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HEALTH PULSE INITIATIVE: TRACKING BLOOD PRESSURE IN AKSHAYA GROUP'S TEACHING AND NON-TEACHING STAFF

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Article History	Abstract
Received on: 24-11-2023 Revised on: 12-12-2023 Accepted on: 15-01-2024	Hypertension refers to a condition where the systemic artery blood pressure exceeds normal levels, necessitating increased cardiac effort to counteract the elevated pressure and ensure adequate blood flow to tissues. The heightened systemic arterial pressure places stress on the heart and other arteries, contributing to the development of hypertension. In our cross-sectional observational study, we employed questionnaires to gather data from volunteers over a three-month period. The inclusion and exclusion criteria were carefully applied to ensure the relevance of the collected data. Our study included 120 individuals from the selected region, aiming to assess blood pressure monitoring. The study revealed a dominance of males, constituting 51.67% of the total participants, while women accounted for 48.33%. The age distribution showed that 46.67% of the volunteers fell within the 31 to 40 age group. Our findings indicated that age, gender, and occupation significantly influenced blood pressure monitoring. Upon analysis, we observed a statistically significant improvement in volunteers' knowledge, attitudes, and practices regarding hypertension following counseling. This suggests the potential efficacy of intervention strategies in enhancing awareness and management of hypertension among the studied population.
 	Keywords: Blood Pressure, Hypertension, Knowledge, Attitude, Practice, Volunteers.

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Introduction

The most common risk factor for cardiovascular and cerebrovascular death globally is still hypertension, the most common chronic non-communicable disease. The World Health Organization (WHO) estimates that 1.28 billion adults globally suffer from arterial hypertension, although only half of those cases have received a thorough diagnosis and course of treatment. With the widespread prevalence of risk factors such as unhealthy lifestyle, smoking, and obesity, the estimated prevalence and control of hypertension is still not optimistic, causing the grim situation of blood-pressure control [1]. The evidence-based international strategies for the control and treatment of hypertension focus on using standardized treatment protocols to achieve the blood-pressure (BP) target range. Hypertension is traditionally divided into essential and secondary hypertension. Patients with primary hypertension account for more than 90% of all hypertensive patients, and the etiology is mostly unclear. Therefore, the application of standardized treatment protocols can significantly simplify the selection of anti-hypertensive drugs and ensure therapeutic

effectiveness. For example, the 2020 ISH hypertension guidelines recommend a four-stage, streamlined treatment protocol [2].

Nonetheless, although non-etiological treatments can control BP, the pathophysiological state of some patients remains, which may also lead to the development of heart failure, chronic kidney disease and other diseases [3,4]. Therefore, there is an urgent need to find a system of diagnosis and treatment based on Etiology to improve the prognosis of hypertensive patients.

Hypertension, often known as high blood pressure, is a long-term medical disorder characterized by elevated blood pressure within the arteries. In order to pump blood through the blood arteries, the heart must beat harder than usual.

The activity of the heart affects the pressure within the arteries. The pressure rises as the heart beats and pumps blood into the arteries. The pressure drops as the heart becomes more relaxed. When measuring blood pressure, diastole is the lowest pressure recorded during a heartbeat and systole is the greatest pressure recorded during a heartbeat. Systolic blood pressure is difficult to control in clinical practice, which is a better predictor of cardiovascular risk than diastolic blood pressure, systolic blood pressure increases linearly from 30 years, while diastolic blood pressure decreases from 50 years. Blood pressure is measured with a number followed by "mmHg", which stands for "millimetres of mercury".

Symptoms

- 1) Chest pain
- 2) Confusion
- 3) Noise or buzzing
- 4) Irregular heartbeat
- 5) Ear nosebleed
- 6) Exhaustion (lethargy)
- 7) Vision changes [6]

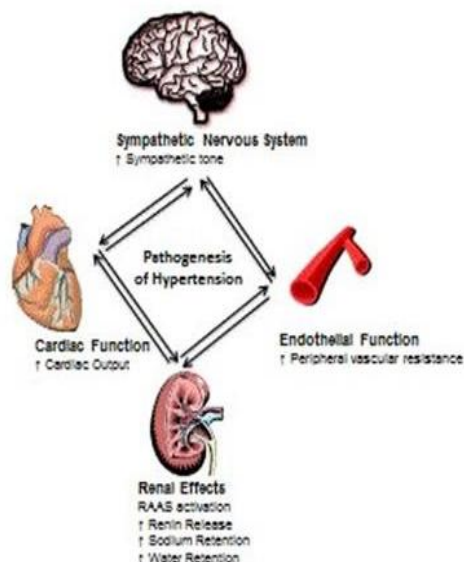


Fig 1: Systems involved in the development and maintenance of hypertension [7]

Pathophysiology

Many pathophysiologic factors have been implicated in the genesis of essential hypertension:

increased sympathetic nervous system activity, perhaps related to heightened exposure or response to psychosocial stress; overproduction of sodium-retaining hormones and vasoconstrictors; long-term high sodium intake; inadequate dietary intake of potassium and calcium; increased or inappropriate renin secretion with resultant increased production of angiotensin II and aldosterone; deficiencies of vasodilators, such as prostacyclin, nitric oxide (NO), and the natriuretic peptides; alterations in expression of the kallikrein-kinin system that affect vascular tone and renal salt handling; abnormalities of resistance vessels, including selective lesions in the renal microvasculature; diabetes mellitus; insulin resistance; obesity increased activity of vascular growth factors; alterations in adrenergic receptors that influence heart rate, inotropic properties of the heart, and vascular tone; and altered cellular ion transport. In youth, the pulse pressure generated by the left ventricle is relatively low and the waves reflected by the peripheral vasculature occur mainly after the end of systole, thus increasing pressure during the early part of diastole and improving coronary perfusion. With ageing, stiffening of the aorta and elastic arteries increase the pulse pressure. Reflected wave moves from early diastole to late systole. This result in increase in left ventricular afterload and contribute to the left ventricular hypertrophy. The widening of the pulse pressure with ageing is strong predictor of coronary heart disease. Considerable evidence indicate that resetting of pressure natriuresis plays a key role in causing hypertension. 8

Types of hypertension

There are two major types of hypertension and four less frequent found types. The two major types are:

- Primary or essential hypertension
- Secondary hypertension

The other types include:-

- Malignant hypertension
- Isolated systolic hypertension
- White coat hypertension
- Resistant hypertension

Primary hypertension:- This type is also called essential hypertension, and it is by far the most common type of hypertension, and is diagnosed in about 95% of cases. Essential hypertension has no obvious or yet identifiable cause.

Secondary hypertension:- This may be caused by:

- Kidney damage or impaired function
- Tumours or over activity of the adrenal gland
- Thyroid dysfunction
- Pregnancy related condition
- Drinks and food.

Malignant hypertension:- This is the severe form of hypertension. It rapidly leads to organ damage, unless properly treated. It is fatal within five years for the majority of patient.

Isolated systolic hypertension:- In this case the systolic blood pressure, is consistently above 160mm Hg, and the diastolic below 90mm Hg. This may occur in older people, and results from the age-related stiffening of the arteries. The loss of elasticity in arteries, like the aorta, is mostly due to arteriosclerosis.

White coat hypertension:- Also called anxiety induced hypertension. It means blood pressure is only high when tested by a health professional. It confirmed by repeated reading outside of the clinical setting. It does not need to be treated. However, regular

Follow-up is recommended to ensure that persistent hypertension has not developed.

Resistant hypertension:- If blood pressure cannot be reduce to below 140/90mm Hg despite a triple-drug regime resistant hypertension is considered [9].

Classification of blood pressure for adults:

Table 01: Classification of blood pressure for adults

Blood pressure class	Systolic blood pressure (mmHg)	Diastolic blood pressure (mmHg)
Normal	<120	And <80
Prehypertension	120 – 139	Or 80 – 89
Stage 1 hypertension	140 – 159	Or 90 – 99
Stage 2 hypertension	≥160	Or ≥ 100

Material and methods

Aim

➤ To Assesst and monitor the blood pressurelevel among the faculty members of AkshayaGroup of Institution [Teaching

staff and non-Teaching staff].

Objective

- To monitor the blood pressure level among the Staff member among the Akshaya Group of Institution.
- To monitor the work stress level among the Staff member among the Akshaya Group of Institution.

Ethical consideration

- Akshaya institution of ethics committee granted ethical approval.
- The study provided informed concerned prior to the start of the study.

Study site:

the study was conducted at akshaya institution of pharmacy (aip), akshaya institution of nursing (ain), akshaya institution of technology (ait), akshaya institution of polytechnic, tumkur, karnataka.

Study design area & period:

A cross-sectional observational study. The study was conducted during a time period of 3 months (15 july 2023 to 15 october 2023).

Study criteria:

The study was carried out by considering the following inclusioncriteria and exclusion criteria.

Inclusion criteria

- Volunteers age morethan18years.
- Both the gender.
- Those who were willing to participate in the study.
- All the staff and non-staff of akshaya faculty.

Exclusive criteria

- Agebelow18years.
- Special population (pregnancy and lactating women).
- Those who were not willing to participate in the study.
- Students were excluded from the study.

Sample size determination:

A convenient random sample technique adopted. A total samplesize was 120 volunteers. 95% of confidence interval, 80% power and 5% chances of error.

Statistical test:

The statistical analysis used in this study included both descriptive and inferential analyses. Paired t test has been used to find out significance of proportion in paired data. Microsoft word and excel were used to generate graphs and tables.

Data collection procedure & tool:

It is a prospective intervention study conducted in akshaya group of institution faculty for a period of three months, with inclusion criteria consistent of all faculty members, including teaching and non-teaching staff. A specially designed data collecting form was created to capture demographic information from participating volunteers such as age, gender, past medical and medication history.

Data analysis:

The self-modified kap questionnaire was used to assess and monitor blood pressure in faculty members of the akshaya group of institutions. Expert validation and reliability were conducted. Consist of fifteen questions that were divided into three categories for evaluation: knowledge, attitude,

andpractice. The following was the kap scoring:

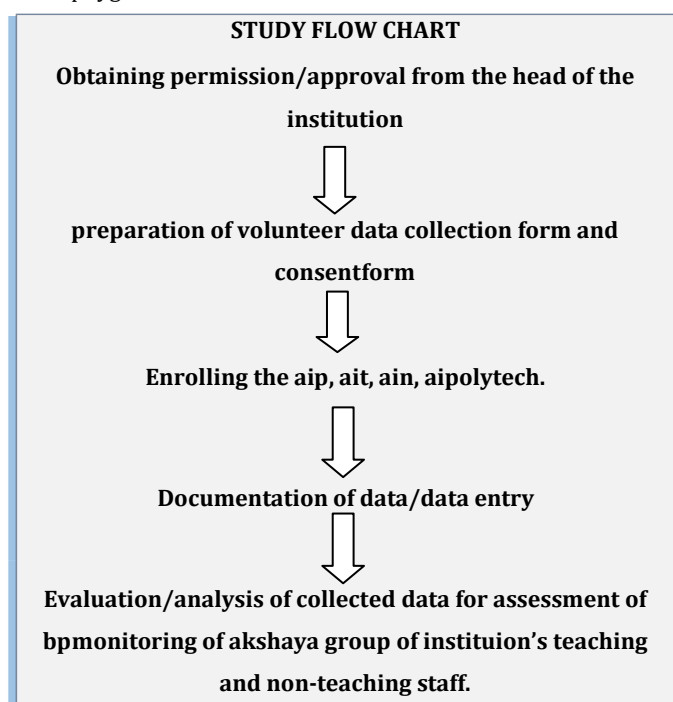
Total score 0-3 = poor, 4-7 = good

Based on the scores counselling was given related to lifestyle modifications.

Statistical significance was determined using a p-value of 0.05.

Study material:

- Validated questionnaires.
- Informed consent forms.
- Volunteers profile form.
- Kap self modified questionnaire.
- Volunteer information leaflet.
- Sphygmomanometer.



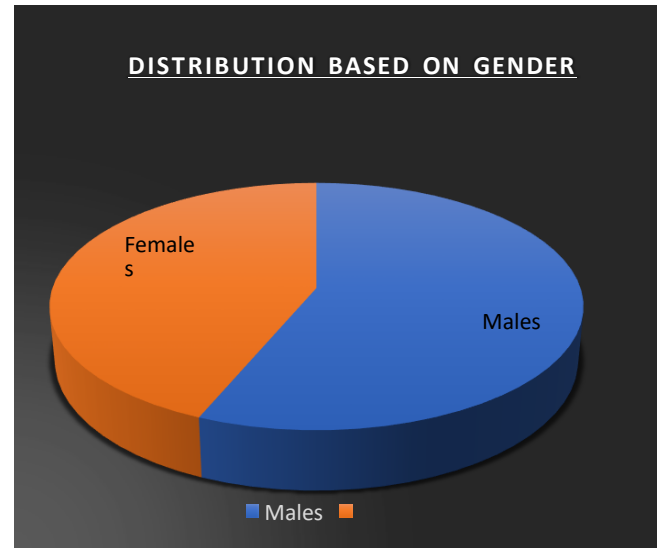
Results

A total of 120 volunteers were enrolled in the study at Akshaya Group of Institution in Tumkur, India. Based on inclusion criteria, 62 males (51.67%) and 58 females (48.3%) were recruited for the study. The Volunteers' ages ranged from 22 to 80 years. The vast majority of volunteers (46.67%) were between the ages of 31 and 40. According to the blood pressure distribution of the volunteers, the majority have systolic BP above 140 and diastolic BP below 80.

Distribution of Volunteers According To the Gender

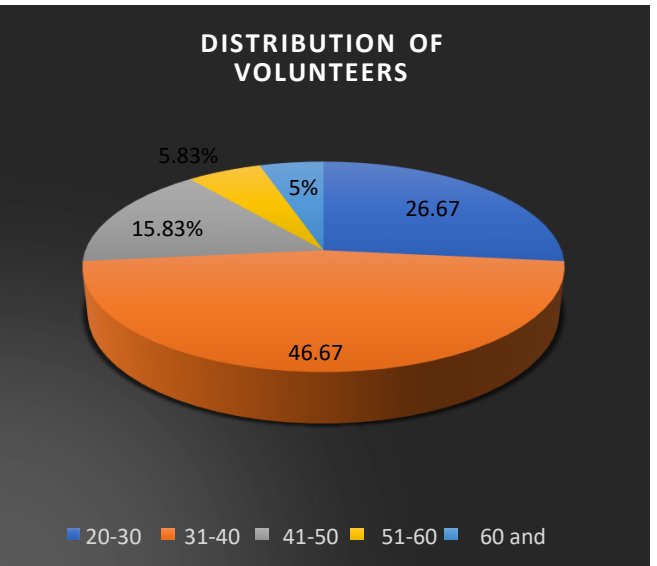
Gender	Total number of participants (N=120)	Percentage
Males	62	51.67%
Females	58	48.33%

Among 120 Volunteers age ranges from 20 years to 60 years and above. They are categorized in to 5 group, among these group. The study volunteers were classified according to their systolic blood pressure (SBP). Of these, 49 (40.08%) had SBP less than 120 mmHg, while 31 (25.08%) also had SBP less than 120 mmHg.



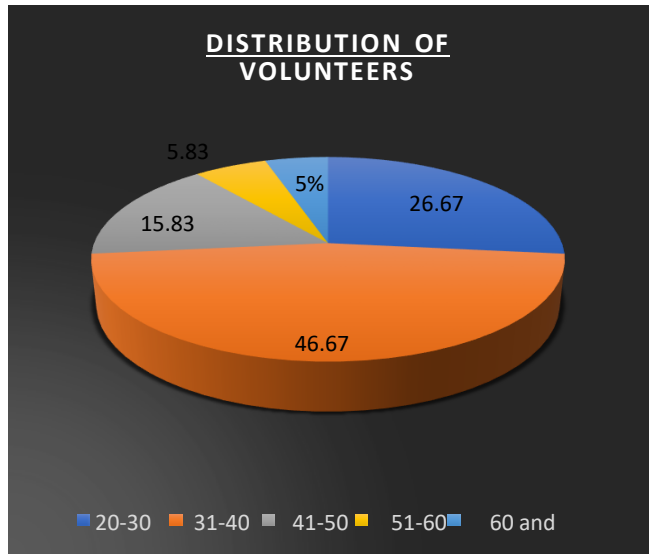
DISTRIBUTION OF VOLUNTEERS ACCORDING TO AGE

Age groups (in year)	No. of volunteers (N=120)	Percentage
20-30	32	26.67%
31-40	56	46.67%
41-50	19	15.83%
51-60	7	5.83%
60 and above	6	5%



SYSTOLIC	NO. OF VOLUNTEERS	PERCENTAGE
<120	49	40.08%
<130	31	25.8%

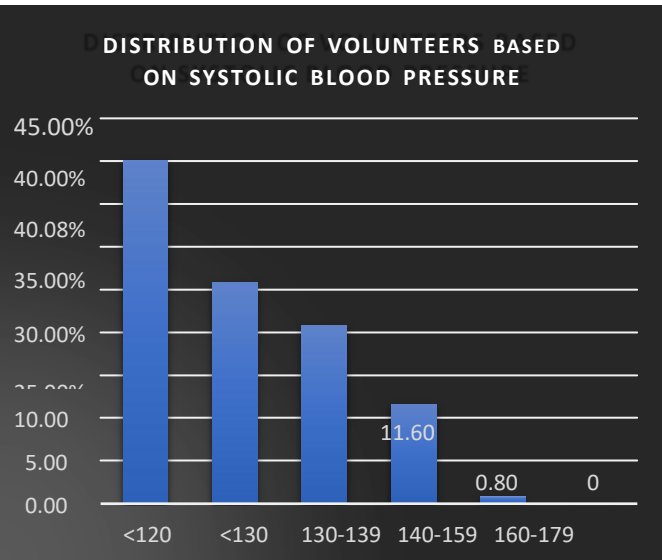
130-139	25	20.8%
140-159	14	11.6%
160-179	1	0.8%
≥180	0	0



In our study volunteers were categorized based on Diastolic blood pressure, among them 56(66.06%) volunteers had DBP of <80mmHg, followed by 23(19.01%) volunteers with DBP of 90- 95mHg.

DISTRIBUTION OF VOLUNTEERS BASED ON SYSTOLIC BLOODPRESSURE

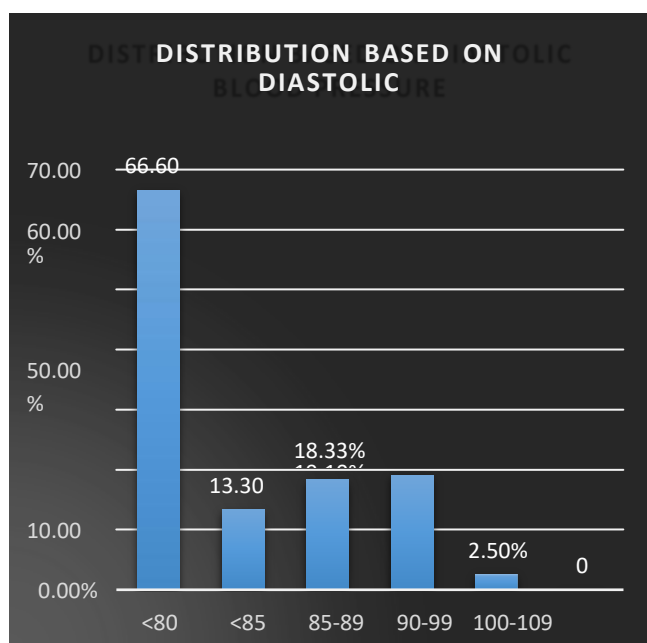
SYSTOLIC	NO. OF VOLUNTEERS	PERCENT AGE
<120	49	40.08%
<130	31	25.8%
130-139	25	20.8%
140-159	14	11.6%
160-179	1	0.8%
≥180	0	0



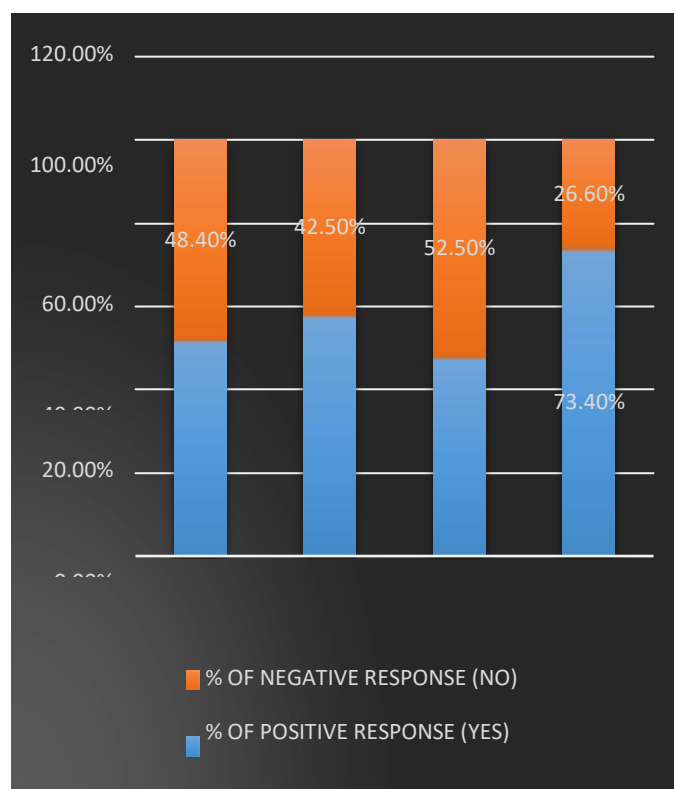
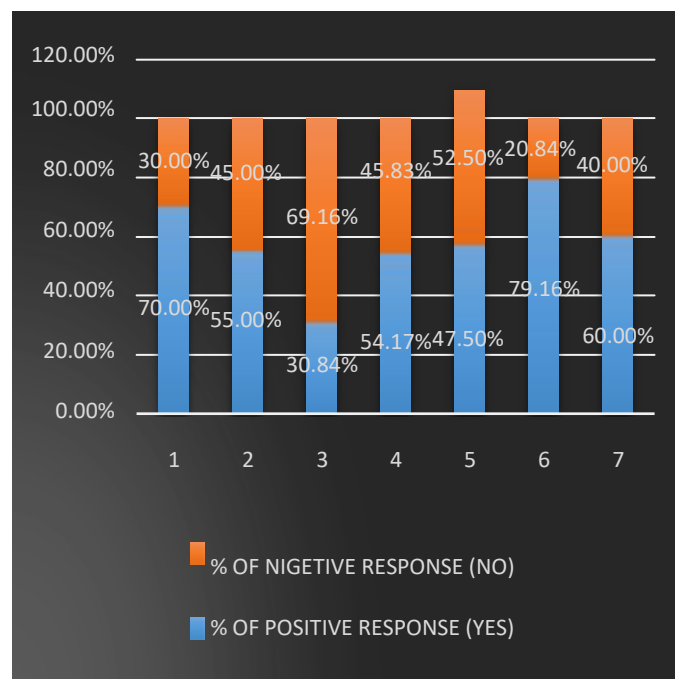
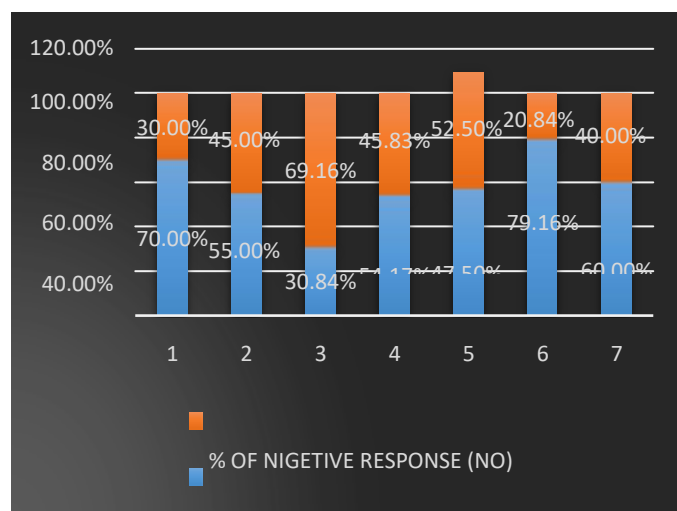
In our study volunteers were categorized based on Diastolic blood pressure, among them 56(66.06%) volunteers had DBP of <80mmHg, followed by 23(27.71%) volunteers with DBP of 80-89mmHg, 2(2.44%) volunteers with DBP of 90-95mmHg, and 0(0%) volunteers with DBP of ≥110mmHg.

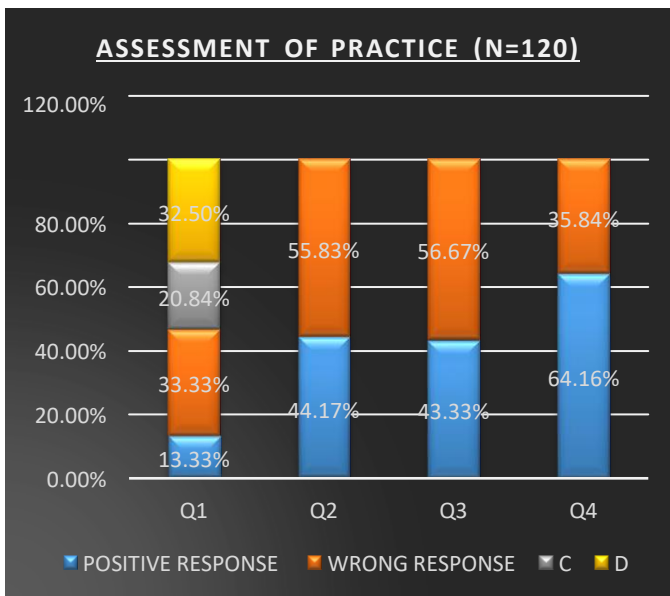
DISTRIBUTION BASED ON DIASTOLIC BLOOD PRESSURE
90- 95mHg.

DIASTOLIC	NO.OF VOLUNTEERS	PERCENTAGE
<80	56	66.6%
<85	16	13.3%
85-89	22	18.33%
90-99	2	1.67%
≥110	0	0



ASSESSMENT OF KNOWLEDGE OF VOLUNTEERS





COMPARISON OF KAP KNOWLEDGE

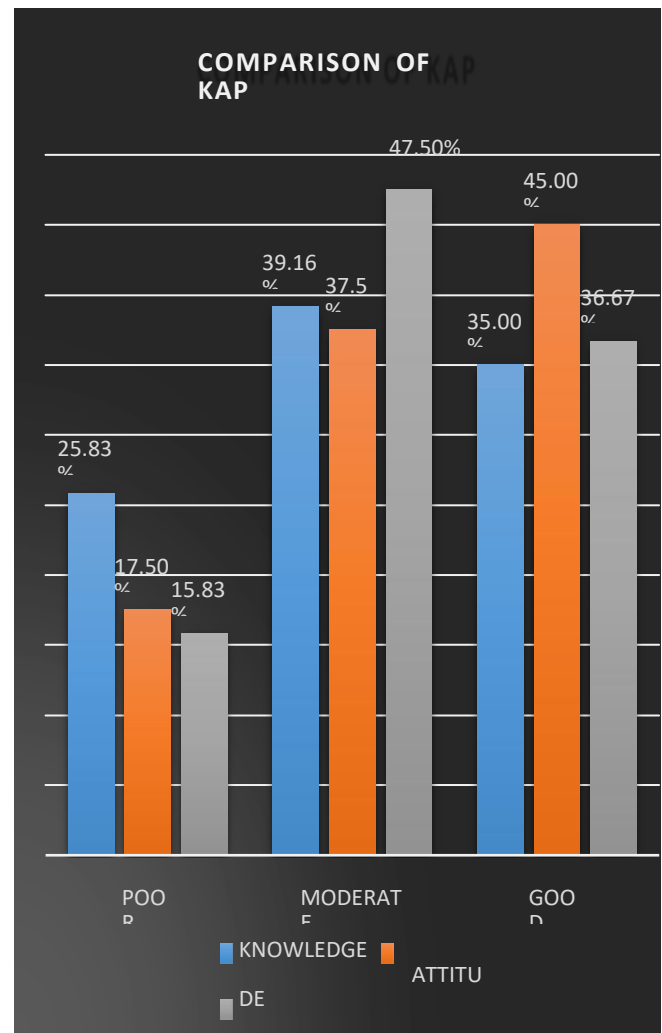
RESPONSE	POOR	MODERATE	GOOD
NO. OF RESPONSE	31	47	42
%	25.83%	39.16%	35%

ATTITUDE

RESPONSE	POOR	MODERATE	GOOD
NO. OF RESPONSE	21	45	54
%	17.50%	37.50%	45.00%

PRACTICE

RESPONSE	POOR	MODERATE	GOOD
NO. OF RESPONSE	19	57	44
%	15.83%	47.50%	36.67%



consequences of high blood pressure. Majority of the participants in our study had a better understanding and attitude towards the risk of excessive salt intake to prevent hypertension. Salt reduction has been suggested as possible measure to reduce high BP. several studies investigated this issues and found that for salt restriction provides additional benefits in term of BP control.¹⁰ The attitude and practice of exercise was found poor in our study. Majority of the volunteers had not the practice of doing exercise regularly. There is evidence that regular dynamic

physical exercise (including walking, cycling, swimming) decreases both systolic and diastolic blood pressure by 5-7mmHG independent of weight loss, alcohol or salt intake. Additionally, data indicated that for hypertensive patients, moderate-intensity exercise performed three or four times a week for fifty to sixty minutes may be more beneficial than vigorous exercise in

lowering blood pressure. The relative risk of hypertension is decreased by increased physical activity, calorie restriction, alcohol reduction, and sodium reduction alone or in combination.¹¹

The study shows positive impact of counselling on hypertension. Generally less patients have addiction of

smoking and alcohol which can be considered as risk factor of cardiovascular diseases in hypertensive patients. Many epidemiological studies from different part of India have shown significant correlation of smoking and alcohol use with hypertension prevalence.¹²

Before receiving counselling, 120 volunteers exhibited poor attitudes, practices, and knowledge about hypertension. These metrics improved and the majority of volunteers' quality of life increased after receiving counselling regarding changing their lifestyles. The study shows that blood pressure can be controlled by proper management. The educated volunteers have a major role in improving health care in hypertensive volunteers. The study demonstrates that counselling improves KAP scores of patients which leads in decreasing BP and improving quality of life of volunteers.

Level of education had an impact on KAP scores. We found that people with education level of class 10 and above had higher KAP scores compared to those with lower education level. A similar study in Nepal also showed influence of education on knowledge and practice indicating that literate patients scored better than their illiterate counterparts.²⁸

Based on Assessment of Knowledge, Attitude and Practice.

A portion of the 120 volunteers' responses to certain questions following counselling are provided.

Assessment of knowledge (out of 120 Volunteers)

- Of the patients, 70.00% are aware of what a normal blood pressure reading is, and 30.00% are unaware.
- Of the patients, 55% are aware of high and low blood pressure, while 45% are unaware of it.
- Of the patients, 47.50% are aware of the symptoms of low blood pressure, while 52.50% are unaware of them.

Assessment of attitude (out of 120 Volunteers)

- The percentage of participants who believe obesity and high blood pressure are related (40%) and who do not believe this (60%).
- Of the volunteers, 73.40 percent believed that regular physical activity was essential, while 26.60 percent did not think so.

- Of the volunteers, 57.50% believed that reducing salt intake could control high blood pressure, while 42.50% did not believe this.

Assessment of practice (out of 120 Volunteers)

- Of the volunteers, 43.33% engaged in regular exercise, while 56.67% did not.
 - The number of volunteers who measure their Blood Pressure are as follows:
 - Daily (13.33%)
 - Monthly (33.33%)
 - Twice a week (20.84%)
 - If I have a problem (32.50%)
 - The number of volunteers who were avoiding the intake of extra salt were (44.17%) and who were not (55.83%).
- We also found that duration of hypertension also had impact on knowledge of hypertension. People with duration of hypertension five years and above had better knowledge compared to people with less duration of hypertension.¹³

Conclusion

Hypertension stands as a severe ailment with the potential for various complications and, ultimately, fatal outcomes. The evaluation of hypertension is crucial for the formulation of novel strategies aimed at enhancing knowledge, attitudes, and practices to alleviate the burden of this condition within a country. Our research uncovered that a substantial portion of the population exhibits a commendable comprehension of hypertension-related issues.

Our primary emphasis was on crafting and executing health education programs, specifically targeting voluntary work stress and the root causes of job-related stress, with the overarching goal of augmenting the understanding of hypertensive individuals. The findings of our study underscore the significant impact of hypertension on the quality of life for patients and highlight the pivotal role that education plays in ameliorating healthcare outcomes.

A deficiency in understanding and suboptimal practices may exacerbate existing health challenges, potentially leading to severe complications and harm to vital organs. Therefore, it becomes imperative to employ effective instructional techniques for patients. Our study conclusively demonstrates a statistically significant improvement in the knowledge, attitudes, and practices of hypertension among volunteers following counseling. This underscores the importance of targeted educational interventions in fostering positive health outcomes for individuals grappling with hypertension.

Limitations

- 1) In this study there was no proper evidence about the complete follow up of volunteers.
- 2) The study was conducted for shorter duration of time.
- 3) The local language was barrier for our study.

Acknowledgements

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