Adolescent Sleep Deprivation

In this issue Gupta, *et al*.(1) report the findings of their survey, "Sleep patterns of urban school-going adolescents," which confirms for urban Indian adolescents what has been published regarding North American, Oriental, European, Middle Eastern, and South American adolescents' sleep habits, which is that older adolescents do not in general get enough sleep(2-7). This study is a confirmation rather than an unexpected report of widely held notions regarding insufficient sleep among this age group. This study per the authors was admittedly limited to urban youth in India with no inclusion or comparison with rural youth; likewise, the study serves more to introduce the topic relative to Indian youth than to draw conclusions in that further work including rural youth and more detailed parameters of study subjects is needed. Such parameters begging inclusion are the environmental sleep circumstances, associations with other diagnoses and symptoms, prescription medication use, biological characteristics, and potential causes. To complete such a review, inclusion of consequences of poor sleep hygiene and sleep deficits would be of interest.

While survey studies have inherent limitations, the authors admirably sought to mitigate such by supervising the actual completion of the questionnaires. The authors were reluctant to include more parameters in the questions for fear of losing a participant's interest or attention which might be predictable among some but not all adolescents. However, opportunities for significance were perhaps unnecessarily missed by not having parents complete additional questions in addition to those completed by the youth. Such parental involvement may have been more accurate than what one might expect from their children and could have included meaningful correlations. It may be fair to wonder if sleep deprived adolescents make the best historians; perhaps a prospective study with parents recording the information is needed to confirm the adolescents' information.

While the authors excluded children with history of "recurrent abdominal pain, sinusitis, chronic rhinitis, etc," exclusion of disorders such as ADHD, depression, chronic anxiety, obesity, sleep apnea, asthma, and restless leg syndrome would have added refinement to the study. Prior to the administration of the questionnaire to the students, obtaining a body weight, if not a body mass index (BMI) calculation, may have provided useful information both for this and future studies. Pertinent circumstances and characteristics of the study population would also include degree of academic achievement (grade point average, class rank, or special education needs), participation in athletics (especially at the university level), extra-school employment, socio-economic position of the family, family history of sleep disorders, and travel time to school, all of which may affect sleep hygiene and duration as well as daytime consequences of sleep deprivation.

Culturally unique aspects of Indian adolescents were stressed in the study, especially daytime napping. Pertinent to this observation is the work of Judith Owens(3) regarding cross-cultural differences in non-adult sleep practices and behaviors in both Western and Asian countries such as co-sleeping, bedtime rituals, the sleeping environment, napping, and parental expectations of sleep. While the authors state that daytime napping is culturally accepted in Asian cultures, its mention begs for details. Western literature suggests that a 30-minute nap is sufficient to refresh the mind and body, but that longer naps will later interfere with nocturnal sleep(4).

Additional studies by these and other Indian authors will hopefully also include data regarding the consequences of inadequate sleep. In Mary Carskadon's study of sleep patterns and sleepiness in adolescents, she mentions issues including vulnerability to accidents, mood and behavior changes, substance use, and disorders of circadian rhythm(5).

Although studying the consequences was not a goal of the Gupta, *et al.* study(1), it is the consequences of the number of hours of sleep that provide significance to that number.

The value of this study is the confirmation of adolescent sleep deprivation in urban Indian adolescents. Indeed it has been shown that such sleep inadequacy as found in these urban Indian youth is the same in a wide variety of culturally and geographically different populations(6). Correlation of findings using uniformly consistent methodologies in future studies would help to further define and characterize this adolescent inadequacy of sleep pandemic. Such work when coupled with studies providing neurobiological data using polysomnography, neuroimaging techniques, and chemical (melatonin) analysis of adolescents surrounding sleep and wake times may give us a more complete view of this complex subject. We have known for some time that the physical and emotional health of our adolescents are negatively affected by inadequate sleep(7). The most exciting outcome of all such work would be a better understanding of the consequences of sleep inadequacy as well as to successfully construct preventative measures to maximize the health and well being of our children.

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REFERENCES

1. Gupta R, Bhatia MS, Chhabra V, Sharma S, Dahiya D, Semalti K, *et al*. Sleep patterns of urban school-going adolescents. Indian Pediatr 2008; 45: 183-189.
2. Carskadon MA, Wolfson AR, Acebo C, Tzischinsky O, Seifer R. Adolescent sleep patterns, circadian timing and sleepiness at a transition to early school days. Sleep 1998; 21: 871-881.
3. Owens JA. Sleep in children: cross-cultural perspectives. Sleep Biol Rhythm 2004; 2: 165-173.
4. Teen sleep: Why is your teen so tired? From www.mayoclinic.com. Accessed January 10, 2008.
5. Carskadon MA. Patterns of sleep and sleepiness in adolescents. Pediatrician 1990; 17: 5-12.
6. Roberts RE, Roberts CR, Chen IG. Ethnocultural differences in sleep complaints among adolescents. J Nerv Ment Dis 2000; 188: 222-229.
7. Price VA, Coates TJ, Thoresen CE, Grinstead OA. Prevalence and correlates of poor sleep among adolescents. Am J Dis Child 1978; 132: 583-586.