

SIDS surprise: Study finds that infant boys are more easily aroused from sleep than girls

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A study in the Aug. 1 issue of the journal *Sleep* shows that at 2 to 4 weeks of age male infants are easier to arouse than females during quiet sleep, and by 2 to 3 months of age there are no significant gender differences in arousability. The results suggest that the increased rate of sudden infant death syndrome (SIDS) in males may not reflect a pre-existing vulnerability involving arousal responses.

Results show that at 2 to 4 weeks of age, the mean strength of a pulsatile air-jet stimulus that was required to induce arousal during quiet [sleep](#) was significantly lower in male [infants](#) than female infants. At 2 to 3 months of age, which is the age of peak SIDS risk, this gender difference in arousal threshold was no longer significant. The study also found similar arousal frequencies in male and female infants at both ages. The results suggest that there are no [gender differences](#) in arousability that could increase the vulnerability of male infants to SIDS.

"A failure to arouse from sleep is involved in the fatal pathway to an infant dying suddenly and unexpectedly," said senior author Rosemary S.C. Horne, National Health and Medical Research Council of Australia Senior Research Fellow and Deputy Director of the Ritchie Centre at the Monash Institute of Medical Research at Monash University in Melbourne, Australia. "Since the incidence of SIDS is increased in male infants, we had expected the male infants to be more difficult to arouse from sleep and to have fewer full arousals than the female infants. In fact, we found the opposite when infants were younger at 2 to 4 weeks of age, and we were surprised to find that any differences between the

male and female infants were resolved by the age of 2 to 3 months, which is the most vulnerable age for SIDS."

The Eunice Kennedy Shriver National Institute of Child Health and Human Development reports that SIDS is the sudden, unexplained death of an infant younger than 1 year old. SIDS is the leading cause of death in children between 1 month and 1 year of age.

Horne and lead author Heidi L. Richardson, PhD, studied 50 healthy infants who were evaluated at both ages by daytime polysomnography, which was performed in a sleep laboratory where light and noise were minimal. Infants were placed on their backs in a bassinet to sleep. Arousability was assessed using a five-second, pulsatile jet of air that was delivered with a hand-held cannula to the nostrils. Air pressure was increased between consecutive stimuli until an arousal response was observed. Responses to each stimulus were classified as either non-arousal, subcortical activation or full cortical arousal.

According to the authors, the finding that infant girls appeared to sleep more soundly than infant boys is consistent with previous reports of increased sleep disruption in male infants. Mothers tend to perceive that infant boys have sleep patterns that include more problematic crying and increased night awakenings.

The authors suspect that mothers may be more likely to try to calm restless male infants by putting them to sleep on their stomach, which may contribute to the gender difference in the rate of SIDS. Approximately 60 percent of SIDS victims are male, reports Horne.

"Our study has highlighted the fact that SIDS is multi-factorial and that at present it is not possible to predict the deadly combination of internal and environmental factors that will result in SIDS," Horne said.

"Therefore, parents should be aware of the known risk factors and avoid

them as best as possible by practicing the safe sleeping guidelines of sleeping babies on their backs, making sure their heads cannot be covered by bedding and keeping them free from cigarette smoke both before and after birth."

The "Back to Sleep" campaign was started in 1994 as a way to inform parents and caregivers that placing babies on their back to sleep reduces the risk of SIDS. The NICHD reports that the overall SIDS rates have declined by more than 50 percent since the campaign began.

Provided by American Academy of Sleep Medicine

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