



An Overview of Nutrition Focused Physical Examination of the Orofacial Region in Children

Dr. Jane Ziegler, DCN, RDN, LDN
Associate Professor and Program Director
Doctorate in Clinical Nutrition
Rutgers, The State University of New Jersey



Objectives

- Describe the role of the Registered Dietitian Nutritionist (RDN) in Nutrition Focused Physical Examination (NFPE) of the Orofacial Region and integration of these findings into practice.
- Describe the components of the orofacial NFPE and their utility and practice.
- Be familiar with benefits of NFPE to the pediatric patient and the clinician.



Standards of Practice and Standards of Professional Performance

NFPE evaluates findings from the review of systems, muscle and subcutaneous fat wasting, oral health, hair, skin, nails, signs of edema, suck/swallow/breathe ability, and appetite

Academy of Nutrition and Dietetics. Revised 2016 Standards of Practice and Standards of Professional Performance for Registered Dietitian Nutritionists (Competent, Proficient, and Expert) in Pediatric Nutrition. Nutrition News/Online. Feb 2016. 15(3):43-46(4):3.

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Academy of Nutrition & Dietetics Standards of Practice: Nutrition Assessment

NFPE: Is a component of Nutrition Assessment

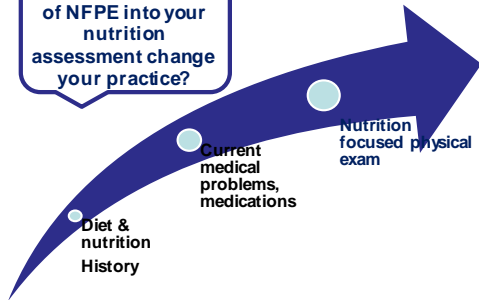
- Provides
 - ‘Physical’ findings that may impact the patient’s ability to ingest or digest foods and fluids
 - Visual & physical signs of nutrition related problems
 - including malnutrition and nutrient deficiencies
 - conditions that directly impact the ability to eat

That the dietitian is **UNIQUELY TRAINED TO IDENTIFY & MANAGE** via intervention &/or referral!

JANO, 2013, 119(8) Supp 2, S30

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How can integration of NFPE into your nutrition assessment change your practice?



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As the Nutrition Experts, Dietitians CAN

Distinguish between normal & abnormal findings
 Assess findings relative to nutrition & diet considering:

- Patient complaints, symptoms, disease state*
- History, diagnosis(es), medications*
- Ability to bite, chew, suck, swallow*
- Impact on disease management*
- Influence on growth and development patterns*

Document nutrition diagnoses including malnutrition
 Manage nutrition interventions and plan of care
 Monitor and evaluate progress of the patient
 Refer / consult other disciplines as needed

Dietitians CANNOT

Diagnose medical, dental or other non-nutrition diseases/disorders

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Stepwise Approach to Orofacial & Upper Body NFPE in Children

- Steps 1 & 2
 - 1. Interview the patient or the parent
 - 2. Head, face, neck, extra-oral screens
- Steps 3
 - 3. Upper body fat, muscle & functional status, growth trends
- Steps 4 & 5
 - 4. Intra-oral exam
 - 5. Look for macro & micronutrient deficiency signs & symptoms – as part of steps 2 & 4

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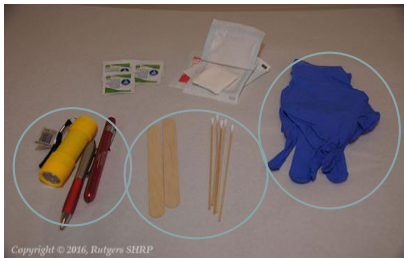
Nutrition Focused Physical Exam

Observations/Assessment made by the RDN during NFPE could help to identify and treat aspects of health that potentially leads to further impairment, disability, or morbidity

Through NFPE, the NRD can help address the negative affect oral health conditions have on the child's overall health and wellbeing.

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What tools do you need to perform a NFPE in a child?



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GENERAL APPEARANCE

- FACIES
- SKIN
- POSTURE
- POSITION
- BODY MOVEMENT
- HYGIENE
- NUTRITION
- BEHAVIOR
- DEVELOPMENT



Observe General Appearance



Symmetry



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Symmetry



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Nutrition Focused Physical Exam

- Skin
 - Acanthosis
 - Acne
 - Striae
 - Pannus
 - Hirsutism
 - Intertrigo



(Acanthosis)

Picture: https://upload.wikimedia.org/wikipedia/commons/thumb/9/9e/Familial_acanthosis_nigricans_3.jpg/640px-Familial_acanthosis_nigricans_3.jpg

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Iron Deficiency – Common in Childhood

- Eyes
- Brittle nails
- Spoon-shaped nails
- Sores develop at edges of the mouth
- Thin hair
- Pallor
- Taste changes
- Fatigue



<https://upload.wikimedia.org/wikipedia/commons/thumb/f/f6/1%20C3%A4nenen%20BC.e.jpg/559px-1%20C3%A4nenen%20BC.e.jpg>

Facial Expressions



Smile
Puff cheeks
Fish face or
throw a kiss

Frown



Sometimes you
don't have to ask –
it is natural!

Facial Palsy



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Stick out tongue and Inspect Tongue



Have child wiggle tongue from side to side and up and down

Seven horizontal lines for writing notes.

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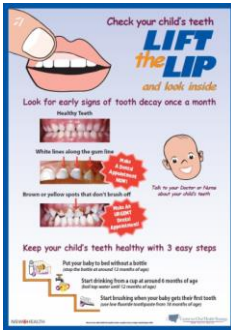
Cleft Lip and Palate



Seven horizontal lines for writing notes.

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Lift the Lip and Look in the Mouth



Seven horizontal lines for writing notes.

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Checking a small child's teeth

Check for white or brown spots often by lifting the lip.
Children will get used to having their teeth checked.



Observe for white or light brown spots. If visible – make a dental referral

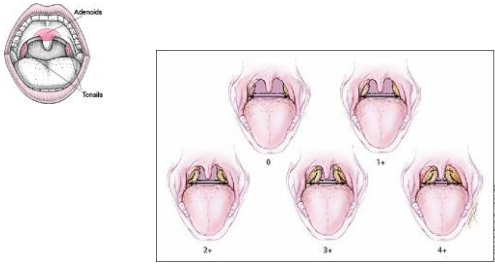
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Lifting the Lip

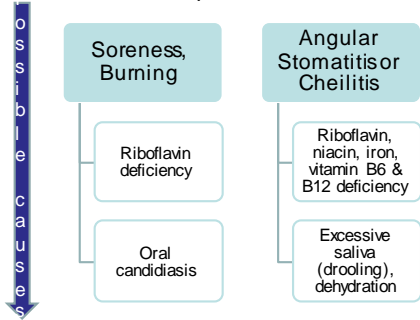
It is not enough to just lift the lip – you must look at the molars as well



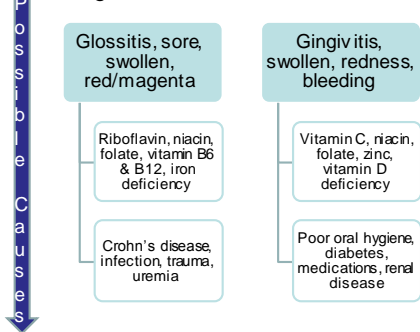
Enlarged Tonsils



NFPE-Mouth and Lips



NFPE-Tongue and Gums



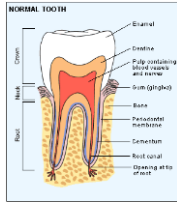
Permanent Teeth

Teeth	Age Tooth Comes in (years)
Central Incisor	7.35
Lateral Incisor	8.45
Canine (Cuspids)	11.35
First Premolar (Bicuspid)	10.20
Second Premolar (Bicuspid)	11.05
First Molar	6.30
Second Molar	12.25
Third Molar	Variable 17 to 21
Third Molar	11.00
Second Molar	6.55
Second Premolar (Bicuspid)	11.20
First Premolar (Bicuspid)	10.50
Canine (Cuspids)	10.35
Lateral Incisor	7.50
Central Incisor	6.40

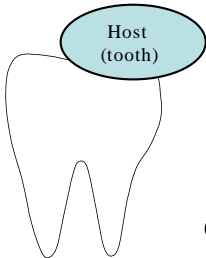
<http://www.khanacademy.com/a/development-of-the-mouth-a04649-d-Pd-9Z26d>

Dental Caries

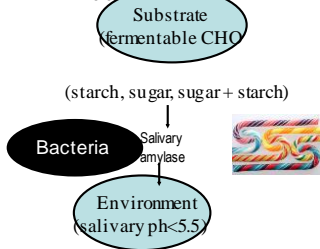
- Early Childhood Caries – found in the primary teeth
- Localized destruction of the tooth
- Can affect the enamel, dentin and cementum
- Most common infectious disease in children



Caries Development



Dental caries are the result of acids on the enamel surface. The acid is produced when sugars (mainly sucrose) in foods or drinks react with bacteria present in the dental biofilm (plaque) on the tooth surface and cause a drop in pH to < 5.5.



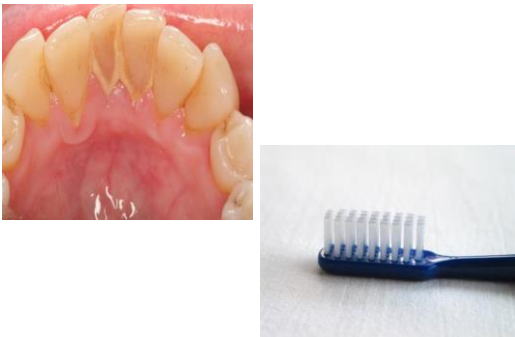
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The Decay Process

- Plaque formation: sticky mix of microorganisms, protein, polysaccharides
- Bacteria metabolizing fermentable carbohydrate produce acid
- Acid production: oral pH<5.5 allow tooth demineralization
- Saliva function: rinses away food; neutralizes acid; promotes remineralization
- Caries patterns: pattern depends on cause

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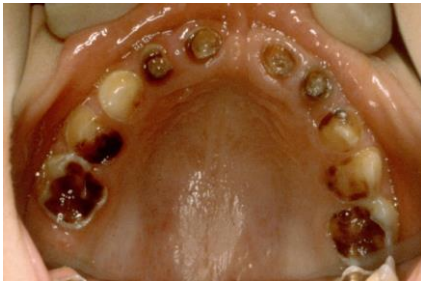
Plaque Build Up



https://upload.wikimedia.org/wikipedia/commons/2/23/Plaque_Tartar_Diagnosis_Study_01.jpg

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Severe Early Children Caries



Courtesy of Dr. Eva Sprack

Affects Children in Many Ways



- Pain
- Difficulty chewing
- Sensitivities
- Missed School Days
- Self-esteem
- Infections
- Growth

• Epstein Pearl

Palatal cysts of the newborn. Lesions located along the mid palatine raphe; often small and white. Harmless. Disappear within 1-2 weeks



https://upload.wikimedia.org/wikipedia/commons/0/0a/Epstein_pearl.jpg

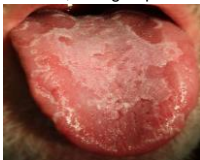
• Dental Lamina Cysts

Cysts located along the maxillary and mandibular dental ridges. Filled with keratin. Disappear within 1-2 weeks



• Geographic Tongue

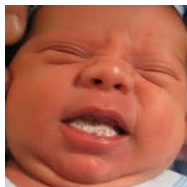
Described by atrophy or short-term loss of filiform papillae; pink to red, changes patterns



https://upload.wikimedia.org/wikipedia/commons/0/01/Lesiones_2015.jpg - <https://upload.wikimedia.org/wikipedia/commons/3/37/ha1010.D.JPG>

• Candidiasis

Fungal infection; thrush



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Ankyloglossia (Tongue Tie)

A physical examination will show that the lingual frenulum is attached too far forward on the tongue.



Breastfeeding
Speech

<https://www.breastfeeding.com/aidia/hange-4e>

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• Stomatitis

Inflammation; re-occurring ulcers also known as Aphthous ulcer (chancere sores)



https://upload.wikimedia.org/wikipedia/commons/8/8BAphthous_ulcers_w_1.jpg

• Angular Cheilitis

Lesions appearing at corners of the lips



https://commons.wikimedia.org/wiki/File:Angular_Cheilitis_2.jpg

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• Abscess

Buildup of purulent material near apex of a non-vital tooth due to pulpal necrosis; swelling occurs



https://upload.wikimedia.org/wikipedia/commons/0/0C/Case11_0301.jpg

• Gastroesophageal Reflux

Causes erosion of the teeth



<https://upload.wikimedia.org/wikipedia/commons/thumb/9/9B/UpperEnamelLoss.JPG/350px-UpperEnamelLoss.JPG>

• Cystic Fibrosis

Discoloration of teeth ranges from yellowish-gray to dark brown



Image 1 of 17 Figure 3. Proximal enamel stain.

• Fluorosis

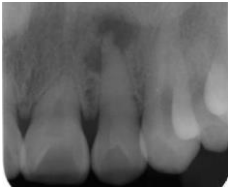
Too much fluoride results in chalky and opaque white or gray stained teeth; defective mineralization of enamel



https://upload.wikimedia.org/wikipedia/commons/6/68/EnamelLeukid.jpg

• Microdontia

Characterized by one (or more) tooth that looks to be smaller in size than other teeth



https://upload.wikimedia.org/wikipedia/en/9/98/Microdontia.jpg

• Gingival Overgrowth

Gingiva hypertrophy, overgrowth of the gingiva
Medications - dilantin



Courtesy of Dr. Eva Speck

• Teething

Occurs around 6 months; signs include crying, increased drooling, fever, facial rash



https://upload.wikimedia.org/wikipedia/commons/thumb/3/37/Teething.jpg/120px-Teething.jpg

• Early Childhood Dental Caries

Caused by intake of fermentable carbohydrates; teeth are chalky white; progression leads to brown lesions



https://upload.wikimedia.org/wikipedia/commons/4/4a/Superdentalcaries1190586.jpg

• Thumb and Finger Habits

Results in "anterior open bite; maxillary constriction; facial movement of the maxillary incisors and; lingual movement of mandibular incisors



https://upload.wikimedia.org/wikipedia/commons/8/8d/Thumb_sucking.jpg

• Lip Habits

Licking lips; inflamed lips



https://upload.wikimedia.org/wikipedia/commons/7/74/Perioral_Lemak2014.JPG

• Bruxism

Grinding of teeth; often occurs while child is sleeping



<http://home.danville.edu/itscamp/danville/orthodontics/clinical-dental/bruxism/bruxism-grinding-teeth.html>

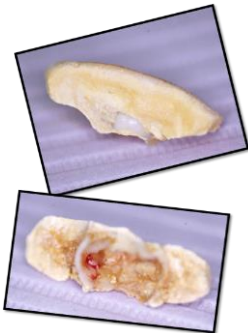
• Malocclusion

Imperfect positioning of teeth when jaw is closed



https://upload.wikimedia.org/wikipedia/commons/8/81/Case_11.jpg

Case Studies: What Is Causing These Issues?



Pictures courtesy of Dr. Evan Spivak

Thank You



<https://i1.safefix.com/3/2373906765/8872641.jpg>
