Trends in the prevalence and motor severity of cerebral palsy in Northern Ireland: a register-based study

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Introduction
International reports suggest the prevalence of cerebral palsy (CP) is decreasing subsequent to evolving neonatal practice. Establishing prevalence of CP regionally is important for local healthcare planning. Furthermore, evaluating changes in the profile of gross motor function in this population over time may also assist in planning and provision of health, education and social care services for children and adults.

Aims
This study aimed to analyse trends in:
1. prevalence of CP in Northern Ireland (NI) during 1981-2011;
2. prevalence of CP by gestational age and birthweight;
3. severity of gross motor function over time; and
4. motor severity in relation to gestational age and birthweight.

Patients and method
Population: Children with early onset CP born 1981-2011 and known to the NI Cerebral Palsy Register were included. Children born outside NI and those with post-neonatally acquired CP were excluded. Children born between 1981 and 2011 were included in the analyses.

Aim 1: Prevalence of CP over time
Overall trends in prevalence of CP were stable over time (IRR=1.0, p=0.04; Figure 1).

Figure 1: Prevalence of CP per 1,000 live births among children born in NI, 1981 to 2011

Aim 2: Prevalence of CP by gestational age and birthweight
There were significant decreases in prevalence of CP in children born VPT (IRR=0.97, 95% CI=0.94-0.99, p<0.01), at MLBW (IRR=0.95, 95% CI=0.93-0.97, p<0.01) and NBW (IRR=0.97, 95% CI=0.96-0.99, p<0.01).

Results
A total of 1,643 children with CP and 770,186 resident live births were included in the analyses.

Aim 1: Prevalence of CP over time
Overall trends in prevalence of CP were stable over time (IRR=1.0, p=0.04; Figure 1).

Table 1: Odds of being able to walk without aids by birthweight and gestational age category (reference category=NBW or ≥2500g)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>Odds ratio</th>
<th>p value</th>
<th>95% confidence intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birthweight¹</td>
<td>ELBW (≤1000g)</td>
<td>0.79</td>
<td>0.37</td>
<td>0.47-1.33</td>
</tr>
<tr>
<td></td>
<td>VLBW (1000-1499g)</td>
<td>1.66</td>
<td>0.00</td>
<td>1.18-2.34</td>
</tr>
<tr>
<td></td>
<td>MLBW (1500-2499g)</td>
<td>1.34</td>
<td>0.05</td>
<td>1.00-1.78</td>
</tr>
<tr>
<td></td>
<td>≥2500g</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00-1.00</td>
</tr>
<tr>
<td>Gestational age²</td>
<td>EPT (&lt;28 weeks)</td>
<td>1.67</td>
<td>0.43</td>
<td>0.79-1.72</td>
</tr>
<tr>
<td></td>
<td>MPT (28-31 weeks)</td>
<td>1.52</td>
<td>0.01</td>
<td>1.13-2.05</td>
</tr>
<tr>
<td></td>
<td>VPT (32-36 weeks)</td>
<td>1.05</td>
<td>0.76</td>
<td>0.78-1.41</td>
</tr>
</tbody>
</table>

¹ reference category=NBW or ≥2500g; ² reference category=Term or ≥37 weeks

Aim 3: Severity of gross motor function over time
The motor severity of children with CP in NI did not change significantly across the years (OR=1.00, 95% CI=0.99-1.01, p=0.79; Figure 2).