Traffic deaths before and after birth

Dear Editors,

We found that the risk of a fetus death from a traffic crash during the nine months of the mother’s pregnancy is five times the risk during the first nine months of a baby’s life.

Our result was derived using United States data documenting 33,561 road deaths in 2012 [1]. This total ignores an additional source of traffic fatalities, namely, fetus deaths.

Using national datasets and applying plausible assumptions about rates of pregnancy and traffic fatalities, we calculated the number of unborn babies lost traffic in 2012 (Table 1). Two main assumptions were: (1) pregnant and non-pregnant women of the same age have equal chances of becoming traffic fatalities; (2) the death of a pregnant woman leads to the death of her unborn child. We compute that 227 pregnant women die per year in US traffic crashes, a finding that compliments estimates based on samples of fatally injured fetuses [2].

Our estimate of 227 fetuses killed in traffic contrasts with 60 babies aged less than one year killed in traffic crashes in 2012 [1], equivalent to 45 deaths in a the nine month period corresponding to pregnancy. Thus the risk of fetal death during pregnancy is 227/45 = 5.04 times the risk after birth for equal exposure times. This ratio likely underestimates the disparity because the risk of crashing is increased during pregnancy [3], and we have ignored the many cases in which the mother survives but the fetus does not [4].

The 227 fetal traffic deaths are easily overlooked because they constitute so small fraction of the approximately 25,000 fetal deaths that occur annually in the United States. They are an even smaller fraction of total traffic deaths. The main argument justifying more attention is that these fetus deaths can be so easily reduced.

All United States traffic deaths can be reduced sharply by US safety policy becoming more based on safety science, as has already occurred in many countries. For example, if US traffic deaths had declined by the same percent as occurred in the Netherlands, US traffic deaths in 2012 would have been reduced by 68% [5]. If the US had safety policies like those in the Netherlands, then 72 instead of 227 fetuses would have been killed. The key to major risk reductions for all road travelers, born and unborn, is sensible traffic safety policy sensibly enforced in ways the public embraces because they really understand that the largest risk to their families is from traffic [5].

Given the current situation, physicians can advise patients that the priority in protecting a fetus in traffic is the same as protecting the mother, and everyone else. The advice is simple. Do not rush in traffic – plan to leave 5 min earlier for your appointments. Pay close attention to traffic. When driving, slow down – this is crucial, obey traffic law, and keep foremost in mind your precious cargo. Beware at all times that a few percent of other drivers create threats you must actively avoid. The father should receive similar advice, because when he is the driver, mother and fetus are likely exposed to increased risk.
Traffic safety is an established part of pediatric care and the low rates of motor vehicle traffic fatalities during infancy indicate that such efforts are effective. The current data highlight that such prevention needs to start even earlier as a part of standard prenatal care. Specifically, pregnant women should be advised by their physicians on the even greater importance of road safety before the baby is born.

Conflict of interest

Neither author reports any conflicts of interest.

Acknowledgements

Redelmeier acknowledges support from the Canada Research Chair in Medical Decision Science; Evans no support.

References


All data for United States in 2012.
Wide age range to show youngest and oldest values make negligible contributions.

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<table>
<thead>
<tr>
<th>Female age (years)</th>
<th>Live births</th>
<th>Female population</th>
<th>Probability that woman gives birth</th>
<th>Probability that woman is pregnant</th>
<th>Women killed in traffic</th>
<th>Potential fetal losses</th>
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