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Section A-Research paper

To assess the awareness, knowledge and risk factor associated in hypertensive subjects and impact of counseling lifestyle modification adherence to hypertensive therapy and patient's knowledge & satisfaction among hypertensive therapy

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ABSTRACT

Hypertension is very important health issue due to morbidity and mortality which is caused by cardiovascular diseases and high treatment services. It is most common chronic disease in rural and urban areas in today's world and needs continuous monitoring and lifetime treatment. The objective of the study were to assess the awareness, knowledge and risk factor associated in hypertensive subjects and impact of counseling lifestyle modification adherence to hypertensive therapy and patient's knowledge & satisfaction among hypertensive therapy. Total 195 hypertensive subjects were selected for the study in Rural and Urban area of Dehradun District. In present study, 22(17.32%) and 29(42.64%) were aware of monthly blood pressure checkup. 35(27.55%) and 24(35.29%) were do physical activity to control their blood pressure. 90 (70.86%)and 58(85.29%) were taken their medicine as prescribed by the doctor,10(7.87%) & 42(33.07%) and 29(42.64%) & 28(41.17%) have knowledge of hypertension and role of high salt intake in it. 71(55.90%),35(27.55%),63(49.60%) & 91(71.65%) and 19(27.94%),34(50%) & 52(76.47%) were know about the obesity ,coffee, smoking and high salt intake is the major risk factor for the hypertension. 62(48.81%), 75(59.05%), 37(29.13%) & 10(7.8%) and 37(54.4%),42(61.76%),27(39.70%) & 21(30.88%) have knowledge about take healthy diet, eliminate spicy food, role of avoiding alcohol and role of drink herbal tea to lower the blood pressure in rural and urban areas respectively. Concluding the study, rural area subjects were having lesser knowledge about hypertension than urban population. Counseling should be done for the people of rural area for better outcomes.

Keywords- Counseling, adherence, obesity, smoking, hypertension

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Introduction- Hypertension is defined as the elevation of systolic blood pressure above a certain threshold value. Blood pressure is a major risk factor for cardiovascular diseases when it reaches from 115 ⁄ 75 mm Hg to 140 mmHg [1-5].

According to JNU 7 report on Prevention, Detection, Evaluation and Treatment of High blood pressure [6] provides a classification of blood pressure for adults aged ≥18 years [table 1]. Hypertension is divided into two stages.

• Stage 1 includes patients with systolic blood pressure 140-159 mmHg or diastolic blood pressure 90-99 mmHg.

• Stage 2 includes patients with systolic blood pressure ≥160 mmHg or diastolic blood pressure ≥ 100mmHg.66

Table1- Classification of blood pressure for adult aged ≥18 years [6]

Classification	Systolic blood pressure (mmHg)		Diastolic Blood pressure (mmHg)
Normal	<120	AND	<80
Pre- Hypertension	120-139	OR	80-89
Stage 1 hypertension	140-159	OR	90-99
Stage 2 hypertension	≥160	OR	≥100

Hypertension nearly affects 26% of adults of total population in the world. It is estimated that till 2025 29% of world's population (1.56 billion adults) will have hypertension. In India the presence of Hypertension has increased very fast. 25% and 10% in rural and urban areas respectively are affected by hypertension. This shows that by not taking medicines properly is reason of multifaceted problem which the reason for increasing important medical and public health issues like worst therapeutic outcomes, increase in hospitalization rates and increase the rate of health care [7]. Every year around the world due to uncontrolled BP 7.1 million people die [8].

Blood pressure is easy to detect and control with medications and lifestyle modification [9, 10]. Failed to control the blood pressure at normal levels because of different reasons i.e. lack of knowledge among patients, unhealthy lifestyle, limited access to health care, lack of treatment adherence etc. [11]

It is most common chronic disease in rural and urban areas in today's world and needs continuous Monitoring and lifetime treatment [12].

The aim of the study was to assess the awareness, knowledge and risk factor associated in hypertensive subjects and impact of counseling, lifestyle modification, adherence to hypertensive therapy and patient's knowledge & satisfaction among hypertensive therapy.

Hypertension can be controlled effectively by antihypertensive drugs [13]. These drugs decrease the rate of high blood pressure and reduce the risk of cardiovascular diseases [14] Stroke rate decrease nearly by 40% and myocardial infarction rate nearly reduced by 30% by intake of antihypertensive drugs. The antihypertensive drug treatment is very low and it can vary between 50%‐75% [15]

Change in lifestyle can be done by weight loss (at least 4.5kg), low sodium intake, limited increase in physical activity, quit smoking, reduce intake of alcohol and follow the Dietary Approaches to Stop Hypertension (DASH). DASH diet besides sodium intake, includes vegetable and low-fat dairy products rich in calcium and potassium and regular consumption of fruits [13].

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DASH diet results at least in 8 weeks with decrease in BP by 5.5/3.0 mmHg [16]. It is recommended to take daily 5.8 gm of NaCl salt or 2.3 gm of sodium [17]. Decreased risk of cardiovascular development and improved antihypertensive treatment mainly takes place due to lifestyle modification [13].

Methodology- The present study was conducted in rural and urban area of Dehradun District. This study was prospective assessment of awareness, knowledge and risk factor of hypertension and impact of counseling, lifestyle modification, adherence to hypertensive therapy and patient's knowledge & satisfaction among hypertensive therapy. The duration of study was six months. The hypertensive subjects of both male and female gender and all ages were enrolled into the study. The material used for conduction of study was questionnaire, information leaflets and informed consent forms. Subjects were randomly selected from Rural and Urban area of Dehradun District. A total 195 subjects voluntarily participated in the study. Hypertensive subjects were interviewed on the basis of structured questionnaire. Data related to their adherence to drug therapy, life style modification, disease state, approach towards the treatment were recorded. After the interview, counselling leaflet were distributed. The subjects were counseled regarding their disease state, lifestyle modification, adherence to antihypertensive drug therapy. Post counselling data was collected and recorded for future analysis.

Ethical committee approval- The proposed study was a survey study conducted on general population, without intervening of medical prescription, hence no approval was needed.
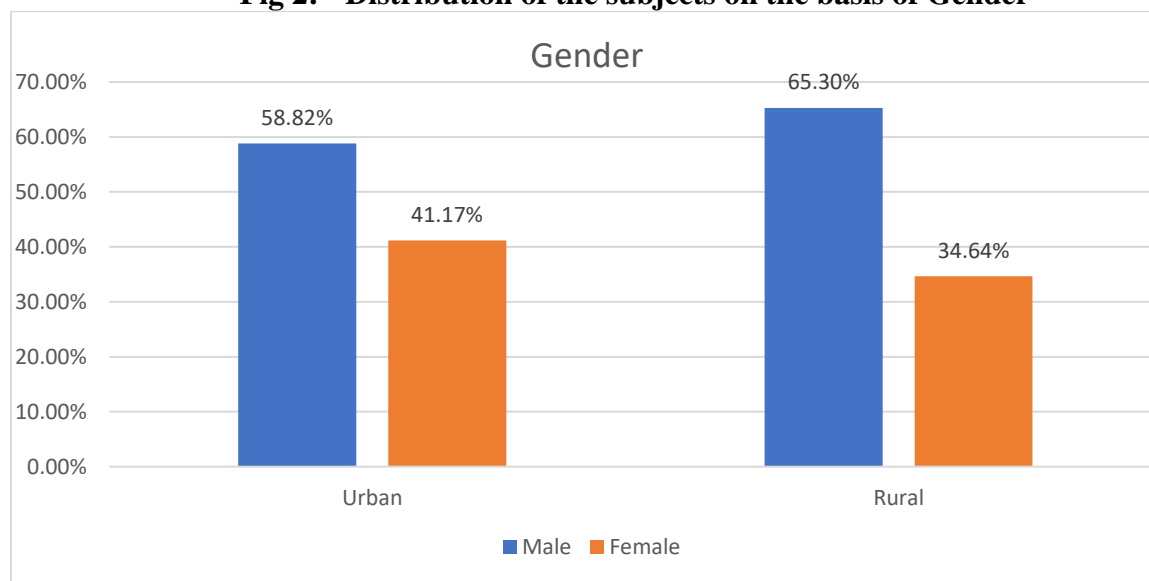
Results-
This is a survey-based study conducted in the rural and urban area of Dehradun District in which subject suffering with the hypertension were enrolled based on the inclusion & exclusion criteria. A total of 195 subjects 65.12% rural & 34.87% urban were included in the study. [Fig 1]

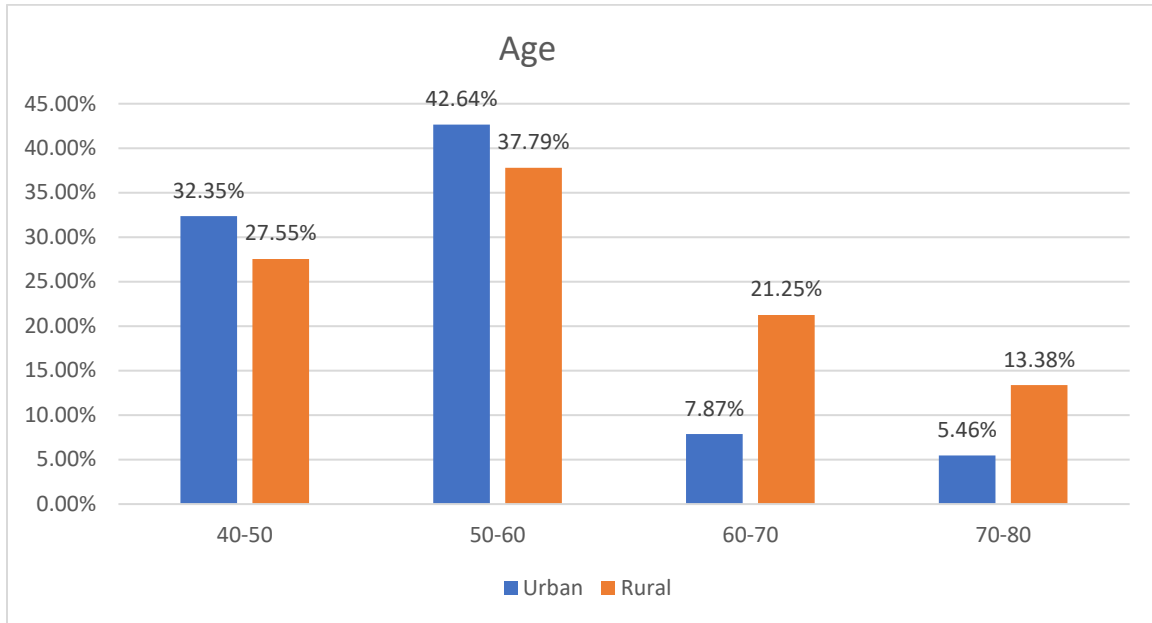**Fig 1: - Distribution of the subjects on the basis of areas**
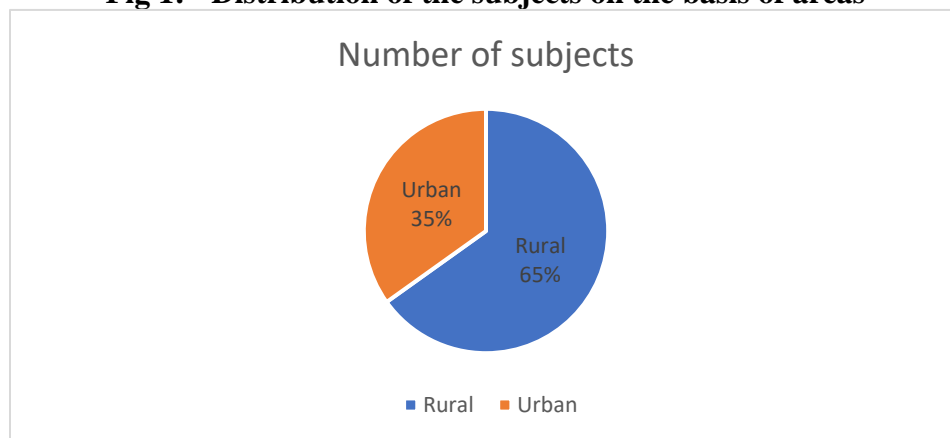
A)- Demographic details- Among 195 subjects 65.3% & 58.82 % males and 34.64% & 41.17% females were selected in rural and urban areas respectively. [Fig 2]

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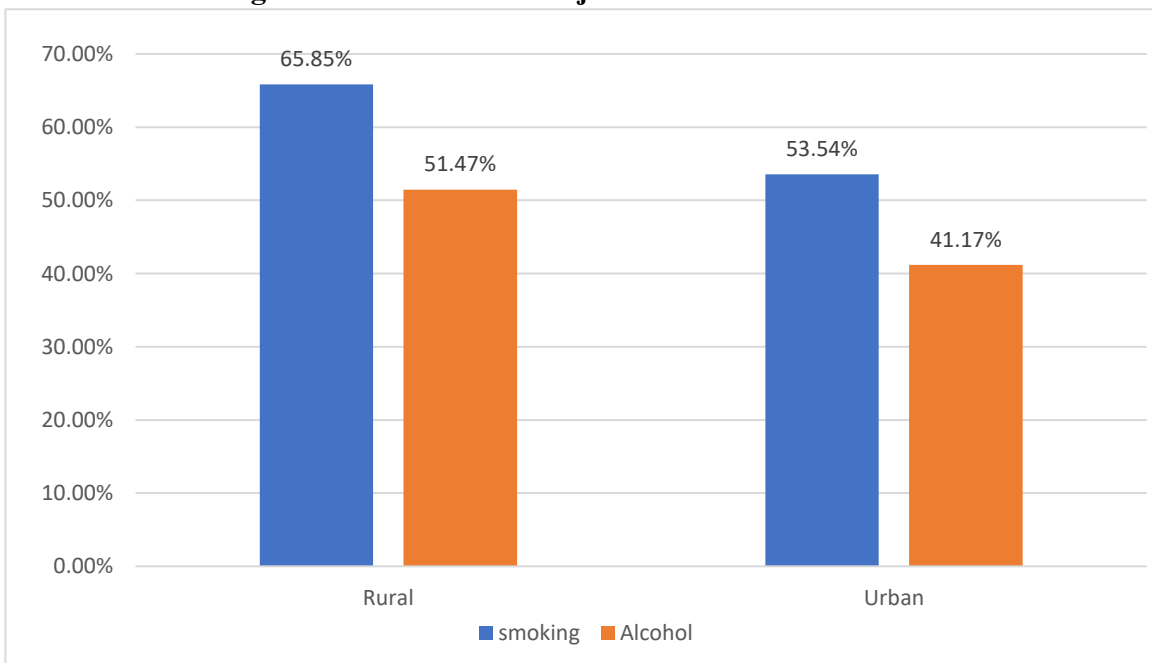**Fig 2: - Distribution of the subjects on the basis of Gender**

Among 195 subjects, 27.55% & 32.35%, 37.79% & 42.64%, 21.25% & 7.87% and 13.38% & 5.46% subjects were selected from age 40-50, 50-60, 60-70 to age 70-80 from rural and urban areas respectively. [Fig 3]

**Fig 3: - Distribution of subjects on the basis of age**

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Among 195 subjects 65.85% & 53.54% were smokers and 51.47% & 41.17% were alcoholic in rural and urban area respectively. [Fig 4]

Fig.4:- Distribution of subjects based on social habits

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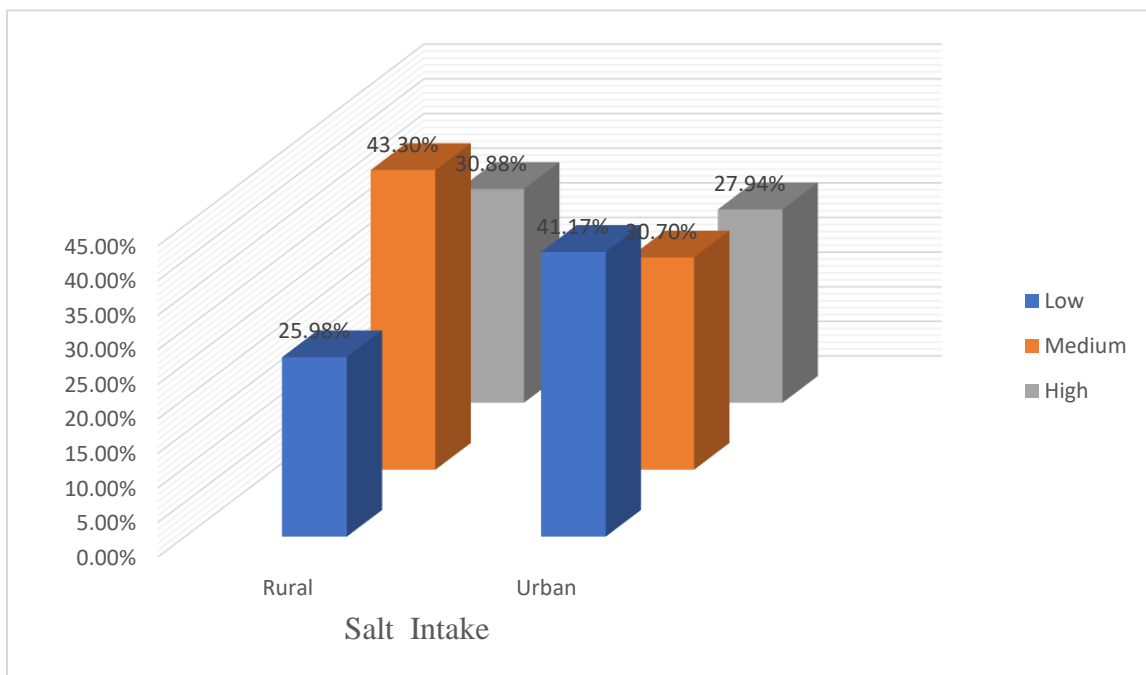
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Among 195 subjects 40.15% & 38.23 and 59.84% & 61.76% subjects from rural and urban area were vegetarian and non-vegetarian respectively [Fig 5]

Fig 5- Distribution of subjects based on diet
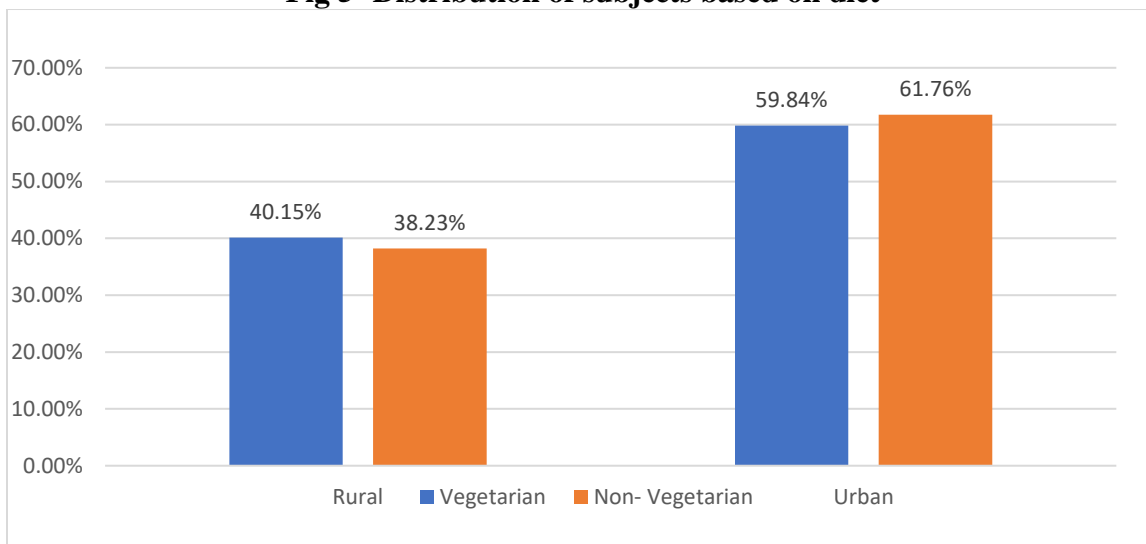
Among 195 subjects 25.98% & 43.30% & 30.88% subjects were on low salt diet, medium salt diet and on high salt diet in rural and41.17%, 30.70% & 27.94 % subjects were on low salt diet, medium salt diet and on high salt diet inurban area respectively. [Fig 6]

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Fig 6- Distribution of subjects based on salt intake

B). Distribution according to lifestyle-

Among 195 subjects 17.32%, 56.69% & 25.98% and 42.64%, 47.05% & 10.29% werefollowing their blood pressure check-ups monthly, six month and yearly in rural and urban areas respectively. [Table no 1]

Table no 1:- Distribution of the study group on the basis of frequency of blood pressure check-up

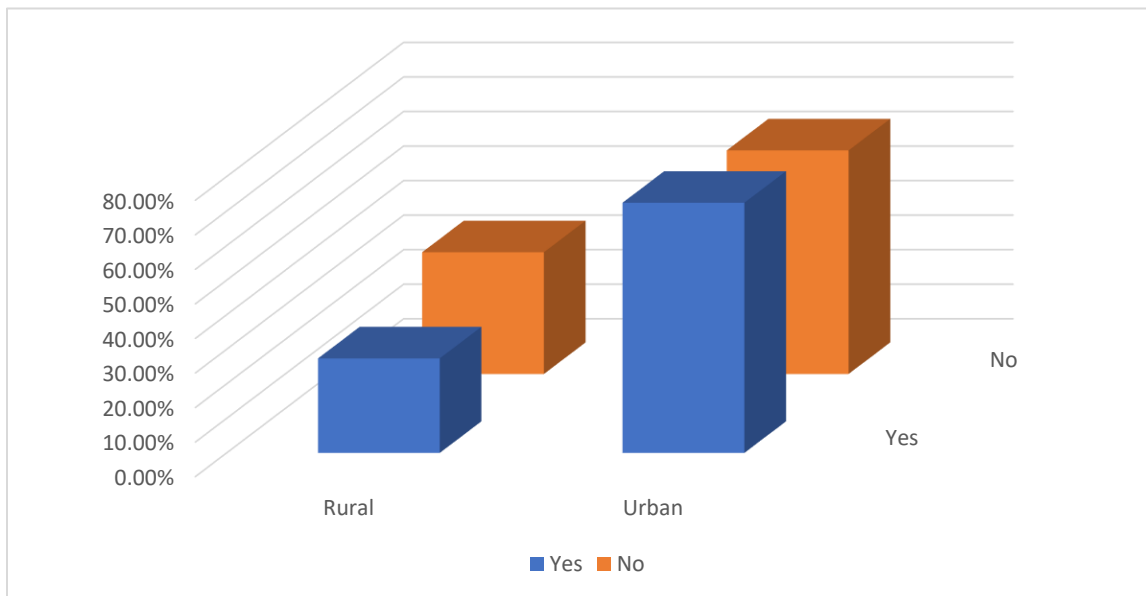|	Rural	Urban
Monthly	17.32%	42.64%
6 monthly	56.69%	47.05%
Yearly	25.98%	10.29%

Among 195 subjects, in rural area daily abilities were affected and 19.68% were aware of it, 18.11% were not aware of it & 62.20% don't know about it .And simultaneously in urban areas 35.29% were aware of it, 45.68% were not aware of it and 19.11% don't know about it. [Table no 2]

Table no 2:- Response of the subjects on affect of blood pressure on daily activities

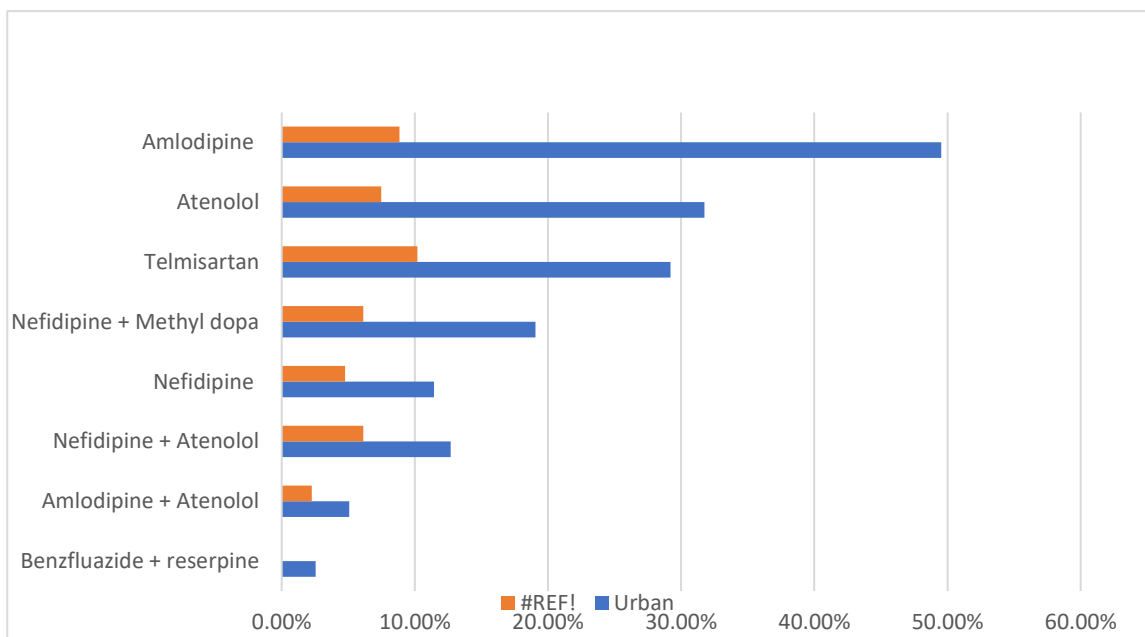| Ability to perform usual daily activity	Rural	Urban
Yes	19.68%	35.29%
No	18.11%	45.68%
Don't know	62.20%	19.11%

Among 195 subjects, 27.35% & 35.23% do physical activity and 72.4% & 64.72% do not do any physical activity in rural and urban areas respectively. [Fig 7]

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**Fig 7:- Distribution of the subjects on the basis of Physical activity**

Among 195 subjects, 49.53% & 8,84% were on amlodipine therapy, 31.75% & 7.48% were on atenolol therapy, 29.21% & 10.20% were on telmisartan therapy, 19.05% &6.12% were on the combination therapy of nifidipine& methyldopa, 11.43% &4.76% were on nefidipine therapy, 12.70% & 6.12% were on combination therapy of nifidipine& atenolol, 5.08% & 2.27% were on combination therapy of amlodipine &atenolol and 2.54% &nil were on combination therapy of benzfluazide& reserpine from rural and urban area respectively. [Fig 8]

Fig 8- Distribution of the subjects on the basis of drug therapy

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Among 195 subjects, 70.86% & 85.29% were taken their medicine as prescribed bythe Clinician and 30.70% & 14.70% were not taking their medicine as prescribed bythe Clinician in rural and urban areas respectively. [Fig 9]

Fig 9:- Response about the adherence to the Antihypertensive medication prescribed by the Clinician
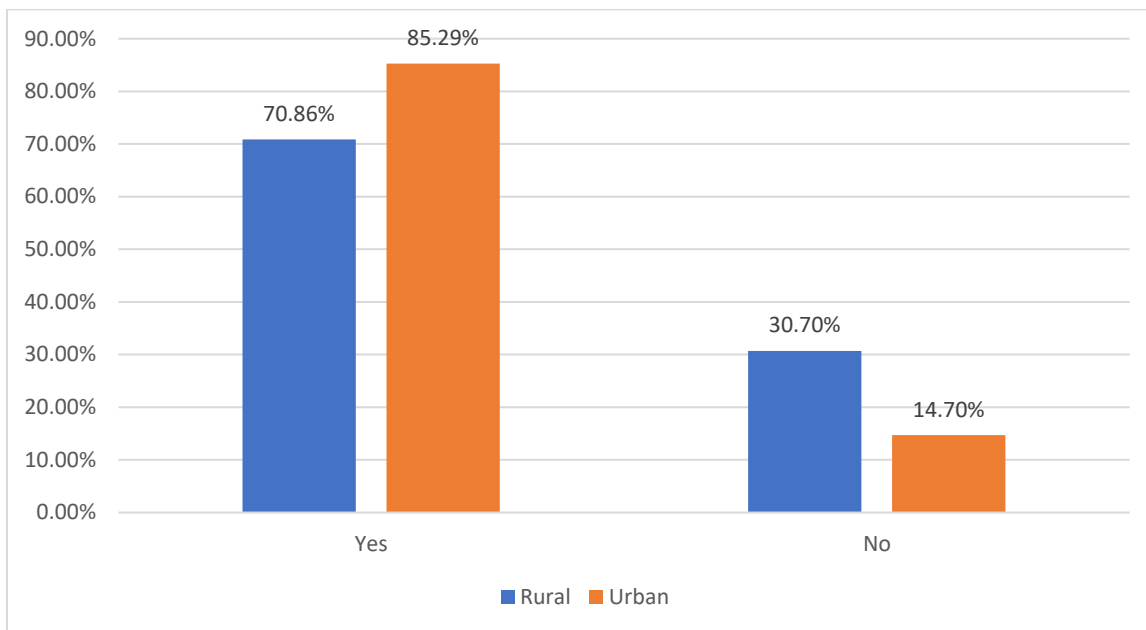

Among 195 subjects, have illness of stroke 0.78%) & 2.94%, 2.36% & 10.29% of kidney disease, 1.57% & 4.41% of liver disease, 2.36% & 8.82% of UTI, none of them & 4.41% experienced edema, 22.83% & 26.47% of eye problem, 42.51% & 27.94% of diabetes, 2.36% & 5.88% of PVD and 64.56% & 69.11% of obesity in rural and urban areas respectively. [Table no .3]

Table no 3:- Distribution of the subjects on the basis of concurrent illness along with Hypertension

	Rural	Urban
Stroke	0.78%	2.94%
Kidney Diseases	2.36%	10.29%
Liver diseases	1.57%	4.41%
UTI	2.36%	8.82%
Edema	0	4.41%
Eye problems	22.83%	26.47%
Diabetes	42.51%	27.94%
PVD	2.36%	5.88%
Obesity	6456%	69.11%

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Among 195 subjects 33.85% & 39.70% had family history of hypertension in rural and urban areas respectively. [Fig 10]

Fig 10:-Distribution of subjects on the basis of family history of Hypertension
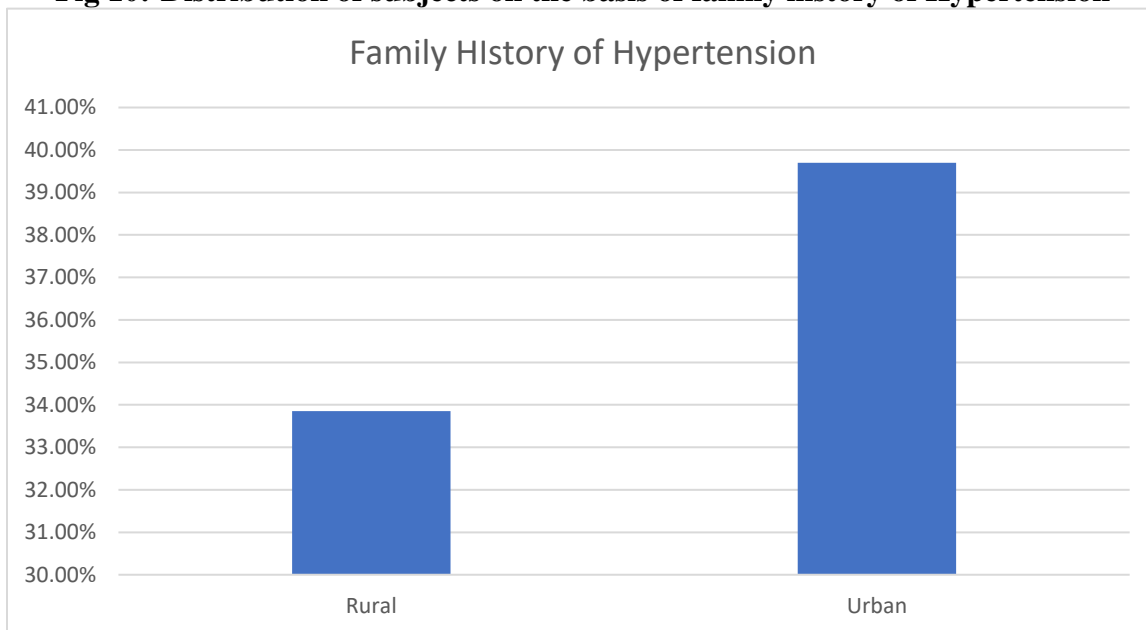
Among 195 subjects, 7.87%, 33.07%, 27.55% and 42.64%, 41.17%, 45.98% responded yes about knowledge of Hypertension. 51.96%, 29.13%, 21.25% and 30.88%, 7.35%, 27.94 responded no about knowledge of hypertension. 49.60%, 37.79%, 59.05% and 11.76%, 51.47%, 26.47% don't know about hypertension on questions 1, 2, 3 in rural and urban areas. [Table no 4] Questions were-

Q1. Do you know what Hypertension is?
**Q2.** Do you know the role of salt intake in Hypertension?
Q3. A person is considered to have hypertension if either their systolic blood pressure is 140 or their diastolic blood pressure is 90?

Table no. 4:- Response about knowledge of Hypertension

Questions	Rural			Urban		
	Yes	**No**	**Don't Know**	**Yes**	**No**	**Don't Know**
Question 1	7.87%	51.96%	49.60%	42.64%	30.88%	11.76%
Question 2	33.07%	29.13%	37.79%	41.17%	7.35%	51.47%
Question 3	27.55%	21.25%	59.05%	45.98%	27.94%	26.47%

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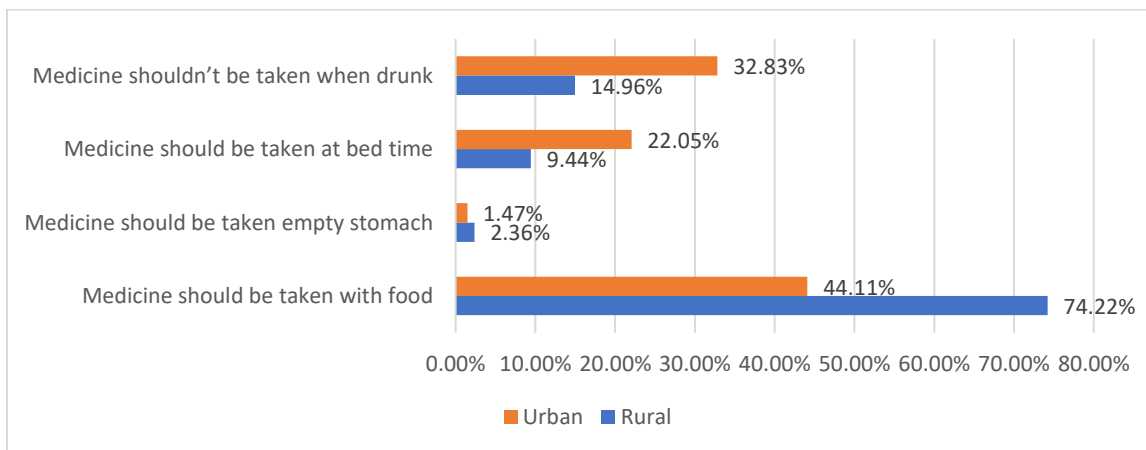
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Among 195 subjects, risk of hypertension increase due to obesity 55.90% & 60.29% , having more than two cup of coffee a day 27.55%) & 27.94% , smoking habits49.60% & 50% , high salt intake 71.65% & 76.47% in rural and urban areas respectively.[fig 11]

Fig 11:- Response of the subjects for high risk of Hypertension
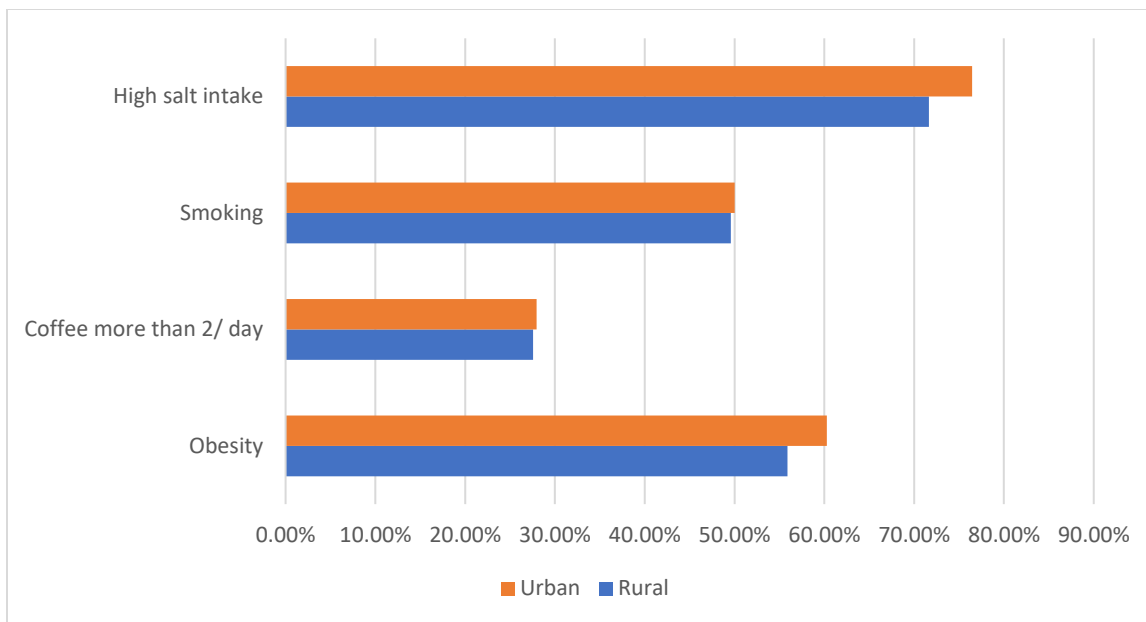

Among 195 subjects in rural and urban areas consider that the statement bloodpressure medicine should be, 73.22% & 44.11% taken with food , 2.36% & 1.47% taken in empty stomach, 9.44% & 22.05% works best if taken at bed time and 14.96% & 32.83% not be taken if drunk.[Fig 12]

Fig12:- Statement about blood pressure medicine

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Among 195 subjects, 48.80% & 54.41% were knowledge of having healthy diet low fat and dairy products, 59.05% & 61.76% eliminates spicy foods, 29.13% & 39.70% avoid alcohol and 7.8% & 30.88% drink herbal tea in rural and urban areas respectively. [Fig 13]

Fig 13:- Response about the Knowledge on life style modification
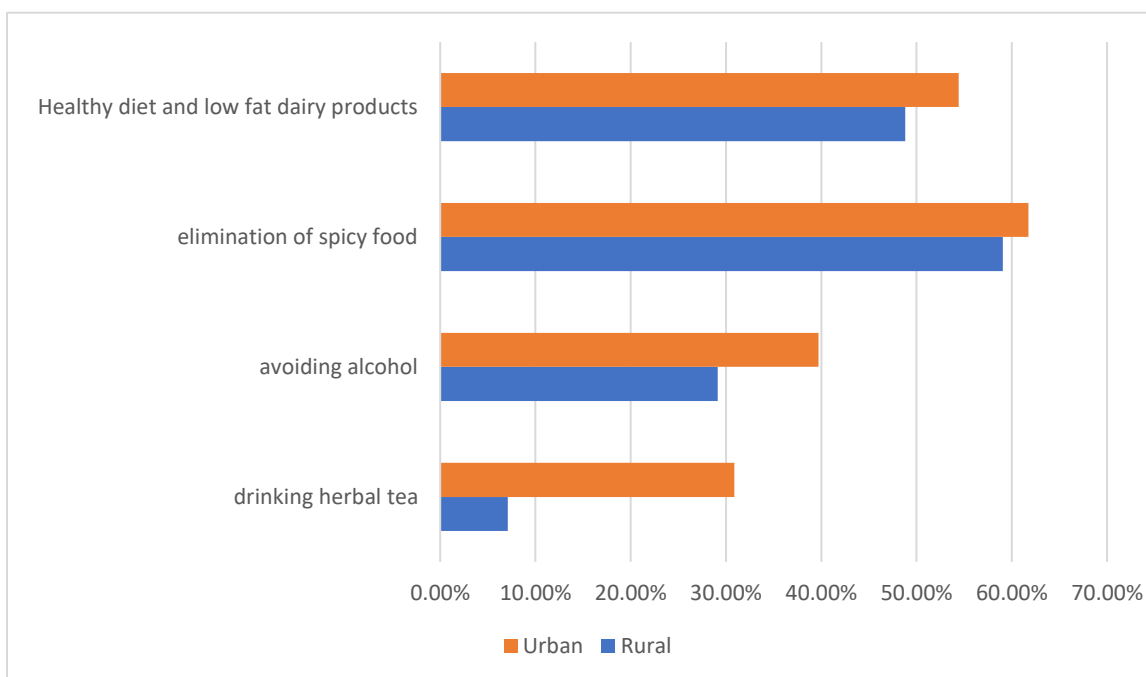
DISCUSSIONhigher knowledge in comparison of rural population. According to the Armenian Demographic and Health Survey (DHS) [18], 22% of females and 27% of males had hypertension in 2005 in Armenia. The same study showed that hypertension was positively associated with age and body mass index (BMI). DHS (2005) also showed that the majority of women (82%) and men (81%) did not know about being hypertensive; 5% of women and 11% of men knew about their disease but did not seek care; and only 7% of women and 2% of men knew about their disease and received treatment. (NSS. Armenia Demographic and Health Survey 2005. Maryland: The National Statistical Service of the Republic of Armenia and Ministry of Health of the Republic of Armenia and ORC Macro in Calverton 2006.)[19] In present study, 22(17.32%) were aware of monthly blood pressure.

The present prospective study was conducted at Rural and Urban area of Dehradun district to assess the awareness, knowledge and risk factor associated in hypertensive subjects and adherence to hypertension therapy. A rising prevalence of hypertension with age and this are in keeping with local and worldwide observations. But in this study found that Hypertension is peek in age between 50-60 years; 37.79% in rural and 42.64% in urban.This cross sectional study shows that, the urban

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population has greater awareness than that of rural population in terms of assessing risk factors, medication use, health monitoring and regular blood pressure check-ups, and has

Check-up. 35(27.55%) were doing physical activity to control their blood pressure. 90 (70.86%) were taken their medicine as prescribed by the doctor,10(7.87%) & 42(33.07%) have knowledge of hypertension and role of high salt intake in it. 71(55.90%),35(27.55%),63(49.60%) and 91(71.65%) were know about the obesity,coffee, smoking and high salt intake is the major risk factor for the hypertension. 62(48.81%), 75(59.05%), 37(29.13%) and 10(7.8%) have knowledge about take healthy diet, eliminate spicy food, role of avoiding alcohol and role of drink herbal tea to lower the blood pressure.More than half of the participants knew that physically inactive/passive lifestyle can lead to increase BP. Similar proportions of participants knew that factors such as alcohol, smoking and salt rich diet can also contribute to cause hypertension. Almost82.0% of the participants knew that hypertension can lead to other health problems incase of absence of or not following the treatment. The most frequently mentioned risk conditions which can be developed due to hypertension as reported by participants included heart diseases, stroke, kidney and eye diseases.[78]In present study, 29(42.64%) were aware of monthly blood pressure check-up. 24(35.29%) were doing physical activity to control their blood pressure. 58(85.29%) were taken their medicine as prescribed by the doctor. 29(42.64%) & 28(41.17%) have knowledge of hypertension and role of high salt intake in it. 41(60.29%), 19(27.94%),34(50%) and 52(76.47%) were know about the obesity, coffee, smoking and high salt intake is the major risk factor for hypertension. 37(54.4%),42(61.76%),27(39.70%) and 21(30.88%) have knowledge about take healthy diet, eliminate spicy food, role of avoiding alcohol and role of drink herbal tea to lower the blood pressure. Several studies throughout the world have demonstrated that demographic factor andother conditions such as age, low education status, high BMI, sedentary lifestyle, and excessive alcohol drinking increases the risk of uncontrolled hypertension among hypertensive patients. The pooled estimate for awareness of BP in rural and urban India was 25.1% (21.0–29.1) and41.9% (35.1–48.9), respectively. The pooled estimate for the percentage of areas was 24.9(16.7–33.0) and 37.6 (23.9–51.2), respectively. The estimate for percentage of hypertensive Patients having their BP under control in rural and urban India was 10.7 (6.4–15.0) and 20.2 (11.6–28.8), respectively. Significant differences were noted in the rural and urban areas forawareness and control of HTN (P values of 0.002 and 0.03, respectively). Pharmacist play an important role on patient education and medication counsellingare the base management of the disease like hypertension where the base line

Knowledge about the disease is low among hypertensive subjects were counselled regarding their knowledge, awareness and adherence to medication therapy. Thenumber of subjects who were counselled showed very large effect after counselling.

Patient counselling produced significant improvement in patient's knowledge, awareness and adherence to medication therapy for better therapeutic outcomes. Thisstudy shows that counselling play very important role in management of hypertension and the distribution of information leaflets play a major role in improving patient's knowledge, awareness and medication adherence by patient education.

Conclusion- In this cross sectional study the results that were concluded that, the urban population has greater awareness than that of rural population in terms of medication uses, health monitoring and regular blood pressure check-ups. Urban population has greater influence on the knowledge of role of physical activity, symptoms about hypertension, assessment of risk factors associated to it, and prescription compliance. Patient counseling is needed in both urban and rural areas to increase the awareness, knowledge, patient compliance, medication adherence and management

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on risk of cardiovascular disease due to hypertension and distribution of information leaflet is necessary and mandatory to increase public awareness on antihypertensive subjects. Hence clinical pharmacist must be required for patient care to decrease the disease and drug related problem.

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