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# Understanding the Gaps: DASH Diet Awareness and Hypertension-Related Behaviours in Young Adults

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## Abstract

### Introduction/Background

Hypertension represents a major modifiable risk factor for cardiovascular morbidity and mortality, with its prevalence increasingly observed among young adult populations worldwide. In the Indian context, epidemiological data indicate that 12.4% of males and 8.2% of females within the 18–39-year age group are affected by elevated blood pressure. The Dietary Approaches to Stop Hypertension (DASH) diet, an evidence-based nutritional intervention, promotes the intake of nutrient-rich foods while restricting dietary sodium, saturated fats, and added sugars. Despite its demonstrated efficacy in blood pressure regulation, both awareness and adherence to the DASH dietary regimen remain suboptimal among young adults. This study was undertaken to assess the levels of awareness, knowledge, and compliance with the DASH diet in this demographic, while also examining associated dietary behaviours and lifestyle determinants contributing to hypertension risk.

### Methodology

A cross-sectional study was conducted among 263 participants aged 18–25 years, predominantly first-year undergraduate students. A structured and validated questionnaire assessed participants' knowledge, dietary habits, and lifestyle factors. Data were analyzed using descriptive statistics and chi-square tests, with p-values <0.05 considered statistically significant. Literature searches utilized PubMed and Scopus databases with MESH terms like "DASH diet," "hypertension," and "dietary adherence."

### Results

Only 25.1% of participants were aware of the DASH diet, and 35.7% expressed willingness to follow it. Key findings included high consumption of sugar-sweetened beverages (51%) and fatty meals (50.6%) and an average salt intake exceeding recommended limits for 65% of participants. Awareness of the normal blood pressure range was high (93.2%), with 78.3% recognizing excessive salt intake as a hypertension risk factor. Gender differences revealed males were more physically active, while females were more aware of dietary risks related to salt and hypertension. Stress levels and headaches were more prevalent among females.

### Conclusion

The study highlights limited awareness and suboptimal adherence to the DASH diet among young adults. Efforts to enhance awareness and adherence, especially through educational campaigns, are critical for hypertension prevention and management. Gender-specific interventions addressing dietary habits and lifestyle factors are recommended to promote better health outcomes.

### Keywords

DASH diet, hypertension, young adults, dietary adherence, lifestyle factors, gender differences, sodium intake.



## Introduction

Hypertension, a leading risk factor for cardiovascular diseases, has seen a rising prevalence among young adults globally. In India, studies indicate that 12.4% of men and 8.2% of women aged 18–39 years are hypertensive [1].

Eating patterns play a crucial role in modulating blood pressure (BP). High sodium consumption is a recognized contributor to the development of hypertension [2,3], whereas dietary regimens abundant in fruits, vegetables, and low-fat dairy—such as the Dietary Approaches to Stop Hypertension (DASH) diet—have been proven effective in lowering BP levels [4]. The Dietary Approaches to Stop Hypertension (DASH) diet is a scientifically backed nutritional approach designed to prevent and manage hypertension. It emphasizes the consumption of nutrient-dense foods rich in potassium, calcium, magnesium, and fiber while reducing sodium, saturated fats, and added sugars. Developed in the 1990s by the National Heart, Lung, and Blood Institute (NHLBI), the DASH diet was shown to effectively lower blood pressure levels, even without weight loss interventions [5]. Despite the proven benefits of the DASH diet, awareness and adherence among young adults remain suboptimal. A study among university students found that only a minority adhered to the DASH dietary pattern, which was associated with lower BP and reduced visceral fat [3]. Furthermore, eating behaviours, including the consumption of late-night snacks and preference for certain tastes, have been linked to elevated BP levels in college students [6].

In the Indian context, dietary patterns are diverse, with a significant portion of the population following vegetarian diets. However, the consumption of processed foods high in sodium is increasing, contributing to the hypertension burden [1]. Additionally, lifestyle factors such as physical inactivity and stress are prevalent among young adults, further exacerbating the risk of hypertension. [7,8] Given the escalating prevalence of hypertension and the critical role of diet in its management, it is imperative to assess the awareness and adherence to dietary patterns like the DASH diet among young adults. Understanding the knowledge gaps and barriers to adherence can inform targeted interventions aimed at promoting healthy eating behaviours and, consequently, reducing the risk of hypertension and related complications in this demographic. This study aims to evaluate the awareness, knowledge, and adherence to the DASH diet among young adults, alongside their dietary habits and lifestyle factors, to provide insights into potential strategies for hypertension prevention and management in this population.

## Methodology

### Study Design

A cross-sectional study was conducted to evaluate the awareness, knowledge, and adherence to the DASH diet among young adults aged 18–25 years.

### Inclusion Criteria

- Participants aged 18–25 years.

- Individuals willing to provide informed consent.
- Both genders, irrespective of dietary habits.

### Exclusion Criteria

- Participants with pre-existing diagnosed chronic diseases such as diabetes or hypertension.
- Individuals on specific dietary restrictions or regimens not related to DASH.

### Number of Participants

The study included 263 participants, predominantly first-year undergraduate students, with a demographic distribution of 65% females and 35% males.

## Data Collection Tools

### Questionnaire Formation: A structured questionnaire was designed and validated based on:

- Awareness and knowledge of the DASH diet.
- Dietary patterns and habits (e.g., salt intake, caffeine consumption).
- Lifestyle factors (e.g., physical activity, stress levels).
- Sources of dietary information and willingness to follow the DASH diet.
- Anthropometric measures such as BMI.

### Literature Search and Data Sources

- MESH Terms: Relevant medical subject headings included “DASH diet,” “hypertension,” “dietary adherence,” “young adults,” and “nutritional interventions.”
- Databases Used:
  - PubMed: For peer-reviewed articles related to DASH and hypertension.
  - Scopus: For cross-disciplinary studies on diet and lifestyle.

### Statistical Analysis

- Chi-square tests for analyzing associations between gender and dietary habits.
- P-values less than 0.05 were considered statistically significant.

### Ethical Considerations

The study received approval from the institutional ethics committee. Participants provided written informed consent before inclusion.

## Results

Table 1: Demographic Distribution of Study Population

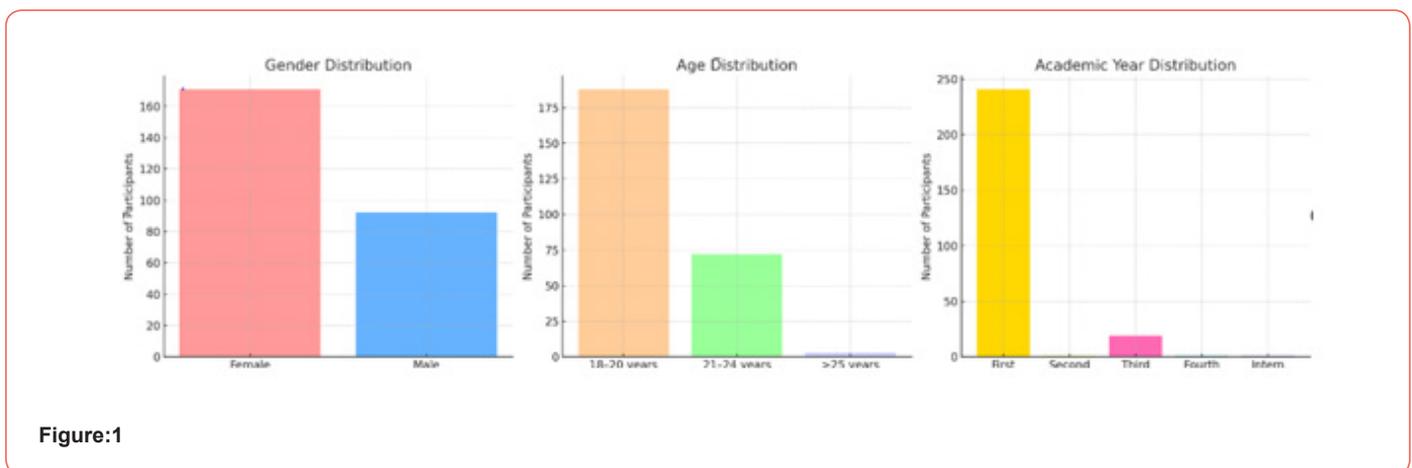
The study consisted of 263 participants, predominantly females (65.0%) compared to males (35.0%). The majority of participants (71.5%) were aged 18–20 years, followed by 27.4% in the 20–24

years range, with only 1.1% aged above 25 years. In terms of academic year distribution, an overwhelming 91.6% were first-year students, while only 7.2% were third-year students, and the remaining were evenly distributed among second-year students,

fourth-years, and interns (0.4% each). This demographic structure reflects a youthful and predominantly female population, with a large proportion at the beginning of their academic journey.

**Table 1:** Demographic distribution of study population

Variable		N	%
Gender	Females	171	65.0
	Males	92	35.0
Age	18-20 years	188	71.5
	20-24 years	72	27.4
	>25 years	3	1.1
Academic year	First	241	91.6
	Second	1	0.4
	Third	19	7.2
	Fourth	1	0.4
	Intern	1	0.4
Total		263	100.0



**Figure:1**

**Table 2:** Knowledge about the DASH Diet

Knowledge and awareness of the DASH diet were limited among participants. A small proportion (25.1%) had heard of the DASH diet, but 35.7% expressed willingness to follow it. Dietary habits revealed that 38.4% consumed caffeine often, while 51.0% consumed sugar-sweetened beverages frequently. The participants' dietary patterns showed that 53.6% followed a vegetarian diet, while 39.9% opted for a mixed diet. In terms of fatty meals, 50.6%

reported consuming them often, and 65.0% had an average daily salt intake of 5 grams, exceeding the recommended limits. Regarding dietary health awareness, 68.4% reported consuming a balanced diet, while 45.6% actively monitored their salt intake. Awareness of the normal blood pressure range was high, with 93.2% identifying it correctly. Furthermore, 78.3% recognized that excessive salt intake could lead to hypertension, while 66.2% associated it with heart diseases

**Table 2:** Knowledge about DASH diet

Question	Options	N	%
Do you consume caffeine	Not at all	34	12.9
	Rarely	89	33.8
	Often	101	38.4
	Very often	39	14.8

Do you include sugar sweetened beverages in diet	Not at all	13	4.9
	Rarely	84	31.9
	Often	134	51.0
	Very often	32	12.2
What is your daily dietary pattern	Mixed	105	39.9
	No- veg	15	5.7
	Vegan	2	0.8
	Vegetarian	141	53.6
How often you eat fatty heavy meals	Often	133	50.6
	Rarely	104	39.5
	Very often	26	9.9
What is your average salt intake per day	3 gm	62	23.6
	5 gm	171	65.0
	7 gm	26	9.9
	9 gm	4	1.5
Do you know which vegetable oil is best for cooking	Yes	194	73.8
	No	69	26.2
Is your food a balanced diet	Yes	180	68.4
	No	83	31.6
Do you pay attention to salt intake	Yes	120	45.6
	No	143	54.4
Do you know normal blood pressure range	100-60 mm Hg	16	6.1
	120-80 mm Hg	245	93.2
	130-90 mm Hg	2	0.8
Are you aware of any heart disease due to excess salt in diet	Yes	174	66.2
	No	43	16.3
	Maybe	46	17.5
Can excess dietary salt lead to hypertension	Yes	206	78.3
	No	16	6.1
	Maybe	41	15.6
What is your BMI	Healthy	182	69.2
	Obese	5	1.9
	Overweight	35	13.3
	Underweight	41	15.6
Do you feel stressed out	Yes	147	55.9
	No	116	44.1
Do you exercise	Daily	78	29.7
	Once a week	81	30.8
	Once a month	19	7.2
	Rarely	85	32.3
	Never	24	9.1
Do you suffer from headache	Often	90	34.2
	Rarely	149	56.7
	Never	24	9.1
DO you know what is DASH diet	Yes	66	25.1
	No	197	74.9
Would you like to follow DASH diet	Yes	94	35.7
	No	44	16.7
	Maybe	125	47.5

Table 3: Knowledge According to Gender

The analysis revealed significant gender differences in several parameters. Females were more likely to consume fatty meals less often, with only 34.6% consuming them very often compared to 65.4% of males (p=0.002). Regarding physical activity, males demonstrated higher exercise levels, with 60.3% exercising daily compared to 39.7% of females (p=0.0001). In contrast, females were more aware of the relationship between salt intake and

hypertension (p=0.015) and the association between salt and heart diseases (p=0.037). However, both genders showed low awareness of the DASH diet, with no significant difference between them. Stress levels were slightly higher among females, but this difference was not statistically significant (p=0.298). Headaches were reported more frequently among females (77.8%) than males (22.2%), with a significant p-value of 0.005. These findings highlight gender-specific trends in dietary habits, physical activity, and health awareness.

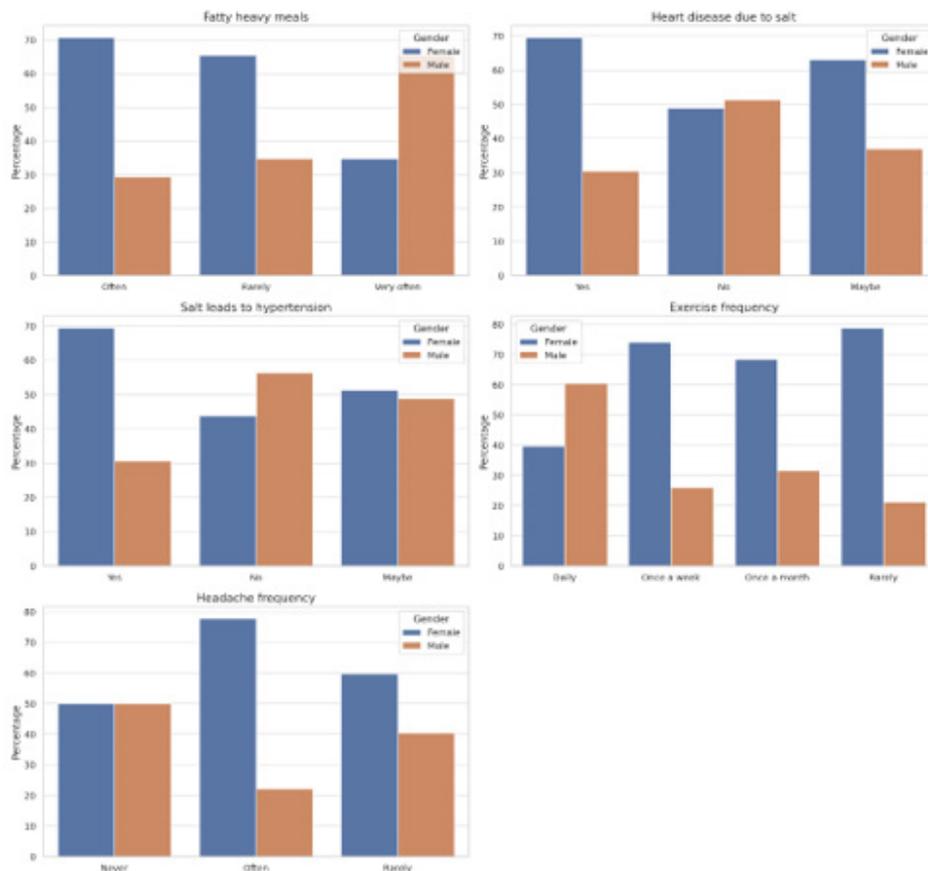


Table 2: Knowledge about DASH diet

Table 3: Knowledge according to gender

Question	Options	Females		Males		p-value
		N	%	N	%	
Do you consume caffeine	Not at all	24	70.6	10	29.4	0.571
	Rarely	54	60.7	35	39.3	
	Often	65	64.4	36	35.6	
	Very often	28	71.8	11	28.2	
Do you include sugar sweetened beverages in diet	Not at all	7	53.8	6	46.2	0.666
	Rarely	52	61.9	32	38.1	
	Often	91	67.9	43	32.1	
	Very often	21	65.6	11	34.4	

What is your daily dietary pattern	Mixed	65	61.9	40	38.1	0.565
	No- veg	11	73.3	4	26.7	
	Vegan	2	100.0	0	0	
	Vegetarian	93	66.0	48	34.0	
How often you eat fatty heavy meals	Often	94	70.7	39	29.3	<b>0.002*</b>
	Rarely	68	65.4	36	34.6	
	Very often	9	34.6	17	65.4	
What is your average salt intake per day	3 gm	42	67.7	20	32.3	0.366
	5 gm	112	65.5	59	34.5	
	7 gm	16	61.5	10	38.5	
	9 gm	1	25.0	3	75.0	
Do you know which vegetable oil is best for cooking	Yes	130	67.0	64	33.0	0.161
	No	41	59.4	28	40.6	
Is your food a balanced diet	Yes	113	62.8	67	37.2	0.270
	No	58	69.9	25	30.1	
Do you pay attention to salt intake	Yes	82	68.3	38	31.7	0.364
	No	89	62.2	54	37.8	
Do you know normal blood pressure range	100-60 mm Hg	9	56.3	7	43.8	0.444
	120-80 mm Hg	160	65.3	85	34.7	
	130-90 mm Hg	2	100.0	0	0	
Are you aware of any heart disease due to excess salt in diet	Yes	121	69.5	53	30.5	<b>0.037*</b>
	No	21	48.8	22	51.2	
	Maybe	29	63.0	17	37.0	
Can excess dietary salt lead to hypertension	Yes	143	69.4	63	30.6	<b>0.015*</b>
	No	7	43.8	9	56.3	
	Maybe	21	51.2	20	48.8	
What is your BMI	Healthy	116	63.7	66	36.3	0.524
	Obese	4	80.0	1	20.0	
	Overweight	26	74.3	9	25.7	
	Underweight	25	61.0	16	39.0	
Do you feel stressed out	Yes	100	68.0	47	32.0	0.298
	No	71	61.2	45	38.8	
Do you exercise	Daily	31	39.7	47	60.3	<b>0.0001*</b>
	Once a week	60	74.1	21	25.9	
	Once a month	13	68.4	6	31.6	
	Rarely	67	78.8	18	21.2	
Do you suffer from headache	Never	12	50.0	12	50.0	<b>0.005*</b>
	Often	70	77.8	20	22.2	
	Rarely	89	59.7	60	40.3	
DO you know what is DASH diet	Yes	42	63.6	24	36.4	0.882
	No	129	65.5	68	34.5	
Would you like to follow DASH diet	Yes	61	64.9	33	35.1	0.409
	No	25	56.8	19	43.2	
	Maybe	85	68.0	40	32.0	

## Discussion

This study, which primarily included young adults, mostly female participants at the early stages of their undergraduate education,

demonstrated a limited level of knowledge and awareness regarding the DASH diet. However, a substantial number of respondents acknowledged the association between high salt intake and the risk of hypertension and heart failure. Previous research has indicated

that sustained adherence to the DASH dietary pattern is linked to a decreased incidence of heart failure among middle-aged and older adults in Sweden [9]. Furthermore, following the DASH diet has been associated with a lower risk of developing heart failure in individuals under the age of 75, reinforcing its potential for primary prevention in younger populations [10]. Diet plays a crucial role in the primary prevention of cardiovascular diseases such as hypertension and ischemic heart conditions [11,12,13]. Research from Sweden demonstrated that adherence to the DASH diet was associated with a 37% lower occurrence of heart failure in women [14,15] and a 22% lower rate in men [16,17] when comparing individuals in the highest adherence group to those in the lowest. It is important to note, however, that these findings were based on a largely homogeneous White population. Additionally, studies following healthy individuals have found that daily intake of whole-grain breakfast cereals may reduce obesity risk by 30% [18]. Conversely, consuming eggs more than twice daily was linked to a 64% increase in heart failure risk [19] and a sodium intake of 100 mmol/day or more was tied to a 26% higher risk [20]. Interestingly, nut consumption showed no significant relationship with heart failure prevalence [21].

Therefore, assessing compliance with the DASH diet, recommended for both the prevention and management of hypertension, can be a beneficial approach in clinical settings. The DASH dietary model has demonstrated efficacy in reducing the risk of multiple conditions, including cardiovascular diseases [22,23,24,25,26]. Its principles are consistent with nutritional strategies widely endorsed for addressing other cardiovascular risk factors, such as elevated lipid levels [27] and type 2 diabetes mellitus [28]. Additionally, this dietary approach aligns with guidelines aimed at cancer prevention [29] and is supportive in managing chronic conditions like osteoporosis [30,31].

## Conclusion

The survey revealed that a significant proportion of respondents (78.3%) acknowledged the link between excessive sodium consumption and the development of hypertension, while 66.2% recognized its association with cardiovascular diseases. These findings underscore the critical need to promote adherence to evidence-based dietary patterns, such as the DASH diet, as a preventative strategy against hypertension within the general population. Moreover, the study highlights notable gender-specific variations in dietary behaviours, physical activity levels, and health-related awareness, emphasizing the necessity for tailored public health interventions.

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