Counseling on Early Childhood Concerns: Sleep Issues, Thumb-Sucking, Picky Eating, School Readiness, and Oral Health

ARWA NASIR, MD, *University of Nebraska Medical Center, Omaha, Nebraska*
LAETH NASIR, MD, *Creighton University School of Medicine, Omaha, Nebraska*

Family physicians are often a source of information and advice on early childhood concerns regarding sleep, thumb-sucking/pacifier use, picky eating, school readiness, and oral health. Evidence indicates that family variables are important in the genesis of sleep difficulties, and that traditional behavioral methods are not as effective as previously thought. Attention to family psychosocial well-being, especially maternal functioning, is important in addressing childhood sleep difficulties. Thumb-sucking and pacifier use may be associated with negative consequences if they persist, and referral is recommended after four years of age if appropriate behavioral interventions are ineffective. Picky eating is heavily influenced by environmental factors, and food neophobia is a normal stage of development. The main approaches to childhood eating problems include social modeling of normal eating behaviors, repeated exposures to new foods, and positive mealtime experiences. School readiness focuses on supporting the psychosocial variables that are associated with school success. Reading with the child enhances literacy skills. Quality early childhood education programs are also effective in enhancing school success. Delaying school entry is not beneficial and may be detrimental. School readiness includes the schools' role in supporting the learning needs of all children regardless of their abilities and skills. Oral health is increasingly recognized as an important contributor to overall health. Oral health should be incorporated into well-child visits beginning at the eruption of the first tooth. (*Am Fam Physician*. 2015;92(4):274-278. Copyright © 2015 American Academy of Family Physicians.)

CME This clinical content conforms to AAFP criteria for continuing medical education (CME). See CME Quiz Questions on page 252.

Author disclosure: No relevant financial affiliations.

▶ **Patient information**: A handout on this topic is available at http://www.aafp.org/afp/2009/0715/p139-s1.html.

Early childhood concerns often represent individual variations of normal development. A number of factors, including family dynamics, cultural expectations, and family resources, determine whether these issues are seen as problematic. Normal variations may sometimes deviate into abnormalities that can affect future health if not addressed. Providing families with the available evidence regarding these issues is often helpful to patients and the entire family unit.

Sleep Issues

During infancy, sleep awakenings are normal as infants transition from short sleep cycles with multiple awakenings to a normal sleep pattern in which most sleep occurs at night. Approximately two-thirds of children progress steadily to a normal sleep pattern with infrequent disruptive night awakenings.[1] One study found that by six months of age most infants (58%) were waking up in the middle of the night twice a week or less.[2] However, in the first three years of life, 10% to 30% of healthy children have sleep patterns that unacceptably disrupt caretaker and family functioning.[3-5] These patterns include bedtime struggles, prolonged sleep onset latency, sleep interruptions, and shortened sleep durations.

Difficult temperament, illness, and developmental problems (e.g., autism spectrum disorders) in a child are strongly associated with reported sleep problems.[6-8] Sleep problems have also been associated with family discord, low socioeconomic status, ethnicity, and maternal sensitivity and mental health problems, although the reason is unclear.[9-13] International surveys point to cultural and environmental factors as additional influences on childhood sleep patterns.[14-16]

The National Sleep Foundation recommends the following daily sleep durations for healthy children: 14 to 17 hours for newborns, 12 to 15 hours for infants, 11 to 14 hours for toddlers, and 10 to 13 hours for preschoolers.[17]

Parental education about sleep and sleep schedules, bedtime routines, and acquisition

SORT: KEY RECOMMENDATIONS FOR PRACTICE

Clinical recommendation	*Evidence rating*	*References*
Parental education about sleep and sleep schedules, bedtime routines, and acquisition of self-soothing skills are effective in improving sleep problems and nighttime awakenings in children.	C	18
Children older than four years who suck their thumbs despite appropriate behavioral interventions should be referred to a pediatric dentist.	C	36
Delaying school enrollment by one or more years is not beneficial and may be associated with increased rates of behavioral problems.	C	44, 47
In children five years and younger, fluoride varnish should be applied periodically to primary teeth as soon as they erupt. Application once per year has comparable effectiveness to application every six months.	B	49, 50
Starting at six months of age, oral fluoride supplementation is recommended in communities with insufficient fluoride in the water supply (less than 0.6 ppm).	B	49, 50

A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, go to http://www.aafp.org/afpsort.

of self-soothing skills are effective in improving sleep problems and nighttime awakenings in children.[18] To reduce bedtime problems and nighttime awakenings, thereby improving caretaker well-being and the child's daytime functioning, the American Academy of Sleep Medicine recommends that caretakers implement behavioral interventions for children through four years of age.[18] These interventions include unmodified extinction (caretaker leaves the child to "cry it out" in his or her crib), modified or graduated extinction (caretaker gradually withdraws from the child's room), and initiation of bedtime schedules and routines. There is insufficient evidence to support one intervention, or a combination, over others.[18]

A meta-analysis concluded that behavioral interventions in the first six months of life do not decrease crying, prevent behavioral or sleep problems in infants, or reduce maternal depression. In addition, unintended outcomes of behavioral interventions in this age group may include increased infant crying, increased maternal anxiety, and premature termination of breastfeeding.[19] Additionally, the feasibility and acceptability of these behavioral interventions to parents have not been rigorously assessed.[20]

Although sleep problems among young children can be stressful for families, family physicians can educate concerned parents and reassure them that some sleep issues are a normal part of development. However, physicians should also identify any concerns for abuse; explore underlying conditions, including postpartum depression; and provide sources of additional support to families experiencing excessive stress. *Table 1* summarizes sleep interventions for infants.[18]

Thumb-Sucking and Pacifier Use

Nonnutritive sucking habits such as thumb- and finger-sucking and pacifier use are prevalent among children in all parts of the world and in all socioeconomic classes.[21-24] In most cases, the habits cease spontaneously between two and four years of age. However, persistence of these oral habits can lead to negative consequences, such as koilonychia (deformity of the nail), paronychia, and dental malocclusion.[25-27] Behavioral interventions for these habits include aversive conditioning by applying a bad-tasting substance (e.g., Thum Liquid), or positive reinforcement when the child avoids the habit.[28,29]

Pacifier use is associated with a reduced incidence of sudden infant death syndrome in infants younger than six months,[30] although the cause-effect relationship is unclear. However, pacifier use may also be associated with recurrent otitis media and increases in wheezing, cough, and diarrhea.[31] American Academy of Pediatrics guidelines acknowledge that reducing or eliminating pacifier use after six months of age may reduce otitis media.[32] Pacifier use is also a stronger risk factor for dental malocclusion than is thumb- or finger-sucking among older children.[33-35]

Referral to a pediatric dentist should be considered if nonnutritive sucking habits persist beyond about four years of age despite appropriate behavioral interventions. The use of preventive orthodontics for thumb-sucking may be a cost-effective way of preventing malocclusion in these children.[36]

Picky Eating

Parents often describe their toddlers and preschoolers as picky eaters. The reluctance to eat or try new foods (food neophobia) is a normal developmental stage that the child usually outgrows. However, there are picky or fussy eaters who restrict their intake to only a few food items, regardless of whether they are new or familiar.[37]

Picky eaters tend to consume more sweetened foods and foods with high carbohydrate content.[38] Children with sensory defensiveness such as those with autism spectrum disorders are more likely to be picky

Table 1. Sleep Interventions for Infants

Intervention	*Description*	*Pros*	*Cons*
Unmodified extinction	Putting the infant in the crib at a defined bedtime and ignoring him or her until morning; monitor for safety	Requires little effort, easy to explain to parents	May increase infant crying and parental anxiety; may not be acceptable to some parents
Modified (graduated) extinction	Same as unmodified extinction, except parents briefly check on the infant at progressively increasing intervals	May reassure the parents and child, thereby reducing anxiety compared with unmodified extinction	Requires more effort than unmodified extinction; may still increase infant crying and parental anxiety; may not be acceptable to some parents
Positive bedtime routine	Establishing an enjoyable routine at bedtime (e.g., reading stories)	Benefits may extend beyond improving sleep (emotional bonding, intellectual stimulation)	Requires time and effort; acceptability to parents has not been formally studied
Parental education	Providing information, reassurance, and written materials	Cost-effective; may be helpful for parents of infants younger than six months	Does not necessarily address parental resources; literacy may limit effectiveness

NOTE: *Good-quality evidence supports all of these interventions.*

Information from reference 18.

eaters. Picky or fussy eating is heavily influenced by environmental factors (e.g., parent behaviors, such as offering limited food choices).

The main approaches to picky eating include social modeling of normal eating behaviors, repeated exposures to new foods, and positive mealtime experiences.[39] There is a strong correlation between parent and child nutritional behaviors.[40] Parental efforts to control the child's intake of food using pressure to eat a certain food or quantity of food, restriction of certain foods, or promise of a reward have negative effects on food acceptance and are discouraged.[41] In the Satters' Division of Responsibility Model, the parents' role is to provide mealtime structure, positive social modeling, and a variety of healthy foods, whereas the child decides how much and which foods to eat *(Table 2)*.[42,43]

School Readiness

The concept of school readiness has been informed by the knowledge of early brain development and includes psychosocial constructs that influence academic and school success. Schools are required to support the educational needs of all children regardless of their skills or abilities.

Family psychosocial risk factors and the child's social and emotional development are more predictive of school success than academic milestones.[44] The family environment plays a critical role in providing positive early childhood experiences. The family physician can screen for psychosocial risk factors, such as family turmoil or abuse, and provide referral to support services. Additionally, surveillance of the child's physical, emotional, and behavioral health and development (e.g., ability to follow instructions and pay attention), and early interventions may be beneficial.

Reading to children starting at an early age has been shown to enhance language development and literacy skills.[45] Similarly, enrollment in quality preschool programs has been shown to improve school outcomes.[46] Delaying school enrollment by one or more years to

Table 2. Satters' Division of Responsibility Model: Mealtime Roles for Parents and Children

Parents	**Children**
Provide mealtime structure: time and place	Eat if he or she wants to
Create a positive environment: pleasant interaction	Choose what to eat out of the offered foods
Allow the child to feed himself or herself	Stop eating when full
Provide a variety of healthy foods	

Information from references 42 and 43.

allow children to mature or to attain more skills is not beneficial and may be associated with increased rates of behavioral problems.[44,47]

Oral Health

Oral health is increasingly recognized as a significant contributor to overall health. The family physician is an important advocate for oral health and can incorporate oral health into well-child visits.

The American Academy of Pediatrics and the American Academy of Pediatric Dentistry recommend the integration of oral health prevention into health care maintenance at the time of first tooth eruption. Parents should limit their children's juice intake to 4 to 6 oz per day given in a cup at mealtimes, not give carbonated beverages to children, not put children to bed with a bottle containing anything but water, and brush children's teeth twice daily with fluoridated toothpaste.[48]

No more than a rice-sized amount of toothpaste should be used for infants and children younger than three years, and no more than a pea-sized amount should be used for children up to six years of age.[48] In addition, the periodic application of fluoride varnish is recommended at first tooth eruption in children five years and younger; application once per year has comparable effectiveness to application every six months.[49,50] Oral fluoride supplementation starting at six months of age is recommended if the community water supply is fluoride deficient (less than 0.6 ppm). Referral to a dentist to establish a dental home is recommended toward the end of the first year of life.[49,50] *Table 3* summarizes U.S. Preventive Services Task Force recommendations for oral health screening in young children.[50]

Table 3. U.S. Preventive Services Task Force Recommendations for Oral Health in Children Five Years and Younger

Oral fluoride supplementation is recommended for children starting at six months of age who live in communities with less than 0.6 ppm of fluoride in the water supply.
Fluoride varnish is recommended starting at the eruption of the first primary tooth through five years of age. Application once per year has comparable effectiveness to application every six months.
There is insufficient evidence to support routine oral screening examination by primary care clinicians.

Information from reference 50.

Data Sources: A PubMed search was completed in Clinical Queries using the key terms thumb-sucking, malocclusion, pacifier use, infant sleep problems, picky eating, school readiness, and pediatric oral health. The search included meta-analyses, randomized controlled trials, clinical trials, and reviews. Also searched were the Cochrane database and the National Guideline Clearinghouse. Search dates: November 1, 2014, to February 12, 2015.

The Authors

ARWA NASIR, MD, is an associate professor and division chief of general pediatrics in the Department of Pediatrics at the University of Nebraska Medical Center in Omaha.

LAETH NASIR, MD, is a professor in and chairman of the Department of Family Medicine at Creighton University School of Medicine in Omaha.

Address correspondence to Arwa Nasir, MD, 982167 Nebraska Medical Center, Omaha, NE 68198-2167 (e-mail: anasir@unmc.edu). Reprints are not available from the authors.

REFERENCES

1. Nikolopoulou M, St James-Roberts I. Preventing sleeping problems in infants who are at risk of developing them. *Arch Dis Child.* 2003;88(2):108-111.
2. Weinraub M, Bender RH, Friedman SL, et al. Patterns of developmental change in infants' nighttime sleep awakenings from 6 through 36 months of age. *Dev Psychol.* 2012;48(6):1511-1528.
3. Byars KC, Yolton K, Rausch J, Lanphear B, Beebe DW. Prevalence, patterns, and persistence of sleep problems in the first 3 years of life. *Pediatrics.* 2012;129(2):e276-e284.
4. Giallo R, Rose N, Vittorino R. Fatigue, wellbeing and parenting in mothers of infants and toddlers with sleep problems. *J Reprod Infant Psychol.* 2011;29(3):236-249.
5. Cook F, Bayer J, Le HN, Mensah F, Cann W, Hiscock H. Baby business: a randomised controlled trial of a universal parenting program that aims to prevent early infant sleep and cry problems and associated parental depression. *BMC Pediatr.* 2012;12:13.
6. Sadeh A, Tikotzky L, Scher A. Parenting and infant sleep. *Sleep Med Rev.* 2010;14(2):89-96.
7. Keller P, El-Sheikh M. Children's emotional security and sleep: longitudinal relations and directions of effects. *J Child Psychol Psychiatry.* 2011;52(1):64-71.
8. Mindell JA, Sadeh A, Kohyama J, How TH. Parental behaviors and sleep outcomes in infants and toddlers: a cross-cultural comparison. *Sleep Med.* 2010;11(4):393-399.
9. Piteo AM, Roberts RM, Nettelbeck T, et al. Postnatal depression mediates the relationship between infant and maternal sleep disruption and family dysfunction. *Early Hum Dev.* 2013;89(2):69-74.
10. Loutzenhiser L, Ahlquist A, Hoffman J. Infant and maternal factors associated with maternal perceptions of infant sleep problems. *J Reprod Infant Psychol.* 2012;29(5):460-471.
11. Goldberg WA, Lucas-Thompson RG, Germo GR, Keller MA, Davis EP, Sandman CA. Eye of the beholder? Maternal mental health and the quality of infant sleep. *Soc Sci Med.* 2013;79:101-108.
12. El-Sheikh M, Bagley EJ, Keiley M, Elmore-Staton L, Chen E, Buckhalt JA. Economic adversity and children's sleep problems: multiple indicators and moderation of effects. *Health Psychol.* 2013;32(8):849-859.
13. Mannering AM, Harold GT, Leve LD, et al. Longitudinal associations between marital instability and child sleep problems across infancy and toddlerhood in adoptive families. *Child Dev.* 2011;82(4):1252-1266.
14. Owens JA. Introduction: culture and sleep in children. *Pediatrics.* 2005;115(1 suppl):201-203.

15. Liu X, Liu L, Owens JA, Kaplan DL. Sleep patterns and sleep problems among schoolchildren in the United States and China. *Pediatrics*. 2005;115(1 suppl):241-249.
16. Mindell JA, Du Mond CE, Sadeh A, Telofski LS, Kulkarni N, Gunn E. Efficacy of an internet-based intervention for infant and toddler sleep disturbances. *Sleep*. 2011;34(4):451-458.
17. Hirshkowitz M, Whiton K, Albert SM, et al. National Sleep Foundation's sleep time duration recommendations: methodology and results summary. *Sleep Health*. 2015;1(1):40-43.
18. Morgenthaler TI, Owens J, Alessi C; American Academy of Sleep Medicine. Practice parameters for behavioral treatment of bedtime problems and night wakings in young children. *Sleep*. 2006;29(10):1277-1281.
19. Douglas PS, Hill PS. Behavioral sleep interventions in the first six months of life do not improve outcomes for mothers or infants: a systematic review. *J Dev Behav Pediatr*. 2013;34(7):497-507.
20. Blunden S, Baills A. Treatment of behavioural sleep problems: asking the parents. *J Sleep Disord Treat Care*. 2013;2(2):1-7.
21. Yonezu T, Yakushiji M. Longitudinal study on influence of prolonged non-nutritive sucking habits on dental caries in Japanese children from 1.5 to 3 years of age. *Bull Tokyo Dent Coll*. 2008;49(2):59-63.
22. Laganà G, Fabi F, Abazi Y, Beshiri Nastasi E, Vinjolli F, Cozza P. Oral habits in a population of Albanian growing subjects. *Eur J Paediatr Dent*. 2013;14(4):309-313.
23. Ngom PI, Diagne F, Samba Diouf J, Ndiaye A, Hennequin M. Prevalence and factors associated with non-nutritive sucking behavior. Cross sectional study among 5- to 6-year-old Senegalese children [in French]. *Orthod Fr*. 2008;79(2):99-106.
24. Farsi NM, Salama FS. Sucking habits in Saudi children: prevalence, contributing factors and effects on the primary dentition. *Pediatr Dent*. 1997;19(1):28-33.
25. Choi SI, Kim JE, Lee SH, Cho MK, Lee JS, Lee SY. Habitual thumbsucking-induced koilonychia in infancy. *Korean J Dermatol*. 2011;49(10):915-917.
26. Garde JB, Suryavanshi RK, Jawale BA, Deshmukh V, Dadhe DP, Suryavanshi MK. An epidemiological study to know the prevalence of deleterious oral habits among 6 to 12 year old children. *J Int Oral Health*. 2014;6(1):39-43.
27. Urzal V, Braga AC, Ferreira AP. Oral habits as risk factors for anterior open bite in the deciduous and mixed dentition—cross-sectional study. *Eur J Paediatr Dent*. 2013;14(4):299-302.
28. Clover M, Hobson R. Digit sucking. *Orth Update*. 2013;6(1):6-9.
29. Bate KS, Malouff JM, Thorsteinsson ET, Bhullar N. The efficacy of habit reversal therapy for tics, habit disorders, and stuttering: a meta-analytic review. *Clin Psychol Rev*. 2011;31(5):865-871.
30. Li DK, Willinger M, Petitti DB, Odouli R, Liu L, Hoffman HJ. Use of a dummy (pacifier) during sleep and risk of sudden infant death syndrome (SIDS): population based case-control study. *BMJ*. 2006;332(7532):18-22.
31. Rovers MM, Numans ME, Langenbach E, et al. Is pacifier use a risk factor for acute otitis media? *Fam Pract*. 2008;25(4):233-236.
32. Lieberthal AS, Carroll AE, Chonmaitree T, et al. The diagnosis and management of acute otitis media [published correction appears in *Pediatrics*. 2014;133(2):346]. *Pediatrics*. 2013;131(3):e964-e999.
33. dos Santos RR, Nayme JG, Garbin AJ, Saliba N, Garbin CA, Moimaz SA. Prevalence of malocclusion and related oral habits in 5- to 6-year-old children. *Oral Health Prev Dent*. 2012;10(4):311-318.
34. Urzal V, Braga AC, Ferreira AP. The prevalence of anterior open bite in Portuguese children during deciduous and mixed dentition—correlations for a prevention strategy. *Int Orthod*. 2013;11(1):93-103.
35. Bueno SB, Bittar TO, Vazquez Fde L, Meneghim MC, Pereira AC. Association of breastfeeding, pacifier use, breathing pattern and malocclusions in preschoolers. *Dental Press J Orthod*. 2013;18(1):30.e1-e6.
36. Borrie FR, Elouafkaoui P, Bearn DR. A Scottish cost analysis of interceptive orthodontics for thumb sucking habits. *J Orthod*. 2013;40(2):145-154.
37. Dovey TM, Staples PA, Gibson EL, Halford JC. Food neophobia and 'picky/fussy' eating in children: a review. *Appetite*. 2008;50(2-3):181-193.
38. Galloway AT, Lee Y, Birch LL. Predictors and consequences of food neophobia and pickiness in young girls. *J Am Diet Assoc*. 2003;103(6):692-698.
39. Scaglioni S, Arrizza C, Vecchi F, Tedeschi S. Determinants of children's eating behavior. *Am J Clin Nutr*. 2011;94(6 suppl):2006S-2011S.
40. Scaglioni S, Salvioni M, Galimberti C. Influence of parental attitudes in the development of children eating behaviour. *Br J Nutr*. 2008;99(suppl 1):S22-S25.
41. Birch LL, Davison KK. Family environmental factors influencing the developing behavioral controls of food intake and childhood overweight. *Pediatr Clin North Am*. 2001;48(4):893-907.
42. Feeding the child and adolescent. In: Kleinman RE. *Pediatric Nutrition Handbook*. 6th ed. Elk Grove Village, Ill.: The American Academy of Pediatrics; 2009:145-174.
43. Satter E. The feeding relationship: problems and interventions. *J Pediatr*. 1990;117(2 pt 2):S181-S189.
44. High PC; American Academy of Pediatrics Committee on Early Childhood, Adoption, and Dependent Care and Council on School Health. School readiness. *Pediatrics*. 2008;121(4):e1008-e1015.
45. Duursma E, Augustyn M, Zuckerman B. Reading aloud to children: the evidence. *Arch Dis Child*. 2008;93(7):554-557.
46. Heckman JJ. Skill formation and the economics of investing in disadvantaged children. *Science*. 2006;312(5782):1900-1902.
47. Byrd RS, Weitzman M, Auinger P. Increased behavior problems associated with delayed school entry and delayed school progress. *Pediatrics*. 1997;100(4):654-661.
48. Maintaining and improving the oral health of young children. *Pediatrics*. 2014;134(6):1224-1229.
49. American Academy of Pediatric Dentistry. Guideline on caries risk assessment and management for infants, children, and adolescents. Revised 2014. http://www.aapd.org/media/Policies_Guidelines/G_CariesRiskAssessment.pdf. Accessed February 13, 2015.
50. U.S. Preventive Services Task Force. Clinical summary. Dental caries in children from birth through age 5 years: screening. May 2014. http://www.uspreventiveservicestaskforce.org/Page/Document/ClinicalSummaryFinal/dental-caries-in-children-from-birth-through-age-5-years-screening. Accessed February 13, 2015.