Child abuse and neglect are important causes of child morbidity and death. We assessed potentially detrimental parental actions induced by infant crying in 3259 infants aged 1–6 months, in the Netherlands. In infants aged 6 months, 5.6% (95% CI 4.2–7.0) of parents reported having smothered, slapped, or shaken their baby at least once because of its crying. The risks of detrimental actions were highest for parents from non-industrialised countries, those with either no job or a job with short working hours, and those who judged their infant’s crying to be excessive.

Clinicians should be aware of the risks of abuse in children known to cry a lot and should target interventions at parents to help them cope with this crying.

### Table 1: Cumulative prevalence rates and 95% CIs of detrimental actions undertaken by parents to stop the crying of their child

<table>
<thead>
<tr>
<th>Infant age (n=3259)</th>
<th>Detrimental action</th>
<th>Smothering</th>
<th>Slapping</th>
<th>Shaking</th>
<th>Any</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1·00% (1·0–2·11)</td>
<td>0·65% (0·3–1·0)</td>
<td>1·10% (1·0–2·0)</td>
<td>2·30% (1·3–3·7)</td>
</tr>
<tr>
<td>1 month</td>
<td></td>
<td>1·00% (1·0–2·11)</td>
<td>0·65% (0·3–1·0)</td>
<td>1·10% (1·0–2·0)</td>
<td>2·30% (1·3–3·7)</td>
</tr>
<tr>
<td>3 months</td>
<td></td>
<td>1·32% (1·0–2·0)</td>
<td>1·90% (1·0–2·7)</td>
<td>3·35% (2·3–4·8)</td>
<td>5·60% (4·2–6·9)</td>
</tr>
<tr>
<td>6 months</td>
<td></td>
<td>1·63% (1·0–2·37)</td>
<td>1·90% (1·0–2·70)</td>
<td>3·35% (2·3–4·80)</td>
<td>5·60% (4·2–6·9)</td>
</tr>
</tbody>
</table>

Data are rate (%) and 95% CI.
living address; and ethnic origin was categorised as non-Dutch if the child or a parent was born outside the Netherlands. We calculated crude odds ratios for detrimental action and adjusted for infant age. We repeated these analyses for infant crying variables, restricting ourselves to infants aged 1 and 3 months, since crying can change after this age.4

In infants aged 6 months, nearly 6% of parents reported taking at least one action to stop infant crying that might lead to child abuse (ie, smothering, slapping, or shaking) of whom one in five had taken more than one of these three actions. Cumulative rates rose steadily from 1 to 6 months and were highest for shaking (table 1). Rates were significantly higher for infants not living with both their biological parents; those living in urbanised areas; those of Turkish or Moroccan descent, or from another non-industrialised country; those with unemployed parents; and those with parents who worried about the crying, or had at any time judged it to be excessive (table 2). After Bonferroni adjustment for multiple comparisons, only differences by age, ethnic origin, parental employment, and the two measures of crying remained significant. After multivariable adjustment, only infant age, ethnic origin, and crying history were associated with high rates, with risks similar to those adjusted only for age (data not shown). Risks for infants aged 1 and 3 months were similar (data not shown).

Our findings show that, to stop infant crying, some parents take actions that can threaten the child’s health and be regarded as abuse. Since our data relied on parental self-report, under-reporting could have affected our results. However, data were obtained anonymously,
probably reducing this drawback. We cannot exclude effects of selective reporting completely, but such effects are unlikely to account for such large differences.

The provocative effect of infant crying on abuse occurs in the first 6 months of life when most non-accidental injuries happen. The substantial rise in shaking between 3 and 6 months of age accords with battering as the main cause of hospitalisation and death in this age-group. Furthermore, groups at highest risk of taking health-threatening action and of child maltreatment are immigrants, unemployed parents, and families that include non-biological parents. The results of our study could provide the link between data on infant crying and infant maltreatment, supported by case-studies on fatal abuse that seemed to be induced by infant crying. Further information on the processes leading to fatal child abuse is needed.

Clinicians and other health-care providers working with parents of infants should be aware of the risks for young children associated with their crying, especially if parents report a history of what they regard to be excessive crying and they are in a social position that could put pressure on the family situation. The actual duration of crying at a given moment seems to be less relevant than the parents’ perception of the crying of their infant in the long term. Furthermore, our results show that the number of infants implicated is substantial, highlighting an urgent need to teach carers of infants how to cope adequately with infant crying, including telling parents that the average 1-month-old baby cries 1.5 h per day, asking questions about crying during routine well-baby visits, and providing additional support services and follow-up for those at risk.

Contributors
S A Reijneveld had the original idea for the project, wrote the study protocol, and coordinated the study. M F van der Wal participated in the development of the questionnaire. S A Reijneveld, M F van der Wal, E Brugman, R A Hira Sing, and S P Verloove-Vanhorick discussed the protocol and formulated the final design. E Brugman supervised the data collection. S A Reijneveld and E Brugman did the statistical analyses, which were discussed by S A Reijneveld, M F van der Wal, E Brugman, R A Hira Sing, and S P Verloove-Vanhorick. S A Reijneveld wrote the final manuscript, which was discussed, edited and revised by S A Reijneveld, M F van der Wal, E Brugman, R A Hira Sing, and S P Verloove-Vanhorick. S A Reijneveld had full access to all the data in the study and had final responsibility for the decision to submit it for publication.

Conflict of interest statement
We declare that we have no conflict of interest.

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References