The Epidemic of Hypertensive Disease and Changing Patterns of Leading Causes of Hospitalization in Patients with Co-existing Hypertension Among the US Adults Aged 35 and Older

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The Epidemic of Hypertensive (HT) disease is an important public health concern in the United States because of its high epidemic proportions. However, no study examined the longitudinal trend of HT disease and its patterns co-existing with others.

HYPOTHESIS

Patients with HT disease significantly increased in the past 27 years. HT chronic kidney disease (CKD) and HT heart and CKD have become new epidemics in HTD study.

METHODS

• Total sample size: n=4,596,488 hospitalized patients aged 35 and older.
• Age-adjusted for US 2000 standard population.
• Trends of HT disease hospitalization, associations between primary causes of hospitalized diseases and HT were analyzed using univariate and multivariate techniques.

RESULTS

Table 1. Prevalence (%) of hospitalization in patients aged 35 and older with first or with any of 2nd to 7th diagnosis of hypertensive disease (HTD). National Hospital Discharge Surveys 1980-1981 and 2006-2007

<table>
<thead>
<tr>
<th>Sub-group</th>
<th>With 1st diagnosis of HTD</th>
<th>With any of 2nd to 7th diagnosis of HTD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Female</td>
<td>Total</td>
</tr>
<tr>
<td>Essential hypertension</td>
<td>5.0%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Hypertensive heart disease</td>
<td>4.8%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Hypertensive CKD</td>
<td>4.0%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Secondary hypertension</td>
<td>3.9%</td>
<td>4.0%</td>
</tr>
</tbody>
</table>


CONCLUSIONS

Hospitalization rates due to 1st and any of 2nd to 7th diagnosis of HT diseases significantly increase in the United States. Essential hypertension, HT chronic kidney disease and HT heart and CKD as 2nd to 7th diagnosis have become new epidemics of HTD. Advances to deal with key missing data, such as race/ethnicity in the application of large-scale hospital electronic record dataset call for further studies.

Acknowledgements

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1. Hospitalization rates in patients with 1st and any of 2nd to 7th diagnosis of hypertensive disease (HTD) significantly increased from 1980-81 to 2006-2007, except for those with 1st diagnosis of HTD in females. People living in the West had the lowest rates than those living in the Northeast, Midwest and South (Table 1 and Figure 1).
2. Of those with any of 2nd to 7th diagnosis of subtype HTD, patients with essential hypertension (E-HT), HT chronic kidney disease (CKD) and HT heart disease and CHD significantly increased from 1980 to 2007 (Fig 2).
3. The annual increase rate of those with 1st diagnosis of HTD was 1.4% (male: p=0.03) and 0.96% in female (p=0.08) (Table 2).
4. Males had 16% higher odds of being 1st diagnosis of HTD than females. People living in 2000-07 had 22% higher odds of being hospitalization due to 1st diagnosis of HTD than the West (Table 3).
5. Patients with 1st diagnosis of diabetes had the highest odds ratio of HTD, followed by atherosclerosis, coronary heart disease, stroke and chronic kidney disease (Table 3).
6. Missing data on race/ethnicity has limited our ability to test race/ethnicity associated health disparity in the present analysis.