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Infant Oral Health: A Comprehensive Review

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Abstract:
Infant oral health is a critical component of overall health and well-being. Early preventive dental care, parental education, and timely interventions are key factors in ensuring optimal oral development and the prevention of diseases such as early childhood caries (ECC). This review highlights the importance of infant oral health, risk factors affecting dental development, preventive strategies, and the role of paediatric dental professionals in establishing a dental home during infancy.
Key Words: *Infant, Oral Health*

I. Introduction:

Infant oral health refers to the maintenance and promotion of oral well-being in children from birth to 12 months of age. It encompasses the prevention of oral diseases, establishment of healthy oral habits, and early identification of anomalies in oral and craniofacial development. The foundation of lifelong oral hygiene begins during infancy, making this period critical for dental health promotion.

Good oral health is an integral component of good health. Good oral health includes more than just having healthy teeth; many children have inadequate oral and general health because of active and uncontrolled dental caries.[1] The importance of childhood period for oral health cannot be overemphasized if we say that conditions such as cleft lip, cleft palate, disturbances in calcification, unusual number of teeth, oral habits, caries and development of malocclusions start during these years. Oral diseases especially dental caries is complicated, multi-factorial, transmissible, infectious disease and it often begins to develop during infancy. It is 5 times more common than asthma and 7 times more common than hay fever in children.[2,3]

The lack of parent education in the prenatal period and the neglect of oral health care in infancy can have far reaching sequelae as during this period the foundation of the permanent teeth and a sound oral health to last for lifetime is laid down.

Thus, the preventive process must begin early in infancy i.e. during the infant's first year—to ensure a successful outcome[4]. The purpose of an infant oral health program is to improve access to care, to provide counselling and anticipatory guidance for children aged 6 months to 5 years[3].

This will help to provide infants and toddlers with a pleasant, non-threatening introduction to dentistry and to establish and reinforce the foundation of sound dental habits[4].

Importance of Infant Oral Health [5,6]

Proper oral care during infancy helps in:

- Preventing **early childhood caries (ECC)**
- Promoting healthy development of **primary dentition**
- Establishing appropriate **feeding and oral hygiene practices**
- Ensuring **normal speech, mastication, and esthetics**
- Preventing **malocclusion and other developmental anomalies**

- Establish a Dental Home for Health or Harm
- Impart Optimal Fluoride Protection Disrupt the acquisition of harmful microflora

Infant Oral Examination Procedure [7,8]:

Infant oral examination is conducted in the dental operatory, where there is adequate light for a visual examination. It may be convenient to conduct the examination in the private consultation room during the initial meeting with the child and the parents. The examination procedures include direct observation and digital palpation. The parents should be informed before the examination that it will be necessary to gently restrain the child and that it is normal for the child to cry during the procedure. The infant is held on the lap of a parent, usually the mother. This direct involvement of the parent provides emotional support to the child and allows the parent to help restrain the child. Both parents may participate or at least be present during the examination. The dentist should get acquainted with the infant. The dentist's voice should remain unstrained and pleasant during the examination. The dentist's behavior should reassure the child and alleviate the parents' anxiety concerning this first dental procedure.[8]

One method of performing the examination is the dentist and the parent is seated face to face with their knees touching. Their upper legs form the "examination table" for the child. The child's legs straddle the parent's body, which allows the parent to restrain the child's legs and hands. An assistant is present to record the dentist's examination findings as they are dictated and to help restrain the child if needed (Fig A).

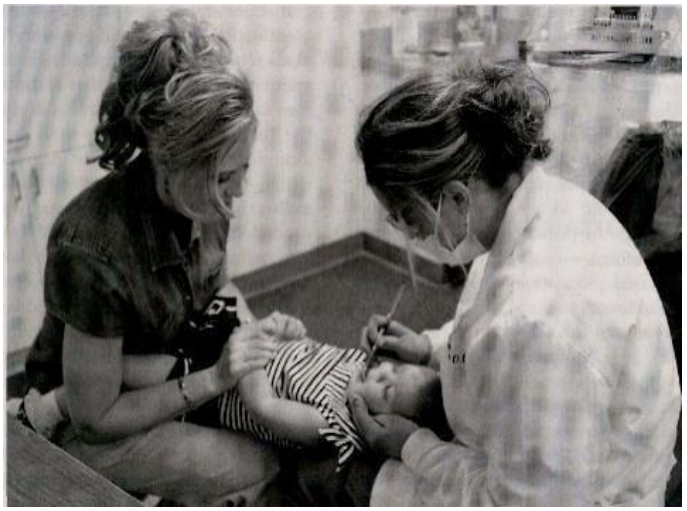

Fig A

Risk Factors Affecting Infant Oral Health[9]

Several factors contribute to poor oral health in infants, including:

- **Feeding practices**: Bottle-feeding at bedtime and prolonged breastfeeding can increase caries risk.
- **Oral hygiene neglect**: Lack of cleaning after feeding can promote bacterial colonization.
- **Parental knowledge**: Limited awareness of oral health practices and misconceptions.
- **Dietary habits**: Early exposure to sugary foods and drinks.
- **Fluoride exposure**: Inadequate or excessive fluoride can lead to caries or fluorosis.
- **Socioeconomic status**: Lower income and education levels are associated with higher risk of ECC.

There have been several risk assessment tools developed by various institutions across the globe to help in infant oral health care. Some of these risk assessment tools are as follows[10, 11]:

1. Caries Assessment Tool (CAT)
2. Risk-Assessment Checklist
3. Oral Health Risk Assessment Tool
4. Caries Management by Risk Assessment (CAMBRA)

Common conditions/Diseases of Infant Oral Health:

- **Teething:** Often associated with irritability, drooling, and sleep disturbances; not typically linked to fever or diarrhea[12].
- **Natal and Neonatal Teeth**: Present at or shortly after birth, these may interfere with feeding or pose aspiration risks[13].
- **Oral Thrush:** A fungal infection common in infants due to immature immune systems.
- **Tongue-tie (Ankyloglossia):** May interfere with breastfeeding and speech; managed based on severity.
- **Early Childhood Caries (ECC)**

ECC is a highly prevalent, transmissible bacterial disease that affects primary teeth in infants and toddlers. Key characteristics include[14, 15]:

- Rapid progression
- Association with feeding practices
- Often begins with demineralization of upper anterior teeth

Etiology: Streptococcus mutans transmitted from caregiver to infant, often via salivary contact.
Prevention:

- Avoid bottle feeding during sleep
- Initiate weaning at the appropriate time
- Promote use of cups by 12 months
- Maintain oral hygiene from birth
- Fluoride varnish application in high-risk children

Timeline for Infant Oral Care

Age	Recommended Action
Birth to 6 months	Clean gums with moist gauze; educate parents
6 to 12 months	Eruption of first teeth; start brushing with soft brush
By 12 months	First dental visit; assess risk of caries
12+ months	Regular dental visits every 6 months

Preventive Strategies[16]:

1. Parental Education

Educating parents about the importance of oral hygiene, dietary habits, and early dental visits is crucial. Topics should include:

- Cleaning the infant's gums with a soft cloth before tooth eruption
- Brushing with a smear of fluoridated toothpaste as soon as the first tooth appears
- Avoiding the use of sweetened pacifiers or bottles for sleep

2. Fluoride Use

Topical fluoride application and fluoridated toothpaste are proven to reduce caries incidence. Community water fluoridation and professional fluoride varnish applications are key components of preventive care.

3. **Maternal Diet & Nutrition:** A healthy maternal diet during pregnancy is crucial for both the mother's well-being and the baby's development. It should focus on nutrient-rich foods, including fruits, vegetables, whole grains, lean proteins, and healthy fats, while limiting processed foods, sugary snacks, and excessive saturated fats. Adequate calorie and nutrient intake, especially folic acid, iron, calcium, and omega-3 fatty acids, is essential for optimal fetal growth and development, and to prevent complications**.**

4. Dental Home Establishment[17,18,19]

The American Academy of Pediatric Dentistry (AAPD) recommends establishing a "dental home" by the age of one[20]. The concept of a "dental home" promotes continuous and comprehensive oral health care starting no later than 12 months of age. This model supports individualized risk assessment, prevention, and management.
This includes[21]:

- Comprehensive, accessible, and family-centered dental care
- Risk assessment and preventive guidance
- Individualized anticipatory guidance and management
- Emergency care and referrals when needed

Recommendation[22]:

1. Infants should be breast-feed during the first year of life, although ad libitum nocturnal breast-feeding should be discouraged after the first primary tooth erupts.
2. Bottle-feed infants should not be put to sleep with the bottle.
3. Children should be weaned from the breast or the bottle by 12 to 14 months of age.
4. Infants older than 6 months and with exposure to less than 0.3 ppm fluoride in their drinking water need dietary fluoride supplements of 0.25 mg fluoride per day.
5. Parents should be advised to reduce their child's sugar consumption frequency.
6. Infants should be allowed to consume only 4 to 6 oz of fruit juice per day. They should not be given powdered beverages or soda pop, as these drinks pose increased risk for dental caries.
7. Only iron-fortified infant cereals along with breast milk or infant formula should be given to infants who are older than 6 months of age. Cow's milk should be com- pletely avoided in the first year of life and restricted to less than 24 oz per day in the second year of life.
8. Parents should be counseled on the potential of various foods that constitute a choking hazard to infants

II. Conclusion:

Infant oral health is foundational to overall well-being. Preventive care, early risk assessment, and parental involvement are vital for maintaining oral health from infancy. Collaborative efforts between dental professionals, pediatricians, and caregivers are essential to promote healthy oral habits that persist into adulthood.

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