ISSN: 0975-3583,0976-2833 VOL16, ISSUE 03, 2025

A STUDY OF ASSOCIATION OF BLOOD GROUPS AND OTHER ASSOCIATED RISK FACTORS WITH HYPERTENSION IN TERTIARY CARE CENTRE OF CENTRAL INDIA.

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ABSTRACT

INTRODUCTION

There is a growing worldwide epidemic of non-communicable diseases (NCDs), and the most common of these are cardiovascular disease (for which hypertension is a significant risk factor). In India, NCDs contribute to 62% of all deaths and 48% of total national mortality occurs prematurely. This makes hypertension a significant public health issue.The major human blood group system is ABO. Recent studies have shown that some ABO type antigens are risk factors for Hypertension. But still, limited studies are added in today's science literature about the relationship of "ABO" blood group with hypertension.

METHODOLOGY

A total of 284 patients with hypertension were included in this study attending OPD and IPD of Bundelkhand Medical College, Sagar (M.P.)

1) Patients Blood pressure was measured by Digital Sphygmomanometer.

2) Patients Blood groups was determined by Glass – slide method.

All the results of reports which include blood group and blood pressure were tabulated for analysis.

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 03, 2025

RESULTS

This study included a total of 284 patients, out of which 144 (50.7%) were males and 140 were females (49.3%). Maximum 91 patients (32%) had B blood group and AB blood group distribution was seen in minimum of 38 patients (13.3%) .

As the age progressed, prevalence of hypertension increased as well. Between the age of 21-25 years only 2% patients had hypertension whereas it increased to 17.9% in patients of 56-59 years of age.

Patients having sedentary lifestyle (74.3%) are more prone for developing hypertension than those having active lifestyle (25.7%).

Patients having addiction history of alcohol (69.1%) are more likely to develop hypertension than those who do not consume alcohol (30.9%) .

CONCLUSION:

- In our study results shows that the relative risk of hypertension was found higher in blood group B and lowest in blood group AB.
- Thus, Blood Group can be used for screening of Hypertension and early correction in lifestyle may be helpful in preventing the progression of the disease and adverse outcomes related to disease.

Keywords

Non-communicable diseases (NCDs), Hypertension , Blood group

MAIN ARTICLE

INTRODUCTION:

There is a growing worldwide epidemic of non-communicable diseases (NCDs), and the most common of these are cardiovascular disease (for which hypertension is a significant risk factor).[1]In India, NCDs contribute to 62% of all deaths and 48% of total national mortality occurs prematurely. This makes hypertension a significant public health issue.[2]Hypertension

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 03, 2025

is the leading preventable risk factor for cardiovascular disease (CVD) and all-cause mortality worldwide[3]. Hypertension has become one of the world's biggest health issues in recent years. Due to the lack of early specific signs and symptoms, the majority of people are unaware that they have hypertension.[4]In an analysis of worldwide data for the global burden of HTN, 20.6% of Indian men and 20.9% of Indian women were suffering from HTN in 2005.[5] The rates for HTN in percentage are projected to go up to 22.9 and 23.6 for Indian men and women, respectively by 2025.[6]Recent studies from India have shown the prevalence of HTN to be 25% in urban and 10% in rural people in India.[7-9]The major human blood group system is ABO. The blood group of a person depends upon the presence or absence of two genes, A and [10]. Recent studies have shown that some ABO type antigens are risk factors for Hypertension. But still, limited studies are added in today's science literature about the relationship of "ABO" blood group with hypertension.

AIM OF THE STUDY:

To study the association of Blood Groups and other associated risk factors with Hypertension in tertiary care centre of central India.

OBJECTIVES OF THE STUDY:

1. To assess the prevalence of blood groups in hypertensivepatients.

2. To study other related risk factors with hypertension.

3. To compare different variables among male and female patients.

MATERIALS AND METHODS:

INCLUSION CRITERIA:

All hypertensive patients of age between 19-59 years of age attending OPD/IPD of Bundelkhand Medical College Sagar, M.P.

EXCLSUION CRITERIA:

1. Those who are not willing to give the written informed consent to participate in the study.
2. Patients less than 19 Years and more than 60 Years of age

STUDY METHOD:

The study was conducted as per and after due approval from the Institutional Ethics Committee.

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 03, 2025

1) Patients Blood pressure was measured by Digital Sphygmomanometer.

2) Patients Blood groups was determined by Glass – slide method.
Patients meeting the eligibility criteria were enrolled in the study after obtaining a written informed consent.Face to face questionnaires was conducted by the primary investigator and personal demographic and anthropometric details such as age, sex ,weight, height, occupation ,address ,socio economic status and personal history such as food habits ,sleep , bowel, bladder movements was noted. Also the family history of hypertension, diabetes mellitus and any other relevant pathological familial disease, was noted.All the study participants weresubjected for clinical examination which includes systolic, diastolic BP and heart rate.

For ABO blood grouping, standard serological procedures was followed using the anti-A, anti-B and anti-D antisera by using standard agglutination techniques at central laboratory of BMC, SAGAR.

All the results of reports which include blood group and blood pressure were tabulated for analysis.

JNC -8 [JOINT NATIONAL COMMITTEE] CRITERIA FOR HYPERTENSION

BP CLASSIFICATION	SBP (mm Hg)	DBP (mm Hg)
Normal	< 120	< 80
Prehypertension	120-139	80-89
Stage -1 Hypertension	140-159	90-99
Stage -2 Hypertension	> 160	> 100

SBP - SYSTOLIC BLOOD PRESSURE DBP-

DIASTOLIC BLOOD PRESSURE

RESULTS:

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 03, 2025

TABLE- 1 Distribution of gender of hypertensive paients according to their Blood group ;SAMPLE SIZE (N =284)

S.NO .	BLOOD GROUP	MALE (%)	FEMALE (%)	TOTAL HYPERTENSIVE PATIENTS
1.	A	36 (12.6%)	39 (13.7%)	75(26.4%)
2.	B	45 (15.8%)	46 (16.1%)	91(32.2%)
3.	AB	19 (6.6%)	19 (6.6 %)	38(13.3%)
4.	O	44 (15.4%)	36 (12.6%)	80(28.1%)
5.	TOTAL	144 (50.7%)	140 (49.2%)	284(100%)
6.	Rh (+)	124 (43.6%)	104 (36.6%)	228(80.2%)
7.	Rh(-)	30 (10.5%)	26 (9%)	56(19.8%)

This study included a total of 284 patients, out of which 144 (50.7%) were males and 140 were females (49.3%). Maximum 91 patients (32%) had B blood group and AB blood group distribution was seen in minimum of 38 patients (13.3%) .

TABLE-2: AGE DISTRIBUTION OF THE STUDY GROUP SAMPLE SIZE : (N =284)

	AGE GROUP	HYPERTENSIVE PATIENTS	PERCENTAGE OF TOTAL HYPERTENSIVE PATIENTS
1.	21-25YRS	7	2%
2.	26-30YRS	19	6.9%
3.	31-35YRS	36	12.7%
4.	36-40YRS	38	13.5%
5.	41-45YRS	40	14.2%
6.	46-50YRS	43	15.2%
7.	51-55YRS	50	17.6%
8.	56-59 YRS	51	17.9%
	TOTAL	284	100%

As the age progressed, prevalence of hypertension increased as well. Between the age of 21-25 years only 2% patients had hypertension whereas it increased to 17.9% in patients of 56-59 years of age.

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 03, 2025

TABLE- 3 :LIFESTYLE RELATION WITH HYPERTENSION (N=284)

S.NO.	LIFESTYLE	HYPERTENSIVE PATIENTS	PERCENTAGE OF TOTAL HYPERTENSIVE PATIENTS
1.	SEDENTRY	211	74.3%
2.	ACTIVE	73	25.7 %
	TOTAL	284	100%

Patients having sedentary lifestyle (74.3%) are more prone for developing hypertension than those having active lifestyle (25.7%).

TABLE -4 :ADDICTION HISTORY OF ALCOHOL RELATION WITH HYPERTENSION : (N =284)

S.NO.	ADDICTION HISTORY OF ALCOHOL	HYPERTENSIVE PATIENTS	PERCENTAGE OF TOTAL HYPERTENSIVE PATIENTS
1.	PRESENT	196	69.1%
2.	ABSENT	88	30.9%
	TOTAL	284	100%

Patients having addiction history of alcohol (69.1%) are more likely to develop hypertension than those who do not consume alcohol (30.9%) .

ISSN: 0975-3583,0976-2833 VOL16, ISSUE 03, 2025

DISCUSSION:

In our study out of total 284 Hypertensive patients , 144 (50.7%) were male and 140 (49.2%) were female. 91 (32%) had blood group B and 38 (13.3%) had blood group AB. In other study done by Hitesh **Kumar K Solanki**et al[11] demonstrated that most common blood group in both sexes was B group. Out of 200 students, 186 students have Rh positive blood group and 14 have negative.

In our study, Hypertension increased with age; 2% (aged 21-25yrs) and 17.9% (aged 56-59) . In a study by **YechiamOstchega**et al[12] shows Forty-five percent of U.S. adults had hypertension in 2017–2018, and prevalence increased with age.

In our study we found that patients having sedentary lifestyle 74.3% are more prone for developing hypertension than who have active lifestyle 25.7% . Similar results were seen in studies done by**Min-WoongSohn** et al [13]. In their studies result shows, BP had a graded association with increased sedentary time.

In our study patients having addiction history of alcohol 69.1% are more likely to develop hypertension than those who do not consume alcohol 30.9%. In other study done by **Onosetale M Okojie**et al[14]shows that heavy alcohol use is generally seen as a significant risk factor for essential hypertension development.

CONCLUSION:

- In our study results shows that the relative risk of hypertension was found higher in blood group B and lowest in blood group AB.
- There is no correlation of Rh positive and Rh negative blood group with hypertension .
- Hypertension prevalence increases with age.
- Patients having sedentary lifestyle are more prone for developing hypertension than those having active lifestyle.
- Patients having addiction history of alcohol are more likely to develop hypertension than those who do not consume alcohol.

Thus, Blood Group can be used for screening of Hypertension and early correction in lifestyle may be helpful in preventing the progression of the disease and adverse outcomes related to disease.

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ISSN: 0975-3583,0976-2833 VOL16, ISSUE 03, 2025

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ISSN: 0975-3583,0976-2833 VOL16, ISSUE 03, 2025