Janaki Medical College Journal of Medical Sciences (2026); Vol.14 (2):112-126

JMCJMS

DOI: https://doi.org/10.3126/jmcjms.v14i02.98139

ISSN: 2091-2242
eISSN: 2091-2358

OPEN ACCESS

Original Research

Knowledge regarding Hypertension and its associated Risk Factors among Residents of a Sub-metropolitan City, Nepal

Khushbu Yadav[1]*, Satyam Prakash[2], Nagendra Yadav[1], Ramesh Nayak[3], Om Prakash Yadav[4], Basant Kumar Yadav[5]

[1]Department of Microbiology, Janaki Medical College, Tribhuvan University, Nepal
[2]Department of Biochemistry, Janaki Medical College, Tribhuvan University, Nepal
[3]Department of Physiology, Madhesh Institute of Health Sciences, Janakpurdham, Nepal
[4]Department of Physiology, Janaki Medical College, Tribhuvan University, Nepal
[5]Emergency Department, Mirchaiya Hospital, Mirchaiya, Siraha, Nepal

***Correspondence to:**
Mrs. Khushbu Yadav
Assistant Professor, Department of Microbiology, Janaki Medical College, TU, Nepal
E-mail: meetkhushi20@gmail.com
ORCID: https://orcid.org/0000-0001-5001-3983

Received: 9 May 2026
Revised: 24 July 2026
Accepted: 28 July 2026

Citation:
Yadav K, Prakash S, Yadav N, Nayak R, Yadav OP, Yadav BK. Knowledge regarding hypertension and its associated risk factors among residents of a sub-metropolitan city, Nepal. Janaki Med Coll J Med Sci. 2026;14(2):112-126.

ABSTRACT:

Background and Objectives: Hypertension is a major public health concern that substantially increases the risk of cardiovascular diseases, stroke, and kidney disease. Despite its serious consequences, many individuals have limited awareness of the condition because it usually presents without symptoms. Thus, this study was conducted to assess knowledge regarding hypertension and its associated risk factors among residents of a selected ward of a sub-metropolitan city.

Materials and Methods: A descriptive cross-sectional study was conducted among 280 adults aged 30–60 years residing in Ward No. 4 of Janakpurdham Sub-metropolitan City, Nepal. Participants were selected using convenient non-probability sampling. Data were collected through face-to-face interviews using a modified structured questionnaire, and blood pressure was measured using a validated automated digital

sphygmomanometer. Data were analyzed using SPSS version 26, with a p-value <0.05 considered statistically significant.

Results: Of the 280 participants, 27.2% were male, and 72.7% were female, aged between 30–40 years. Normal blood pressure was observed in 166 (59.3%) participants, while 64 (22.9%) had hypertension and 50 (17.9%) had hypotension. Regarding hypertension knowledge, 27.5% identified cigarette smoking and 24.6% identified salt intake as major risk factors, while 34.3% recognized that consuming fruits, vegetables, whole grains, and low-fat dairy products could help to lower blood pressure. No significant association was found between blood pressure status and gender (p=0.183) or educational level (p=0.86).

Conclusions: Knowledge regarding hypertension among the study participants was satisfactory, with notable misconceptions about blood pressure and its management. No significant association was observed between blood pressure status and gender or educational level. Community-based health education programs are needed to improve hypertension awareness and prevention.

Keywords: Adults, Blood pressure, Hypertension, Janakpurdham, Knowledge, Risk Factors

INTRODUCTION

Hypertension (HTN), also called as high blood pressure, is a global problem nowadays. It is characterized by a systolic blood pressure (SBP) of 140 mmHg or greater and/or a diastolic blood pressure (DBP) of 90 mmHg or greater [1,2]. Values between SBP 140–159 mmHg and DBP 90–109 mmHg are considered non-severe hypertension, while SBP ≥160 mmHg and/or DBP ≥110 mmHg are considered severe hypertension [3,4]. It is frequently referred to as a silent killer because it elevates the risk of heart attacks, strokes, and other related medical conditions, often without any early signs or symptoms [5,6].

The World Health Organization identifies hypertension as a major risk factor contributing to global morbidity and mortality [1]. It affects approximately 1.3 billion adults aged 30–79 years worldwide, with nearly two-thirds living in low- and middle-income countries. Even with effective treatment, blood pressure control remains poor in many countries [2,7]. The prevalence of hypertension-related issues in Nepal has been steadily rising in tandem with urbanisation and lifestyle changes. As per the data of the nationally representative STEPS survey, the prevalence of hypertension in adults of Nepal augmented from 21.5% in 2007 to 24.5% in 2019, and was expected to reach 32.5% by 2025 [8]. Nepal has been part of the campaign of the International Society of Hypertension (ISH), which initiated a global blood pressure measurement campaign, May Measure Month (MMM), to promote awareness about blood pressure measurement and promote healthy lifestyle choices to prevent and manage hypertension [9]. Since its inception, Nepal has screened over 150,000 individuals in the MMM campaign by 2020 and found hypertension in 24.4% of participants in 2017 [10], 27.8% in 2018 [11], and 27.5% in 2019 [12]. But the National Demographic and Health Survey (NDHS) 2022 found the national prevalence of hypertension was 20.0% [8, 13] which could be due to campaigns like MMM, which might have raised awareness among the general public.

Knowledge and awareness play a vital role in the prevention and control of hypertension. Individuals who know about blood pressure, its healthy range, and risk factors are more likely to undertake regular screening, adopt

healthy lifestyles and adhere to treatment. However, inadequate or poor knowledge results in gaps in the hypertension care cascade comprising delayed diagnosis, inadequate treatment and poor blood pressure control [14].

Previous community-based research literature in urbanising areas of Nepal revealed gaps in cardiovascular health knowledge, attitudes, and practices among residents, emphasising the need for targeted community health education [8,12,15]. Health promotion along with prevention strategies, such as screening and lifelong personalized management of risk factors and lifestyle interventions, are likely to positively impact cardiovascular disease incidence and its effects on personal, social and economic outcomes [16,17].

In this regard, sub-metropolitan and urban wards in Nepal are of major concern. One of the rapidly urbanising areas, the capital of Madhesh Province, Janakpurdham, experiences lifestyle changes, unhealthy dietary habits, reduced physical activity, and psychosocial stress, which are known risks of hypertension. However, community-level knowledge and awareness remain scarce and vary unequally across age groups, education levels and occupations at the local level. National data on hypertension prevalence and the care cascade are available [8-12]; however, community-based, ward-level evidence on residents' blood pressure, hypertension, and associated risk factors is not accessible in the available published literature. Thus, the local evidence on hypertension is essential for designing targeted hypertension and awareness programs in Sub-metropolitan City, Janakpur Dham. To address this gap, the present study was undertaken to assess the level of knowledge regarding hypertension and its associated risks among residents of a selected ward of a sub-metropolitan city.

MATERIALS AND METHODS

Study design and site

This descriptive cross-sectional study was carried out at Janakpurdham in February and March 2023. Janakpurdham is a sub-metropolitan city located about 225km south-east of Kathmandu. It consists of 25 wards in Dhanusha district in the Madhesh Province of Nepal. Ward No. 4 of Janakpurdham Sub-metropolitan City was purposively selected because it had a sufficiently large residential population to achieve the required sample size and was easily accessible for data collection.

Sample Size Estimation

The sample size was calculated using the formula,

$$n = \frac{Z^2 p(1-p)}{d^2}$$

Where:

$Z = 1.96$(95% confidence level)

$p = 0.50$(maximum variability)

$d = 0.06$(6% margin of error)

$$n = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.06)^2} = \frac{3.8416 \times 0.25}{0.0036} = 266.8$$

The required minimum sample size is 267 participants.

Assuming a 5% non-response rate:

$267 + (267 \times 0.05) = 280.35$

Thus, the final sample size = 280 participants.

Sampling Technique and Data Collection

A convenience (non-probability) sampling method was applied. A total of 280 individuals aged between 30–60 years residing in the selected ward of the sub-metropolitan city were included in the study. Data were collected using a modified structured interviewer-administered questionnaire developed from a review of the relevant literature and expert opinion. Forty final-year Health Assistant (HA) students from Mithila Technical Academy (MTA), Janakpurdham, served as data collectors. They were divided into 10 groups of four interviewers and were trained by the principal investigator on the study objectives, questionnaire administration, and accurate blood pressure measurement before data collection.

A total of 300 households were visited, of which 20 eligible household members declined to participate. The study objectives were explained to all participants, and their questions were answered before the interview. Written informed consent was obtained before the interview. Participation was voluntary, and participants could withdraw at any stage without any consequences. Interviews were conducted in Nepali or the local language according to the participant's preference to ensure better understanding.

Blood Pressure Measurement

Blood pressure was measured according to the manufacturers' instructions using an automated digital sphygmomanometer, Trust Check Expert, Automatic upper arm blood pressure monitor (Model no: HL888HC) manufactured by Health and Life Co., LTD, New Taipei City, Taiwan. Blood pressure of participants was measured in the seated position after resting quietly for at least 5 minutes, with their back supported, feet flat on the floor, and the arm supported at heart level. An appropriately sized upper-arm cuff was selected based on the participant's arm circumference. Two blood pressure measurements were obtained with an interval of 1–2 minutes between readings, and the average of the two readings was used for analysis. Measurements were taken in a quiet environment during the study visit.

Inclusion and Exclusion Criteria

One adult aged 30–60 years was selected from each household. Participants who had lived in the ward for at least six months, were willing to participate, provided written informed consent, and could communicate in Nepali or the local language were included in the study.

Individuals with cognitive impairment, severe mental illness, hearing or speech disabilities, acute febrile illness, or critical illness were excluded. Participants who did not give informed consent or had lived in the ward for less than six months were also excluded.

Data analysis

All completed questionnaires were checked on the same day for completeness and consistency. Data were entered and analyzed using IBM SPSS Statistics version 26. The chi-square test was used to assess the association between categorical variables. A p-value of <0.05 was considered statistically significant.

Ethical considerations

Institutional Review Committee of Janaki Medical College provided ethical approval for this study (Ref: IRC/53/2079-080).

RESULTS

Among the total study population, the highest number of participants were between 30–40 years old, 27.2% male and 72.7% female, followed by those aged 41–50 years. The results are shown in Table 1.

Fig. 1 shows that the majority of the study population were married (94%), followed by unmarried (5%) and divorced (1%).

Table 2 shows a greater number of study population were illiterate. More than 50 % of population had secondary education of 41 % were male and 58% were female followed by primary education population of 19% were male and 81% were female. Least number of study population had higher level education of 68% were male and 32% were female.

Fig. 2 illustrates the largest proportion of the study population had a normal blood pressure level, comprising 42% males and 58% females. This was followed by hypertension, observed in 48% of males and 52% of females. Hypotension was found among one-fourth of the study population, with a male-to-female distribution of 22% and 78%, respectively.

Table 1: Age-and Gender-wise distribution of study population

Age group (years)	Gender		Total
	Male (%)	Female (%)	
30-40	43(27.2)	115 (72.7)	158
41-50	35(50)	35 (50)	70
51-60	22(42.3)	30 (57.6)	52
Total	100 (35.7)	180 (64.2)	280

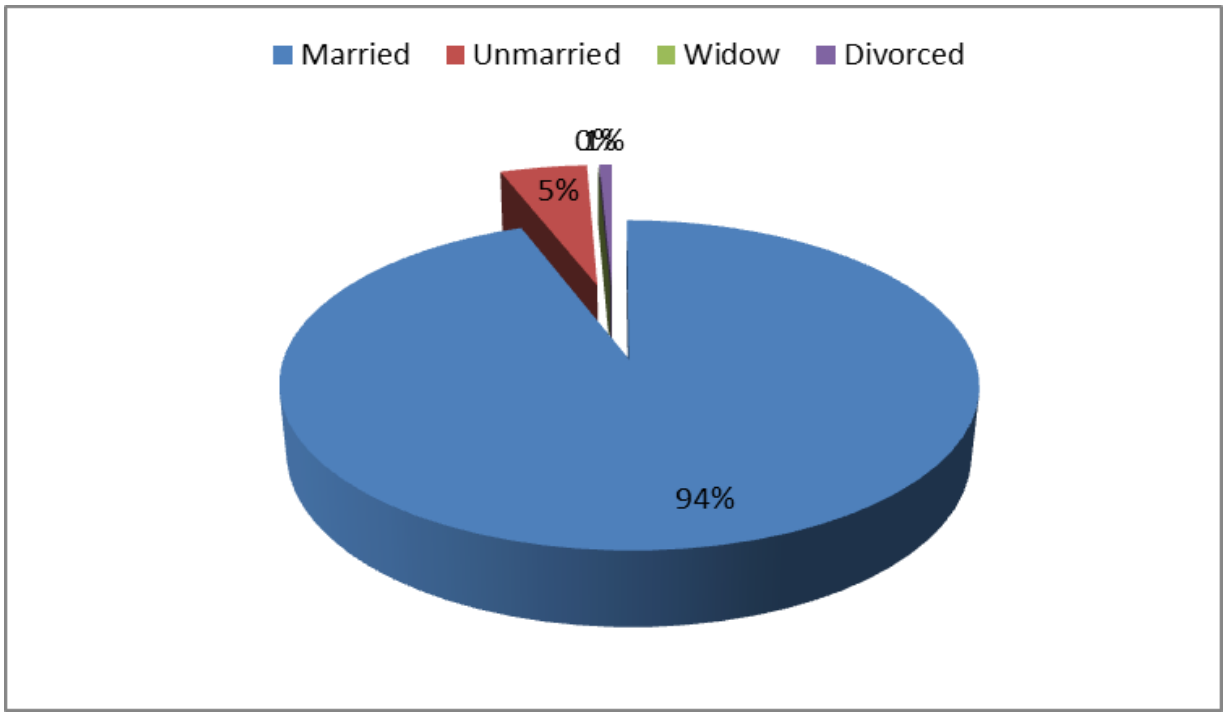

Fig. 1 Marital Status of study population

Table 2: Pattern of education level among study population

Education level	Gender		Total
	Male (%)	Female (%)	
Illiterate	37 (31.3)	83(70.3)	118
Primary	10(18.5)	44(81.4)	54
Secondary	28(41.1)	40(58.8)	68
Higher	25(67.5)	12(32.4)	37
Total	100 (35.7)	180 (64.2)	280

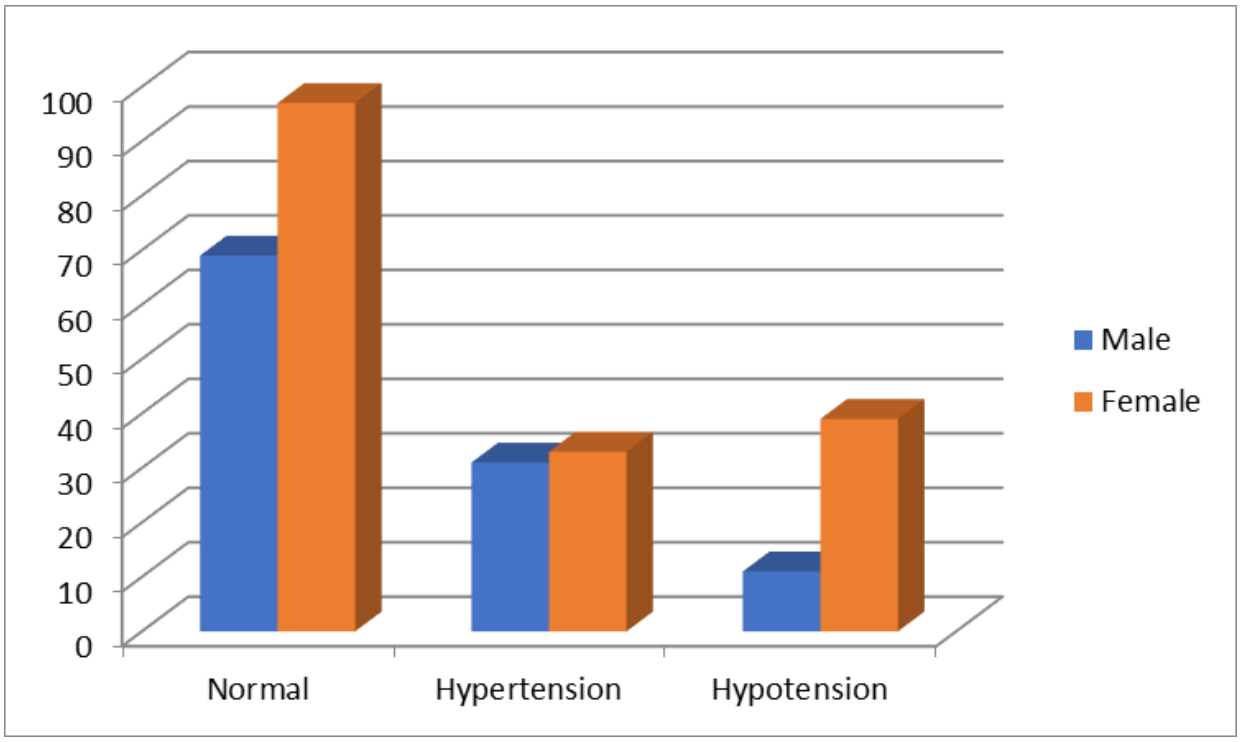

Fig. 2 Blood pressure status among the study population

As depicted in Table 3, regarding the normal blood pressure range, the maximum number of the study population, comprising 59.1% male and 40.8% female, gave a false response. More than 50% of the study population, comprising 59.6% male and 40.3% female, gave a true response, while 34.7% male and 65.2% female responded as "don't know."

For the knowledge regarding the hypertensive blood pressure threshold (systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥90 mmHg), 55.5% of males and 44.4% of females gave the correct response. Conversely, 54.5% of males and 45.4% of females gave an incorrect response.

The majority of respondents, comprising 71.4% of males and 28.5% of females, were not sure that people with high blood pressure can behave abnormally. In comparison, a true response was given by 54.7% of males and 45.2% of females, while a false response was reported by 38.7% of males and 61.2% of females.

Regarding the statement that people with hypertension do not need medication if they exercise daily, most participants either

Table 3: Knowledge regarding blood pressure among study population

S. No	Blood Pressure Questions (BPQ)	Gender		Total
		Male (%)	Female (%)	
1.	**A healthy human's normal blood Pressure is 120/80 mm/Hg**			
	True	68 (59.6)	46 (40.3)	114
	False	71 (59.1)	49 (40.8)	120
	Don't know	16 (34.7)	30 (65.2)	46
2.	**A person is considered to be hypertensive when systolic blood pressure is 140 or their diastolic blood pressure is 90 or higher on two separate occasions**			
	True	75(55.5)	60 (44.4)	135
	False	30 (54.5)	25 (45.4)	55
	Don't know	50(55.5)	40(44.4)	90
3.	**People with high blood pressure can behave abnormally**			
	True	52 (54.7)	43(45.2)	95
	False	31(38.7)	49(61.2)	80
	Don't know	75(71.4)	30(28.5)	105
4.	**People with hypertension do not need to take medicine if they exercise daily.**			
	True	83(59.2)	57(40.7)	140
	False	65(60.1)	43(39.8)	108
	Don't know	18(56.2)	14(43.7)	32
5.	**Most of the hypertensive people need more than one kind of blood pressure medicine to control their blood pressure**			
	True	81(50.9)	78 (49.06)	159
	False	43(52.4)	39(47.5)	82
	Don't know	18(46.1)	21 (53.8)	39
6.	**Which of the following increases the risk of hypertension?**			
	Fast foods	39 (65)	21(35)	60
	Caffeine	19(39.5)	29(60.4)	48
	Cigarette Smoking	49(63.6)	28(36.3)	77
	Salt Intake	50(72.4)	19(27.5)	69
	Don't know	15(57.6)	11(42.3)	26
7.	**Which of the following changes in diet is most likely to lower high blood pressure**			
	Eating more fruits, vegetables, whole grains and low-fat dairy products	58(60.4)	38(39.5)	96
	Eliminating spicy foods	30(71.4)	12(28.5)	42
	Drinking one glass of red wine daily	45 (70.3)	19(29.7)	64
	Drinking herbal tea instead of Coffee	43(87.8)	6 (12.2)	49
	Don't know	13(44.8)	16(55.1)	29
8.	**The blood pressure for a 70-year-old man with no other health problems taking medicine for HTN should be**			
	Less than 120/80mmHg	54 (68.3)	25(31.6)	79
	Less than 130/80mmHg	33(80.4)	8(19.5)	41
	Less than 160/90 mmHg	41(56.9)	31(43.06)	72
	Less than 140/90mmHg	37(58.7)	26(41.2)	63
	Don't know	16(64)	9(36)	25
9.	**A man reports that his blood pressure is 148/78 when he checks it using the BP machine in the pharmacy, 144/66 in his family doctor's office, and 132/74 when he checks it at home. Which of the following statements is TRUE?**			
	It is common for blood pressure readings to vary like this.	27(58.6)	19(41.3)	46
	The highest blood pressure reading is the correct one	13(29.5)	31(70.4)	44
	The lowest blood pressure reading is the correct one	37(51.3)	35(48.6)	72
	He/she can be reassured that his blood pressure is normal	44(53.01)	39(46.9)	83
	Don't know	17(48.5)	18(51.4)	35
10.	**Uncontrolled HTN can lead to**			
	Lung cancer	32(56.1)	25(43.8)	57
	Kidney failure	55(68.7)	25(31.2)	80
	High cholesterol	38(65.5)	20(34.4)	58
	Diabetes	21(40.3)	31(59.6)	52
	Don't know	19(57.6)	14(42.4)	33

Table 4: Knowledge regarding risk factors and symptoms of Blood Pressure

Q. No	Blood Pressure Questions (BPQ)	Yes		No		Don't know		Total
		Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)	
1.	**The risk factors for high blood pressure are**							
	a. Alcohol	10 (17.2)	15 (25.8)	8 (13.7)	10 (17.2)	7 (12.07)	8 (13.7)	58
	b. Smoking	12 (20)	14 (23.3)	10 (16.6)	13 (21.6)	6 (10)	5 (8.33)	60
	c. Sleep apnea	8(21.05)	9(23.6)	8 (21.0)	7(18.4)	4(10.5)	2(5.26)	38
	d. Stress	15 (22.06)	20 (29.4)	12 (17.6)	8 (11.7)	7 (10.2)	6 (8.82)	68
	e. Age/Race	14(25)	18(32.1)	9 (16.0)	8 (14.2)	4(7.14)	3 (5.35)	56
2.	**The different signs and symptoms seen in increased blood pressure are**							
	a. Dizziness	9 (14.06)	13 (20.3)	12 (18.7)	15 (23.4)	7 (10.9)	8 (12.5)	64
	b. Recurring Headache	19 (26.04)	21 (26.7)	10 (13.69)	12 (16.4)	4 (5.48)	7 (9.59)	73
	c. Nose bleeds	27 (26.7)	23 (22.7)	18 (17.8)	14 (13.8)	9 (8.91)	10 (9.9)	101
	d. Shortness of breath	13 (30.9)	10 (23.8)	8 (19.05)	6 (14.2)	2 (4.76)	3 (7.14)	42
3.	**High blood pressure can cause**							
	a. Heart Disease	20 (27.03)	14 (18.9)	19 (25.6)	10 (13.5)	5 (6.76)	6 (8.11)	74
	b. Cancer	8 (23.5)	10 (29.4)	7 (20.5)	5 (14.7)	3 (8.82)	1 (2.94)	34
	c. Erectile dysfunction	7 (28)	5 (20)	3 (12)	2 (18)	5 (20)	3 (12)	25
	d. Brain Stroke	10 (22.2)	12 (26.6)	9 (20)	7 (15.5)	3 (6.67)	4 (8.89)	45
	e. Kidney disease	5 (20.8)	6 (25)	3 (12.5)	7 (29.1)	2 (8.33)	1 (4.16)	24
	f. Pulmonary disease	6 (22.2)	7 (25.9)	4 (14.8)	5 (18.5)	3 (11.1)	2 (7.4)	27
	g. Kidney Failure	3 (16.6)	4 (22.2)	5 (27.7)	2 (11.1)	3 (16.6)	1 (5.55)	18
	h. Retinopathy	3 (23.08)	2 (15.3)	1 (7.69)	3 (23.07)	4 (30.7)	0 (0)	13
	i.Thyroid disease	9 (45)	5 (25)	2 (10)	4 (20)	0 (0)	0 (0)	20

disagreed, 60.1% were males and 39.8% were females. Similarly, among those who were unsure, 56.2% were males and 43.7% were females. Approximately 50% male and female participants correctly agreed that most hypertensive patients need more than one type of blood pressure medicine to control their blood pressure, while 52.4% of males and 47.5% of females disagreed, and

46.1% of males and 53.8% of females responded "don't know."

Similarly, 63.6% of males and 36.3% of females identified cigarette smoking as a risk factor for hypertension. This was followed by salt intake, fast food consumption, and caffeine. Only a small proportion of participants did not know the risk factors for hypertension. The results are presented in Table 3.

Among the signs and symptoms of high blood pressure, nosebleeds were the most commonly recognized symptom, reported by 27% of males and 23% of females. This was followed by recurring headache, reported by 26% of males and 27% of females. Regarding the complications of high blood pressure, heart disease was the most commonly identified complication, reported by 27% of males and 19% of females. This was followed by brain stroke, reported by 22% of males and 27% of females, and other complications. The findings are presented in Table 4.

There was no significant relation between blood pressure of the study population and gender at p -value = 0.183. The results are shown in Table 5.

There was no significant association between the blood pressure of the study population and education level p= 0.86. The results are shown in Table 6.

DISCUSSION

In the present study, 35.7% of the participants were male and 64.2% were female. A total of 158 (56.4%) participants were in the age of 30–40 years, of whom 27.2% were male and 72.7% were female. The highest proportion of participants belonged to the 30–40-year age group, followed by those aged 41–50 years. In a similar study, 27.9% of respondents were aged 31-40 years [18], which is not similar to our findings regarding the predominant age group. However, 52.7% of males and 47.3% of female's population differed in gender distribution, but females constituted the majority (64.2%) in our study as compared with the findings of Basnet S [18]. A comparable study conducted in Uttara, Dhaka, similarly reported 31.8% male and 68.2% female participants [19], which is in proximity to our findings. The inconsistencies observed in gender distribution may be explained by heterogeneity across study settings, differences in participant availability

Table 5. Association of blood pressure in relation to gender

Blood Pressure	Gender		Total	P-value
	Male	Female		
Normal	69	97	166	**0.183**
Hypertension	31	33	64	
Hypotension	11	39	50	
Total	**111**	**169**	**280**	

Table 6. Association of blood pressure of study population in relation to education

Blood pressure	Illiterate	Primary education	Secondary education	Tertiary education	Total	p-value
Normal	81	30	35	20	166	**0.86**
Hypertension	21	12	21	10	64	
Hypotension	19	12	12	7	50	
Total	**121**	**54**	**68**	**37**	**280**	

during data collection, and socio-cultural influences.

In this study, participants who incorrectly identified the normal blood pressure range were predominantly male (59.1%), while females accounted for 40.8%. Among those who correctly identified the normal range, 59.6% were male and 40.3% were female. However, females represented a higher proportion among participants who did not know the normal blood pressure range (65.2%). The findings are comparable with the studies from Bangladesh, where 78% of respondents correctly identified the normal blood pressure value [19,20] and Bhaktapur, Nepal, where 58% had correct knowledge [6]. Similarly, Basnet S [18] reported higher awareness (82.3%) in Biratnagar, Nepal. Variations in knowledge levels may be linked to differences in education, access to healthcare, study environments, and participation in awareness programs. By contrast, Yao et al. [21] found that awareness was lower in Tibet, where fewer than one-third of participants were able to report the normal blood pressure range.

Regarding the diagnostic threshold for hypertension (blood pressure ≥140/90 mmHg), 55% of males and 44.4% of females correctly identified the hypertensive blood pressure value. However, 54.5% of males and 45.4% of females responded incorrectly. Similar findings were reported in a tertiary care hospital-based study from Jharkhand, India, where nearly 40% of adults had inadequate knowledge of hypertension [22]. In contrast, Basnet S reported a higher level of awareness, with 82.3% of participants correctly recognizing hypertension as blood pressure above the normal range [18]. These variations may be due to differences in study settings, educational status, and exposure to health education programs.

Our study revealed that most participants had inadequate knowledge regarding the misconception that people with hypertension can behave abnormally. Of the incorrect responses, 71.4% were from males and 28.5% were from females. In contrast, 54.7% of the correct responses were from males and 45.2% were from females. Overall, 38.7% of males and 61.2% of females gave incorrect responses. These findings indicate persistent misconceptions about hypertension manifestations. Similar findings were reported in rural South India, where only 31% of participants knew the adverse effects of hypertension and 48% could not identify any risk factor [23]. Likewise, an analysis of the National Family Health Survey-4 conducted by Grover et al. [24] also showed that awareness of hypertension was low among both men and women in India, with only 34.7% of men and 53.6% of women demonstrating adequate awareness. These gaps may reflect limited health literacy and the need for effective community-based health education.

In this study, among participants who correctly responded that antihypertensive medication should be continued despite regular exercise, 59.2% were males and 40.7% were females. However, 60.1% of males and 39.8% of females gave incorrect responses, while 56.2% of males and 43.7% of females were uncertain, suggesting persistent misconceptions regarding hypertension treatment. Similar knowledge gaps were reported in eastern Saudi Arabia, where only 10.3% of hypertensive patients demonstrated a high level of hypertension-related knowledge, with drug compliance

being the least understood domain [25]. Likewise, Thirunavukkarasu et al. reported inadequate knowledge among 49.2% and poor medication adherence among 40.8% of hypertensive patients in the Aljouf region of Saudi Arabia [26]. These findings suggest that patient education should emphasize that regular exercise supports hypertension management but does not replace prescribed antihypertensive medication.

In our study, most participants correctly identified cigarette smoking as a risk factor for hypertension, with 63.6% of males and 36.3% of females providing the correct response. Awareness was also observed regarding other modifiable risk factors, including excessive salt intake, fast food consumption, and caffeine intake, while only a few participants were unaware of hypertension risk factors. Similar findings were reported in Morang, Nepal, where 86.3% of respondents recognized excessive salt intake, and 74.7% identified tobacco and alcohol consumption as risk factors [18]. Likewise, a study from Ethiopia found that 80.0% recognized excessive salt intake and 67.5% identified smoking as major risk factors [27]. These findings suggest that smoking and salt intake are commonly recognized risk factors, although awareness of other lifestyle-related factors varies among populations.

The present study depicted that 60.4% of males and 39.5% of females correctly identified that consumption of fruits, vegetables, whole grains, and low-fat dairy products can help lower blood pressure. However, misconceptions regarding the benefits of red wine, herbal tea, and avoidance of spicy foods were also observed. Similar evidence from the DASH trial showed that a diet rich in fruits, vegetables, whole grains, and low-fat dairy products reduced systolic blood pressure by 5.5 mmHg and diastolic blood pressure by 3.0 mmHg compared with a control diet [28]. The DASH-Sodium trial further demonstrated additional blood pressure reduction with combined DASH diet and reduced sodium intake [29]. These findings emphasize the importance of nutrition education to improve awareness and promote evidence-based dietary practices for hypertension management.

Most respondents believed that the target blood pressure for a 70-year-old man with hypertension should be <120/80 mmHg. This response was given by 68.3% of males and 38.6% of females. However, only about one-third of the participants selected the recommended target of <130/80 mmHg. This suggests that many participants confused normal blood pressure values with treatment goals. The 2023 European Society of Hypertension (ESH) guideline recommends individualized blood pressure targets, with an initial goal of <140/90 mmHg followed by <130/80 mmHg if tolerated [30]. Similarly, the 2017 ACC/AHA guideline recommends a target of <130/80 mmHg for most adults receiving antihypertensive therapy [31]. These findings suggest the need for improved awareness regarding evidence-based blood pressure targets.

In our study, 53.0% of females and 46.9% of males believed that blood pressure readings of 148/78 mmHg at a pharmacy, 144/66 mmHg at a physician's office, and 132/74 mmHg at home represent the normal blood pressure. Many participants also assumed that the lowest blood pressure reading is always the most accurate. These misconceptions highlight gaps in participants'

understanding of blood pressure interpretation across different measurement settings. Current guidelines emphasize that office, home, and ambulatory blood pressure measurements have different diagnostic thresholds and should be interpreted based on repeated standardized measurements rather than a single or lowest value [30,31]. Home blood pressure monitoring also improves diagnostic accuracy and helps identify white-coat and masked hypertension [32]. These findings suggest the need for community education to improve awareness regarding proper blood pressure measurement and interpretation.

In this study, most respondents correctly identified uncontrolled hypertension as a cause of kidney failure, with 68.7% of males and 31.2% of females providing the correct response. However, misconceptions regarding high cholesterol and lung cancer as direct complications of hypertension were observed, suggesting confusion between complications and risk factors. Uncontrolled hypertension can cause progressive vascular and renal damage and is associated with complications such as stroke, coronary artery disease, heart failure, chronic kidney disease, and hypertensive retinopathy [30,31,33]. These findings indicate the need for targeted health education to improve awareness of hypertension complications.

Our study demonstrated that no significant association was observed between blood pressure status and educational level (p=0.86), indicating that hypertension prevalence did not differ across educational categories. Although education may influence health awareness and behaviours, blood pressure status is also affected by factors such as age, obesity, dietary habits, physical inactivity, socioeconomic status, and healthcare access. Similar findings have been reported from community-based studies in Bangladesh and Ethiopia, where multiple demographic and lifestyle factors contributed to hypertension risk [34,35]. Global evidence also suggests that socioeconomic and educational inequalities influence hypertension awareness, treatment, and control [36].

Similarly, no significant association was found between blood pressure status and gender (p = 0.183). This indicates that blood pressure status did not differ significantly between men and women in this study. Although population-based studies have reported sex differences in hypertension prevalence, hypertension is influenced by multiple biological, behavioural, and environmental factors. Therefore, the lack of a significant association in the present study should be interpreted with caution and may reflect the characteristics of the study population [1,8,30,36]. Although this study provides various useful insights, limitations such as cross-sectional design, convenience sampling, single-ward setting, small sample size, self-reported data, use of student interviewers, and lack of formal questionnaire validation should be considered. Therefore, the findings may have limited generalizability to the wider population.

CONCLUSIONS

The study found that knowledge of hypertension among the participants was satisfactory, with several misconceptions about its causes, symptoms, treatment, and complications. Although some participants were aware of common risk factors and preventive measures, important knowledge

gaps remained. These findings highlight the need for community-based health education to improve awareness and promote better prevention and management of hypertension at local as well as national levels.

ACKNOWLEDGEMENT

We sincerely thank all the participants for their valuable time and final year MTA Students for their active participation during data collection in this study. We also express our gratitude to Janaki Medical College for providing the ethical approval and all the faculty members involved in this research for their active participation throughout the study period.

AUTHOR'S CONTRIBUTION:

Conceptualization, study design, supervision, data collection, literature review, statistical analysis, and manuscript drafting and final revision-**KY;** study design, manuscript review, editing the 2nd draft, Final Revision-**SP, NPY**; data interpretation, involved in writing the 1st draft and reference management-**RN;** Data interpretation, manuscript review and Revision -**OPY**; Revised second draft, checked and verified all references and citations- **BKY**. All authors read and approved the final manuscript towards publication.

CONFLICT OF INTEREST: None declared

FUNDING: None

REFERENCES

1. World Health Organization. *Global report on hypertension: the race against a silent killer* [Internet]. Geneva: World Health Organization; 2023 [cited 2026 May 04]. Available from: https://www.who.int/publications/i/item/9789240081062
2. World Health Organization. Hypertension [Internet]. Geneva: World Health Organization; 2025 [cited 2026 May 04]. Available from: https://www.who.int/news-room/fact-sheets/detail/hypertension
3. Bernstein PS, Martin JN Jr, Barton JR, Shields LE, Druzin ML, Scavone BM, et al. Consensus bundle on severe hypertension during pregnancy and the postpartum period. J Obstet Gynecol Neonatal Nurs 2017;46(5):776–87. doi:10.1016/j.jogn.2017.07.004
4. Prakash S, Pandeya DR, Jitendra KS, Yadav K. Blood pressure measurement among women of reproductive age in Southern Nepal. J Nephrol Hypertens 2020;3(1):1013.
5. Khoury SR, Ratchford EV. Hypertension. Vasc Med 2018;23(3):293–7. doi:10.1177/1358863X18775488
6. Pokhrel S, KC T. Awareness regarding hypertension among adults in a community of Bhaktapur, Nepal. J Inst Med Nepal 2019;41(3):24–29. doi:10.59779/jiomnepal.1057
7. NCD Risk Factor Collaboration (NCD-RisC). Worldwide trends in hypertension prevalence and progress in treatment and control from 1990 to 2019: a pooled analysis of 1201 population-representative studies with 104 million participants. Lancet. 2021;398(10304):957–980. doi:10.1016/S0140-6736(21)01330-1.
8. Dhimal M, Bista B, Bhattarai S, Dixit LP, Hyder MKA, Agrawal N, et al. Report of noncommunicable disease risk factors: STEPS survey Nepal 2019. Kathmandu: Nepal Health Research Council; 2020.
9. Beaney T, Schutte AE, Stergiou GS, Borghi C, Burger D, Charchar F, et al. May Measurement Month 2019: the global blood pressure screening campaign of the International Society of Hypertension. Hypertension 2020;76(2):333–41. doi:10.1161/HYPERTENSIONAHA.120.14874
10. Mishra SR, Shrestha N, Poudyal IP, Malla M, Gyawali B, Shrestha AD, et al. May Measurement Month 2017: an analysis of blood pressure screening results in Nepal—South Asia. Eur Heart J Suppl 2019;21(Suppl D):D83–5. doi:10.1093/eurheartj/suz041
11. Adhikari TB, Bhattarai H, Ranabhat K, Khanal P, Mishra SR, Koirala S, et al. May

Measurement Month 2018: an analysis of blood pressure screening results from Nepal. Eur Heart J Suppl. 2020;22(Suppl H): H92–5. doi:10.1093/eurheartj/suaa046

12. Bhattarai H, McLachlan CS, Khanal P, Adhikari TB, Ranabhat K, Koirala S, et al. May Measurement Month 2019: an analysis of blood pressure screening results from Nepal. Eur Heart J Suppl 2021;23(Suppl B):B110–3. doi:10.1093/eurheartj/suab047
13. Dhungana RR, Pandey AR, Shrestha N. Trends in the prevalence, awareness, treatment, and control of hypertension in Nepal between 2000 and 2020: a systematic review and meta-analysis. Int J Hypertens 2021;2021:6610649. doi:10.1155/2021/6610649.
14. Neupane D, Shrestha A, Mishra SR, et al. Awareness, prevalence, treatment, and control of hypertension in Western Nepal. Am J Hypertens 2017;30(9):907–13. doi:10.1093/ajh/hpx085.
15. Vaidya A, Aryal UR, Krettek A. Cardiovascular health knowledge, attitude and practice/behaviour in an urbanising community of Nepal: a population-based cross-sectional study from the Jhaukhel-Duwakot Health Demographic Surveillance Site. BMJ Open 2013;3:e002976. doi:10.1136/bmjopen-2013-002976.
16. Lurbe E, Ingelfinger J. Developmental and early life origins of cardiometabolic risk factors: novel findings and implications. Hypertension 2021;77(2):308–18. doi:10.1161/HYPERTENSIONAHA.120.16458.
17. Mainieri F, La Bella S, Chiarelli F. Hyperlipidemia and cardiovascular risk in children and adolescents. Biomedicines. 2023;11(3):809. doi:10.3390/biomedicines11030809.
18. Basnet S. Knowledge on hypertension among adult people in Morang, Nepal. Purbanchal Univ Health J 2024;2(1):7–12. doi:10.3126/puhj.v2i1.74943.
19. Akter A, Ahmed M, Chowdhury MZ, Karim F. Knowledge, attitudes, and practices related to hypertension among adult people in selected areas of Uttara, Dhaka, Bangladesh. East West Med Coll J 2025;13(2):125–30. doi:10.3329/ewmcj.v13i2.79433.
20. Rahman MN, Alam SS, Mia MA, et al. Knowledge, attitude and practice about hypertension among adult people of selected areas of Bangladesh. MOJ Public Health 2018;7(4):211–14. doi:10.15406/mojph.2018.07.00231.
21. Yao DK, Su W, Zheng X, Wang LX. Knowledge and understanding of hypertension among Tibetan people in Lhasa, Tibet. Heart Lung Circ 2016;25(6):600–6. doi:10.1016/j.hlc.2015.11.007.
22. Ranjan A, Agarwal R, Mudgal SK, et al. Determinants and knowledge of hypertension among adult population visited in out-patients department of a tertiary care centre: a cross-sectional study. Discov Public Health 2025;22:163. doi:10.1007/s44197-025-00290-5.
23. Businge D, Arabshahi S, Evans RG, Riddell MA, Srikanth VK, Kartik K, et al. Knowledge of risk factors for hypertension in a rural Indian population. Heart Asia 2019;11(1):e011136. doi:10.1136/heartasia-2018-011136.
24. Grover A, Venkatesh U, Ghai G, Babu V, Aggarwal S, Singh R, et al. Prevalence and associated factors for awareness of hypertension in India: findings from National Family Health Survey-4. J Fam Med Prim Care 2022;11(9):5766–75. doi:10.4103/jfmpc.jfmpc_173_22.
25. Al-Hazmi AH, Alqahtani SA, Alghamdi AM, et al. Hypertension-related knowledge among hypertensive patients attending primary healthcare centers in Eastern Saudi Arabia: a cross-sectional study. BMC Prim Care 2025;26:36. doi:10.1186/s12875-025-02718-9.
26. Thirunavukkarasu A, Alshammari SA, Alenezi AA, et al. Knowledge of hypertension and medication adherence among hypertensive patients in the Aljouf region, Saudi Arabia: a cross-sectional study. Healthcare (Basel) 2024;12(22):2268. doi:10.3390/healthcare12222268.
27. Chekol HR, Demissie NG, Mekonnen CK. Awareness of hypertension-related complications and its determinants among adult hypertensive patients in Ethiopia. Front Cardiovasc Med 2025;12:1563249. doi:10.3389/fcvm.2025.1563249.
28. Appel LJ, Moore TJ, Obarzanek E, Vollmer WM, Svetkey LP, Sacks FM, et al.; DASH Collaborative Research Group. A clinical trial of the effects of dietary patterns on blood pressure. N Engl J Med 1997;336(16):1117–24. doi:10.1056/NEJM199704173361601.

29. Sacks FM, Svetkey LP, Vollmer WM, Appel LJ, Bray GA, Harsha D, et al.; DASH-Sodium Collaborative Research Group. Effects on blood pressure of reduced dietary sodium and the Dietary Approaches to Stop Hypertension (DASH) diet. N Engl J Med 2001;344(1):3–10. doi:10.1056/NEJM200101043440101.
30. Mancia G, Kreutz R, Brunström M, Burnier M, Grassi G, Januszewicz A, et al. 2023 ESH guidelines for the management of arterial hypertension. J Hypertens 2023;41(12):1874–2071. doi:10.1097/HJH.0000000000003480.
31. Whelton PK, Carey RM, Aronow WS, Casey DE Jr, Collins KJ, Dennison Himmelfarb C, et al. 2017 ACC/AHA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults. Circulation 2018;138(17):e484–94. doi:10.1161/CIR.0000000000000596.
32. Mizuno H, Choi E, Kario K, Muntner P, Fang CL, Liu J, et al. Diagnostic accuracy of office blood pressure measurement and home blood pressure monitoring for hypertension screening among adults: results from the IDH study. J Am Heart Assoc 2023;12(24):e030150. doi:10.1161/JAHA.123.030150.
33. Ku E, Lee BJ, Wei J, Weir MR. Hypertension in chronic kidney disease: Core Curriculum 2023. Am J Kidney Dis 2023;81(1):87–102. doi:10.1053/j.ajkd.2022.06.008.
34. Khanam MA, Lindeboom W, Razzaque A, Niessen L, Milton AH. Prevalence and determinants of pre-hypertension and hypertension among adults in rural Bangladesh: findings from a community-based study. BMC Public Health 2015;15:203. doi:10.1186/s12889-015-1520-0.
35. Awoke A, Awoke T, Alemu S, Megabiaw B. Prevalence and associated factors of hypertension among adults in Gondar, northwest Ethiopia: a community-based cross-sectional study. BMC Cardiovasc Disord 2012;12:113. doi:10.1186/1471-2261-12-113.
36. Mills KT, Stefanescu A, He J. The global epidemiology of hypertension. Nat Rev Nephrol 2020;16(4):223–37. doi:10.1038/s41581-019-0244-2.