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Original Article

Maternal and paternal sleep during pregnancy in the Child-sleep birth cohort

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ABSTRACT

Study objectives: Maternal and paternal sleep insufficiency during pregnancy appears to be a risk factor for health and wellbeing in young families. Here, we evaluated the prevalence of sleep insufficiency and symptoms of insomnia during pregnancy (at 32nd pregnancy week) and their relationship to depression, anxiety and environmental stress.

Methods: The study is based on a population based sample from Finland consisting of 1667 mothers and 1498 fathers from the Child-sleep birth cohort. We evaluated both the core symptoms of insomnia (sleep onset problems, nocturnal awakenings, too-early awakenings, and poor sleep quality) and the presence of insufficient sleep. Insufficient sleep was defined as a two-hour difference between self-assessed sleep need and reported sleep duration, or sleep duration shorter than six hours per night.

Results: We found that symptoms of insomnia were more prevalent among women than among men (9.8% vs. 6.2%), whereas sleep debt was less prevalent among women than among men (4.5% vs. 9.6%). Overall, 11.8% of the women and 14.9% of the men reported either significant insomnia or short sleep. Symptoms of insomnia were related to symptoms of depression both among women and men (AOR 3.8, 95% CI 2.6–5.6 vs. AOR 1.9, 95% CI 1.1–3.2), while short sleep was related to depression among women (AOR 3.3, 95% CI 1.8–5.8), and to low education, poor health and a larger number of children among men.

Conclusions: The study showed that insomnia and sleep insufficiency are prevalent among women and men during pregnancy. The findings underline the impact of insomnia to both maternal and paternal health during pregnancy as well as to the implementation of effective interventions to prevent negative consequences of sleep disturbances.

1. Introduction

Insufficient sleep is a well-known stress factor for health and wellbeing, as shown in several recent studies [1]. While it is generally known that insufficient sleep during pregnancy may constitute a risk factor for women's health and even fetal development [2], the sleep quality of fathers has remained largely unexplored.

Insufficient sleep constitutes two main factors: too short duration of sleep or bad quality of sleep. Less than five or six hours of sleep is regarded as a short sleep duration with potential adverse health consequences. Sleep debt, measured as the difference between self-assessed sleep need and actually acquired sleep duration, is another variable that has been used to probe sufficiency of sleep. It has been shown that although overlapping, these factors are independent predictors of cardiac events [3], indicating that the duration of sleep may not comprehensively explain the relationship between

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sleep and increased health risks. Symptoms of insomnia (sleep onset problems, nocturnal awakenings, too early awakenings, and poor sleep quality) constitute yet another aspect of insufficient sleep.

Due to pregnancy-related physical and hormonal changes, women are at a heightened risk of suffering from insufficient sleep during this period. As summarized in a recent review, pregnant women with poor sleep quality are at risk for gestational diabetes and heightened blood pressure [4]. Furthermore, lack of sleep may increase the risk for obstetric problems [4]. For example, sleep debt during early pregnancy is associated with pre-eclampsia in the second and third trimesters [5] and a higher rate for preterm delivery [6], and symptoms of insomnia in late pregnancy are associated with delivery complications, such as a risk for emergency cesarean [7], longer duration of labor and instrumental delivery [8–10]. Sleep onset difficulties and symptoms of insomnia during pregnancy have also been linked with postpartum depressive symptomology [9–10].

Paternal sleep insufficiency and its effects on future family life has been studied far less than maternal sleep insufficiency, although the father's role in supporting the sleep of both the child and the mother during the postpartum period has been emphasized [11]. Still, antenatal depression and insomnia are common also in fathers [12], as well as shortened sleep and fatigue during pre- and postpartum periods [13].

While it has been recognized that both maternal and paternal antenatal sleep insufficiency may constitute a risk for psychosocial wellbeing and health in young families, in current clinical practice this aspect is largely ignored. Reliable and current knowledge regarding the prevalence and consequences of sleep insufficiency in both women and men during pregnancy could warrant implementation of effective and targeted prevention programs.

The objectives of this work were (i) to assess both maternal and paternal sleep insufficiency in late pregnancy (32nd week) and (ii) to characterize factors that increase the risk for sleep insufficiency during this period of life. Supported by the previous literature, we included depressiveness, anxiety, stress, adverse life events and family atmosphere as factors that could be related to sleep insufficiency, while, age, education, number of children in the family, alcohol and smoking habits were controlled for.

The study was performed in the Child-sleep birth cohort, recruited from the Pirkanmaa Hospital District from southern Finland and comprising 1673 families, which was established to study various aspects of sleep in families with newborn children. Data were compiled using a wide spectrum of questionnaires. In addition to sleep, the questionnaires probed the neurological and psychological development of the children, their family environment, socio-economic factors and general health. Furthermore, genomic data were collected from both parents and the babies. Here, the birth cohort will be described as a whole for the first time.

2. Methods

2.1. Study setting

The study is based on a longitudinal birth cohort, with several measurement points. The recruitment and baseline measurement occurred prenatally at 32nd week and the follow-up measurements took place at the birth of the child and at the child age of three, eight, 18 and 24 months (Fig. 1). The records from the maternity hospital and the maternity clinics were also gathered. Maternal, paternal and cord blood samples were drawn for genetic analyses.

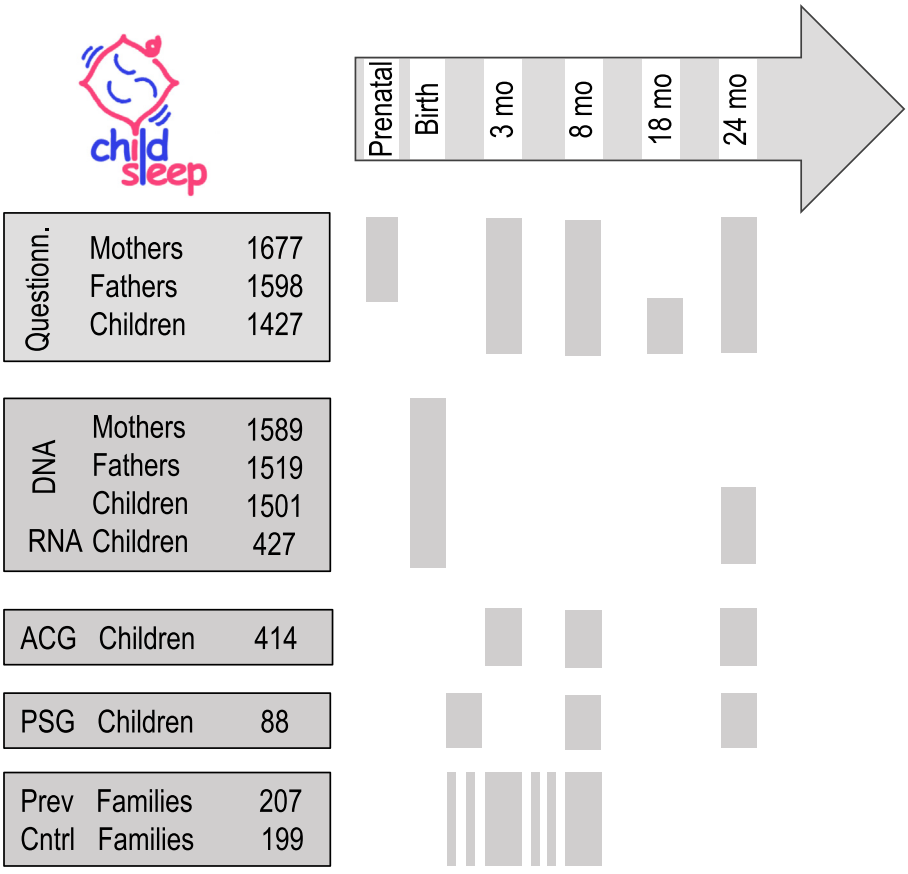

Fig. 1. Study protocol. Abbreviations: ACG Actigraphy, PSG polysomnography, Prev prevention group, Cntrl control group.