Policy on Pacifiers

Revised
2024

How to Cite: American Academy of Pediatric Dentistry. Policy on pacifiers. The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2024:79-82.

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.[1] This document is based a revision of the original policy and is 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 (i.e., nutritive) or psychological (i.e., 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 United States (**U.S.**).[2] Cultural background may play a role in pacifier introduction.[3] 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 breastfeeding disruption,[4] a systematic review 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 four months of age[5].

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

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.[9] For safety, AAP recommends a pacifier shield be firm, have ventholes, and measure at least 1.5 inches across (i.e., large enough not to pass completely into the mouth).[9] Additionally, the U.S. Consumer Product Safety Commission prohibits straps, cords, or attachments that could pose a danger to infants or children.[10] Regular inspection of the pacifier by caregivers is recommended to evaluate for any structural wear that poses a safety risk.[9]

Pacifier use is a risk factor for otitis media in infants and children.[11-15] The incidence of acute otitis media may be reduced by decreasing or eliminating use of a pacifier in the second six months of life.[16] Evidence linking pacifier use to issues with speech development or speech delay is limited.[17,18] 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.[18]

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

Children using a pacifier 36 months or longer had a significantly higher incidence of anterior open bite compared to those not using a pacifier.[11,14,24-32] An anterior open bite with pacifier use will improve after elimination of the pacifier before age three.[14,32,33] In addition, increased pacifier use leads

ABBREVIATIONS

AAP: American Academy of Pediatrics. **AAPD:** American Academy of Pediatric Dentistry. **SIDS:** Sudden infant death syndrome. **U.S.:** United States.

to posterior crossbite,[11,14,27-31,34,35] including crossbite with midline deviation.[36-39] A prospective study examining pacifier use beyond age four concluded the transverse occlusal relationship should be evaluated before three years of age.[33] To limit the development of a posterior crossbite, discontinuing or limiting pacifier use when canines emerge (approximately 18 months of age) has been recommended.[39] Malocclusion was affected by duration more than frequency,[34,36] and the percentage of open bite was significantly greater as the duration of nonnutritive sucking continued beyond three years of age[35]. Increased overjet and a Class II malocclusion are more strongly associated with a finger habit versus a pacifier habit.[35,36]

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 (i.e., design and size) regardless of whether they are labeled conventional or orthodontic.[40] 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.[14,30,40-42] Palatal collapse contributes to the early development of posterior crossbites.[31,41,43] The use of biometrics to aid pacifier selection has shown promise in recent research.[44,45]

A systematic review noted orthodontic pacifiers induce less open bite compared to conventional pacifiers.[31] One study[30] 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[29] found children who used a pacifier had a significantly higher incidence of posterior crossbite versus non-habit 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 three months.[46] A significant difference ($P<0.001$) regarding overbite and overjet changes between pacifier groups was reported (i.e., 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.[46] Two reviews comparing orthodontic versus conventional pacifiers stated evidence was insufficient to support a preference for orthodontic pacifiers preventing malocclusions.[47,48]

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.[49] This recommendation is supported by other organizations such as the International Society for the Study and Prevention of Perinatal and Infant Death[50] and the Safe to Sleep® campaign of the United States Department of Health and Human Services[51].

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.[52] 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.[2,11,18,53-55] Children who started using an orthodontic pacifier before four months old had a lower risk of developing a finger/thumb sucking habit compared to children who began after four months.[56] 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.[57]

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 SIDS, and preventing a persistent finger-sucking habit. The AAPD encourages parents to establish a dental home for their children by 12 months of age[58] 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 ofthe developing orofacial complex.

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