

## **PREVALANCE OF HYPERTENSION IN INDIA: DATA ANALYSIS FROM NATIONAL SURVEYS**

NFI had undertaken analysis of the raw data from AHS third round and DLHS 4 to assess variation in systolic and diastolic blood pressure in adults in:

- AHS and DLHS states,
- urban and rural areas,
- men and women,
- different age groups. and
- nutritional status.

The observations from these analysis had been reported in the quarterly report for April to June 2020.

Data analysis has been continued to assess the prevalence of pre hypertension, hypertension grade1 and 2 in adults in

- AHS and DLHS states,
- urban and rural areas,
- men and women,
- different age groups. and
- nutritional status.

### **Material and methods**

In India DLHS 4 and AHS CAB surveys undertaken in 2013-15 have collected information on nutritional status, Hb levels, acute and chronic morbidity, hypertension and diabetes in all major states. AHS CAB and DLHS4 undertook the assessment of nutritional and health status of all the members of the selected households. Hence it is possible to compare the prevalence of hypertension across age groups and nutritional status groups from the same household residing in AHS or DLHS states, in urban and rural areas.

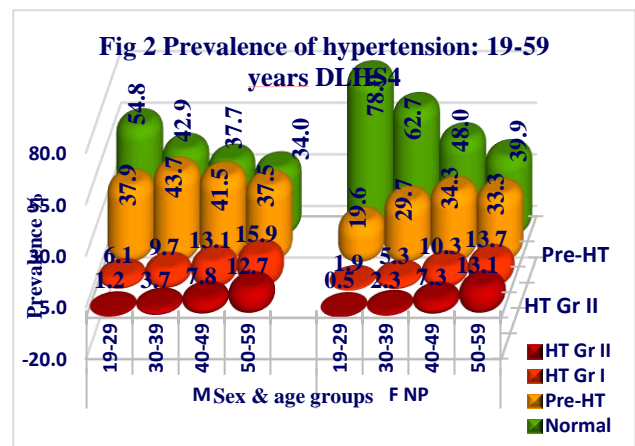
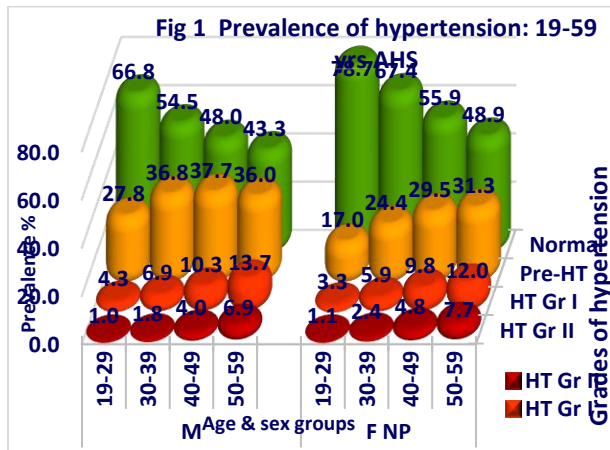
In both these surveys data collection was done by trained health paraprofessional personnel. Prior to initiation of the survey all the para-professionals recruited by various agencies were trained in undertaking measurement of height, weight, measuring blood pressure using digital blood pressure monitor. Only those personnel who had acquired the required accuracy in measurements conducted the survey. All equipment for the survey were centrally procured and tested for accuracy before being sent to the survey agencies. After the person was sitting quietly for about ten minutes BP measurements were taken twice five minutes apart. As a quality assurance measure duplicate measurements of height, weight BP were done in 10 % of the persons surveyed.

Raw data from the AHS and DLHS 4 were analysed using SPSS 26. Means and standard deviations of systolic and diastolic BP were computed in different groups. The findings from this part of the analysis is presented in the report for the last quarter ( 1.4.2020 to 30.6.2020)

Prevalence of prehypertension , hypertension grade 1 and 2 were computed in AHS and DLHS 4 states, in urban and rural areas, in men and women and in relation to nutritional status of the persons and are being presented in this report ( 1.7.2020 to 30.9.2020 ).

**Results**

**Prevalence of pre-hypertension and hypertension in AHS and DLHS 4 states ( 19-59 years)**

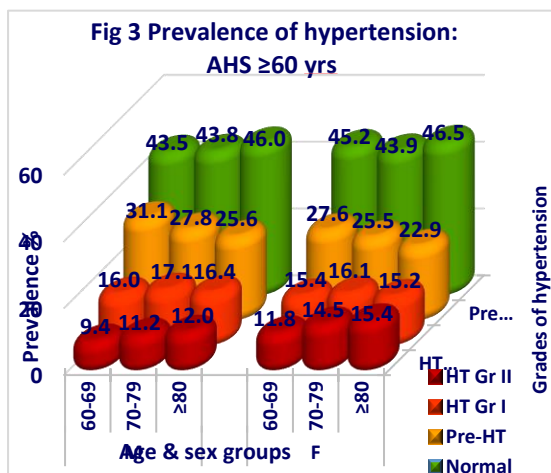


Prevalence of prehypertension and hypertension in AHS and DLHS 4 states in men and women between 18-59 years of age is shown in Figures 1 and 2 -4.

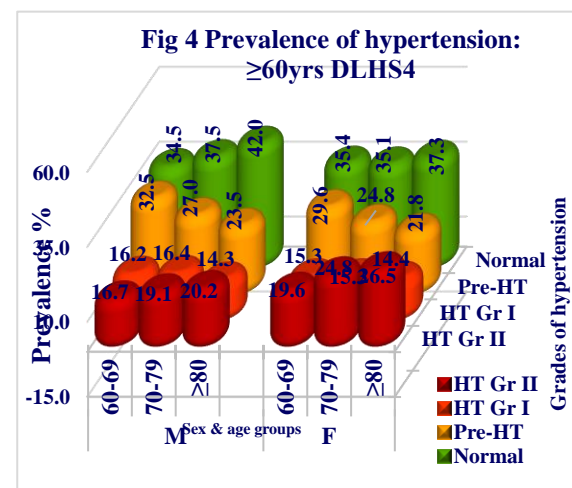
There was a progressive reduction in % of persons with normal blood pressure with increasing age between 19-59 years both AHS and DLHS states, both in women and in men. There was a progressive increase in the prehypertension and hypertension grade 1 and 2 both in men and women with increasing age across decades from 19 to 59 years both in AHS and DLHS states. Prevalence of prehypertension, hypertension grade1 and 2 were higher in DLHS 4 states both in men and women across decades in the 19- 59 years of age group. The magnitude of the increase in prehypertension is higher as compared to hypertension grade 1; rise in hypertension grade 2 followed similar trends but was of a lower magnitude.

**Prevalence of pre-hypertension and hypertension in AHS and DLHS 4 states (60 -59 years)**

Blood pressure was normal in over 40% of men and 45% women in the 60 to ≥80years in AHS states and over a third of men and women in

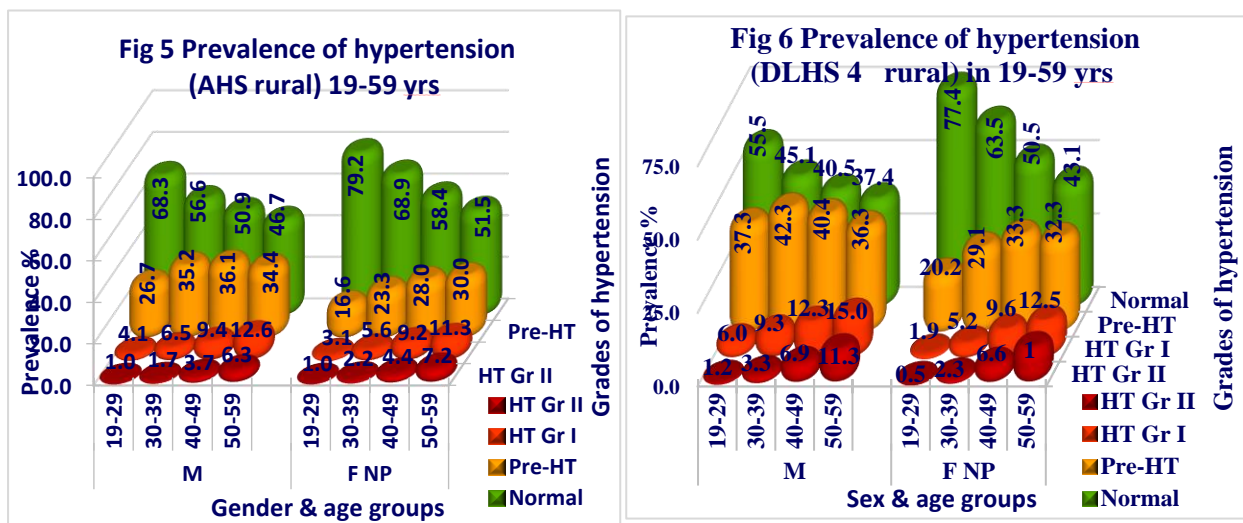


the



DLHS states. Prevalence of prehypertension, hypertension grade 1 and 2 were higher in elderly men and women in DLHS4 states as compared to AHS states ( fig 3 and 4 ). Between 60 and ≥ 80 years there was not much difference in the prevalence of prehypertension, hypertension grade 1 and 2 either in women or men. The magnitude of increase in hypertension grade 1 and 2 in the men and women beyond 60 years was relatively small. This might partly be due to a larger number having been detected earlier and being under treatment .The fact that the persons with more severe hypertension may have succumbed to cardiovascular and/or cerebrovascular diseases may also account in part to the lower increase in hypertension rates among the elderly.

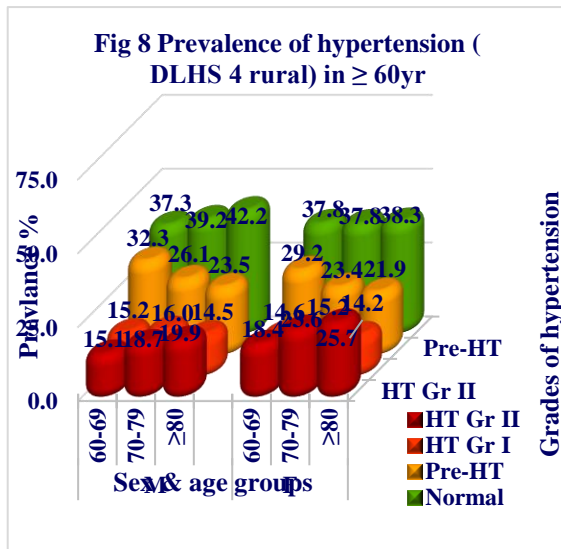
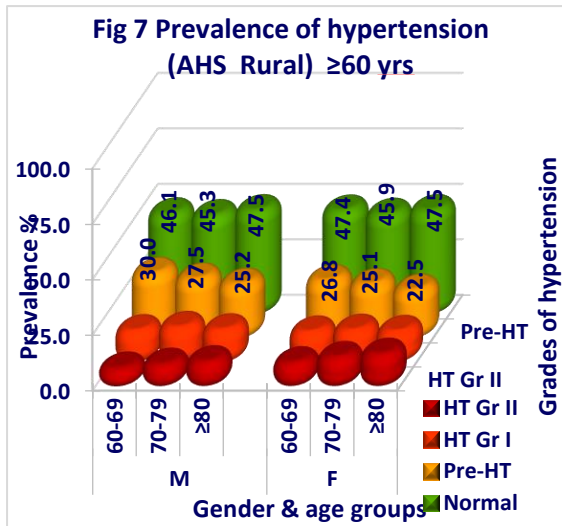
**Prevalence of hypertension in rural areas in 19-59 year age group in AHS and DLHS 4 states**



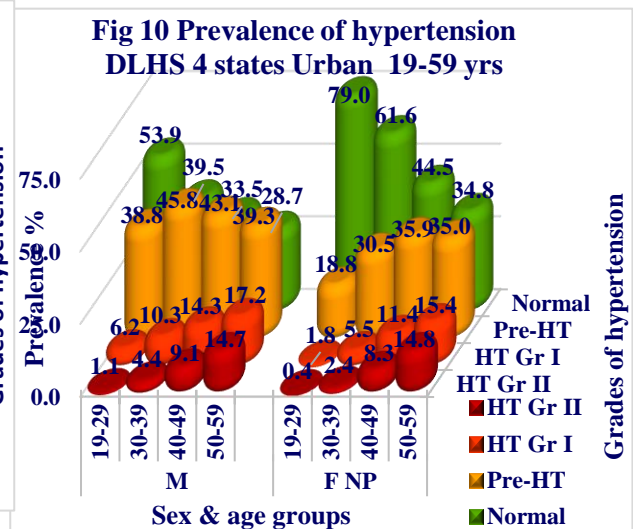
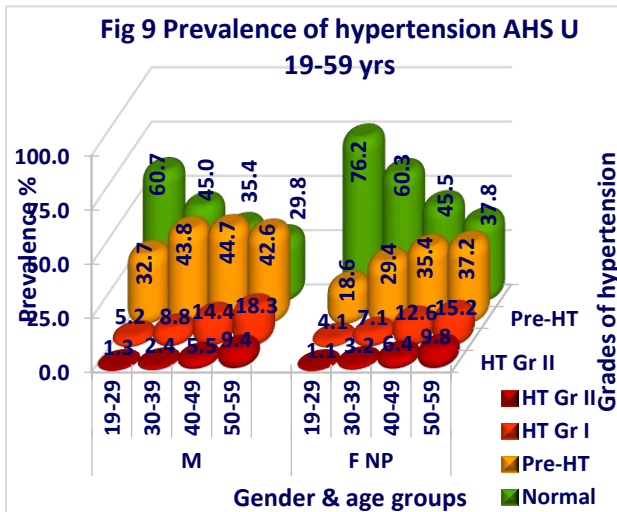
Prevalence of normal blood pressure was lower and prevalence of prehypertension and hypertension grade 1 and 2 were higher in DLHS 4 states as compared to AHS states both in men and women across all age groups in rural areas ( Fig 5 and 6 ). There was a progressive increase in the prevalence of pre-hypertension, hypertension grade 1 and 2 the 19-59 yr group in rural areas both in AHS and DLHS states. Prevalence of pre-hypertension , hypertension grade 1 and 2 were lower in women as compared to men in rural areas both in AHS and DLHS4 states

**Prevalence of hypertension in rural areas in elderly men and women in AHS and DLHS 4 states**

Among the elderly persons prevalence of pre-hypertension, hypertension grade 1 and 2 are lower in the AHS state rural areas as compared to the DLHS state rural areas. About a third of the men and women in both AHS and DLHS 4 states rural areas had prehypertension. There was a small but progressive rise in prevalence of hypertension grade 1 both in men and women from rural areas in DLHS 4 states but such a trend was not seen in AHS states in rural areas (Fig 7 and 8)

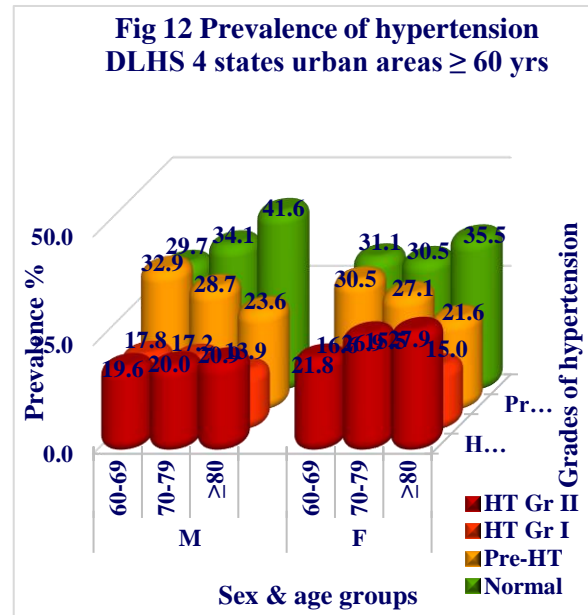
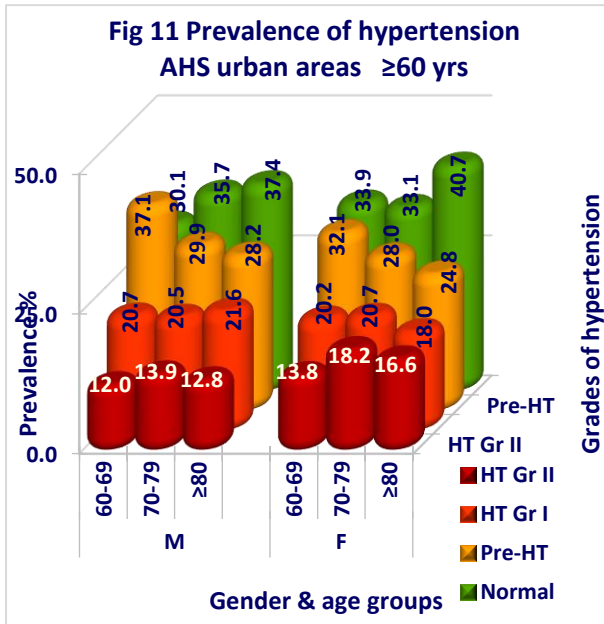


**Prevalence of hypertension in Urban areas in 19-59year age group in AHS and DLHS 4 states**



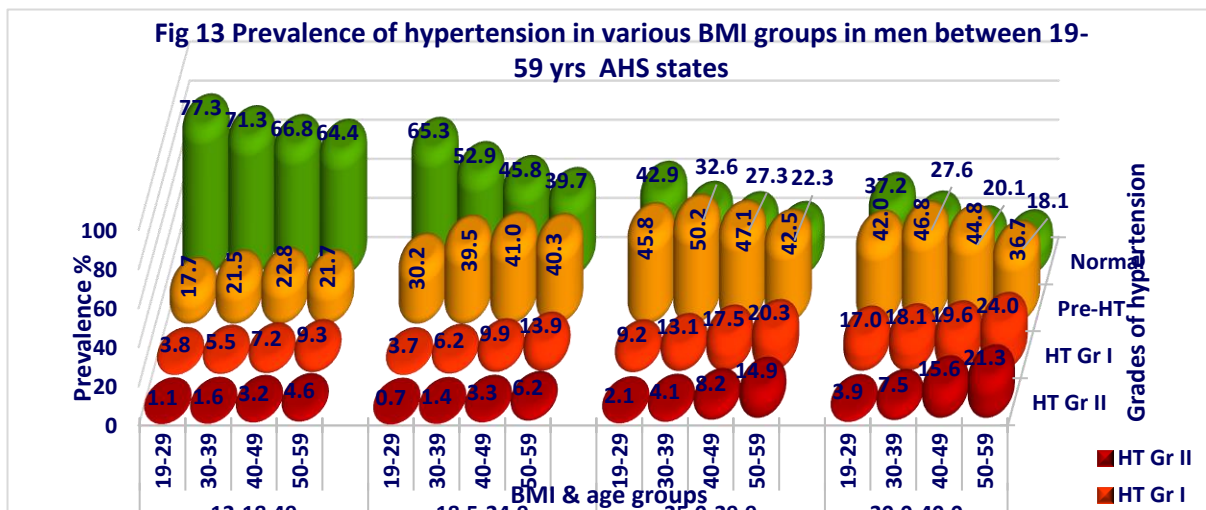
Prevalence of prehypertension and hypertension grade 1 and 2 are higher in urban areas as compared to rural areas in both AHS and DLHS 4 states in the 19-59 year age group. In urban areas both in AHS and DLHS states there was a progressive rise in hypertension grade 1 and grade 2 with increasing age between 19 to 59. Prevalence of prehypertension was about one third right in the 19-29 year age group both in AHS and DLHS 4 states. There was a small increase in the prehypertension rates between 30- 59 years of age both in AHS and DLHS4 states . Prevalence of prehypertension and hypertension grade 1 and 2 were higher in Urban areas in DLHS 4 states as compared to urban areas in AHS states .In urbanareas both in DLHS4 and Ahs states only about a third of men and women in the 50-59 year age group were normotensive. Clearly urban men and women both in AHS and Dlhs 4 states have higher prevalenceof prehypertension , hypertension grade1 and 2 as compared to the rural women and men. There is an urgent need to organise health and wellness centres in urban abd rural areas in all states where men and women can get their weight , BP and Hb checked and appropraite health and nutrition counsellign is done . Follow up by front line workers is critical because sustained life style modification is very difficult to achieve and persons need constant support and encouragement .

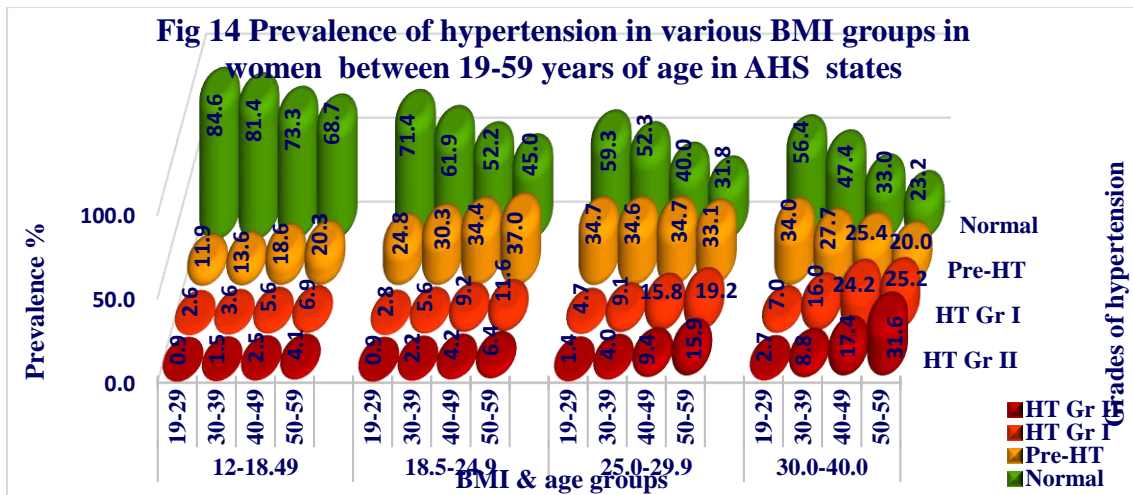
**Urban rural differences in blood pressure in the elderly in AHS and DLHS 4 states**



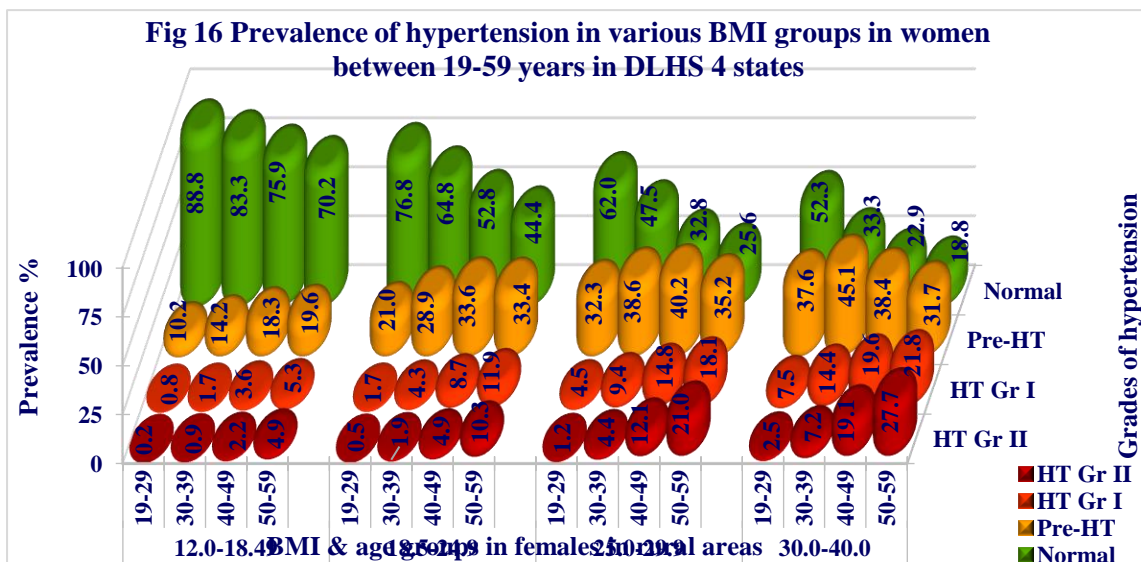
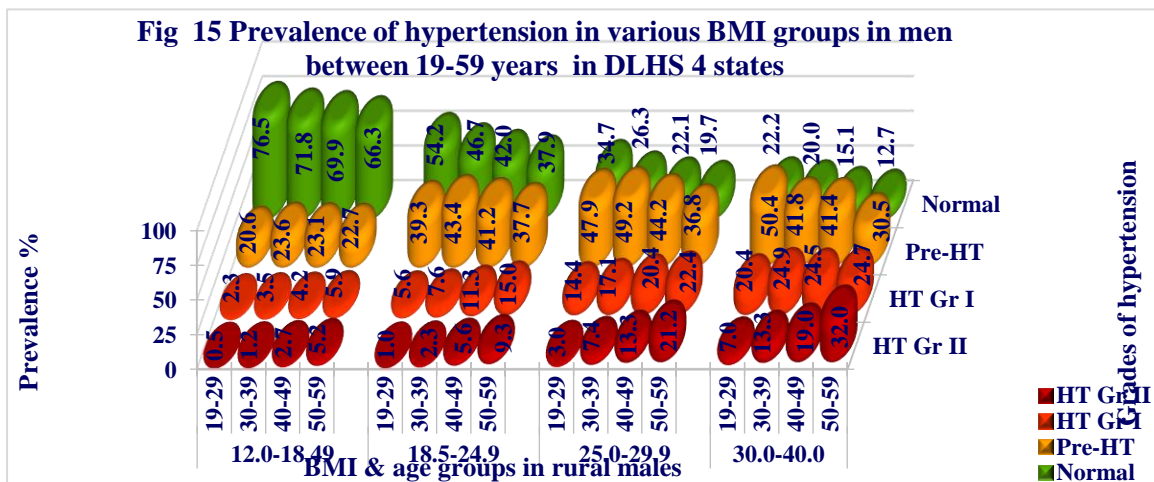
Urban rural differences prevalence of prehypertension, hypertension grade 1 and 2 in elderly men and women is given in Fig 11 and 12. Both in AHS and DLHS 4 states men and women in urban areas there was a small increase in normotensive rates with increasing age between 60 to 80 years and a fall in the pre-hypertension rates. There was not much change in the prevalence of hypertension grade 1 and grade 2 with increasing age beyond 60 years. This might be because persons with hypertension might have been on treatment or those with uncontrolled hypertension might have died due to complications. The trend of higher hypertension grade 1 and 2 in men as compared to women and in DLHS 4 states as compared to AHS states was seen in the elderly persons also.

**Prevalence of hypertension in relation to BMI status in men and women in 19-59 age groups in AHS and DLHS 4 states**





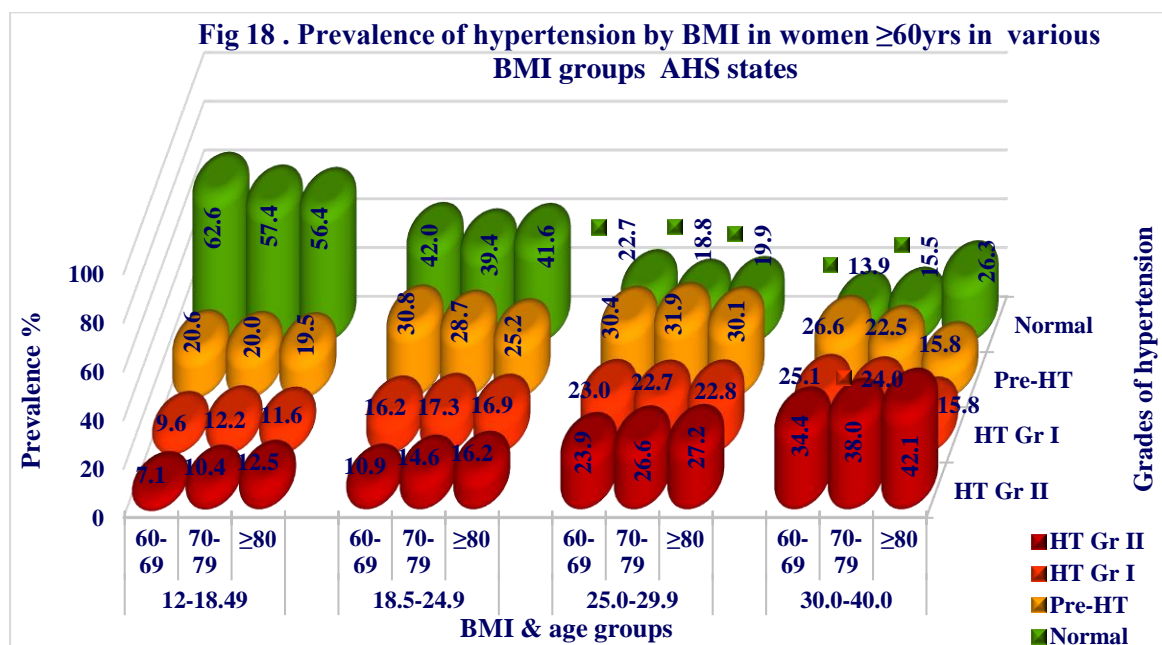
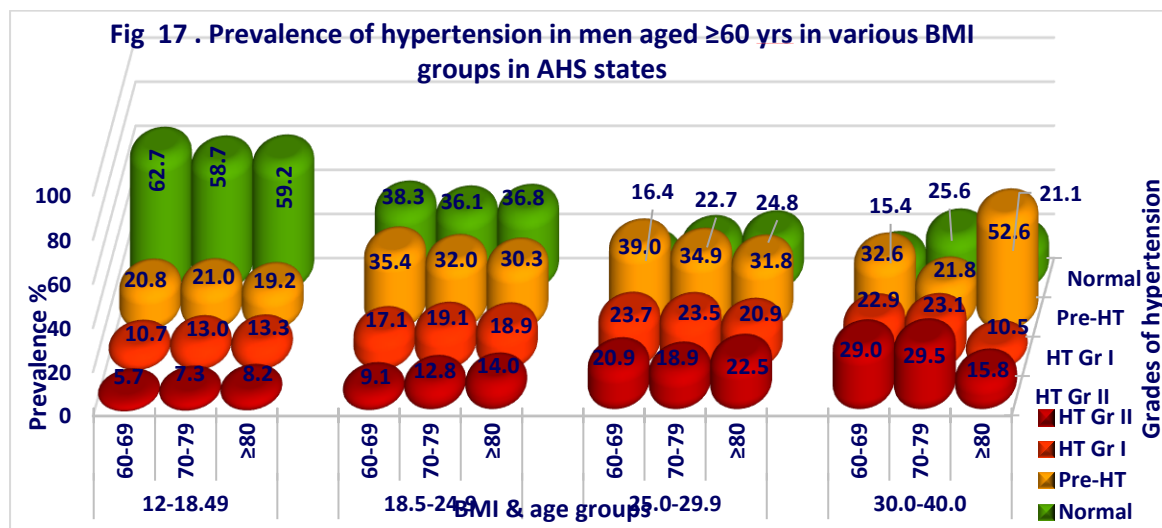
Prevalence of hypertension in men and women in 19-59 age groups in AHS states in relation to their BMI status is indicated in Fig 13 and 14. Prevalence of pre-hypertension and hypertension shows a progressive increase with increase in age between 19 and 59 years and increase in BMI both in men and women. Prevalence of pre-hypertension and hypertension grade 1 and 2 are higher in women compared to men in AHS states in all age and normal BMI groups. Hypertension grade 1 and 2 rates are highest in men in the 50-59 age group and are obese.



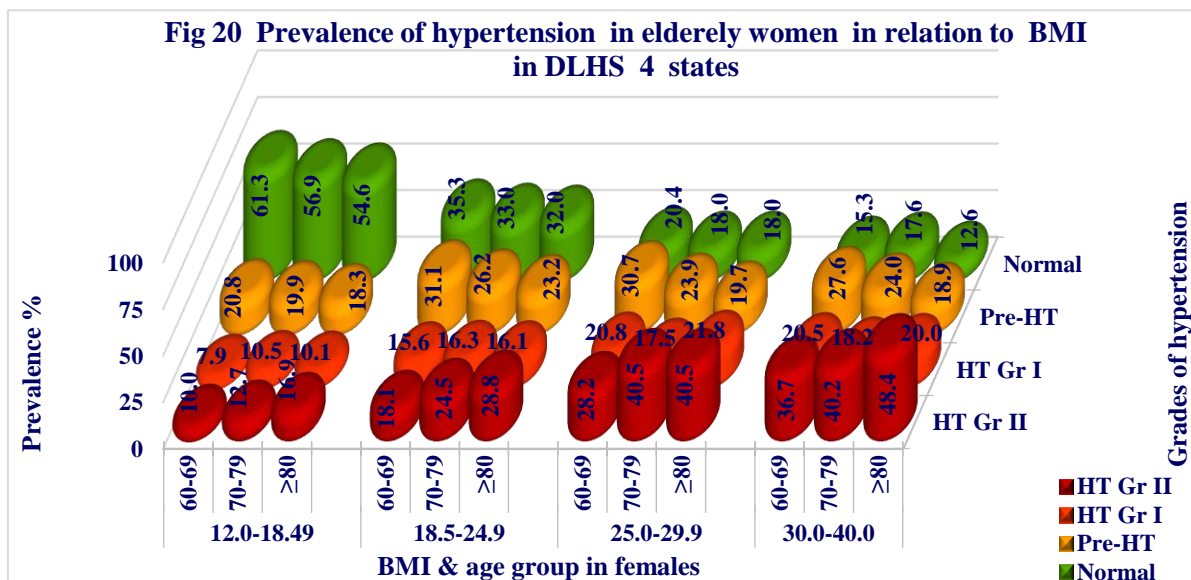
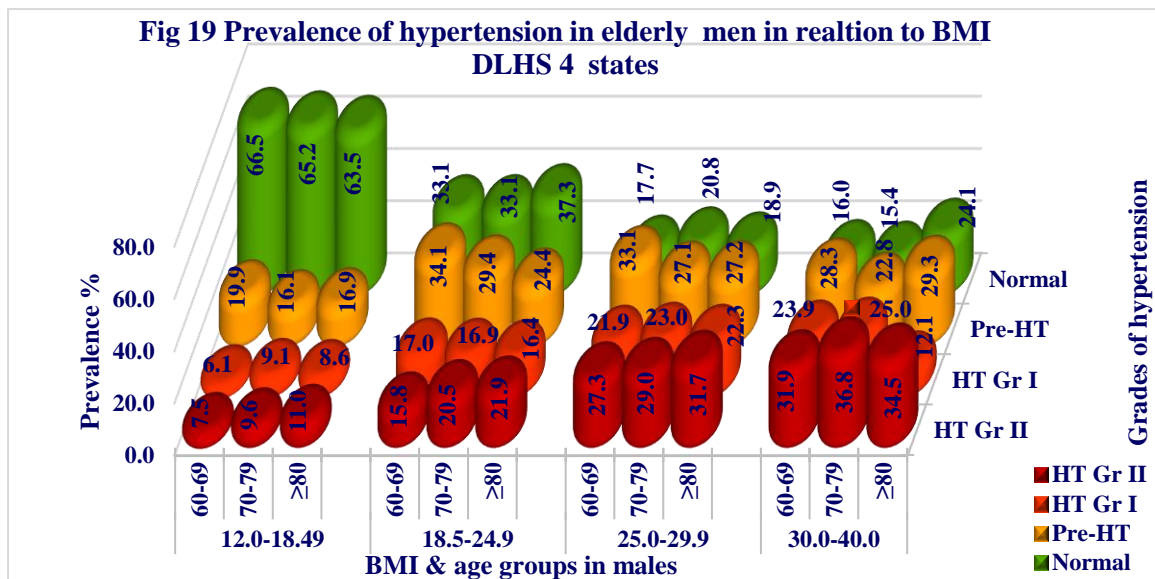
Prevalence of hypertension in relation to BMI status in men and women in 19-59 age groups in DLHS 4 states is given in Fig 15 and 16 .The trends in prevalence of prehypertension, hypertension grade 1 were higher in DLHS4 states as compared to AHS states but the trends were similar . Prevalence of hypertension grade 1 and 2 were highest in men in the 50-59 age group who were obese .

**Prevalence of hypertension in relation to BMI status in elderly men and women in AHS and DLHS 4 states**

Prevalence of hypertension in relation to BMI status in elderly men and women in AHS and DLHS 4 states is given in Fig 17, 18 , 19 and 20 .



Prevalence of prehypertension and hypertension grade 1 and 2 in elderly men and women is given in Fig 17-20 . Both in men and women and in AHS and DLHS 4 states prevalence of pre-hypertension and hypertension grade 1 and 2 were higher in overweight and obese



persons . Prevalence of hypertension in women was higher as compared to men of similar age and BMI both in AHS and DLHS4 states . Nearly half the women in their eighties who were over weight or obese were hypertensive both in AHS and DLHS4 states . Women have higher longevity as compared to men. Providing appropriate care for obese hypertensive women in their eighties will pose major problems both to the families and to the health system. Early diagnosis of hypertension and appropriate management is critical to ensure that the

### Policy and programme implications

The data clearly show that hypertension begins early in both men and women. With increasing age there is a progressive increase in hypertension. Overnutrition in men and women is associated with substantial increase in the prevalence of hypertension in all age groups .Prevalence In the elderly prevalence of hypertension and severe hypertension are more in women. Screening, detecting and providing appropriate care to these persons earlier could go a long way in the reduction in prevalence of complications with severe hypertension.