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Sleep in the Family

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Family systems are dynamic, with reciprocal interactions among family members, including interactions at night and during the day. When children have sleep problems, they often awaken a parent, impacting parent sleep and subsequent parent daytime functioning. Parent behaviors, which are shaped by parental cognitions and beliefs about sleep, as well as external stressors (e.g., work or marital problems), can also disrupt child sleep patterns. Thus sleep among children cannot be understood in isolation, but rather it is important to view sleep from a family context[1]. This article will review the relationship between sleep among children and their parents from infancy through adolescence. We will also briefly review the added complexity for sleep in the family when a child has a chronic illness or development disorder. For the sake of brevity, we have summarized all primary care roles as "parents".

Pregnancy, Neonates, and Infants

Hormonal changes contribute to alterations in maternal sleep as early as the first trimester [2], resulting in less total sleep, lower sleep efficiency, more frequent night wakings, and less deep sleep than prior to pregnancy [3;4]. However, sleep is most disrupted in the immediate postpartum period. Compared to pregnancy, the postpartum period is characterized by a self-report of three times the number of nighttime awakenings, a decrease in sleep efficiency, and twice the level of daytime sleepiness [5]. The majority of postpartum mothers' sleep disturbances are caused by the newborns' sleep and feeding schedules [6;7].

Newborn sleep is distributed almost equally across the day and night [8]. In order to match their newborns' polyphasic sleep pattern, mothers report having to adjust their own sleep schedule, often attempting to "sleep when the baby sleeps". However, in reality this can be

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very challenging, often due to household chores, caring for other children or simply the inability to fall asleep on demand for short periods of time. New mothers report being surprised by their level of sleep disturbance and daytime exhaustion [9].

Despite the common belief that new mothers are significantly sleep deprived, recent evidence shows that mothers actually experience significant sleep fragmentation and low sleep efficiency rather than sleep loss per se. And, actually, their average total sleep time of 7.2 hours per night throughout the first 4 months postpartum is within the recommended range [10].

Sleep fragmentation can have a significant impact on women, most notably on mood. During the first week following childbirth, most women report “baby blues,” a risk factor for the onset of postpartum depression [11;12]. In addition, one of the major contributors to the baby blues is the fatigue due to disrupted sleep. For example, one study found that the negative mood effects during the first postpartum week were mediated by the amount of time mothers spent awake during the night [13]. Another study found a strong association between fatigue due to chronic sleep disruptions and the onset of depressive symptoms [14].

While sleep disruption is linked to the onset of postpartum depression and depressive symptoms, there is a bidirectional and interactive relation between sleep disruption and negative affect. In other words, while infant sleep disruptions contribute to maternal sleep disruption and subsequent depressive symptoms, prenatal depressive symptoms or negative cognitions may also contribute to infant sleep problems. Maternal cognitions related to infant distress at night have been associated with poorer infant sleep quality [15]. One complicating factor is that sleep disruption during pregnancy may contribute to an accumulated sleep debt that then facilitates the onset of symptomatology not directly attributable to childbirth or childcare [16].

Fathers too can also experience significant sleep disruptions in the postnatal period, including less total sleep time [2] and increased fatigue [2;17;18]. Other research has shown that paternal cognitions about infant sleep were associated with infant sleep patterns, [19] yet when fathers were involved with overall infant care, infants had fewer night awakenings [20]. Since they play an important role in infant sleep and development, it is important for future research studies and interventions to include fathers.

The dynamic relation between infant sleep and parent mood continues for infants 6–12 months of age. While multiple studies have found an association between infant sleep problems and maternal depression [14;21–23], longitudinal studies have shown that infant sleep problems contribute to maternal depressive symptoms [24;25]. In addition, maternal sleep quality has been shown to mediate the relation between infant sleep disturbances and maternal mood [23;26] while resolution of infant sleep problems from the first to the second year after birth is more likely among mothers with lower depression and anxiety.[27].

For most infants, sleep begins to consolidate by six months of age, with infants establishing a circadian rhythm and no longer needing to feed during the night. Yet for 17–46% of families, bedtime problems and night wakings persist [23;28;29]. If left untreated, infant sleep problems can persist into childhood [25;30].

Most interventions to address sleep problems have focused on infants more than 6 months, yet preventative behavioral-educational interventions have also been found to promote maternal and infant sleep [e.g., 31–34]. For infants 6 months and older, a number of behavioral treatment approaches have been recommended and shown to be efficacious, producing reliable and durable changes [29]. Behavioral intervention for infant sleep problems have been shown to also improve maternal mood, [35–38], decrease caregiver fatigue [35;36], and reduce

distress in both mothers and fathers [39], with benefits for maternal depression maintained for up to 2 years [37].

Toddlers, Preschoolers, and School-Age Children

A national survey of sleep in American children reported more than 50% of parents losing an average of 30 minutes of sleep per night due to their child's night awakenings [40]. The negative association between child sleep disruptions and parent sleep and health has also been reported in population studies of Australian preschoolers and Swedish school children. Sleep problems in Australian children were associated with psychological distress among mothers and poor general health among both mothers and fathers [28]; frequent night wakings in Swedish children were associated with maternal sleep problems, while difficulties falling asleep or sleep disordered breathing were associated with paternal sleep problems [41].

Parental sleep schedules may also be influenced by children's sleep. One study of young children found maternal chronotype was influenced by children's sleep patterns [42]. However, a study of school-aged children found no relation between parent and child sleep schedules [43]. Differences in the results from these studies are likely due to child age, with parents becoming less involved with sleep routines as children get older. Further, children require less supervision when they awaken in the morning, reducing the impact of their sleep schedules on parent sleep schedules.

Beyond sleep schedules, two studies examined the impact of children's sleep disorders and sleep disturbances on parent sleep and parent functioning. One found daytime sleepiness in both mothers and fathers to be associated with child sleep problems, child sleep duration, and child daytime sleepiness [44]. Another study reported that maternal sleep quality, mood, parenting stress, fatigue, and daytime sleepiness were all worse when children had significant sleep disruptions [45]. Further, children's sleep disruptions were reported to have an indirect relation with maternal daytime functioning, with children's sleep disruptions predicting maternal sleep quality, while maternal sleep quality predicted maternal negative daytime functioning (e.g., depression, parenting stress, etc.).

Behavioral interventions for younger children (toddlers and preschooler) have been shown to be effective for improving both child sleep and family functioning, including parental depression, marital satisfaction, and parenting stress [29;35;46;47]. A recent study also found that the simple implementation of a consistent bedtime routine for infants and toddlers was associated with decreased maternal tension, anger, and fatigue [48]. Finally, a brief behavioral sleep intervention among 8–10 month olds was associated with not only fewer child sleep problems two years after treatment, but also fewer symptoms of maternal depression [37]. Together these studies demonstrate the effectiveness and durability of changes to the child's sleep, parent's sleep, and family functioning. However, few studies have examined treatments for sleep problems in typically-developing school aged children, with a recent call for more research in this area [49].

This section has primarily focused on the premise that children's sleep problems disrupt parent sleep and family functioning. However, several recent studies have also examined aspects of families that may influence a child's sleep. One group has found marital conflict to be associated with disruptions to sleep quantity and quality among third graders [50;51]. In a two-year follow-up of these youth, initial emotional security predicted later sleep duration and quality, with emotional security about marital relationships negatively associated with child sleepiness, sleep-wake problems, and increased sleep onset latency [52]. In a cross-sectional nationally representative study, parental warmth was related to increased total sleep time among school-aged children[53]. While more research is needed in this area, it is clear that family functioning plays an important role in children's sleep.

Adolescents

In general, adolescents in the United States are sleep deprived, averaging only 7.6 hours, well below the required 9.2 hours [54;55]. This sleep deprivation is primarily due to academic and social demands that result in late bedtimes and early wake times, as well as a circadian shift in the underlying biological clock. This shortened sleep opportunity may also influence parent sleep, although few studies have examined this issue. For example, parents may have difficulties initiating and maintaining sleep if they are waiting for their teen to come home late at night, or parent sleep may be delayed if an adolescent needs to be picked up after a late night extracurricular activity or social event.

Only a handful of studies have examined the relationship between adolescent sleep and either parent sleep or family functioning. Parents are typically not involved with adolescent sleep routines. However, one study reported that adolescent total sleep time increased with parental rules (including an earlier bedtime)[53]. Another study found that psychological distress mediated the relationship between parental involvement and sleep efficiency in adolescents with a history of substance abuse [56]. In other words, when parents were more involved with monitoring, adolescents experienced less psychological distress and greater sleep efficiency. Finally, a study of undergraduate students found that family stressors predicted insomnia, even after controlling for depression [57].

Three other studies have examined the relation between adolescent and parent sleep [58–60]. Each of these studies reported that adolescent sleep quantity, sleep quality, and/or sleep problems were associated with family factors, including parenting style, family problems, and the atmosphere in the home. Together these studies suggest a dynamic relationship between adolescent and parent sleep, with adolescent sleep affected by poor parenting or family functioning. In turn, poor parenting may result from poor parent sleep, which may be a result of poor or insufficient adolescent sleep. It should be noted that each of these studies was limited by relying solely on the adolescent's report of both their own and their parents' sleep. More research is needed that examines the relation between adolescent sleep, parent sleep, and family functioning.

Chronic Illness

A chronic illness impacts family functioning in many ways, including sleep disruptions for both children and caregivers. Sleep problems among children can be due to disease symptoms (e.g., pain, itching, wheezing) or medical management of the disease (e.g., nocturnal blood glucose monitoring)[61–67]. Additionally, parent sleep may be disrupted due to heightened vigilance (e.g., monitoring for a seizure), worries about the child's health, or changes to sleeping arrangements (e.g., increased co-sleeping) [61;68–70].

Together these factors result in significant sleep deprivation in parental caregivers, with studies reporting an average of less than 6 hours of sleep for many parents [68;69;71]. With research showing significant declines in alertness and memory after 18 cumulative hours of wakefulness [72], the significant sleep loss experienced by caregivers may interfere with the parents' ability to provide the best medical care in the home or make critical medical decisions [73;74].

Sleep disruptions in parents of children with chronic illnesses have also been associated with increased symptoms of depression and anxiety, less marital satisfaction, poorer parent health, and more days of missed work [62;68;75;76]. Two studies have shown that sleep quality in parental caregivers mediates the relationship between child health and negative caregiver outcomes (i.e., depression, anxiety, fatigue)[67;69].

While disease management should be the primary intervention to alleviate child night wakings due to illness factors, additional interventions are needed to improve both child and parent sleep. Behavioral interventions that work for healthy children should also be utilized for children with chronic illnesses. However, many parents struggle with consistency and limit-setting when a child is ill. Interventions such as respite care should also be examined for parents. One recent study of parents of ventilator-assisted children found that regular night nursing was associated with increased parent total sleep time (>1 hour), as well as fewer symptoms of parent depression and sleepiness[77].

As suggested in a recent review article focusing on sleep in parental caregivers, future studies need to include objective assessments of sleep (i.e., actigraphy), longitudinal study designs to assess changes in sleep associated with disease factors (e.g., flares, remission), and appropriate control groups (e.g., children with other illnesses, children with developmental delays, healthy children) [78]. Further, interventions are needed to alleviate caregiver burden and reduce sleep disruptions. Finally, siblings' sleep can also be affected when there is a child in the home with a chronic illness, so sibling sleep should also be examined in future studies.

Developmental Disorders

For children with developmental disorders (including intellectual disabilities [ID], autism spectrum disorder [ASD], and attention-deficit/hyperactivity disorder [ADHD]), sleep problems are common and can include difficulties initiating sleep, frequent and/or prolonged night waking, as well as early morning sleep termination [79–84]. Because many of these children cannot go unsupervised, if the child is not sleeping, parents are typically also not sleeping.

Multiple studies have found associations between sleep problems in children with developmental disorders and parent sleep disruptions [82;85;86]. One study using actigraphy found that parents of children with ASDs slept one hour less than parents of typically developing children [87]. Along with sleep disruptions, parent daytime functioning has also been associated with sleep problems among children with developmental disorders. This includes increased parenting stress [88;89], as well as elevated symptoms of depression and anxiety [90;91]. Finally, parent work attendance and family functioning have also been associated with sleep problems among children with ADHD [90].

While only a handful of studies have examined the benefits for parents of treatments that address sleep problems among children with developmental disorders, improvements were reported in parent satisfaction with their own sleep, as well as their ability to manage their child's sleep [92;93]. Together these studies highlight the need to include parent sleep and functioning as an important outcome for interventions that primarily target sleep problems in children with developmental disorders.

Conclusions

Because the family system is a central part of a child's life, child sleep problems can have a significant impact on family functioning, in particular parent sleep and daytime functioning (e.g., mood, stress, and marital satisfaction). Likewise, family functioning (e.g., parent stress, marital conflict) may impact child sleep. Behavioral treatments that improve sleep in children are also likely to result in improvements to parental sleep and subsequent daytime functioning, although more research is needed in this area. Clinicians and researchers who work with children of all ages, both healthy and those with a chronic illness or developmental disorder, need to be aware not only of the causes and consequences of sleep

problems among children, but also how these sleep problems impact the entire family system.

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References

1. Dahl RE, El-Sheikh M. Considering sleep in a family context: Introduction to the special issue. J Fam Psychol. 2007; 21(1):1–3. [PubMed: 17371104]
2. Gay CL, Lee KA, Lee SY. Sleep patterns and fatigue in new mothers and fathers. Biological Research for Nursing. 2004; 5(4):311–318. [PubMed: 15068660]
3. Kang MJ, Matsumoto K, Shinkoda H, Mishima M, Seo YJ. Longitudinal study for sleep-wake behaviours of mothers from pre-partum to post-partum using actigraph and sleep logs. Psychiat Clin Neuros. 2002; 56(3):251–252.
4. Lee KA, Zaffke ME, McEnany G. Parity and sleep patterns during and after pregnancy. Obstet Gynecol. 2000; 95(1):14–18. [PubMed: 10636494]
5. Nishihara K, Horiuchi S. Changes in sleep patterns of young women from late pregnancy to postpartum: relationships to their infants' movements. Percept Mot Skills. 1998; 87(3 Pt 1):1043–1056. [PubMed: 9885077]
6. Nishihara K, Horiuchi S, Eto H, Uchida S. Mothers' wakefulness at night in the post-partum period is related to their infants' circadian sleep-wake rhythm. Psychiatry Clin Neurosci. 2000; 54(3):305–306. [PubMed: 11186088]
7. Hunter LP, Rychnovsky JD, Yount SM. A selective review of maternal sleep characteristics in the postpartum period. J Obstet Gynecol Neonatal Nurs. 2009; 38(1):60–68.
8. Kleitman, N. Sleep and Wakefulness. Chicago: University of Chicago Press; 1963.
9. Kennedy HP, Gardiner A, Gay C, Lee KA. Negotiating sleep: a qualitative study of new mothers. J Perinat Neonatal Nurs. 2007; 21(2):114–122. [PubMed: 17505231]
10. Montgomery-Downs HE, Insana SP, Clegg-Kraynok MM, Mancini LM. Normative longitudinal maternal sleep: the first 4 postpartum months. Am J Obstet Gynecol. 2010
11. Kendell RE, McGuire RJ, Connor Y, Cox JL. Mood changes in the first three weeks after childbirth. J Affect Disord. 1981; 3(4):317–326. [PubMed: 6459348]
12. Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. Br J Psychiatry. 1987:150782–150786.
13. Swain AM, O'Hara MW, Starr KR, Gorman LL. A prospective study of sleep, mood, and cognitive function in postpartum and nonpostpartum women. Obstet Gynecol. 1997; 90(3):381–386. [PubMed: 9277648]
14. Dennis CL, Ross L. Relationships among infant sleep patterns, maternal fatigue, and development of depressive symptomatology. Birth. 2005; 32(3):187–193. [PubMed: 16128972]
15. Tikotzky L, Sadeh A. Maternal sleep-related cognitions and infant sleep: a longitudinal study from pregnancy through the 1st year. Child Dev. 2009; 80(3):860–874. [PubMed: 19489908]
16. Hedman C, Pohjasvaara T, Tolonen U, Suhonen-Malm AS, Myllyla VV. Effects of pregnancy on mothers' sleep. Sleep Med. 2002; 3(1):37–42. [PubMed: 14592252]
17. Damato EG, Burant C. Sleep patterns and fatigue in parents of twins. J Obstet Gynecol Neonatal Nurs. 2008; 37(6):738–749.
18. Elek SM, Hudson DB, Fleck MO. Couples' experiences with fatigue during the transition to parenthood. J Fam Nurs. 2002; 8(3):221–240.
19. Sadeh A, Flint-Ofir E, Tirosh T, Tikotzky L. Infant sleep and parental sleep-related cognitions. J Fam Psychol. 2007; 21(1):74–87. [PubMed: 17371112]
20. Tikotzky L, Sadeh A, Glickman-Gavrieli T. Infant sleep and paternal involvement in infant caregiving during the first 6 months of life. J Pediatr Psychol. 2010

21. Armstrong KL, O'Donnell H, McCallum R, Dadds M. Childhood sleep problems: Association with prenatal factors and maternal distress/depression. J Paediatr Child Health. 1998; 34(3):263–266. [PubMed: 9633975]
22. Goodlin-Jones B, Eiben LA, Anders TF. Maternal well-being and sleep- wake behaviors in infants: an intervention using maternal odor. Inf Mental Hlth J. 1997; 18(4):378–393.
23. Hiscock H, Wake M. Infant sleep problems and postnatal depression: a community-based study. Pediatrics. 2001; 107(6):1317–1322. [PubMed: 11389250]
24. Karraker KH, Young M. Night waking in 6-month-old infants and maternal depressive symptoms. Journal of Applied Developmental Psychology. 2007; 28(5–6):493–498. [PubMed: 19050747]
25. Lam P, Hiscock H, Wake M. Outcomes of infant sleep problems: A longitudinal study of sleep, behavior, and maternal well-being. J Pediatr. 2003; 111(3):203–207.
26. Bayer JK, Hiscock H, Hampton A, Wake M. Sleep problems in young infants and maternal mental and physical health. J Paediatr Child Health. 2007; 43(1–2):66–73. [PubMed: 17207059]
27. Morrell J, Steele H. The role of attachment security, temperament, maternal perception, and care-giving behavior in persistent infant sleeping problems. Inf Mental Hlth J. 2003; 5(447):468.
28. Martin J, Hiscock H, Hardy P, Davey B, Wake M. Adverse associations of infant and child sleep problems and parent health: an Australian population study. Pediatrics. 2007; 119(5):947–955. [PubMed: 17473096]
29. Mindell JA, Kuhn BR, Lewin DS, Meltzer LJ, Sadeh A, Owens JA. Behavioral treatment of bedtime problems and night wakings in infants and young children. Sleep. 2006; 29(10):1263–1276. [PubMed: 17068979]
30. Gaylor EE, Burnham MM, Goodlin-Jones BL, Anders TF. A longitudinal follow-up study of young children's sleep patterns using a developmental classification system. Behav Sleep Med. 2005; 3(1):44–61. [PubMed: 15639757]
31. Stremler R, Hodnett E, Lee K, MacMillan S, Mill C, Ongcangco L, et al. A behavioral-educational intervention to promote maternal and infant sleep: a pilot randomized, controlled trial. Sleep. 2006; 29(12):1609–1615. [PubMed: 17252892]
32. Wolfson A, Lacks P, Futterman A. Effects of parent training on infant sleeping patterns, parents' stress, and perceived parental competence. J Consult Clin Psych. 1992; 60(1):41–48.
33. Kerr S, Jowett SA, Smith LN. Preventing sleep problems in infants: A randomized controlled trial. J Adv Nurs. 1996:24938–24942.
34. St.James-Roberts I, Sleep J, Morris S, Owen C, Gillham P. Use of a behavioural programme in the first 3 months to prevent infant crying and sleeping problems. J Paediatr Child Health. 2001:37289–37297.
35. Eckerberg B. Treatment of sleep problems in families with young children: Effects of treatment on family well-being. Acta Paediatr. 2004; 93(1):126–134. [PubMed: 14989452]
36. Hall WA, Clauson M, Carty EM, Janssen PA, Saunders RA. Effects on parents of an intervention to resolve infant behavioral sleep problems. Pediatr Nurs. 2006; 32(3):243–250. [PubMed: 16802683]
37. Hiscock H, Bayer JK, Hampton A, Ukoumunne OC, Wake M. Long-term mother and child mental health effects of a population-based infant sleep intervention: Cluster-randomized, controlled trial. Pediatrics. 2008; 122(3):e621–e627. [PubMed: 18762495]
38. Hiscock H, Wake M. Randomised controlled trial of behavioural infant sleep intervention to improve infant sleep and maternal mood. Brit Med J. 2002; 324(7345):1062–1065. [PubMed: 11991909]
39. Thome M, Skuladottir A. Evaluating a family-centred intervention for infant sleep problems. J Adv Nurs. 2005; 50(1):5–11. [PubMed: 15788060]
40. National Sleep Foundation. Sleep in America Poll. 2004. from http://www sleepfoundation org/
41. Smedje H, Broman JE, Hetta J. Sleep disturbances in Swedish pre-school children and their parents. Nordic Journal of Psychiatry. 1998; 52(1):59–67.
42. Leonhard C, Randler C. In sync with the family: Children and partners influence the sleep-wake circadian rhythm and social habits of women. Chronobiol Int. 2009; 26(3):510–525. [PubMed: 19360493]

43. Gau SS, Merikangas KR. Similarities and differences in sleep-wake patterns among adults and their children. Sleep. 2004; 27(2):299–304. [PubMed: 15124726]
44. Boergers J, Hart C, Owens JA, Streisand R, Spirito A. Child sleep disorders: Associations with parental sleep duration and daytime sleepiness. J Fam Psychol. 2007; 21(1):88–94. [PubMed: 17371113]
45. Meltzer LJ, Mindell JA. Relationship between child sleep disturbances and maternal sleep, mood, and parenting stress: A pilot study. J Fam Psychol. 2007; 21(1):67–73. [PubMed: 17371111]
46. Adams LA, Rickert VI. Reducing bedtime tantrums: Comparison between positive routines and graduated extinction. Pediatrics. 1989; 84(5):756–761. [PubMed: 2797970]
47. Mindell JA, Durand VM. Treatment of childhood sleep disorders: Generalization across disorders and effects on family members. J Pediatr Psychol. 1993; 18(6):731–750. [PubMed: 8138867]
48. Mindell JA, Telofski L, Wiegand B, Kurtz ES. A nightly bedtime routine: Impact on sleep in young children and maternal mood. Sleep. 2009; 32(5):599–606. [PubMed: 19480226]
49. Tikotzky L, Sadeh A. The role of cognitive-behavioral therapy in behavioral childhood insomnia. Sleep Med. 2010; 11(7):686–691. [PubMed: 20620108]
50. El-Sheikh M, Buckhalt JA, Mize J, Acebo C. Marital conflict and disruption of children's sleep. Child Dev. 2006; 77(1):31–43. [PubMed: 16460523]
51. Keller, P.; Buckhalt, JA.; El-Sheikh, M. Links Between Family Functioning and Children's Sleep. In: Ivanenko, A., editor. Sleep and Psychiatric Disorders in Children and Adolescents. New York: Informa Healthcare; 2008.
52. Keller P, El-Sheikh M. Children's emotional security and sleep: longitudinal relations and directions of effects. J Child Psychol Psyc. 2010
53. Adam EK, Snell EK, Pendry P. Sleep timing and quantity in ecological and family context: A nationally representative time-diary study. J Fam Psychol. 2007; 21(1):4–19. [PubMed: 17371105]
54. National Sleep Foundation. Sleep in America Poll. 2006. from http://www sleepfoundation org/
55. Carskadon MA. When worlds collide: Adolescent need for sleep versus societal demands. Phi Delta Kappan. 1999 January.:348–353.
56. Cousins JC, Bootzin RR, Stevens SJ, Ruiz BS, Haynes PL. Parental involvement, psychological distress, and sleep: a preliminary examination in sleep-disturbed adolescents with a history of substance abuse. J Fam Psychol. 2007; 21(1):104–113. [PubMed: 17371115]
57. Bernert RA, Merrill KA, Braithwaite SR, Van Orden KA, Joiner TE Jr. Family life stress and insomnia symptoms in a prospective evaluation of young adults. J Fam Psychol. 2007; 21(1):58–66. [PubMed: 17371110]
58. Brand S, Gerber M, Hatzinger M, Beck J, Holsboer-Trachsler E. Evidence for similarities between adolescents and parents in sleep patterns. Sleep Med. 2009
59. Tynjala J, Kannas L, Levalahti E, Valimaa R. Perceived sleep quality and its precursors in adolescents. Health Promotion International. 1999; 14(2):155–166.
60. Vignau J, Bailly D, Duhamel A, Vervaecke P, Beuscart R, Collinet C. Epidemiologic study of sleep quality and troubles in French secondary school adolescents. J Adolesc Health. 1997; 21(5): 343–350. [PubMed: 9358298]
61. Chamlin SL, Mattson CL, Frieden IJ, Williams ML, Mancini AJ, Cella D, et al. The price of pruritus: Sleep disturbance and cosleeping in atopic dermatitis. Arch Pediatr Adolesc Med. 2005; 159(8):745–750. [PubMed: 16061782]
62. Diette GB, Markson L, Skinner EA, Nguyen TT, gatt-Bergstrom P, Wu AW. Nocturnal asthma in children affects school attendance, school performance, and parents' work attendance. Arch Pediatr Adolesc Med. 2000; 154(9):923–928. [PubMed: 10980797]
63. Fiese BH, Winter MA, Sliwinski M, Anbar RD. Nighttime waking in children with asthma: An exploratory study of daily fluctuations in family climate. J Fam Psychol. 2007; 21(1):95–103. [PubMed: 17371114]
64. Gedaly-Duff V, Lee KA, Nail LM, Nicholson S, Johnson KP. Pain, sleep disturbance, and fatigue in children with Leukemia and their parents: A pilot study. Oncol Nurs Forum. 2006; 33(3):641–646. [PubMed: 16676020]

65. Hinds PS, Hockenberry M, Rai SN, Zhang L, Razzouk BI, McCarthy K, et al. Nocturnal awakenings, sleep environment interruptions, and fatigue in hospitalized children with cancer. Oncol Nurs Forum. 2007; 34(2):393–402. [PubMed: 17573303]
66. Monaghan MC, Hilliard ME, Cogen FR, Streisand R. Nighttime caregiving behaviors among parents of young children with Type 1 diabetes: Associations with illness characteristics and parent functioning. Fam Syst Health. 2009; 27(1):28–38. [PubMed: 19630443]
67. Moore K, David TJ, Murray CS, Child F, Arkwright PD. Effect of childhood eczema and asthma on parental sleep and well-being: A prospective comparative study. Brit J Dermatol. 2006; 154(3): 514–518. [PubMed: 16445784]
68. Cottrell L, Khan A. Impact of childhood epilepsy on maternal sleep and socioemotional functioning. Clin Pediatr (Phila). 2005; 44(7):613–616. [PubMed: 16151567]
69. Meltzer LJ, Mindell JA. Impact of a child's chronic illness on maternal sleep and daytime functioning. Arch Intern Med. 2006:1661749–1661755.
70. Williams J, Lange B, Sharp G, Griebel M, Edgar T, Haley T, et al. Altered sleeping arrangements in pediatric patients with epilepsy. Clin Pediatr (Phila). 2000; 39(11):635–642. [PubMed: 11110363]
71. McCann D. Sleep deprivation is an additional stress for parents staying in hospital. J Spec Pediatr Nurs. 2008; 13(2):111–122. [PubMed: 18366378]
72. Van Dongen HP, Maislin G, Mullington JM, Dinges DF. The cumulative cost of additional wakefulness: Dose-response effects on neurobehavioral functions and sleep physiology from chronic sleep restriction and total sleep deprivation. Sleep. 2003; 26(2):117–126. [PubMed: 12683469]
73. Balas MC, Scott LD, Rogers AE. Frequency and type of errors and near errors reported by critical care nurses. Can J Nurs Res. 2006; 38(2):24–41. [PubMed: 16871848]
74. Scott LD, Hwang WT, Rogers AE. The impact of multiple care giving roles on fatigue, stress, and work performance among hospital staff nurses. J Nurs Adm. 2006; 36(2):86–95. [PubMed: 16528150]
75. Yilmaz O, Sogut A, Gulle S, Can D, Ertan P, Yuksel H. Sleep quality and depression-anxiety in mothers of children with two chronic respiratory diseases: Asthma and cystic fibrosis. Journal of Cystic Fibrosis. 2008; 7(6):495–500. [PubMed: 18585104]
76. Hatzmann J, Heymans HS, Carbonell A, van Praag BM, Grootenhuis MA. Hidden consequences of success in pediatrics: Parental health-related quality of life--results from the Care Project. Pediatrics. 2008; 122(5):e1030–e1038. [PubMed: 18852185]
77. Meltzer LJ, Boroughs DS, Downes JJ. The relationship between home nursing coverage, sleep, and daytime functioning in parents of ventilator-assisted children. J Pediatr Nurs. 2010; 25(4):250–257. [PubMed: 20620805]
78. Meltzer LJ, Moore M. Sleep disruptions in parents of children and adolescents with chronic illnesses: Prevalence, causes, and consequences. J Pediatr Psychol. 2008; 33(3):279–291. [PubMed: 18084038]
79. Didden R, Korzilius H, van Aperlo B, van Overloop C, De Vries M. Sleep problems and daytime problem behaviours in children with intellectual disability. J Intell Disabil Res. 2002; 46(7):537–547.
80. Owens JA. The ADHD and sleep conundrum: A review. J Dev Behav Pediatr. 2005; 26(4):312–322. [PubMed: 16100507]
81. Patzold LM, Richdale AL, Tonge BJ. An investigation into sleep characteristics of children with autism and asperger's disorder. J Paediatr Child Health. 1998; 34(6):528–533. [PubMed: 9928644]
82. Robinson AM, Richdale AL. Sleep problems in children with an intellectual disability: Parental perceptions of sleep problems, and views of treatment effectiveness. Child Care Health Dev. 2004; 30(2):139–150. [PubMed: 14961866]
83. Wiggs L, Montgomery P, Stores G. Actigraphic and parent reports of sleep patterns and sleep disorders in children with subtypes of attention-deficit hyperactivity disorder. Sleep. 2005; 28(11): 1437–1445. [PubMed: 16335331]
84. Wiggs L, Stores G. Severe sleep disturbance and daytime challenging behaviour in children with severe learning disabilities. J Intell Disabil Res. 1996; 40(Pt 6):518–528.

85. Chu J, Richdale AL. Sleep quality and psychological wellbeing in mothers of children with developmental disabilities. Res Dev Disabil. 2009

86. Lopez-Wagner MC, Hoffman CD, Sweeney DP, Hodge D, Gilliam JE. Sleep problems of parents of typically developing children and parents of children with autism. J Gen Psychol. 2008; 169(3): 245–259.

87. Meltzer LJ. Brief report: sleep in parents of children with autism spectrum disorders. J Pediatr Psychol. 2008; 33(4):380–386. [PubMed: 18250091]

88. Doo S, Wing YK. Sleep problems of children with pervasive developmental disorders: Correlation with parental stress. Dev Med Child Neurol. 2006; 48(8):650–655. [PubMed: 16836776]

89. Richdale A, Francis A, Gavidia-Payne S, Cotton S. Stress, behaviour, and sleep problems in children with an intellectual disability. J Intellect Dev Dis. 2000; 25(2):147–161.

90. Sung V, Hiscock H, Sciberras E, Efron D. Sleep problems in children with attention-deficit/hyperactivity disorder: Prevalence and the effect on the child and family. Arch Pediatr Adolesc Med. 2008; 162(4):336–342. [PubMed: 18391142]

91. Meltzer LJ. Factors associated with depressive symptoms in parents of children with autism spectrum disorders. Research in Autism Spectrum Disorders. 2010

92. Wiggs L, Stores G. Behavioural treatment for sleep problems in children with severe learning disabilities and challenging daytime behaviour: Effect on sleep patterns of mother and child. J Sleep Res. 1998; 7(2):119–126. [PubMed: 9682184]

93. Wiggs L, Stores G. Behavioural treatment for sleep problems in children with severe intellectual disabilities and daytime challenging behaviour: Effect on mothers and fathers. Brit J Health Psych. 2001; 6(Pt 3):257–269.