

Maternal alcohol consumption and the behaviour of the foetus

Introduction

Maternal alcohol consumption during pregnancy adversely affects the foetus resulting in morphological, growth and neurobehavioural disorders after birth. This research, undertaken by Dr Jenny Little and Prof. Peter Hepper of Queen's University Belfast, examined the relationship between the behaviour of the foetus and infant, and the alcohol consumption of their mothers during pregnancy. Previous research by the team and others has established that the behaviour of the foetus directly represents the functioning of its nervous system. Thus by observing the foetus's behaviour; the effects of alcohol on the developing individual's brain may be studied directly, at the time of alcohol exposure. The behaviour of the foetus was observed at 18-20,25,27,32,36 and 38 weeks of gestation and after-birth at 4 months of age. The research also examined the drinking habits of mothers.

Findings

- 60-70% (n=300) of pregnant mothers reported drinking some alcohol during their pregnancy and 15% reported drinking 15 units or more per week. This was unchanged, with different cohorts, over a 4-year period.
- The behaviour of the foetus was related to maternal alcohol consumption: foetuses of mothers who drank were; less active; exhibited different mouthing and breathing patterns; displayed a delayed startle response; and, differed in their rate of habituation, compared to foetuses of mothers who did not drink,
- Maternal alcohol consumption during pregnancy was associated with infant habituation at 4 months of age, Infants of mothers who drank during pregnancy habituated faster than mothers who did not, the same pattern as seen at 38 weeks gestation,
- These effects were observed at low levels of maternal alcohol consumption (3-6 units per week),

Implications

- The behavioural effects observed suggest that maternal alcohol consumption has influenced the functioning of the brain of the foetus and infant, This could be a long-term effect,
- Behavioural observation of the foetus provides a means of assessing the influence of alcohol on the developing individual and may provide more information on causal mechanisms.
- The levels of alcohol consumed by the mothers were relatively low during pregnancy, i.e. 3-6 units per week, More work is needed to determine the effects of low levels of alcohol on neural functioning.

Further Information

- The study was performed on mothers who, although drinking during their pregnancy, had no alcohol within their bodies during the time of testing, Thus the effects observed cannot be attributed to an acute effect of alcohol but rather a long-term effect.
- The study overcomes problems of identifying the amount drunk by mothers as the effects of maternal alcohol consumption on the foetus are observed directly,

- Further research is needed to assess whether these differences persist in the long-term and the contribution of maternal factors, such as emotional arousal, to these effects. The possibility of an effect due to inherited differences in neurological reactivity, between drinkers and non-drinkers, as well as their children, also needs to be explored.

Research Team

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