

STUDENT STUDY PROJECT

“A Survey on distribution of Blood Pressure among the students of Dr.BRR Government Degree College Jadcherla”

Department of Zoology
Dr.BRR Government College, Jadcherla
Dist:Mahabubnagar-509001

(Accredited by NAAC with “B” Grade
An ISO 9001-2015
Affiliated to Palamu



Academic Year 2022-23


Supervisor


Head of the Department
DEPT. OF ZOOLOGY
Dr. B.R.R. GOVT. COLLEGE
JADCHERLA


Principal
PRINCIPAL
Dr.B.R.R. Govt. Degree College
Jadcherla

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DECLARATION

I hereby declare that the project work entitled with "A Survey on distribution of Blood among the students of Dr.BRR Government Degree College Jadcherla " is a genuine work done under the supervision of Smt Neeraja, Assistant Professor, Department of Zoology, Dr.BRR Government Degree College, and it has not been submitted to any other Institute or University either in part or in full, for the award of any degree.

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CERTIFICATE

This is to certify that the project work entitled "A Survey on distribution of Blood Pressure among the students of Dr.BRR Government Degree College Jadcherla"

is a bonafide work done by **CHANDU,P.SAI CHARAN GOUD, SHIVA REDDY THIRUPATI,G.VIJAYLAXMI** the students of B.Sc. (BZC) E/M, VI semester students under my supervision in Zoology at the Department of Zoology Dr.BRR Government College Jadcherla during 2022-23 and the work has not been submitted in any other college or University either part or full for the award of any degree.


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ABSTRACT

Background: Hypertension, or high blood pressure, is a major cause of disability and the leading risk factor for death around the world. Ongoing surveillance is necessary to monitor and assess the population burden of hypertension in India. Survey and analysis estimates average systolic blood pressure (BP), average diastolic BP, and hypertension prevalence, awareness, treatment and control in the population aged 19 to 60 years in the period from December 2021 to July 2022 by sex and age group. Among 271 adults aged 20 to 60 years, 24% of males and 23% of females had hypertension, defined as measured BP $\geq 140/90$ mm Hg or past-month use of antihypertensive medication. Hypertension prevalence increased to 40% for males and 32% for females when the BP threshold was lowered to $\geq 130/80$ mm Hg. Among adults, 84% of people with hypertension were aware of their condition, 80% of hypertensive people were treated for their condition, and 66% had controlled hypertension (measured BP (140/90 mm Hg), though those aged 20 to 39 were less likely than older age groups to be aware, treated or controlled... This finding highlights the importance of initiatives to encourage the students and the staff of Dr.BR Government Degree College to have their blood pressure checked and treated.

Key words: Blood Pressure, Hypertension, Hypotension, Systolic and Diastolic pressure Aneroid and Sphygmomanometer and Dr.BRR Government Degree College Jadcherla.

INTRODUCTION

Hypertension, or high blood pressure, is a silent Killer. This has been attributed to several factors, Stress full environment, Anxiety, Lifesyle changes are the reasons behind this

problem. In India prevalence of Hypertension among the adult populations is 1 among 4.

Ongoing

surveillance is necessary to monitor and assess the population burden of hypertension. This study

examines systolic blood pressure (SBP), diastolic blood pressure (DBP), and hypertension

prevalence, awareness, for adults aged 20 to 60 by age group and sex. Hypertension is defined

using two sets of blood pressure thresholds: SBP-130 mm Hg or DBP-90 mm Hg, and SBP-130 mm Hg or DBP>-80 mm Hg. To assess trends over time, crude and age-

standardized estimates of SBP, DBP, and hypertension prevalence, awareness, periodic check ups are also

presented for adults.

However, these symptoms aren't specific. They usually don't occur until high blood pressure has reached a severe or life-threatening stage.

When to see a doctor

Blood pressure screening is an important part of general health care. How often you should get your blood pressure checked depends on your age and overall health.

Ask your provider for a blood pressure reading at least every two years starting at age 18. If you're age 40 or older, or you're 18 to 39 with a high risk of high blood pressure, ask for a blood pressure check every year.

Your care provider will likely recommend more-frequent readings if have high blood pressure or other risk factors for heart disease.

Children age 3 and older may have blood pressure measured as a part of their yearly checkups.

If you don't regularly see a care provider, you may be able to get a free blood pressure screening at a health resource fair or other locations in your community. Free blood

pressure machines are also available in some stores and pharmacies. The accuracy of these machines depends on several things, such as a correct cuff size and proper use of the machines. Ask your health care provider for advice on using public blood pressure machines.

High blood pressure is a common condition that affects the body's arteries. It's also called hypertension. If you have high blood pressure, the force of the blood pushing against the artery walls is consistently too high. The heart has to work harder to pump blood.

Blood pressure is measured in millimeters of mercury (mm Hg). In general, hypertension is a blood pressure reading of 130/80 mm Hg or higher.

The American College of Cardiology and the American Heart Association divide blood pressure into four general categories. (Ideal blood pressure is categorized as normal.)

Normal blood pressure. Blood pressure is 120/80 mm Hg or lower.

Elevated blood pressure. The top number ranges from 120 to 129 mm Hg and the bottom number is

below, not above, 80 mm Hg. ● **Stage 1 hypertension.** The top number ranges from 130 to 139 mm Hg or the bottom number is between

80 and 89 mm Hg.

● **Stage 2 hypertension.** The top number is 140 mm Hg or higher or the bottom number is 90 mm Hg or higher.

Blood pressure higher than 180/120 mm Hg is considered a hypertensive emergency or crisis. Seek emergency medical help for anyone with these blood pressure numbers.

Untreated, high blood pressure increases the risk of heart attack, stroke and other serious health problems. It's important to have your blood pressure checked at least every two years starting at age 18. Some people need more-frequent checks.

Healthy lifestyle habits-such as not smoking, exercising and eating well-can help prevent and treat high blood pressure. Some people need medicine to treat high blood pressure.

Symptoms

Most people with high blood pressure have no symptoms, even if blood pressure readings reach dangerously high levels. You can have high blood pressure for years without any

symptoms. A few people with high blood pressure may have:

India Hypertension Control Initiative, a high impact and low-cost solution

It is estimated that at least one in four adults in India has hypertension ¹, but, only about 12% of them have their blood pressure under control ².

India has set a target of 25% relative reduction in the prevalence of hypertension (raised blood pressure) by 2025³. To achieve this, it is important to fast-track access to treatment services by strengthening interventions such as the India Hypertension Control Initiative (IHCI). IHCI is a multi-partner initiative of the Government of India's Ministry of Health & Family Welfare, Indian Council of Medical Research (ICMR), WHO Country Office for India (WHO India), and Resolve to Save Lives (Technical partner).

Uncontrolled blood pressure is one of the main risk factors for cardiovascular diseases (CVDs) such as heart attacks and stroke and globally are the most common cause of death and disease. CVDs are also responsible for one-third of total deaths in India ⁴. Of the estimated 220 million people in India living with hypertension, only 12% have their blood pressure under control².

“Hypertension kills more adults than any other cause. Treatment of people with high risk of CVD is one of the best buys recommended by the WHO and scaling hypertension treatment and control can save millions of lives in the next decade,” says Dr Roderico H. Ofrin, WHO Representative to India.

A report on the progress made under IHCI was released on 9 May 2022 during a meeting organized by ICMR to discuss mainstreaming IHCI strategies under India's National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular diseases and Stroke.

IHCI annual progress report released in New Delhi by officials from WHO, ICMR, Ministry of Health & Family Welfare, Directorate General of Health Services, National Health Systems Resource Centre on 9 May 2022. © WHO India

The success of IHCI Phase I led to its expansion from 25 to 100 districts across the country. By April 2022, more than 2.5 million patients with hypertension have been enrolled in over 15 000 health facilities.

Of a million patients registered in the 4505 health facilities till December 2020, about 740 000 were under care between April 2020 – March 2021.

Nearly 47% of the registered patients under care had blood pressure under control during the most recent visit in the first quarter of 2021.

For most adults, there's no identifiable cause of high blood pressure. This type of high blood pressure is called primary hypertension or essential hypertension. It tends to develop gradually over many years. Plaque buildup in the arteries, called atherosclerosis, increases the risk of high blood pressure.

Secondary hypertension

This type of high blood pressure is caused by an underlying condition. It tends to appear suddenly and cause higher blood pressure than does primary hypertension. Conditions and medicines that can lead to secondary hypertension include:

- Adrenal gland tumors
- Blood vessel problems present at birth, also called congenital heart defects
- Cough and cold medicines, some pain relievers, birth control pills, and other prescription drugs
- Illegal drugs, such as cocaine and amphetamines
- Kidney disease
- Obstructive sleep apnea
- Thyroid problems

Sometimes just getting a health checkup causes blood pressure to increase. This is called white coat hypertension.

More Information

- [Medications and supplements that can raise your blood pressure](#)
 - [Anxiety: A cause of high blood pressure?](#)
 - [Blood pressure readings: Why higher at home?](#)
- [Show more related information](#)

Risk factors

High blood pressure has many risk factors, including:

- **Age.** The risk of high blood pressure increases with age. Until about age 64, high blood pressure is more common in men. Women are more likely to develop high blood pressure after age 65.
- **Race.** High blood pressure is particularly common among Black people. It develops at an earlier age in Black people than it does in white people.
- **Family history.** You're more likely to develop high blood pressure if you have a parent or sibling with the condition.
- **Obesity or being overweight.** Excess weight causes changes in the blood vessels, the kidneys and other parts of the body. These changes often increase blood pressure. Being overweight or having obesity also raises the risk of heart disease and its risk factors, such as high cholesterol.
- **Lack of exercise.** Not exercising can cause weight gain. Increased weight raises the risk of high blood pressure. People who are inactive also tend to have higher heart rates.

- **Tobacco use or vaping.** Smoking, chewing tobacco or vaping immediately raises blood pressure for a short while. Tobacco smoking injures blood vessel walls and speeds up the process of hardening of the arteries. If you smoke, ask your care provider for strategies to help you quit.
- **Too much salt.** A lot of salt — also called sodium — in the body can cause the body to retain fluid. This increases blood pressure.
- **Low potassium levels.** Potassium helps balance the amount of salt in the body's cells. A proper balance of potassium is important for good heart health. Low potassium levels may be due to a lack of potassium in the diet or certain health conditions, including dehydration.
- **Drinking too much alcohol.** Alcohol use has been linked with increased blood pressure, particularly in men.
- **Stress.** High levels of stress can lead to a temporary increase in blood pressure. Stress-related habits such as eating more, using tobacco or drinking alcohol can lead to further increases in blood pressure.
- **Certain chronic conditions.** Kidney disease, diabetes and sleep apnea are some of the conditions that can lead to high blood pressure.
- **Pregnancy.** Sometimes pregnancy causes high blood pressure.

High blood pressure is most common in adults. But kids can have high blood pressure too. High blood pressure in children may be caused by problems with the kidneys or heart. But for a growing number of kids, high blood pressure is due to lifestyle habits such as an unhealthy diet and lack of exercise.

Complications

The excessive pressure on the artery walls caused by high blood pressure can damage blood vessels and body organs. The higher the blood pressure and the longer it goes uncontrolled, the greater the damage.

Uncontrolled high blood pressure can lead to complications including:

- **Heart attack or stroke.** Hardening and thickening of the arteries due to high blood pressure or other factors can lead to a heart attack, stroke or other complications.
- **Aneurysm.** Increased blood pressure can cause a blood vessel to weaken and bulge, forming an aneurysm. If an aneurysm ruptures, it can be life-threatening.
- **Heart failure.** When you have high blood pressure, the heart has to work harder to pump blood. The strain causes the walls of the heart's pumping chamber to thicken. This condition is called left ventricular hypertrophy. Eventually, the heart can't pump enough blood to meet the body's needs, causing heart failure.
- **Kidney problems.** High blood pressure can cause the blood vessels in the kidneys to become narrow or weak. This can lead to kidney damage.
- **Eye problems.** Increased blood pressure can cause thickened, narrowed or torn blood vessels in the eyes. This can result in vision loss.
- **Metabolic syndrome.** This syndrome is a group of disorders of the body's metabolism. It involves the irregular breakdown of sugar, also called glucose. The syndrome includes increased waist size, high

triglycerides, decreased high-density lipoprotein (HDL or "good") cholesterol, high blood pressure and high blood sugar levels. These conditions make you more likely to develop diabetes, heart disease and stroke.

- **Changes with memory or understanding.** Uncontrolled high blood pressure may affect the ability to think, remember and learn.
- **Dementia.** Narrowed or blocked arteries can limit blood flow to the brain. This can cause a certain type of dementia called vascular dementia. A stroke that interrupts blood flow to the brain also can cause vascular dementia.

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Untreated, high blood pressure increases the risk of heart attack, stroke and other serious health problems. It's important to have your blood pressure checked at least every two years starting at age 18. Some people need more-frequent checks.

Healthy lifestyle habits —such as not smoking, exercising and eating well — can help prevent and treat high blood pressure. Some people need medicine to treat high blood pressure.

High blood pressure puts stress on your arteries and the heart muscle — find out what you should do and why even elevated blood pressure that isn't hypertension can be dangerous.

The cause of high blood pressure in young adults isn't always known, but addressing obesity, sedentary lifestyle and excessive alcohol or salt can be the first steps toward bringing your blood pressure down.

Some patients with high blood pressure may not notice a difference in how they feel, but over time, the increased stress on your arteries and the heart muscle will decrease the flow of blood and oxygen to your heart and can cause chest pain, heart attack and ultimately heart failure.

High blood pressure in young adults is not uncommon. Nearly a quarter of those between the ages of 18 and 39 had hypertension, according to the National Health Statistics Reports published in June 2021. The condition is more common in men than women, and African Americans are especially at risk.

Norton Heart & Vascular Institute

Know your numbers and take them seriously. We will too.

Knowing what a good blood pressure number is and getting yours checked regularly can help you take the steps to avoid long-term complications.

High blood pressure — even if it isn't hypertension — is still dangerous.

Even if your blood pressure falls short of the formal hypertension diagnosis, you still could be at risk for heart damage.

High blood pressure in young adults, even if merely "elevated" and not at the level of a hypertension diagnosis, can lead to heart failure at a young age, especially in African American patients, according to cardiologist **Kelly C. McCants, M.D.**, executive medical director of the Norton Heart & Vascular Institute Advanced Heart Failure & Recovery Program and executive director of the Institute for Health Equity, a Part of Norton Healthcare.

"If you're African American, that target clearly should be under 120 for your systolic, and your diastolic should be less than 80," Dr. McCants said.

Often, patients with 120/80 blood pressure would be considered at the bottom end of what's considered "elevated" blood pressure or even in the "normal" range.

According to Dr. McCants, a patient resting in a health care provider's office may show borderline hypertension, but when stressed or exercising the systolic pressure can double. And for patients who have been going on for years with blood pressure that was short of meeting the hypertension diagnosis, they still can experience significant thickening of the left ventricle muscle.

For some young adults with high or merely "elevated" blood pressure, medication to reduce blood pressure may be an appropriate addition to lifestyle changes. Blood pressure that's elevated can accelerate to cardiomyopathy — a weakened heart — particularly in African Americans and other people of color, according to Dr. McCants.

"If someone has hypertension in their 30s, you can bet that if they make it 30 more years and their blood pressure remains uncontrolled, there is a good chance they could have end organ damage from prolonged hypertension like kidney failure, stroke or heart failure," he said.

Medications can include angiotensin-converting enzyme (ACE) inhibitors, angiotensin receptor blockers, beta blockers and diuretics.

Nothing to ignore

High blood pressure is usually taken seriously by medical professionals.

However, despite how vigilant doctors are in treating the condition in middle-aged and older individuals, this isn't always the case with younger people.

"Active individuals, like the young and athletes, are viewed as free of diseases such as hypertension," stated one study in the journal Postgraduate Medicine.

"However, the increased prevalence of traditional risk factors in the young, including obesity, diabetes mellitus, and renal disease, increase the risk of developing hypertension in younger adults," the study authors added.

Blood pressure is a vital sign reflecting the pressure exerted on blood vessels when blood is forced out of the heart during contraction.

Diastole is the relaxation of the chambers of the heart and systole is the contraction of the heart chambers.

Blood pressure is composed of systolic and diastolic blood pressure, which correspond to the pressure following contraction of the heart and pressure during relaxation for the heart, respectively. Normal blood pressure should be around 120/80, with the systolic number on top.

Mean blood pressure decreases as the circulating blood moves away from the heart through arteries, capillaries, and veins due to viscous loss of energy. Mean blood pressure drops during circulation, although most of this decrease occurs along the small arteries and arterioles.

blood pressure: The pressure exerted by the blood against the walls of the arteries and veins; it varies during the heartbeat cycle and according to a person's age, health, and physical condition.

systolic pressure: The peak arterial pressure during heart contraction.

diastolic pressure: The minimum arterial pressure between contractions, when the heart expands and refills.

Blood pressure is the pressure that blood exerts on the wall of the blood vessels. This pressure originates in the contraction of the heart, which forces blood out of the heart and into the blood vessels.

Two mechanisms take place in the heart: diastole and systole. Diastole is the relaxation of the chambers of the heart and systole is the contraction of the heart chambers. Systolic pressure is thus the pressure that your heart emits when blood is forced out of the heart and diastolic pressure is the pressure exerted when the heart is relaxed. This is the main mechanism by which blood pressure operates.

Blood pressure is one of the principal vital signs. During each heartbeat, blood pressure varies between a maximum (systolic) and a minimum (diastolic) pressure. A normal blood pressure should be around 120/80, with the systolic pressure expressed first.

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A Review of Population-Based Studies on Hypertension in Ghana

J Addo,¹ C Agyemang,² L Smeeth,¹ A de-Graft Aikins,³ A K Edusei,⁴ and O Ogedegbe⁵

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Go to:

Summary

Background

Hypertension is becoming a common health problem worldwide with increasing life expectancy and increasing prevalence of risk factors. Epidemiological data on hypertension in Ghana is necessary to guide policy and develop effective interventions.

Methods

A review of population-based studies on hypertension in Ghana was conducted by a search of the PUBMED database, supplemented by a manual search of bibliographies of the identified articles and through the Ghana Medical Journal. A single reviewer extracted data using standard data collection forms.

Results

Eleven studies published on hypertension with surveys conducted between 1973 and 2009 were identified. The prevalence of hypertension was higher in urban than rural areas in studies that covered both types of area and increased with increasing age (prevalence ranging from 19.3% in rural to 54.6% in urban areas). Factors associated with high blood pressure included increasing body mass index, increased salt consumption, family history of hypertension and excessive alcohol intake. The levels of hypertension detection, treatment and control were generally low (control rates ranged from 1.7% to 12.7%).

Conclusion

An increased burden of hypertension should be expected in Ghana as life expectancy increases and with rapid urbanisation. Without adequate detection and control, this will translate into a higher incidence of stroke and other adverse health outcomes for which hypertension is an established risk factor. Prevention and control of hypertension in Ghana is thus imperative and any delays in instituting preventive measures would most likely pose a greater challenge on the already overburdened health system.

Keywords: hypertension, salt consumption, alcohol intake, urbanization, Ghana

Go to:

Introduction

Hypertension is an important public health challenge in both economically developing and developed countries.¹ It is becoming an increasingly common health problem because of increasing longevity and prevalence of contributing factors such as obesity, physical inactivity and an unhealthy diet.²⁻⁴ The current prevalence of hypertension in many developing countries, particularly in urban societies, is reported to be already as high as is seen in developed countries.⁵⁻⁷ The prevalence of hypertension is expected to increase even further in the absence of broad and effective preventive measures.⁸

This is especially true for Ghana where hypertension was reported to be the second leading cause of outpatient morbidity in adults older than 45 years in Ghana.⁹ At the leading teaching hospital in Ghana between 1990 and 1997, non-communicable diseases and their complications accounted for more than two-thirds of all medical admissions and more than 50% of all deaths.⁹ An increase in morbidity associated with hypertension does not only reflect a high prevalence of hypertension, but is also an indication of inadequate rates of detection, treatment and control. In an examination of postmortem records in the teaching hospital in Accra between 1994 and 1998, 11 % of deaths in adults aged 20 years or more were due to stroke, most of which were haemorrhagic.¹⁰ Hypertension was a predominant factor in these strokes.

Most of the hypertension research to date has been undertaken among white participants in developed country settings. Both health service factors relating to the detection and control of hypertension and environmental determinants of blood pressure -such as diet and physical activity -differ markedly between Africa and most western settings. In addition, there is some evidence that compared to white people, people of black African origin have higher risks of

developing hypertension, the blood pressure elevation is often more marked and more rapid and that achieving blood pressure control is more difficult.¹¹ Reliable information about the prevalence of hypertension in different world regions is essential to the development of health policies for prevention and control of this condition.¹² The absence of reliable data on the prevalence of major cardiovascular risk factors in sub-Saharan Africa (SSA), let alone the trends over time, has been identified as a major impediment to developing appropriate policies and interventions to prevent and treat cardiovascular disease (CVD) in the region.^{13–17} Current estimates and projections around non-communicable diseases for most of SSA are largely based on assumptions and extrapolations.^{18, 19}

The purpose of this review was to identify population based studies of hypertension in Ghana; to determine the prevalence, detection, treatment and control rates reported in these studies; examine the sex and urban-rural differences if any, in these rates; examine temporal trends in the prevalence, detection, treatment and control of hypertension and to examine the factors associated with hypertension and its control.

an area of around 15 Acres of land. this college has good greenery with gardens covering 7 Acres of land.



Fig.1: Map of Study area - Jadcherla

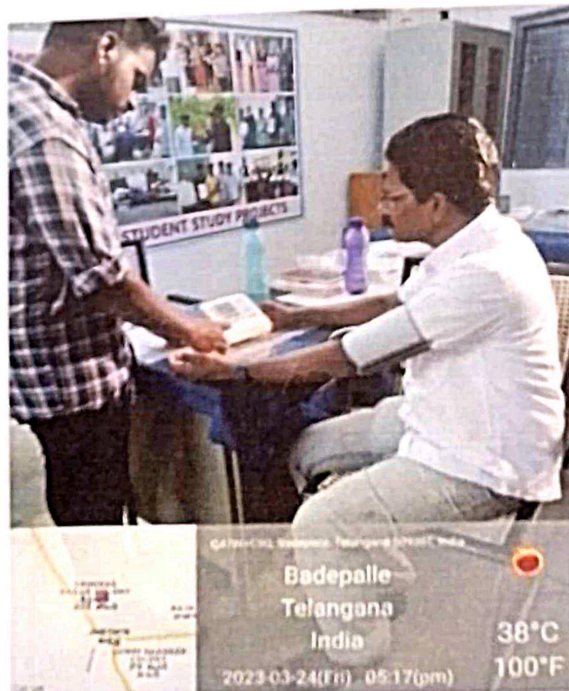
2) Materials and Methods::

The present study was done for six months from July 2021 to December 2021.. Periodical recording of Blood Pressure is done by the team members using Auscultatory and Oscillometric method. A team of six members divided into three groups and recorded the Blood pressure of the students and staff members on weekly basis with the help of Health club in the college.

Auscultatory Method: this method usually employs a mercury column and occlusive cuff and a stethoscope. The cuff is placed around the upper arm of the patient when the cuff is inflated, the circulation in the artery is blocked temporarily. When the cuff is deflated sounds are generated because of blood throbbing inside the artery. These sounds are monitored by stethoscope placed on rachial artery. Firrst sound is listened and verified in the meter is SBP, Second sound disappears is the DBP in the arteries.

Oscillometric Method: Electronic pressure monitors are popular nowadays due to their simplicity of use. The principle of measurement using this technique depends on the transmission of Intra arterial pulsations through the occluded arm. Cuff is placed on the upper arm rapidly inflated to

30mm Hg above the prospective SBP. Occluding the blood flow in the brachial artery, then the cuff is deflated gradually detecting the system by means of pressure sensors.



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Fig. 1: The team members recording the blood pressure

Results:

Among 271 members of this college, 80 male members and 140 female members are in the Age group of 18-30 years. 17 male members and 112 female members are in the Age group of 31-45 years. 10 male members and 5 female members are in the Age group of 46-60 years. The Hypertension among the age group 18-30 years, is nil. But 10 members are suffering from Hypotension with recordings ranging from 71/66 to 90/60mm Hg It is interesting to note that only the female members are in this age group are detected with hypotension.

Among 31-45 Age group, only one female member is with hypertension with 142/93 mmHg Among 46-60 age group. One female and one male member are with Hypertension with

149/89mmHg

By the above recordings it can be concluded that 22 % of the staff and students of this college is with Blood pressure abnormalities. 21% of population in the college is with Hypotension and 1% is with Hypertension, the findings are submitted to the Convener of Health club for further necessary suggestions to the persons with blood pressure anomalies.

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