

# Policy on Pacifiers

## Revised

2024

### Purpose

The American Academy of Pediatric Dentistry (AAPD) encourages health care providers to follow evidence-based literature to educate parents about the safe practices, benefits, and risks of pacifier use by infants and children in order to promote healthy growth and development.

### Methods

This policy was developed by the Council on Clinical Affairs and adopted in 2022.<sup>1</sup> This document is a revision of the original policy and based on review of current dental and medical literature, including a search of the PubMed/MEDLINE database using the terms: *pacifier* AND *emotional development, safety, benefits, malocclusion, crossbite, open bite, fields*: all; limits: within the last 10 years, English. Five hundred fifty-seven articles met these criteria. Papers for review were chosen from this list and from references within selected articles.

### Background

Sucking behaviors in infants can be a natural reflex to satisfy a physiological (ie, nutritive) or psychological (ie, non-nutritive) need. The nonnutritive drive may be satisfied by sucking a digit or an available object such as a pacifier. Pacifier use is common among infants in the US.<sup>2</sup> Cultural background may play a role in pacifier introduction.<sup>3</sup> Considerations when counseling parents on introducing pacifiers include safety and potential risks and benefits of pacifier use. Although the American Academy of Pediatrics (AAP) has recommended delaying pacifier use in breastfed infants until breastfeeding is established to prevent its disruption,<sup>4</sup> a systematic review<sup>5</sup> found pacifier use, whether started from birth or after lactation, did not affect the prevalence or duration of breastfeeding in healthy, term infants up to 4 months of age.

The controlled action of sucking promotes feelings of security and allows infants to self-soothe.<sup>6</sup> Pacifiers may continue to provide comfort in the toddler years. Cessation may be carried out either through self-implementation or caregiver mediation.<sup>7</sup> Although psychological interventions such as positive and negative reinforcement improve nonnutritive sucking habits in children,<sup>7</sup> positive reward for pacifier cessation (eg, recognition or incentive for each day of non-use) is preferable to negative reinforcement (eg, criticism, restraint) to avoid power struggles which could extend the duration of the habit.<sup>8</sup>

**How to Cite:** American Academy of Pediatric Dentistry. Policy on pacifiers. *The Reference Manual of Pediatric Dentistry*. Chicago, IL: American Academy of Pediatric Dentistry; 2025:86-9.

### Risks of pacifier use

Practitioners can provide counseling and anticipatory guidance regarding pacifier selection and safe usage to parents of infants and children who utilize a pacifier. Pacifiers of single piece construction are less likely to break apart and become a choking hazard.<sup>9</sup> For safety, the AAP recommends a pacifier shield be firm, have ventholes, and measure at least 1.5 inches across (ie, large enough not to pass completely into the mouth).<sup>9</sup> Additionally, the US Consumer Product Safety Commission prohibits straps, cords, or attachments that could pose a danger to infants or children.<sup>10</sup> Regular inspection of the pacifier by caregivers is recommended to evaluate for any structural wear that poses a safety risk.<sup>9</sup>

Pacifier use is a risk factor for otitis media in infants and children.<sup>11-15</sup> The incidence of acute otitis media may be reduced by decreasing or eliminating use of a pacifier in the second 6 months of life.<sup>16</sup> Evidence linking pacifier use to concerns with speech development or speech delay is limited.<sup>17,18</sup> Recent research suggested that while prolonged day-to-day pacifier use lasting several hours may have significance with atypical speech errors, a strong speech-related justification against pacifier use is not evident.<sup>19</sup>

Pacifiers can serve as a reservoir for microbes, and their use is linked to oral yeast infections.<sup>20</sup> Sterilization/disinfection, either by boiling in water for 15 minutes or preferably spraying an antimicrobial agent (eg, 0.12% chlorhexidine), can minimize and eliminate microbes such as *Staphylococcus*, *Candida albicans*, and *Streptococcus mutans*.<sup>18,21,22</sup> The US Food and Drug Administration recommends that infants and young children not be given pacifiers containing or dipped in honey.<sup>23</sup> Honey contains spores of a particular bacterium, *Clostridium botulinum*, that produces a neurotoxin capable of causing respiratory difficulty, paralysis, and even death.<sup>23</sup> Cases of infant botulism in Texas were attributed to commercially-available honey-filled pacifiers.<sup>23</sup>

Children using a pacifier 36 months or longer had a significantly higher incidence of anterior open bite compared to those not using a pacifier.<sup>11,14,24-32</sup> An anterior open bite with pacifier use will improve after elimination of the pacifier before age 3.<sup>14,32,33</sup> In addition, increased pacifier use leads to posterior crossbite,<sup>11,14,27-31,34,35</sup> including crossbite with midline

### ABBREVIATIONS

**AAP:** American Academy of Pediatrics. **AAPD:** American Academy of Pediatric Dentistry.

deviation.<sup>36-39</sup> A prospective study examining pacifier use beyond age 4 concluded the transverse occlusal relationship should be evaluated before 3 years of age.<sup>33</sup> To limit the development of a posterior crossbite, discontinuing or limiting pacifier use when canines emerge (approximately 18 months of age) has been recommended.<sup>39</sup> Malocclusion was affected by duration more than frequency,<sup>34,36</sup> and the percentage of open bite was significantly greater as the duration of nonnutritive sucking continued beyond 3 years of age.<sup>35</sup> Increased overjet and a Class II malocclusion are more strongly associated with a finger habit versus a pacifier habit.<sup>35,36</sup>

The pacifier design (orthodontic, conventional, or physiologic) and shield design (conventional or flare) have implications for the use and function of different brand pacifiers. Pacifiers interact with the palate differently based on their fit (ie, design and size) regardless of whether they are labeled conventional or orthodontic.<sup>40</sup> Pacifier sizing has been brought into focus for the role it plays in providing palatal support to prevent loss of transverse palatal dimensions and causing palatal collapse.<sup>14,30,40-42</sup> Palatal collapse contributes to the early development of posterior crossbites.<sup>31,41,43</sup> The use of biometrics to aid pacifier selection has shown promise in recent research.<sup>44,45</sup>

A systematic review noted orthodontic pacifiers induce less open bite compared to conventional pacifiers.<sup>31</sup> One study<sup>30</sup> showed that use of conventional pacifiers exhibited higher prevalence of anterior open bite and posterior crossbite compared to the control group with no nonnutritive sucking habits. Another study<sup>29</sup> found children who used a pacifier had a significantly higher incidence of posterior crossbite versus nonhabit children although the difference between pacifier types with regards to posterior crossbite was not significant. A prospective study introduced a pacifier with a thin neck to children (average age 20 months) who had a diagnosed anterior open bite and already used a conventional pacifier; the study group was compared to not only the original pacifier group but also to children not using any pacifier for at least 3 months.<sup>46</sup> A significant difference ( $P < 0.001$ ) regarding overbite and overjet changes between pacifier groups was reported (ie, the thin-neck pacifier resulted in less increase in the overbite and open bite compared to the conventional pacifier); however, no improvement in either pacifier group compared to cessation of pacifier use was found.<sup>46</sup> Two reviews comparing orthodontic versus conventional pacifiers stated evidence was insufficient to support a preference for orthodontic pacifiers preventing malocclusions.<sup>47,48</sup>

### Benefits of pacifiers use

Based on good-quality patient-oriented evidence, the AAP recommends offering a pacifier when an infant is placed to sleep due to its protective effect on the incidence of sudden infant death syndrome (SIDS), but a pacifier should not be forced on resistant infants.<sup>49</sup> This recommendation is supported by other organizations such as the International Society for the Study and Prevention of Perinatal and Infant Death<sup>50</sup> and

the Safe to Sleep Campaign<sup>51</sup> of the US Department of Health and Human Services.

Pacifier use may be beneficial when mothers cannot breast feed due to medication or severe illness, if infants need early oral stimulation to develop or maintain the sucking reflex, or in neonatal intensive care environments when infants need calming, pain relief, or decreased stress.<sup>52</sup> The benefits of pacifier use also include adjunctive pain relief in newborns and infants undergoing common, minor procedures in the emergency department and reducing the likelihood of a digit-sucking habit.<sup>2,11,18,53-55</sup> Children who started using an orthodontic pacifier before 4 months old had a lower risk of developing a finger/thumb sucking habit compared to children who began after 4 months.<sup>56</sup> Allowing the habit to continue beyond 14 months of age may help prevent a persistent finger habit because forced early cessation of pacifier usage has been associated with prolonged finger sucking.<sup>57</sup>

### Policy statement

The AAPD supports parents in the decision to introduce a pacifier based on their infant's needs and parental preference as pacifiers may be beneficial during the first few months of life in helping premature infants develop the sucking reflex, offering comfort and soothing, providing an analgesic effect during minor invasive procedures, decreasing the incidence of sudden infant death syndrome, and preventing a persistent finger-sucking habit. The AAPD encourages parents to establish a dental home for their children by 12 months of age<sup>58</sup> to allow time-critical opportunities for anticipatory guidance on preventive health practices including the discontinuance of nonnutritive sucking habits by 36 months of age. The AAPD supports consistent messaging by medical and dental providers when educating parents on the risks of a prolonged pacifier habit as usage after 12 months of age can increase the risk of acute otitis media and beyond 18 months can influence the developing orofacial complex, leading to anterior open bite, posterior crossbite, and Class II malocclusion. Understanding the safety, benefits, and risks is critical to counseling parents on the use of pacifiers. Furthermore, the AAPD encourages additional research regarding pacifier selection to minimize disturbances of the developing orofacial complex.

### References

1. American Academy of Pediatric Dentistry. Policy on pacifiers. The Reference Manual of Pediatric Dentistry. Chicago, IL: American Academy of Pediatric Dentistry; 2022:86-9.
2. Sexton S, Natale R. Risks and benefits of pacifiers. *Am Fam Physician* 2009;79(8):681-5.
3. Feștilă D, Ghergie M, Muntean A, Matiz D, Șerb Nescu A. Suckling and non-nutritive sucking habit: What should we know? *Clujul Med* 2014;87(1):11-4.

*References continued on the next page.*

4. American Academy of Pediatrics Section on Breastfeeding; Eidelman AI, Schanler RJ, et al. Breastfeeding and the use of human milk. *Pediatrics* 2012;129(3):e827-e41.
5. Jaafar SH, Ho JJ, Jahanfar S, Angolkar M. Effect of restricted pacifier use in breastfeeding term infants for increasing duration of breastfeeding. *Cochrane Database Syst Rev* 2016;(8):CD007202.
6. Staufert Gutierrez D, Carugno P. Thumb Sucking. [Updated May 5, 2023]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024. Available at: "https://www.ncbi.nlm.nih.gov/books/NBK 556112/". Accessed February 28, 2024.
7. Borrie, FR, Bearn, DR, Innes NP, Iheozor-Ejiofor Z. Interventions for the cessation of non-nutritive sucking habits in children. *Cochrane Database Syst Rev* 2015; 2015(3):CD008694.
8. Augustyn M, Frank DA, Zuckerman BS. Infancy and toddler years. In: Carey WB, Crocker AC, Elais ER, Feldman HM, Coleman WL, eds. *Developmental-Behavioral Pediatrics*. 4th ed. Philadelphia, PA: Saunders; 2009:55.
9. American Academy of Pediatrics. Pacifier Safety. *Caring for your Baby and Young Child: Birth to Age 5*. Updated November 19, 2018. Available at: "https://www.healthychildren.org/English/safety-prevention/at-home/Pages/Pacifier-Safety.aspx". Accessed February 28, 2024.
10. US Consumer Product Safety Commission. Pacifiers Business Guidance. Available at: "https://www.cpsc.gov/Business--Manufacturing/Business-Education/Business-Guidance/Pacifiers-Business-Guidance". Accessed February 28, 2024.
11. Geder A, Coommarawamy K, Turner JP. Pacifiers: A review of risks vs benefits. *Dent Update* 2013;40(2):92-101.
12. Salah M, Abdel-Aziz M, Al-Farok A, Jebrini A. Recurrent acute otitis media in infants: Analysis of risk factors. *Int J Pediatr Otorhinolaryngol* 2013;77(10):1665-9.
13. Stone KN, Fleming P, Golding J. Socio-demographic associations with digit and pacifier sucking at 15 months of age and possible associations with infant infection. The ALSPAC Study Team. *Avon Longitudinal Study of Pregnancy and Childhood. Early Hum Dev* 2000;60(2): 137-48.
14. Warren JJ, Bishara SE. Duration of nutritive and non-nutritive sucking behaviors and their effects on the dental arches in the primary dentition. *Am J Orthod Dentofacial Orthop* 2002;121(4):347-56.
15. Warren JJ, Levy SM, Kirchner HL, et al. Pacifier use and the occurrence of otitis media in the first year of life. *Pediatr Dent* 2001;23(2):103.
16. Lieberthal AS, Carroll AE, Chonmaitree T, et al. Clinical practice guideline: The diagnosis and management of acute otitis media. *Pediatrics* 2013;131(3):e964-e999. Errata: *Pediatrics* 2014;133(2):346-7.
17. Burr S, Harding S, Wren Y, Deave T. The relationship between feeding and non-nutritive sucking behaviours and speech sound development: A systematic review. *Folia Phoniatr Logop* 2021;73(2):75-88.
18. Nelson AM. A comprehensive review of evidence and current recommendations related to pacifier usage. *J Pediatr Nurs* 2012;27(6):690-9.
19. Strutt C, Khattab G, Willoughy J. Does the duration and frequency of dummy (pacifier) use affect the development of speech? *Int J Lang Commun Disord* 2021;56(3):512-27.
20. Comina E, Marion K, Renaud FN, Dore J, Bergeron E, Freney J. Pacifiers: A microbial reservoir. *Nurs Health Sci* 2006;8(4):216-23.
21. Lopes DE, Fernandes RT, Medeiros YL, Apolonio ACM. Disinfection of pacifier focusing on *Candida albicans*. *Clin Pediatr (Phila)* 2019;58(14):1540-3.
22. Nelson-Filho P, Louvain MC, Macari S, et al. Microbial contamination and disinfection methods of pacifiers. *J Appl Oral Sci* 2015;23(5):523-8.
23. US Food and Drug Administration. Honey Pacifiers Suspected in Texas Infant Botulism Cases. FDA Reminds Parents Not to Feed Honey to Children Younger Than 1 Year. November 16, 2018. Available at: "https://public4.pagefreezer.com/browse/FDA/15-02-2022T20:48/https://www.fda.gov/food/alerts-advisories-safety-information/honey-pacifiers-suspected-texas-infant-botulism-cases". Accessed February 28, 2024.
24. Bueno SB, Bittar TO, Vazquez FL, et al. Association of breastfeeding, pacifier use, breathing pattern and malocclusion in preschoolers. *Dental Press J Orthod* 2013;18(1):30.e1-6.
25. Germa A, Clement C, Weissenbach M, et al. Early risk factors for posterior crossbite and anterior open bite in the primary dentition. *Angle Orthod* 2016;86(5):832-8.
26. Larsson E. Artificial sucking habits: Etiology, prevalence and effect on occlusion. *Int J Orofacial Myology* 1994; 20(1):10-21.
27. Adair SM, Milano M, Lorenzo I, et al. Effects of current and former pacifier use on the dentition of 24- to 59-month-old children *Pediatr Dent* 1995;17(7):437-44.
28. Ling HTB, Sum FHK, Zhang L et al. The association between nutritive, non-nutritive sucking habits and primary dental occlusion. *BMC Oral Health* 2018;18(1):145.
29. Zardetto CGC, Rodriguez CRMD, Stefani FM. Effects of different pacifiers on the primary dentition and oral myofunctional structures of preschool children. *Pediatr Dent* 2002;24(6):552-60.
30. Lima AADSJ, Alves CMC, Ribeiro CCC, et al. Effects of conventional and orthodontic pacifiers on the dental occlusion of children aged 24-36 months old. *Int J Paediatr Dent* 2017;27(2):108-19.
31. Schmid KM, Kugler R, Nalabothu P, et al. The effect of pacifier sucking on orofacial structures: A systematic literature review. *Prog Orthod* 2018;19(1):8.
32. Duncan K, McNamara C, Ireland AJ. Sucking habits in childhood and effects on the primary dentition: Findings of the Avon Longitudinal Study of Pregnancy and Childhood. *Int J Paediatr Dent* 2008;18(3):178-88.

33. Bishara SE, Warren JJ, Broffitt B, et al. Changes in the prevalence of nonnutritive sucking patterns in the first 8 years of life. *Am J Orthod Dentofacial Orthop* 2006;130(1):31-6.
34. Lima Vasquez F, Castro Meneghim M. Association of breastfeeding, pacifier use, breathing pattern and malocclusions in preschoolers. *Dental Press J Orthod* 2013;18(1):1-6.
35. Montaldo L, Montaldo P, Pasquale P, et al. Effects of feeding on non-nutritive sucking habits and implications on occlusion in mixed dentition. *Int J Paediatr Dent* 2011;21(1):68-73.
36. Cenci VS, Marciel SM, Jarrus ME, et al. Pacifier-sucking habit duration and frequency on occlusal and myofunctional alterations in preschool children. *Braz Oral Res* 2015;29(1):1-7.
37. Larsson E. Sucking, chewing, and feeding habits and the development of crossbite: A longitudinal study of girls from birth to 3 years of age *Angle Orthod* 2001;71(2):116-9. Available at: "[https://meridian.allenpress.com/angle-orthodontist/article-lookup/doi/10.1043/0003-3219\(2001\)071%3C0116:SCAFHA%3E2.0.CO;2](https://meridian.allenpress.com/angle-orthodontist/article-lookup/doi/10.1043/0003-3219(2001)071%3C0116:SCAFHA%3E2.0.CO;2)". Accessed March 1, 2024.
38. Lopes Freire GM, Suarez de Deza JEE, Rodrigues IC, et al. Non-nutritive sucking habits and their effects on the occlusion in the deciduous dentition in children. *Eur J Paediatr Dent* 2016;17(4):301-6.
39. Melink S, Vagner MV, Hocevar-Boltezar I. Posterior crossbite in the deciduous dentition period, its relation with sucking habits, irregular orofacial functions, and otolaryngological findings. *Am J Orthod Dentofacial Orthop* 2010;138(1):32-40.
40. Tesini DA. Design, sizing and ergonomics of infant pacifiers: A biometric basis for pacifier fit. *Pediatr Nurs* 2022;48(1):36-41.
41. Levrini L, Merlo P, Paracchini L. Different geometric patterns of pacifiers compared on the basis of finite element analysis. *Eur J Paediatr Dent* 2007;8(4):173-8.
42. Lindner A, Helsing E. Cheek and lip pressure against the maxillary dental arch during dummy sucking. *Eur J Ortho* 1991;13(5):362-6.
43. Doğramacı EJ, Rossi-Fedele G. Establishing the association between nonnutritive sucking behavior and malocclusions: A systematic review and meta-analysis. *J Am Dent Assoc* 2016;147(12):926-34.
44. Lee CL, Costello M, Tesini DA. Computational simulation of pacifier deformation and interaction with the palate. *Clin Exp Dent Res* 2021;7(5):884-7. Available at: "<https://onlinelibrary.wiley.com/doi/10.1002/cre2.428>". Accessed February 28, 2024. Corrigendum: *Clin Exp Dent Res* 2022;8(2):610.
45. Tesini DA, Hu LC, Usui BH, Lee CL. Functional comparison of pacifiers using finite element analysis. *BMC Oral Health* 2022;22:49. Available at: "<https://bmcoralhealth.biomedcentral.com/articles/10.1186/s12903-022-02087-4>". Accessed February 28, 2024.
46. Wagner Y, Heinrich-Weltzien R. Effect of a thin-neck pacifier on primary dentition: A randomized controlled trial. *Orthod Craniofac Res* 2016;19(3):127-36.
47. Corrêa CC, Sallas Bueno MR, Pereira Lauris JB, et al. Interference of conventional and orthodontic nipples in system stomatognathic: Systematic review 2016. *Codas* 2016;28(2):182-9.
48. Medeiros R, Ximenes M, Massgnam C, et al. Malocclusion prevention through the usage of an orthodontic pacifier compared to a conventional pacifier: A systematic review. *Eur Arch Paediatr Dent* 2018;19(5):287-95.
49. Moon RY, Carlin RF, Hand I; The Task Force on Sudden Infant Death Syndrome and the Committee on Fetus and Newborn. Sleep-related infant deaths: Updated 2022 recommendations for reducing infant deaths in the sleep environment. *Pediatrics* 2022;150(1):e2022057990. Available at: "<https://doi.org/10.1542/peds.2022-057990>". Accessed February 28, 2024.
50. International Society for the Study and Prevention of Perinatal and Infant Death. How to Keep Your Baby Healthy and Reduce the Risk of Sudden Infant Death (SIDS). July 5, 2020. Available at: "<https://www.ispid.org/infantdeath/id-prevention>". Accessed February 28, 2024.
51. US Department of Health and Human Services Safe to Sleep® Campaign. Safe Sleep for Your Baby. Reduce the Risk of Sudden Infant Death Syndrome (SIDS) and Other Sleep-Related Causes of Infant Death. NIH Pub No 17-HD-7040, June 2017. Available at: "[https://www.nichd.nih.gov/sites/default/files/publications/pubs/Documents/NICHD\\_Safe\\_to\\_Sleep\\_brochure.pdf](https://www.nichd.nih.gov/sites/default/files/publications/pubs/Documents/NICHD_Safe_to_Sleep_brochure.pdf)". Accessed March 14, 2024.
52. Lubbe W, Ten Ham-Baloyi W. When is the use of pacifiers justifiable in the baby-friendly hospital initiative context? A clinician's guide. *BMC Pregnancy Childbirth* 2017;17(1):130. Available at: "<https://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/s12884-017-1306-8>". Accessed March 1, 2024.
53. Campos RG. Rocking and pacifiers: Two comforting interventions for heelstick pain. *Res Nurs Health* 1994;17(5):321-31.
54. Marter A, Agruss JC. Pacifiers: An update on use and misuse. *J Spec Pediatr Nurs* 2007;12(4):278-85.
55. Vu-Ngoc H, Uyen NCM, Think OP, et al. Analgesic effect of non-nutritive sucking in term neonates: A randomized controlled trial. *Pediatr Neonol* 2020;61(1):106-13.
56. Caruso, S, Nora A, Darvizeh A, et al. Poor oral habits and malocclusion after usage of orthodontic pacifiers: An observational study on 3-5 year-old children. *BMC Pediatr* 2019;19(1):294.
57. Fukumoto E, Fukumoto S, Kawasaki K, et al. Cessation age of breastfeeding and pacifier use is associated with persistent finger-sucking. *Pediatr Dent* 2013;35(7):506-9.
58. American Academy of Pediatric Dentistry. Policy on the dental home. The Reference Manual of Pediatric Dentistry. Chicago, IL: American Academy of Pediatric Dentistry; 2024:38-40.