



Figure 1. Thumbsucking is a non-nutritive sucking habit that alters a child's growth and development.

Unlocking the root cause of prolonged non-nutritive sucking habits

By Kelly Baker, RDH, OMT



A common practice for new parents is to offer infants pacifiers (also referred to as ordinary soothers or dummies) to provide emotional comfort during times of stress. An infant may seek out comfort from a pacifier, thumb or other items they can use for sucking and this is referred to as a non-nutritive sucking habit (NNSH). Butler et al (2016) found over half of all children aged 15 months old were still engaging in a NNSH. The study also found most children prefer the pacifier to their fingers.¹

It is recommended that breastfeeding be well-established between the mother and infant before introducing a pacifier or other mechanism for non-nutritive sucking. Correct breastfeeding provides an ideal environment for the infant to develop their craniofacial complex and airway.²

Defining a nutritive sucking habit versus a prolonged non-nutritive sucking habit

At birth, an infant begins suckling from either their mother's breast or a bottle nipple as their primary source of nutrition. This is referred to as a nutritive sucking habit (NSH). The correct



Figure 2. Breastfeeding is a nutritive sucking habit (NSH) which allows the infant to develop an ideal craniofacial complex.

swallowing pattern demonstrated by the infant at this developmental age should be the infantile swallow. The infantile swallow consists of the entire nipple being placed in contact with the roof of the mouth, contacting the soft palate as well. The pressure applied from the tongue pressing the nipple onto the hard and soft palate, as well as sagittal rotation of the mandible, lays the critical foundation to the development of the entire oral pharyngeal complex. This swallow, however vital in the development of an infant, should disappear within the first year of life.³

Use of a pacifier is not only accepted by most paediatricians and parents, it is often encouraged and research indicates NNSHs actually begin in a developing fetus. Festila et al (2014) found that a fetus begins swallowing and sucking movements between 13-16 weeks of gestation and this early development is linked to the rooting and suckling reflex.³

A NNSH is considered normal as a child develops. However, if the habit of non-nutritive sucking continues past the age of three, it is considered to be a prolonged non-nutritive sucking habit (PNNSH).

Role of pacifiers in non-nutritive sucking habits

We know that a PNNSH can cause detrimental effects to the dentition, growth and occlusion of a child, including a narrow maxilla, malocclusion, open lips in the resting position, lowered tongue position, protrusion of the tongue between the arches, weakened orofacial musculature and a reverse swallowing pattern.² They can also highly contribute to poor health effects including Otitis Media, gastrointestinal symptoms and respiratory disorders.⁴

It is believed that the dental effects on a child's developing dentition are not only minor but also reversible if habit cessa-

tion occurs prior to the age of three.³ From my experience as a clinician, I would not agree with this. A PNNSH in a developing young child can not only have long-lasting dental and health effects, but also greatly reduce a child's ability to form a normal growth pattern. I have found the sooner the underlying issue of the PNNSH is addressed, the more promising an outcome for any child.

Prevention of SIDS and why

Recent literature has shown that pacifiers are a strong leader in the prevention of Sudden Infant Death Syndrome (SIDS). Although still somewhat controversial, a recent study conducted in California by Butler et al (2016) found a 90% reduction in the risk of SIDS in infants using pacifiers.¹ The recommendation to offer a pacifier to every infant is growing in popularity by health

professionals. It is encouraged after one month in breastfed infants to allow for a proper latch and breastfeeding relationship to form between the infant and mother. So much about the occurrence of SIDS is a mystery, but there is little doubt that pacifiers are providing a needed solution to reduce the risk in infants.

The question remains - why would an appliance that puts an infant and/or young child at risk for a multitude of negative impacts be so beneficial? There are many hypotheses surrounding this conundrum, but none have been found to be the exact solution. However, several studies have linked pacifiers to increasing airway patency.⁵

In addition to increasing the airway patency, pacifiers allow the mandible to position itself forward, which also allows the tongue to move into a more favourable anterior position out of the airway.⁵ From an anatomical perspective, bringing the mandible and tongue forward out of the airway would allow a compromised airway the ability to open and broaden itself, thereby providing necessary assistance in preventing an airway collapse.

The root cause and solution

In our modern world of stress, soft diets, allergens and numerous environmental factors, we are seeing a generation of children entering a habitat that does not support our ability to thrive and grow into our full genetic potential. The prevalence of malocclusion, poor jaw growth and health is nearing 100 per cent in all children.^{6,7,8} We offer solutions such as pacifiers to soothe the emotional response being exhibited without pause to ponder the cause.

PNNShs are a primary example of a tool children use to circumvent the symptoms they feel due to insufficient development of their oral pharyngeal complex. A pacifier is not a favourable solution due to its further negative impact on their growth; addressing the root cause would be.^{1,2,3}

Myofunctional Research Co. (MRC) offers a range of appliances specific to the needs of each child. The appliances have the characteristics to not only address the



Figure 3. The use of a pacifier beyond the age of three is considered a prolonged non-nutritive sucking habit (PNNSh) and has been shown to restrict growth.

poor malocclusion and growth, but to strengthen the entire oral pharyngeal complex. The appliances guide the mandible into its ideal position while encouraging the tongue to remain in its correct tongue resting position. This effect will begin to establish an airway and as the airway is gaining patency, the patient will build lip strength and competency to promote nasal breathing.

The traditional approach of waiting until the child is older and the adult teeth have completely erupted is antiquated. As soon as the issues are recognised, treatment may be initiated. In addition to the appliances available to address the causes of a PNNSh, MRC has myofunctional activities that focus on breathing, tongue posture, tongue strength and tone as well as correct swallowing and lip strength.

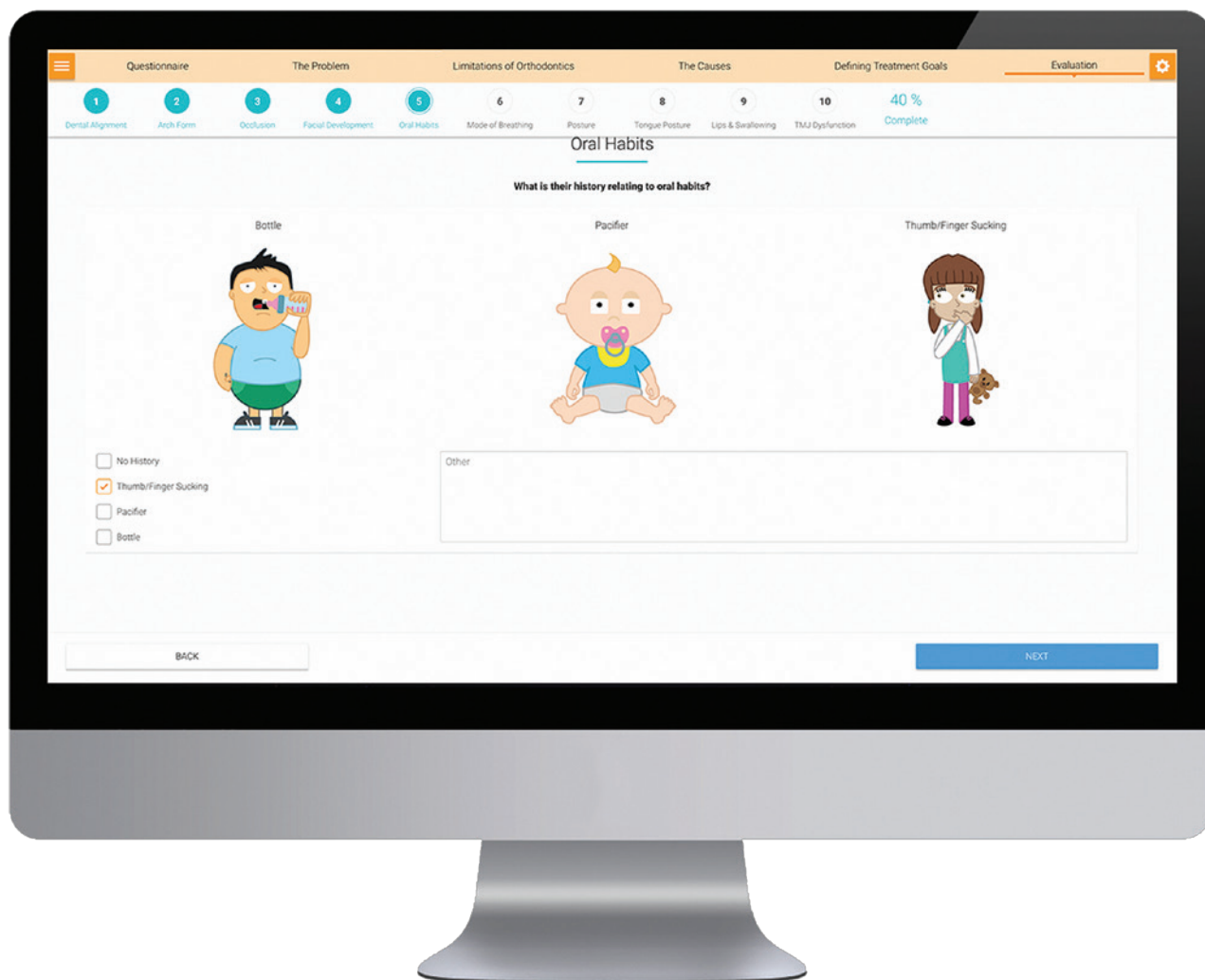


Figure 4. The Myobrace® Patient Consultation app allows practitioners to screen patients for prolonged non-nutritive sucking habits (PNNSHs) such as thumb/finger sucking.

About the author

As MRC celebrates 30 years of addressing poor myofunctional habits and respecting the importance of a healthy airway in our treatment modality, we continue to bring innovation to our treatment plans. In addition to appliances and activities, we have provided an educational platform to assist our treatment protocols. Digital technology plays a large role for patient education and compliance. By using our treatment systems to provide comprehensive treatment which addresses the root cause of a PNNSH, children will have a tremendous opportunity to grow to their full and rightful genetic potential.

Kelly Baker currently serves as Myofunctional Research Company's lead US Educator. She began her career as a chairside dental assistant in high school and went on to obtain qualifications as a Registered Dental Hygienist and an Orofacial Myofunctional Therapist. After 19 years practicing as a RDH and OMT, she took up an educator role with Myofunctional Research Company where she has been able to express her passion and belief for myofunctional therapy.

References

- Butler, R., Moore, M., Mindell, J. (2016). Pacifier Use, Finger Sucking, and Infant Sleep. *Behavior Sleep Medicine* 14:615-623.
- Berwig, L., Montenegro, M., Ritzel III, R., da Silva IV, A., Correa V, E., Mezzomo IV, C. (2011). Influence of the respiratory mode and non-nutritive sucking habits in the palate dimensions. *Brazilian Journal of Oral Sciences* Vol. 10 No. 1. 3.
- Festila, D., Ghergie, M., Muntean, A., Matiz, D., Serbanescu, A. (2014). Suckling and non-nutritive sucking habit: what we should know. *Clujul Med* Vol.87: 11-14.
- Sexton, S., Natale, R. (2009). Risks and Benefits of Pacifiers. *Am Fam Physician*. April, Vol.15: 681-685.
- Hauck, F., Omojokun, O., Siadaty, M. (2005). Do Pacifiers Reduce the Risk of Sudden Infant Death Syndrome? A Meta-analysis. *Pediatrics* Vol. 116 No. 5: 716-723.
- Bittencourt, M., Machado, A. (2010). An overview of the prevalence of malocclusion in 6 to 10-year-old children in Brazil. *Dental Press J Orthod*. Nov/Dec 2010;15(6).
- Rebeka, G., Kang, D. (2001). Prevalence of malocclusion among Latino adolescents. *Am J Orthod Dentofacial Orthop*. Mar 2001;119(3):313-315.
- Ciuffolo, F., Manzoli, L., D'Attilio, M., Tecco, S., Muratore, F., Festa, F., Romano, F. (2005). Prevalence and distribution by gender of occlusal characteristics in a sample of Italian secondary school students: a cross-sectional study. *European Journal of Orthodontics*, Volume 27, Issue 6, December 2005, Pages 601-606.