Gender and rural-urban differences in hypertension among youths in India: Insights from NFHS-4

Ritu Rani, Ajit Kumar Kannaujiya, Ankit Sikarwar

International Institute for Population Sciences

Theoretical focus

Hypertension is considered one of the most persistent public health issues and has been recognized as an influential contributor to the global burden of diseases. The consequential association of hypertension with cardiovascular diseases (CVDs) and premature deaths makes it a global public health concern (Bauer et al., 2014).

Hypertension should not only be perceived as an adult morbid condition, rather, it can be traced back from childhood to youth. As per WHO report (2011) on young people, nearly two-thirds of premature deaths and one-third of the total disease burden in adults are associated with conditions or behaviors initiated in their youth (*e.g*. tobacco use, physical inactivity, alcohol use, etc.). The behavioral patterns established during this developmental phase determine their current health status and the risk of developing some chronic diseases like hypertension in later years. Therefore, it is crucial to understand the prevalence and associated risk factors of hypertension in this population cohort for identifying interventions and strategic approaches that protect youth's health.

At the national level, a few recent studies have observed a rising prevalence of hypertension among young adults in India compared with the global level (Ghosh & Kumar, 2019; Ramakrishnan et al., 2019). Since several factors may play a vital role in the prevalence of hypertension, stratification by gender and rural-urban residence may improve the existing strategies for the prevention of hypertension in the country. Further, it is also pivotal to understand the differences in the distribution of factors that could attribute to gender and rural-urban differences in hypertension.

Data source

The present study used fourth round of nationally representative data from the National Family Health Survey (NFHS-4), 2015-16 also known as Indian Demographic and Health Survey. Of the total individuals, 777,573 were youth aged between 15-29 years. After excluding cases with missing information on any of the variables included in the analysis, our analytic sample consisted of 416,155 youths.

Methods

The prevalence rates of hypertension are reported as percentages of the total population, and the Chi-squared ($\chi 2$) test was used to test the association between various risk confounding variables and hypertension. Stratified multivariable logistic regression models were constructed to assess the influence of independent variables on hypertension among youth population in the urban and rural areas, and for males and females in 95% C.I. The statistical analysis for this study was conducted using STATA 13.1 software. The spatial patterns of hypertension in Indian states and UTs were illustrated in maps using ArcMap 10.3.

Findings

Hypertension was significantly highly prevalent among young males in the majority of the states and UTs compared to females and overall estimates. The results show that the prevalence among men varied greatly between states and UTs, with a prevalence of 1.56 % in Delhi to 17.2% in Sikkim. While for females, it ranged between 3.21% in Kerala to 9.59% in Assam. Interestingly, a clear picture of striking gender differences in hypertension prevalence across various states is evident (Fig. 1).

Urban participants had a higher prevalence according to the majority of the characteristics in comparison with their rural counterparts. Overall, a remarkable difference was evident in the prevalence based on gender; being higher among males than females, in both urban and rural settings. Results of logistic regression analysis showed that the risk of hypertension increased with increasing age for youths in urban-rural residence; however, males had a higher likelihood of being hypertensive than females in both urban and rural areas. . Urban (OR= 1.29, $p < 0.05$) and rural (OR=1.15, $p< 0.05$) females without education were more likely to be at risk of hypertension compared to youths with higher education. Both young males (OR=1.88, $p<0.05$) and females (OR=1.73, $p<0.05$) from the northeast region were more likely to report hypertension in urban areas. A significant gender gap was observed in the odds of hypertension by body mass index in both rural and urban areas; however, higher odds were noted in urban areas in comparison with rural areas. Additionally, it was found that rural male and female having a high glucose level was 1.17 times and 1.4 times more likely to be hypertensive, respectively

Summary and Conclusion

The study concludes that the hypertension among the youth population is spreading alarmingly in India across rural and urban settings. Although, the prevalence is higher among male youths from urban settings with a substantial gender difference. Public health awareness regarding blood pressure needs to be tailored differently for both males and females considering the rural-urban dimension. The study suggests a strong association of high glucose level and overweight/obese with a higher likelihood of hypertension. Therefore, youths at higher risk of hypertension should adopt a healthier and active lifestyle to control glucose levels and body weight to reduce complications, steps should be taken to address the rising trend of overweight/obesity in adolescents and youth, as that would stem the rising prevalence of hypertension. Awareness regarding preventive measures as well as specific and effective ways of controlling blood pressure at a young age needs to be spread.There is a strong need to involve families, doctors, public health professionals, policymakers, and educational institutions in efforts to address hypertension in the young population that will help to promote healthy lifestyles of young people.

References

Bauer, U. E., Briss, P. A., Goodman, R. A., & Bowman, B. A. (2014). Prevention of chronic disease in the 21st century: elimination of the leading preventable causes of premature death and disability in the USA. *The Lancet*, *384*(9937), 45-52. https://doi.org/10.1016/s0140-6736(14)60648-6

Ghosh, S., & Kumar, M. (2019). Prevalence and associated risk factors of hypertension among persons aged 15–49 in India: a cross-sectional study. *BMJ open*, *9*(12), e029714.

Ramakrishnan, S., Zachariah, G., Gupta, K., Rao, J. S., Mohanan, P. P., Venugopal, K., ... & Banerjee, S. C. A. (2019). Prevalence of hypertension among Indian adults: results from the great India blood pressure survey. *Indian heart journal*, *71*(4), 309-313. https://doi.org/10.1016/j.ihj.2020.04.013

World Health Organization. (2011). Young people: health risks and solutions. *Geneva: WHO*.

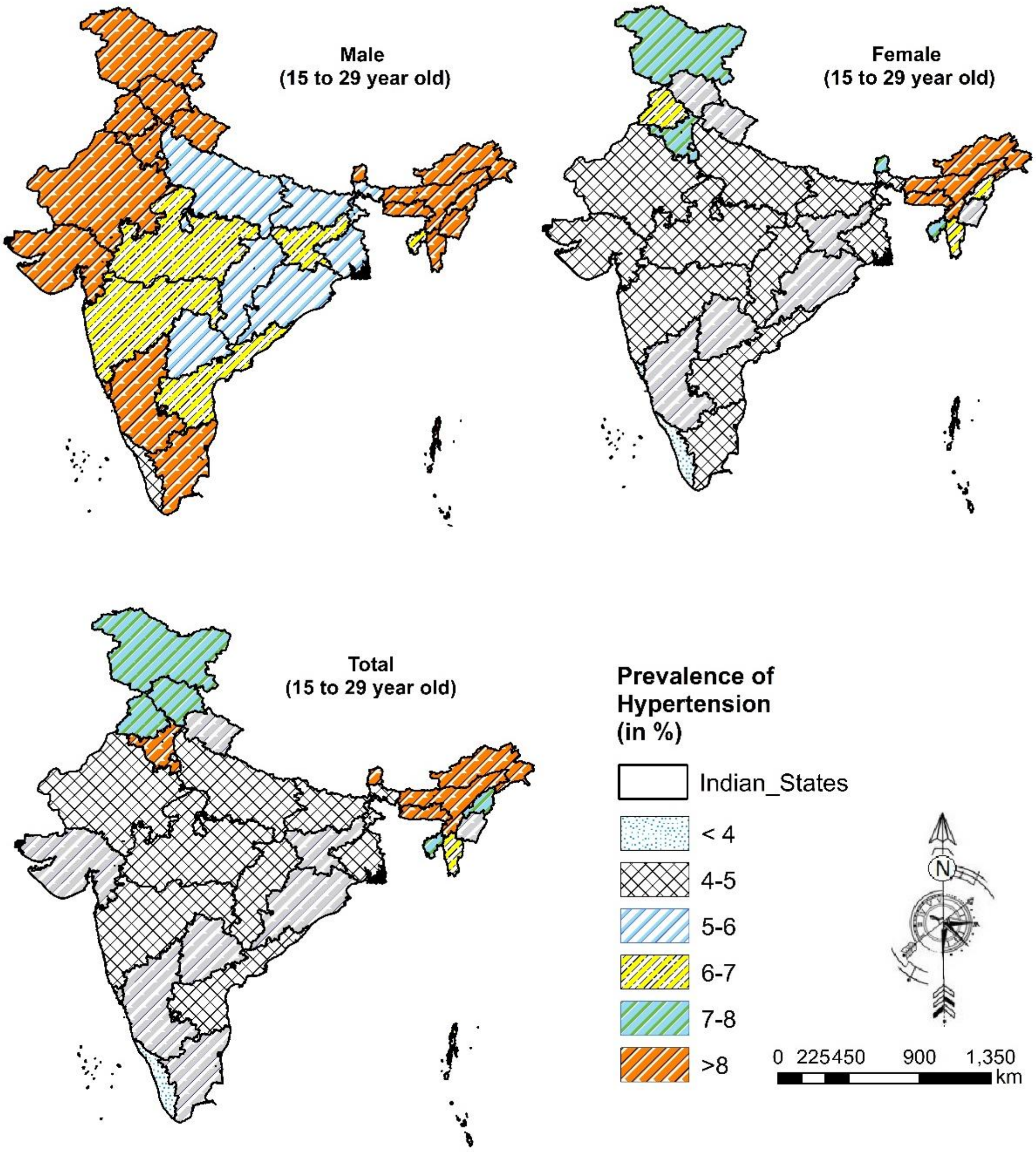

Figure 1 Prevalence of hypertension in male, female, and total youth population in Indian states and UTs.