RESEARCH PAPER

Awareness Of Dietary And Lifestyle Factors Among Patients With Hypertension In Rural Population- A Cross Sectional Study

Sharmila.CM.Reddy[1], Dr. Chandrakanth Patil (PT) [2*]

[1]Undergraduate student, Krishna college of physiotherapy, KVV Karad reddysharmila1906@gmail.com
[2*]Associate Professor, Krishna college of physiotherapy, KVV Karad chandupatil69@gmail.com

ABSTRACT

Background: Hypertension is a major public health challenge in India, particularly in rural populations, where awareness of modifiable risk factors remains inadequate. Dietary habits, lifestyle practices, and physical inactivity significantly influence blood pressure control. Physiotherapy-based lifestyle modification plays an important role in non-pharmacological management of hypertension.

Objective: To assess awareness of dietary and lifestyle factors related to hypertension among patients in a rural population, with special emphasis on Indian dietary practices and the role of physiotherapy.

Methods: We conducted a cross-sectional observational study involving 120 patients with primary hypertension in rural areas. Data were collected using a structured, pre-validated questionnaire that assessed demographic details and awareness of dietary, lifestyle, and physiotherapy-related factors. Descriptive and inferential statistics were used for data analysis.

Results: Of the participants, 31% had poor awareness, 45% had moderate awareness, and only 24% had good awareness. Awareness regarding salt intake, smoking, alcohol consumption, and walking was relatively high, whereas awareness related to processed foods, excessive oil and ghee consumption, physical inactivity, obesity, stress management, and the role of physiotherapy was low. Awareness levels were significantly associated with age, education level, and duration of hypertension ($p < 0.05$).

Conclusion: Awareness of dietary and lifestyle factors influencing hypertension among the rural population was suboptimal. Integrating physiotherapy-led lifestyle modification and structured health education into rural healthcare services may improve hypertension management and reduce disease burden.

Keywords: Hypertension, Rural population, Diet, Lifestyle factors, Physiotherapy.

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INTRODUCTION

Hypertension, a chronic non-communicable disease, is characterized by persistently increased systolic and/or diastolic blood pressure. It is a major cause of cardiovascular disease, stroke, renal failure, and early death worldwide.(1) Nearly one-third of adults worldwide are thought to have high blood pressure, with low- and middle-income nations bearing a disproportionate share of the burden because of quick changes in epidemiology and lifestyle.(2) High salt intake, poor eating habits, physical inactivity, smoking, excessive alcohol consumption, obesity, and long-term stress are examples of dietary and lifestyle factors that are known to be modifiable risk factors that have a substantial impact on the onset and progression of hypertension.(3)

Hypertension has become a significant public health issue in India, affecting people in both rural and urban areas. According to national data, 22.6% of persons aged > 15 years have hypertension, with men having a slightly higher prevalence than women (4). Nearly half of people aged ≥ 60 years are affected, and the risk increases noticeably with age. Although hypertension has historically been more common in urban areas, rural prevalence is quickly increasing and getting close to urban levels due to shifting dietary and lifestyle trends throughout India. (5)

Despite this high burden, rural communities understanding, management, and control of hypertension are inadequate. According to pooled estimates, only around 25% of rural Indians with hypertension are aware that they have the ailment, and even less manage their blood pressure well. (6) Dietary and lifestyle risk factors that are crucial for efficient management and prevention are also not well understood. In India, the average daily salt consumption exceeds double the World Health Organization's recommended limit, which increases cardiovascular risk. Excessive salt intake is a major dietary driver of increased blood pressure. (7)

Cultural food patterns, low health literacy, restricted access to healthcare facilities, and financial limitations that negatively impact lifestyle choices and adherence to preventative practices are some of the particular difficulties faced by rural people.(8) The industrialization of agricultural work and decreased leisure -time activities may limit physical activity, while traditional eating patterns frequently involve high consumption of oil and sodium (9). Additionally, poor self-management habits among patients with hypertension are a result of healthcare engagement in rural regions, which is often episodic and concentrates more on acute care than on the management of chronic illnesses. (10)

The excessive consumption of oil, ghee, and vanaspati is common in traditional Indian cooking methods, which increases the intake of trans and saturated fats. This dietary pattern is connected to dyslipidemia, obesity, and insulin resistance—all of which are intimately related to hypertension. Even though traditional Indian diets contain nutritious ingredients like pulses, beans, and millets, their preventive benefits may be offset by poor portion management and harmful cooking techniques.(11)

Due to the belief that everyday home or professional activities are adequate, physical inactivity is frequently underestimated among rural Indian populations. However, general levels of physical activity have decreased due to increased mechanization and changes in lifestyle. (12) Physiotherapists can instruct patients on the value of breathing exercises, strength training, flexibility exercises, and organized aerobic activity for successful blood pressure management. Rural communities can successfully adopt basic, culturally acceptable activities including chair-based exercises, yoga-based exercises, cycling, and brisk walking.(13)
Physiotherapy plays a critical role in the non-pharmacological management of hypertension by encouraging physical activity, exercise therapy, and lifestyle adjustments. Frequent exercise lowers sympathetic nervous system activity, increases insulin sensitivity, helps control weight, and improves vascular endothelial function—all of which lower blood pressure.(14)Particularly in rural areas where structured exercise awareness is low, physiotherapists are in a unique position to evaluate physical fitness, recommend customized exercise plans, and encourage patients to lead active lifestyles.(15)
Therefore, this study aimed to assess the awareness of dietary and lifestyle factors among patients with hypertension in the rural population. Identifying knowledge gaps and misconceptions will help in formulating targeted, culturally appropriate, and community-based educational strategies. Such interventions have the potential to improve self-management practices, enhance treatment adherence, prevent complications, and ultimately reduce the burden of hypertension in rural communities.

METHODOLOGY

A cross-sectional observational study was conducted to assess awareness of dietary and lifestyle factors related to hypertension among patients residing in a rural population. The study was conducted in selected rural areas of Karad through primary health centers and community health camps.
Adult patients aged 30–70 years, diagnosed with primary hypertension for at least six months and residing in rural areas, were included. Patients with secondary hypertension, severe cardiovascular or neurological disorders, cognitive impairment, or pregnancy were excluded. A total of 120 participants were recruited using convenience sampling after providing informed consent.
Data were collected using a structured, pre-validated questionnaire administered through face-to-face interviews in the local language. The questionnaire included sections on demographic details, awareness of Indian dietary factors (salt intake, oil and fat consumption, fruits and vegetables, processed foods), lifestyle factors (physical activity, sedentary behavior, stress, tobacco and alcohol use), and awareness regarding the role of exercise and physiotherapy in hypertension management.
Ethical approval was obtained from the Institutional Ethics Committee, and permission was obtained from the relevant local authorities. Confidentiality and voluntary participation were ensured throughout the study.
Data were analyzed using SPSS / Microsoft Excel. Descriptive statistics such as frequency and percentage were used to summarize awareness levels. Awareness was categorized as poor, moderate, or good based on questionnaire scores. Associations between awareness levels and selected demographic variables were analyzed using appropriate inferential statistical tests, with significance level of $p < 0.05$.

PROCEDURE:
This cross-sectional study was conducted in selected rural areas of Karad through primary health centers and community health camps. Prior to data collection, approval was obtained from the Institutional Ethics Committee, and necessary permissions were secured from local health authorities.
Participants were screened for eligibility based on predefined inclusion and exclusion criteria. Adult patients diagnosed with primary hypertension were recruited using convenience sampling. The objectives and procedures of the study were explained in the local language, and written informed consent was obtained from all participants prior to enrolment.
Data were collected using a structured and pre-validated questionnaire administered through face-to-face interviews to minimize information bias and accommodate varying literacy levels. The questionnaire captured demographic characteristics, awareness of Indian dietary factors, lifestyle-related risk factors, and knowledge regarding the role of exercise and physiotherapy in hypertension management. Interviews were conducted individually in a standardized manner, with each session lasting approximately 15–20 minutes.
All collected data were anonymized, coded, and securely stored to ensure confidentiality. Data entry and verification were performed prior to statistical analysis.
Following data collection, participants received brief standardized education on dietary modification, physical activity, and lifestyle management for hypertension, without influencing study outcomes.

RESULTS:

Table 1. Demographic Characteristics of Participants (N = 120)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	30–40	18	15.0
	41–50	32	26.7
	51–60	40	33.3
	>60	30	25.0
Gender	Male	68	56.7
	Female	52	43.3
Education	Illiterate	28	23.3
	Primary	36	30.0
	Secondary	34	28.3
	Graduate & above	22	18.4
Duration of Hypertension	<5 years	74	61.7
	≥5 years	46	38.3

Table 1 suggests that the majority of participants were middle-aged people, with the age range of 51 to 60 having the largest percentage. The proportion of men was higher than that of women. Most participants completed only basic or secondary school, indicating low educational attainment. The fact that more than half of the individuals had experienced hypertension for less than five years suggests that the rural population's diagnosis was relatively recent

Table 2. Awareness of Indian Dietary Factors Related to Hypertension (N = 120)

Dietary Awareness Item	Aware n (%)	Not Aware n (%)
Excess salt increases BP	82	38(31.7)
Pickles/papads are high in salt	70	50(41.7)
Fruits & vegetables help control BP	64(53.3)	56(46.7)
Excess oil/ghee increases BP risk	58 (48.3)	62(51.7)
Processed foods affect BP	46 (38.3)	74(61.7)

Table 2 suggests that awareness of the high salt content of pickles and papads was moderate (70; 58.3%), and the majority of participants (82; 68.3%) knew that too much salt increased blood pressure. Only 64 participants (53.3%) were aware that eating fruits and vegetables can help lower blood pressure. Only 46 individuals (38.3%) were aware of the detrimental effects of processed foods on blood pressure, and only 58 participants (48.3%) were aware of the impact of excess oil or ghee on blood pressure. Overall, the data showed that the rural hypertensive population had inadequate nutritional awareness.

Table 3. Awareness of Lifestyle Factors Related to Hypertension (N = 120)

Lifestyle Factor	Aware n (%)	Not Aware n(%)
Physical inactivity increases BP	72(60.0)	48(40.0)
Obesity is a risk factor	66(55.0)	54(45.0)
Stress affects BP	76(63.3)	44(36.7)
Smoking increases BP	88(73.3)	32(26.7)
Alcohol consumption increases BP	84(70.0)	36 (30.0)

Table 3 suggests that, as compared to nutritional considerations, awareness of lifestyle factors impacting HTN was comparatively higher. The most well-known risk variables were alcohol use (84; 70.0%) and smoking (88; 73.3%). 72 participants (60.0%) reported being physically inactive, whereas 76 participants (63.3%) indicated being aware that stress affects blood pressure. The percentage of those who knew that obesity was a risk factor was rather low (66; 55.0%). Overall, there are still significant gaps, especially regarding physical inactivity and obesity, even though awareness of lifestyle-related risk factors was modest.

Table 4. Awareness Regarding Role of Physiotherapy and Exercise (N = 120)

Physiotherapy-Related Awareness	Aware n (%)	Not Aware n (%)
Exercise helps reduce BP	78(65.0)	42(35.0)
Walking is beneficial for BP control	86(71.7)	34(28.3)
Regular exercise improves heart health	80(66.7)	40(33.3)
Breathing/relaxation exercises reduce BP	52(43.3)	68(56.7)
Physiotherapy helps lifestyle modification	48(40.0)	72 (60.0)

Over two-thirds of the participants knew that exercise lowered blood pressure (78; 65.0%) and that walking helps regulate blood pressure (86; 71.7%). Eighty participants (66.7%) reported knowing that regular exercise promoted heart health. In contrast, only 48 participants (40.0%) knew that physiotherapy aids overall lifestyle improvement, and only 52 participants (43.3%) knew about breathing and relaxation exercises. These results show that while fundamental physical exercise is well understood, the comprehensive role of physiotherapy in managing hypertension is not well understood.

Table 5. Overall Awareness Level Among Participants (N = 120)

Awareness level	Frequency (n)	Percentage (%)
Poor	38	31.7
Moderate	54	45.0
Good	28	23.3

A total of 54 participants (45.0%) had moderate awareness, 38 participants (31.7%) had low awareness, and just 28 participants (23.3%) had good awareness. This suggests that most people with HTN in rural areas are not well informed about food and lifestyle issues.

Table 6. Association Between Awareness Level and Selected Variables

Variable	X2 Value	p-Value	Significance
Age	6.12	0.047	Significant
Gender	1.84	0.39	Not Significant
Education level	12.56	0.002	Significant
Duration of hypertension	4.98	0.026	Significant

$p < 0.05$ considered statistically significant

According to association analysis, awareness levels were significantly correlated with age ($\chi^2 = 6.12$, $p = 0.047$), education level ($\chi^2 = 12.56$, $p = 0.002$), and length of hypertension ($\chi^2 = 4.98$, $p = 0.026$). Gender, on the other hand, did not significantly correlate ($\chi^2 = 1.84$, $p = 0.39$). These results highlight the need for focused educational treatments, as they imply that awareness increases with age, education, and longer disease duration.

Figure 1: Distribution of overall awareness levels among hypertensive patients in the rural population.

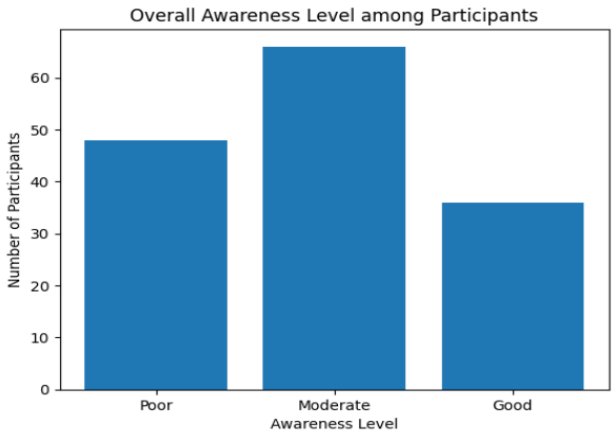


Figure 2: Awareness of dietary factors influencing hypertension

Figure 3: Awareness of lifestyle-related risk factors

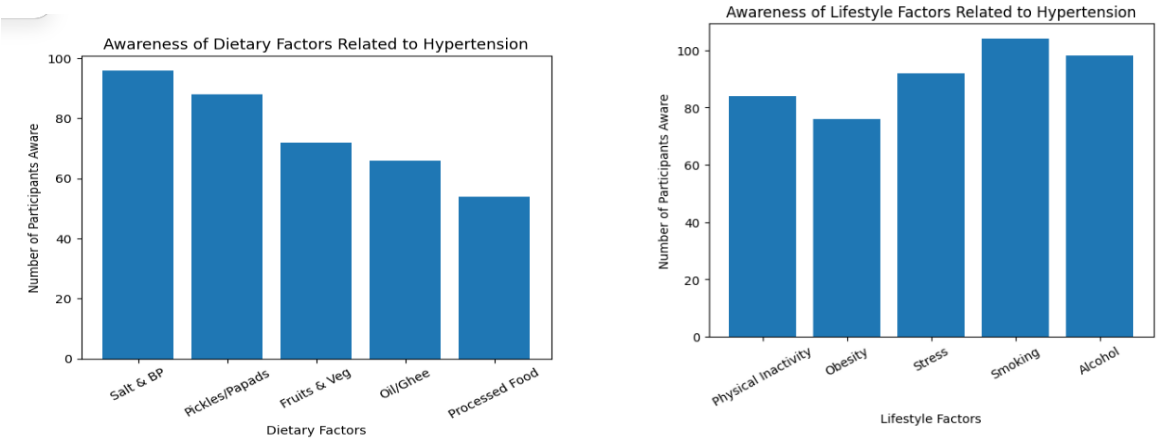
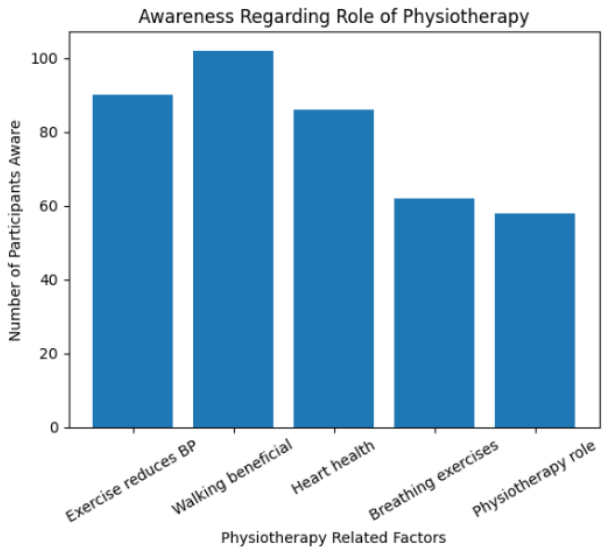


Figure 4: Awareness of the role of exercise and physiotherapy in hypertension management.



DISCUSSION

This study assessed the knowledge of a rural population regarding dietary and lifestyle factors associated with hypertension, with a focus on Indian dietary customs and the function of physical therapy. The results showed a modest level of overall awareness, with notable knowledge gaps regarding physical inactivity, diet composition, and the wider role of physiotherapy in managing hypertension.

According to their demographic profiles, most participants were middle-aged and older, with low to moderate levels of education. Only 24% of participants had strong overall awareness, whereas the majority showed moderate or low awareness, as seen in Table 5 and Figure 1. Similar trends have been shown in studies conducted in rural India, where insufficient knowledge of the risk factors for hypertension was linked to low levels of education and restricted access to health information (Gupta et al., 2019; Anchala et al., 2014).(4)These results demonstrate the ongoing disparity in rural India between proper disease-related knowledge and diagnosis.

According to Table 2 and Figure 2, participants' awareness of dietary factors associated with hypertension indicated that the majority of them were aware of how excessive salt consumption raises blood pressure. This result is in line with research from India that shows increased knowledge of salt restriction as a result of national and international public health messaging (WHO, 2013; ICMR, 2020).(16) On the other hand, there was far less knowledge about the negative effects of processed meals, excessive consumption of oil and ghee, and insufficient consumption of fruits and vegetables. Similar findings have been found in studies carried out in rural Maharashtra and South India, where patients tend to underestimate the role of cooking oils, traditional fried foods, and packaged foods in controlling hypertension (Ramakrishnan et al., 2018; Meshram et al., 2016).(17)

The National Nutrition Monitoring Bureau's findings, which show that rural Indian residents consume insufficient amounts of preventive foods, are in line with the poor knowledge of fruit and vegetable consumption found in this study (NNMB, 2017).(18) This dietary imbalance negatively impacts on blood pressure management by reducing potassium and fiber intake. These results point to the necessity of nutritional education initiatives that emphasize overall dietary quality rather than just salt limitation.(19)

The results pertaining to exercise awareness and physiotherapy are particularly significant from a physiotherapy perspective. Table 4 and Figure 4 demonstrate that although most participants were aware that walking and general exercise assisted in lowering blood pressure, there was little knowledge about breathing exercises, relaxation techniques, and the all-encompassing role of physiotherapy. Similar findings have been documented in Indian research, where physiotherapy is frequently seen to be more important for treating musculoskeletal disorders than for managing chronic illnesses (Kaur et al., 2020).(20)

Structured exercise regimens, breathing exercises, and relaxation methods such as pranayama have been shown in Indian interventional studies to dramatically lower systolic and diastolic blood pressure (Patel et al., 2017; Innes et al., 2016)(21)(22). Physiotherapists have the opportunity to be more involved in community-based hypertension therapy, especially in rural areas where access to multidisciplinary care is scarce, given the low understanding of these interventions shown in this study.

Age, education level, and duration of hypertension were substantially correlated with awareness levels, according to the association analysis (Table 6). These results are in line with Indian research showing that people with higher levels of education and longer disease durations typically have greater awareness because they have interacted with healthcare professionals more frequently (Anchala et al., 2014).(4) However, the continued lack of awareness even among long-term hypertension patients raises the possibility that regular clinician consultations may not place enough emphasis on dietary and lifestyle education.(23)

This study emphasizes the importance of incorporating lifestyle change programs led by physiotherapists into the treatment of hypertension in rural areas. Promoting structured physical activity, teaching patients about culturally acceptable exercises like walking and yoga-based practices, and supporting dietary and lifestyle changes are all important roles that physiotherapists can play.(24) In Indian communities, community-based physiotherapy programs have been demonstrated to increase blood pressure control and adherence to lifestyle modifications (Joshi et al., 2021).(25)

CONCLUSION

The present study concluded that awareness regarding dietary and lifestyle factors influencing hypertension among the rural population is predominantly moderate to poor, despite the high prevalence of the condition. Although participants showed better awareness of salt intake, smoking, alcohol consumption, and walking as beneficial for blood pressure control, significant gaps were observed in knowledge related to overall dietary quality, consumption of processed foods, excessive use of oil and ghee, physical inactivity, obesity, stress management, and the comprehensive role of physiotherapy. These findings indicate that hypertension management in rural India continues to be largely medication-centered, with insufficient emphasis on lifestyle modifications.

The significant association between awareness levels and education, age, and duration of hypertension highlights the importance of continuous and structured health education, rather than one-time counselling. From a physiotherapy perspective, limited awareness regarding exercise prescription, breathing exercises, and relaxation techniques suggests underutilization of physiotherapy services in the management of hypertension. Physiotherapists can play a pivotal role in promoting physical activity, stress reduction, and sustainable lifestyle

LIMITATIONS:

The cross-sectional design limits causal inference, and self-reported awareness may be subject to recall or response bias. Additionally, the findings may not be generalizable beyond similar rural settings. Future studies should focus on interventional designs evaluating the effectiveness of physiotherapy-based education programs on blood pressure outcomes

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