular diseases, chronic kidney damage and stroke, and is a repeated cause of premature deaths<sup>3</sup>.

Making changes in your diet is proof to help control your high blood pressure. These differences can also help you to lose bodyweight and reduce your chance of getting heart diseases and stroke. The low salt Dietary Approaches to Stop Hypertension (DASH) diet is proven to help lower blood pressure. its effects on blood pressure, are sometimes seen within a few weeks. This diet is rich in important nutrients; it includes foods that are higher in potassium, calcium, and magnesium, proteins, fibers, carbohydrates and lower in sodium (salt).<sup>8</sup>

Hypertension is the most chronic disease in India. The prevalence of hypertension ranges from 20-40% in urban adults and 12-17% among rural adults. The number of people with hypertension is projected to increase from 118 million in 2000 to 214 million in 2025, with nearly equal numbers of men and women<sup>10</sup>. A survey of 26,000 adults in South India showed a hypertension prevalence of 20% (men 23% and women 17%) but 67% of those with hypertension were unaware of their diagnosis.<sup>10</sup>

It is found that the recommended dietary intake, nutritional status is still not met of people living in India. India needs to be awakened and the communities should be sensitized about the need for change. So, the researcher found that there is a need to assess the nutritional status especially of the hypertensive patients because hypertension is known to a silent killer disease and is increasing worldwide, and it is mostly affected by the people due to their modification or changes in their diet. <sup>16</sup>

No, studies have been conducted in India. People are still away from the RDI since India is known as an agricultural occupation country and they lead with the heavy work and couldn't meet the nutritional requirements which are to be needed for the entire day that will develop further complications.<sup>16</sup>

## **II. Material and Method:**

The descriptive study was conducted in the tertiary care hospital in western Maharashtra.

Totally 80 hypertension patients were allotted by the Simple random sample technique.

The study was who fulfilled the inclusion criteria who speak Marathi or the English language. Patients having the other diagnosis along with hypertension were excluded from the study.

**Ethical Issue:** Research Ethics Committee of the Krishna Institute of Medical Science Deemed University, Karad had permitted the data collection. After obtaining permission from the setting, the patients were asked their willingness to participate in the study and informed consent was obtained.

**Procedure:** A collection of Demographic data, Medical history regarding hypertension, Dietary Questionnaires, Biochemical laboratory data (Red blood cells, White blood cells, Hemoglobin, platelets, cholesterol, fasting glucose, systolic blood pressure, diastolic blood pressure) Anthropometric measurements (Height, Bodyweight, Body mass index, Waist circumference, Hip circumference, Waist hip ratio) were used for doing the nutritional assessment.

### III. Result:

Among all study participants Patients diagnosed with hypertension are 52 normal, 26 overweight, 1 obese and 1 underweight which was also confirmed by observations. At the same time, dietary energy intake was found to be insufficient about the recommended allowances. From 80 samples, 66 hypertension patients belong to a poor category and only 14 hypertension patients belong to a good category.

The results showed that in demographic variables the majority of the sample (26.25%) belonged to the age group of 31-40 years.

Findings related to the medical history of HTN patients the results showed that the majority of samples (37.5%) belongs to the group from the duration of illness is > 6 months to 1 year.

Findings related to biochemical laboratory data, the results showed that average mean of red blood cells of hypertension patients is 5.20 and the standard deviation is 0.56, the average mean of white blood cells is 9.969, and SD is 1,116, mean of Hemoglobin is 14,24475 and SD deviation is 2,00, Mean of platelets is 3,53,775, and SD is 67,329, mean of cholesterol is 183,8, and SD is 14.39, Mean of fasting glucose is 85, and SD is 17, mean of systolic blood pressure is 157.75 and SD is 8.56, and mean of diastolic pressure is 106 and SD is 7.

Findings related to Anthropometric measurements, the results showed that average height of hypertension patients is 158.88, and SD is 6.69, mean of weight is 60.06 and SD is 6.31, mean of body mass index is 23.81, and SD is 2.25, mean of waist circumference is 89.41, and SD is 9.58, mean of the hip circumference is 98.27 and SD is 6.40, mean of the waist -hip ratio is 0.91 and SD is 0,086.

Analysis of association between the nutritional status of hypertensive patients with demographic variables there is significantly associated with age group and also there is significant association concerning marital status.

**Table NO.1:** Frequency and percentage distribution of samples according to demographic variables.

n=80

DEMOGRAPHIC VARIABLE	FREQUENCY	PERCENTAGE
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<b>AGE</b>		
<30	8	10%
31 to 40	21	26.25%
41 to 50	20	25%
51 to 60	18	22.5%
61 to 70	13	16.25%
<b>GENDER</b>		
Male	40	50%
female	40	50%
<b>RELIGION</b>		
Hindu	70	87.5%
Christian	4	5%
Muslim	6	7.5%
Others	0	0%
<b>MARITAL STATUS</b>		
Married	55	68.75%
Unmarried	10	12.5%
Widow/widower	12	15%
Separated	3	3.75%
Others	0	0%
<b>TYPE OF FAMILY</b>		

Nuclear	26	32.5%
Joint	50	62.5%
Extended	4	5%
Broken	0	0%
Others	0	0%
<b>EDUCATIONAL STATUS</b>		
Non literate	13	16.25%
Primary school	34	42.5%
Elementary school	0	0%
High school	16	20%
Higher secondary	8	10%
Graduate and above	9	11.25%
Others	0	0%
<b>EMPLOYMENT STATUS</b>		
Professional	3	3.75%
supervisor	16	<b>20%</b>
Self employed	3	<b>3.75%</b>
unskilled	0	0%
homemaker	9	11.25%
retired	1	1.25%
Unemployed able to work	0	0%

others	48	60%
<b>FAMILY MONTHLY INCOME IN RUPEES</b>		
<5000	5	6.253%
5001-7500	28	<b>35%</b>
7501-10000	19	23.75%
>10000	21	26.75%
Others	7	8.75%
<b>TOTAL NUMBER OF FAMILY MEMBERS</b>		
0-3	3	3.75%
3-6	43	53.75%
6-9	30	37.5%
Others	4	5%

### Description of sample characteristics

The data presented in Table 1. Reveals distribution of samples according to demographic variables. Majority of samples 21 (26.25%) belong to age group 31-40 years, 20 (25%) belong to age group 41-50 years, 18 (22.5%) belong to age group 51 to 60, around 13 (16.25%) belonged to age group 61 to 70, and only 8 (10%) of patients belonged to age group < 30 years. Out of 80 samples 40 (50%) were females and 40 (50%) males, according to religion 70 (87.5%) belong to the Hindu religion, 6 (7.5%) patients belonged to the Muslim religion, 4 (5%) of patients belong to the Christian religion. According to marital status 55 (68.75%) were married, 12 (15%) are widow/ widower, 10 (12.5%) are unmarried, 3 (3.75%) patients are from separated group. According to the type of family 50 (62.5%) are living in a joint family, 26 (32.5%) belong to the nuclear family, 4 (5%) living in an Extended family. Based on the education status 34 (42.4%) has taken primary school education, 16 (20%) patients have taken high school education, 13 (16.25%) patients are nonliterate, 9 (11.25%) completed their graduation degree, 8 (10%) completed their higher secondary education. Based on their employment status out of 80 samples patients belong from other group others that is agriculture with frequency 48 (60%), with frequency 16 (20%) were supervisor/clerical/medium level business head, Homemaker were 9 (11.25%), self-employed and professional executive/ business head patients were with Frequency 3 (3.75%), only one single patient was retired frequency 1

(1.25%). According to their monthly income patients having monthly income 5001-7500 were with frequency 28 (35%), >10000 were clients with 21 frequencies (26.25%), 7501-10000 were patients with Frequency 19 (23.75%), other were 7 (8.75%), and < 5000 were 5 (6.253%).

**Table NO. 2:** Frequency and percentage distribution of samples regarding Medical History of Hypertension.

<b>HISTORY OF HYPERTENSION PATIENTS</b>	<b>FREQUENCY</b>	<b>PERCENTAGE</b>
<b>DURATION OF ILLNESS</b>		
<b>&lt; 6 months</b>	<b>27</b>	<b>33.75%</b>
<b>&gt;6 month- 1 year</b>	<b>30</b>	<b>37.5%</b>
<b>&gt;1 year</b>	<b>23</b>	<b>28.75%</b>
<b>FAMILY HISTORY OF PATIENTS</b>		
<b>Do any family members having hypertension</b>		
<b>No</b>	<b>44</b>	<b>55%</b>
<b>Yes</b>	<b>36</b>	<b>45%</b>
<b>HOW OFTEN YOU CHECK YOUR BLOOD PRESSURE</b>		
<b>15 days</b>	<b>1</b>	<b>1.25%</b>
<b>Once in a week</b>	<b>16</b>	<b>20%</b>
<b>Once in a month</b>	<b>17</b>	<b>21.25%</b>
<b>Twice in a month</b>	<b>2</b>	<b>2.5%</b>
<b>Once in a two month</b>	<b>5</b>	<b>6.25%</b>
<b>Once in a three month</b>	<b>1</b>	<b>1.25%</b>
<b>Once in a six month</b>	<b>3</b>	<b>3.75%</b>

<b>No</b>	<b>35</b>	<b>43.75%</b>
<b>DO YOU HAVE ANY OTHER DISEASES IN THE PAST YEARS</b>		
<b>Tuberculosis</b>	<b>0</b>	<b>0%</b>
<b>Malaria</b>	<b>0</b>	<b>0%</b>
<b>Bronchial Asthma</b>	<b>13</b>	<b>16.25%</b>
<b>Others</b>	<b>1</b>	<b>1.25%</b>
<b>No</b>	<b>66</b>	<b>82.5%</b>
<b>HAVE YOU EVER BEEN HOSPITALIZED</b>		
<b>&lt;5 Days</b>	<b>6</b>	<b>7.5%</b>
<b>5-10 Days</b>	<b>6</b>	<b>7.5%</b>
<b>&gt;10 Days</b>	<b>0</b>	<b>0%</b>
<b>No</b>	<b>69</b>	<b>86.25%</b>

#### **Description of medical history regarding hypertension**

The data presented in Table 2. shows that the majority of sample 30 (37.5%) belongs to group > 6 months to 1 year, 44 (55%) belongs members are not having hypertension in the family,35 (43.75%) belongs to the group that they do not check their blood pressure, 66 (82.5%) do not have any diseases in the past years, 69 (86.25%) patients have never been hospitalized.

#### **BIOCHEMICAL LABORATORY DATA**

<b>COMPONENTS</b>	<b>MEAN</b>	<b>STANDARD DEVIATION</b>
<b>RED BLOOD CELLS (RBC)</b>	<b>5.20</b>	<b>0.56</b>



(T/T)		
<b>WHITE BLOOD CELLS (WBC) (G/L)</b>	9,969	1,116
<b>HAEMOGLOBIN (HB)</b>	14,24475	2.00
<b>PLATELET (PLT) (G/DL)</b>	3,53,775	67,329
<b>TOTAL CHOLESTEROL ( MG/DL)</b>	183.8	14.39
<b>FASTING GLUCOSE(MG/DL)</b>	85	17
<b>SYSTOLIC BLOOD PRESSURE (MMHG)</b>	157.75	8.56
<b>DIASTOLIC PRESSURE</b>	106	7

Average mean of red blood cells of hypertension patients is 5.20 and the standard deviation is 0.56, the average mean of white blood cells is 9.969, and SD is 1,116, mean of Hemoglobin is 14,24475 and SD deviation is 2,00, Mean of platelets is 3,53,775, and SD is 67,329, mean of cholesterol is 183,8, and SD is 14.39, Mean of fasting glucose is 85, and SD is 17, mean of systolic blood pressure is 157.75 and SD is 8.56, and mean of diastolic pressure is 106 and SD is 7.

#### **ANTHROPOMETRIC MEASUREMENT**

<b>PARAMETERS</b>	<b>MEAN</b>	<b>STANDARD DEVIATION</b>
<b>HEIGHT (HT)</b>	158.88	6.69
<b>BODY WEIGHT (WT)</b>	60.06	6.31
<b>BMI( KG/M)<sup>2</sup></b>	23.81	2.25

<b>WAIST CIRCUMFERENCE( CM)</b>	89.41	9.58
<b>HIP CIRCUMFERENCE</b>	98.27	6.40
<b>WAIST HIP RATIO (WHR)</b>	0.91	0.086

The Average height of hypertension patients is 158.88, and SD is 6.69, mean of weight is 60.06 and SD is 6.31, mean of body mass index is 23.81, and SD is 2.25, mean of waist circumference is 89.41, and SD is 9.58, mean of the hip circumference is 98.27 and SD is 6.40, mean of waist-hip ratio is 0.91 and SD is 0,086.

**Association of nutritional status with demographic variables**

<b>DEMOGRAP HIC VARIABLES</b>	<b>POOR</b>	<b>GOOD</b>	<b>TOTAL</b>
	<b>AGE</b>		
<b>&lt; 30</b>	<b>8</b>	<b>0</b>	<b>8</b>
<b>31 TO 40</b>	<b>20</b>	<b>1</b>	<b>21</b>
<b>41 TO 50</b>	<b>17</b>	<b>3</b>	<b>20</b>
<b>51 TO 60</b>	<b>14</b>	<b>4</b>	<b>18</b>
<b>61 TO 70</b>	<b>7</b>	<b>6</b>	<b>13</b>
	<b>GENDER</b>		
<b>FEMALE</b>	<b>31</b>	<b>9</b>	<b>40</b>
<b>MALE</b>	<b>35</b>	<b>5</b>	<b>40</b>
	<b>RELIGION</b>		
<b>HINDU</b>	<b>56</b>	<b>14</b>	<b>70</b>
<b>CHRISTIAN</b>	<b>4</b>	<b>0</b>	<b>4</b>

<b>MUSLIM</b>	<b>6</b>	<b>0</b>	<b>6</b>
<b>OTHERS</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>MARITAL STATUS</b>		
<b>MARRIED</b>	<b>48</b>	<b>7</b>	<b>55</b>
<b>UNMARRIED</b>	<b>10</b>	<b>0</b>	<b>10</b>
<b>WIDOW/WIDOWER</b>	<b>7</b>	<b>5</b>	<b>12</b>
<b>SEPARATED</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>OTHERS</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>TYPE OF FAMILY</b>		
<b>NUCLEAR</b>	<b>25</b>	<b>1</b>	<b>26</b>
<b>JOINT</b>	<b>38</b>	<b>12</b>	<b>50</b>
<b>EXTENDED</b>	<b>3</b>	<b>1</b>	<b>4</b>
<b>BROKEN</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>OTHERS</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>EDUCATIONAL STATUS</b>		
<b>NON LITERATE</b>	<b>8</b>	<b>5</b>	<b>13</b>
<b>PRIMARY SCHOOL</b>	<b>27</b>	<b>7</b>	<b>34</b>
<b>ELEMENTARY SCHOOL</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>HIGH</b>	<b>14</b>	<b>2</b>	<b>16</b>

<b>SCHOOL</b>			
<b>HIGHER SECONDARY</b>	<b>8</b>	<b>0</b>	<b>8</b>
<b>GRADUATE AND ABOVE</b>	<b>9</b>	<b>0</b>	<b>9</b>
<b>OTHERS</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<b>EMPLOYEMENT STATUS</b>		
<b>PROFESSION AL</b>	<b>3</b>	<b>0</b>	<b>3</b>
<b>SUPERVISOR</b>	<b>16</b>	<b>0</b>	<b>16</b>
<b>SELF EMPLOYED</b>	<b>2</b>	<b>1</b>	<b>3</b>
<b>UNSKILLED</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>HOMEMAKE R</b>	<b>8</b>	<b>1</b>	<b>9</b>
<b>RETIRED</b>	<b>0</b>	<b>1</b>	<b>1</b>
<b>UNEMPLOYE D ABLE TO WORK</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>OTHERS</b>	<b>37</b>	<b>11</b>	<b>48</b>
	<b>FAMILY MONTHLY INCOME IN RUPEES</b>		
<b>&lt; 5000</b>	<b>5</b>	<b>0</b>	<b>5</b>
<b>5001-7500</b>	<b>21</b>	<b>7</b>	<b>28</b>
<b>7501-10000</b>	<b>17</b>	<b>4</b>	<b>21</b>

<b>&gt;10000</b>	<b>17</b>	<b>2</b>	<b>19</b>
<b>OTHERS</b>	<b>6</b>	<b>1</b>	<b>7</b>
	<b>TOTAL NUMBER OF FAMILY MEMBERS</b>		
<b>0-3</b>	<b>3</b>	<b>0</b>	<b>3</b>
<b>3-6</b>	<b>38</b>	<b>5</b>	<b>43</b>
<b>6-9</b>	<b>23</b>	<b>7</b>	<b>30</b>
<b>OTHERS</b>	<b>2</b>	<b>2</b>	<b>4</b>

Age group and Marital status are significantly associated with having a p-value < 0.05.

Gender, Religion, Type of family, Education status, Employment status, Monthly income, Total number of family members these are the groups that are not significantly associated with having p-value > 0.005.

#### **IV. Discussion:**

Evaluation of nutritional status showed that there is a considerable percentage of patients diagnosed with hypertension are 52 normal, 26 overweight, 1 obese and 1 underweight which was also confirmed by observations. At the same time, dietary energy intake was found to be insufficient about the recommended allowances. from the above findings it shows that 66 hypertension patients belong to a poor category and only 14 hypertension patients belong to a good category. This suggests that the patients deliberately reduced number of consumed foodstuffs.

In the present study majority of sample 21 (26.25%) belonged to the age group of 31-40 years, in that 40 (50%) were Females and 40 (50%) were Males, 70 (87.5%) belongs to Hindu religion, 55 (68.75%) is Married, 50 (62.5%) Living in a joint family, 34 (42.5%) has taken Primary education, 48 (60%) are doing Agriculture, 28 (35%) with Monthly income 5001-7500, 43 (53.75%) belongs to 6-9 family group.

The present study shows that the majority of sample 30 (37.5%) belongs to group > 6 months to 1 year, 44 (55%) belongs members are not having hypertension in the family, 35 (43.75%) belongs to the group that they do not check their blood pressure, 66 (82.5%) do not have any diseases in the past years, 69 (86.25%) patients have never been hospitalized.

In the present study, mean of red blood cells of hypertension patients is 5.20 and Standard deviation is 0.56, mean of white blood cells is 9,969, SD is 1,116, mean of hemoglobin is 14,24475, SD is 2.00, mean of platelets of hypertension patients is 3,53,775, SD is 67,329, the average mean of cholesterol is 183.8, SD is 14.39,

the average mean of fasting glucose is 85, SD is 17, mean of systolic pressure of hypertension patients is 157.75, SD is 8.56 and the average mean of diastolic pressure of hypertension patients is 106 and the standard deviation is 7.

Similar findings were noted by Julita Regula, Angelika Smidowicz showed that mean of red blood cells of hypertension patients is 5.20, SD is 0.56, mean of white blood cells is 7.39, SD is 1.85, mean of hemoglobin is 11.91, SD is 3.18, mean of platelet is 292.07, SD is 69.43, mean of cholesterol is 183.8, and SD is 14.39, Average mean of fasting glucose is 97.83, SD is 14.5, mean of systolic pressure of hypertension patients is 126.75, SD is 12.13, mean of diastolic pressure is 78.32, and the standard deviation is 10.06.

In the present study there is a significant association for nutritional status concerning age group (P-value = 0.0188) and also there is significant association for nutritional status concerning the marital status group (P-value= 0.0049).

A Similar study was noted by Rashmi Agarwalla, Anku Moni Saikia they conducted a cross-sectional study assessment of the nutritional status of the elderly and its correlates (2013). Out of 360 elderly persons, the results revealed that there is a significant association between nutritional status and demographic variables like age group, and marital status.

#### **Recommendations:**

1. Studies can be replicated on a large sample thereby findings can be generalized for a large population.
2. A study can be conducted to assess the prevalence among hypertension patients.
3. Studies can be conducted in other hospitals on hypertensive patients to assess their nutritional status.
4. A study can be conducted by using other strategies like booklets, pamphlets, flashcards, etc. providing knowledge regarding appropriate diet intake.
5. A study can be conducted to find out the dietary components like sodium, potassium, magnesium, calcium, protein, carbohydrates, dietary fibers of hypertension patients.
6. A study can be conducted on the other group except hypertension patients to find out their nutritional status.

#### **Limitations and Strengths:**

1. The study limited to those who are having hypertension and admitted to the Krishna Hospital, Karad. And those who are presented during data collection.
2. The first study to assess the nutritional status of hypertension patients at national, state and district level.

#### **V. Conclusion:**

We can conclude that, With the help of the present study, the patients should be educated regarding the importance of daily recommended diet. It is suggested that, nursing research should come up to search various non-pharmacological methods. Provision of various pamphlets, booklets, brochures, health education to the patients focusing on the methods on the prevention of hypertension.

The curriculum should give importance to health education and should emphasize more on the public to impart health information regarding the nutritional assessment.

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