Pre-hypertension and hypertension among adolescents of Switzerland

To the Editor:

McNiece et al.1 showed a high prevalence of pre-hypertension and hypertension in American adolescents aged 11 to 17 years. To provide insight on this issue in another population, we provide similar analysis from a recent school-based survey in Switzerland.2

We examined 5207 schoolchildren in the 6th grade of the canton of Vaud in 2005/2006 (2621 boys, 2586 girls; mean ± SD age: 12.3 ± 0.5 years). The prevalence of excess body weight (“at risk of overweight” or “overweight”) was 14.3%. At visit 1, blood pressure (BP) was measured 3 times with a clinically validated oscillometric device, and the average of the final 2 of 3 readings was considered. BP was assessed on up to 2 additional visits if age-, sex-, and height-specific BP was ≥95th percentile.3 We defined pre-hypertension and hypertension in the same way as McNiece et al.1 Figures from the latter study are provided for comparison (n = 6790, in Houston area; mean ± SD age: 12.7 ± 1.2 years).

The prevalence of pre-hypertension and hypertension are presented in the Table. By visit 3, 2.2% had hypertension.

A major limitation in both surveys1,2 is that repeated BP measurements were performed only among participants with BP in the hypertensive range at visit 1. Had we also measured BP on several visits in the other children, it is possible that a proportion of children with pre-hypertension on visit 1 would have shifted into the normal BP category on visit 3, as shown in adults.4 Hence, prevalence of pre-hypertension is probably overestimated in both surveys.

Our findings in a different population of children confirm that BP decreases over subsequent visits, which stresses the need for measuring BP over several visits to detect false-positive cases of hypertension.5 Further studies should examine the predictive value of pre-hypertension in children.

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Table. Prevalence (%) of pre-hypertension and hypertension in adolescents in Switzerland (Vaud Canton) and in America (Houston area1)

<table>
<thead>
<tr>
<th>Visit 1</th>
<th>Visit 2</th>
<th>Visit 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switzerland</td>
<td>USA</td>
<td>Switzerland</td>
</tr>
<tr>
<td>Normal blood pressure</td>
<td>75.3</td>
<td>81.1</td>
</tr>
<tr>
<td>Pre-hypertension</td>
<td>13.3</td>
<td>9.5</td>
</tr>
<tr>
<td>Hypertension</td>
<td>11.4</td>
<td>9.4</td>
</tr>
<tr>
<td>Stage 1</td>
<td>10.1</td>
<td>8.4</td>
</tr>
<tr>
<td>Stage 2</td>
<td>1.3</td>
<td>1</td>
</tr>
</tbody>
</table>

BP is based on mean of final 2 of 3 readings (Vaud) and final 3 of 4 readings (Houston). BP categories: (1) Normal blood pressure: BP <90th percentile for age, height and sex; (2) Pre-hypertension: BP ≥90th but <95th percentile or BP ≥120/80 mm Hg; (3) Stage 1 hypertension: BP ≥95th but ≤99th percentile + 5 mm Hg; (4) Stage 2 hypertension: BP >99th percentile + 5 mm Hg.
REFERENCES