

Prevention and Promotion of Oral Health in Children

Diana Biordi, PhD, RN, FAAN- Nursing

Marguerite DiMarco, PhD, RN, CPNP- Nursing

Marlene Huff, PhD, RN- Nursing

Peter Leahy, PhD- Health and Social Policy

Deb Marino, PhD, RD, LD- Nutrition

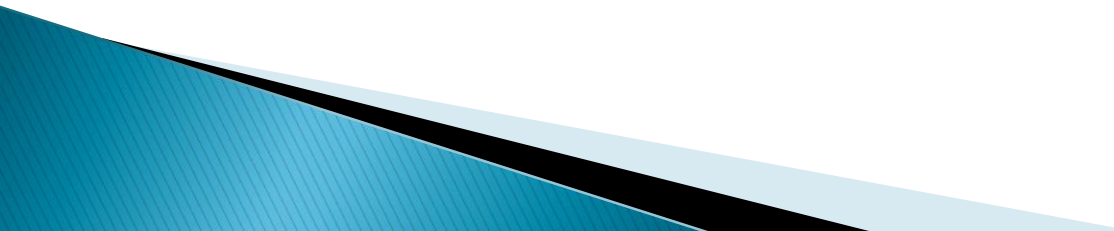
Evelyn Taylor, MS, RD, LD- Nutrition

Funded by the WK Kellogg Foundation

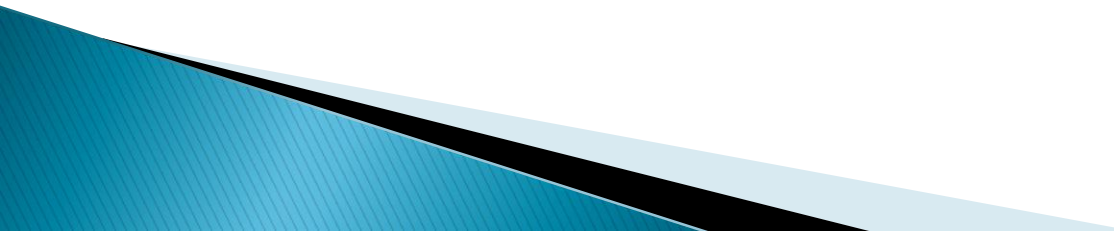


The University of Akron
College of Nursing
Nursing Transforms

Objectives:

- ▶ Following this presentation the learner will be able to:
 - ▶ 1. Describe the importance of oral health
 - ▶ 2. Talk about the use of fluoride varnish
 - ▶ 3. Describe the role of interdisciplinary teams in health care of children.
- 

The problem:

- ▶ The Surgeon General declared dental caries the “Silent Epidemic”.
 - ▶ Profound disparities exist in the level of dental services obtained by poor children.
 - ▶ Low rates of early detection and preventive care for 3 year old and younger children eligible for Medicaid.
 - ▶ Even when Medicaid provides dental services, only 33% of eligible children receive dental service due to a shortage of dentists who accept Medicaid and/or who are willing to treat children.
- 

Consequences of Poor Dental Health

Untreated dental conditions can result in:

- ▶ Teeth destruction
- ▶ Problems chewing which could result in malnutrition negatively impacting growth development.
- ▶ Dysfunctional speech
- ▶ Poor concentration
- ▶ Poor academic performance
- ▶ Psychological issues
- ▶ Severe infections



(Open Wide: 1.5.1 Population Groups' Tooth Decay Risk, 2010)

Factors Contributing to Poor Dental Care for Children at Risk

- ▶ Lack of pediatric dentists
- ▶ Inaccessibility due to geographical location of oral health professionals
- ▶ Parent's lack of knowledge and attitudes concerning oral health
- ▶ Low rate of early detection and preventive care for young children eligible for Medicaid.



(Pediatric Oral Health Management:Mod.1 Trends in Oral Health, 2010)

Primary Cause of Tooth Decay

- ▶ The bacterium *S. mutans* is the main contributor to tooth decay.
- ▶ Adults may have higher amount of *S. mutans* in their mouth and can transmit it to their infant or child through the exchange of saliva
- ▶ Frequent sugary snacking and drinking interact with *S. mutans*, producing acids that can cause mineral loss from teeth increases the risk for tooth decay.

(“Open Wide: 1.2.1 Population Groups' Tooth Decay Risk.”)



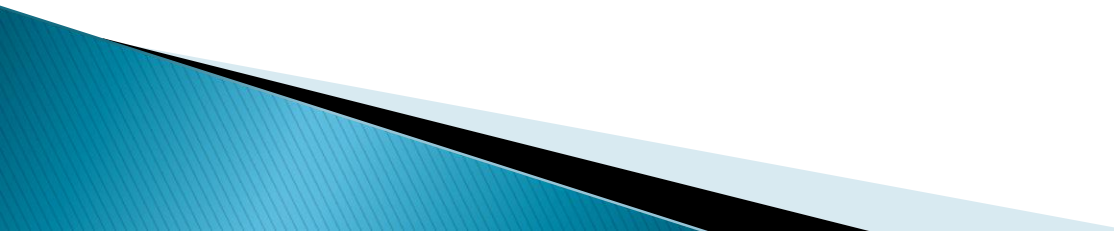
Process of Decay

- bacteria of dental plaque convert sugar and carbohydrates of foods into acids. The normal mouth pH of 6.2 to 7.0 starts to drop to acidic values.

If the mouth environment becomes too acidic (pH below 5,5–6,0), the acids start to dissolve the minerals (calcium and phosphate) of the tooth's surface creating microscopic lesions on tooth enamel (demineralization).

- Streptococcus mutans is the most destructive bacterial strain in the mouth as it attaches easily to teeth and produces a lot of acid. Other common but less destructive acid-producing bacteria are lactobacillus and actinomyces.

- ▶ After all the sugars are consumed by the bacteria, acid production eventually stops and the tooth has a chance to repair itself (remineralization) helped by the minerals of saliva and toothpaste's fluoride. If dental plaque is not removed regularly, or if sugar is consumed too often, then the remineralization periods are not enough to repair the damage. Eventually a small cavity appears on the tooth enamel. The continuous exposure of the tooth to acids is what causes tooth decay.

- ▶ Tooth decay can then penetrate through the protective enamel down to the softer, vulnerable dentine and continue to the soft tooth pulp and the sensitive nerves within it. Although the metabolic activity of plaque bacteria in our mouth is what actually causes dental caries, the underlying causes of tooth decay are in most cases the poor oral hygiene and high sugar consumption
- 

The Main Problem: Dental Caries

- ▶ Dental caries affect more children in the United States than any other chronic infectious disease
- ▶ Tooth decay and other oral diseases that can affect children are preventable. Fluoride varnish can reduce cavities in preschool children by 30–40%.



(Child who participated in the fluoride varnishing offered at one of the WIC sites)

Early Childhood Caries

- ▶ Tooth decay of the front top teeth are referred to as Early Childhood Caries (ECC).
- ▶ Causes of ECC:
 - Poor oral hygiene
 - Not enough fluoride
 - Sleeping with a bottle or sippy cup
 - Frequent snacking and bottle/sippy cup
 - Feedings containing beverages high in sugar, milk, or formula during the day or night.
 - Coating pacifiers with sweeteners like sugar or honey.
 - Having a mother or another caregiver or sibling who has had active tooth decay in the past 12 months.



Children should never be put to bed with a bottle

ADAM.



(Open Wide: 2.3 Population Groups' Tooth Decay Risk 2010).

Ways to Prevent Dental Disease

- ▶ Oral Screenings
- ▶ Fluoridation
- ▶ Educate on appropriate oral care
- ▶ Educate on preventative measures to prevent tooth decay
- ▶ Educate on good healthy eating habits



(Open Wide: 3.0 Population Groups' Tooth Decay Risk, 2010)

Purpose of Project

To improve the oral health of low income pregnant women, mothers, & children. WIC (Supplemental Nutrition Program for Women, Infants, and Children) is a national program that safeguards the health of low-income women, infants, & children who are at nutritional risk.

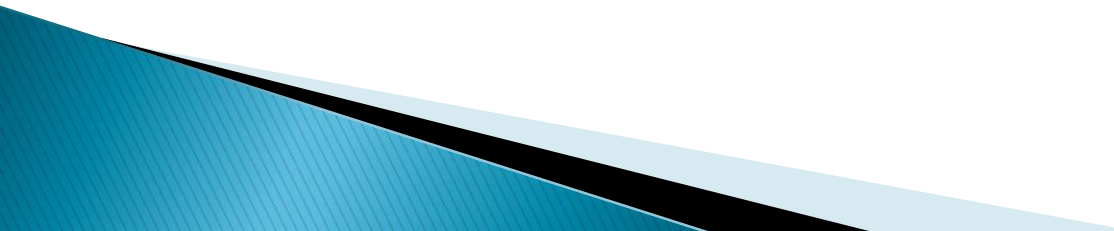


Preventative Measures Against Dental Disease

- ▶ The University of Akron's College of Nursing and Division of Nutrition and Dietetics collaborated together to initiated the project seeking to test the feasibility of integrating oral health assessments and fluoride varnishing interventions into regular practice at two WIC sites.



2 WIC Sites

- ▶ Two Chosen WIC sites:
 - The rural location chosen was the WIC site in Portage County.
 - The urban location chosen was the WIC site in Summit County.
 - Nurse Practitioners (NPs), Registered Dietitians(RDs), and undergraduate/graduate nursing and nutrition students are involved in the project.
- 

Training Non-dental Specific Health Care Professionals

- ▶ At each WIC location there is an individual (RD or NP) trained to apply fluoride varnish (FV) the teeth of WIC clients' from the appearance of a child's first tooth bud through four years of age.
- ▶ By training NP's, RD's, and RN's to perform oral health assessment, fluoride varnishing, education, and other preventative care measures could reduce poor oral health in high risk populations.



The Project Taking Place at the WIC Sites

- ▶ Typical Day:

1. NP or RD at the WIC clinics obtain informed consent form WIC clients about the free FDA approved fluoride varnish.
2. The guardian is then asked to fill out an Oral Health Survey which asks simple questions about the child's diet and dental care.



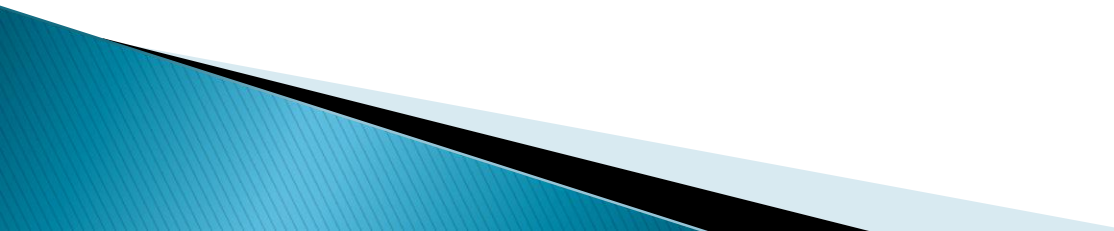
The Project Taking Place at the WIC Sites

3. The RD or NP will:

- Ask about the infant or child's dental health
- Provide education on appropriate dental health
- Conduct an oral health assessment on child's teeth
- Apply fluoride varnish to child's teeth
 - using a small brush.
 - takes a few seconds
 - tastes like bubble gum
- Keep a dental screen record
- Provides written material on oral health



The Project Taking Place at the WIC Sites

4. The child is seen every 6 months until the study is complete in three years.
 5. The RD or NP will give the guardian or parent a list of dentists that the child may be able to receive care.
 6. After the fluoride varnishing procedure the parent or guardian is given an satisfaction survey.
- 

The Project Taking Place at the WIC Sites

7. After the first time visit the child is given a goodie bag containing:

- Information pamphlets on good dental hygiene
- Toothbrush
- Toothpaste
- Coloring book
- Crayons
- Stickers



(First child seen at one of the WIC sites leaving with her yellow goodie bag)

Demographics

	Number	Percentage
Summit	900	45.5
Portage	1078	54.5
Total	1978	100.0

Children's age	Summit = 714	Portage = 907	Overall = 1621
• Mean	2.38	2.58	2.49
• Mode	1.00	0.98	1.00

Nationality

	Summit (n=68)		Portage (n=68)		Overall (n=136)	
Race	Number	Percent	Number	Percent	Number	Percent
Black	46	67.6	8	11.8	54	39.7
White	15	22.1	53	77.9	68	50.0
Biracial	3	4.4	6	8.8	9	6.6
Hispanic	2	2.9	0	0.0	2	1.5
Asian	2	2.9	0	0.0	2	1.5
Native American	0	0.0	1	1.5	1	0.7

Screening results

Result of Screening	Summit (n= 900)		Portage (n=1078)		Overall (n=1978)	
	Number	Percent	Number	Percent	Number	Percent
Normal	865	96.1	1056	98.0	1921	97.1
Teething	138	15.3	158	14.7	296	15.0
Inflamed gums	18	2.0	8	0.7	26	1.3
Lesions	2	0.2	1	0.1	3	0.2
Tongue and buccal mucosa pink, moist, without lesions	894	99.3	1011	93.8	1871	94.6
Other	3	0.1	0	0.0	3	0.1

Screening results

Result of Screening	Summit (n= 900)		Portage (n=1078)		Overall (n=1978)	
	Number	Percent	Number	Percent	Number	Percent
Missing teeth	13	1.4	15	1.4	28	1.4
- ECC upper	4	0.4	10	0.9	14	0.7
- ECC lower	0	0.0	0	0.0	0	0.0
Broken teeth	29	3.2	11	1.0	40	2.0
- ECC upper	8	0.9	1	0.1	9	0.5
- ECC lower	1	0.1	1	0.1	2	0.1
Decayed/Discolored teeth	222	24.7	143	13.3	365	18.5
- ECC upper	15	1.7	34	3.2	49	2.5
- ECC lower	12	1.3	2	0.2	14	0.7
Filled teeth	29	3.2	20	1.9	49	2.5
- ECC upper	3	0.3	1	0.1	4	0.2
- ECC lower	0	0.0	0	0.0	0	0.0
Silver/Capped teeth	39	4.3	19	1.8	58	2.9
- ECC upper	19	2.1	9	0.8	28	1.4
- ECC lower	1	0.1	0	0.0	1	0.1

Discussion with moms

Materials/Topics	Summit (n= 900)		Portage (n=1078)		Overall (n=1978)	
	Number	Percent	Number	Percent	Number	Percent
Written materials on general oral health given	884	98.2	1054	97.8	1938	98.0
Appropriate brushing/use of fluoride for age	885	98.3	1062	98.5	1947	98.4
Frequency & type of carbohydrate rich snacks/beverages	838	93.1	580	78.8	1688	85.3
Appropriate use of bottle/sippy cup	358	39.8	484	44.9	842	42.6
Fluoride concerns	102	11.3	408	37.8	510	25.8
Dental visits encouraged	348	38.7	280	26.0	682	31.7
Sharing germs – maternal/child	153	17.0	12	1.1	165	8.3
Stop pacifier	9	0.1	0	0.0	9	0.1
Stop bottle	5	0.1	2	0.1	7	0.1
Infant sibling/pregnant mom	9	0.1	0	0.0	9	0.1
Increase fruits/vegetables	0	0.0	35	3.2	35	1.8
Other	20	2.2	21	2.0	41	2.1

Brushing

Questions	Summit (n=681)		Portage (n=859)		Overall (n=1540)		
	Number	Percent	Number	Percent	Number	Percent	
Do you brush or clean your child's teeth at least once daily? ¹	553	81.2	739	86.0	1292	83.9	



* Total number reported accounts only those with valid birth date and date of 1st visit, all others were excluded.

Oral Exam

	Summit (n=133)	%	Portage (n=114)	%	Overall (n=247)	%
Decayed/Discolored teeth	5	3.8	0	0.0	5	2.0
- ECC upper	0	0.0	0	0.0	0	0.0
- ECC lower	0	0.0	0	0.0	0	0.0
Normal gums	129	97.0	113	99.1	242	98.0
Tongue and buccal mucosa pink, moist, w/out lesions	127	95.5	107	93.9	234	94.7

* Total number reported accounts only those with valid birth date and date of 1st visit, all others were excluded.


Dental Problems

	Summit (n=133)		Portage (n=114)		Overall (n=247)		
Variable	Number	Percent	Number	Percent	Number	Percent	
Decayed/Discolored teeth	5	3.8	0	0.0	5	2.0	
- ECC upper	0	0.0	0	0.0	0	0.0	
- ECC lower	0	0.0	0	0.0	0	0.0	
Normal gums	129	97.0	113	99.1	242	98.0	
Tongue and buccal mucosa pink, moist, w/out lesions	127	95.5	107	93.9	234	94.7	

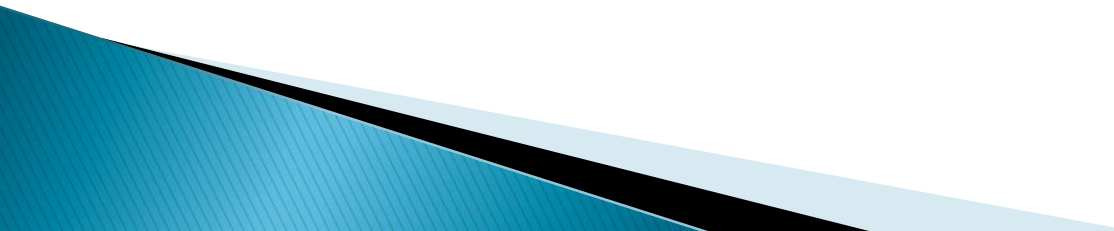
Vitamins Minerals Herbs

	Summit (n=136)		Portage (n=92)		Overall (n=228)		
Supplement	Number	Percent	Number	Percent	Number	Percent	
Vitamins	9	6.6	9	9.8	18	7.9	
Vitamin D	2	1.5	1	1.1	3	1.3	
Iron drops	3	2.2	3	3.3	6	2.6	
Fluoride drops	1	0.7	3	3.3	4	1.8	
Herbs	0	0.0	0	0.0	0	0.0	
None	120	88.2	75	81.5	195	85.5	
Other	4	2.9	5	5.4	9	3.9	

Preliminary Results

- ▶ Material Distributed by staff and topics discussed:
 - 97.3% Received written materials on general oral health and appropriate brushing/use of fluoride for age was discussed
 - ▶ Child's dental hygiene concerns reported by parent:
 - 19.5% not eating enough fruits/veggies
 - 16.7% drinking sugary drinks
 - 16.1 eating sugary snacks
 - 14.2% use of bottle/sippy cup
- 

Preliminary Results

- ▶ 1179 participated in the exit survey questions
 - ▶ Overall guardian or parent's response to the exit survey:
 - 95.0% recorded that they were very satisfied with the oral health visit today
 - 95.7% recorded that the information they received on oral health was helpful
- 

The Project is still in Process

- ▶ The long term goal of this project is to show an improvement in the oral health of children at WIC sites.
- ▶ The ultimate goal is that this program will be implemented at WIC sites nationwide.



Meaning for Nurses and other Health Care Providers

- ✓ Educate mothers and children
 - ✓ Tooth brushing
 - ✓ Fluoride
 - ✓ nutrition
- ✓ Use interprofessional approach to care
- ✓ Include community in promotion efforts

References

- "Children's Oral Health – Topics – Oral Health." *Centers for Disease Control and Prevention*. 7 Jan. 2011. Web. 15 Feb. 2011. <<http://www.cdc.gov/oralhealth/topics/child.htm>>.
- "Pediatric Oral Health Management:Mod.1 Trends in Oral Health." *National Maternal and Child Oral Health Resource Center, Georgetown University*. 2010. Web. 14 Feb. 2011. <http://www.mchoralhealth.org/pediatricOH/mod1_2.htm>.
- "Pediatric Oral Health Management:Mod.1 Trends in Oral Health." *National Maternal and Child Oral Health Resource Center, Georgetown University*. 2010. Web. 15 Feb. 2011. http://www.mchoralhealth.org/pediatricOH/mod3_5.htm
- "Pediatric Oral Health Management:Mod.2 Anticipatory Guidance." *National Maternal and Child Oral Health Resource Center, Georgetown University*. 2010. Web. 19 Feb. 2011. <http://www.mchoralhealth.org/pediatricOH/mod2_6.htm>.
- "Open Wide: 1.5.1 Population Groups' Tooth Decay Risk." *National Maternal and Child Oral Health Resource Center, Georgetown University*. 2010. Web. 14 Feb. 2011. <http://www.mchoralhealth.org/Openwide/mod1_5.htm>.
- "Open Wide: 2.1 Population Groups' Tooth Decay Risk." *National Maternal and Child Oral Health Resource Center, Georgetown University*. 2010. Web. 14 Feb. 2011. <http://www.mchoralhealth.org/Openwide/mod2_1.htm>.
- "Open Wide: 2.3 Population Groups' Tooth Decay Risk." *National Maternal and Child Oral Health Resource Center, Georgetown University*. 2010. Web. 14 Feb. 2011. http://www.mchoralhealth.org/openwide/mod2_3.htm
- "Open Wide: 3.0 Population Groups' Tooth Decay Risk." *National Maternal and Child Oral Health Resource Center, Georgetown University*. 2010. Web. 14 Feb. http://www.mchoralhealth.org/Openwide/mod3_0.htm