



Impact of Carers' Smoking Status on Childhood Obesity in the Growing up in Ireland Cohort Study.

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ABSTRACT

The association between childhood obesity and maternal smoking and/or paternal smoking has been reported. However, few studies have explored the association between childhood obesity and exposure to carers' smoking status. This study aimed to assess the impact of carers' smoking status on childhood obesity in a cohort of children enrolled in the Growing up in Ireland (GUI) study. Participants from the GUI infant cohort were categorized into four groups based on their exposure status: Neither caregiver smoked (60.4%), only primary caregiver smoked (13.4%), both caregivers smoked (10.9%). Exposure to primary carers' smoking (98% are biological mothers) was found to be significantly associated with childhood overweight/obesity at age three (Odds Ratio: 1.30, 95% CI: 1.17–1.46) and at age five (OR: 1.31, 95% CI: 1.16–1.49). Exposure to both carers' smoking status was significantly associated with increased odds of childhood overweight/obesity across both waves. These findings emphasize the health burden of childhood obesity that may be attributable to maternal smoking postnatally and through early childhood in Ireland.

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INTRODUCTION

Ireland is ranked among the countries with high rates of childhood obesity and almost half of the children in Irish households are exposed to second-hand smoke (SHS). According to the WHO, childhood obesity can only be successfully tackled if we focus on both the child and the child's prevailing environment. One such environment is the setting where a child spends most of the time, namely, in a household or in a carers' service. The Central Statistics Office (2006) in Ireland found that 60% of infants are looked after by a parent/guardian closely followed by 12% looked after by paid carers'. A study found that children who spend more time at home, in the presence of a smoker or living with a carer who smokes have an increased SHS exposure. However, there is limited evidence suggesting a link between post-natal or childhood SHS exposure and childhood obesity. Therefore, the current study has a two-fold rationale; (1) to examine the impact of childhood SHS exposure on childhood obesity risk in a private setting to provide further evidence in support of a healthy living environment, as actioned in the Irish Healthy Ireland strategy; (2) to reproduce similar findings in Ireland that were previously reported in other comparable population settings, using a nationally representative population-based cohort while controlling for potential confounders available to the dataset.

METHODS AND MATERIALS

Study children were participants from the Growing up in Ireland (GUI) study. The infants were aged nine months at the start of the study and data collection, three years during the second wave ($n = 9703$), five years at the third wave ($n = 9001$) and 7/8 years at the fourth wave. This study used data collected in the first three waves of the study. Carers' were separated into a primary and secondary carer. The primary carer was defined as the person who knew more about the study child who was the child's biological mother in 98% of cases, and the secondary carer was the spouse or partner of the Primary Carer (usually the child's father or father figure). Directed Acyclic Graphs (DAGs) were used to examine the role of potentially confounding variables of the association between carers' smoking and childhood overweight/obesity. Student t-tests, Chi-square test, logistic regression and Mantel Haenszel statistics were performed using STATA.

RESULTS

The analysis showed that most of the infants (60.5%) were never exposed to either carers' smoking, whereas 10.9% of infants were exposed to both carers' smoking. Conversely, 13.4% were exposed to only primary carers' smoking (98% are biological mothers). Children exposed to primary carers' smoking in early childhood had 1.30 times the odds of being overweight/obese at age three compared to children of non-smoking mothers (OR:1.30, 95% CI: 1.17–1.46)). Similarly, children exposed to primary carers' smoking in early childhood had similarly increased odds of being overweight/obese at age five compared to children of non-smoking mothers (OR: 1.31, 95% CI: 1.16–1.49).

CONCLUSIONS

The study showed an association between carers' smoking (largely maternal smoking post-natally) and childhood obesity in children aged three and five years old, independent of other potential confounders, such as low birth weight and breastfeeding. This evidence strongly supports the need for informing policies on targeted population-level anti-smoking interventions in private settings not only to reduce further childhood SHS exposure levels, but also to tackle the epidemic of childhood obesity.

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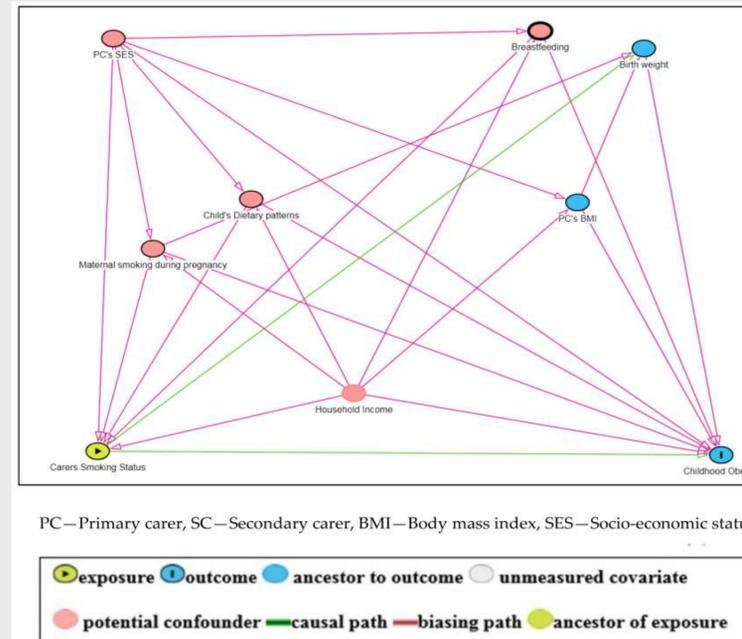


Figure 1. A Directed Acyclic Graph (DAG) for the association between Carers' Smoking Status and Childhood Obesity.

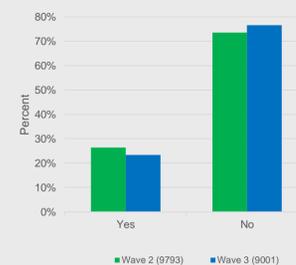


Figure 2. Primary Carers' Smoking at each wave.

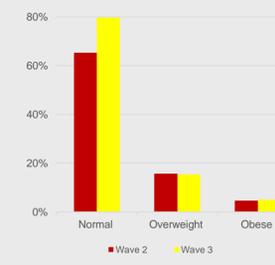


Figure 3. Prevalence of Overweight/Obesity at each wave.

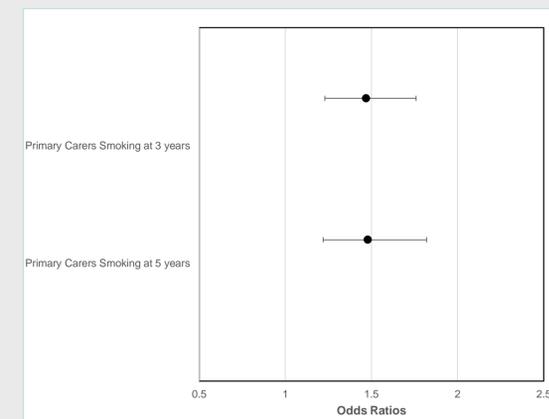


Figure 3. Crude OR's.