Attitudes, Self-Care Practices and Medication Adherence in Hypertensive Patients Attending Non-Communicable Disease (NCD) Clinic in Salumbar District Hospital of Southern Rajasthan.

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Abstract

Background: Hypertension is a major public health challenge in both developing and developed countries. Raising awareness of the management of hypertension is one of the focuses of primary prevention of cardiovascular disease (CVD). The aim of this study was therefore to assess attitude, self-care practices and medication adherence in hypertensive patients attending NCD clinic in Salumbar district hospital which caters markedly to tribal population.

Materials and Methods: It was hospital based cross-sectional study. Purposive sampling was done for 380 samples over a period of 3 months. Semi-structured pre tested questionnaire was used to assess attitude and self-care practices, Morisky scale (MMAS-8) was used to assess medication adherence.

Results: Out of 380 subjects, majority were female 226 (59.4%). In our study 138 controlled and 242 were uncontrolled hypertensive. Out of total subjects 32.1% were taking excessive salt. Majority (97.6%) of patients had a positive attitude but had poor self-care practices. Nonadherence to antihypertensive medication were more among uncontrolled hypertensive subjects (85.5%). Attitude and adherence were statistically significant.

Conclusion: In our study despite having a positive attitude towards hypertension management, patients at Salumbar district hospital exhibit poor self-care practices and medication adherence, especially among uncontrolled hypertensive individuals. Addressing these gaps is crucial for improving blood pressure control and reducing cardiovascular risk. Tailored interventions focusing on education, support, and behaviour change are needed to bridge this divide and enhance outcomes for hypertensive patients, with great emphasis on tribal population.

Keywords: Attitude, Medication adherence, Hypertension, Self-care practices Southern Rajasthan,Tribal population

BACKGROUND:

Hypertension is a major public health challenge in both developing and developed countries [1].

Hypertension is defined as the blood pressure ≥140/90 mm Hg in all adults in the office or clinic following repeated examination.[2] It is responsible for 57% of all stroke deaths and 24% of all coronary heart disease deaths in India.

Overall prevalence of Hypertension in India is 29.8% according to **Anchala et.al** [3] Furthermore, the age-standardized prevalence of hypertension in India was 32.8% in men and 29.7% in women[4].

Raising awareness of the management of hypertension is one of the focuses of primary prevention of cardiovascular disease (CVD). Patients' beliefs and attitudes regarding the management of hypertension have an independent impact on their compliance with recommended lifestyle practices [5].

About 7.6 million premature deaths (about 13.5% worldwide) are attributed to hypertension itself. Non pharmacologic treatments (cessation of smoking, weight loss, proper diet, and regular physical activity) are essential and important components of blood pressure control [5].

Factors associated with poor blood pressure control may be due to either patient- or physician-related factors. The aim of this study was therefore to describe adaptations in self-care practices and attitudes in hypertensive patients attending NCD clinic in Salumbar district hospital markedly serving tribal population which was previously a part of Udaipur district.

It mostly comprises of tribal population that living in hilly and rural area. Hence the study was planned to address this important public health challenge.

The outcome of the study might help to identify strategies to improve blood pressure control among hypertensive patients.

OBJECTIVES

1. To assess the patient's attitude and self-care practices in hypertension.

2. To know the factors affecting medication adherence in hypertensive patients presenting to NCD clinic in Salumbar district hospital.

3. To generate health awareness amongst these patients about hypertension and its medication.

MATERIALS AND METHOD

1. Study Design - Hospital based cross-sectional study.

2. Study Setting- NCD clinic in Salumar district hospital.

3. Study Duration - The study was conducted for a period of 3 months after IEC approval.

4. Study population- Hypertensive patients meeting the inclusion criteria who were presented to NCD clinic in Salumbar district hospital.

5. Sample Size - Sample size was calculated by using the formula-

$N = Z^2 PQ/L^2$

Where,

Z = 1.96, P = prevalence, Q = 1- P, and L = precision.

Sample size was calculated on the basis of previous study of **Joseph et.al** [6] where Self-Management Practices among Hypertensive Patients was found to around 60.6%

According to the above-mentioned formula, sample size calculated was 366. And with 10% non-response rate the sample size was 376

Thus, rounding off the number, sample size for the study was 380.

6. Sampling Technique - The eligible respondents were selected by non-probable convenient purposive sampling method.

7. Study subjects - Study subjects were those who fulfilled the following criteria:

- **Inclusion criteria:** -

Patients with hypertension attended NCD clinic in salumbar district hospital who gave consent to participate in the study were included.

- **Exclusion criteria** : -

i.   Patients <18 years of age.

ii. Pregnant women

iii. Mentally incompetent patients

8   DATACOLLECTION ;
   a) . **TOOLS-**
      i. Pretested Self-designed questionnaire to assess attitude of patients on hypertension is prepared based on the study done by Kisoknath et.al [7]. It has 20 questions with a score of 1 each. High score indicates positive attitude towards hypertension.

      ii. Self-designed pre-tested questionnaire prepared using extensive literature review was used to assess self-care practices in patients with hypertension. It has 15 questions with a score of one each. High score indicates good self-care practices in hypertension.

      iii. Medication adherence behaviour and the reasons for non-adherence was studied using Morisky Medication Adherence scale.[8] It has a total score of 11 with a score of one each for 1 to 7 questions and a score of 1-4 from 8th question based on responses. A score l <6 was considered as poor medication adherence , between 6-8 was considered as medium adherence and a score > 8 was considered high adherence
      b. **Data collection**: The responses on questionnaire was collected on one-to-one basis in privacy with assurance of confidentiality.

9.ETHICAL CONSIDERATIONS- Potential participants were informed the purpose of study and written informed consent were taken without any persuasions by investigator. Participants had freedom to execute voluntary acceptance or refusal for study at any stage. Confidentiality and importance of responses were conveyed to them. Preventive corrective measures were informed to the subjects and attendants immediately after collecting data from them. The study was carried forward only after approval from institutional ethics committee.

 10. **STUDY PERIOD** – After IEC approval the study was conducted for a period of 3 months from July to September 2023.

 11 .DATA CODING- The data collected was categorized according to different variables and further categorized data was entered on a master chart created in MS Excel 2021 (Office 365, Microsoft Company Ltd., USA).

12. STATISTICAL DATA ANALYSIS- Master chart created in MS Excel 2021 and data analysis was done using IBM SPSS version 26.0 Chi-square test was applied to find the association between the two variables and P value less than 0.05 was considered statistically significant.

Results:

A total of 380 subjects were included in the study, with 226 (59.47%) female and 154(40.5%) males.138 classifieds as controlled and 242 as uncontrolled. Higher proportion of individuals following a vegetarian diet (87.9%) compared to the non-veg diet (12.1%). Similarly, a greater percentage of individuals reported a salt intake greater than 5 grams 258 (67.8%) compared to 122 (32.1%) less than 5gm. (Table. 1)

Table 1: Distribution of respondents as per demographic factors, lifestyle factors and blood pressure.

AGE		Percentage		Diet		Percentage
<40	5	1.3		VEG	334	87.9
41-50	29	7.6		NON-VEG	46	12.1
51-60	102	26.8				
61-70	156	41.1		Salt Intake		
71-80	72	18.9		<5gm	122	32.1
>80	16	4.2		> 5gm	258	67.8
Gender						
male	154	40.5		Physical activity		
female	226	59.5		Sedentary	345	90.8
				Moderate	18	4.7
Education				Heavy	17	4.5
illiterate	281	73.9				
primary	65	17.1		Habits		
secondary	17	4.5		current smoker	24	6.3
graduate	17	4.5		ex-smoker	11	2.9
postgraduate	0	0.0		Non smoker	345	90.8
				current alcohol user	15	3.9
Occupation				non-alcohol user	365	96.1
Govt	6	1.6				
Private	128	33.7		Blood Pressure		
Unemployed	246	64.7		Controlled	138	36.3
				Uncontrolled	242	63.7
Socio Economic status (SES)						
Upper I	0	0.0				
Upper Middle II	13	3.4				

Lower Middle III	55	14.5			
Upper Lower IV	312	82.1			
Lower V	0	0.0			

A significant disparity was observed between the two groups (p < 0.001*), indicating substantial differences in salt consumption habits. Among the uncontrolled subjects 209 (86.4%) salt intake is exceeding 5 grams whereas 49 (35.5%) in controlled subjects. (Table 2)

Table 2: Distribution of respondents with controlled and uncontrolled blood pressure as per their age, gender, education, occupation and lifestyle factors.

Variables		Controlled n=138	Uncontrolled n=242	p value
AGE	<40	2 (1.4%)	3 (1.2%)	0.244
	41-50	8 (5.8%)	21 (8.7%)	
	51-60	34 (24.6%)	68 (28.1%)	
	61-70	62 (44.9%)	94 (38.8%)	
	71-80	30 (21.7%)	42 (17.4%)	
	>80	2 (1.4%)	14 (5.8%)	
Gender	Male	54 (39.1%)	100 (41.3%)	0.757
	Female	84 (60.9%)	142 (58.5%)	
Education	Illiterate	93 (67.4%)	188 (77.7%)	0.164
	Primary	31 (22.5%)	34 (14.0%)	
	Secondary	8 (5.8%)	9 (3.7%)	
	Graduate	6 (4.3%)	11 (4.5%)	
Occupation	Government	2 (1.4%)	4 (1.7%)	0.534
	Private	42 (30.4%)	87 (36.0%)	
	Unemployed	94 (68.1%)	151 (62.4%)	
Socioeconomic Status	Upper middle	6 (4.3%)	7 (2.9%)	0.214
	Lower middle	25 (18.1%)	30 (12.4%)	
	Upper lower	107 (77.5%)	205 (84.7%)	
Diet	Vegetarian	112 (81.2%)	221 (91.3%)	**0.006***
	Non vegetarian	26 (18.8%)	21 (8.7%)	
Salt Intake	< 5gm	89 (64.5%)	33 (13.6%)	**<0.001***
	> 5gm	49 (35.5%)	209 (86.4%)	
Physical activity	Sedentary	125 (90.6%)	220 (90.9%)	0.649
	Moderate	8 (5.8%)	10 (4.1%)	
	Heavy	5 (3.6%)	12 (5.0%)	
Habits	Current smoker	8 (5.8%)	17 (7.0%)	0.072
	Ex-smoker	0	11 (4.5%)	
	Non smoker	130 (94.2%)	214 (88.4%)	
	Current alcohol user	3 (2.2%)	12 (5.0%)	
	Non-alcohol user	135 (97.8%)	230 (95.0%)	

The study reveals distinct differences in attitudes between controlled and uncontrolled hypertensive individuals. Controlled participants exhibit significantly higher awareness and confidence in managing their condition, with 89.1% perceiving their blood pressure within the normal range compared to 18.6% in the uncontrolled group. Control participants also demonstrate stronger beliefs in self-management (85.5%) and the importance of regular blood pressure monitoring (89.9%) compared to 19.0% and 58.7% respectively in the uncontrolled group. Furthermore, controlled individuals show greater adherence to dietary recommendations, recognizing the importance of including green leafy vegetables (100%) and avoiding excess salt (84.1%). They also emphasize the significance of regular physical exercise (80.4%) and exhibit heightened awareness of hypertension-related complications, including kidney dysfunction, vision impairment, and cardiovascular risks. (Table 3)

Table 3: Distribution of controlled and uncontrolled hypertensive subjects as per their attitude towards hypertension.

S.No.	Attitude	Controlled n=138	Uncontrolled n= 242	p value
1	My blood pressure is now within normal range.	123 (89.1%)	45 (18.6%)	**<0.001** *
2	The waiting time at the clinic is acceptable.	138 (100%)	242 (100%)	-
3	The doctor listens to my concerns.	138 (100%)	242 (100%)	-
4	The doctor understands my concerns.	138 (100%)	242 (100%)	-
5	The doctor clearly explains my condition to me	138 (100%)	242 (100%)	-
6	Relevant medications are available most of time in pharmacy.	138 (100%)	242 (100%)	-
7	I can manage my disease.	118 (85.5%)	46 (19.0%)	**<0.001** *
8	It is important to monitor my blood pressure reading regularly.	124 (89.9%)	142 (58.7%)	**<0.001** *
9	It is good to include green leafy vegetable in my daily diet.	138 (100%)	242 (100%)	-
10	It is good to avoid extra added salts in your diet.	116 (84.1%)	107 (44.2%)	**<0.001** *
11	Food label reading is important in choosing a low-sodium diet.	2 (1.4%)	5 (2.1%)	0.973
12	It is good to avoid extra cooking oil in your diet.	130 (94.2%)	227 (93.8%)	0.947

13	It is good to have fruits rather than deserts and sweets.	85 (61.6%)	91 (37.6%)	**<0.001 ***
14	Excess alcohol can worsen the blood pressure level.	134 (97.1%)	232 (95.9%)	0.741
15	Regular physical exercise is essential to control blood pressure.	111 (80.4%)	138 (57.0%)	**<0.001 ***
16	High blood pressure will affect your kidney functions.	128 (92.8%)	226 (93.4%)	**<0.001 ***
17	High blood pressure will affect your vision.	70 (50.7%)	60 (24.8%)	**<0.001 ***
18	High blood pressure can affect your blood vessels.	68 (49.3%)	60 (24.8%)	**<0.001 ***
19	High blood pressure can lead to stroke.	138 (100%)	233 (96.3%)	0.052
20	High blood pressure can lead to ischemic heart disease.	122 (88.4%)	120 (49.6%)	**<0.001 ***

Significant differences were observed between the controlled and uncontrolled hypertensive subjects across all attitude score ranges (p < 0.001). In particular, the controlled group exhibited higher frequencies of scores associated with more positive attitudes (16-20 ranges) 101 (73.2%) compared to the uncontrolled subjects 24 (9.9%). (Table 4)

Table 4: Distribution of respondents with controlled and uncontrolled blood pressure as per their scoring of Attitude.

Score for Attitude	Total	Controlled n=138	Uncontrolled n=242	p value
0 to 5	0	0	0	**<0.001***
6 to 10	9	2 (1.4%)	7 (2.9%)	
11 to 15	246	35 (25.4%)	211 (87.2%)	
16 to 20	125	101 (73.2%)	24 (9.9%)	

Self-Care Practices Among Individuals with Controlled and Uncontrolled Hypertension

Those with controlled hypertension exhibited significantly higher adherence to prescribed medication (93.5% vs. 75.6%, p < 0.001) and reported consuming diets rich in leafy vegetables more frequently (75.4% vs. 28.5%, p < 0.001) compared to the uncontrolled group. Only 14% of hypertensive patients read food label for sodium content Uncontrolled 21.1% and controlled 3.6% (21.1% vs 3.6%), p < 0.001). Individuals with uncontrolled hypertension salt intake limit to one teaspoon per day (13.6% vs 64.5%) p < 0.001) compared to those with controlled hypertension. No significant differences were found between the groups in other self-care

practices such as monitoring blood pressure at home, avoiding tobacco and alcohol, or engaging in physical activity. (Table 5)

Table 5: Distribution of controlled and uncontrolled hypertensive subjects as per their self-care practice.

S.No.	Self-care Practices	Controlled n=138	Uncontrolled n=242	p value
1	Do you have instrument to monitor blood pressure at home?	0	0	-
2	Do you measure your blood pressure at home?	0	0	-
3	Do you measure your blood pressure often by yourselves or with the help of other family member's?	0	0	-
4	Do you take your medicines regularly as prescribed by health care provider?	129 (93.5%)	183 (75.6%)	**<0.001***
5	Do you take diet rich in leafy vegetables?	104 (75.4%)	69 (28.5%)	**<0.001***
6	Do you take diet rich in fresh fruits?	0	0	-
7	You don't take any forms of tobacco or stopped taking any forms of tobacco after diagnosed with hypertension?	125 (90.6%)	224 (92.6%)	0.628
8	Do you take alternative medicines like homeopathy or Ayurveda to control blood pressure?	0	0	-
9	Do you read the food label for sodium content?	5 (3.6%)	51 (21.1%)	**<0.001***
10	Do you avoid adding extra salt during cooking?	126 (91.3%)	184 (76.0%)	**<0.001***
11	Do you control your salt intake to one teaspoon/5g per day?	89 (64.5%)	33 (13.6%)	**<0.001***
12	Do you perform any physical activity like Yoga/walking /jogging/Cycling/Gym?	2 (1.4%)	0	0.255
13	Do you perform physical activity for at least 30 minutes per session?	2 (1.4%)	0	0.255
14	You don't take or you have stopped consuming alcohol after diagnosed with hypertension?	134 (97.1%)	231 (95.5%)	0.604
15	Have you got your blood profile done recently for liver and kidney function tests?	0	0	-

Almost all subjects in both groups scored 0 to 5. Two individuals (1.4%) with controlled hypertension scored 6 to 10, while none in the uncontrolled group fell in this range. No participants scored 11 to 15. (Table 6)

Table 6: Distribution of respondents with controlled and uncontrolled blood pressure as per their scores for self-care practices.

Score for Self-care Practices	Total	Controlled n=138	Uncontrolled n=242	p value
0 to 5	378	136 (98.6%)	242 (100%)	
6 to 10	2	2 (1.4%)	0	0.254
11 to 15	0	0	0	

Controlled subjects demonstrated significantly higher adherence levels compared to their uncontrolled counterparts across multiple metrics. Notably, controlled participants were less likely to forget medication doses (18.12% vs. 88.4%, $p < 0.001$), miss doses due to reasons other than forgetfulness (23.19% vs. 44.0%, $p < 0.001$), and adjust medication without consulting a physician (12.32% vs. 56.0%, $p < 0.001$). Additionally, none of the controlled group forgot yesterday's dose, whereas 10.8% of the uncontrolled group did ($p < 0.001$).(Table 7)

Table 7: Distribution of respondents with controlled and uncontrolled blood pressure as per their medication adherence.

S.No.	Adherence	Controlled n=138	Uncontrolled n=242	p value
1	Do you sometimes forget to take your medication?	25 (18.12%)	213 (88.4%)	<0.001*
2	People sometimes miss taking their medication for reasons other than forgetting. Thinking over the past two weeks, were there any days when you did not take your medication?	32 (23.19%)	106 (44.0%)	<0.001*
3	Have you ever stopped or taken again medication without telling doctor?	17 (12.32%)	135 (56.0%)	<0.001*
4	When you leave/travel home, do you sometimes forget to take your medication?	44 (31.88%)	210 (87.1%)	<0.001*
5	Did you forget to take your medicine yesterday?	0	26 (10.8%)	<0.001*

6	When you feel like your health is under control, do you sometimes stop your medication?	1 (0.72%)	51 (21.2%)	**<0.001 ***
7	Taking tablets every day is really unconvincing for some people. Do you ever feel hassled about sticking to your treatment plan?	18 (13.04%)	179 (74.3%)	**<0.001 ***
8	How often do you have difficulty remembering to take all your medicine?	0	0	-
9	Never/rarely	99 (71.74%)	27 (11.2%)	**<0.001 ***
10	Sometimes	20 (14.49%)	189 (78.4%)	**<0.001 ***
11	Once in a while	16 (11.59%)	24 (10.0%)	0.735
12	Always	0	0	-

Individuals with scores < 6 were predominantly uncontrolled (85.5% vs. 16.7%), while those with scores > 8 were mostly controlled (73.2% vs. 11.2%). A smaller proportion of uncontrolled individuals fell within the 6-8 score range (3.3% vs 10.1%). (Table 8)

Table 8: Distribution of respondents with controlled and uncontrolled blood pressure as per their scores for adherence.

Score for Adherence	Total	Controlled n=138	Uncontrolled n=242	p value
< 6	230	23 (16.7%)	207 (85.5%)	
6 - 8	22	14 (10.1%)	8 (3.3%)	**<0.001***
> 8	128	101 (73.2%)	27 (11.2%)	

Discussion:

A total of 380 subjects were included in the study, majority of the participants belong to the age group 61 to 70 years. with 226 (59.47%) female and 154(40.5%) males. 73.9% of the subjects are illiterate and 17.1% of the subjects completed their primary education. 64.7% of the subjects were unemployed and 33.7% of the subjects were private employee. 82.1% of the subjects belong to Class 4 group of SES. 87.9% of the subjects preferred vegetarian diet.138 classifieds as controlled and 242 as uncontrolled. Similarly, a greater percentage of individuals reported a salt intake >5 grams 258(67.8%) compared to 122(32.1%) less than 5gm. 90.8% of

the subjects were having sedentary lifestyle and majority 345 (90.8%) were non-smokers. Only 3.9% of the subjects reported alcohol consumption as a habit. 63.7% of the subjects had uncontrolled hypertension. These findings underscore the imperative of dietary interventions, particularly in promoting reduced salt intake and increased consumption of plant-based foods, as integral components of hypertension management strategies.

Attitudinal disparities between controlled and uncontrolled hypertensive individuals further elucidate the significance of patient engagement and empowerment in effective blood pressure control. Controlled participants exhibited notably higher awareness (89.1%) of their blood pressure status being within the normal range compared to only 18.6% in the uncontrolled group. Moreover, a substantial majority of controlled individuals expressed confidence in self-management (85.5%) and recognized the importance of regular blood pressure monitoring (89.9%). These findings underscore the pivotal role of patient education initiatives aimed at fostering positive attitudes, enhancing health literacy, and promoting active involvement in hypertension management.

Self-care practices emerged as crucial determinants of hypertension control, with significant disparities observed between controlled and uncontrolled subjects.. Adherence to dietary recommendations, particularly the consumption of leafy vegetables, was notably higher among controlled individuals (75.4%) compared to uncontrolled individuals (28.5%). These findings underscore the importance of targeted interventions aimed at promoting medication adherence, dietary compliance, and other self-care practices to optimize blood pressure control outcomes.

The study also highlights the intricate relationship between medication adherence and blood pressure control. Notably, 93.5% of individuals with controlled hypertension reported regular adherence to prescribed medication, in contrast to 75.6% among those with uncontrolled hypertension. Controlled subjects demonstrated significantly higher adherence levels, with only 18.12% reporting occasional forgetfulness in medication intake, compared to a striking 88.4% among uncontrolled subjects. These findings underscore the critical importance of consistent medication adherence in achieving and sustaining blood pressure control, necessitating tailored interventions to address barriers to adherence and enhance treatment efficacy.

Overall, 97.5% of the subjects showed positive attitude towards hypertension which is in accordance with the findings of **Rajiv Kumar Gupta et al (90.83)[9] & Aravinda Swami et al (70%).[10]** As per study done by **Mathur et al[11]** 31.8% of the subjects had good medication adherence which is similar to our study findings 33.68% of the subjects showed high medication adherence.

In conclusion, the findings of this study underscore the multifactorial nature of hypertension management and emphasize the need for comprehensive, patient-centered approaches to optimize blood pressure control outcomes. By addressing demographic disparities, promoting healthy lifestyle behaviours, fostering positive attitudes, and facilitating adherence to medication and self-care regimens, healthcare practitioners can significantly enhance hypertension management efficacy and mitigate associated risks of cardiovascular morbidity and mortality.

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