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# PATHWAYS OF INEQUALITIES IN PAEDIATRIC INFECTIOUS DISEASES

## Evidence from register-based cohort studies in Sweden

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## Sammanfattning

**Background:**
In Sweden, the risk of paediatric infectious diseases is associated with low parental education levels, low household income, and country of birth. Health-related behaviours that increase the risk of paediatric infectious diseases include high pregnancy body mass index (i.e., body mass index ≥25), smoking during pregnancy, and low exclusive breastfeeding (i.e., exclusive breastfeeding for <4 months). These behaviours may serve as pathways linking socioeconomic circumstances to paediatric infectious diseases; however, this has rarely been studied. The overarching aim of this thesis was to investigate whether and how health-related behaviours link socioeconomic circumstances to infectious disease hospitalisations in the first 5 years of life.

**Methods:**
We created four register-based cohorts by combining data from the Medical Birth Register, the National Inpatient Register, the Cause of Death Register, the Longitudinal Integrated Database for Health Insurance and Labour Market Studies, the Total Population Register, and the Child Healthcare Quality Database in Uppsala. In the first study, we examined intersectional inequalities in paediatric infectious diseases in relation to maternal education, household income, sex and gender, and maternal migration status, as well as their combinations, using an analysis of individual heterogeneity and discriminatory accuracy approach. In the second study, we examined associations between high pregnancy body mass index and smoking during pregnancy—and paediatric infectious disease hospitalisations using regression models. In the third study, we examined associations between breastfeeding practice and paediatric infectious diseases using regression models. In the fourth study, we explored whether the effect of disadvantaged socioeconomic circumstances on the risk of paediatric infectious diseases was mediated by high pregnancy body mass index, smoking during pregnancy, and low exclusive breastfeeding, using causal mediation analysis.

**Results:**
In the first study, we identified complex inequalities in paediatric infectious diseases related to maternal education, household income, sex and gender, and maternal migration status, as well as their combinations. Children from lower socioeconomic groups were more likely to be hospitalised for overall, upper respiratory, lower respiratory, and enteric infections, with maternal education being the primary driver of these socioeconomic inequalities. Additionally, we found that the overall risk of paediatric infectious diseases was unrelated to household income in children born to highly educated mothers, suggesting that maternal education may protect children from the adverse consequences of poverty. In the second study, we found that high pregnancy body mass index and smoking during pregnancy were associated with an increased risk of paediatric infectious disease hospitalisations. Pregnancy overweight and obesity increased the risk of overall paediatric infectious diseases by 5% and 18%, respectively. Smoking during pregnancy increased the risk of respiratory infections by 29%. In the third study, we found that the overall risk of paediatric infectious disease hospitalisation decreased with the duration of exclusive breastfeeding up to 4 months of age. Additionally, we found that exclusive breastfeeding reduced the risk of both respiratory and enteric infections in children under 2 years and the risk of respiratory infections in children aged 2–4 years. In the fourth study, we found that higher exposure to health-related behaviours—namely, high pregnancy body mass index, smoking during pregnancy, and low exclusive breastfeeding—mediated approximately half of the association between maternal education level and paediatric infectious diseases. Most of this mediation effect was attributed to low exclusive breastfeeding. However, high pregnancy body mass index and smoking during pregnancy accounted for approximately 20% of the increased risk of infectious diseases observed in children born to mothers with less than 13 years of education.

**Conclusion:**
Our findings suggest that higher exposure to health-related behaviours is an important pathway linking socioeconomic circumstances to paediatric infectious diseases. Consequently, interventions targeting these behaviours may help reduce inequalities in paediatric infectious diseases.

**Nyckelord:** Public health, community child health, infectious diseases, healthcare disparities, obesity, smoking, breastfeeding

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