



## Original Article

## Prevalence and Role of Risk Factors for Hypertension in 18-70 Years of Age in Rural and Urban Areas of District Sahiwal, Punjab Pakistan

Muhammad Anees Ur Rehman<sup>1\*</sup>, Khuram Ashfaq<sup>2</sup>, Nayab Sohail<sup>2</sup>, Abuzar Ghaffari<sup>2</sup> and Nasir Ali<sup>2</sup><sup>1</sup>Ruth Pfau College of Nutrition Sciences, Lahore Medical and Dental College, Lahore, Pakistan<sup>2</sup>Department of Pharmaceutical Chemistry, Lahore Pharmacy College, Lahore, Pakistan

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## \*Corresponding Author:

Muhamad Anees Ur Rehman  
 Department of Nutrition, Ruth Pfau College of Nutrition Sciences, Lahore Medical and Dental College, Lahore, Pakistan  
[Anees.haraj@yahoo.com](mailto:Anees.haraj@yahoo.com)

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## ABSTRACT

Globally, cardiovascular illnesses are believed to have hypertension as their primary cause and most important contributing factor. According to Pakistan's National Health Survey, 33% of adults over the age of 45 and 18% of adults generally have hypertension. **Objective:** To determine the prevalence of hypertension and its risk factors in both urban and rural District Sahiwal, Punjab, Pakistan. **Methods:** The population under consideration includes people from both urban and rural regions of three hospitals for identification of hypertension. Questions regarding behavior including food, cigarette, and alcohol intake were posed. The behavioral calculations followed the physical measurements. After the patient had been at ease for 20 minutes, blood pressure was taken, and the person's BMI. **Results:** With an increase in age, hypertension prevalence occurs suddenly. The frequency of hypertension was 4.27% in the age group of 20-29 years, rising to 59.72% up to the maximum frequency in the age group of 50-59 years, after which it significantly decreased to 56.79%. Out of 500 men, 162 (32.4%) and 170 (34%) of 500 females had hypertension. The percentage of hypertensive was 168 (33.6%) and 164 (32.8%) out of 500 respondents in rural and urban regions, respectively. **Conclusions:** In this study, the prevalence of hypertension suggests that it is becoming more prevalent. The key contributors to this emerging trend include urbanization, lifestyle modifications, and nutrient deficiencies.

## INTRODUCTION

The prevalence of chronic non-communicable diseases (NCDs) among adults worldwide is rising. In most countries, the prevalence of chronic diseases is rising, and this trend is anticipated to continue for a number of reasons. A chronic medical condition called hypertension (HTN), also referred to as high blood pressure, causes elevated blood pressure in the arteries. A common medical condition called hypertension (HTN) has been linked to a higher risk of mortality from all causes and cardiovascular disease (CVD) [1]. A disease with considerable socioeconomic impact in the twenty-first century is hypertension. The victims of heart attacks and strokes are its main targets now, and it is growing. A growing problem in public health all over the

world is hypertension. The prevalence of hypertension in Pakistani society is still poorly understood [2]. One of the most notable examples of a disease's iceberg impact is hypertension. Worldwide, 7.5 million fatalities from high blood pressure are expected, or about 12.8% of all yearly deaths [3]. Adults aged 25 and older had a 40% global incidence of high blood pressure in 2008. Around 35% of adults in the South-East Asia region have hypertension, which is responsible for 9.4% of all deaths and nearly 1.5 million annual fatalities [4]. A significant public health concern in India is hypertension, which is straight liable for 51% of all stroke deaths and 45% of total deaths from coronary heart disease. According to World Health

Organization health data from 2012, the prevalence of hypertension in men and women aged 25 and older in Pakistan was 23.1% and 22.6%, respectively [5]. It is known that all lifestyle risk factors cause hypertension to develop early and worsen quickly. Social factors that negatively affect behavioral risk factors, such as urbanization, housing, and income, influence the onset and course of hypertension. Some of the risk factors for hypertension include the following: 1) Physical inactivity; 2) consumption of a bad diet; 3) use of tobacco, etc. It frequently has linkages to co-morbid conditions including obesity and overweight [6]. By 2020, cardiovascular disease and stroke will be the primary causes of death globally, according to the "Global Burden of Disease research [7]. Thus, it is clear that the major public health issue of the twenty-first century is hypertension. One of the most common cardiovascular diseases is hypertension [8]. The eating and drinking customs of the Punjabi people differ from those of the other states in Pakistan. Concerning the estimate of prevalence and contribution of risk factors for hypertension in individuals aged 20 to 70 in rural and urban areas of the district of Sahiwal, the current study was carried out.

## METHODS

Residents in the demographic under study come from both urban and rural areas. Data was gathered from three hospitals: THQ, DHQ Hospital Sahiwal, and Rai Ali Nawaz Hospital (Chichawatni) (teaching hospital of Sahiwal medical college). The patient's informed approval was acquired, and the study was carried out with the ethics committee of the Madina Medical College in Faisalabad approval. A one-year cross-sectional survey that lasted from January 1 to December 31, 2021, was conducted. There was a pre-planned performance made. The aforementioned hospitals' OPDs were used to gather patient information. The patients were told in their own language what the purpose of the study was. Patients were given the assurance that their information would be kept private and used only for research. It was granted with written informed permission. Ages 18 to 70 were believed to be the eligibility range. Participants were only excluded from the physical disability category if they had a serious physical impairment that prevented them from taking part. The pretested Performa was followed when conducting interviews with participants. Name, age, gender, and other socio-demographic details were included in the first part. Then, behavioral measurements including food, cigarette, and alcohol intake were asked for. Physical calculations were done after the behavioral calculations. Once the subject had relaxed for 20 minutes, blood pressure was obtained, and the BMI was determined by dividing the subject's height by their weight in kilograms (m<sup>2</sup>). A

weighing scale, a measuring tape, and a digital blood pressure monitor were all employed during the examination. Individuals with SBP 140 and/or DBP 90 mmHg and those who were previously receiving anti-hypertensive management were categorized as hypertensive by JNC VII and WHO guidelines. To calculate BMI, the Asia Pacific (2004) perspective was employed.

## RESULTS

Proper trials were taken, and results were evaluated statistically using epi-info 7. The link between the definite variables and findings was observed with the help of Chi Square test. P values less than 0.05 were considered significant. The total occurrence of hypertension in the existing sample is 33.2%. Age-specific distribution of hypertensive (Table 1) recommends that the prevalence of hypertension happens abruptly with increase in age. At age 20-29 years, the frequency of hypertension was 4.27% which increases to 59.72% up to age group of 50-59 years, which was the maximum frequency after which it decreases slightly to 56.79%. Out of 500 males, 162 (32.4%) and out of 500 females, 170 (34%) were hypertensive. Out of 500 respondents each in rural and urban areas, the percentage of hypertensive were 168 (33.6%) and 164 (32.8%) respectively.

AGE			
Age in years	Hypertension	Non-hypertensive	Total (n=1000)
18-29	10	224	234
30-39	46	198	244
40-49	98	118	216
50-59	86	58	144
60-69	92	70	162
Total	332	668	1000
GENDER			
Gender	Hypertension	Non-hypertensive	Total (n=1000)
Male	162	338	500
Female	170	330	500
Total	332	668	1000
RESIDENCE			
Residence	Hypertension	Non-hypertensive	Total (n=1000)
Rural	168	332	500
Urban	164	336	500
Total	332	668	1000

**Table 1:** Socioeconomic demographic variables affecting hypertension

Table 2 shows that when the BMI of respondents rises, the percentage of hypertensive grows. i.e., from 4 (5.2%) in respondents with BMI 30. Out of entire 1000 respondents, 72 were smokers, out of which 25 (34.72%) were hypertensive. As of 928 non-smokers, 307 (33.08%) were hypertensive (Table 2). Out of 1000 respondents, 560 respondents were consuming vegetarian diet, out of which 206 (36.78%) were hypertensive. Out of 440 non-vegetarians, 126 (28.63%) were hypertensive.

BMI			
BMI	Hypertension	Non-hypertensive	Total (n=1000)
Less than 18.5	4	76	80
18.5-22.9	86	294	380
23-24.92	54	112	166
5-29.9	118	125	243
More than 30	70	61	131
Total	332	668	1000
SMOKING STATUS			
Smoking Status	Hypertension	Non-hypertensive	Total (n=1000)
Smokers	25	47	72
Non-Smokers	307	621	928
Total	332	668	1000
TYPE OF DIET			
Type of Diet	Hypertension	Non-hypertensive	Total (n=1000)
Vegetarians	206	354	560
Non-Vegetarians	126	314	440
Total	332	668	1000

**Table 2:** Risk factors for Hypertension

## DISCUSSION

Pakistan, a nation having a population of over 200 million people, has one of the poorest health indicators in South Asia, a region where cardiovascular disease and hypertension are on the rise. In hypertensive women, hypertension is also a major source of stress for the fetus. [9]. The prevalence of hypertension (33.2%) in this study indicates that hypertension is on the rise. The main causes of this developing tendency include urbanization, lifestyle changes, and dietary changes. Similar findings were reported in a research conducted in Punjab, which revealed a 46.2% prevalence of hypertension [10]. In this research, the prevalence of hypertension was 162 (32.4%) in males and 170 (34% in females). In a survey research conducted in 2017, Shafi et al., reported that nearly one-third of the population in central Punjab had hypertension [11]. In a study conducted in 2000 in Punjab, Raza et al identified that the prevalence of hypertension in the adult inhabitants of Punjab is 18%. The current investigation discovered a substantial positive relationship among age and the prevalence of hypertension. According to a population-based survey conducted by Raza et al., in 2000, the prevalence of hypertension improved dramatically with age [12]. Rafiq et al., found that the prevalence of stage I and stage II hypertension, together with those who were already under treatment, was 37% and 15.9%, respectively, in their study of hypertensive individuals [13]. Another study conducted in Punjab in 2019 found a statistically significant link between BMI and hypertension [14]. According to a study held by Shafi et al in rural central Punjab, almost one-third of patients in health screening camps in rural central Punjab had hypertension. These patients had a low rate of blood pressure control [15]. According to a 2019 study conducted by Basit et al., in

Pakistan's urban and rural areas, Punjab had the greatest weighted prevalence of hypertension at 49.2%, followed by Sindh at 46.3%, Baluchistan at 40.9%, and Khyber Pakhtunkhwa at 33.3%. Rural areas have a higher prevalence of hypertension than urban areas [16]. In a 2011 study, Mehmood et al., showed a statistically notable connection between hypertension and its risk variables (blood glucose, serum cholesterol, and body mass index [17]. Obesity is another risk factor for the development of hypertension. A linear development was observed between BMI and hypertension in our study, and a comparable discovery was made by Singh RB et al in his study on 25-64-year-old grownup population of North India [18]. According to which, the prevalence of hypertension in smokers is just 1.64% higher than in nonsmokers. Kannan L and Satyamoorthy TS (2009) found that among hypertensive, smoking and tobacco chewers were key risk factors, and the dissimilarity was statistically significant when compared to nonsmokers and nontobacco chewers [19]. However, a study by Joseph C. Schoenenberger JC found no indication of a link between a change in smoking status and a change in blood pressure [20]. In this study, respondents who followed a non-vegetarian diet had a lower prevalence of hypertension than vegetarians, and comparable findings were made by Das SK, Sanyal K, and Basu A [21].

## CONCLUSIONS

Population expansion, ageing, and behavioral risk dynamics such as bad nutrition, less physical activity, excess weight gain, along with others are all contributing to the rising prevalence of the disease in rural and urban settings. Creating awareness, improving education levels, imparting healthy education, and adopting a lifestyle with consistent physical workout for at least 30 minutes per day, five days a week are critical actions that should be supported early in life to combat the growing problem of hypertension.

## Conflicts of Interest

The authors declare no conflict of interest.

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