The role of daytime napping on salivary cortisol in children aged 0–5 years: a systematic review and meta-analysis

- Mesas A.E.[a, b]
- Sánchez-López M.[a, c]
- Pozuelo-Carrascosa D.P.[a]
- Sequí-Domínguez I.[a]
- Jiménez-López E.[a, d]
- Martínez-Vizcaíno V.[a, e]

Abstract

Cortisol levels are implicated in emotional and cognitive development in children. However, it is not clear whether daytime napping influences cortisol levels in early childhood. This systematic review and meta-analysis aimed to synthesize the available evidence regarding the association between daytime napping and salivary cortisol in early childhood. The Medline, Embase, Web of Science, PsycINFO, and Cochrane Collaboration databases were searched for observational and experimental studies reporting data about napping behavior and salivary cortisol in children 0–5 years of age. Salivary cortisol levels were analyzed in three situations: CAR, cortisol awakening response from nap awakening; PRE-POST, before and after a daytime nap; and DIURNAL, from morning awakening to bedtime. Five studies showed a significant CAR after napping (mean difference, MD: 0.11μg/mL; 95% confidence interval, CI: 0.04, 0.18). In the PRE-POST analysis, a small decrease was observed for at-home naps (MD: -0.05 μg/mL; 95% CI: − 0.09, − 0.02) but not for at-childcare naps (MD: 0.04 μg/mL; 95% CI: − 0.01, 0.09). A similar pattern of DIURNAL salivary cortisol decrease was observed when children took a nap (MD: − 0.34 μg/mL; 95% CI: − 0.41, − 0.28) and when they did not sleep during the day (MD: − 0.28 μg/mL; 95% CI: − 0.38, − 0.19). Conclusions: Daytime napping plays a minor role in the fluctuation of salivary cortisol levels during the day. The conditions of the home or the childcare environment under which napping occurs might have a greater influence on cortisol levels than daytime napping itself in early childhood. PROSPERO Identifier: CRD42020212249.What is Known:• The regulation of sleep involves circadian rhythmicity of cortisol secretion via activation of the HPA axis and a subsequent release of cortisol upon morning awakening followed by a decline throughout the day.What is New:• The available evidence supports the occurrence of a cortisol awakening response after a daytime nap.• A small decrease in cortisol after napping was observed when the nap occurred at home but not at childcare.• The conditions of the home or childcare environment under which the nap occurs and the activities before and after napping may have a greater influence on cortisol levels than napping itself.

Author keywords

Children; Cortisol; Daytime napping; Meta-analysis; Systematic review