The causes of the excess males among pre-term and post-term births

Dear Sir,

Zeitlin et al (2002) reproduced data from a large number of samples which confirm that there is a male excess among preterm births. They also provided data from four original datasets on the topic. However these authors reported two exceptions to this generalization. First, they reported that there was no such male excess among spontaneous-onset births after IVF; and second, they reported (following others) that the male excess in preterm births was absent in samples of Black births. I wish to comment on these findings.

The IVF Data

I have cited 10 sets of direct data to suggest that the regression of offspring sex ratio on cycle day of conception is U-shaped (James, 2000a). On the basis of this, I suggested that boys are born about a day earlier because they are conceived about a day earlier on average (James, 2000b); (the idea is that the U-shaped regression at conception occurs—much damped—9 months later at birth). Zeitlin et al (2002) noted this suggestion but they wrote: ‘‘We posited that if the excess of males was due solely to a difference in the timing of conception, it should disappear completely in IVF births for which the moment of conception is known with certainty for both sexes. This does not appear to be the case in the overall population of IVF births’’. Nevertheless, I want to argue that timing of conception explains part, even if not the whole, of the excess of males in preterm births.

The regression of sex ratio (proportion male) on duration of gestation is U-shaped (or, more properly, reverse-J-shaped), not \(\backslash-J\) shaped. In other words, in contrast with term births, there are excess males not only among pre-term births, but also among post-term births. This phenomenon was present in data on White live births in the USA for all 11 years 1966–1976 (James 1994) and three large UK samples (Karn and Penrose, 1951; McKeown and MacMahon, 1956; Milner and Richards, 1974). As I demonstrated (James, 1994), timing of conception would explain not only the excess of males among pre-term births but also this excess of males among post-term births. Moreover, this interpretation is supported by the finding of Milner and Richards (1974) that when the reported duration of gestation is controlled, male birth weights have a greater variance than female birth weights. I know no other satisfactory explanation of these latter data. I infer that timing of conception partly (though perhaps not wholly) explains the excess of males among pre-term births.

Lastly, it is worth pointing out that the proposition that timing of conception (partly) explains the excess of males in pre-term births is consistent with a network of other logically inter-related, empirical, (apparently true) propositions (James, 2000b).

The data on Black births

Zeitlin et al (2002) failed to find a significant excess of males among pre-term Black births. In this they followed Cooperstock and Campbell (1996) who had also reported less of such an effect in women aged <20 years and women who had been educated for <12 years and women who were unmarried. Accordingly I suggested that these failures were a consequence of small samples in conjunction with poorer reporting of last menstrual period in these classes of women (James, 1997). So it seemed worth extracting official data from

<table>
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<th>Year</th>
<th>1975&lt;sup&gt;a&lt;/sup&gt;</th>
<th>1976&lt;sup&gt;a&lt;/sup&gt;</th>
<th>1980&lt;sup&gt;b&lt;/sup&gt;</th>
<th>1992&lt;sup&gt;c&lt;/sup&gt;</th>
<th>1993&lt;sup&gt;c&lt;/sup&gt;</th>
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<tr>
<td>&lt;37 weeks&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.518</td>
<td>0.516</td>
<td>0.517</td>
<td>0.517</td>
<td>0.517</td>
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<tr>
<td>≥37 weeks&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.506</td>
<td>0.506</td>
<td>0.506</td>
<td>0.508</td>
<td>0.505</td>
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<sup>a</sup>In the years 1975 and 1976, these were called ‘Negro’ births. In later years they were called ‘Black’ births.

<sup>b</sup>The yearly totals of births of <37 weeks varied between 44 058 and 111 605. The yearly totals of births of ≥37 weeks varied between 242 221 and 535 788.

<sup>c</sup>For each year, the difference between the two sex ratios is very highly significant.

Table 1. Sex ratios of Black births by duration of gestation, selected years, USA
the published Natality Volumes of the USA vital statistics for 5 randomly chosen years (1975, 1976, 1980, 1992 and 1993). The data are shown in Table I. All five of the differences are statistically very highly significant. In view of the uniformity of these results, I infer that pre-term Black births (like pre-term White births) contain an excess of males. The reported differential is smaller in Black births, presumably as a consequence of poorer reporting of the duration of gestation in Black, as contrasted with White, births.

References


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