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Prevalence and Associated Risk Factors of Hypertension in the Community of Jamshoro

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Abstract

Background: The WHO estimates that 1.28 billion adults worldwide suffer from hypertension, making it a growing public health concern, particularly in low-resource settings. Many risk factors influenced such as age, obesity, poor diet, physical inactivity, and family history. However, research indicates that many communities still lack of awareness and knowledge of these factors. The objective of this study was to determine the prevalence and associated risk factors of hypertension in adults in district Jamshoro. Methodology: A cross-sectional study was conducted in district Jamshoro, A non probability convenience sampling was used and total 160 participate included in the study ages (≥18 years). Data were collect through face to face personal interviewed with an adopted multilingual questionnaire covering demographics, lifestyle, medical history, and BMI. Descriptive statistics (frequencies and percentages) were used, and Chi-square tests in SPSS v27 assessed

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associations, with $p < 0.05$ considered significant. Informed consent and ethical approval were obtained. Results: Among the 160 participants, 35.6% were found to be hypertensive. Significant associations with hypertension were observed for age, marital status, current smoking, family history of hypertension, and medication non-compliance ($p < 0.05$). No significant associations were found with dietary habits or awareness of physical activity. However, a significant association was observed between the belief that obesity ($p = 0.022$) and inappropriate sleep ($p = 0.038$) can cause hypertension. Although BMI was not significantly associated overall ($p = 0.194$), a linear trend suggested that increasing BMI may elevate the risk of hypertension ($p = 0.070$). Conclusion: The study found that more than one-third of the participants had high blood pressure, with significant associations found with age, marital status, current smoking, family history, and a moderate association with BMI. Additionally, hypertensive individuals exhibited higher awareness of factors such as obesity and poor sleep patterns. These findings underscore the importance of implementing targeted health interventions focused on lifestyle modifications and educational strategies to address hypertension risk factors.

INTRODUCTION

Hypertension, or persistently elevated arterial blood pressure, is a major public health issue and a leading risk factor for cardiovascular disease (CVD), stroke, renal failure, and premature mortality worldwide. Often referred to as a "silent killer" due to its asymptomatic nature in early stages, hypertension affects a growing segment of the adult population, especially in low- and middle-income countries [(1)]. The condition not only contributes significantly to the global burden of disease but also places a tremendous economic strain on health systems through increased healthcare utilization and lost productivity [(2)]. A 2005 study predicts that there will be 1.56 billion hypertensive individuals worldwide by 2025 [(3)]. According to 2025 study, globally an estimated that 1.28 billion adults aged 30 to 79 years are living with hypertension, with nearly 46% unaware of their condition and only 42% receiving treatment [(1)]. The WHO estimates that 1.13 billion people worldwide suffer from hypertension. Two-thirds of hypertensive patients originate from low and middle-income countries. In low- and middle-income nations, the prevalence of hypertension was 32.3%, whereas in South Asia, it was 29.4% [(3)]. People over 15 years in Pakistan have an 18% prevalence of hypertension, with 16.2% of people living in rural areas and 21.6% of people living in urban areas. In Pakistan, there are very few patients with managed hypertension. Nearly 5.5 million men and 5.3 million women in Pakistan suffer from hypertension, and 70% of the population is uninformed that they have the condition. One-third of Pakistanis over 45 years suffer from high blood pressure [(4)]. Over the past few decades, the global prevalence of hypertension has remained stable in high-income countries due to improved awareness, screening, and treatment, but has increased markedly in many low- and middle-income nations, driven by rapid urbanization, lifestyle changes, and aging populations [(5)]. The etiology of hypertension is multifactorial, encompassing both non-modifiable and modifiable risk factors. Non-modifiable factors include age, sex, race and family history of hypertension, while modifiable risk factors include low literacy rates, stress, alcohol consumption, high salt intake, obesity, sedentary lifestyles, and hypercholesterolemia [(6)]. The overall prevalence of

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hypertension is marginally higher in urban areas, despite the fact that these modifiable risk factors are more common in rural populations. Furthermore, people with low levels of education, men, the elderly, the wealthy, and those who use tobacco and alcohol are more likely to have hypertension.

Disparities in geography and socio demographics, including caste, religion, and marital status, also affect the risk of hypertension, underscoring the necessity of focused preventative measures [(7)]. Although hypertension is preventable, its risk is nevertheless increased by a lack of knowledge about important lifestyle factors, such as eating habits, medication adherence, and sleep patterns. This disparity emphasizes the urgent need for focused health education programs and tactics to increase treatment compliance and knowledge of modifiable risk factors [(8)]. Furthermore, preventing and managing hypertension is severely obstructed by a lack of technology, inadequate funding for health care, inadequate infrastructure, and medical illiteracy [(9)]. This study intends to highlight the prevalence and important risk factors of hypertension among papulation in Jamshoro Khuda Ki Basti by concentrating on a particular low-resource community. The results of a thorough examination of socioeconomic and lifestyle factors are meant to guide specific public health initiatives, facilitating better early detection, prevention, and treatment of hypertension in comparable impoverished environments. The research aims to inform local health authorities in designing targeted public health measures and ultimately reducing the risk and impact of hypertension among adult papulation.

METHODOLOGY

A community-based cross-sectional study was conducted to assessed the prevalence of hypertension and its associated risk factors among residents in Jamshoro at Khuda Ki Basti Kotri. A non-probability convenient sampling technique was used to recruit participants who were readily available and willing to take part in the study. This approach facilitated timely and efficient data collection. The sample size was calculated using the Rao software, assuming a 50% response rate and an unknown population size, resulting in a final sample of 160 participants. Data were collected through an adopted, ethically approved questionnaire administered via face-to-face interviews. To accommodate diverse language preferences and literacy levels, the questionnaire was provided in English, Urdu, and Sindhi. It comprised sections on socio-demographic characteristics, lifestyle behaviors, medical history, and body mass index (BMI) measurements. This comprehensive approach ensured reliable data collection for a thorough analysis of hypertension and its risk factors. Data analysis was carried out using the Statistical Package for the Social Sciences (SPSS) version 27. Descriptive statistics were presented as frequencies and percentages using cross-tabulations. Inferential statistics, including the Pearson Chi-square test were used to examine associations between variables. A p-value of less than 0.05 and 95% confidence level was considered statistically significant. Ethical approval was obtained from the relevant institutional authorities, including written consent from the Head of Department of People Nursing School, Liaquat University of Medical & Health Sciences (LUMHS), Jamshoro. Informed consent was obtained from all participants, who were made fully aware of the study's purpose, and their participation was voluntary. Confidentiality and participants' autonomy were strictly maintained throughout the study. Participants included

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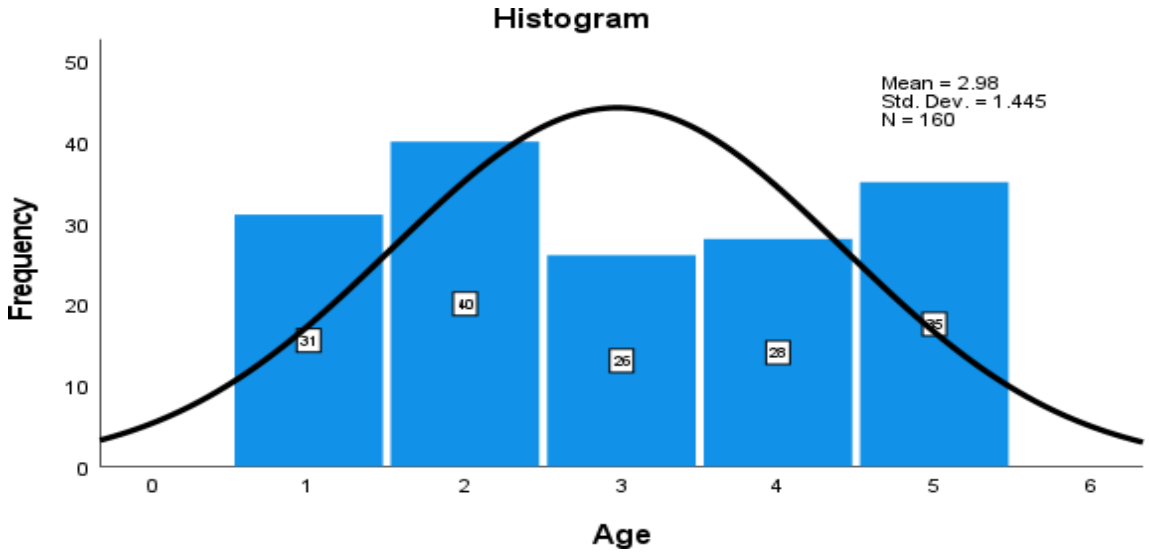
males and females aged 18 years and above who were permanent residents of Jamshoro at Khuda Ki Basti Kotri and were available and willing to participate during the study period. Individuals below 18 years of age, non-residents, those who refused to provide informed consent, and those unable to respond due to mental illness were excluded from the study.

RESULTS

DEMOGRAPHIC DATA

FIGURE NO 01: AGE



1: 18-25 years, 2: 26-33 years, 3: 34-41 years 4: 42-49 years and 5: 50 or above years

Figure 01 illustrates the age distribution of the 160 study participants. Of these, 31 participants were aged 18–25 years, 40 were aged 26–33 years, 26 were in the 34–41 years age group, 28 were aged 42–49 years, and 35 participants were aged 50 years and above. The mean age of participants was 37.63 years.

FIGURE NO 02 GENDER

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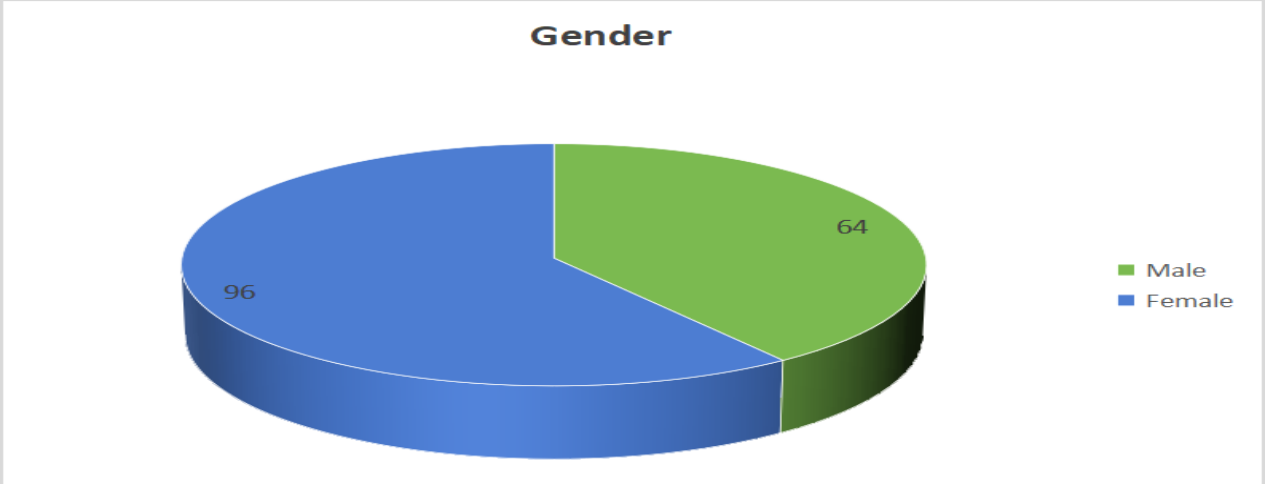

Figure 02 displayed the gender distribution of the study participants. Among the total population of 160, 64 (40.0%) were male and 96 (60.0%) were female.

FIGURE NO 03: MARITAL STATUS

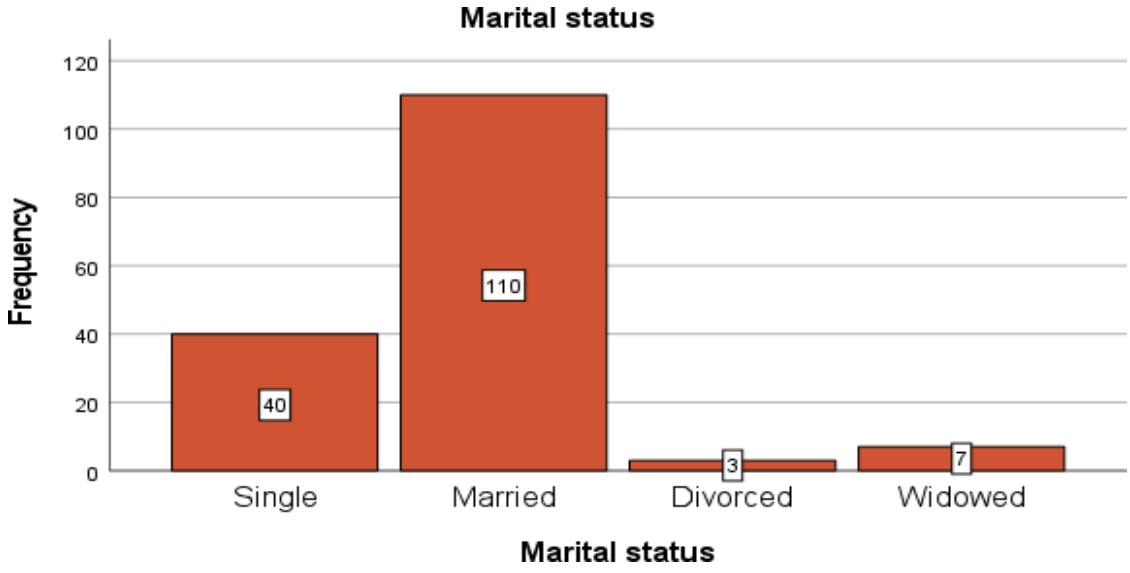

Figure 03 presents the marital status of the study population. Out of 160 participants, 40 (25.0%) were single, 110 (68.8%) were married, 3 (1.9%) were divorced, and 7 (4.4%) were widowed.

FIGURE NO 04: PREVALENCE OF HYPERTENSION

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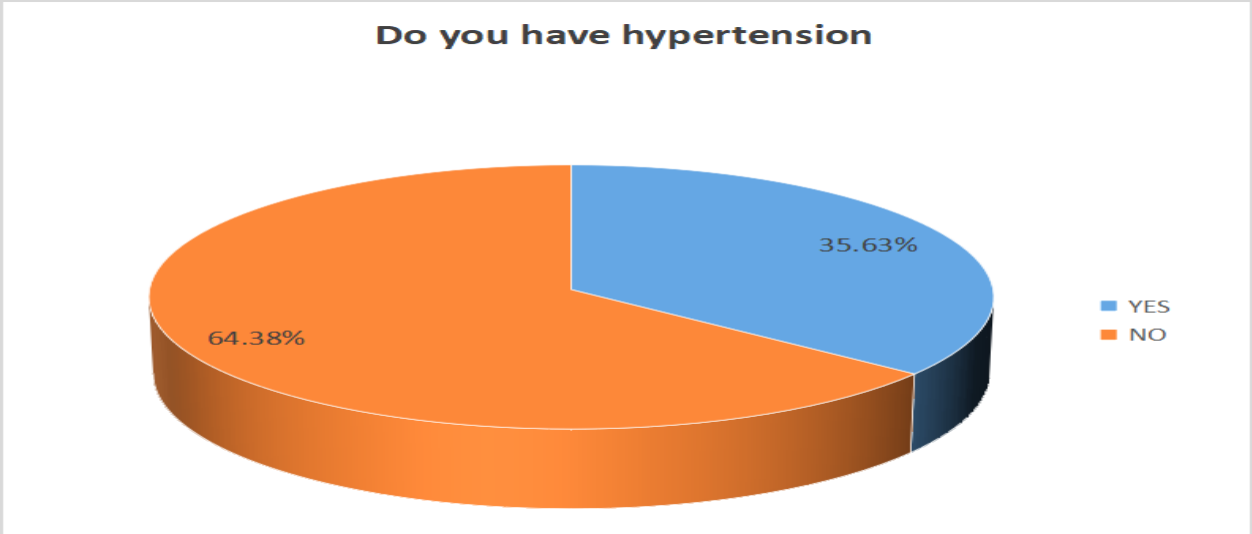

Figure No 04 showed among the 160 participants, 35.63% (n=57) reported having hypertension, while the remaining 64.4% (n=103) did not.

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TABLE NO: 01 ASSOCIATION BETWEEN DEMOGRAPHIC DATA AND HYPERTENSION

Variable	Category	Hypertensive			
		Yes (N=57)	No (N=103)	Total (N=160)	P value
Age	18-25	4 (7.0%)	27 (26.2%)	31 (19.4%)	< 0.000
	26-33	7 (12.3%)	33 (32.0%)	40 (25.0)	
	34-41	6 (10.5 %)	20 (19.4%)	26 (16.3%)	
	42-49	16 (28.1%)	12 (11.7%)	28 (17.5%)	
	≥ 50	24 (42.1%)	11 (10.7%)	35 (21.9%)	
Gender	Male	24 (42.1%)	40 (38.8%)	64 (40.0%)	0.686
	Female	33 (57.9%)	63 (61.2%)	96 (60.0%)	
Marital status	Single	7 (12.3%)	33 (32.0%)	40 (25.0%)	0.003
	Married	43 (75.4%)	67 (65.0%)	110 (68.8%)	
	Divorced	1 (1.8%)	2 (1.9%)	3 (1.9%)	
	Widowed	6 (10.5%)	1 (1.0%)	7 (4.4%)	
Religion	Muslim	54 (94.7%)	93 (90.3%)	147 (91.9%)	0.324
	Non-Muslim	3 (5.3%)	10 (9.7%)	13 (8.1%)	
Education	None	24 (42.1%)	35 (34.0%)	59 (36.9%)	0.408
	Primary	13 (22.8%)	19 (18.4%)	32 (20.0%)	
	Middle	5 (8.8%)	14 (13.6%)	19 (11.9%)	
	Secondary	4 (7.0%)	12 (11.7%)	16 (10.0%)	
	H. secondary	7 (12.3%)	8 (7.8%)	15 (9.4%)	
	Graduation	4 (7.0%)	15(14.6%)	19 (11.9%)	
	Other	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Employment Status	Employed	22 (38.6%)	45 (43.7%)	67 (41.9%)	0.532
	Unemployed	35 (61.4%)	58 (56.3%)	93 (58.1%)	

Table 01 showed the association between demographic characteristics and hypertension among 160 participants. Age had a strong and highly significant association with hypertension (P < 0.000). Most hypertensive individuals were aged 50 years and above (24 or 42.1%) and 42–49

years (16 or 28.1%), while non-hypertensive individuals were mostly younger, especially in the 18–25 (27 or 26.2%) and 26–33 (33 or 32.0%) age groups. Gender was not significantly associated with hypertension (P = 0.686); 42.1% of hypertensive were male and 57.9% were female, compared to 38.8% male and 61.2% female in the non-hypertensive group. Marital status showed a significant association (P = 0.003), with most hypertensive being married (43 or 75.4%) or widowed (6 or 10.5%), whereas non-hypertensive were more likely to be single (33 or 32.0%). Religion was not significantly related to hypertension (P = 0.324); the majority in both groups were Muslim, 94.7% among hypertensive and 90.3% among non-hypertensive. Education also had no significant association (P = 0.408), although a higher proportion of hypertensive individuals had no formal education (42.1%) compared to non-hypertensive (34.0%). Fewer hypertensive participants had graduated (7.0%) compared to non-hypertensive (14.6%). Employment status was not significantly associated with hypertension either (P = 0.532); 38.6% of hypertensive individuals were employed, compared to 43.7% of non-hypertensive.

LIFE STYLE RELATED FACTORS

TABLE NO: 02 ASSOCIATION BETWEEN SMOKING AND HYPERTENSION

Variable	Category	Hypertensive			
		Yes (N=57)	No (N=103)	Total (N=160)	P value
Have you ever smoked?	Yes	17 (29.8 %)	29 (28.2 %)	46 (28.7%)	0.823
	No	40 (70.2%)	74 (71.8%)	114 (71.3%)	
Do you currently Smoke?	Yes	17 (29.8%)	15 (14.6%)	32 (20.0%)	0.012
	No	40 (70.2%)	88 (85.4%)	128 (80.0%)	

Table 02 presents the association between smoking and hypertension. Out of 160 participants, 46 (28.7%) had ever smoked, including 17 out of 57 hypertensive (29.8%) and 29 out of 103 non-hypertensive (28.2%) individuals, showing no significant association (p = 0.823). Among them, 32 (20.0%) were current smokers, with 17 (29.8%) from the hypertensive group and 15 (14.6%) from the non-hypertensive group, indicating significant association (p = 0.012).

TABLE NO: 03 ASSOCIATION BETWEEN DIET AND HYPERTENSION

Variable		Hypertensive			
	Category	Yes (N=57)	No (N=103)	Total (N=160)	P value

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Do you eat fruits frequently?	Yes	31 (54.4 %)	54 (52.4%)	85 (53.1%)	0.812
	No	26 (45.6%)	49 (47.6%)	75 (46.9%)	
Do you eat vegetables frequently?	Yes	53 (93.0%)	91 (88.3%)	144 (90.0%)	0.350
	No	4 (7.0%)	12 (11.7%)	16 (10.0%)	
Do you know high intake of salt can cause of high blood pressure?	Yes	51 (89.5%)	80 (77.7%)	131 (81.9%)	0.063
	No	6 (10.5%)	23 (22.3%)	29 (18.1%)	

Table 03 shows no significant association between diet and hypertension. Fruit consumption was reported by 85 (53.1%) participants, 31 out of 57 (54.4%) hypertensive and 54 out of 103 (52.4%) non-hypertensive (p = 0.812). Vegetables were frequently consumed by 144 (90.0%) participants, 53 out of 57 (93.0%) hypertensive and 91 out of 103 (88.3%) non-hypertensive (p = 0.350). Awareness of the link between high salt intake and hypertension was reported by 131 (81.9%) participants, 51 out of 57 (89.5%) hypertensive and 80 out of 103 (77.7%) non-hypertensive (p = 0.063).

TABLE NO: 04 ASSOCIATION BETWEEN PHYSICAL ACTIVITY AND HYPERTENSION

Variable		Hypertensive			
	Category	Yes (N=57)	No (N=103)	Total (N=160)	P value
Do you perform physical activity?	Yes	43 (75.4%)	77 (74.8 %)	120 (75.0%)	0.924
	No	14 (24.6%)	26 (25.2%)	40 (25.0%)	
Do you know lack of physical activity can cause hypertension?	Yes	34 (59.6%)	58 (56.3 %)	92 (57.5%)	0.682
	No	23 (40.4%)	45 (43.7 %)	68 (42.5%)	

Table 04 shows no significant association between physical activity and hypertension. 120 out of 160 (75.0%) participants engaged in physical activity, 43 out of 57 (75.4%) hypertensive and 77 out of 103 (74.8%) non-hypertensive (p = 0.924). Regarding awareness of the link between physical inactivity and hypertension, 92 out of 160 (57.5%) believed it contributed, 34 out of 57 (59.6%) hypertensive and 58 out of 103 (56.3%) non-hypertensive (p = 0.682).

TABLE NO: 05 ASSOCIATION BETWEEN FAMILY HISTORY AND HYPERTENSION

Variable		Hypertensive			
	Category	Yes (N=57)	No (N=103)	Total (N=160)	P value
Is there anyone in your family who has hypertension?	Yes	38 (66.7%)	48 (46.6%)	86 (53.8%)	0.015
	No	19 (33.3%)	55 (53.4%)	74 (46.3%)	

Table 05 shows significant association between family history and hypertension. 86 out of 160 (53.8%) participants reported a family history of hypertension, 38 out of 57 (66.7%) hypertensive and 48 out of 103 (46.6%) non-hypertensive ($p = 0.015$).

Table No: 06 Association Between Non Compliance to medicine and Hypertension

Variable	Category	Hypertensive			
		Yes (N=57)	No (N=103)	Total (N=160)	P value
Do you take medicine for hypertension?	Yes	41 (71.9 %)	0 (0.0 %)	41 (25.6%)	<.001
	No	16 (28.1 %)	103 (100.0 %)	119 (74.4%)	

Table 06 shows among the hypertensive group (57 participants), 41 out of 57 (71.9%) were taking medication, while 16 out of 57 (28.1%) were not. Among the non-hypertensive group (103 participants), 103 out of 103 (100.0%) were not taking medication, and none reported medication use. This difference was statistically significant ($p < 0.001$).

TABLE NO: 07 ASSOCIATION BETWEEN OBESITY AND HYPERTENSION

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Variable	Category	Hypertensive			
		Yes (N=57)	No (N=103)	Total (N=160)	P value
Do you have any knowledge about obesity?	Yes	39 (68.4%)	61 (59.2 %)	100 (62.5%)	0.250
	No	18 (31.6%)	42 (40.8 %)	60 (37.5%)	
If yes do you think obesity cause hypertension?	Yes	44 (77.2%)	61 (59.2 %)	105 (65.6%)	0.022
	No	13 (22.8%)	42 (40.8 %)	55 (34.4%)	
Do you know about BMI?		4 (7.0 %)	9 (8.7%)	13 (8.1%)	0.703
	Yes	53 (93.0 %)	94 (91.3%)	147 (91.9%)	
	No				

Table 07 shows no significant link between obesity knowledge and hypertension. 39 out of 57 (68.4%) hypertensive participants and 61 out of 103 (59.2%) non-hypertensive participants knew about obesity (p = 0.250). 44 out of 57 (77.2%) hypertensive and 61 out of 103 (59.2%) non-hypertensive participants believed obesity causes hypertension indicating significant association (p = 0.022). Knowledge of BMI was low in both groups, 4 out of 57 (7.0%) hypertensive and 9 out of 103 (8.7%) non-hypertensive participants were aware of it (p = 0.703).

Table No: 08 Association Between Sleep and Hypertension

Variable		Hypertensive			
	Category	Yes (N=57)	No (N=103)	Total (N=160)	P value

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Do you sleep more than 6 hours in a day?	Yes	45 (78.9 %)	91 (88.3 %)	136 (85.0%)	0.111
	No	12 (21.1 %)	12 (11.7 %)	24 (15.0%)	
Do you think that inappropriate sleep causes hypertension?	Yes	45 (78.9%)	65 (63.1 %)	110 (68.8%)	0.038
	No	12 (21.1%)	38 (36.9 %)	50 (31.3%)	

Table 08 examines the relationship between sleep and hypertension. 136 out of 160 (85.0%) participants reported sleeping more than 6 hours a day, 45 out of 57 (78.9%) hypertensive and 91 out of 103 (88.3%) non-hypertensive (p = 0.111). 110 out of 160 (68.8%) believed inappropriate sleep can cause hypertension, 45 out of 57 (78.9%) hypertensive and 65 out of 103 (63.1%) non-hypertensive (p = 0.038).

FIGURE NO 05: BODY MASS INDEX

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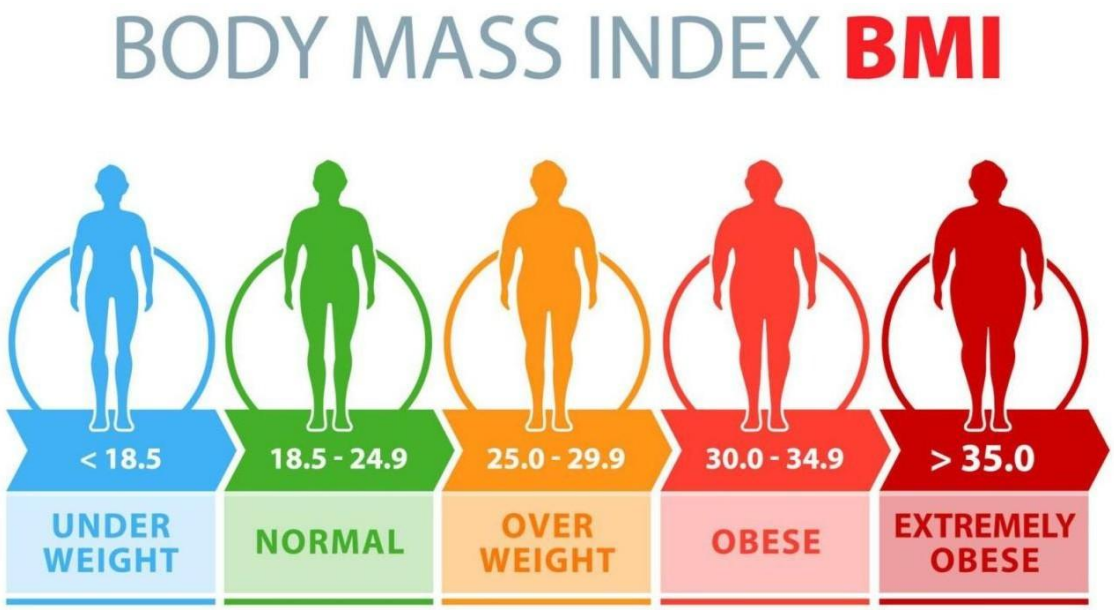

TABLE NO: 09 ASSOCIATION BETWEEN BODY MASS INDEX AND HYPERTENSION

Variable		Hypertensive			
	Category	**Yes (N=57)**	**No (N=103)**	**Total (N=160)**	**P value**
Body Mass Index	< 18.5	7 (12.3%)	15 (14.6 %)	22 (13.8%)	0.194
	18.5-	35 (61.4%)	75 (72.8%)	110 (68.8%)	
	24.9	11 (19.3%)	9 (8.7%)	20 (12.5%)	
	25-29.9	3 (5.3%)	4 (3.9%)	7 (4.4%)	
	30-34.9	1 (1.8%)	0 (0.0%)	1 (0.6%)	
	>35				

The relationship between 160 participants' BMI and hypertension is displayed in Table 9. The majority (68.8%) had a normal BMI with 61.4% having hypertension and 72.8% not. 13.8% of the population was underweight, which was somewhat more prevalent in the non-hypertensive group. Overweight participants had a higher prevalence of hypertension (19.3% vs. 8.7%). Just 5% of people were obese. The Linear-by-Linear Association test suggested a potential trend ($p = 0.070$) connecting higher BMI with an increased risk of hypertension, but the Chi-square test revealed no significant association ($p = 0.194$).

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DISCUSSION

According to the current study, 35.6% of participants reported having hypertension, which is consistent with global statistics that estimates the prevalence of hypertension to be around 31% worldwide and affects around 1.28 billion persons aged 30 to 79 years [10]. Even across a range of demographic situations, this study demonstrates that hypertension is a substantial health cost. Hypertension was strongly correlated with age. In contrast to just 11 (10.7%) in the non-hypertensive group, the bulk of the 160 participants with hypertension (42.1%) were 50 years of age or older. The results of a prior study that found age-related physiological changes, like arterial stiffening, contribute to elevated blood pressure in older persons are supported by this pattern [2]. Younger participants (18–33 years old) on the other hand, were primarily non-hypertensive, suggesting a lesser risk at an early age. In a research with 160 individuals (96 women and 64 men), the prevalence of hypertension was 37% in men and 34.4% in women. This supports a study that showed a higher prevalence of hypertension in men (34.6%) than in women (30.8%) [11]. A cross-sectional survey, on the other hand, showed that the prevalence of hypertension was considerably higher in women (8.9%) than in men (4.5%). This difference was especially noticeable among women 60 years of age and older, when the prevalence was 21.3%. [12]. Prevalence of hypertension showed a significant association with marital status. The majority of participants (68.8%) were married. The percentage of married people was greater in the hypertension group (75.4%) than in the non-hypertensive group (65.0%). This conclusion is supported by other studies that hypothesized that marital stress and related obligations could raise blood pressure, especially in older persons [13]. Furthermore, the prevalence of hypertension was higher among widowed people (10.5%) than it was among those without hypertension. This discrepancy could be caused by psychosocial stressors like loneliness, loss, and a lack of social support. In the present study, a sizable portion (42.1%) lacked formal education. This result is consistent with earlier research that linked a lower level of education to a higher risk of cardiovascular disease, which is frequently brought on by a lack of health literacy. On the other hand, those with secondary or higher education levels had lower rates of hypertension, indicating

that education may offer some protection by increasing awareness and encouraging the adoption of healthy lifestyle choices. Evidence showing that participant with elementary school or less education had higher risks of newly diagnosed hypertension and worse blood pressure control than those with middle school or higher education further supports these findings [14]. The prevalence of hypertension was higher among the unemployed (61.4%) compared to the employed (38.6%), confirming previous findings that the risk of hypertension is increased by financial instability. This supports the findings of the article, which highlighted the influence of low socioeconomic status on the prevalence and management of hypertension by demonstrating higher odds of hypertension among those who were unemployed, retired, and had lower incomes (OR = 1.35) [15]. In the present study, 28.7% of participants reported a history of smoking, with 20.0% identified as current smokers. The study identified current smoking as a prevailing risk factor, with p value 0.015. Earlier research supports the association between smoking and increased hypertension risk [16]. However, some studies, reported a paradoxical or non-significant relationship between smoking and hypertension. For instance, the study found no difference in hypertension prevalence among smokers, former smokers, and non-smokers after adjusting for age and body mass index [17]. The study shows that both hypertensive and non-hypertensive individuals have similar dietary habits, with 53.1% consuming fruits and 90.0% consuming vegetables frequently. Awareness of the link between high salt intake and hypertension was higher among hypertensive (89.5%) compared to non-hypertensive (77.7%). Despite this awareness, the similarity in dietary practices suggests a gap between knowledge and behavior. This aligns with findings showing that fruit and vegetable intake reduces hypertension risk [18] and to avoid hypertension, WHO advises individuals to consume no more than 2000 mg of sodium (less than 5 grams of salt) each day [19]. The results of this study indicate that 75.0% of participants engaged in physical activity, while 57.5% believed that a lack of physical activity could lead to hypertension. Among hypertensive individuals, 75.4% reported engaging in physical activity and 59.6% recognized its link to hypertension, whereas among non-hypertensive participants, 74.8% engaged in physical activity and 56.3% acknowledged the connection. These findings suggest that while a majority of participants are physically active,

there is a noticeable gap in awareness regarding the role of inactivity in hypertension, highlighting the need for improved health education. This is supported by the World Health Organization, which identifies physical inactivity as a major risk factor for non-communicable diseases, including hypertension, and recommends regular physical activity as a key preventive measure (WHO, 2010) [20]. Among hypertensive participants, 66.7% reported having a family member with hypertension, compared to 46.6% of non-hypertensive participants. This suggests that individuals with hypertension were more likely to have a family history of the condition, highlighting the potential hereditary or familial influence in the development of hypertension. These results align with existing literature, which recognizes family history as a significant risk factor for hypertension. According to study identifying individuals with a family history of hypertension could help in early screening and prevention strategies for hypertension in adult populations [21].

Thus, family history is an important factor that should be considered in both prevention and management strategies for hypertension. In the present study, 28.1% of hypertensive participants were non-compliant with their medication, with a significant difference observed between hypertensive and non-hypertensive groups ($p < 0.001$). This aligns with the literature review, which reported a pooled non-compliance prevalence of 42.6% across multimorbidity studies, with non-compliance often attributed to factors like forgetfulness, misunderstanding, or intentional decisions, highlighting the need for targeted interventions to improve compliance in patients with chronic conditions [22]. The findings of present study indicate a significant awareness of obesity's link to hypertension, with 77.2% of hypertensive and 59.2% of non-hypertensive participants acknowledging this connection. While most participants had normal BMIs, hypertensive people were more likely to be overweight (19.3%) than non-hypertensive (8.7%). A trend ($p = 0.070$) indicated that a higher BMI might be linked to hypertension, even though the relationship was not statistically significant ($p = 0.194$). Despite this potential association, knowledge about Body Mass Index (BMI) was notably low, with only 7.0% of hypertensive and 8.7% of non-hypertensive participants aware of it. This highlights a significant gap in obesity-related health literacy. Our findings align with global and regional studies

showing that obesity significantly increases hypertension risk. Obesity accounts for up to 75% of primary hypertension cases due to mechanisms like impaired kidney function and sodium retention. Despite general awareness, specific knowledge of indicators like BMI remains limited, highlighting a need for improved health education [23]. The findings suggest a possible association between sleep duration and hypertension. A greater proportion of non-hypertensive individuals (88.3%) reported sleeping more than 6 hours compared to those with hypertension (78.9%), indicating that adequate sleep may be protective. Additionally, 78.9% of hypertensive participants believed that poor sleep can lead to hypertension, compared to 63.1% of non-hypertensive possibly due to greater awareness from lived experience. These results align with the previous study which found that short sleep duration significantly increases the risk of developing hypertension [24].

CONCLUSION

This study revealed a hypertension prevalence of 35.6% among the community of Jamshoro, highlighting a significant public health concern. Key risk factors associated with hypertension included older age (particularly ≥50 years), marital status (being married or widowed), current smoking, family history of hypertension, and lower educational levels. Although BMI did not show a statistically significant association, a positive trend was observed. Notably, awareness of specific risk factors such as obesity and inadequate sleep was significantly higher among hypertensive individuals. These findings underscore the urgent need for community-based interventions that focus on health education, lifestyle modification, and early screening to mitigate the burden of hypertension in this rural population.

LIMITATIONS

- Limited time restricted comprehensive data collection.
- Small sample size limits generalizability.
- Some participants declined to participate, introducing potential bias.
- Language barriers may have affected response accuracy.

- Self-reported data may contain bias or inaccuracies.

RECOMMENDATIONS

- Launch community awareness campaigns on hypertension and its prevention.
- Promote public education on BP monitoring, healthy diet, exercise, and stress control.
- Support further research on local hypertension trends and risk factors.
- Conduct free BP screening camps for early detection.
- Include hypertension management in medical and nursing education.
- Raise awareness about major risk factors like smoking, salt intake, and obesity.

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