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Comparison of subjective sleep and fatigue in breast- and bottle-feeding mothers

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ABSTRACT

Objectives: Artificial milk supplementation remains a popular practice in spite of the well documented and indisputable advantages of breast feeding for both mother and child. However, the association between maternal sleep, fatigue and feeding method is understudied and remains unclear. The aim of this study is to investigate whether perceived sleep and fatigue differ between breast- and bottle feeding post partum women. In addition, the relationship between subjective sleep characteristics and fatigue is examined.

Methods: Post partum women (four to 16 weeks) filled out a socio-demographic questionnaire, the Pittsburgh Sleep Quality Index (PSQI) and the Checklist Individual Strength (CIS).

Findings: Sixty-one within the past week exclusively breast- and 44 exclusively bottle-feeding mothers were included. The first group showed better subjective sleep quality, but lower habitual sleep efficiency as measured by the PSQI. Global PSQI, as well as subjective fatigue and global CIS, did not differ between the two groups. Significant positive correlations were found between global CIS and the number of night feeds and global PSQI. However, only global PSQI significantly predicted global CIS in relation to the number of night feeds.

Conclusions: Within a general pattern of deteriorated sleep quality, breast-feeding women showed better subjective sleep quality, but lower habitual sleep efficiency, between four and fourteen weeks after childbirth. However, the PSQI component scores compensated for each other, resulting in absence of any difference in global PSQI sleep quality between the two groups. Global PSQI significantly predicted global CIS, resulting in an absence of any difference in post partum fatigue according to feeding method.

Implications for practice: Midwives and nurses should, together with the parents, continue to focus on exploring ways to improve maternal sleep quality and to reduce postnatal fatigue.

Introduction

It has been well documented that mothers experience sleep changes and increased levels of fatigue after childbirth (Dørheim et al., 2009, Rychnovsky and Hunter, 2009; Taylor and Johnson, 2010). Midwives and maternal-child health nurses worldwide play an important role in helping mothers to minimise and manage these changes as they can affect women's physical, mental and emotional well-being, including the development of post partum depression (Wilkie and Shapiro, 1992; Bozoky and Corwin, 2002; Corwin et al., 2005; Dørheim et al., 2009).

Post partum maternal sleep and fatigue are difficult to study since subjective measurement can be time consuming and objective measurement may be intrusive for new mothers (Hunter et al., 2009). Nevertheless, some general findings have been reported in the literature. Total sleep time (TST) and sleep efficiency (SE) decreased, and wake after sleep onset (WASO) increased in the early post partum period compared with late pregnancy (Matsumoto et al., 2003; Gay et al. 2004; Signal et al., 2007; Bei et al., 2010; Doan et al., 2014;). More daytime napping has been reported in new mothers (Matsumoto et al., 2003; Gay et al. 2004), although it has not been consistently

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shown to be significantly increased compared to the last month of pregnancy (Doan et al., 2014). TST, SE, WASO and daytime napping improved over time, but Matsumoto et al. (2003) found that at 15 weeks post partum most sleep parameters had not yet returned to the level of the non-pregnant control group. Subjective sleep quality as measured by the Pittsburgh Sleep Quality Index (PSQI) was experienced as poor by nearly 60% of 2830 women in a population based setting, two months after childbirth (Dørheim et al., 2009). There was, however, a small but significant decline in PSQI scores three months postpartum, indicating an improvement in global sleep quality (Dørheim et al., 2009; Coo et al., 2014).

Sleep disturbances as a consequence of altered maternal sleep are mostly related to the night-time feeding, care and sleeping patterns of newborns (Hunter el al., 2009). It is a common belief that infant artificial milk has a more satiating effect on babies, which may explain why mothers are often advised to use or supplement with artificial milk for night feeds, in order to improve maternal sleep and to lower the risk of post partum depression (Ross et al., 2005; Bennett, 2007). However, this strategy is questioned in the literature and firm evidence about the impact of feeding methods on maternal sleep is still lacking.

Two studies measuring objective sleep suggest that breast-feeding mothers spent more time awake during the night but did not differ from bottle-feeding mothers with respect to TST in the early post partum period (Blyton et al., 2002; Gay et al., 2004). Doan et al. reported that mothers who breastfed exclusively slept 30–40 minutes more per night than artificial milk-feeding mothers, but levels of sleep fragmentation did not differ at one month postpartum (Doan et al. 2007; Doan et al., 2014). Another study found no differences in objective sleep during the first three post partum months in relation to the feeding method (Montgomery-Downs et al., 2010). Different outcomes for quantitative subjective sleep have also been described in the literature, reflecting the controversy about the impact of the feeding method on maternal sleep (Gay et al., 2004; Montgomery-Downs et al., 2010; Kendall-Tackett et al., 2011; Doan et al., 2014). Subjectively reported sleep quality in relation to the feeding method has not yet been comprehensively studied in post partum women. Nevertheless, perceived sleep quality has been shown to be more strongly related to post partum depression than actual sleep time, confirming the importance of an in-depth assessment (Bei et al., 2010).

Fatigue has been described to be highest soon after childbirth and to decrease two weeks postpartum. However, no change or improvement has been seen from the second to the sixth week postpartum (Rychnovsky and Hunter, 2009). Post partum fatigue is often linked in women's minds to breast feeding and is a commonly cited reason for early weaning (Cloherty et al., 2004; Gagnon et al., 2005). However, Callahan et al. (2006) showed no significant differences in perceived fatigue between breast- and bottle-feeding women on days two to four, or at six weeks and 12 weeks following childbirth. Other studies with a small sample size also reported no significant differences in experienced fatigue between mothers who fed their infants exclusively breast milk, exclusively artificial milk or both breast milk and artificial milk until 12 weeks postpartum (Gay et al., 2004; Montgomery-Downs et al., 2010).

Methods

Aims/ Objectives

Artificial milk supplementation remains a popular practice in spite of the well documented and indisputable advantages of breast-feeding for both mother and child. However, the association between maternal sleep, fatigue and feeding method is understudied and remains unclear. The aim of this study is, therefore, to investigate whether perceived sleep and fatigue differ between breast- and bottle-feeding women during the post partum period. In addition, the relationship between subjective sleep characteristics and fatigue is examined.

Design

The study has a cross- sectional design.

Participants

Participants were recruited at two different hospitals and through social networks (Facebook advertising) between March and May 2014. On the maternity unit of X, the researcher was present three times a week to inform potential participants about the study. Subsequently, they were invited to complete the questionnaire after one month. If necessary, the researcher sent a reminder to fill out the questionnaires. At hospital Y, an outpatient secretary approached potential participants to invite them to participate in the study. These participants immediately completed the questionnaires. Participants recruited through social networks completed the questionnaires by clicking on a link. Participants had infants aging between four and 16 weeks and were proficient in the Dutch language. Mothers were excluded if their infant was still hospitalised in the neonatal intensive care unit at time of recruitment. Participants were divided into groups of exclusively/only breastfed, exclusively/only bottle-fed (artificial milk) or mixed breast- and bottle-fed, based on their self-reported feeding practice during the last week.

Taking a standardised effect size of 0.61 on the Pittsburgh Sleep Quality Index (PSQI), a total of at least 44 participants in each feeding group was required, as identified after power calculation (α=0.05, β=0.20, standardised effect size Cohen's d=0.61) (Cohen, 1988; Dørheim et al., 2009).

Data collection tools

All participants filled out a general socio-demographic questionnaire supplemented with questions on maternal- and infant-related factors that could potentially influence sleep and/or fatigue (e.g., diagnosis of a pre-existing psychiatric disorder and use of psychotropic drugs by the mother, diagnosis of organic conditions in the infant, sleeping and feeding arrangements), the PSQI and the Checklist Individual Strength (CIS). Questionnaires were filled out on location or one month after childbirth by participants recruited during postnatal consultation or at the maternity unit, respectively. Participants recruited through social networks were asked to fill out the questionnaires only when their infant was between four and 16 weeks old.

The PSQI was used to assess sleep quality and disturbances during the past month. Nineteen individual items generate seven component scores (range 0–3, with higher scores indicating worse sleep): subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency (calculated by dividing total sleep time by total time spent in bed), sleep disturbances, use of sleep medication, and daytime dysfunction. The global sleep quality score has a cut-off value of five, discriminating between ‘good’ and ‘poor’ sleepers (Buysse et al., 1989). The PSQI has been well-validated supporting internal consistency (Cronbach's alpha 0.80) (Buysse et al., 1989; Carpenter and Andrykowski, 1998), concurrent validity (Carpenter and Andrykowski, 1998; Backhaus et al., 2002) and discriminative validity (Carpenter and Andrykowski, 1998; Backhaus et al., 2002) across a variety of clinical and healthy populations.

The CIS consists of 20 items (range one to seven) to quantify subjective fatigue and related behavioural aspects, including reduced motivation, reduced activity and reduced concentration during the last two weeks. Discriminating cut-off values of 35 for subjective fatigue and 76 for the global score were used in the study (Vercoulen et al., 1999). The CIS has been used and validated in a range of clinical populations and healthy working adults, with good internal consistency (Cronbach's alpha 0.90 for the total CIS) and convergent validity (Hewlett et al., 2011).