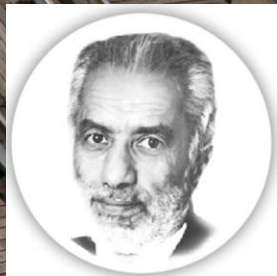


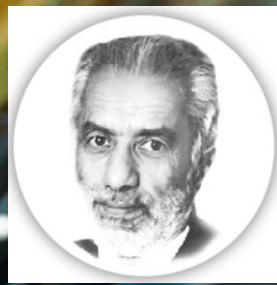
no unification

Separate paths to the health domain with many intersections





Lack of coordination ; train derailment
Disruption of treatment and loss of opportunity for early diagnosis



The combination of colors that are uniquely beautiful creates a work of art



Dr. Pachenari F.
Pedodontist

The patient is a living whole, and the Dento-Medical Approach; which is the synergy of medicine and dentistry, is a new and essential perspective.

- most prevalent infectious disease in children



THE LANCET

This journal Journals Publish Clinical Global health Multimedia Eve



ANNOTATIONS. · Volume 209, Issue 5401, P502-503, March 05, 1927

[Download Full Issue](#)

DENTAL CARIES IN BABIES.

Article Info [^](#)

Publication History: Published March 5, 1927

DOI: [10.1016/S0140-6736\(00\)73330-7](https://doi.org/10.1016/S0140-6736(00)73330-7) [↗](#) Also available on [ScienceDirect](#) [↗](#)

[Cite](#) [Share](#) [Set Alert](#) [Get Rights](#) [Reprints](#)



the American Academy of Pediatric Dentistry (AAPD):

first infant oral health-care policy statement approach (1986)



AMERICA'S PEDIATRIC DENTISTS
THE BIG AUTHORITY on little teeth®

[Find a Dentist](#) [Residency Programs](#) [Store](#) [Join AAPD](#) [Create Account](#)

[About](#) ▼

[Resources](#) ▼

[Education](#) ▼

[Research](#) ▼

About AAPD

The American Academy of Pediatric Dentistry (AAPD) is the recognized authority on children's oral health.

Founded in 1947, the AAPD is a not-for-profit professional membership association representing the specialty of pediatric dentistry. Its nearly 12,000 members provide primary care and comprehensive dental specialty treatments for infants, children, adolescents, and individuals with special health care needs. As advocates for the optimal oral health of all children, the AAPD promotes evidence-based policies, best practices, and clinical guidelines; educates and informs policymakers, parents and guardians, and other health care professionals; supports research; and provides continuing professional education for pediatric dentists and general dentists who treat children.

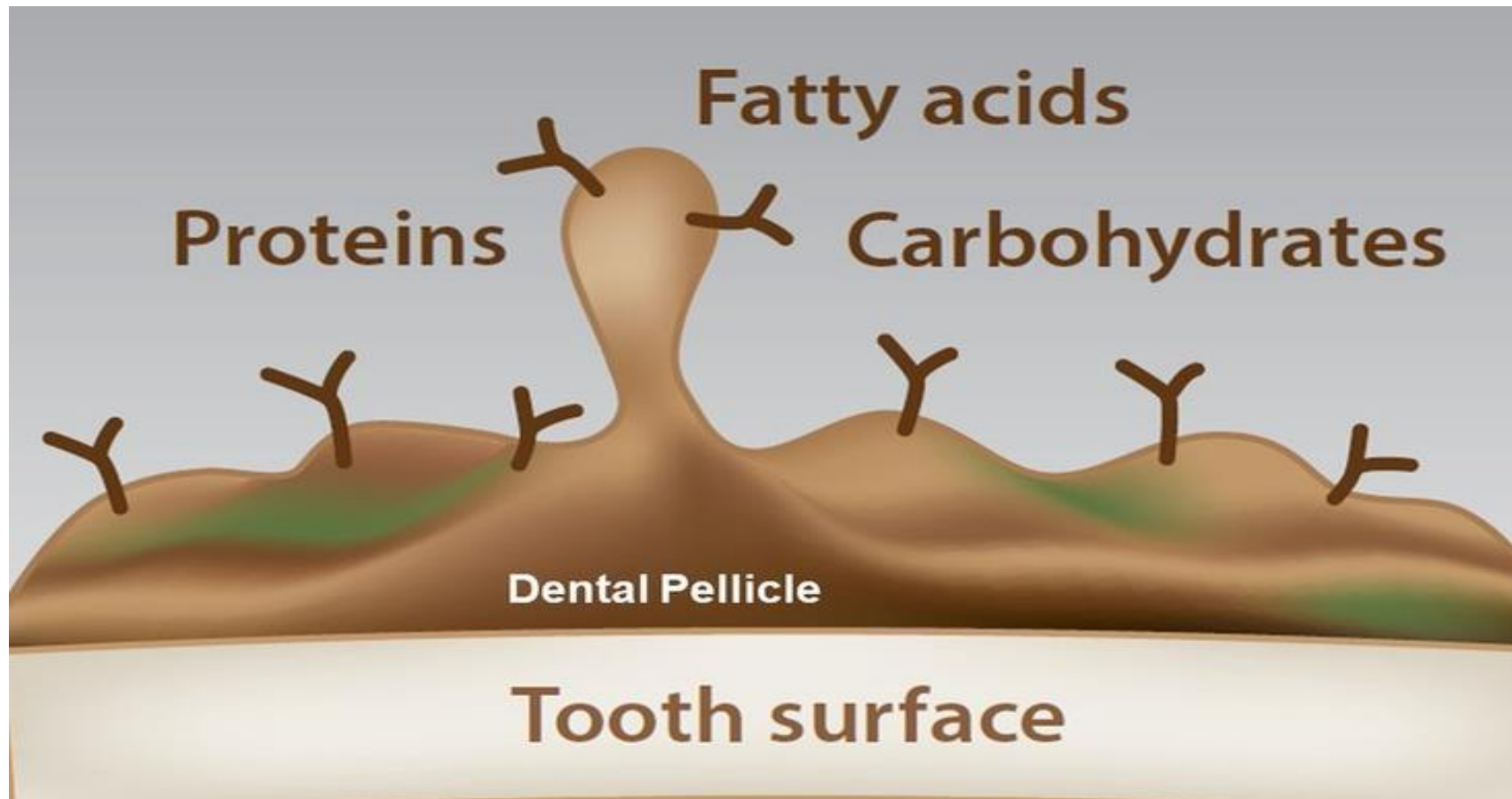


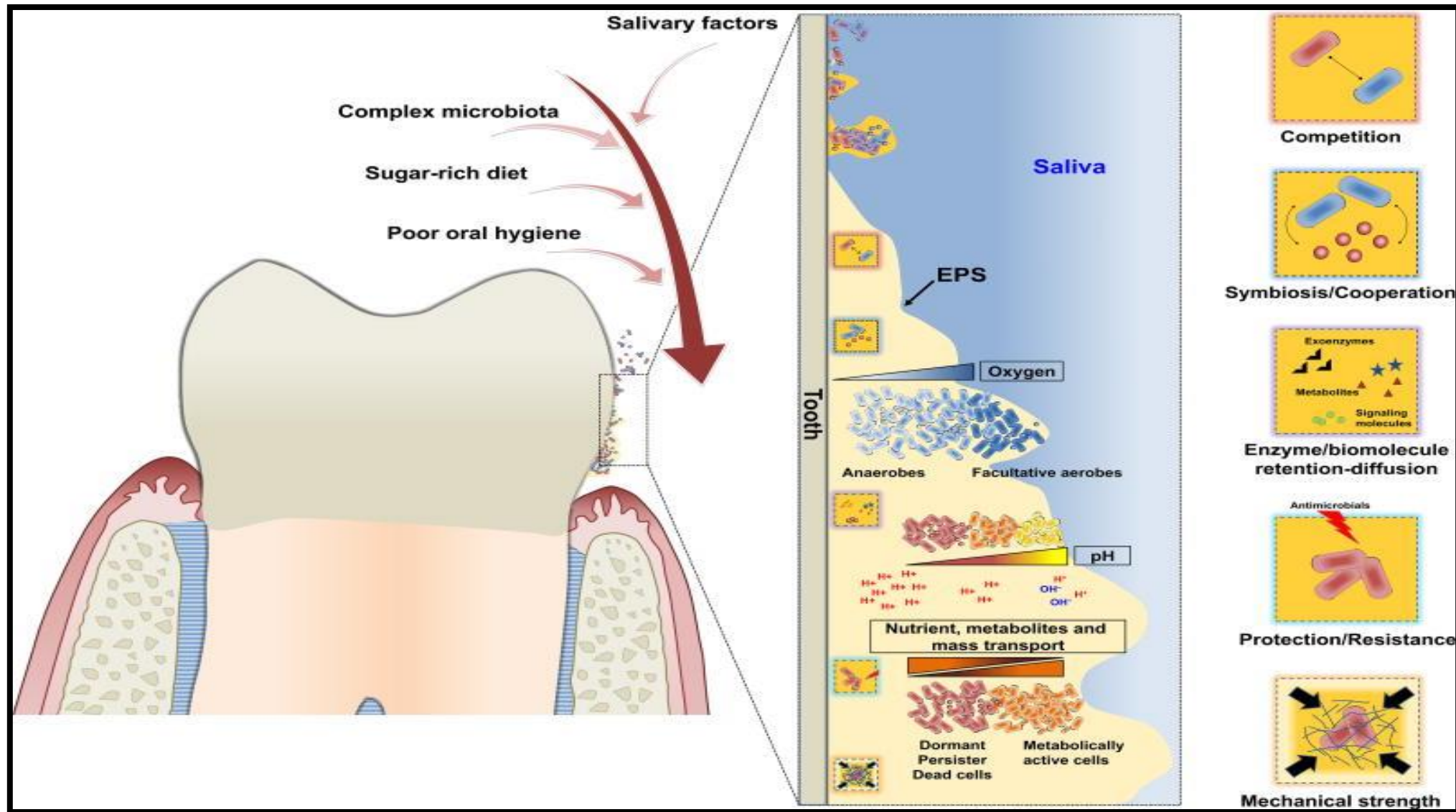
Dental caries

Arumugam Priya, Hari Prasath Nagaiah, Nambiraman Malligarjunan, Shunmugiah Karutha Pandian, Chapter 29 - Oral biofilms: Architecture and control, Editor(s): Surajit Das, Neelam Amit Kungwani, Understanding Microbial Biofilms, Academic Press, 2023, Pages 485-507

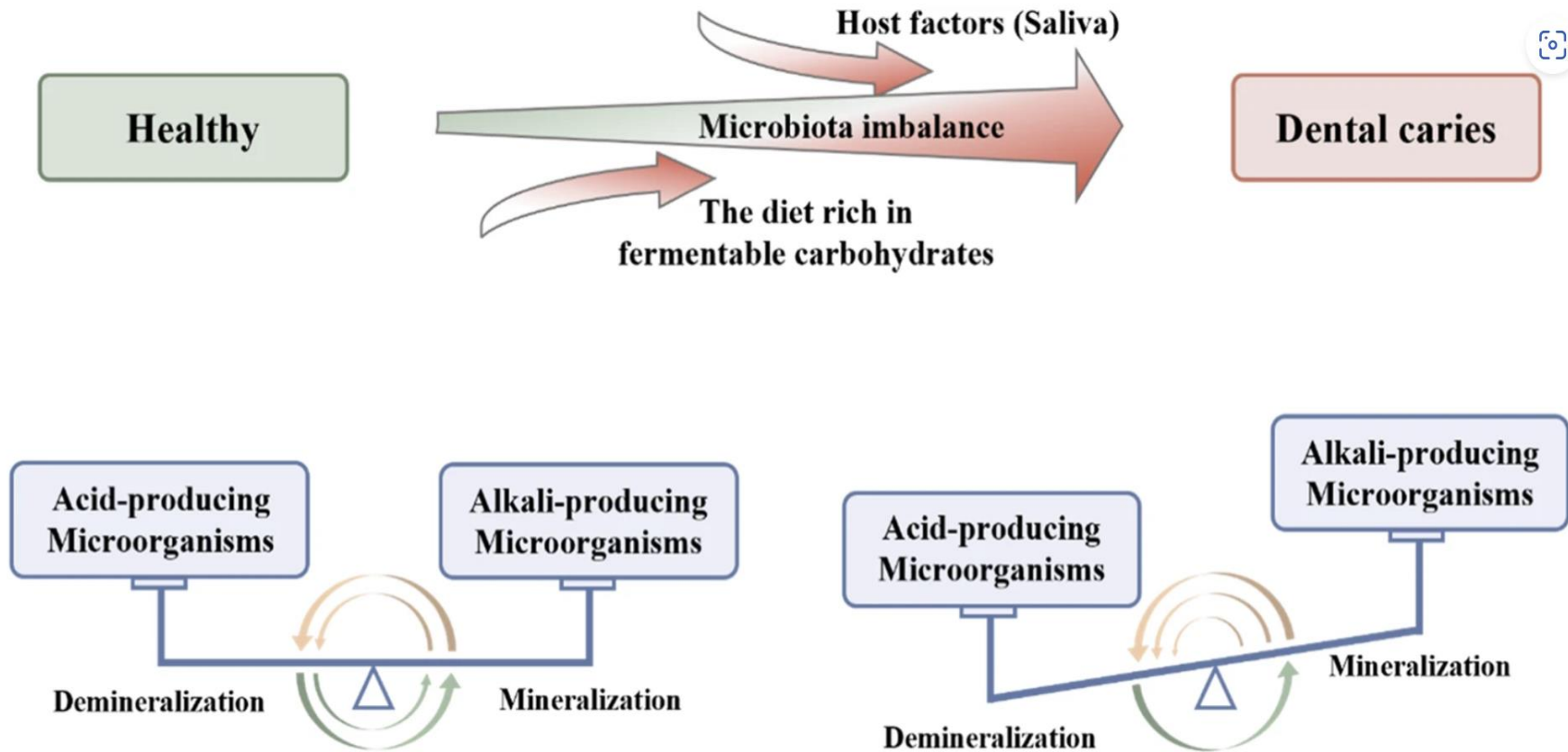
Deo PN, Deshmukh R. Oral microbiome: Unveiling the fundamentals. J Oral Maxillofac Pathol. 2019 Jan-Apr;23(1):122-128.

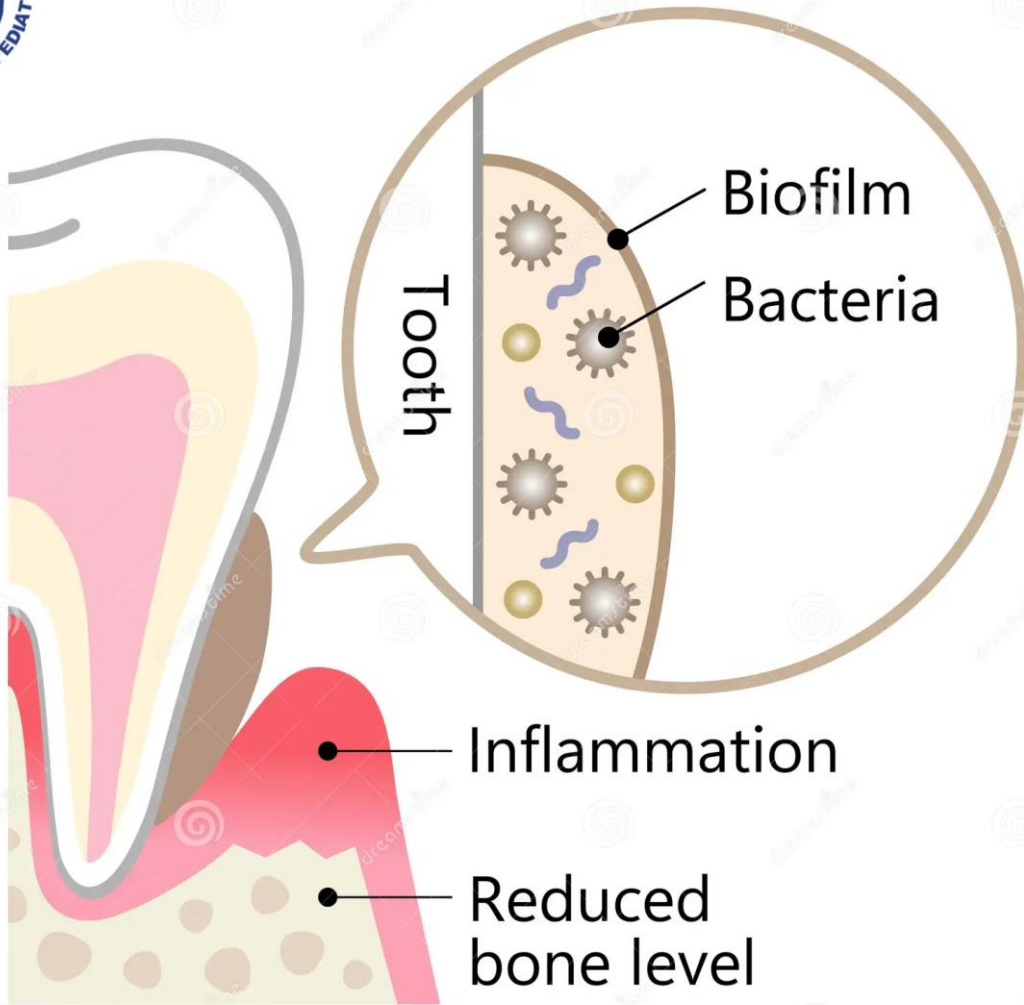
- oral biofilms





- dynamic biological processes/ episodic



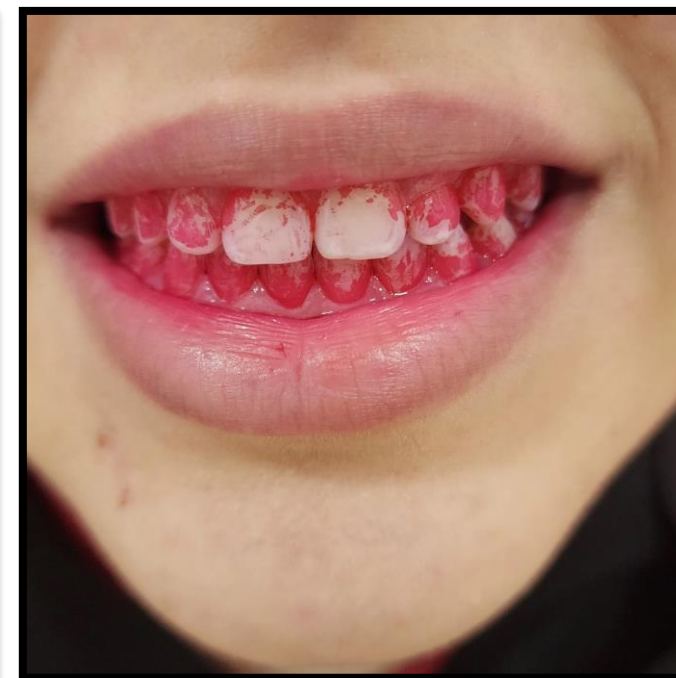


- high **Streptococcus mutans** levels: **five times more** prone to dental caries
- transmission



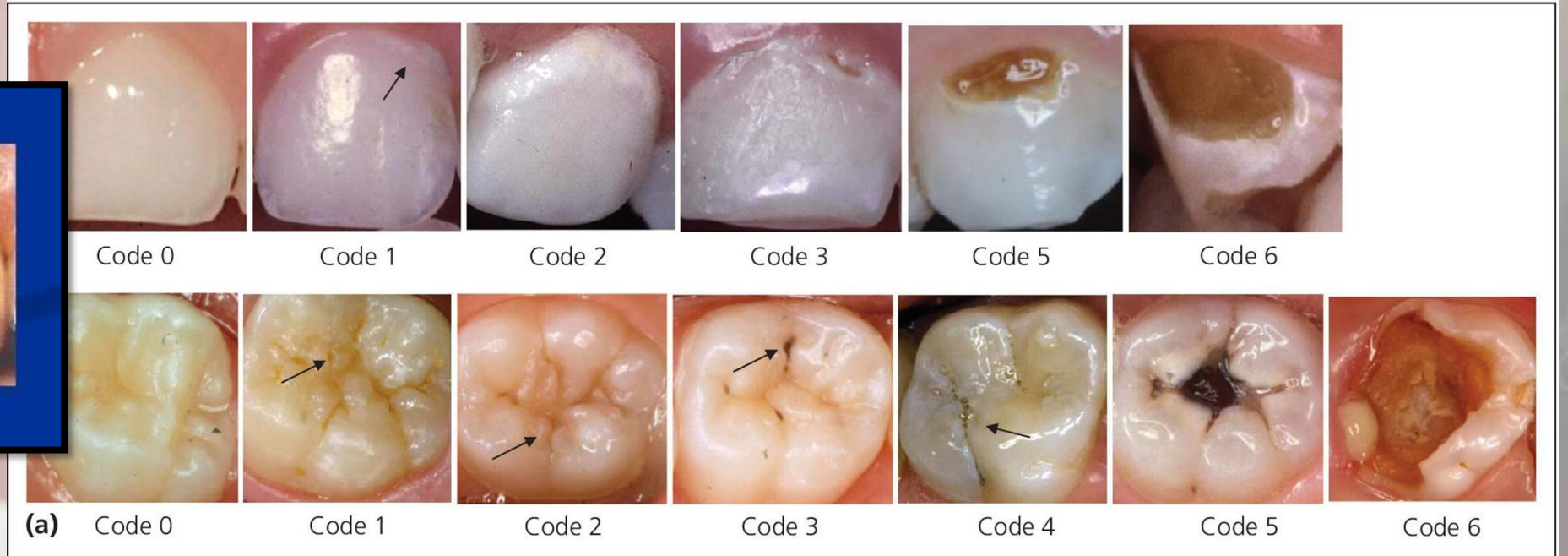
The permanent anterior teeth of an adolescent boy

Disclosing agent



• International Caries Detection and Assessment System (ICDAS)

- Incipient
- Active
- Arrested



EARLY CHILDHOOD CARIES (ECC)

- one or more

In less developed countries : **70%**



کوچکتر از ۶ سال

Diagnosis:

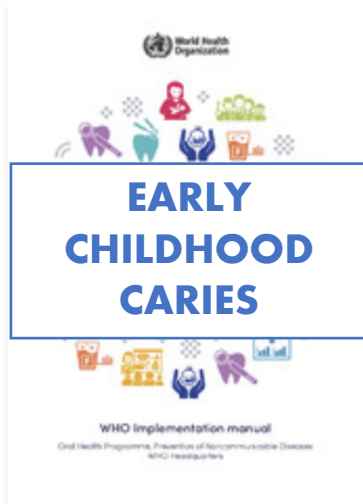
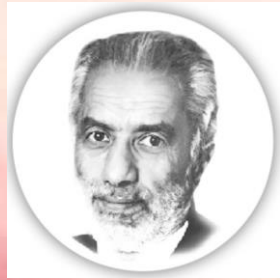


- visual and clinical : **clean and dry**
- **lift the lip:** once a month





World Health Organization



Overview

Early childhood caries (ECC) affects teeth of children aged under six years. According to the Global Burden of Disease Study in 2017, more than 530 million children globally have dental caries of the primary teeth. However, as primary teeth are exfoliated due to growth of the child, ECC has previously not been considered important.

ECC has significant influence on individuals, families and societies. The disease affects primary teeth and permanent teeth and influences general health and quality of life across the entire life course. ECC links with other frequent diseases of childhood, primarily due to risk factors shared with other noncommunicable diseases (NCDs) such as high sugar intake, and the disease relates to other health conditions such as obesity. Dental caries can lead to abscesses and cause toothache, which may compromise ability to eat and sleep and restrict life activity of children. Severe dental caries is associated with poor growth. Moreover, ECC is an economic burden to the family and society; treatment of ECC under general anaesthesia for extensive dental repair is especially costly.

The manual is based on evidence from systematic reviews and WHO recommendations, especially on nutrition, including breastfeeding, and primary care workers' programmes.

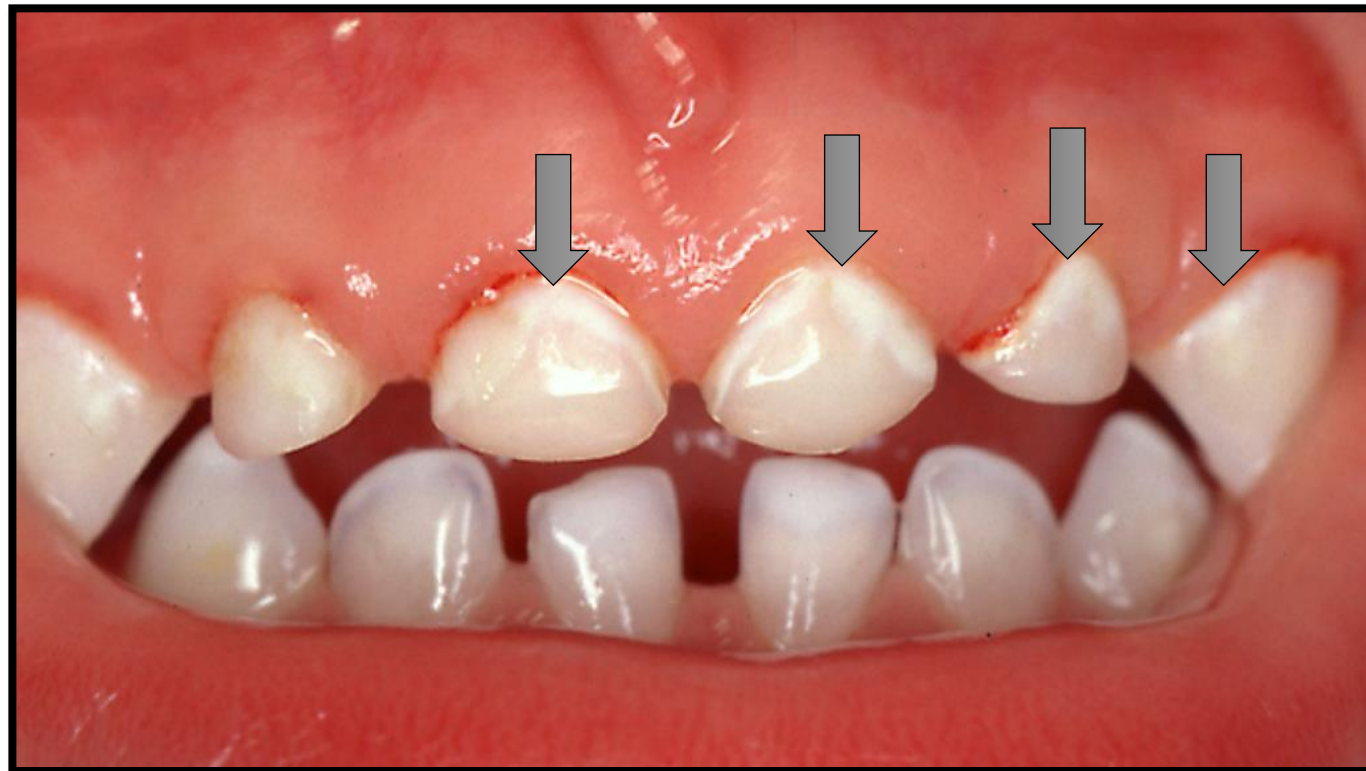
The current manual focus on tackling ECC in its global context defines the disease and outlines known risk factors and approaches to prevention and treatment. It is intended to inform and support:



Mild to moderate ECC

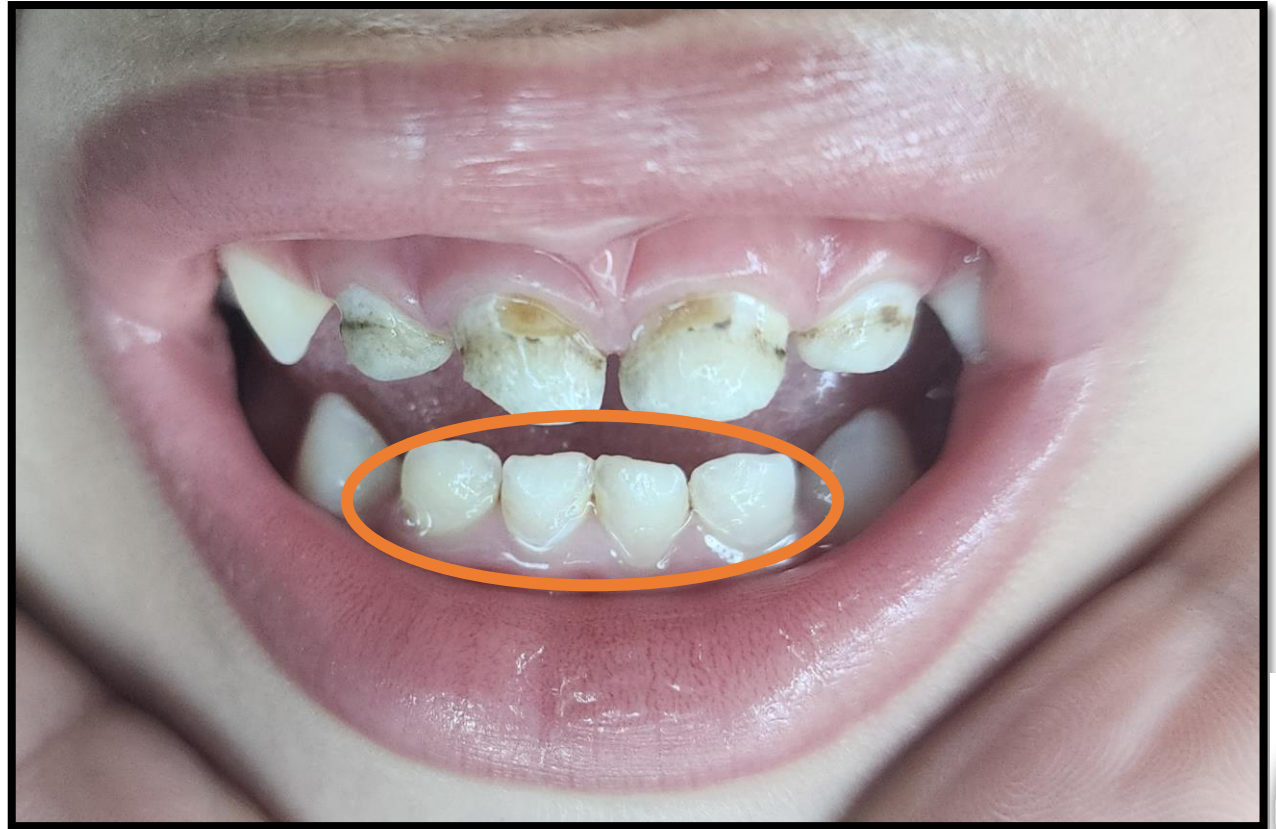


- **White** spot lesion



Moderate to severe ECC

- No mandibular incisors



Severe ECC

- **All** the teeth



Severe early childhood caries (SECC) :

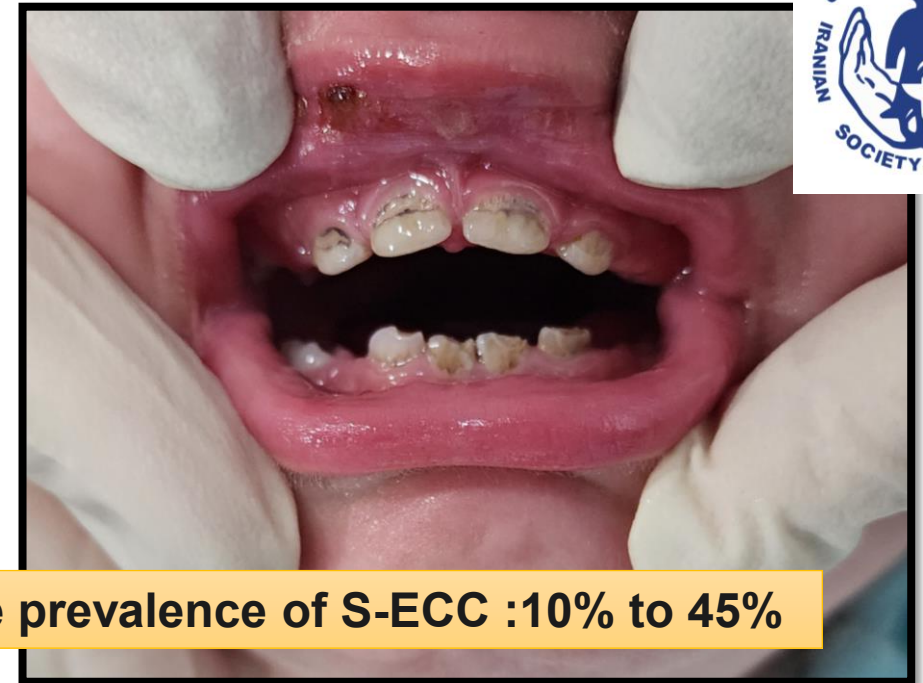


- Any sign/ **the first 3 yrs**

- 'rampant' pattern

- Terminology:

- nursing bottle mouth
- nursing bottle caries
- nursing caries
- rampant caries
- baby bottle caries
- baby bottle tooth decay
- milk bottle syndrome
- prolonged nursing habit caries



In Iran, the prevalence of S-ECC :10% to 45%



Sign and symptom

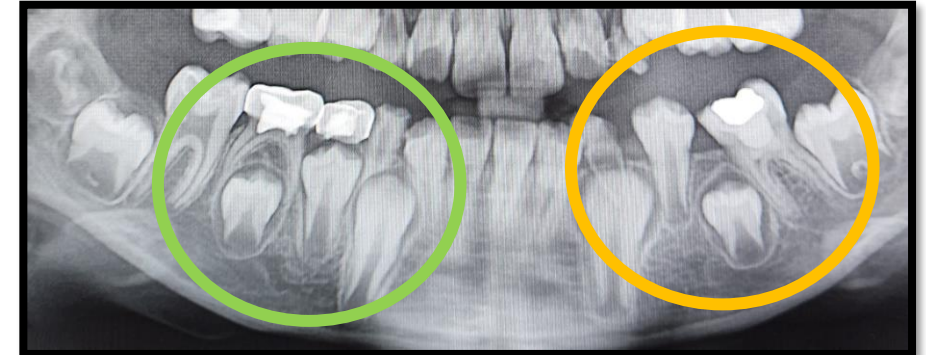
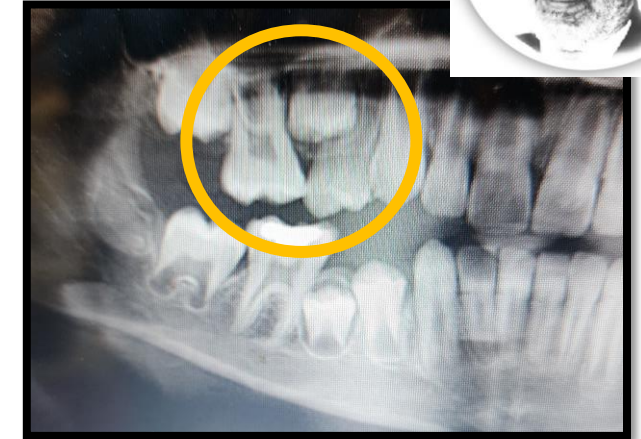
- Toothache(painful sucking: **drink less milk** or refuse feedings)
- baby cranky, **prolonged crying**, difficulty soothing to sleep through the night and **sleep disturbances**
- **Swelling** or abscesses
- **Fever**



Long-term effects



- **Hypoplastic** permanent teeth(turner)
- premature loss of baby teeth and **crowded** permanent teeth



Long-term effects

- eating
- speech
- cognitive development
- weight and height
- psychological outcomes



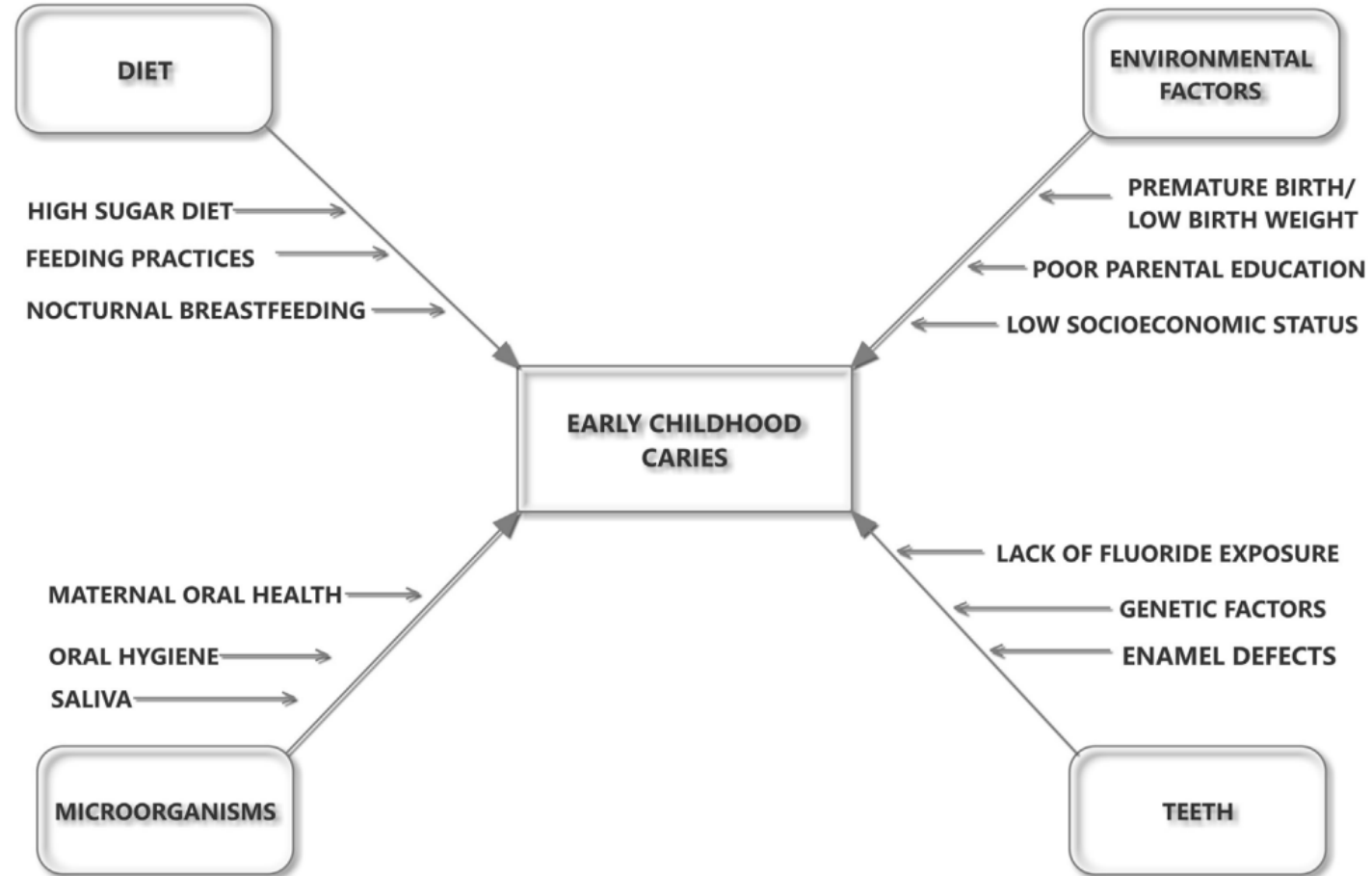
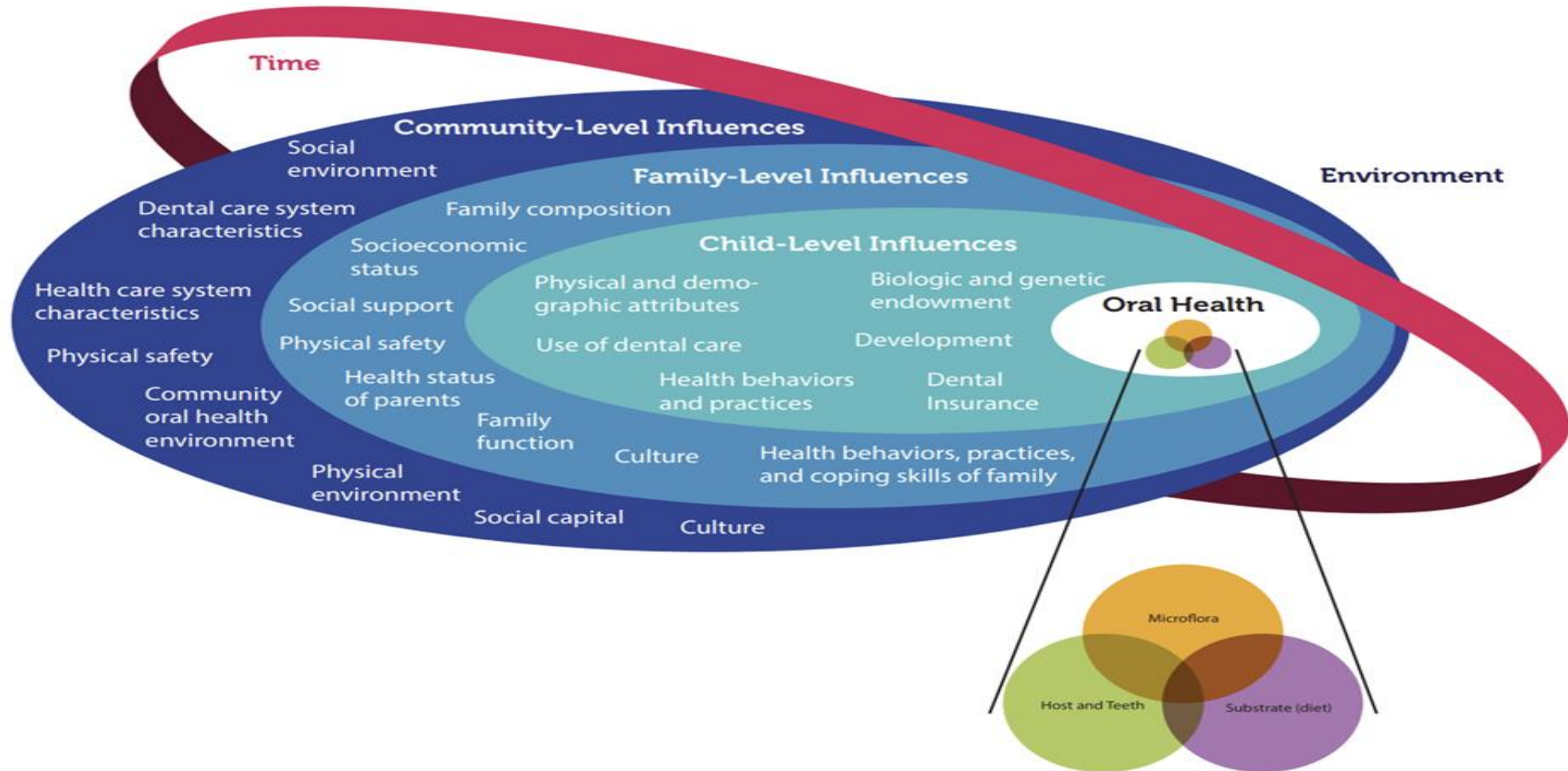


FIGURE 1 | The influence of host–microbe–diet interactions in the etiology and pathogenesis of early childhood caries.

Figure 2 Concept of childhood caries – child, family and community influences on oral health outcomes of children

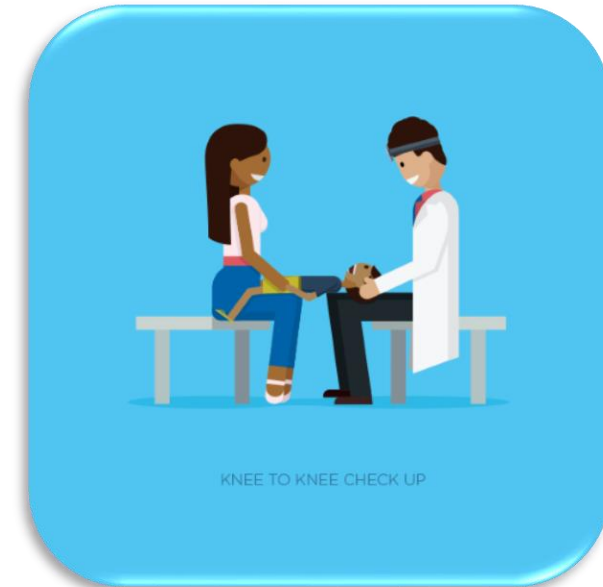


Source: adapted from Fisher-Owens SA, Gansky SA, Platt LJ, Weintraub JA, Soobader MJ, Bramlett MD, Newacheck PW. Influences on children's oral health: a conceptual model. *Pediatrics*. 2007;120:e510–20.

Multi-factorial approach to Primary prevention:

1

- **Education**
- **Assessment and Regular dental visits** & Early screenings:
 - 6 months of first tooth coming



American Academy of Pediatric Dentistry (AAPD). Policy on early childhood caries (ECC): Consequences, and preventive strategies. The reference manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2021. p. 90-93.



Multi-factorial approach to Primary prevention:

2

Dietary control:

- Limiting **sugar** intake
- weaning the **bottle** (Using a **cup as soon as 6 to 12 months**)
- Avoiding Inappropriate **feeding practices**
 - **night-time bottle feeding beyond 12 months**





World Health
Organization



World Health
Organization

Health Topics ▾

Countries ▾

Newsroom ▾

Emergencies ▾



Breastfeeding



Overview

Recommendations

WHO Response

Breastfeeding rate:

US: 80% initiate /**25.8%** by six months
UNICEF : 74% at 12 months

IRAN: 4 and 6 months of age :
58% and **29%**

Olang B, Farivar K, Heidarzadeh A, Strandvik B, Yngve A.
Breastfeeding in Iran: prevalence, duration and current
recommendations. Int Breastfeed J. 2009 Aug 5;4:8. doi:
10.1186/1746-4358-4-8.

Breastfeeding is one of the most effective ways to ensure child health and survival. However, contrary to WHO recommendations, fewer than half of infants under 6 months old are exclusively breastfed.

Breastmilk is the ideal food for infants. It is safe, clean and contains antibodies which help protect against many common childhood illnesses. Breastmilk provides all the energy and nutrients that the infant needs for the first months of life, and it continues to provide up to half or more of a child's nutritional needs during the second half of the first year, and up to one third during the second year of life.

Breastfed children perform better on intelligence tests, are less likely to be overweight or obese and less prone to diabetes later in life. Women who breastfeed also have a reduced risk of breast and ovarian cancers.



Updated AAP guidance recommends longer breastfeeding due to benefits

- **exclusive** :six months
- **complementary** foods
- **until two years**



ACADEMY OF
**Breastfeeding
Medicine**

Member Login

Since in 1995

HOME

ABOUT

JOIN

SUPPORT ABM

MEMBERS

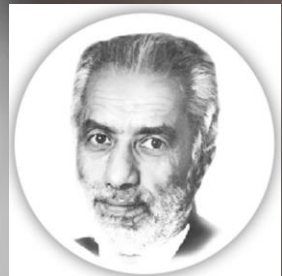
MYABM

EVENTS

RESOURCES

WELCOME TO THE ACADEMY OF BREASTFEEDING MEDICINE

A Worldwide Organization Of Medical Doctors Dedicated To Educating And Empowering Health Professionals To Support And Manage Breastfeeding, Lactation, And Human Milk Feeding



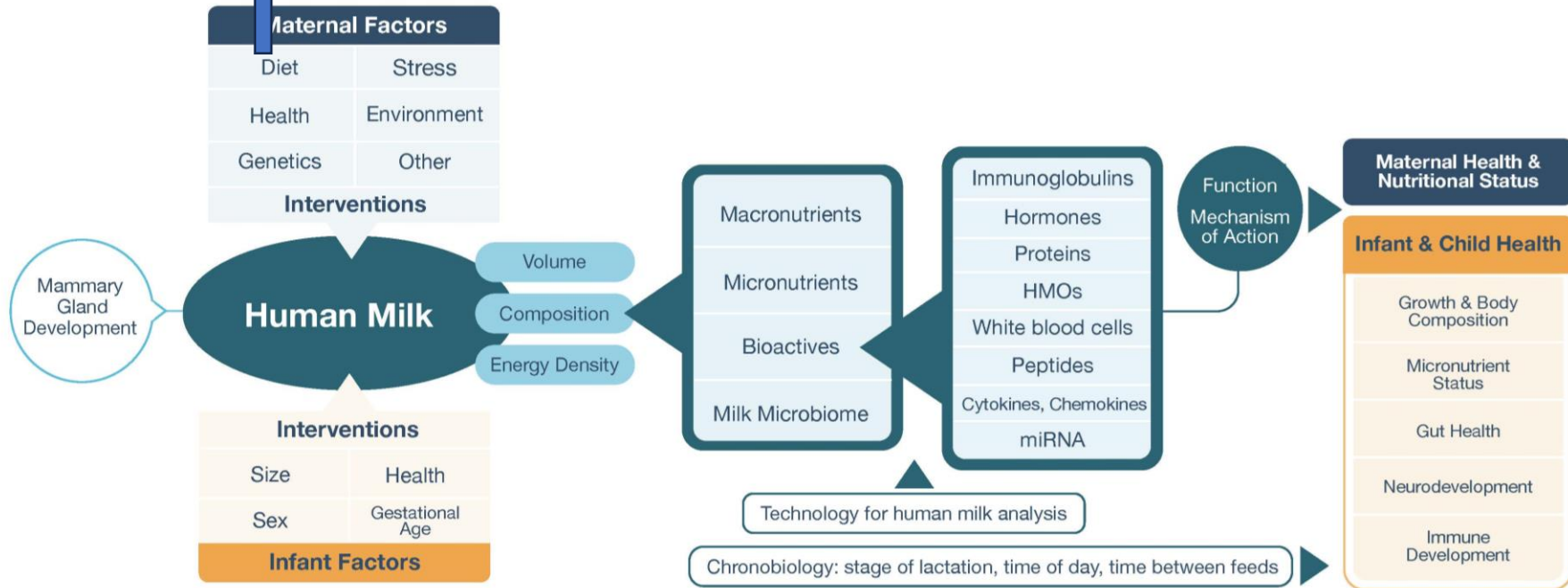
What exactly is Breast Milk?

Human milk

- hypothesize: **tailor-made** by each mother
- highly complex, and dynamic biological fluid
- inter- and intra-individual variability (**plasticity** of composition ,...)
 - **maternal intervention to optimize milk composition for specific needs of infants**

a high-fructose source: increased concentrations of fructose in HM, which stayed elevated for 5 h (No such effects for glucose or lactose)

Human milk is a complex biological system with many components and functions. Despite its importance, there is still a lot we don't know about it. A deeper understanding of human milk biology is essential for addressing ongoing and emerging questions about infant feeding practices.



- Samuel TM, Zhou Q, Giuffrida F, Munblit D, Verhasselt V, Thakkar SK. Nutritional and Non-nutritional Composition of Human Milk Is Modulated by Maternal, Infant, and Methodological Factors. Front Nutr. 2020 Sep 16;7:576133. doi: 10.3389/fnut.2020.576133. PMID: 33117843; PMCID: PMC7557356.
- Parul Christian, Emily R Smith, Sun Eun Lee, Ashley J Vargas, Andrew A Bremer, Daniel J Raiten, The need to study human milk as a biological system, The American Journal of Clinical Nutrition, Volume 113, Issue 5, May 2021, Pages 1063–1072, <https://doi.org/10.1093/ajcn/nqab075>

The positive effect of breastfeeding for at least 6 months:

- **Growth and development**
 - **Neuro cognitive development**
 - **Socio emotional** development
 - LC-PUFAs contained
 - Oxytocin contained
- Natural antibodies/Antifungal effect
- Constipation & flatulence
- Breast cancer
- Mother's weight

Importance of Nighttime Breastfeeding:

- tiny tummies/**enough feeding**
- Babies' circadian rhythms and **sleep**:
tryptophan to make melatonin
- Lactational **Amenorrhea** Method
- protective against SIDS



Breastfeeding Characteristics :

- Duration
 - volume
 - frequency
 - Timing(during sleep)
-
- non-responsive to hunger: overfeeding
 - to sleep
 - to settle behavior
 - Feeding/sucking

Cheng H, John J, Scott J, Denney-Wilson E, Do L, Bhole S, Baur L, Arora A. Bottle feeding to sleep beyond 12 months is associated with higher risk of tooth decay and overweight in Australian children: Findings from the Healthy Smiles Healthy Kids cohort study. Aust N Z J Public Health. 2025 Apr;49(2):100224.

Breastfeeding schedule:

- 8–12 times per day
- 30-150 mls
- cluster feeding

Breastfeeding Frequency by Age

Age	Daytime	Nighttime
1 Week	Every 1-3 hours (wake if sleeping longer than 3 hours)	Every 1-3 hours (wake if sleeping longer than 3 hours)
Newborn to 3 Months	Every 2 to 3 hours	Every 2 to 3 hours
4 to 5 Months	Every 2 1/2 to 3 hours	5+ hour stretch then every 3 hours
6 to 7 Months	Every 3 to 4 hours	5-8+ hour stretch then every 3 hours
8 to 9 Months	Every 3 to 4 hours	8-10+ hour stretch
10 to 11 Months	Every 3 to 4 hours	8-12 hour stretch
Toddlers	Every 4 hours	None, on average



The cariogenicity and content of breast milk



- Milk: **non-cariogenic**
 - **Lactose**
- Human breast milk : **highest amount** of lactose
- ever to never: a reduced risk of ECC
- **Lancet** : dental caries: **only negative** related to prolonged breastfeeding
 - beyond the age of 12 months (**frequent or nocturnal**)
 - **a seven times greater risk**: longer nocturnal
 - **Prolonged frequent**
- **breastfeeding ≥ 12 months**: significant
- **breastfeeding ≥ 6** compared with ≤ 6 months: not significant
- breastfed for **more than 24 months**: nearly three times the odds of ECC



Zamzam R, Karkoutly M, Bshara N. Effect of various types of milk on salivary pH among children: a pilot randomized controlled crossover trial. *BDJ Open*. 2023 Sep 13;9(1):44.

Poureslami H, Sharifi M, Vahedi M, Sabouri S, Poureslami P, Satarzadeh N, Hatami N, Jafari P. Evaluation of Relationship between Sever Early Childhood Caries and Breast Milk's Lactose among 12- to 24-month-old Children. *J Dent (Shiraz)*. 2022 Sep;23(2 Suppl):410-413.

Victora CG, Bahl R, Barros AJ, França GV, Horton S, Krasevec J, Murch S, Sankar MJ, Walker N, Rollins NC; Lancet Breastfeeding Series Group. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *Lancet*. 2016 Jan 30;387(10017):475-90.

Tham R, Bowatte G, Dharmage SC, Tan DJ, Lau MX, Dai X, Allen KJ, Lodge CJ. Breastfeeding and the risk of dental caries: a systematic review and meta-analysis. *Acta Paediatr*. 2015 Dec;104(467):62-84.

van Meijeren-van Lunteren AW, Voortman T, Elfrink MEC, Wolvius EB, Kragt L. Breastfeeding and Childhood Dental Caries: Results from a Socially Diverse Birth Cohort Study. *Caries Res*. 2021;55(2):153-161.

Lustosa, K., Rodrigues, L.R.S., Rocha, R.M., Prudente, T.P., Mezaiko, E., Silva, F.P.Y. and Silva, B.S.F. (2025), Risk of Early Childhood Dental Caries Associated With Prolonged Breastfeeding: A Systematic Review and Meta-Analysis. *Int J Paediatr Dent*.

Cui L, Li X, Tian Y, Bao J, Wang L, Xu D, Zhao B, Li W. Breastfeeding and early childhood caries: a meta-analysis of observational studies. *Asia Pac J Clin Nutr*. 2017;26(5):867-880.



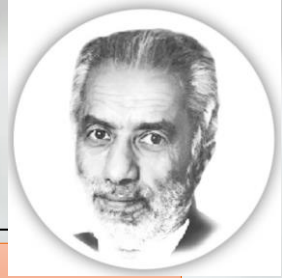
Inappropriate feeding practices:



- prolonged bottle/breast feeding
- Nap/night time feeding
- frequent exposure to sugar
- **Overfeeding**

Nocturnal feeding related to increased caries risk :

- Duration / the content
- the salivary flow: 0.4 ml/min to 0.1 ml/min
-



NEED TO FEEDING OR SUCKING

- **The sensorimotor stage** (Piaget's theory of cognitive development):
2 years
reflex, habits, object permanence
- **Oral stage** (Freudian psychoanalytic theory):
 - 18 months
- **Rooting/ Suck reflex:**
about 4 months



Bulut G, Kilinc G. The impact of infant feeding and oral hygiene habits on early childhood caries: A cross-sectional study. J Pediatr Dent. 2024 Aug;17(8):851-859.

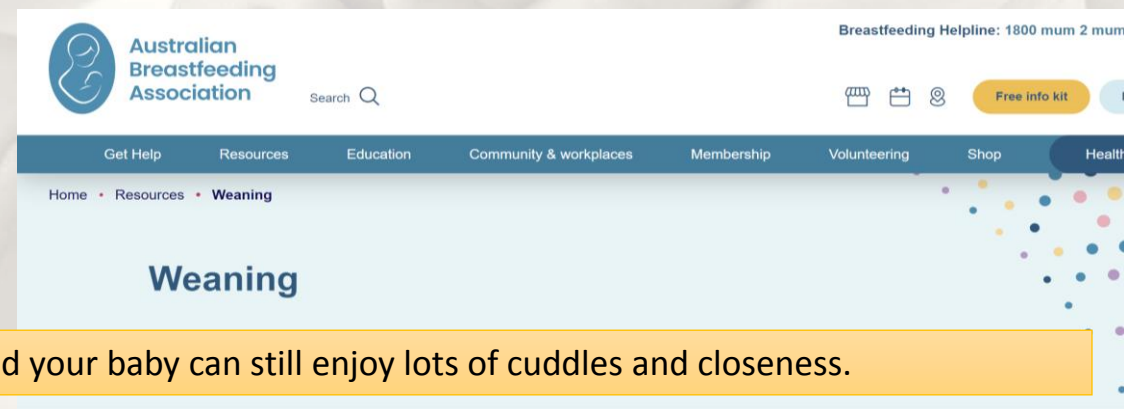
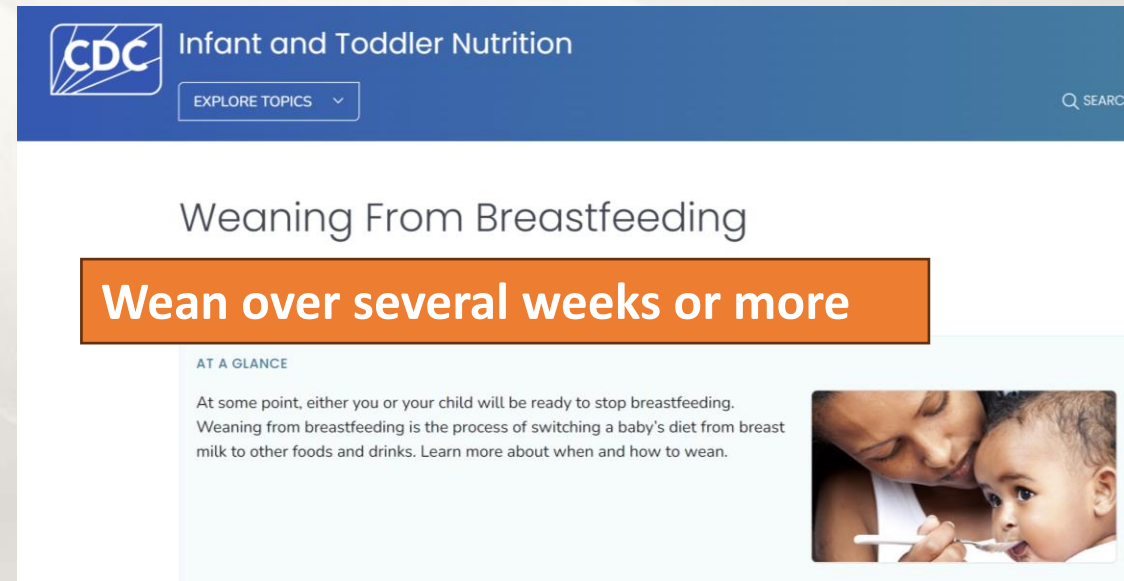
Smith PJ, Moffatt ME. Baby-bottle tooth decay: are we on the right track? Int J Circumpolar Health. 1998;57 Suppl 1:1-10.

Mahanta A, Yadav G, Saha S, Dhinsa K, Sharma A, Rai A. A Comparative Evaluation of the Acidogenic Potential of Hydrolysate-based, and Iron-based Milk Formulas Based on Dental Plaque pH, Salivary pH, and Buffering Capacity. An *in vivo* Study. Int J Clin Pediatr Dent. 2024 Aug;17(8):851-859.

Iorgulescu G. Saliva between normal and pathological. Important factors in determining systemic and oral health. J Med Life. 2009 Jul-Sep;2(3):303-7.

Weaning: a developmental necessity and an emotional journey

- Natural or baby-led weaning
- Planned or mother-led
 - **Physical challenges for mothers:**
 - **Emotional challenges:**
 - **Nutritional concerns:**



Breastfeeding is just one part of being a loving mum. You and your baby can still enjoy lots of cuddles and closeness.

Planned or mother-led

- **Signs of readiness in babies:**

- Developmental
- tongue-thrust reflex
- interest in food
- communicate
- appetite



- **Gradual weaning:**

- Drop one
- Substitution
- Shortening
- Distraction

- **Partial weaning:**

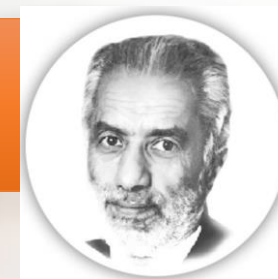
- emotional connection

- **Sudden or abrupt weaning:**

- physical discomfort
- emotionally difficult



Age-appropriate weaning techniques



- **Weaning babies 6-12 months:**

- new foods after breastfeeding
- iron-rich foods

The American Academy of Pediatrics (AAP):

completing the transition from bottle to *cup between 12 and 18 months*.

training to drink instead of sucking

cutting bottle nipple

sippy cup around 6 months

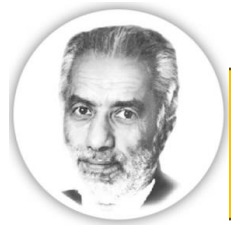
Finally given a cup

- **Weaning toddlers 12-24 months:**

- distraction
- pre-sleep routines to stories or songs
 - substituting another object



- **With older children, communication becomes key**



Multi-factorial approach to Primary prevention:

3

- **Daily plaque removal:**
 - a clean gauze/ toothbrush
- The U-shaped automatic electric silicone toothbrush:
not effective in removing dental plaque.



No silicone FOR TEETH

Nieri M, Giuntini V, Pagliaro U, Giani M, Franchi L, Franceschi D. Efficacy of a U-Shaped Automatic Electric Toothbrush in Dental Plaque Removal: A Cross-Over Randomized Controlled Trial. Int J Environ Res Public Health. 2020 Jun 28;17(13):4649.



Multi-factorial approach to Primary prevention:

4

- **Fluoride:**

- Optimal exposure to dietary fluoride (Global agreement 78%)

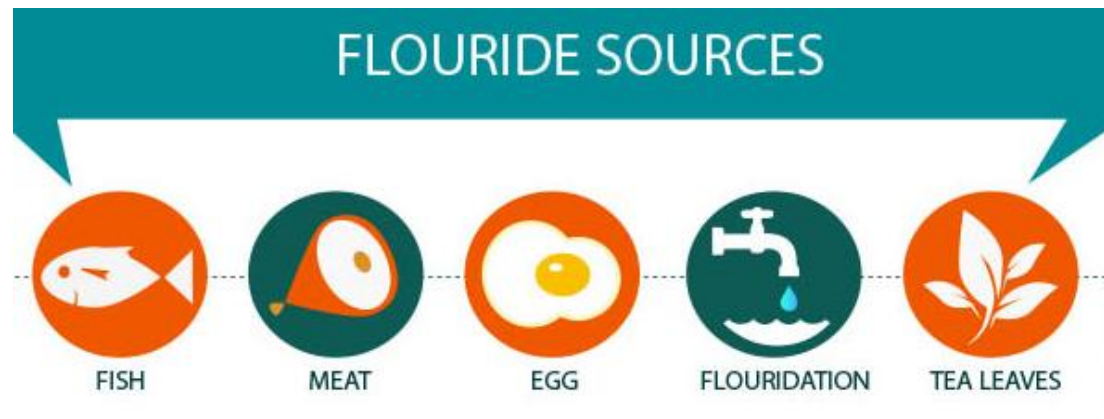
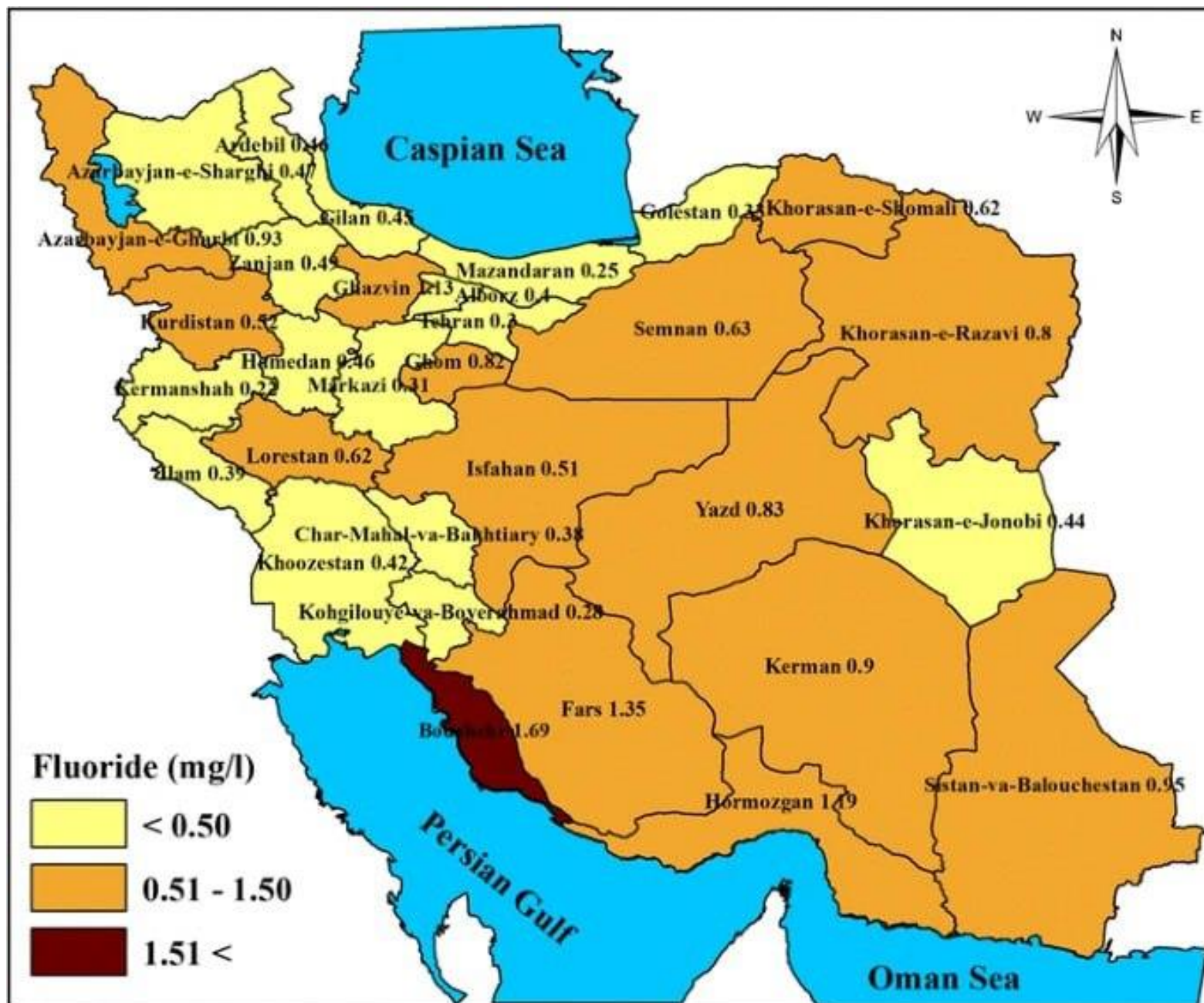


TABLE 1. Fluoride Supplementation Schedule for Children Ages 0 to 16³⁶

Age	Fluoride Level in Drinking Water (ppm)		
	< 0.3 ppm	0.3 ppm to 0.6 ppm	> 0.6 ppm
Birth to 6 months	0	0	0
6 months to 3 years	0.25 mg	0	0
3 years to 6 years	0.5 mg	0.25 mg	0
6 years to 16 years	1.00 mg	0.5 mg	0

- The U.S. Department of Health and Human Services :

0.7 milligrams per liter (mg/L) of fluoride in drinking water



Dental fluorosis

- excessive intake over a long period
- overexposure during the **first eight years** of life
- Tooth discoloration



Permanent Teeth	First evidence of calcification	Crown completion (years)	Eruption (years)	Root completion (years)
Maxillary Teeth				
Central incisor	3-4 months	4-5	7-8	10
Lateral incisor	10-12 months	4-5	8-9	11
Canine	4-5 months	6-7	11-12	13-15
1 st Premolar	11/2-13/4 yrs	5-6	10-11	12-13
2 nd Premolar	2-21/2 yrs	6-7	10-12	12-14
1 st Molar	At birth	21/2-3	6-7	9-10
2 nd Molar	21/2-3 yrs	7-8	12-13	14-16
3 rd Molar	7-9 yrs	12-16	17-21	18-25
Mandibular teeth				
Central incisor	3-4 months	4-5	6-7	9
Lateral incisor	3-4 months	4-5	7-8	10
Canine	4-5 months	6-7	9-10	12-14
1 st Premolar	13/4-2 yrs	5-6	10-12	12
2 nd Premolar	21/4-21/2 yrs	6-7	11-12	13
1 st Molar	At birth	21/2-3	6-7	9
2 nd Molar	21/2-3 yrs	7-8	11-13	14
3 rd Molar	8-10 yrs	12-16	17-21	18



Multi-factorial approach to Primary prevention:

4

- Brushing with the age-appropriate amount (1,000–1,500 ppm fluoride) (Global agreement 90%)



Correct Amount of Toothpaste for Young Children

Use a thin smear for children under age 3



Use a pea-sized amount for children ages 3-6



© Dear Doctor, Inc.



• AAPD :

- twice daily
- a smear
- as soon as the primary incisors erupt

• **only 5.1%**



Multi-factorial approach to Primary prevention:

- Regular 5% fluoride varnish : a safe dental product
- high concentrations: 22600 PPM
 - 0.25 ml: age 2-5 years
 - 0.4 ml: age 5-7 years
- Isolate and thoroughly dry
- **two to four** times per year
 - Swelling (33.8%); burning, itching, or soreness (23.1%); and rash (16.9%)
 - lips (27.7%)
 - **used in school?**
 - **once a year?**
 - **profit or loss**
- Biannual applications :
 - not associated with dental fluorosis



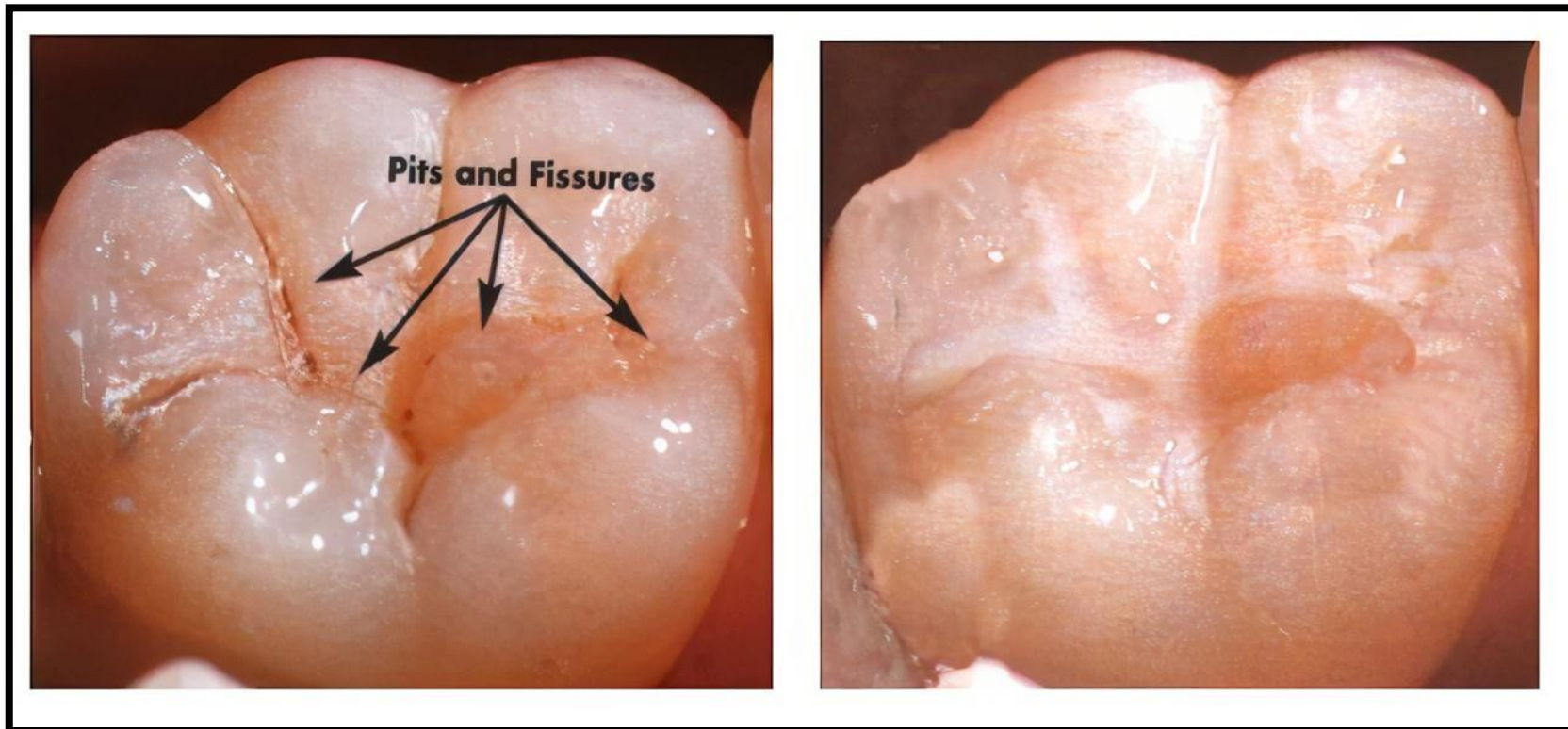
Mascarenhas AK. Is fluoride varnish safe?: Validating the safety of fluoride varnish. J Am Dent Assoc. 2021 May;152(5):364-368.

Kassem TF, Fadhil Z, Anderson M. Extended caries prevention programme with biannual application of fluoride varnish for toddlers: prevalence of dental fluorosis at ages 7-9 years and associated factors. Acta Odontol Scand. 2023 Jul;81(5):368-373.

Multi-factorial approach to Primary prevention:

5

- Pit and fissure sealants



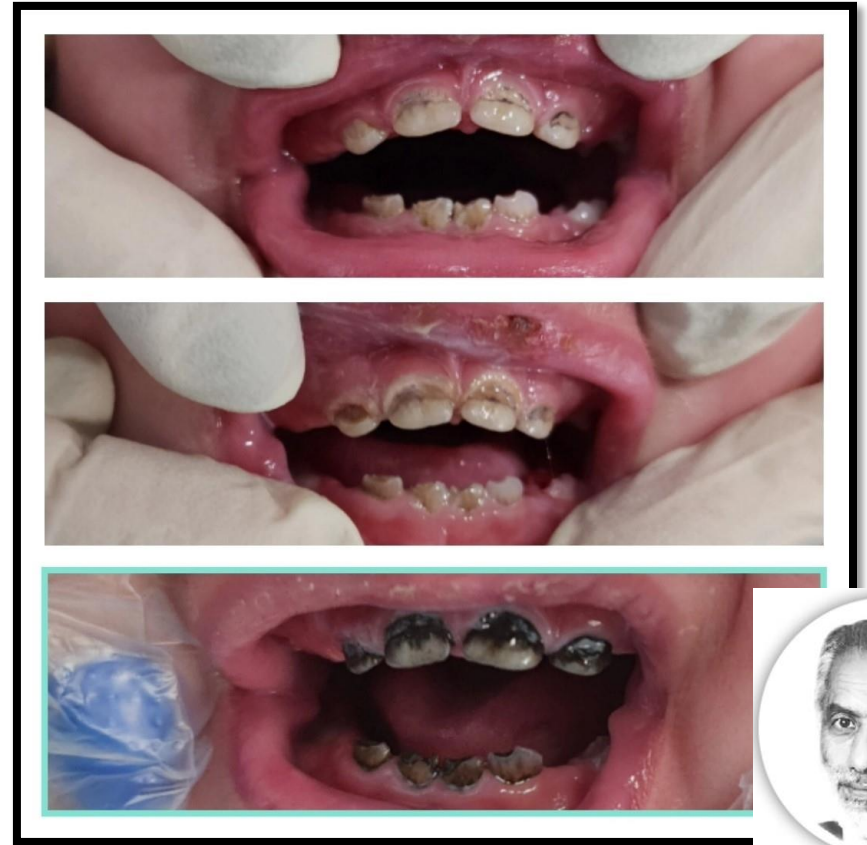
Secondary prevention:

1

- stabilization & arresting

Silver diamine fluoride

- a colorless or blue-tinted liquid
- arresting or slowing progression of caries
- black staining

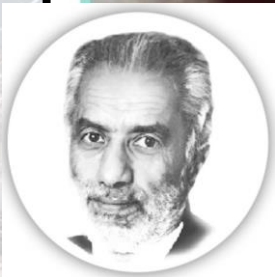


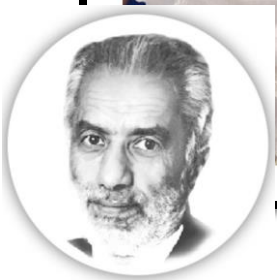
Tertiary prevention:

1

- extensive and expensive
 - For mild conditions: dental fillings / fluoride
 - For advanced conditions: pulp therapy/ extraction
- Despite aggressive treatment : new carious lesions **within 2 years**











Treatment of 17 teeth in a 3-year-old child under general anesthesia



Breast milk jewelry

Type of jewellery



Breast milk jewelry or Breast milk jewellery is jewellery made from pumped or expressed mother's breast milk as a keepsake often worn by the mother. Breast milk keepsakes come in various jewelry types...

 Wikipedia

Many thanks

