How early sucking impacts on later speech development

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Infant sucking is described as the process whereby milk is extracted from the nipple and breast, by compression of the nipple against the palate, by rhythmical movements of the surface of the tongue (Woolridge, 1986). Sucking is a very important milestone for a baby and develops as early as the twentieth week of pregnancy. This is true as one is able to see an infant already sucking and drinking embryonic fluid in the womb. Sucking plays a very important role in the development of feeding, improved alertness (organised behaviour) and the development of speech and language (De Jager, 2011; Engebretson, 1996 in Lubbe, 2012).

Reasons for sucking

An infant however cannot engage solely in sucking in order to attend to their nutritional needs. A very important pattern of events is necessary for a baby to successfully suck and gain nutritional intake, this pattern is referred to as the Suck-Swallow-Breath (SSB) Synchrony. This pattern implies that the baby controls the speed of drinking by interrupting the sucking-swallowing cycle with brief periods of rest (van der Walt, 2005). During these periods of rest, the baby engages in eye contact with his mom and in vocalization. These skills are very important pre-cursors for the development of communication and social skills. This is also the earliest synchronized activity of the human being and is essential for the development of other synchronized activities (van der Walt, 2005).

Sucking can be divided into nutritive sucking (i.e. where nutrition is obtained) and non-nutritive sucking (where no feeding is possible, i.e. sucking a dummy) (Cichero & Murdoch, 2006). Non-nutritive sucking is often necessary if an infant is born preterm and is unable to breastfeed or bottle feed successfully as their sucking reflex may not yet be established. This is vital to ensure that their sucking reflexes are preserved and strengthened, so that nutritive feeding can follow (Lubbe, 2012). Besides using a dummy or mom’s breast as a source of non-nutritive feeding, babies can also suck on their thumbs or on a finger. Often the sucking of preterm babies may also be very weak, leading to a lack of rhythm and ultimately difficulties controlling the SSB synchrony leading to feeding difficulties, e.g. choking (Lubbe, 2012). In order to stimulate a non-nutritive suck a gloved finger can be used to stimulate the tongue, by stroking the tongue from front to back (van der Walt, 2005).

Sucking & language development

Stimulating the sucking reflex of a baby is not only important for nutritional needs but also for the development of the speech sound production. A strong parallel exists between the development of feeding skills and the development of speech sounds (De Jager, 2011; Morris, 1996). Early feeding skills are of course related to sucking. An example of this can be seen in the oral movements needed for sucking from a bottle or nipple. The cheeks are pulled inward and tightened and milk is moved towards the back of the tongue to initiate a swallow. A very similar pattern is required for the development of fricative sounds (e.g. the “sh”, “th”, “f” sounds, etc.). In order to produce these sounds the cheeks need to be tightened and pulled inward to allow the airflow to move forward and to prevent it from escaping from the sides of the lips (Evans Morris, 1996). Similarly, the pressure that is built up in the mouth needed when sucking is also dependant on a good lip seal around the bottle or nipple. This is a pre-cursor for the development of the intra-oral pressure and lip seal required for plosive sounds (e.g. the “m”, “p”, “b” sounds). The ability of the tongue to compress a teat, leads to the development of tongue strength. Tongue strength is required to lift the tongue for sounds like “l” and “r” (Cichero, J.) It is interesting that babies do not usually develop the movements in their sound play before they appear in feeding, e.g. generally the movements for babbling appear roughly around the same age as they are being achieved in feeding (Evans Morris, 1996).
These similarities however do not prove that feeding skills are a pre-cursor to talking, if this where so, children that were tube-fed as infants would never learn to speak (Evans Morris, 1996). Feeding does however play an important role. Because children with difficulties in terms of oral control during feeding (e.g. lip retraction), may have the same oral difficulties when talking (e.g. lip retraction which may cause difficulties producing bilabial / labial sounds, i.e. “m”, “b”, “f”, etc.). (Evans Morris, 1996).

According to Muzino, and Ueda (2005), neonates (35 weeks - 42 weeks) with a low sucking pressure and an inability to control expression and suction within a couple of weeks of birth, tend to have speech-language delays at 18 months of age (Barlow & Poore, 2009.). While early problems with feeding in extremely low-weight pre-term babies have also been found to lead to significant delays in the emergence of speech and language production (Adams-Chapman, 2006; Ballantyne, Frisk & Green, 2006 in Barlow & Poore, 2009.) “Suck, feed and speech-language production areas are encoded and modified by overlapping networks of cortical, sub-cortical and brainstem regions” in the brain (Barlow & Poore, 2009.)

Shelley et al. (1990) also provided a compelling argument that’s states that successful feeding and swallowing is a predictor for normal communication (Cichero & Murdoch, 2006). They state that normal feeding and speech depend on a variety of common factors, e.g. rhythm, breath control, lip tone, finely co-ordinated tongue movements, speed of muscle movements and well-developed sensory feedback systems. In swallowing, the muscles of the lips tongue and cheeks need to be co-ordinated. If they fail to do so, it is predictable that difficulties with speech may follow as the same muscles and co-ordination used for swallowing are also required for speech development (Cichero & Murdoch, 2006).

**BabyGym and sucking/ language development**

De Jager, M (2010) has also linked the importance of developing an awareness of the mouth to the development of the muscles needed for speech, or more specifically, for word formation and later communication. In her book, BabyGym, she describes ways in which a baby’s sucking reflex can be stimulated and in so doing, promoting awareness of the mouth and muscles needed to sucking. These activities include: simulating contractions on the crown of the head, by rhythmically applying and re-applying pressure. This is especially important for infants born via Caesarean section. Applying firm pressure to the palm of the infants hand during feeding, using your thumb, will also simulate sucking.

By massaging the infants chin and belly-button simultaneously, you encourage the transition from being fed to feeding as you are linking your original source of nourishment in the womb, i.e. the umbilical cord, to the current source, i.e. the mouth. Another simple, but important way of stimulating the sucking reflex according to de Jager, (2010), is to gently draw the outline of the lips of the infant with a finger and then also to outline the inside of the mouth as this helps to close the infants lips and promotes sucking. Ultimately these activities will allow for an improved sucking reflex which will in turn develop the muscles of the mouth also needed for speech.

It is therefore important to address issues related to sucking or swallowing in infants and pre-term infants as the later effects may be more detrimental than realised previously. Mothers struggling to overcome breastfeeding issues, e.g. low milk supply, difficulties latching, breast refusal, etc or similarly mom’s struggling to bottle feed their babies due to a poor latch or suck, may see improvement in their babies oral skills by addressing these difficulties with a therapist (Bias, C.L. et al., 2007) or BabyGym Instructor. Treatment strengthens the muscles of the jaw, tongue, cheeks, lips and co-ordinates the swallow mechanism for safe and effective feeding. Later in a child’s development oral motor skills form the foundation for a child to eat solids, drink from a cup and as shown in this article, to produce intelligible (understandable) speech sounds (Bias, C.L. et. al., 2007.), which ultimately leads to improved communication abilities and social relationships.


Lubbe, L., (2012). *Choosing a pacifier to improve normal development. www.littlesteps.co.za*


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Clinical notes derived from the following primary texts:


