Commentary: Alcohol, child development and harm to others: a ‘hard’ problem

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In epidemiology and public health, as in any other area of science, not all interesting and potentially important questions are equally easy to address. Some are tough and refractory, resisting repeated attempts to answer them convincingly. The impact of breastfeeding on child growth and development is at the hard end of this spectrum. Observational studies are fraught with difficulties, as breastfeeding in many countries is highly socially patterned and strongly linked to a range of maternal characteristics, all of which could confound any of the observed associations. In addition, the risk of reverse causality is substantial (a sick infant will be fed differently). Nevertheless, there remains considerable scientific, policy and public interest in the potential benefits of breastfeeding on reduced risk of obesity, improved neurocognitive performance and cardiovascular risk profile in childhood and later life, to name but a few outcomes.

One of the most important recent contributions to this research area has been the PROBIT trial set up in 1996–97 in Belarus.1 Taking advantage of the newly found openness resulting from the then recent break-up of the Soviet Union (1991–92), this study used an ingenious and pragmatic cluster-randomized design, in which maternity units were allocated to provide either enhanced breastfeeding support or usual practice. During the past few years, this large trial has provided some of the most convincing evidence to date that extended breastfeeding is associated with increased childhood cognition,2 but appears not to increase stature or reduce blood pressure or adiposity or obesity in childhood.3,4

This study is now being exploited to see what it can tell us about the impact of parental behaviours and family circumstances on child development. In this issue of the IJE, Yang and Kramer report the results of their analyses of parental drinking and family break-up on childhood cognition and behaviour at 6.5 years of age.5 Like the impact of breastfeeding, this is another area of considerable scientific, policy and public interest, but it is also at the hard end of the spectrum of important questions to address, particularly with respect to residual confounding. Unfortunately, however, these new analyses are purely observational, and cannot lever any inferential advantage from the study’s underlying randomized design. Nevertheless, this article provides an important contribution to what is a sparse literature.

The article study looks at the association between parental drinking, marital transitions and child development and discusses the possibility of family break-down mediating the relationship between drinking and harm to children. They find that heavy paternal drinking was associated with small, but clear, deficits in childhood cognition and with increased risk of negative externalizing behaviours at 6.5 years of age. Moreover, children who were no longer living with both their biological parents also had increased risks of negative externalizing behaviours compared with those that remained in two-parent families. These effects persisted after adjustment for a number of confounding factors, including education, marital status, birthweight z-score, gestational age and breastfeeding.

The scope for residual confounding is acknowledged by the authors, but it is a particular concern in the case of the association of paternal drinking with IQ, as indicated by the fact that adjustment approximately halved the size of the effect, although interestingly had little impact on the association with externalizing behaviours. The other important and acknowledged weakness in the study is that the associations reported are cross-sectional, making it impossible to determine the direction of causality. Although a priori it seems unlikely that either a child’s IQ or its negative externalizing behaviours could result in fathers drinking heavily, it is possible that marital conflict and a psychologically stressful home environment could be a common determinant of both.

It is unfortunate that the relationship between parental drinking and family transition could not be
analysed because there is strong evidence that heavy drinking leads to marital instability, when studied using longitudinal data from the USA\textsuperscript{6,7} and, more recently, using Russian cohort study data.\textsuperscript{8} However, it is also likely that heavy drinking may have an impact on child development long before it leads to family breakdown. Studies show that drinking is strongly associated with other forms of family disruption, such as conflict\textsuperscript{9,10} and domestic violence,\textsuperscript{11} both of which would destabilize the child's environment and encourage behavioural problems.

Existing or new birth cohort studies (that are by definition longitudinal) are the ideal platforms for further exploring these questions. However, they can only do so if data have been collected on the drinking behaviour of the father and the mother, and for the post- and pre-natal periods. Although much attention has been recently focused on the potential adverse effects of maternal drinking in pregnancy,\textsuperscript{12} the importance of collecting these more extensive data on alcohol should not be overlooked. The attention paid to whether women are damaging their fetuses by drinking small or moderate amounts of alcohol in pregnancy may in the end turn out to be a far less significant problem than the harms induced by heavy paternal or maternal drinking in childhood. How far Mendelian randomization designs, in which genetic variants are used as instruments for propensity to drink, would also be able to help is unclear, as a genetic instrument for heavy drinking may be far less easy to identify than the genetic variants, such as ADH1B, that have small incremental effects on volume consumed.\textsuperscript{13}

This article raises two much more general issues. The first is the (re)emerging interest in alcohol's 'harm to others'. This is defined as the impact on the health and well-being of people other than the drinker per se or 'collateral damage' from alcohol, and obviously extends to effects of parental drinking on children. The second concerns the societal impact of the particularly hazardous patterns of alcohol consumption that are characteristic of post-Soviet countries, such as Belarus and the Russian Federation.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{image.png}
\caption{The slogan reads: 'Papa don't drink'. Stenciled spray-painted image on a major pedestrian route in Arkhangelsk, North West Russia, 2011. It is interesting to note that the organization that produced this is an ultra-nationalist and highly culturally conservative campaigning group.}
\end{figure}
The image of the damaging effects of heavy drinking on families and children has always been a central theme of temperance movements and others concerned with the corrosive effects of alcohol. In the Soviet Union, the image of men’s drinking destroying their families was used as an emotive political device by Gorbachev’s anti-alcohol campaign in the mid-1980s. 14 It continues to have a currency, as illustrated in the Figure 1, which shows a spray-painted image photographed in Arkhangelsk, Russia in 2011. Recent international interest in researching alcohol’s harm to others has gained momentum since 2009, when it was identified by WHO as a priority. This has led to initiatives to set up a multi-country project, using registry and survey data, alongside harm to others surveys in a number of developed Western countries (although none in former Soviet countries). Within the alcohol’s harm to others literature, many different types of harm are measured, from relatively objective outcomes such as road traffic accidents to the more subjective ‘softer’ outcomes of feeling ‘negatively affected’ by someone’s drinking. 15 Although determining the prevalence of reports of having been ‘negatively affected’ by someone’s drinking is directly communicable to the public and policy makers, it is likely to be affected by cultural norms and expectations. The current article in comparison has the great strength of using much harder and more reproducible outcomes and should be seen as an exemplar in this area.

Belarus, like most other former Soviet countries, has a pattern of drinking in which spirits are the predominant beverage type (43% of total recorded ethanol consumed). 16 In a survey conducted in 2001, 38% of male and 13% of female respondents drank 300 g (15 UK units) or more of strong spirits on a typical occasion when they drank this beverage type. 17 Life expectancy in Belarus is low by European standards; at the time of the PROBIT follow-up survey in the early 2000, it was 63 years for males and 74 years for females. This was higher than in Russia, but by only a small margin (4 years for males, and 2 years for females). 18

Most of the research on the adverse impact of hazardous drinking in the post-Soviet region has been conducted in Russia. Epidemiological research has focused on the contribution of alcohol to the massive fluctuations in life expectancy, 19 with studies variously estimating that between 40% and 50% of male deaths at working age could be attributed to heavy alcohol consumption. 20–22 Broader social and economic impacts have also been considered. 23 However, little attention has been given to the iceberg of non-fatal damage to families and children caused by heavy drinking. This is a further strength of this new study, one of the few to attempt to rigorously address this topic in a post-Soviet country.

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References


