Estrogenic endocrine disruptors and autoimmune disease

From C Mary Schooling¹,²* and Jie Zhao¹

¹School of Public Health, Li KaShing Faculty of Medicine, University of Hong Kong, Hong Kong SAR, China and ²City University of New York School of Public Health and Hunter College, New York, USA

*Corresponding author. 2180 Third Avenue, New York, NY10035. E-mail: mschooli@hunter.cuny.edu

Harpøe et al. provide a fascinating study showing, in a large cohort of women from Denmark, that adiposity may precede diagnosis of a range of autoimmune diseases.¹ Given rising rates of auto immune disease globally,² identification of a reversible mechanism could facilitate prevention and substantially reduce morbidity. Harpøe et al. suggest a common aetiology linking adiposity to autoimmunity via effects on immune subsets, leptin or perhaps other mechanisms.¹ We wonder whether a mechanism operating via estrogen might provide a more generic underlying explanation for the role of adiposity in autoimmune disease, encompassing all these elements while also providing a guide to potential intervention targets. Specifically, adiposity raises estrogen levels,³ which in turn promotes both immune response⁴ and autoimmunity⁵ as well as raising leptin.⁶ Consistent with this potential mechanism the anti-estrogen, tamoxifen, suppresses immune function and is associated with less autoimmune disease.⁷ As such, interventions to prevent autoimmune disease might focus on the role of maintaining a healthy weight and on the identification and removal from the environment of estrogenic endocrine disruptors, such as dioxins, phthalates and polychlorinated biphenyls.⁸ Moreover, such an approach is unlikely to generate adverse unintended consequences for other diseases or for the major causes of death, as large-scale trials have shown the harms of raising estrogens, among women in the Women’s Health Initiative trial⁹ and among men in the Coronary Drug Project.¹⁰

References

We read with great interest the paper entitled ‘Is road safety being driven in the wrong direction’, recently published in your journal. Davies and Roberts, the authors of the paper, elegantly illustrate the mismatch in the attention given to different traffic safety strategies between the World Health Organization (WHO) and its key collaborator, the Global Road Safety Partnership (GRSP)—a public-private partnership. We cannot agree more with their conclusion, ‘It is imper-ative that the UN and WHO do not allow business interests to dominate public health interests.’

We have recently pointed out the controversy surrounding the recent (2012) French law that makes a portable breathalyzer mandatory in all vehicles. The introduction of prescribed sanctions for drivers without a breathalyzer in their vehicles was first postponed temporarily and then indefinitely. It is unclear to us on what, if any, scientific evidence the legislators based their assumption that having a portable breathalyzer in a vehicle would reduce drink-driving on French roads (assuming that was their motivation in the first place). Apparently there was some conflict of interest involved in drafting this law, as the president of the major non-profit organization that pushed and lobbied for the law was also in the paid service of a major French breathalyzer manufacturer. Although even pharmaceutical research is not immune to such practices, selection bias, experimenter effect and a good subject effect can seriously invalidate the collected data.

Public-private partnerships in traffic safety research and injury prevention have become common in recent years especially in naturalistic studies, on-road and driving simulator experiments. As these studies are quite expensive and often involve testing in-vehicle technologies developed by vehicle manufacturers, their completion is rarely possible without the involvement of these manufacturers. This involvement can take many different forms such as partnerships in large consortiums [e.g. the large-scale European Field Operational Test on Active Safety Systems (euroFOT)], direct funding of studies, providing instruments and other technological support and providing manpower in the execution of the experiments and scientific reporting. We can only speculate as to what extent this might pose a challenge to maintaining researcher integrity; however, similar arrangements in medical and pharmaceutical research give us reason for concern.

Furthermore, it is not rare that company researchers publish studies testing different in-vehicle technologies even using their own employees as subjects. Although even pharmaceutical research is not immune to such practices, selection bias, experimenter effect and a good subject effect can seriously invalidate the collected data.

Serious publication bias can be expected to be one of the final outcomes of these procedures, as only research proposals with positive hypotheses will get funding and only studies with positive results will be submitted for publication. Without doubt, public-private partnership will continue in all domains of traffic safety; however, much can be learned from the mistakes already made in other areas of science, namely medicine and pharmacy. It is to be hoped that Davies and Roberts’ paper will contribute to raising awareness of the challenges we face when it comes to public-private partnerships in traffic safety research and injury prevention.