International Journal of Community Medicine and Public Health
Rewatkar PS et al. Int J Community Med Public Health. 2026 May;13(5):2262-2273
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040
DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20261408

Original Research Article

A descriptive study to assess the knowledge, attitude and practice regarding heart smart diet among hypertensive patients from selected rural community in central part of India

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Received: 12 January 2026
Revised: 03 April 2026
Accepted: 04 April 2026

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ABSTRACT

Background: Cardiovascular diseases (CVDs) are the leading cause of death globally, with hypertension as a major contributor. Dietary modification plays a vital role in controlling hypertension and preventing related complications. Assessing the knowledge, attitude, and practice (KAP) regarding a heart-smart diet among hypertensive patients in rural areas helps identify gaps and guide effective health interventions.
Methods: A descriptive, quantitative study was conducted among 114 hypertensive patients from a selected rural community in central India using purposive sampling. Data were collected from 20 January to 2 February 2025 using a structured questionnaire covering KAP toward a heart-smart diet. Descriptive and inferential statistics, including chi-square tests, were used to analyze associations between demographic variables and KAP scores.
Results: Of 114 participants, 45.6% had average knowledge and 43.0% had poor knowledge. Regarding attitude, 45.6% were neutral, and for practice, 57.9% needed improvement.
Conclusions: A clear gap exists between KAP related to heart-smart diet among hypertensive patients. Although some awareness and a positive outlook were observed, poor dietary practices persist, increasing the risk of complications. Urgent, context-specific health education, counseling, and community-based interventions are essential to improve dietary adherence and reduce the burden of hypertension in rural populations.

Keywords: Knowledge, Attitude, Practice, Heart-smart diet, Hypertensive patients, Rural community, Central India

INTRODUCTION

“Self-care is not selfish. You cannot serve from an empty vessel.”-Eleanor Brown. One of the most significant medical concerns and the most prevalent chronic illness in both industrialized and developing nations is hypertension. High blood pressure, as it is generally called, is one of the most frequent cardiovascular conditions in the world. The world health organization (WHO) states that "High blood pressure in the arteries, with a systolic blood pressure of 140 mmHg or higher and/or a diastolic blood pressure of 90 mmHg or higher, is a condition known as hypertension." and second according to American Heart Association (AHA) "Hypertension is a consistently elevated blood pressure level where the systolic pressure is 130 mmHg or higher and/or the diastolic pressure is 80 mmHg or higher." It is called as silent killer which is usually diagnosed.[1] Hypertension is a major contributing factor to CVDs, which are the world's leading cause of death. It affects one billion subjects worldwide, according to the World Heart Federation. According to the WHO latest data, which was released in September 2023, an estimated 1.28 billion people aged 30-79 worldwide suffer with hypertension, with the majority (two-thirds) living in low- and middle-income countries. This translates to roughly 1 in 3 adults globally suffering from hypertension. In

Central India has a 29.8% overall prevalence of hypertension, according to NCBI data and Maharashtra has a 25.1% prevalence of hypertension, citing a 2018 study, with a prevalence rate of 19.2% in rural eastern Maharashtra, hypertension is today a serious public health concern on the agendas of all developed nations, it is a significant health concern globally, including in rural areas of Maharashtra.[2,3] Diet plays a pivotal role in the management and prevention of hypertension and associated cardiovascular complications.[2] The "Heart Smart Diet," also known as a cardiac diet.[4] It is a diet focused on reducing sodium, fat and cholesterol intake and has garnered considerable attention as an effective dietary approach for individuals with hypertension. The Heart Smart Diet, characterized by low sodium, low saturated fat, and high fiber intake, has been recommended as an effective dietary approach for hypertensive individuals. A "heart-smart diet" is a broad term encompassing various healthy eating patterns that benefit cardiovascular health, while the "DASH diet" (Dietary approaches to stop hypertension) is a specific, well-researched dietary plan primarily designed to lower blood pressure, considered one of the most effective heart-healthy diets due to its emphasis on fruits, vegetables, whole grains, and low sodium intake; essentially, the DASH diet is a structured version of a "heart-smart diet."[5] There is substantial evidence that following a heart-smart diet is associated with improvements in blood pressure, body weight, glucose-insulin homeostasis, blood lipids and lipoproteins, inflammation grade, endothelial function, gut microbiome, risk of CVD, and overall mortality. The heart smart diet is characterized by a high intake of fruits and vegetables, legumes, low-fat dairy, whole grain products, nuts, fish and poultry; a reduced intake of saturated fat, red meat and processed meats, sweet beverages; a low intake of sodium and refined grains. There is often a gap in the KAP regarding heart-healthy diets among hypertensive patients. A heart-smart diet has been shown to improve blood pressure, body weight, glucose-insulin homeostasis, blood lipids and lipoproteins, inflammation grade, endothelial function, gut microbiome, risk of CVD, and overall mortality. High consumption of fruits, vegetables, legumes, whole grain products, low-fat dairy, nuts, fish, and chicken; low consumption of saturated fat, red meat, processed meats, and sweet drinks; and low consumption of sodium and refined grains are the hallmarks of the heart-smart diet.[6] Diet plays a significant role in managing hypertension and reducing the risk of associated CVDs. However, many hypertensive patients may not be aware of the specific dietary guidelines recommended for their condition.[7] Assessing their KAP regarding heart-smart diets can help identify areas where education and interventions are needed to promote healthier lifestyle choices. Therefore, the objective of this study was to assess the knowledge, attitude and practices regarding heart-smart diet among hypertensive patients from a selected rural community and to determine their association with selected demographic variables.

METHODS

Research approach

The present study utilizes a quantitative research approach to systematically investigate the KAP regarding a heart-smart diet among hypertensive patients in a selected rural community in central India.

Research design

Based on the objectives of this study, A Descriptive research design was chosen.

Research variables

KAP of the Heart Smart Diet are the research variables in this study.

Age, gender, religion, marital status, educational status, occupational status, type of family, type of diet, family income per month, body mass index, blood pressure reading are all demographic variables.

Research setting

The setting of this study is a selected rural community located in the central part of India.

Study population

In this research, the study population was all hypertensive people.

Target population

In this study, the target population was hypertensive people in the selected rural community in the central part of India.

Accessible population

In this study, the accessible population was hypertensive people in the selected rural community who fulfilled the inclusion criteria.

Sample and sampling technique

In this Study, the sample consists of 114 hypertensive patients residing in a selected rural community in central India. These individuals were chosen based on their relevance to the study's focus on heart-smart dietary KAPs.

Sampling technique

In this study, the sampling technique used was purposive sampling. This non-probability technique allows the intentional selection of hypertensive patients who meet

specific inclusion criteria (such as residing in the selected rural area, being available during data collection, and taking informed consent).

These criteria are divided into inclusion and exclusion criteria, which help refine the sample to include only relevant participants.

Inclusion criteria

Inclusion criteria specify the characteristics that participants must have to be eligible for the study. For this study, the inclusion criteria are:

Participants must belong to the selected rural community area in the central part of India, subjects willing to participate in the study, subjects present at the time of data collection, subjects who had given informed consent and subjects who can read and write Marathi or Hindi.

Exclusion criteria

Exclusion criteria indicate features that would make a person ineligible to take part in the study. The following are the exclusion criteria for this study: People having other comorbidities with hypertension, pregnant women, as their dietary requirements and restrictions may differ and individuals currently participated in any other research study related to hypertensive dietary interventions.

Withdrawal criteria not applicable

Tools for data collection

This study on assessing KAP regarding a heart-smart diet among hypertensive patients, a structured questionnaire has been developed as the primary data collection tool. This questionnaire is comprehensive and is divided into three sections, each aimed at evaluating a specific aspect: KAP.

Tool description

Knowledge questionnaire

This section assesses participants' understanding of hypertension and heart-smart dietary choices. Each question has four options, out of which only one is correct.

The questionnaire consists of 10 questions covering topics such as blood pressure, daily salt intake, types of fats, beneficial nutrients, and physical activity recommendations for individuals with hypertension.

Scoring and interpretation

The scoring and interpretation shown in the Table shown below.

Table 1: Level of knowledge.

Level of knowledge	Score	Percentage
Poor	0-4	0-30%
Average	5-7	31-65%
Good	8-10	80-100%

Attitude scale

This section evaluates participants' attitudes towards adopting and maintaining a heart-smart diet. It uses a Likert scale format, with responses ranging from "Strongly Disagree" to "Strongly Agree" (scored 1 to 5, respectively). The scale includes both positive and negative statements to capture the participants' perceptions, beliefs, and potential barriers related to following a heart-smart diet.

Scoring and interpretation

Positive statements (Items 1, 3, 5, 6, 7, 9): Higher scores indicate a positive attitude.

Negative statements (Items 2, 4, 8, 10): These items are reverse scored to reflect a negative attitude (1=5, 2=4, etc.).

Table 2: Level of attitude.

Level of attitude	Score	Percentage
Negative attitude	1-16	0-33%
Neutral	17-33	34-65%
Positive attitude	34-50	66-100%

Practice checklist

This section examines participants' actual dietary practices and lifestyle behaviors relevant to a heart-smart diet. It includes 16 yes-or-no questions that cover key practices such as limiting red meat, avoiding processed meats, consuming low-fat dairy, choosing healthy oils, eating fruits and vegetables, and preferring whole grains over refined ones.

Scoring and recommendations

The 12 or more 'Yes' responses: Indicates that the participant follows heart-smart dietary practices. Additional cholesterol-lowering foods can be incorporated for enhanced results.

The 7 to 11 'Yes' responses: Reflects a need for dietary improvements, particularly in reducing high-fat and processed foods and increasing fruits, vegetables, and whole grains.

Less than 7 'Yes' responses: This signifies the need for substantial dietary changes. Recommendations include seeking advice from a dietitian to improve the intake of

heart-healthy foods, particularly focusing on areas with the lowest scores.

Reliability of the study

In this study, the internal consistency of the structured tools (knowledge questionnaire, attitude scale, and practice checklist) was assessed using the Cronbach's Alpha method, which is suitable for multi-item tools and Likert-scale questions. This method evaluates how closely related a set of items are as a group and is the most widely used reliability test in health research. A pilot study was conducted, and the calculated Cronbach's Alpha values were: Knowledge questionnaire: 0.75, attitude scale: 0.76 and practice checklist: 0.83. These results indicate that all tools have acceptable to good internal consistency, and are reliable for use in main study.

Pilot study

To assess the feasibility and clarity of the structured questionnaires for KAP a pilot study was conducted from the 23rd to 25th of October 2024 on 13 subjects by using purposive sampling techniques. The purpose of the research was presented to the participants, and after guaranteeing the privacy of their data, written informed consent was obtained. The data collection included 10 questions on knowledge, 10 questions on attitude, and a 16-item practice checklist, requiring a maximum of 10 to 15 minutes for each participant. A structured knowledge questionnaire was administered to assess the participants' knowledge, and their responses were collected and analyzed. The findings from the pilot study indicated the feasibility of conducting the main study using the current tool. Additionally, the pilot study helped the investigator identify potential practical challenges that might arise during the primary research. It also provided valuable insights into the processes of data collection and analysis. Notably, participants from the pilot study were excluded from the main study.

Method of data collection

The method of data collection for this study involves a structured approach using a self-administered questionnaire, attitude scale and practice checklist designed to assess the knowledge, attitudes, and practices respectively. This method provides a systematic way to gather data directly from participants, enabling accurate measurement of each variable of interest.

The investigator obtained permission from Sarpanch of Gram Panchayat of selected rural area to conduct the main study. The main study was conducted from the 20/01/2025 to 02/02/2025.

The investigator introduce herself/ himself to subjects and maintain good communication and informed them about the nature of study so as to ensure better co-operation during data collection. The investigator approached the subject of selected to the areas and explain the purpose of study and explain how it will beneficial for them. Before collecting the data, the investigator informed about the importance of the study and ascertained the willingness of the participants. The main study was started by choosing 114 subjects by using purposive sampling technique from selected rural areas.

Written informed consent was obtained and assured regarding the confidentiality of matter. The investigator administered questionnaire to them, instructed them not to interact with each other and their doubt were clarified. The sample were allotted 35 minutes to complete the responses. Once the questionnaire was completed, investigator collected them back. The investigator thanked all the study subjects as well as the authorities for their cooperation.

Plan for data analysis

Based on the objectives of the study, descriptive and inferential statistics were used to examine the data. Investigator created a master data sheet to calculate data.

Descriptive statistics

Frequency and percentage for distribution of demographic variables. Frequency and percentage of assessment of existing KAP regarding heart smart diet were calculated by using frequency range mean of standard deviation, level of knowledge as poor, average, and good; level of attitude-positive, neutral and negative; level of practice as poor, need to improved and good.

Inferential statistics

A chi-square test was used to determine the association of KAP with demographic variables such as age, gender, religion, marital status, educational status, occupational status, type of family, type of diet, family income, BMI, and blood pressure reading.

RESULTS

Organization of findings

The analysis and interpretation of the observations are given in the following section:

Section A

Distribution of subjects in relation to their demographic variables.

Section B

Distribution of subjects in relation to their knowledge score regarding heart smart diet among hypertensive patients from selected rural community.

Section C

Distribution of subjects in relation to their attitude score regarding heart smart diet among hypertensive patient from selected rural community.

Section D

Distribution of subjects in relation to their practice regarding heart smart diet among hypertensive patient from selected rural community.

Section E

Association of KAP regarding heart smart diet among hypertensive patients from selected rural community with selected demographic variables.

Section A: Distribution of subjects in relation to their demographic variables

Table 2 shows, the majority, 45.6% of subjects had average level of knowledge score, 11.4% had good level of knowledge score, 43.0% had poor level of knowledge score.

The mean knowledge score of the subjects was 4.96±1.945. The minimum knowledge score was 1. The maximum Knowledge score was 10.

Section B: Distribution of subjects in relation to knowledge on heart smart diet

A total of 114 subjects were included in the study. The highest proportion of correct responses was observed for physical activity recommendations (83.33%), followed by the role of fiber in blood pressure control (47.36%). Knowledge regarding healthy fats in diet was reported by 26.31% of participants.

Basic knowledge of hypertension and salt intake and its effects were correctly answered by 22.80% and 21.92% of participants, respectively. The lowest proportion of correct responses was seen for essential nutrients required for blood pressure control (14.03%).

Table 3 shows, the16.7 % of subjects had negative level of attitude score, 45.6% had neutral level of attitude score and 37.7% had positive level of attitude score.

Mean attitude score of the subjects was 34.48±6.071. The minimum attitude score was 21. The maximum attitude score was 48

Table 4 shows, the 32.5% of subjects had poor level of practice checklist, 57.9% had need to improve level of practice checklist and 9.6% of subjects had good level of practice checklist.

Mean practice score of the subjects was 10.04±2.275. The minimum practice score was 3 The maximum practice score was 16.

Section C: Distribution of subjects in relation to practice on heart smart diet

The study assessed dietary practices among hypertensive individuals. Only 15.78% of subjects followed recommended meat and protein choices, such as limiting red meat, avoiding processed meats, and consuming fish and legumes. Dairy and fat consumption had the lowest adherence at 11.40%, indicating poor awareness about using low-fat dairy and healthy oils. Fruit and vegetable intake had the highest correct response rate at 59.64%, suggesting that many subjects understand its importance in hypertension management. Whole grain and healthy alternatives were followed by 45.61% of subjects, showing moderate awareness about choosing whole grains over refined options. Only 24.56% made healthy snack and beverage choices, highlighting a need for better education on avoiding processed and high-sugar foods. Alcohol and nut consumption practices were followed by 27.19% of subjects, reflecting limited awareness about moderation in alcohol intake and the benefits of unsalted nuts. These findings suggest a need for targeted dietary interventions to improve adherence to heart-smart dietary practices among hypertensive individuals.

Table 5 summarizes the association of knowledge regarding heart smart diet with age in years, gender, religion, marital status, educational status. A statistically significant association was found with religion ($p=0.005$). Other variables showed no significant association.

Table 6 summarizes the association of knowledge regarding heart smart diet with occupational status, type of family, type of diet, monthly income of family, body mass index, blood pressure reading. A statistically significant association was found with type of family ($p<0.001$), and type of diet ($p=0.029$). Other variables showed no significant association.

Table 7 summarizes the association of attitude regarding heart smart diet with age in years, gender, religion, marital status, educational status. A statistically not associated with above demographic variables.

Table 8 summarizes the association of attitude regarding heart smart diet with occupational status, type of family, type of diet, monthly income of family, body mass index, blood pressure reading. A statistically not significant association with demographic variables.

Table 9 summarizes the association of practice regarding heart smart diet with age in years, gender, religion, marital status, educational status. A statistically significant association was found with religion ($p=0.022$), marital status ($p\leq0.001$) and other variables showed no significant association.

Table 10 summarizes association of attitude regarding heart smart diet with occupational status, type of family, type of diet, monthly income of family, BMI, blood pressure reading. Statistically significant association was found with monthly income of family (p=0.017) and other variables showed no significant association.

Table 1: Distribution of subjects in relation to their demographic variable, (n=114).

Demographic variables	N	Percentage (%)
Age (in years)		
30-39	22	19.3
40-49	27	23.7
50-59	42	36.8
60 and more	23	20.2
Gender of patient		
Male	73	64.0
Female	41	35.9
Other	0	0
Religion of patient		
Hindu	86	75.4
Muslim	9	7.9
Christian	2	1.8
Buddhist	16	14.0
Other	1	0.9
Marital status of patient		
Unmarried	9	7.9
Married	90	78.9
Separated	3	2.6
Widowed /widower	12	10.5
Educational status of patient		
Primary education	28	24.6
Secondary education	52	45.6
Higher secondary education	20	17.5
Graduate	10	8.8
Post graduation	3	2.6
Other	1	0.9
Occupation status of patient		
Govt. employee	9	7.9
Private employee	16	14.0
Retired person	6	5.3
Self-employed	61	53.5
Home maker	22	19.3
Type of family of patient		
Nuclear	32	28.1
Joint	76	66.7
Extended	6	5.3
Type of diet of patient		
Vegetarian	73	64.0
Non-vegetarian	41	36.0
Monthly income of the family (INR)		
Less than Rs. 10,000	40	35.1
Rs. 10,000-15,000	38	33.3
Rs. 15,001-20,000	19	16.7
Above Rs. 20,001	17	14.9
Body mass index of patient		
Underweight	17	14.9
Normal weight	73	64.0
Pre obesity	17	14.9
Obesity class I	7	6.1

Continued.

Demographic variables	N	Percentage (%)
BP reading of patient		
Normal BP	12	10.5
Elevated BP	13	11.4
Stage I hypertensive	19	16.7
Stage II hypertensive	70	61.4

Table 2: Distribution of subjects in relation to their knowledge score regarding heart smart diet among hypertensive patients from selected rural community, (n=114).

Level of knowledge score	Score range	Percentage score	Level of knowledge score	
			N	%
Poor	0-4	0-40%	49	43.0
Average	5-7	41-70%	52	45.6
Good	8-10	71-100%	13	11.4
Mean±SD knowledge score			4.96±1.945	
Mean % knowledge score			49.64%	
Minimum score			1	
Maximum score			10	

Table 3: Distribution of subjects in relation to their attitude regarding heart smart diet among hypertensive patient from selected rural community, (n=114).

Level of attitude score	Score range	Percentage score	Level of attitude score	
			N	%
Negative	0-16	0-32%	19	16.7
Neutral	17-33	33-66%	52	45.6
Positive	34-50	67-100%	43	37.7
Mean±SD attitude score			34.48±6.071	
Mean % attitude score			68.96	
Minimum score			21	
Maximum score			48	

Table 4: Distribution of subjects in relation to their practice regarding heart smart diet among hypertensive patient from selected rural community, (n=114).

Level of practice checklist score	Score range	Percentage score	Level of practice checklist score	
			N	%
Poor	0-6	0-38%	37	32.5
Need to improve	7-11	39-69%	66	57.9
Good	12-16	70-100%	11	9.6
Mean±SD practice checklist score			10.04±2.275	
Mean % practice checklist score			62.77%	
Minimum score			3	
Maximum score			16	

Table 5: Association of subjects in relation to knowledge regarding heart smart diet with demographic variables, n=114.

Demographic variables	N	Poor	Average	Good	X^2 value, p value
Age (in years)					
30-39	22	13	6	3	11.692
40-49	27	16	9	2	df=6
50-59	42	12	26	4	0.069
60-more	23	8	11	4	NS, P>0.05
Gender					
Male	73	31	36	6	2.427
Female	41	18	16	7	df=2, 0.297 NS, P>0.05

Continued.

Demographic variables	N	Poor	Average	Good	X^2 value, p value
Religion					
Hindu	86	40	41	5	21.896 df=8 0.005 S, P<0.05
Muslim	9	3	5	1	
Christian	2	1	1	0	
Buddhist	16	5	5	6	
Other	1	0	0	1	
Marital status					
Unmarried	9	5	4	0	7.667 df=6 0.264 NS, P>0.05
Married	90	38	43	9	
Separated	3	0	2	1	
Widowed /widower	12	6	3	3	
Educational status					
Primary education	28	10	14	4	4.960 df=10 0.894 NS, P>0.05
Secondary education	52	22	23	7	
Higher secondary education	20	9	10	1	
Graduate	10	6	3	1	
Post graduation	3	1	2	0	
Other	1	1	0	0	

*S-Significant, NS-Non-significant, df-degree of freedom

Table 6: Association of subjects in relation to knowledge regarding heart smart diet with demographic variables, n=114.

Demographic variables	N	Poor	Average	Good	X^2 value, p value
Occupational status					
Govt. employee	9	5	4	0	7.424 df=8 0.492 NS, P>0.05
Private employee	16	4	9	3	
Retired person	6	2	3	1	
Self-employed	61	25	30	6	
Home maker	22	13	6	3	
Type of family					
Nuclear	32	10	13	9	25.859 df=4 <0.001 S, P<0.05
Joint	76	38	37	1	
Extended	6	1	2	3	
Type of diet					
Vegetarian	73	34	35	4	7.098 df=2 0.029 S, P<0.05
Non-vegetarian	41	15	17	9	
Monthly income of family					
Less than Rs. 10,000	40	11	25	4	10.855 df=6 0.093 NS, P>0.05
Rs. 10,000-15,000	38	18	16	4	
Rs. 15,001-20,000	19	9	6	4	
Above Rs. 20,001	17	11	5	1	
Body mass index					
Underweight	17	3	11	3	5.827 df=6 0.443 NS, P>0.05
Normal weight	73	35	30	8	
Pre obesity	17	8	8	1	
Obesity class I	7	3	3	1	
Blood pressure reading					
Normal BP	12	6	6	0	2.864 df=6 0.826 NS, P>0.05
Elevated BP	13	5	7	1	
Stage I hypertensive	19	9	7	3	
Stage II hypertensive	70	29	32	9	

*S-Significant, NS-Non-significant, df-degree of freedom

Table 7: Association of subjects in relation to attitude regarding heart smart diet with demographic variable, (n=114).

Demographic variables	N	Negative	Neutral	Positive	X^2 value, p value
Age in Years					
30-39	22	4	13	5	4.573 df=6 0.600 NS, P>0.05
40-49	27	6	10	11	
50-59	42	5	18	19	
60-more	23	4	11	8	
Gender					
Male	73	12	32	29	0.364 df=2 0.834 NS, P>0.05
Female	41	7	20	14	
Religion					
Hindu	86	15	43	28	7.605 df=8 0.473 NS, P>0.05
Muslim	9	1	3	5	
Christian	2	0	0	2	
Buddhist	16	3	6	7	
Other	1	0	0	1	
Marital status					
Unmarried	9	2	4	3	8.131 df=6 0.229 NS, P>0.05
Married	90	13	44	33	
Separated	3	0	0	3	
Widowed /widower	12	4	4	4	
Educational status					
Primary education	28	2	15	11	5.713 df=10 0.839 NS, P>0.05
Secondary education	52	10	24	18	
Higher secondary education	20	4	7	9	
Graduate	10	2	5	3	
Post graduation	3	1	1	1	
Other	1	0	0	1	

*S-Significant, NS-Non-significant, df-degree of freedom

Table 8: Association of subjects in relation to attitude regarding heart smart diet with demographic variable, (n=114).

Demographic variables	N	Negative	Neutral	Positive	X^2 value, p value
Occupational status					
Govt. employee	9	2	3	4	4.364 df=8 0.823 NS, P>0.05
Private employee	16	1	7	8	
Retired person	6	0	3	3	
Self-employed	61	12	28	21	
Home maker	22	4	14	8	
Type of family					
Nuclear	32	3	13	16	7.161 df=4 0.128 NS, P>0.05
Joint	76	16	37	23	
Extended	6	0	2	4	
Type of diet					
Vegetarian	73	14	34	25	1.458 df=2 0.482 NS, P>0.05
Non-vegetarian	41	5	18	18	
Monthly income of family (INR)					
Less than Rs. 10,000	40	5	21	14	6.021 df=6 0.421 NS, P>0.05
Rs. 10,000-15,000	38	4	19	15	
Rs. 15,001-20,000	19	5	6	8	
Above Rs. 20,001	17	5	6	6	

Continued.

Demographic variables	N	Negative	Neutral	Positive	X^2 value, p value
Body mass index					
Underweight	17	1	9	7	2.410
Normal weight	73	13	33	27	df=6
Pre obesity	17	3	7	7	0.878
Obesity class I	7	2	3	2	NS, P>0.05
Blood pressure reading					
Normal BP	12	4	4	4	4.669
Elevated BP	13	3	4	6	df=6
Stage I Hypertensive	19	2	10	7	0.587
Stage II Hypertensive	70	10	34	26	NS, P>0.05

*S-Significant, NS-Non-significant, df-degree of freedom

Table 9: Association of subjects in relation to practice regarding heart smart diet with demographic variables, (n=114).

Demographic variables	N	Poor	Need to improved	Good	X^2 value, p value
Age in Years					
30-39	22	8	14	0	4.815
40-49	27	7	18	2	df=6
50-59	42	14	22	6	0.568
60-more	23	8	12	3	NS, P>0.05
Gender					
Male	73	21	47	5	3.976
Female	41	16	19	6	df=2 0.137 NS, P>0.05
Religion					
Hindu	86	30	49	7	17.838 df=8 0.022 S, P<0.05
Muslim	9	1	8	0	
Christian	2	0	1	1	
Buddhist	16	6	8	2	
Other	1	0	0	1	
Marital status					
Unmarried	9	4	5	0	22.754
Married	90	29	56	5	df=6
Separated	3	0	1	2	<0.001
Widowed /widower	12	4	4	4	S, P<0.05
Educational status					
Primary education	28	9	16	3	4.867 df=10 0.900 NS, P>0.05
Secondary education	52	16	32	4	
Higher secondary education	20	9	8	3	
Graduate	10	2	7	1	
Post Graduation	3	1	2	0	
Other	1	0	1	0	

*S-Significant, NS-Non-significant, df-degree of freedom

Table 10: Association of subjects in relation to practice regarding heart smart diet with their age in years, (n=114).

Demographic variables	No	Poor	Need to improved	Good	X^2 value, p value
Occupational status					
Govt. employee	9	3	5	1	8.936
Private employee	16	5	9	2	df=8
Retired person	6	1	3	2	0.348
Self-employed	61	21	38	2	p>0.05 NS
Home maker	22	7	11	4	

Continued.

Demographic variables	No	Poor	Need to improved	Good	X^2 value, p value
Type of family					
Nuclear	32	10	18	4	5.150
Joint	76	26	45	5	df=4
Extended	6	1	3	2	0.272 p>0.05 NS
Type of diet					
Vegetarian	73	26	40	7	0.962
Non-vegetarian	41	11	26	4	df=2 0.618 p>0.05NS
Monthly income of family					
Less than Rs. 10,000	40	15	23	2	15.409
Rs. 10,000-15,000	38	10	27	1	df=6
Rs. 15,001-20,000	19	9	6	4	0.017
Above Rs. 20,001	17	3	10	4	p<0.05S
Body mass index					
Underweight	17	4	10	3	5.839
Normal weight	73	24	44	5	df=6
Pre obesity	17	7	9	1	0.441
Obesity class I	7	2	3	2	p>0.05NS
Blood pressure reading					
Normal BP	12	6	5	1	3.789
Elevated BP	13	4	7	2	df=6
Stage I Hypertensive	19	5	11	3	0.705
Stage II Hypertensive	70	22	43	5	p>0.05nS

*S-Significant, NS-Non-significant, df-degree of freedom

DISCUSSION

The present study assessed the KAP regarding a heart-smart diet among hypertensive patients in a selected rural community of central India. The findings reveal important gaps between awareness, attitude, and actual dietary practices.

In the present study, most participants (45.6%) had average knowledge, while a considerable proportion (43.0%) had poor knowledge regarding heart-smart dietary practices. This finding is consistent with the study conducted in Uttarakhand, which reported poor understanding of hypertension and inadequate dietary intake, particularly of fruits and vegetables. Similarly, the Ethiopian study found that limited knowledge significantly affected adherence to the DASH diet. These similarities indicate that inadequate dietary knowledge among hypertensive patients is a common concern across rural and low-resource settings.[8,9]

Regarding attitude, nearly half of the participants (45.6%) demonstrated a neutral attitude, while only 37.7% showed a positive attitude toward dietary modification. This aligns with the Kuwait study, which reported suboptimal attitudes toward healthy eating despite moderate knowledge levels.[10] In contrast, the Kenya study observed relatively higher positive attitudes, suggesting that supportive healthcare engagement may influence patient outlook toward dietary management.[11]

Practice scores in the present study were notably poor, with 57.9% requiring improvement and only 9.6% demonstrating good dietary practices. This finding closely parallels the Ethiopian, where only 28.3% adhered to recommended dietary guidelines, and the Uttarakhand study, which showed low frequency of healthy food consumption.[8,9] Despite moderate knowledge and acceptable attitudes, the translation into healthy dietary behavior remained inadequate, highlighting a persistent knowledge-practice gap.

Analysis of demographic associations showed that religion, type of family, and type of diet were significantly associated with knowledge, while gender and family income influenced dietary practices. However, no demographic variables were significantly associated with attitude. These findings differ slightly from international studies, such as the Ethiopian study, where age and duration of hypertension were significant predictors of dietary adherence. This variation may be due to cultural, socioeconomic, and healthcare access differences in rural Indian settings.

Overall, the findings of this study are consistent with national and international research, confirming that poor dietary adherence remains a major challenge in hypertension management, particularly in rural communities. The results emphasize the need for context-specific, culturally appropriate dietary education and

continuous motivation to improve long-term health outcomes.

The present study has certain limitations. This study was conducted among patients from a selected rural community in the central part of India who were diagnosed with hypertension, which may limit the generalizability of the findings to other populations. The sample size was relatively small, and data were collected using a self-structured questionnaire, which may introduce information and response bias. In addition, the descriptive research design of the study does not allow for establishing causal relationships between variables. Further large-scale studies are recommended to validate the findings.

CONCLUSION

The present study concludes that although hypertensive patients in the selected rural community possess moderate knowledge and neutral to positive attitudes toward a heart-smart diet, their dietary practices remain largely inadequate. The significant gap between knowledge and practice underscores the need for structured nutrition education, behavior-change communication, and regular follow-up interventions. Community-based dietary counseling programs focusing on practical implementation of heart-smart diets are essential to improve adherence and achieve effective hypertension control in rural populations.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Rewatkar PS, Sahare V, Devalla AR. A descriptive study to assess the knowledge, attitude and practice regarding heart smart diet among hypertensive patients from selected rural community in central part of India. Int J Community Med Public Health 2026;13:2262-73.