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A survey to assess the prevalence of hypertension among adults residing in village Sahauran, distt. Mohali, Punjab

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Abstract
Background: Hypertension is defined as a condition where the systolic blood pressure reaches or exceeds 140 mmHg, or the diastolic blood pressure is at least 90 mmHg, sustained over a prolonged duration. This condition represents a significant public health challenge worldwide. Hypertension, commonly known as the "silent killer," often occurs without any apparent symptoms in those who are affected. In India, the prevalence of hypertension ranges from 20% to 40% in urban areas, while it is observed in 13% to 17% of the rural population.
Aim of the study: The objective of this study is to evaluate the prevalence of hypertension and to formulate preventive guidelines for adults residing in the village of Sahauran, District Mohali, Punjab.
Design and methods: This study employed a quantitative approach utilizing a non-experimental survey research design. The research was conducted in the village of Sahauran, located in the District of Mohali, Punjab. A purposive sampling technique was implemented to select 1,997 participants aged between 20 and 60 years, aiming to evaluate the prevalence of hypertension based on their socio-demographic profiles and responses to a self-structured questionnaire. The gathered data was subsequently analyzed.
Result: The study's results indicated a relatively low prevalence of hypertension among adults. Only 5.5% (109 individuals) were diagnosed with hypertension, while the vast majority, 94.5% (1,888 individuals), were not affected. Hypertension was most common among individuals aged 50 to 60 years, those with no formal education (22%), individuals with primary education (29.4%), and those engaging in moderate physical activity (42.2%). Additionally, there was no significant difference in hypertension prevalence based on gender within the studied population.
Conclusion: The survey highlights a moderate prevalence of hypertension in Sahauran, predominantly affecting older adults, the unemployed, and those with limited education. Lifestyle factors such as stress, obesity, diet, and physical inactivity contribute significantly. While most individuals manage hypertension through medication, awareness and preventive strategies still need improvement. Enhancing public education and lifestyle interventions could significantly reduce hypertension prevalence.

Keywords: Hypertension, prevalence, adult

Introduction
Hypertension is characterized by a persistent increase in systolic or diastolic blood pressure above 140/90 mmHg in adults. It is diagnosed when systolic blood pressure reaches or exceeds 140 mmHg, or diastolic pressure is at or above 90 mmHg for an extended period. A hypertension diagnosis requires elevated blood pressure readings on at least three separate occasions over several weeks. High blood pressure forces the heart to work harder than normal, putting strain on both the heart and blood vessels [1].
While the precise cause remains unclear, various contributing factors have been identified, including heightened sympathetic nervous system (SNS) activity, excessive production of sodium-retaining hormones and vasoconstrictors, increased sodium consumption, body weight exceeding ideal levels, diabetes mellitus, and high alcohol intake [2].
Hypertension is commonly known as the “silent killer” because it often shows no symptoms in those who are affected by it. According to the National Health and Nutrition Examination Survey (NHANES) conducted between 2003 and 2010, 39% of individuals with blood

pressure readings above 140/90 mmHg were unaware of their condition [3].

Elevated blood pressure, or hypertension, is a significant cause of disability globally. The incidence of hypertension is on the rise, with approximately 1.13 billion individuals currently affected, two-thirds of whom reside in low- and middle-income countries. This trend can be linked to lifestyle changes in these regions, which have led to an increase in hypertension risk factors [4].

According to World Health Organization estimates, hypertension is the primary risk factor for global health burden, with prevalence rates in India reported at 32.5% for males and 31.7% for females [5].

Risk factors for hypertension can be categorized into modifiable and non-modifiable types. Modifiable factors include poor dietary habits (such as high salt intake, diets rich in saturated and trans fats, and insufficient consumption of fruits and vegetables), lack of physical activity, tobacco and alcohol use, being overweight or obese, increased waist circumference, and elevated glucose levels. Non-modifiable factors encompass a family history of hypertension, being over the age of 65, and the presence of other health conditions like diabetes or kidney disease [6].

According to the guidelines from the British Hypertension Society (BHS), it is essential to provide guidance for both the prevention and treatment of hypertension, particularly for individuals who are pre-hypertensive or have a significant family history of the condition. The guidelines emphasize that effective lifestyle changes can reduce blood pressure to a degree comparable to that achieved with a single antihypertensive medication. Notably, even a modest reduction of 2 mmHg in diastolic blood pressure can lead to a 17% decrease in the prevalence of hypertension, a 6% reduction in the risk of coronary heart disease, and a 15% decrease in the risk of stroke [7].

Need of the study: Hypertension represents a significant health challenge in India, contributing to 57% of stroke fatalities and 24% of all deaths related to coronary heart disease. It is projected that a reduction of 2 mmHg in the average blood pressure across the population could avert approximately 151,000 strokes and 153,000 deaths from coronary heart disease in the country. The prevalence of hypertension differs considerably among various nations. A recent systematic review has estimated that the global prevalence of hypertension stands at around 26% within the adult demographic. Awareness of the condition ranges from 25% to 75%, while treatment rates vary between 11% and 66%. The effectiveness of hypertension management shows a wide disparity, with control rates ranging from as low as 5% to as high as 58% [8].

The occurrence of hypertension in adults living in a particular area is needed for several reasons as understanding the prevalence helps in planning and allocating resources effectively for public health interventions. Identifying high-prevalence areas allows for targeted preventive measures and awareness campaigns to reduce the incidence of these diseases. It helps in optimizing healthcare services, ensuring that there are adequate facilities and healthcare professionals to manage and treat these conditions.

Objectives

1. To assess the prevalence of hypertension among adults.
2. To find out the association between the hypertension findings with its selected socio demographic variables.
3. To disseminate the findings.

Methodology

Research Approach

The research approach serves as a structured plan or procedure that encompasses a range of steps, from general assumptions to specific methods for data collection, analysis, and interpretation. In this study, a quantitative survey method was employed to evaluate the prevalence of hypertension among adults living in the village of Sahauran, located in the District of Mohali, Punjab.

Research design

A research design serves as a practical framework that outlines the methods and procedures employed in gathering and analyzing the necessary information for a research study. The design utilized for this study was a non-experimental survey research design.

Sampling technique and sampling size

Sample is part or sub set of population that participate in survey. The total sample size of the survey was 1997. The samples were chosen utilizing a purposive sampling method.

Criteria for sample selection

Inclusion Criteria

Adults aged 20 to 60, comprising both males and females, were included in the study. Participation was limited to those who expressed a willingness to take part in the survey and were present during the data analysis phase.

Exclusion Criteria

Adults who were not present at the time of data collection.

Validity and reliability of tool

Validity refers to the degree to which the scores accurately reflect the variable they are designed to measure. The developed instrument was reviewed by experts in the nursing field to assess its content validity. Modifications were implemented based on the experts' recommendations, and the final version of the tool was created in consultation with the research advisor. The reliability of the tool was assessed using the Split-Half (odd-even) correlation method, yielding a reliability coefficient of 0.739.

Results and Discussion

Table 1: Distribution of frequency and percentage regarding the prevalence of hypertension in adults. N=1997

Prevalence		Frequency (f)	Percentage (%)
Prevalence of hypertension among adults	Yes	109	5.5%
	No	1888	94.5%

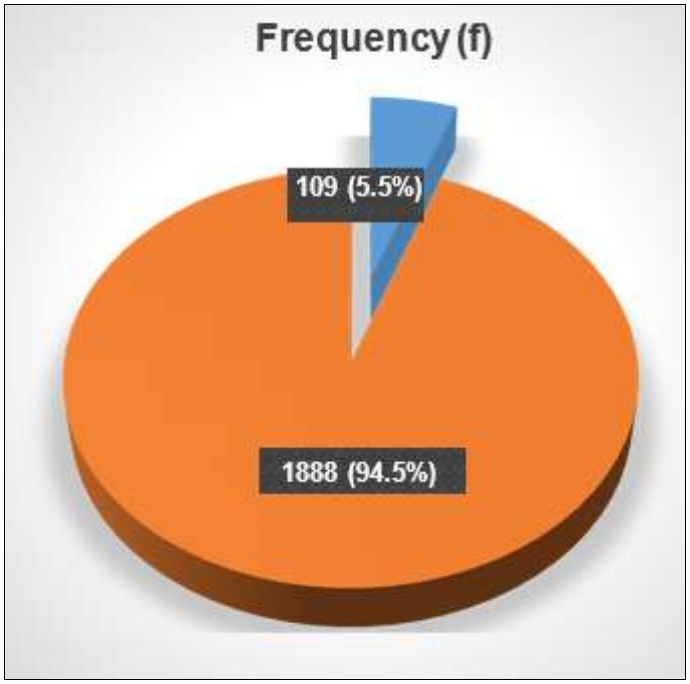

Figure 1: shows frequency and percentage distribution of Prevalence of hypertension among adults. Data depicts that the prevalence of hypertension among adults is relatively low. Only 5.5% of adults (109 individuals) have been diagnosed with hypertension, while a significant majority of 94.5% (1888 individuals) does not have hypertension. This suggests that hypertension is not a common health issue among the surveyed adult population

Table 2: Association between prevalence of hypertension and selected socio-demographic variables N=1997

Association of Socio-Demographic variables with Prevalence of Hypertension								
Socio-Demographic Variables		**No**	**Yes**	**Chi Test**	**P Value**	**df**	**Table Value**	**Result**
Age (in years)	20-<30years	473	2	126.488	0.000	3	7.815	Significant
	30-<40years	629	11					
	40-<50years	438	31					
	50-60years	348	65					
Gender	Male	1022	52	1.711	0.191	1	3.841	Not Significant
	Female	866	57					
	Other	0	0					
Occupation	Employed	569	41	26.661	0.000	3	7.815	Significant
	Unemployed	548	49					
	Retired	41	3					
	Other	730	16					
Marital Status	Married	1581	87	59.588	0.000	3	7.815	Significant
	Unmarried	241	3					
	Widowed	61	16					
	Divorced	5	3					
Educational Status	No formal education	475	24	3.892	0.273	3	7.815	Not Significant
	Primary	548	32					
	Secondary	591	30					
	Graduate or above	274	23					
Family income per month	<5000	165	0	15.238	0.004	4	9.488	Significant
	5001-10000	256	12					
	10001-15000	466	23					
	15001-20000	642	50					
	>20000	359	24					
Type of family	Joint	572	39	8.629	0.013	2	5.991	Significant
	Nuclear	1152	69					
	Extended	164	1					
Dietary pattern of family	Vegetarian	843	49	8.450	0.015	2	5.991	Significant
	Non-Vegetarian	512	41					
	Ovo-Vegetarian	533	19					
Physical activity	Mild	353	28	5.415	0.144	3	7.815	Not Significant
	Moderate	904	46					
	Heavy	498	24					
	No physical activity	133	11					

There was a significant association between prevalence of hypertension with respect to the age, occupation, marital status, family income per month, type of family, dietary pattern of family.

The findings of present study showed that hypertension was most prevalent in individuals aged 50-60 years (59.6%) followed by individuals aged 40-50 years (28.4%), women (52.3%) and men (47.7%) individuals with no formal education (22%) and individuals with primary education (29.4%), unemployed individuals (45%), individuals with moderate physical activity (42.2%) and individuals with no physical activity (10.1%) correlated with a higher risk of hypertension.

A study led by Reinaldo Jose Gianini, Natalia Ferreira Caneto, and colleagues (2024) focused on evaluating the accuracy of a health survey regarding the prevalence of hypertension. This research aimed to assess the effectiveness of a population health survey conducted in Sorocaba from August 2021 to June 2023, specifically targeting the prevalence of arterial hypertension (AH). The performance metric analyzed was the precision, indicated by the design effect (deff), of AH prevalence among adults aged 18 and older, along with their exposure to key risk factors. The study included a total sample of 1,080 individuals from the urban area, deemed adequate for estimating a deff of 1.5. The clusters in this study were defined by census sectors, with data gathered through household visits, utilizing interviews with a standardized questionnaire and measurements of blood pressure and other biometric parameters. The results showed a deff of 0.44 for chronic obstructive pulmonary disease prevalence and a deff of 1.49 for the use of sympatholytic medication, while the deff for AH prevalence was recorded at 1.12 [9].

Additionally, a national representative survey conducted by Maria Dorobantu and colleagues (2023) examined hypertension during the pandemic. The objective was to evaluate the prevalence, awareness, treatment, and control of hypertension in Romania. A representative sample of 1,477 Romanian adults (average age 51.19±16.61 years, ranging from 18 to 80 years, with 59.9% being women) was assessed through multimodal evaluations during two study visits. The prevalence of hypertension was found to be 46% (n=680), which included 81.02% (n=551) of individuals already diagnosed with hypertension and 18.98% (n=129) newly diagnosed cases. The levels of awareness, treatment, and control of hypertension were reported at 81% (n=551), 83.8% (n=462), and 39.2% (n=181), respectively [10].

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