Pervasive behavioural problems are common in children born at less than 26 weeks of gestation

Aijaz Farooqi

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**QUESTION**

**Question:** Does being born at less than 26 weeks of gestation (extremely preterm) increase pervasive behavioural problems at 6 years of age?

**Population:** All children born ≤25 weeks of gestation in UK and Ireland between March and December 1995. 241 of 308 eligible children responded; of these 200 had complete reports from teachers and parents. They were compared with reports for 148 age matched control children.

**Setting:** UK and Ireland; children born between March and December 1995.

**Assessment:** Behavioural problems, including emotional symptoms, conduct problems, hyperactivity, peer problems and prosocial behaviours, were assessed at age 6 years by teacher and parent completed Strengths and Difficulties Questionnaires (SDQ). Clinical pervasive behaviour was defined as behaviour in the clinical range reported by both the parent and teacher. Cognitive ability was assessed using the Kaufman Assessment Battery for Children unless the child had disability or cognitive impairment, in which case the Griffiths Scale of Mental Development or NEPSY neuropsychology assessment was used. Children were also classified into four groups according to overall functional disability, ranging from severe overall disability to none.

**Outcomes:** Pervasive behavioural problems defined as scoring >90th percentile on parent and teacher reports of SDQ.

**METHODS**

**Design:** Comparative cross sectional study

**MAIN RESULTS**

At age 6 years, 19% of extremely preterm children had pervasive behavioural problems compared with 3% of control children (boys 25% vs 5%; girls 16% vs 3%). Extremely preterm children were more likely to have problems with pervasive hyperactivity, conduct, attention, poor peer relationships, emotions and prosocial behaviour than control children (see table 1). Hyperactivity and conduct problems, but not emotional, peer or attention problems, could be accounted for by cognitive deficits (emotional: adjusted odds ratio (OR) 4.2, 95% CI 1.5 to 11.8; peer: adjusted OR 2.5, 95% CI 1.0 to 6.1; attention: adjusted OR 3.8, 95% CI 1.7 to 8.5). Behavioural problems had a significant impact on home or school life for 23% of early preterm children compared with 7% of control children (OR 4.0, 95% CI 1.9 to 8.5). Extremely preterm boys were more likely to have hyperactivity (p<0.001), prosocial problems (p<0.01), attention problems (p<0.001) and higher parent/teacher impact scores (p<0.05) than extremely preterm girls.

**CONCLUSIONS**

Pervasive behavioural problems are common in children aged 6 years who were born at less than 26 weeks of gestation. These problems are more common in preterm boys than preterm girls.

**ABSTRACTED FROM**


**Correspondence to:** Dieter Wolke, Department of Psychology, University of Warwick, Coventry CV4 7AL, UK; D.Wolke@warwick.ac.uk

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**Table 1** Extremely preterm children versus age matched controls at age 6 years

<table>
<thead>
<tr>
<th>Behavioural problem</th>
<th>Boys</th>
<th>Girls</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyperactivity</td>
<td>42%</td>
<td>19%</td>
<td>31%</td>
</tr>
<tr>
<td>Conduct</td>
<td>16%</td>
<td>9%</td>
<td>13%</td>
</tr>
<tr>
<td>Attention</td>
<td>44%</td>
<td>22%</td>
<td>33%</td>
</tr>
<tr>
<td>Peer</td>
<td>31%</td>
<td>20%</td>
<td>25%</td>
</tr>
<tr>
<td>Emotional</td>
<td>10%</td>
<td>17%</td>
<td>14%</td>
</tr>
<tr>
<td>Prosocial</td>
<td>12%</td>
<td>2%</td>
<td>7%</td>
</tr>
</tbody>
</table>

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**COMMENTARY**

The present study identifies an increased frequency of behavioural problems in children born extremely prematurely (at or before 25 weeks’ gestation); 19.4% of preterm children had pervasive behaviour problems compared with 3.4% of the control children. Boys were twice as likely as girls to suffer and the gender difference in the preterm group was greater than that among the controls. Hyperactivity and conduct problems could be explained by cognitive dysfunctions whereas poor attention, peer poor relationships and emotional problems were independent of cognitive function. Almost 30% of children were lost to follow-up, so the true prevalence of these problems in society is probably underestimated.

One of the major strengths of the study is that it is based on both parent and teacher reports on each child. Problems in attention, hyperactivity and social and peer relations have been reported previously in more mature, very preterm or very low birth weight children but most of these results have only been based on parent reports, and some of them on parent, teacher and child reports separately.1 A recent Swedish population based study in extremely preterm children found similar behavioural and emotional problems, except that as a group the preterm children were not hyperactive or delinquent.2

The root causes of these behavioural difficulties remain unknown. Various plausible mechanisms might explain associations between extreme immaturity and behavioural problems, but it seems logical that disruptions in cortical development and brain connectivity are related inversely to birth weight and gestational age at birth. Maternal separation and life-threatening experiences by extremely premature infants might influence brain development.

There seems to be consistent evidence suggesting that biological immaturity is associated with a substantial number of behavioural problems. Some reports suggest that improvement of modifiable environmental and socioeconomic risk factors may improve the outcomes for these children. Knowledge regarding the course of mental health problems in early childhood and beyond is crucial for identifying the need for intervention and prevention strategies.

Aljaz Farooqi, MD, PhD
Consultant Neonatologist/Paediatrician and Research Associate, Umeå, Sweden

**Competing interests:** None.
