



LOW BIRTH WEIGHT IN FULL-TERM NEONATES:THE IMPACT OF MATERNAL
ETS EXPOSURE

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Introduction

- Environmental Tobacco Smoke (ETS) is smoke generated after a cigarette has been lit.
- One in three pregnant women in the UK are exposed to ETS. ¹
- Maternal ETS exposure has been linked with low birth weight (LBW) (<2.5kg) in full-term neonates. ²
- LBW infants have an increased risk of developing respiratory diseases, ischaemic heart disease and type 2 diabetes.³
- NICE guidelines do not address methods to tackle passive smoking in pregnant women nor does it mention the adverse effects of maternal ETS exposure. ⁴

Aim:

To assess the association between maternal ETS exposure and LBW full-term neonates.

Methods

- The NICE evidence database was used to search for relevant guidelines via the terms ‘Secondhand smoke AND low birth weight.’
- No relevant NICE guidelines were obtained
- The Cochrane Library, Pubmed, Google Scholar and EMBASE databases were searched to identify systematic reviews (SRs) and observational literature published after 2004 and 2015, respectively.
- A PECO framework focused the search on pregnant women exposed to ETS versus those unexposed, with the outcome of LBW in full-term neonates.
- Studies with maternal smoking populations and non-LBW outcomes were excluded.
- This resulted in appraisal of 3 SRs and 3 observational studies using CASP tools.

Results

Study Author, year of publication	No. of Studies included	No. of Participants	Adjusted Odds Ratio (95% Confidence Interval)	Reported p-value	Heterogeneity (I ²)	Possible Bias
Parascandola et al., 2019 ⁵	12	56,129	1.28 (1.10-1.49)	p=0.001	69.3%	Selection Publication
Salmasi et al., 2010 ⁶	76	48,439	1.16 (0.99- 1.36)	p=0.06	39%	Selection
Leonardi-Bee et al., 2008 ⁷	26	Prospective : 45,415 Retrospective: 64,910	Prospective: 1.32 (1.07-1.63) Retrospective : 1.22 (1.08-1.37)	Prospective: p=0.009 Retrospective: p=<0.001	Prospective: 55% Retrospective: 0%	Selection Recall

Table 1: Systematic review summary

Study author, year of publication	No. of Participants	Adjusted Odds Ratio (95% Confidence Interval)	Reported P-value	Potential Bias
Jayaraj et al., 2019 ⁸	400	1.72 (0.85-3.50)	p=0.13	Selection Social-acceptability recall
Owili et. al., 2018 ⁹	208,027	1.06 (1.02–1.10)	Unreported	
Huang et al., 2018 ¹⁰	1,632	1.83 (1.35-2.48)	p<0.001	

Table 2: Primary studies summary

- Two of the three SRs appraised found statistically significant associations between ETS and LBW with an increase in odds of 28% and 32%.The remaining SR found an association of no significance (OR 1.16 (95%CI: 0.99-1.36)).
- Two of the three primary studies appraised also found statistically significant associations with an increase in odds of 6% and 83%.The remaining study found a non-significant association (OR 1.72 (95%CI: 0.85-3.50)).

Discussion

- The majority of appraised literature supports an association between ETS and LBW.
- Despite this, NICE guidelines do not address methods to tackle passive smoking in pregnant women nor does it mention the adverse effects of maternal ETS exposure
- Therefore, guidelines and public health policy should be amended to reflect these findings, with the aim of reducing LBW infants in the UK.

Further Research

- The evidence is conflicting so further observational studies should be conducted to validate these findings.
- These should be completed in the UK with objective measurements for ETS exposure.
- Qualitative studies regarding pregnant women’s ideas, expectations and concerns regarding ETS should be undertaken to inform clinical practice.

References

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