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The effect of ultraviolet radiation on birth weights and gestational length in a scottish birth cohort

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Objectives

Outcomes at birth such as prematurity and birthweight are important determinants of later life health and social outcomes including education attainment, cognitive and behavioural development and a large number of health outcomes. Recently, it has become clear that characteristics of the physical environment, including air pollution, plays an important role in mediating outcomes of pregnancy. Vitamin D deficiency from lack of sunlight has also shown associations with pregnancy outcomes but this has not been replicated in intervention studies of vitamin D supplementation. Recent clinical evidence has pointed to a sunlight pathway that is independent of vitamin D, which instead mediates blood pressure through the production of Nitric Oxides in the skin from exposure to the UVA component of sunlight. This pathway might explain the lack of association with vitamin D supplementation and provides a plausible pathway for direct effects of sunlight exposure for pregnancy outcomes. In this study, we examined the effect of exposure to sunlight during pregnancy hypothesising that higher levels of exposure might reduce risks of premature birth and low birthweight.

Approach

We used routinely collected maternity health data covering all births in Scotland in the period 2000-2010 (~ 550000 births). Using the mothers residential postcode at birth we attached estimates of UV exposure for each trimester of pregnancy based on a combination of MET office spatially detailed sun hours data and satellite derived solar insolation data. We modelled the effect of UV exposure for birthweight and risk of preterm birth with adjustment for confounding variables including smoking, parity and maternal stature. Sensitivity analysis using sibling pairs with discordant UV exposures was also explored to test

the robustness of the findings to residual confounding.

Results

Results are not available at time of writing but will be available for the conference presentation and will discuss the effects of UV exposure for both the risk of premature birth and low birthweight.

Conclusion

Together with clinical evidence, findings from this study may serve to highlight a possible need to revisit public health advice regarding reducing UV exposure during pregnancy and may provide evidence for possible interventions including sun lamp therapy for pregnant mothers.

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