



# AB001. Assessment of nocturnal sleep architecture by actigraphy and one-channel electroencephalography in early infancy

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**Background:** To elucidate characteristic sleep architecture of different nocturnal sleep patterns in early infancy.

**Methods:** Participants were 27 infants at the same conceptual age of 3–4 months. Nocturnal sleep of these infants was monitored at home by simultaneously using actigraphy and a one-channel portable EEG device. According to the infants' activity for 6 hours from sleep onset, each night's sleep pattern was classified into three categories: sleeping through the night (STN), sleeping with weak signals (crying/fuss episodes <10 minutes or fed), and sleeping with strong signals (crying/fuss episodes ≥10 minutes). Associations of sleep patterns with sleep variables (percentage of time in sleep stages, pattern of

slow-wave sleep (SWS) recurrence, etc.) were investigated.

**Results:** Analysis was conducted in 95 nights. STN pattern (n=36) was characterized by suppressed body movements while EEG represented a state of wakefulness. Weak signal pattern (n=27) tended to indicate rich and regular distributions of SWS across the night. Strong signal pattern (n=32) was characterized by reduced sleep time, although the amount of SWS was not reduced to that degree. Exclusively breastfed infants accounted for 78% of weak signal patterns, whereas formula-feeding infants, 67% of STN patterns. In several nights with STN or strong signal pattern, SWS did not occur in >50% of the sleep cycles. Multiple regression analysis showed that exclusive breastfeeding may increase the proportion of SWS in non-REM sleep.

**Conclusions:** Each nocturnal sleep pattern was associated with some sleep architecture, part of which would be attributed to infants' feeding methods.

**Keywords:** Infant; development of sleep; actigraphy; EEG

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