Title:
Factors Associated With Hospitalized Preterm Infants' Sleep/Wake Patterns

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Session Title:
Research Poster Session 2
Slot (superslotted):
RSC PST 2: Saturday, 29 July 2017: 12:00 PM-1:30 PM
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RSC PST 2: Saturday, 29 July 2017: 2:45 PM-3:30 PM

Keywords:
Hospitalization, Preterm infant and Sleep/ wake patterns

References:


Abstract Summary:
Sleep plays a key role in brain development. This study explored potential factors (postmenstrual age, body weight, gender, chronological age, illness severity, circadian rhythm) associated with infants’ sleep/wake patterns. These results could help clinicians to identify preterm infants at high risk for poor sleep and protect their sleep integrity.

Learning Activity:

<table>
<thead>
<tr>
<th>LEARNING OBJECTIVES</th>
<th>EXPANDED CONTENT OUTLINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>The learner will be able to understand factors related to sleep/wake patterns in preterm infants.</td>
<td>1. Sleep/wake patterns measurement: Actiwatch 2. What and how factors influencing preterm infants’ sleep?</td>
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<tr>
<td>The learner will be able to understand preterm infants’ sleep/wake patterns during hospitalization.</td>
<td>1. How are preterm infants’ sleep/wake patterns during hospitalization? 2. How to identify preterm infants at high risk for sleep issues?</td>
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Abstract Text:

Purpose: Around 15 million infants (about 1 in 10 infants) worldwide are born preterm (gestation < 37 weeks) every year. Sleep plays a key role in preterm infant brain development. However, factors influencing preterm infants’ sleep remain controversial. Current knowledge of preterm infants’ sleep/wake
patterns is limited by short measurement periods and the extent to which these patterns are related to infants' characteristics in the context of routine NICU caregiving with constant light and noise levels. Understanding factors associated with preterm infants' sleep can assist clinicians and researchers to identify preterm infants at high risk for sleep issues, which have been linked to potential developmental concerns. Thus, the purposes of this Actiwatch-based study were to (1) investigate sleep/wake patterns (sleep efficiency, total sleep time, average duration of sleep/wake bouts, percentage of sleep time, and frequency of sleep/wake bouts) for 3 consecutive days in preterm infants with different PMA, and (2) explore how these infants' sleep/wake patterns are associated with their characteristics under current routine NICU caregiving and environmental conditions (i.e., constant light and noise levels).

Methods: In this prospective repeated-measures study, sleep patterns and circadian rhythm were measured by using Actiwatch for 3 continuous days in infants with gestational age of 28-36.4 weeks in a neonatal intensive care unit and hospital nursery. Data on postmenstrual age, body weight, gender, chronological age, and illness severity were collected from medical records.

Results: For the study sample of 30 preterm infants, better sleep/wake patterns were associated with male gender, younger postmenstrual and chronological age, lower body weight, and less illness severity. Preterm infants’ total sleep time ($B=41.828$, $P<0.01$) and percentage of sleep time ($B=3.711$, $P<0.01$) were significantly longer at night than during the day.

Conclusion: Overall our study findings suggest that preterm infants’ sleep/wake patterns are better if they are male, have younger PMA and chronological age, less body weight, and less severe disease. Preterm infants’ total sleep time and percentage of sleep time were significantly longer at night than during the day. Clinicians could use these findings to provide individualized support and protection to maintain the integrity and quality of preterm infants' sleep. For instance, clinicians could provide preterm infants a combination of non-nutritive sucking, oral sucrose, and facilitated tucking during intrusive procedures to minimize stress/pain and protect their sleep integrity. Moreover, clinicians can help preterm infants develop their circadian rhythm through interventions, such as modulating infants’ states, to optimize the NICU environment and protect their sleep, thus improving their neurological development.