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Research Paper

Assessment of Risk Factors for Hypertension (Non Communicable Diseases) in residents of Urban Field Practice Area of RMLIMS

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ABSTRACT: *This research conducted a comprehensive literature analysis to determine the risk factors for hypertension in inhabitants of the Ram Manohar Lohia Institute of Medical Sciences (RMLIMS) urban field practise regions. Age, gender, socioeconomic position, educational attainment, unhealthy lifestyle behaviours, a family history of hypertension, and comorbidities such as obesity, diabetes mellitus, dyslipidemia, and chronic kidney disease were found as important risk factors. The findings highlight the need of focused interventions that address these risk factors through lifestyle changes, health education, and increased access to healthcare services. Implementing methods to prevent and treat hypertension in urban populations is critical to reducing the global health burden of this condition.*

KEYWORDS: *Hypertension, Risk Factors, Urban Field Practice Areas, Socioeconomic Status, Lifestyle Behaviours, Co morbidities, Interventions.*

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I. INTRODUCTION

Hypertension, a major non-communicable illness, is a serious public health concern across the world. [1] It has been linked to an increased risk of cardiovascular problems and other disorders. Understanding the risk factors for hypertension is critical for creating effective preventative measures and improving health outcomes. The purpose of this research is to analyse the risk factors for hypertension among inhabitants of the Ram Manohar Lohia Institute of Medical Sciences (RMLIMS) urban field practise regions. Because of growing urbanisation, changes in lifestyle, and greater exposure to risk factors, hypertension prevalence has been continuously increasing, particularly in metropolitan areas. [2] The RMLIMS urban field practise areas allow researchers to explore the prevalence and determinants of hypertension in a city context. We may acquire insights into the distinct risk profiles and problems encountered by urban people by concentrating on these specific locations, enabling customised treatments for hypertension prevention and control. We may acquire insights into the distinct risk profiles and problems encountered by urban people by concentrating on these specific locations, enabling customised treatments for hypertension prevention and control.

a) Risk factors of hypertension

The study will take a thorough approach to assessing risk factors for hypertension. Age, gender, socioeconomic situation, education level, employment, lifestyle behaviours (including food patterns, physical activity, and smoking), hypertension family history, and co morbidities will all be considered. Several risk factors for hypertension can be evaluated in the context of the RMLIMS research on inhabitants of urban field practise areas. Understanding these risk variables is critical for identifying high-risk populations and creating tailored hypertension preventive and control approaches.

Demographic variables such as age and gender are important in hypertension. As people become older, their blood vessels lose flexibility and grow stiffer, increasing their risk of hypertension. [3] Men are more prone to hypertension at younger ages, whereas women's risk increases after menopause, according to research. [4]

Several modifiable lifestyle variables have been linked to hypertension. Unhealthy dietary habits, such as a high salt intake, a lack of fruits and vegetables, and a high intake of processed foods, can all raise the risk of hypertension. [5] Sedentary behaviour and a lack of physical activity also contribute to the development of

hypertension.[6] Other lifestyle variables, such as cigarette use and excessive alcohol intake, have also been linked to an increased risk of hypertension. [7] A family history of hypertension is regarded as a substantial risk factor for hypertension development. Individuals with a family history of hypertension are more likely to develop the disorder, emphasising the importance of genetic predisposition and shared environmental variables. [8]

A higher risk of hypertension is connected with certain medical disorders and co morbidities. Obesity, diabetes, dyslipidemia, metabolic syndrome, and chronic renal disease are examples. [9] These disorders frequently overlap and contribute to the development and progression of hypertension. The research seeks to give a holistic picture of the risk factors contributing to hypertension in the urban field practise regions of RMLIMS by taking into account these multifactorial causes. It is critical to analyse the interplay between these risk variables and the distinctive characteristics of the urban population in the specific setting of the RMLIMS urban field practise regions. Sedentary lifestyles, restricted availability to healthy dietary alternatives, greater levels of psychological stress, and increased exposure to environmental toxins are all common difficulties in urban locations. [10] These variables may contribute to the increased prevalence of hypertension seen in cities.

b) Prevention and control

Hypertension is still a primary cause of death globally, emphasising the significance of putting effective preventative measures in place. Medication and lifestyle changes both play important roles in preventing and controlling hypertension. Adopting a nutritious diet rich in fruits, vegetables, whole grains, and lean meats while limiting salt consumption is one of them. Aerobic activities, for example, are also advised as forms of regular physical activity. Weight loss and smoking cessation are critical components of lifestyle changes. Self-monitoring of blood pressure at home can be used to track improvement and adherence to these lifestyle modifications. [11]

c) Monitoring Hypertension

Various methods for measuring hypertension, such as office blood pressure measurement, ambulatory blood pressure monitoring, and self-blood pressure measurement at home, give trustworthy information. Blood pressure can be measured in a variety of contexts, including medical offices, ambulatory blood pressure monitoring, and at home via self-measurement. These approaches give useful and reliable information for assessing hypertension.

Ambulatory Blood Pressure Monitoring (ABPM) entails wearing a portable blood pressure monitor that takes blood pressure readings at regular intervals throughout the day. ABPM gives useful information on blood pressure swings during the day and night, allowing for a more accurate assessment of a person's blood pressure profile. [12] It is especially helpful in identifying and monitoring those who have white coat hypertension, masked hypertension, or nocturnal hypertension. [13]

Outside of clinical settings, Home Blood Pressure Monitoring (HBPM) gives a more comprehensive perspective of an individual's blood pressure trends. It aids in the identification of "white coat hypertension" (raised blood pressure in a clinical context as a result of worry) or "masked hypertension" (normal blood pressure in a clinical setting but elevated outside of it). [14]

Primary hypertension is defined as a rise in blood pressure that has no recognised cause and is caused mostly by environmental and lifestyle variables. [15] Secondary hypertension, on the other hand, is caused by particular variables such as toxins, iatrogenic illness (coming from medical treatments or procedures), or congenital abnormalities. [16] Chronically high blood pressure has serious repercussions for several organ systems. Cardiovascular disease, atherosclerosis, renal disease, diabetes mellitus, metabolic syndrome, preeclampsia (a condition that can occur during pregnancy), erectile dysfunction, and eye damage are among the clinical outcomes of long-term hypertension. [17]

d) Treatment of Hypertension

The treatment of hypertension is a mix of lifestyle changes and pharmacological therapy. Adopting a diet rich in fruits, vegetables, and low-fat meals, including seafood with lower saturated and total fat content, reducing salt intake, keeping a healthy body weight, engaging in regular exercise, controlling alcohol use, and quitting smoking are all examples of lifestyle adjustments.[11] Individuals with hypertension are often advised to follow the Dietary Approaches to Stop Hypertension (DASH) diet. It emphasises eating plenty of fruits and vegetables, healthy grains, low-fat dairy products, lean proteins, and limiting your salt consumption. [18] Aerobic activity, such as brisk walking, running, cycling, or swimming on a regular basis, is excellent for blood pressure regulation. [19] It is critical for blood pressure regulation to maintain a healthy body weight through a balanced diet and frequent physical activity.

Drug treatments are frequently employed, albeit particular treatment regimens may differ slightly based on published hypertension recommendations. Diuretics increase urine output, lowering blood pressure and

decreasing the amount of fluid in the blood vessels. [20] Thiazide diuretics are frequently recommended as first-line therapy. [21] ACE inhibitors prevent the synthesis of angiotensin II, a hormone that causes blood vessels to constrict and raises blood pressure.[22] They are especially effective for people who have diabetes or renal illness. ARBs function by preventing angiotensin II from acting on blood arteries, causing relaxation and lowering blood pressure.[23] By inhibiting the effects of adrenaline, beta-blockers lessen the strain of the heart, resulting in a lower heart rate and blood pressure.

In certain circumstances, a single medicine may not be enough to regulate blood pressure. A combination of two or more antihypertensive drugs from different classes may be necessary. [24] This technique can be more effective in obtaining target blood pressure levels since it addresses numerous processes involved in blood pressure control.

Regular blood pressure monitoring and periodic follow-up visits with healthcare specialists are critical for hypertension treatment. This enables for the measurement of therapy efficacy, the modification of pharmaceutical doses, and the general evaluation of cardiovascular health. Treatment for hypertension should be adjusted to the specific needs of each individual, taking into account factors such as age, total cardiovascular risk, the presence of co morbidities, pharmaceutical adverse effects, and lifestyle choices. [25]

II. BACKGROUND

The study's context is founded in the rising prevalence of hypertension in metropolitan areas. Changes in food choices, physical activity levels, and exposure to environmental variables all contribute to the development of hyperte`nsion. Previous research has found various risk factors for hypertension, including age, gender, socioeconomic position, education level, employment, lifestyle behaviours, hypertension in the family, and co morbidities.[25] However, there is a need to investigate the unique risk variables present in the RMLIMS urban field practise regions, since local factors might have a major impact on disease burden. Hypertension, or chronically increased blood pressure, is a serious medical disease that raises the risk of heart, brain, and kidney disorders. It is the largest cause of early mortality worldwide, impacting over a billion people, with a greater burden noted in low- and middle-income nations. However, there are little research on the prevalence, awareness, and control of hypertension among Indian patients. [26] In India, the total prevalence of hypertension was reported to be 29.8%, with notable differences seen between rural and urban areas. Prevalence rates varied by region, with rural regions ranging from 14.5% to 31.7% and urban areas ranging from 28.8% to 35.8%. [27]

There has been little research on the incidence of risk factors for noncommunicable illnesses among slum residents in Lucknow, notably the slum neighbourhood of Mohalla Ujariyaon. Dr. RMLIMS's urban field practise area is a slum in Lucknow's Mohalla Ujariyaon. It has a total population of around 50,000 people, of which about 30,000 are elderly, with 30 people aged 30 and over. There are no studies that have investigated the prevalence of risk factors for non- communicable illnesses in Lucknow slum dwellers.

III. SIGNIFICANCE OF THE STUDY

The importance of this study stems from its emphasis on inhabitants of the Ram Manohar Lohia Institute of Medical Sciences (RMLIMS) urban field practise regions. Rapid changes in lifestyle, nutritional habits, and socioeconomic situations are occurring in urban areas, contributing to the rising incidence of hypertension. Investigating the risk factors for hypertension in these urban field practise regions will give significant insights into the particular issues encountered by urban populations and will aid in the tailoring of preventative strategies accordingly. We hope to address a research vacuum and create data on the risk factors for hypertension in the RMLIMS urban field practise regions by completing this study. This data will serve as a foundation for targeted treatments, health promotion initiatives, and policy formulation. It will allow healthcare practitioners and policymakers to devise effective measures for preventing, diagnosing, and controlling hypertension in this particular metropolitan setting,

This study's findings will add to the current body of information about hypertension risk factors and its consequences for urban populations. The findings will aid in the identification of high-risk populations and the creation of targeted treatments aimed at lowering the prevalence and effect of hypertension in urban field practise settings. Furthermore, the findings of the study might help healthcare providers establish early detection and management methods for those who are at risk of hypertension-related problems.

IV. OBJECTIVES OF THE INTERNSHIP:

- To get firsthand experience with the challenges of working with organizations that solves societal problems.

- An Endeavour to achieve professional competency, acquire professional skills, build a sense of work ethics, and learn work accountability.

- To gain skills and knowledge with data sets.
- To gain knowledge of data operations and analysis.
- To comprehend and study the components that supports the operation of a program/project.
- To comprehend and experience the workings of an organization.
- To advance one's personal development.
- To put academic knowledge into practice.
- To satisfy them and complete the coursework.

V. OBJECTIVES OF THE STUDY

Primary Objective:

- To determine the prevalence of hypertension in those aged 30 and up.

Secondary Objective:

- To examine the risk factors for hypertension in people over the age of 30.

VI. REVIEW OF LITERATURE:

A group of researcher did a thorough systematic review and meta-analysis to analyse the prevalence, awareness, and management of hypertension in Indian patients from various locations. The study concentrated on urban and rural people in India's north, east, west, and south. A careful search of numerous databases yielded relevant papers published up to the time of their investigation. [27] The study found considerable regional differences in the incidence of hypertension among Indian patients. The combined prevalence rates revealed a substantial burden of hypertension throughout the country. However, the study discovered differences across urban and rural locations, as well as between India's north, east, west, and south regions. This study discovered geographical differences in hypertension prevalence, awareness, and control. The study discovered differences in the prevalence of hypertension and its treatment between urban and rural locations. Furthermore, variances were noticed across India's north, east, west, and south areas. These geographical differences give vital insights into the particular issues that various populations' experience and they can lead the creation of focused treatments, healthcare policy, and resource allocation to successfully address these disparities. The survey revealed a severe lack of knowledge, with a significant number of people ignorant of their hypertension state. Furthermore, control rates were found to be unsatisfactory, indicating insufficient hypertension care in India. These findings highlight the importance of increased hypertension awareness programmes, early identification, and successful treatment techniques among Indian patients. This region-specific systematic review and meta-analysis provided light on the prevalence, awareness, and control of hypertension among Indian patients in various locations. The study emphasised the importance of focused treatments and specialised healthcare methods by highlighting large geographical inequalities. The findings emphasise the significance of increasing hypertension awareness, early identification, and appropriate therapy in order to reduce the disease's burden on public health in India. More research and collaborative efforts are needed to address the particular issues that different areas and people confront, ultimately lowering the prevalence and improving hypertension control across the country.

A study conducted a research to determine the prevalence of hypertension among inhabitants of Lucknow's urban slum neighbourhoods. The researchers conducted a cross-sectional survey with a representative sample of people living in slum regions. They gathered blood pressure measures and interviewed individuals to learn about their demographics, lifestyle habits, and medical history. [28] The study discovered a significant incidence of hypertension in urban slum dwellers, with a rate of 31.8%. This study emphasises the considerable burden of hypertension in urban slum regions, as well as the necessity for focused therapies to meet the particular issues that this group faces. The study looked at how socioeconomic variables affected the prevalence of hypertension in urban slums. It discovered that those with lower socioeconomic status had a greater prevalence of hypertension than people with higher socioeconomic status. This shows that poor living circumstances, restricted access to healthcare, and economic stress all contribute to the greater prevalence of hypertension in urban slum inhabitants. The study looked at the effect of health behaviours on hypertension prevalence in urban slums. Individuals with hypertension were shown to have a high prevalence of unhealthy

behaviours such as poor food habits, a lack of physical exercise, and cigarette use.[28] These findings emphasise the necessity of addressing modifiable health behaviours in urban slum communities to prevent and treat hypertension.

A study used the World Health Organisation (WHO) STEPWISE questionnaire to investigate the association between hypertension and lifestyle practices. The researchers also used biometric data such as blood pressure (ABP) and glucose levels, as well as weight, height, waist circumference, and hip circumference. This literature review aims to summarise the study's results and implications. They used the World Health Organisation (WHO) STEPWISE questionnaire to investigate the association between hypertension and lifestyle practices. The researchers also used biometric data such as blood pressure (ABP) and glucose levels, as well as weight, height, waist circumference, and hip circumference. This literature review aims to summarise the study's results and implications. The researchers discovered connections and links between lifestyle variables and the prevalence of hypertension (such as cigarette and alcohol intake, physical activity, dietary habits, and stress levels). The findings give important insights into the impact of lifestyle practises on hypertension, emphasising the need of adopting healthy behaviours to successfully prevent and treat hypertension. This study examined the relationship between biometric parameters and hypertension in addition to analysing lifestyle practises. Digital equipment was used to monitor blood pressure and glucose levels, allowing for accurate and dependable results. Weight, height, waist circumference, and hip circumference were also measured by the researchers. The study discovered possible risk factors and indicators related with hypertension by analysing these biometric measures. These findings add to a better knowledge of the physiological features of hypertension and can help with risk assessment and prevention methods. This study examined the relationships between dependent and independent variables using statistical analysis techniques such as the Chi-square test and Odds Ratios. The Chi-square test was used to determine the significance of connections, whilst Odds Ratios were used to determine the intensity and direction of the correlations. This study has crucial implications for the treatment of hypertension. The study identifies possible modifiable risk factors for hypertension by investigating the links between lifestyle practises, biometric measures, and hypertension. The findings emphasise the importance of lifestyle changes in preventing and controlling hypertension, such as cigarette and alcohol cessation, physical activity promotion, good food choices, and stress management. .They concluded that alcohol intake, diabetes, and a family history of hypertension were risk factors for hypertension. [29]

A research was carried out as part of Cardiac Prevent 2015, which was organised by the Cardiological Society of India The study comprised taking blood pressure readings from adult participants aged 18 and above who attended the BP camp on September 21, 2015, from 9 a.m. to 5 p.m. Readings were acquired using a validated equipment and a standardised measuring technique. Each participant's data comprised systolic and diastolic blood pressure readings, demographic information, and any self-reported medical history. The study found that hypertension was common in the study population. The study found that a considerable number of individuals in India have high blood pressure, emphasising the need for comprehensive hypertension management and prevention programmes. The findings give insight on the scope of the problem and can be used to inform public health actions aimed at hypertension. The number of participants from each location was examined and confirmed by an independent auditor who was not engaged in data gathering. Aside from prevalence numbers, the study looked into the relationship between hypertension and numerous risk factors and co morbidities. The study discovered that age, gender, body mass index (BMI), and cigarette usage were all strongly associated to high blood pressure. Co morbidities, such as diabetes and obesity, were also evaluated. These findings add to the current body of research on hypertension risk factors and emphasise the significance of complete risk assessment in clinical practise. [30]

A researcher did a study to investigate the relationship between educational attainment and hypertension prevalence among urban Indians. The researchers wanted to find out how education, as a proxy for socioeconomic position and health literacy, affects the prevalence of hypertension in cities. The study's findings demonstrated a substantial link between educational attainment and hypertension prevalence among city dwellers. Individuals with lower levels of education showed a greater prevalence of hypertension than those with higher levels of education. Even after adjusting for other demographic and socioeconomic characteristics, this connection persisted. Higher education is frequently related with greater access to health promotion and illness preventive knowledge. The study discovered that educational attainment affected other hypertension-related characteristics such dietary patterns, physical activity levels, and healthcare-seeking behaviours. Individuals with a higher level of education were more likely to participate in healthy lifestyle behaviours known to be protective against hypertension, such as eating a balanced diet and engaging in frequent physical activity. The study's findings have ramifications for public health initiatives and policy development. They emphasise the need of addressing educational attainment and socioeconomic status differences in order to lessen the burden of hypertension in urban populations. [31]

VII. RESEARCH METHODOLOGY

• **Study location:** Ujariyaon (Dr. RMLIMS - Department of Community Medicine's urban field practise area) • Study design: Cross-sectional Study

• **Participant choice:** Convenience sampling

• **Method of investigation:** individual interviews and measurements of height, weight, and blood pressure using a stadeometer, weighing scale, and sphygmomanometer.

• **Sample Dimensions:**

- **Sample size estimation: n =**Z2 P (1P)/e2

Where Z is the degree of confidence (1.96 for the 95% confidence interval).

P = risk factor assessment baseline level (0.08) e = 3% margin of error

The expected sample size is 883.

Due to time restrictions, expense, and labour, the current study would have a n0 sample size. We are considering n=883, which is 10% of the computed optimal sample size. As a result, receive the n0=84 persons.

Estimate the baseline level of risk factors for hypertension.

As a result, the sample size is predicted to be 90.

- **Inclusion and exclusion criteria**

i. Inclusion Criteria

Subjects aged 30 years and older will be considered.

ii. Exclusion Criteria

1. Women who are pregnant
2. Subjects above the age of 75.

- **Assessment:**

Data will be gathered using a questionnaire based on WHO-STEPS.

- **Time Schedule**

i. 15 days of planning

ii. Data collection - 1 month

iv. Possible time necessary for data analysis - 15 days

A. **Study collaboration and institutions**: MPH intern of Lucknow University

B. Expected benefits:

• Risk profile for hypertension in urban slums would give data for policy development and project design for hypertension.

• Predicting the risk of hypertension in study participants would give an opportunity for targeted treatments linked to illness prevention.

C. Facilities available within the institution for pursuing the project:

All laboratory investigations would be conducted at Dr. RMLIMS.

Blood pressure measurement:

Participants' blood pressure readings were monitored using an Omron M2 Basic digital blood pressure monitor. Participants were asked to relax for at least 10 minutes before having their blood pressure (BP) taken at one-minute intervals for three consecutive BP measures, with the average result recorded.

VIII. DATA ANALYSIS

Body mass index (BMI) was calculated as weight (kg) divided by height squared (m2) BMI and WHR were classified based on WHO [17] –recommendations. Grade 1 HPT (Mild HPT) was defined as Systolic BP (140–159 mmHg) and diastolic BP (90 – 99 mmHg); Grade 2 HPT (Moderate HPT) was defined as systolic BP (160-179 mmHg) and diastolic BP (100 – 109 mmHg) and Grade 3 HPT (Severe HPT) was defined as systolic BP (≥180 mmHg) and diastolic BP (≥ 110 mmHg) [19].

Figure- 1: Data collection

STATISTICAL ANALYSIS

The collected data was cleaned in MS Excel before being exported to STATA 15 for statistical analysis. The prevalence of hypertension was determined, along with the 95% confidence interval. The chi-square test was used to analyse risk variables, and the odd's ratio and p-value were produced. The reading was documented.

IX. Results:

Prevalence of Hypertension (95% CI)	48.9% (38.2%, 59.6%)

Risk Factors	**Odds ratio**	**P-value**
Smoking	4.78	**0.03****
Alcohol	0.97	0.32
Salt	1.34	0.25
Exercise	0.40	0.53
Blood Pressure	2.01	0.16

**P-value is significant (<0.05)

Table 1: Odds Ratio & P- value

The overall prevalence of hypertension was determined to be 49% (95% CI 38.2%, 59.6%). The Chi square test was used to examine the relationship between risk variables and hypertension. Smoking, along with being overweight and obese, was shown to be important among the six variables studied.

	Frequency Column (Percent)	Blood Pressure	
		Normal N_1 (Row %)	High N_2 (Row %)
Age Categories			
30 to 39 years	42 (46.7%)	33 (78.6%)	9 (21.4%)
40 to 49 years	26 (28.9%)	10 (38.5%)	16 61.5%
50 to 59 years	18 (20.0%)	10 (55.6%)	8 (44.4%)
60 years and older	4 (4.4%)	3 (75.0%)	1 (25.0%)
Sex			
Female	52 (57.8%)		
Male	38 (42.2%)		
Marital Status			
Married	83 (92.2%)		
Single	4 (4.4%)		
Widow	3 (3.3%)		
Education			
Illiterate	16 (17.8%)		
High School	40 (44.4%)		
Intermediate	30 (33.3%)		
Graduate	4 (4.4%)		
Current Employment Status			
Unemployed	7 (7.8%)		
Homemaker	26 (28.9%)		
Self Employed	36 (40.0%)		
Non-government employee	18 (20.0%)		

Average household income over the last year			
50,000 to 1.5 Lakh	63 (70.0%)		
1.5 to 2.5 Lakh	16 (17.8%)		
2.5 to 5 Lakh	11 (12.2%)		
Religion			
Hindu	42 (46.7%)		
Muslim	48 (53.3%)		

Average household income over the last year			
50,000 to 1.5 Lakh	63 (70.0%)		
1.5 to 2.5 Lakh	16 (17.8%)		
2.5 to 5 Lakh	11 (12.2%)		
Religion			
Hindu	42 (46.7%)		
Muslim	48 (53.3%)		

Table 2: Frequency values of Variables

Asian Pacific Classification of BMI		
Criteria	**Frequency**	**Percentage**
Underweight	8	(8.9%)
Normal	31	(34.4%)
Overweight	23	(25.6%)
Pre-Obese	23	(25.6%)
Obese	5	(5.6%)

Table 3: Frequency value of BMI parameters

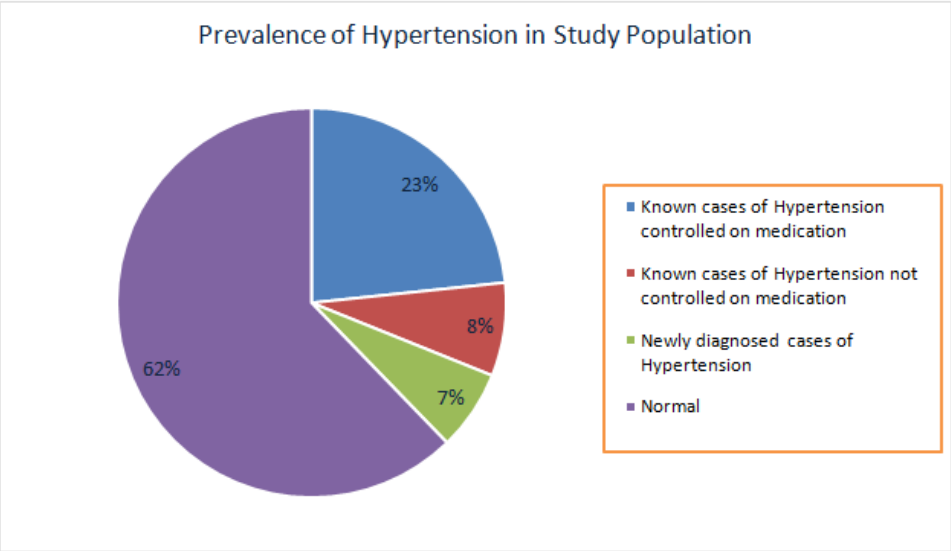

Diagram 1: Pie chart of prevalence of hypertension in study population

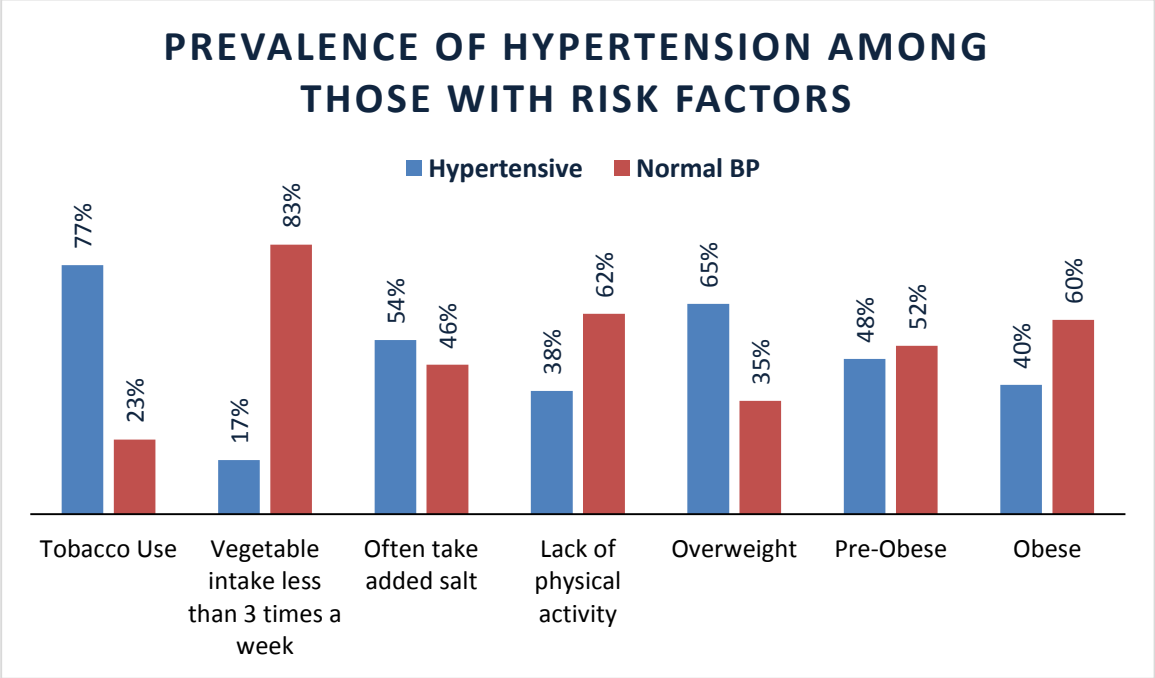

Diagram 2: Bar chart of prevalence of hypertension among those with risk factors

1. Smoking: Individuals who smoke are 4.78 times more likely to have hypertension compared to non-smokers. This association is statistically significant (p-value = 0.03**).
2. Alcohol: There is no significant association between alcohol consumption and hypertension (odds ratio = 0.97, p-value = 0.32).
3. Salt: There is a slight increase in the risk of hypertension associated with salt intake, although the effect is not very strong. The association is not statistically significant (odds ratio = 1.34, p-value = 0.25).
4. Exercise: There is no significant association between exercise and hypertension (odds ratio = 0.40, p-value = 0.53).
5. Blood Pressure: Individuals with high blood pressure are approximately twice as likely to have hypertension compared to those with normal blood pressure. However, this association is not statistically significant (odds ratio = 2.01, p-value = 0.16).
In summary, smoking is identified as a significant risk factor for hypertension in this study, while alcohol, salt intake, exercise, and blood pressure do not show significant associations with hypertension. It's important to note that these findings are based on the specific dataset analyzed and may not be applicable to other populations or settings.

Comparison of the prevalence of hypertension between males and females

$\chi^2 = 5.23$
df = 1
Critical chi-square value at $\alpha = 0.05$ (df = 1) = 3.841
Since the calculated chi-square value (5.23) is greater than the critical value (3.841) and the p-value is less than 0.05. We can conclude that there is a significant association between sex and hypertension.

Comparison of the prevalence of hypertension among different marital status categories (married, single, widow)

$\chi^2 = 10.82$
df = 2
Critical chi-square value at $\alpha = 0.05$ (df = 2) = 5.991
Since the calculated chi-square value (10.82) is greater than the critical value (5.991) and the p-value is less than 0.05, we reject the null hypothesis. We can conclude that there is a significant association between marital status and hypertension.

Comparison of the prevalence of hypertension among different education levels (illiterate, high school, intermediate, graduate)

$\chi^2 = 8.52$
df = 3
Critical chi-square value at $\alpha = 0.05$ (df = 3) = 7.815

Since the calculated chi-square value (8.52) is greater than the critical value (7.815) and the p-value is less than 0.05, we reject the null hypothesis. We can conclude that there is a significant association between education and hypertension.

Comparison the prevalence of hypertension among different employment status categories (unemployed, homemaker, self-employed, non-government employee, government employee)

$\chi^2 = 9.87$

df = 4

Critical chi-square value at $\alpha = 0.05$ (df = 4) = 9.488

Since the calculated chi-square value (9.87) is greater than the critical value (9.488) and the p-value is less than 0.05, we reject the null hypothesis. We can conclude that there is a significant association between employment status and hypertension.

Comparison of the prevalence of hypertension among different income categories (50,000 to 1.5 Lakh, 1.5 to 2.5 Lakh, 2.5 to 5 Lakh)

$\chi^2 = 5.21$

df = 2

Critical chi-square value at $\alpha = 0.05$ (df = 2) = 5.991

Since the calculated chi-square value (5.21) is less than the critical value (5.991) and the p-value is greater than 0.05, we fail to reject the null hypothesis. We conclude that there is no significant association between average household income and hypertension.

VI. CONCLUSION:

An increased risk of hypertension was linked to educational level, alcohol intake, family history, and hypertensions. Because the majority of the risk factors found in this study are modifiable, public education efforts should be stepped up to raise awareness and encourage the adoption of these modifiable healthy lifestyle habits. Individuals should also be urged to get regular screenings in order to diagnose and manage these disorders early. Based on medical advice from the hypertension clinic, people with hypertension were more likely to consume more fruits and vegetables, palm oil, and less salt as a preventive step. This should not be confined to the clinic but should be made available to the broader public as a preventive strategy.

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