SUMMARY AND CONCLUSION
Essential hypertension is a global problem. The causes of hypertension are heterogenous and hence the control of blood pressure is multifactorial. Even in a developing country like India, around 15.8 million people have been diagnosed to have hypertension with over 0.504 million people being added to the hypertensive list every year. There is an immediate need for non-pharmacological methods to control the problem, especially the borderline cases.

The present study was taken up to assess the relationship between blood pressure values, diet and certain specific hypertensive risk factors and to study the effect of intervention with potassium and calcium supplementation.

The sample comprised of 120 men, sixty normotensives and sixty hypertensives of age 41 to 60 years. The hypertensives were not undergoing any hypotensive treatment. Anthropometric measurements like height and weight were taken and Body Mass Index was calculated. Family history, smoking and alcohol consumption were recorded. Dietary survey for three consecutive days was conducted and mean
nutrient composition of the diets was calculated for each subject of the sample. The nutrients calculated were total calories, protein, total fat, saturated fat, polyunsaturated fatty acid, P/S ratio, sodium, potassium, calcium and vitamin C.

Blood pressure was measured in all the subjects. They were divided into three groups and given either placebo (500 mgs starch), 600 mgs Potassium chloride or 500 mgs Calcium lactate. 24 hour urine and blood samples were analysed for sodium, potassium and calcium before and after supplementation. Blood pressure changes on supplementation were recorded. The results were subjected to statistical analysis. Analysis of variance, discriminant function analysis and multiple regression analysis were the tests carried out at Microdata Corporation, Hyderabad. The results of the study are given below.

(1) The initial Blood pressure levels (mean) were 119.56/79.0 mm Hg in normotensives and 148.43/98.2 mm Hg in hypertensives. Blood pressure levels were observed to be higher in the age group 56-60 years. Income and literacy level were not found to affect the blood pressure level. Family history had a positive effect on hypertension. Subjects with higher Body Mass Index had higher
systolic and diastolic pressure: 148.34/97.53 and 154.80/105.60 mm Hg in hypertensives with Body Mass Index less than 25 and above 30 respectively. The intake of calories, saturated fat and sodium was higher in obese subjects and the intake of potassium was lower, all of which tend to increase blood pressure further. Both systolic and diastolic pressures were higher in alcoholics. The number of smokers in the cohort was less and hence the true relationship between the habit of smoking and hypertension could not be assessed.

The number of vegetarians in the cohort was only 26 per cent with only 15.8 per cent among them being hypertensive and thus definite conclusions could not be drawn from the existing data.

(ii) The dietary intake did not differ significantly between normotensives and hypertensives. The blood pressure values were higher in those consuming a high calorie diet; the blood pressure level was 142.44/97.33 mm Hg in those consuming less than 2000 calories and 152.00/103.75 mm Hg in those consuming above 2500 calories. The P/S ratio was lower in both the groups (0.54) and Na/K ratio higher (3.62 in normotensives and 3.79 in hypertensives) both being factors that increase blood pressure.
The biochemical parameters like serum and urine sodium and potassium and serum calcium were within the normal range and did not differ between the two blood pressure groups. There seems to be a urinary calcium leak in hypertensives as excretion was significantly higher in hypertensives (2.80 vs 3.54 mmol/24 h).

Blood pressure values were not observed to differ significantly on supplementation of either 8 mmol of potassium or 91.75 mgs of calcium for 21 days. But on studying individual data, there seems to be a variable response, with a sub-section of the subjects responding to supplementation. These 'responders' had higher initial blood pressure values when compared to non-responders.

A stepwise discriminant function analysis was done to determine the most important variables differentiating normotensives from hypertensives. It was observed that urine calcium (43.03 per cent) and urinary Na/K ratio (7.27 percent) have the highest discriminating power among all the variables.

Multiple regression analysis was done to identify and estimate the magnitude of the variance in the dependent variable (Blood Pressure) that is shared by several
independent variables. It was observed that urinary calcium (33.35 percent) urinary Na/K ratio (11.23 percent) and dietary Na/K ratio (10.54 percent) contribute to the variance to a large extent. As the present study is not an epidemiological survey, the exact contribution of all the variables relating to blood pressure is difficult to assess.

Hypertension has a multifactor etiology with numerous factors playing a part in balancing blood pressure. Within the constraints of time, patient co-operation to adhere to the supplemental regimen, the effect of supplementation of calcium and potassium for a short period of 21 days did not produce significant changes in blood pressure. However, an interesting fact was observed that some people do respond to the supplementation. The factors that differentiate responders from non-responders should be studied in depth. A further study of the effect of potassium and calcium supplementation with a higher dosage and/or for a longer period of time is essential.
Recommendations for Further Study:

1. Increasing the dosage of potassium and calcium supplements and the period of supplementation to observe the long term effects on Blood Pressure.

2. Sodium intervention studies combined with calcium/potassium supplementation.

3. Developing a method to substitute sodium salt with potassium salts.

4. Study the role of parathyroid hormone as an increase in urinary calcium was observed.

5. Study the role of renin; identify low renin and high renin subjects and see the effect of supplementation with calcium or potassium in both the groups.