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Q/ Do behavioral interventions improve nighttime sleep in children < 1 year old?

EVIDENCE-BASED ANSWER

A/ YES. Infants respond to behavioral interventions, although objective data are limited. Behavioral interventions include establishing regular daytime and sleep routines for the infant, reduc-

ing environmental noises or distractions, and allowing for self-soothing at bedtime (strength of recommendation: **B**, based on multiple randomized and nonrandomized studies).

Most interventions resulted in at least modest improvements in sleep

A randomized controlled trial (RCT) of 279 newborn infants and their mothers evaluated developmentally appropriate sleep interventions.¹ Mothers were given guidance on bedtime sleep routines, including starting the routine 30 to 45 minutes before bedtime, choosing age-appropriate calming bedtime activities, not using feeding as the last step before bedtime, and offering the child choices with their routine. Mothers were also given guidance on sleep location and behaviors, including recommendations on the best bedtime (between 7 and 8 PM), avoidance of a stimulating environment, and transition of the infant to their own room by age 3 months. To address nighttime awakenings, the researchers advised not waking the infant routinely to feed, allowing the infant some time to self-soothe after waking at night, and keeping nighttime interactions with the child boring.

These interventions were compared to a control group that received instructions on crib safety, sudden infant death syndrome prevention, and other sleep safety recommendations. Infant nocturnal sleep duration was determined by maternal report using the Brief Infant Sleep Questionnaire (BISQ). After 40 weeks, infants in the intervention group

demonstrated longer sleep duration than did those in the control group (624.6 ± 67.6 minutes vs 602.9 ± 76.1 minutes; $P = .01$).¹

An RCT of 82 infants (ages 2-4 months) and their mothers evaluated the effect of behavioral sleep interventions on maternal and infant sleep.² Parents were offered either a 90-minute class and take-home booklet about behavioral sleep interventions or a 30-minute training on general infant safety with an accompanying pamphlet.

The behavioral interventions booklet included instructions on differentiating day and night routines for baby, avoiding digital devices and television in the evenings, playing more active games in the morning, dimming lights and reducing house noises in the afternoon, and having a consistent nighttime routine with consistent bedtime and sleep space. Participants completed an infant sleep diary prior to the intervention and repeated the sleep diary 8 weeks after the intervention. The infants whose mothers received the education on behavioral sleep interventions demonstrated an increase in nighttime sleep duration when compared to the control group (7.4 to 8.8 hours vs 7.3 to 7.5 hours; ANCOVA $P < .001$).

An RCT of 235 families with infants ages 6 to 8 months evaluated the effect of 45 minutes of nurse-provided education regarding

normal infant sleep, effects of inadequate sleep, setting limits around infant sleep, importance of daytime routines, and negative sleep associations combined with a booklet and weekly phone follow-ups.³ This intervention was compared to routine infant education. At age 6 weeks, infants were monitored for 48 hours with actigraphy and the mothers completed a sleep diary to correlate activities. There was no difference in average nightly waking (2 nightly wakes; risk difference = -0.2%; 95% CI, -1.32 to 0.91).

An RCT of 268 families with infants (ages 2-3 weeks) evaluated the effect of 45 minutes of nurse-provided education on behavioral sleep interventions including the cyclical nature of infant sleep, environmental factors that influence sleep, and parent-independent sleep cues (eg, leaving a settling infant alone for 5 minutes before responding) combined with written information.⁴ This was compared to infants receiving standard care without parental sleep intervention education. Participants recorded sleep diaries for 7 days when their infant reached age 6 weeks and again at age 12 weeks. At both 6 weeks and 12 weeks, there was a significant increase in infant nocturnal sleep time in the intervention group vs the control group (mean difference [MD] at 6 weeks = 0.5 hours; 95% CI, 0.32 to 0.69 vs MD at 12 weeks = 0.64 hours; 95% CI, 0.19 to 0.89).

A nonrandomized controlled trial with 84 mothers and infants (ages 0-6 months) evaluated the effectiveness of a multifaceted intervention involving brief focused negotiation by pediatricians, motivational counseling by a health educator, and group parenting workshops, compared to mother-infant pairs receiving standard care.⁵ Parents completed the BISQ at 0 and 6 months to assess nocturnal sleep duration. At 6 months, the intervention group had a significantly higher increase in infant nocturnal sleep duration compared

to the control group (mean increase = 1.9 vs 1.3 hours; $P = .05$).

In a prospective cohort study involving 79 infants (ages 3-24 months) with parent- or pediatrician-reported day and night sleep problems, parents were given education on the promotion of nighttime sleep by gradually reducing contact with the infant over several nights and only leaving the room after the infant fell asleep or allowing the child to self-soothe for 1-3 minutes.⁶ The intervention was performed over 3 weeks, with in-person follow-up performed on Day 15 and phone follow-up on Days 8 and 21. Infants in this study demonstrated an increase in the average hours of total night sleep from 10.2 to 10.5 hours ($P < .001$).

Editor's takeaway

Providing behavioral recommendations to parents about infant sleep routines improves sleep duration. This increased sleep duration, and the supporting evidence, is modest, but the low cost and risk of these interventions make them worthwhile.

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The low cost and risk of these behavioral interventions to improve infants' sleep make them worthwhile.

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