



## NUTRIENT ANALYSIS OF THE DIETARY INTAKE OF ESSENTIAL HYPERTENSIVE PATIENTS AT NATUROPATHY CENTERS

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**Abstract:** Hypertension is the fall outs of our luxurious civilization which cannot be treated but only be managed through sustained life style modifications chiefly involving diet, exercise and weight reduction, which make the main stay of naturopathic treatment. Therefore the present study has been under taken to see the effectiveness of diet prescribed by naturopathy center on the nutritional and health status of the patients. In naturopathy center patient were doing meditation, yoga, sun, air water and mud therapy and were given hypo caloric diet. The current study was conduct on 60 (30 hypertensive male and equal number of female) subjects between 40-60 years of age from three naturopathy centers, one each from the three states of India (Rajasthan, Haryana and Delhi) like Prakritik Jeevan Kendra, Pattikahyana, G.T. Road, Panipat and Navneet Prabbakar Yog Chikitsa Dham, Bassi, Jaipur, Rajasthan. Weight, height as well as BMI, WHR and nutrient intake was calculated before and after getting the treatment from naturopathy center. Treatment from naturopathy center was effective in reducing the weight (male 8.79; female 10.84 per cent) and BMI (from 25.16 to 22.95 in male and 28.07 to 25.065 in female). Percentage reduction as compare to RDA of carbohydrate, energy, protein and fat intake in male subjects was 39.3, 27.11, 46.24, 177.27 per cent. Corresponding values for female were 28.41, 40.46, 39.98, 137.71 per cent. Contrary to the intake of carbohydrate, energy and fat, Vitamin C intake increased by six folds, Vitamin A turned twice, iron intake too raised in both male and female subjects. So, the diet at naturopathy center is rich in micronutrients and accessory food factors to improve the pathological status of the patients.

**Key words:** Nutrient Analysis, Dietary Intake, Hypertensive Patients, Naturopathy.

### 1. Introduction

Hypertension is a disorder of *Hurry-Worry-Curry*, which is the abstract of modern life style. It emphasizes that curry mean diet and cooking is responsible for causing hyper tension. As Hypertension may be cropped up as a result of sedentary life style, excessive alcoholism, smoking, overeating and fast pace of tension loaded life. It is the precursor of several cardiovascular disorders and gives birth to fatal coronary lesions if not treated well in time. About 80 per cent of hypertensive patients have one or more risk factors like dyslipidemia, glucose intolerance, obesity and ventricular hypertrophy (Framingham, 2006). According to Joint National Committee VII criteria the prevalence of hypertension and pre-hypertension was 27.7 and 56.3 per cent, respectively and this increases with the age (WHO, 2004).

Bakhru (2006) declared modern medical treatment of hypertension as highly unscientific

because it brings down the pressure by drugs without making any effort to remove the under lying causes. Hypertension signifies homeostasis in coordination which could be managed well by applying non drug therapies with physiological justification which is possible through naturopathy only. Normally changes in life is the golden rule in the prevention and even cure of such ailments (Luisa *et al*, 2016). Naturopathy completely and successfully encompasses all these factors i.e., it attacks all culprits responsible for hypertension. Davidson considers naturopathy responsible for removal of ill health altogether by living according to the laws of nature. In India, various naturopathy centers have been set up for treating the patients suffering from hypertension and heart related diseases. Therefore, The present study has been taken with the objective to assess and analyse the adequacy of diet prescribed by naturopathy centres to the diet consumed at house hold level. Moreover its impact on the health

and nutritional status of hypertensive patients enrolled in naturopathy centers was also interpreted. The patients to whom were recommended a treatment of one month were selected for the purpose of study.

## 2. Materials and Methods

**2.1 Sampling:** By purposive sampling technique, 30 hypertensive male and equal number of hypertensive female who enrolled themselves in naturopathy centers for The treatment of hypertension

**2.2 Location:** Subjects were selected from naturopathy centers namely -*Prakritik Jeevan Kendra, Pattikalyana, G.T. Road, Panipat and Navneet Prabhakar Yog Chikitsa Dham, Bassi, Jaipur, Rajasthan.* The age of the subjects was between 40-60 years. This treatment

was done in naturopathy centers for one month In naturopathy centers subjects were doing yoga (i.e.exercise and *pranayam*). Along with this they were under going mud, water and diet therapies accordingly. They were given herbal tea, honey amla water or bottle guard juice to drink in fasting state according to their adjascent complications.

**2.3 Dietary Survey:** Meal pattern and intake of each subject as before and after attending the naturopathy center for one month for treatment was established by 24 hr recall method for three consecutive days. Total amount of raw & cooked food in the family was also noted during this duration. Based on the above data, the amount of raw food consumed by each subject was calculated as follows:

$$\begin{aligned} \text{Amount of raw} \\ \text{food consumed} \\ \text{by individual} \end{aligned} = \frac{\text{Total quantity of raw} \\ \text{food used by family}}{\text{Total quantity of} \\ \text{cooked food}} \times \text{Individual} \\ \text{intake of} \\ \text{cooked} \\ \text{portion}$$

Their **nutrient intake** was compared with the Recommended Dietary allowances given in Nutritive value of Indian Foods (Gopalan, 2010).

**2.4 Food Intake:** Plenty of seasonal fruits and controlled fluid intake was recommended. They took bottle guard juice in fasting state and then herbal tea after 2 hours of it. They were provided cow milk once a day.

## 2.5 Blood pressure

Blood pressure was measured on left arm by auscultatory method using mercury sphygmomamometer. The individual was made comfortable and seated at least for five minutes in the chair before measurement. Two readings were taken half an hour apart and the average of two was taken (WHO, 2004). Hypertension was defined as systolic blood pressure (SBP) >140 mm Hg and diastolic blood pressure (DBP) >90 mmHg as per US Seventh Joint National Committee on detection, evaluation and treatment of hypertension (JNC VII) criteria (2003).

**2.6 Statistical Analysis:** data for height, weight, BMI, WHR and lipid profile was statistically analysed to calculate the mean, S.D. and paired t test was used for difference of significance.

## 3 Results And Discussion:

**3.1 Anthropometry:** Mean weight of the male and female subjects was 71.29 and 67.029 kg and BMI was 25.16 and 28.07, WHR 1.038 and .942 respectively, which was above the ICMR standards. Analysis of data in Table 2 further reveal that before joining the naturopathy center maximum subjects were at the risk of obesity and were the obese of 1category (male 30%; female 19.8%) and category 2 obese(male 13.2%; female 6.6 %). Overall subjects having below normal BMI(<18.5) were 6.6 per cent and only 16.6 percent subjects were falling under normal BMI range (18.5 to 22.9) Before naturopathy centers diet intake, the mean value of BMI in the essential hypertensive observation group of male, female and total was 25.16±3.95, 28.07±5.92 and 26.74± 5.22 kg/m<sup>2</sup> respectively which declined to 23.66±3.72, 26.16±5.05 and 25.02±4.58 kg/m<sup>2</sup> after

15 days and further went down to  $22.95 \pm 3.60$ ,  $25.07 \pm 4.68$  and  $24.10 \pm 4.28$  kg/m<sup>2</sup>, respectively after 30 days of naturopathic diet intake. Table 3 reveals that prior to admission at naturopathy centers the WHR of male and female were  $1.04 \pm 0.07$  and  $0.94 \pm 0.09$ , respectively which decreased to  $1.01 \pm 0.06$  and  $0.91 \pm 0.08$  after 15 days to  $0.99 \pm 0.05$  and  $0.90 \pm 0.07$  after 30 days. The reduction in both the anthropometric parameters was significant at both levels ( $P \geq 0.01$ ) at all points of the study. However, A major chunk of subjects who were the victim of obesity, reported to have a feeling of fitness after joining naturopathy center. The subjects having below normal weight were increased from 6.6 to 13.33 per cent, which is beneficial for better blood pressure control. Initially 16.6 percent were under the normal BMI category (i.e. 18.5-24.9), which increased up to 23.32 percent after one month of treatment. This is due to summative effect of vegetarian diet, yogasana and *pranayam*. Hence naturopathic treatment was found effective in reducing the BMI of essential hypertensive subjects.

### 3.2 Nutrient intake:

**3.2.1 Energy:** The mean energy intake for male and female was  $2621.30 \pm 73.21$  and  $1982.34 \pm 84.72$  k cal respectively. The calorie intake of all selected essential hypertensive subjects (both males and females) was found slightly more than ICMR standard (1990) of energy intake of sedentary males (2425 k cal) and females (1875 kcal) and lower than that reported by Singh and Choudhary (2006) i.e. 3031 k cal.

**3.2.2 Proteins:** The mean protein intake of male and female was  $102.35 \pm 13.94$  and  $48.33 \pm 11.23$  g respectively which was very close to the mean protein intake in the diet of CVD patients (48.60 g) as reported by Singh and Choudhary (2006).

**3.3.3 Fats:** The dietary intake of fat was higher in all male (247.78% RDA) and female (200.86% RDA) subjects than recommended for a reference man and woman by ICMR (2010).

**3.3.4 Carbohydrate:** Before naturopathic diet intervention, the mean carbohydrate change was observed pre and post naturopathy center stay. ydrate

intake by male and female subjects was  $361.28 \pm 63.12$  and  $281.63 \pm 53.61$  g respectively and higher than that reported by Singh and Choudhary (2006).

**3.3.5 Vitamin A:** The mean vitamin A intake by male and female subjects increased significantly ( $P \geq 0.01$ ) to 136.68 and 136.30 per cent of RDA from household intake of 51.81 per cent of RDA.

**3.3.6 Vitamin C:** Before naturopathic diet introduction the mean vitamin C intake by male and female

.28 per cent of RDA during the intake of naturopathy center diet and the change was significant (subjects was 165.34 and 112.19 per cent of RDA respectively).

**3.3.7 Calcium:** At home, the mean calcium intake of male and female subjects was showing wide variation (i.e.  $678.33 \pm 50.21$  and  $281.02 \pm 65.14$  mg/day respectively against the recommendations of 400 mg/day). Calcium intake was one and a half times for male (i.e. 169.58% RDA) but less than recommended amount for female (i.e. 70.26% RDA). Milk consumption in excess of the requirement was mainly responsible for high calcium content of the male diet.

**3.3.8 Iron:** Before naturopathic diet introduction, the mean iron intake by male and female subjects was 59.01 and 43.53 per cent of RDA and lower than that reported by Singh and Choudhary (2006) i.e. 16.6 mg. The somewhat low intake of iron was mainly due to very low consumption of green leafy vegetables.

**3.3.9 Fiber:** Before naturopathic diet introduction the mean fiber intake by male and female subjects was  $10.48 \pm 7.14$  (26.2% RDA) and  $9.08 \pm 4.34$  g (22.7% RDA) respectively which was lower than recommended level of the 40 g (ADA) increased to 132.06 and 135.11 per cent respectively. Increased fiber content in diet of subjects may provide protection against dyslipidemia and hypertension (Nahar *et al.*, 2003).

**3.3.10 Sodium:** Before naturopathic diet introduction, the mean sodium intake by male and female subjects was  $1419.99 \pm 100.21$  mg (43.03% RDA) and  $1370.49 \pm 92.71$  mg (41.53% RDA)

respectively which was lower than recommended level of the 3300 mg (Food and Nutrition Board of the National Academy of Science, National Research Council, 1980).

**3.3.11 Potassium:** Before naturopathic diet introduction, the mean potassium intake by male and female subjects was 1400.85±114.21 mg

(42.45%RDA) and 1353.99±123.22 mg (41.03% RDA) respectively which was lower than recommended level of the 3300 mg (Food and Nutrition Board of the National Academy of Science, National Research Council, 1980) as well as the intake of CVD patients (i.e. 1606.50 mg) as reported by Singh and Choudhary (2006).

**Table 1: Blood pressure (Mean ± S.D.) of the hypertensive human subjects at joining naturopathic treatment**

Parameters	Blood Pressure (mm Hg) (Mean ± S.D.)
<b>SBP (Systolic Blood Pressure)</b>	
Male (n=30)	157.20± 19.86
Female (n=30)	166.99 ± 23.83
Total (N=60)	162.51± 22.27
<b>DBP (Diastolic Blood Pressure)</b>	
Male (n=30)	106.29± 15.20
Female (n=30)	104.81± 11.62
Total (N=60)	105.49± 13.25

**Table 2: Mean nutrient intake of subjects before and during treatment at naturopathy centers**

Nutrient	At Home		At Naturopathy Center		Paired 't' test value
	Mean intake	% RDA	Mean intake	% RDA	
<b>Energy(Kcal)</b>					
Male	2621.30± 73.21	108.10	1640.29±45.54	67.64	10.33**
Female	1982.34± 84.72	105.73	1304.89 ± 49.27	69.59	9.64**
<b>Protein(gm)</b>					
Male	102.35± 13.94	61.41	33.84 ±12.38	56.40	1.78(NS)
Female	48.33± 11.23	96.66	27.45 ±10.45	54.89	2.39*
<b>Fat (gm)</b>					
Male	49.05± 5.70	245.27	13.2 ±2.75	66.00	31.33**
Female	40.54± 8.15	202.71	11.68 ±4.21	58.38	15.78**
<b>Carbohydrate(gm)</b>					
Male	361.28 ±63.12	99.32	330.56 ±14.52	82.63	2.71*
Female	281.63± 53.61	100.14	175.89± 50.86	62.53	3.29
<b>Vitamin A(mg)</b>					
Male	358.8 ±44.15	59.8	820.08 ±54.81	136.68	33.12**
Female	310.86± 35.67	51.81	817.83 ± 75.17	136.30	27.46**
<b>Vitamin C(mg)</b>					
Male	66.13 ±17.73	165.34	289.70 ±4.92	724.25	33.66**
Female	44.88 ±13.52	112.19	288.51± 38.77	721.28	31.82**
<b>Calcium (mg)</b>					
Male	678.33 ±50.21	164.58	578.75 ±43.29	144.69	2.09*
Female	281.02 ± 65.14	70.26	566.56 ± 58.42	141.64	8.23**
<b>Iron(mg)</b>					
Male	16.52 ±6.13	59.01	27.11 ±8.31	96.82	32.75**
Female	13.06 ± 4.45	43.53	23.97 ±5.48	79.80	11.94**
<b>Fiber (gm)</b>					
Male	10.48 ±7.14	26.20	52.82±10.25	132.06	20.05**
Female	9.08 ± 4.34	22.7	54.05± 17.12	135.11	18.91**
<b>Sodium(mg)</b>					
Male	1419.99 ±100.21	43.03	430.73 ±20.35	13.05	15.78**
Female	1370.49 ±92.71	41.53	424.64 ±32.18	12.87	5.49**

Potassium					
Male	1400.85 ±114.21	42.45	2132.64 ±300	64.63	3.42**
Female	1353.99 ±123.22	41.03	2102.95 ±280.736	3.73	7.56**

NS - Non significant value

\* - Significant value at 5% ( $P \geq 0.05$ ) level of significance as tested by paired t test.

\*\* - Significant value at 1% ( $P \geq 0.01$ ) level of significance as tested by paired t test.

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