



Optimizing oral health and relevance to disease

Melinda Luis M.S., RDN, LDN
Ujwal Patel BDS, MPH student ,

Dr. Kiran C. Patel College
of Osteopathic Medicine
NOVA SOUTHEASTERN UNIVERSITY

NSU
Florida

This presentation is supported by grant funding from HRSA
(Grant number :U1QHP33074)

Project: Geriatrics Workforce Enhancement Program

PI: Naushira Pandya MD, CMD, FACP

Administrative Director: Sweta Tewary PhD, MSW

Affiliations and Disclosures

Learning Objectives

1. Describe the south Florida older adult populations at greatest risk for dental disease.
2. Identify causes of five common dental diseases and related nutrition consequences in the older adult population.
3. Recall evidence-based interventions to treat and prevent dental disease and nutrient intake problems in the older adult population.
4. Recall three community resources which provide dental and nutrition services to patients and health care professionals.



Dental disease in the older adult population

The prevalence of dental diseases in community residing older adults in South Florida

Zevallos et al (2016), Miami-Dade county's elderly population that in Miami-Dade County, the population of older adults will double from 394,328 in 2015 to 674,264 in 2040.^[7]



1

Dental health...



2

Disease Process
Cardiovascular Disease
Dementia
Diabetes
Immunocompromise
COPD



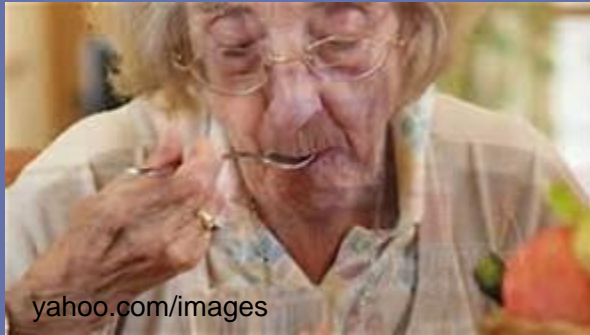
3

Nutritional implications

Oral Health: Importance in Older Adult Populations

- Age-related changes:¹
 - Cells renew at a slower rate
 - Tissues become thinner and less elastic
 - Bones become less dense and strong
 - The immune system can become weaker, infection can occur more quickly and healing takes longer.
 - These changes affect tissue and bone in the mouth, which increases the risk for oral health problems in later years
- Potential comorbidities and medications²
- Cognitive impairments²
- Physical and sensory limitations²

Nutritional concerns



Malnutrition risk primary outcome of inadequate intake.³

- Medications
- Dental status
- Complications of disease process: dry mouth, oral pain⁴
- Food insecurity

QuickFacts

Miami-Dade County, Florida; Broward County, Florida

[What's New & FAQs >](#)

QuickFacts provides statistics for all states and counties, and for cities and towns with a *population of 5,000 or more*.

🔍 Enter state, county, city, town, or zip code

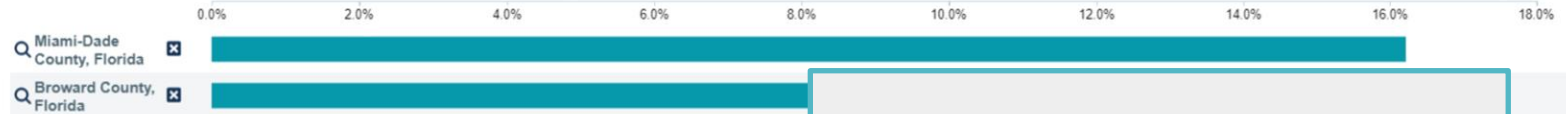
-- Select a fact --



Chart

Show selected locations

Persons 65 years and over, percent



Broward 16.6 % age 65 +
Miami Dade 16.2% age 65 +

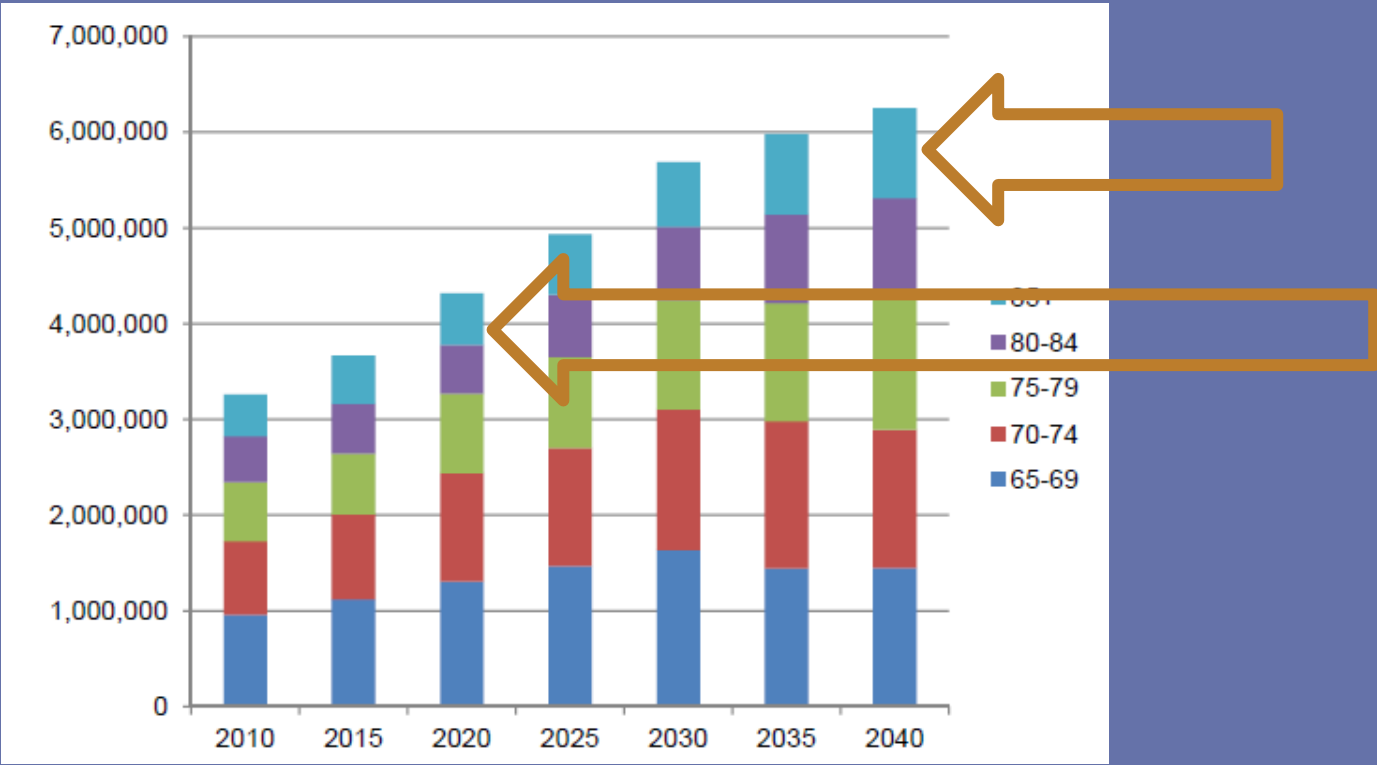
Population Growth

The growth in aging population into elderly group has been contributing to increase in US and even to *Florida's median age.*⁷

Florida's older adult population (age 60 +) will account for most Florida's population growth, representing 56.9 % of the gains.⁷

Between 2010 and 2040, Florida's older adult population is expected to almost be double of 2010's.⁷

Florida's Older Adult Population Growth



Population Growth: Impacts on Health

- Oral health problems such as missing teeth, dry mouth, masticatory problems frequently affects the older adult population and are correlated with general health, income, and marital status.¹⁰
- Basic Medicare service does not cover the cost of dental treatment.
- More African American and Hispanic older adults and those with lower incomes and less education have not been to the dentist in the past 5 years.¹⁰

5th Oral Health Summit

Miami Dade Oral Health Network

NAME: _____

ADDRESS: _____

DATE: _____

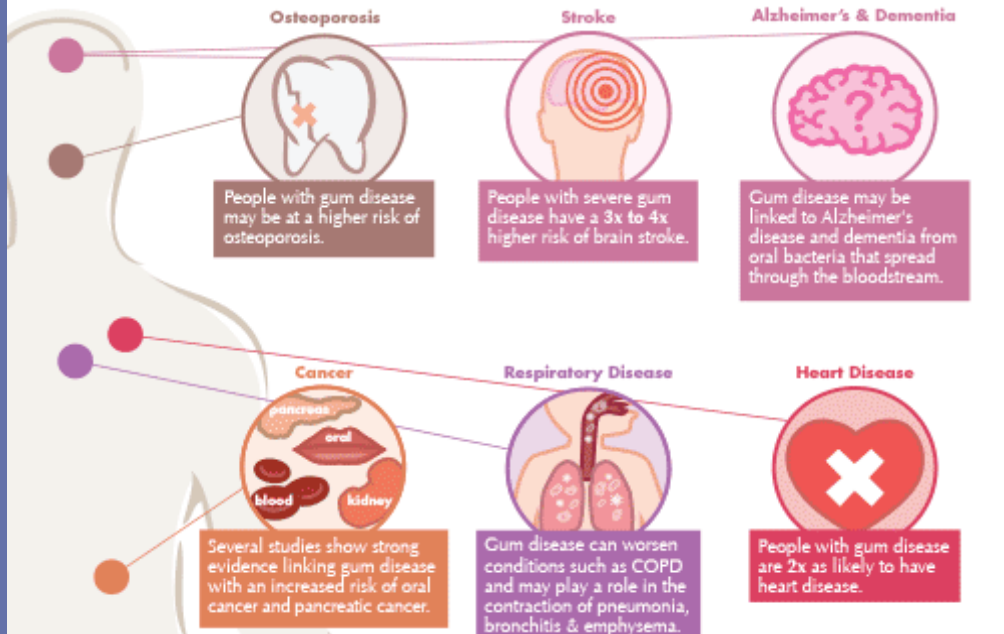
Dear Senator _____,

This letter is to urge you to support adding an oral health benefit to Medicare. Most elderly people cannot afford dental care, their overall health suffers, worsening oral health conditions, including diabetes and heart conditions.



Gum Disease & Your Whole Body Health

Over 50% of adults in the U.S. have some degree of gum disease.
But did you know the impact goes far beyond your mouth...



Gum Disease

Cardiovascular Disease [CVD]

- Cardiovascular prevalence for 65 years old or over, in Broward and Miami Dade county, is 9.7 and 23.1 respectively.¹²
- Diagnostic measures: Visit to physician and cardiologist, blood pressure, heart sounds, blood test and electrocardiogram (ECG) and certain physical signs.

CVD: Oral Manifestation

- Oral manifestations are mainly due to drugs used to treat CVD Diseases:¹²
 - Xerostomia and nausea due to diuretics
 - Xerostomia and sialadenosis due to adrenergic blocking agents
 - Burning mouth, loss of taste and Lichenoid reaction due to ACEIs
 - Gingival hyperplasia due to calcium channel blockers

CVD: Oral Manifestation



**Gingival
Hyperplasia**

Lichenoid
reaction due
to ACEIs



Lichenoid

CVD: Health Impacts

Oral Health:

- Difficulty in oral hygiene maintenance
- Difficulty in mastication
- Frequent bleeding and infection
- Discomfort while eating or drinking.

Overall Health:

- Poor quality of life due to morbidities
- Long term complications can lead to death
- Decrease access to social activities due to morbidities which lead to social neglect

CVD: Dental considerations

Excessive Bleeding
Syncope
Bacteremia
Endocarditis ¹⁴



Nutritional Considerations

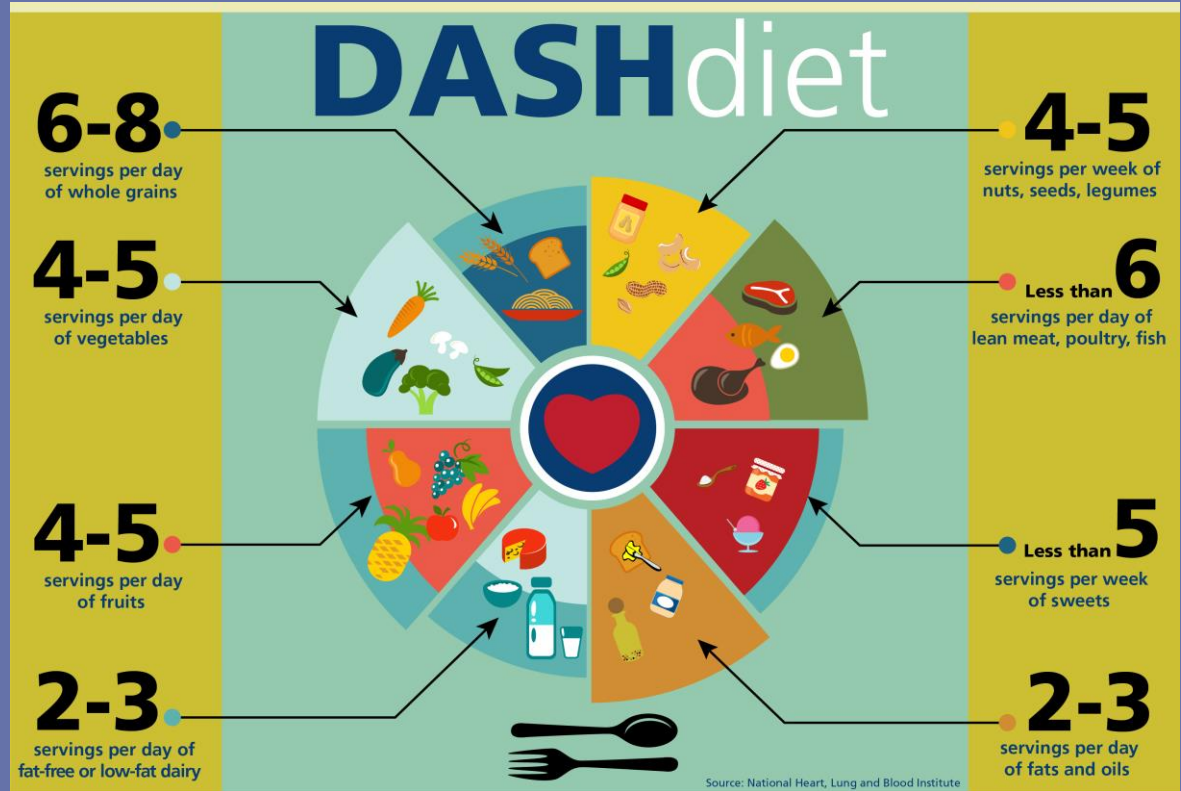
Problems

- Obesity
- Poor intake nutrient dense foods
- Physical inactivity
- Lipid profiles
- HTN

Interventions

- DASH diet ¹⁵
- Supplementation used with caution
- Variety of fruits and vegetables-
modified texture

CVD:
Nutrition Interventions



The DASH diet (Dietary Approaches to Stop Hypertension) has been shown to help lower blood pressure and prevent heart disease, stroke, diabetes and even some forms of cancer. It focuses on eating more fresh fruits and vegetables.

This is a guide to how much of each food group you should eat every day, based on eating 2,000 calories per day.

UKHealthCare.
Gill Heart Institute

Dementia

Dementia is not a single disease
The brain has many distinct regions
Dementia is caused by damage to brain cells

Dementia: Oral Manifestation

There are many oral health problems related to Dementia:¹⁸

- Gingival inflammation bleeding
- Periodontal pockets
- Stomatitis
- Mucosal lesions
- Reduced salivary flow
- High levels of plaque

Dementia: Oral Manifestation



Dementia: Health Impacts

- **Oral Health:**

- Poor oral hygiene
- Neglected oral care due to forgetfulness
- Oral discomfort due to tissue inflammation

- **Overall Health:**

- Mental disabilities: Difficulties in concentrating, planning and organising. Patients may remain disoriented and can't recognize where they are
- Physical disabilities: Gradual loss of ability to walk or stand. High risk for falls, bedsores, blood clots and infections.

Dementia: Dental considerations

- Short span of concentration.
- Difficulty to follow complex instructions: Tell-show-do technique should be used.¹⁶
- Decrease in manual dexterity: Brushing and flossing.
- Chronic periodontitis¹⁹

Nutrition Considerations

Problems:

- Forget to eat
- Refusal to eat
- Behavioural
- Communication
- Wandering
- Dysphagia



Interventions: ¹⁷

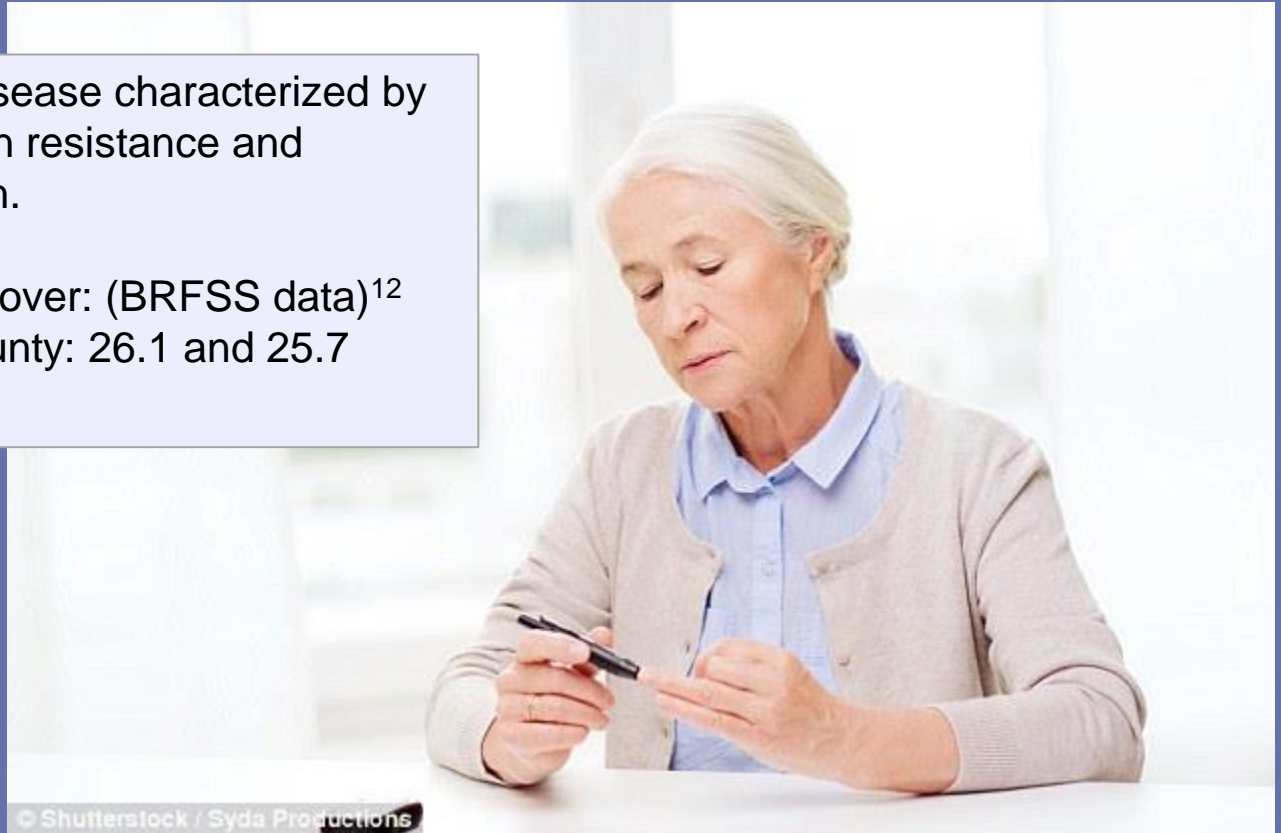
- Reminders
- Pre-prepared foods
- Finger foods
- Small amounts
- Frequent meals
- Patience
- Caloric assessment
- Encourage fluids

Diabetes Mellitus

Diabetes Mellitus

Diabetes Mellitus (DM) is a disease characterized by elevated blood glucose, insulin resistance and inadequate of insulin secretion.

Prevalence in 65 years old or over: (BRFSS data)¹²
Broward and Miami-Dade County: 26.1 and 25.7



Diabetes: Oral Manifestation

Lichen Planus

Neurosensory dysesthesias and taste dysfunction

Xerostomia due to salivary gland dysfunction
The manifestations are ¹⁹

Gingivitis and Periodontitis

Dental caries

Halitosis

Candidiasis

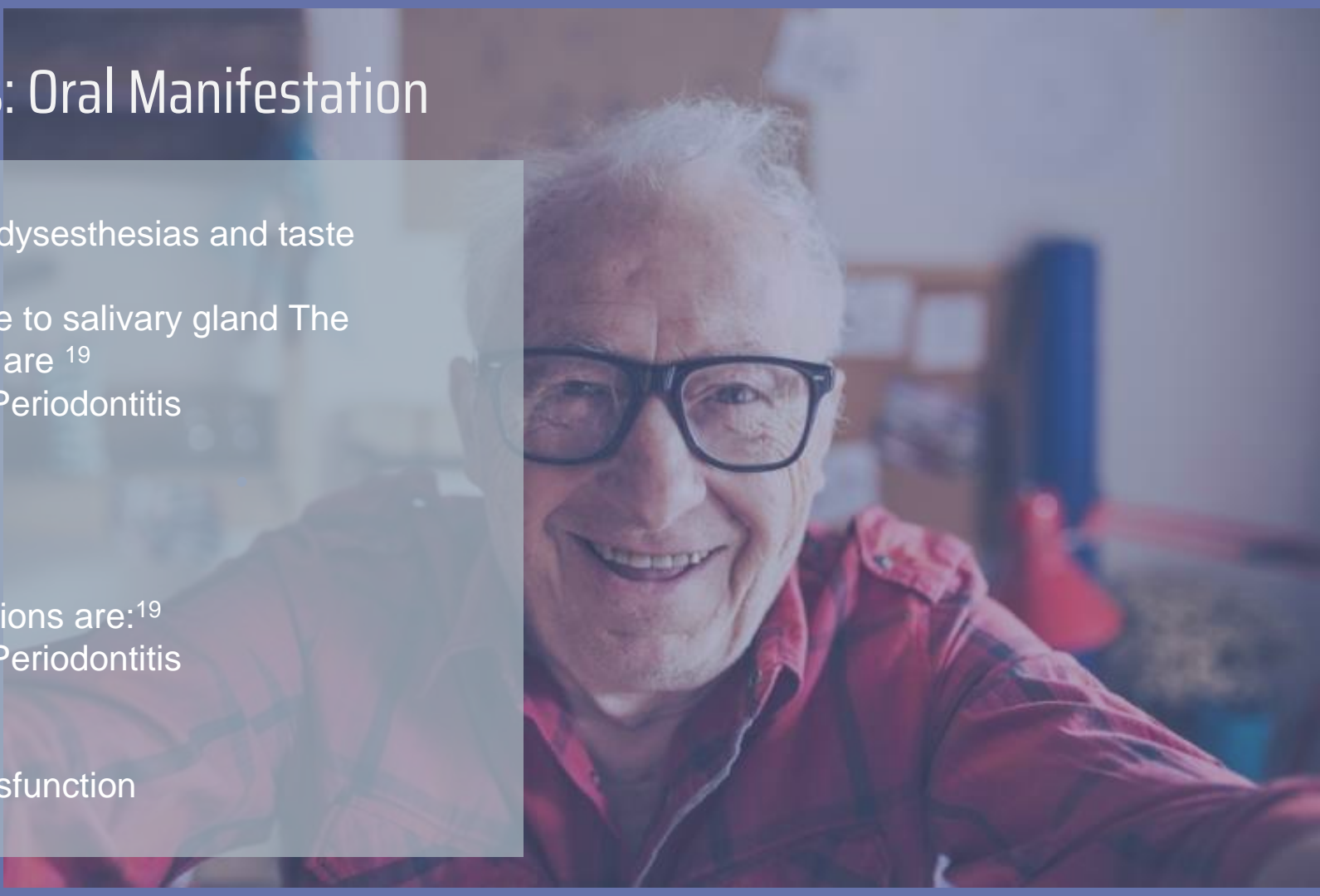
The manifestations are:¹⁹

Gingivitis and Periodontitis

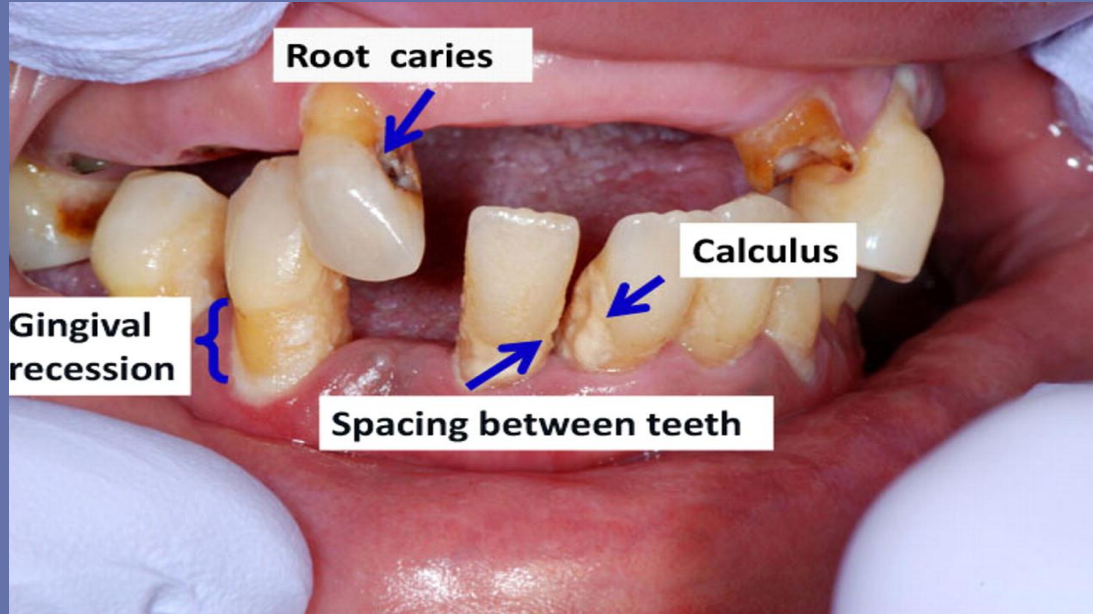
Dental caries

Halitosis

Candidiasis dysfunction



Diabetes: Oral Manifestation



Diabetes: Health Impact

Oral Health:

- Sensitivity and discomfort
- Difficulty in mastication
- Oral infections
- Oral abscess

Overall Health:

Macro and Micro-vascular complications

- Coronary heart disease
- Cerebrovascular disease
- Peripheral vascular disease
- Retinopathy
- Neuropathy
- Nephropathy
- **Periodontitis is considered newer complication of DM.²⁰**



Diabetes: Dental Considerations



- Poor wound healing
- Disruption in immune system functions
- Failure of dental treatments
- Hypoglycemia
- Periodontitis ¹⁷

Nutrition Interventions

- Individualized Therapeutic diet –American Diabetes Association
- Adequate fluid
- Vitamin A, C, D, Calcium, Phosphorus rich foods
- Supplementation: Vitamin C and A ²¹
- Glucose monitoring
- Educate patient and caregivers
- Medicare Part B –reimburses MNT ²²

Immunocompromised Conditions

Immunocompromised Conditions: Oral Manifestations

- Fungal infections: Candidiasis and Angular cheilitis
- Viral infections: Herpes Simplex and Herpes Zoster
- Bacterial infections: tuberculosis and syphilis
- Xerostomia
- Aphthous ulcer
- Mucosal inflammation and laceration
- Dental caries

Immunocompromised conditions: Oral Manifestations



Immunocompromised conditions: Health Impacts



Overall Health:

- Physical disability
- Adverse effects on mental health
- Social isolation due to stigma
- Financial burden on family
- Ultimately, all these lead to poor quality of life

Oral Health:

- Difficulty in mastication and drinking.
- Compromised aesthetics in case of extensive dental caries
- Oral discomfort due to mucosal lacerations and ulcers

Immunocompromised conditions: Dental considerations

Risks of treatment

- **HIV:** Transmission of infection.
- Post-extraction complications included persistent bleeding, persistent pain, localized alveolitis(dry socket), local wound infection, or delayed wound healing ²⁴
- **Cancer:** Radiation and chemotherapy
- Osteoradionecrosis of Jaw (ORNJ) is most common complication following dental treatment in post-radiation patients if critical care.

Nutrition Interventions

Treatment: ²⁶

- High protein, calorie dense foods
- Multiple small meals
- Liquid oral nutritional supplements
- Physical activity



Chronic Obstructive Pulmonary Disease

COPD: Oral Manifestations

The oral manifestations of COPD are most often due to inhalation drugs and frequent use of nebulizer and inhalers:²⁵

- Xerostomia
- Gingival enlargement
- Ulceration of tongue and mucosa
- Periodontitis
- Depapilation of tongue
- Candidiasis
- Discoloration of teeth



COPD: Health Impacts

Oral Health:

- Discomfort in mastication and swallowing
- Risk of loss of natural dentition
- Aesthetic of dentition



Overall Health:

- Physical inactivity due to poor respiratory function
- Easy fatigue due to lack of oxygenated blood supply
- Mental stress and anxiety
- Sleep deprivation due to obstructive airway
- Poor quality of life
- Malnutrition

COPD: Dental considerations

Treatment:²⁷

- Patient position in dental chair
- Frequent breaks during dental treatments
- Drug history: Prevent critical emergencies
- Regular tooth scaling and root planning

Nutrition Interventions

Diet Therapy:²⁹

- Lower carbohydrate, moderate protein, moderate fat
- Liquid oral supplements: Pulmocare or Ensure/Boost
- Small frequent meals
- Adequate fluids

Interventions: Dental

- Consultation with physician or health-specialist
- Consultation with dentist
- Educate vulnerable population, immediate family and nursing staff



Interventions: Nutrition



- Nutrition Screening
- Consultation with dietitian for nutrition assessment and MNT
- Educate immediate family and caregivers
- Cultural considerations

RESOURCES

Professional

- **American Dental Association**
- <https://www.ada.org/en/publications>

- **Florida Health**
- <http://www.floridahealth.gov/programs-and-services/community-health/dental-health/index.html>

- **Clinical and Nutrition Services - Florida Health Broward County**
- <http://broward.floridahealth.gov/programs-and-services/clinical-and-nutrition-services/index.html>

Consumer

Free Dental Care

<https://www.freedentalcare.us/co/fl-broward>

Dental Clinics.org

https://www.dentalclinics.org/lis/fl-broward_county_health_department_dental_clinic_northwest_health_center

Academy of Nutrition and Dietetics

<https://www.eatright.org/>

National Institute of Dental and Craniofacial Research

<https://catalog.nidcr.nih.gov/OrderPublications/>

References

1. Aging changes in teeth and gums: MedlinePlus Medical Encyclopedia. MedlinePlus. <https://medlineplus.gov/ency/patientinstructions/000951.htm>. Accessed November 23, 2019.
2. Aging and Dental Health. Aging and dental health (Geriatrics). <https://www.ada.org/en/member-center/oral-health-topics/aging-and-dental-health>. Accessed November 23, 2019.
3. Malnutrition risk: Malnutrition Quality improvement initiative.2018. <http://malnutritionquality.org/why-malnutrition-matters.html> Accessed: 11/27/2019
4. Oral Health for Older Americans. Facts about older adult oral health. Centers for Disease Control. 2019. https://www.cdc.gov/oralhealth/basics/adult-oral-health/adult_older.htm Accessed: 11/27/2019
5. Nutrition for Older Adults. MedlinePlus. <https://medlineplus.gov/nutritionforolderadults.html>. Published November 5, 2019. Accessed November 23, 2019.
6. Razak PA, Richard KMJ, Thankachan RP, Hafiz KAA, Kumar KN, Sameer KM. Geriatric oral health: a review article. Journal of international oral health : JIOH. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4295446/>. Published 2014. Accessed November 23, 2019.
7. U.S. Census Bureau QuickFacts: Miami-Dade County, Florida; Broward County, Florida. Census Bureau QuickFacts. <https://www.census.gov/quickfacts/fact/chart/miamidadecountyflorida,browardcountyflorida/AGE775218#AGE775218>. Accessed November 23, 2019.
8. Florida's Economic Future & the Impact of Aging. The Florida Legislature Office of Economic and Demographic Research. http://edr.state.fl.us/Content/presentations/economic/FLEconomicFuture&theImpactofAging_3-17-14.pdf. Published March 17, 2014. Accessed November 23, 2019.
9. Zevallos JC, Wilcox ML, Jean N, Acuña JM. Profile of the Older Population Living in Miami-Dade County, Florida: An Observational Study. Medicine. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4902408a>. Published May 2016. Accessed November 23, 2019.
10. Gil-Montoya JA, de Mello ALF, Barrios R, Gonzalez-Moles MA, Bravo M. Oral health in the elderly patient and its impact on general well-being: a nonsystematic review. Clinical interventions in aging. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4334280/>. Published February 11, 2015. Accessed November 23, 2019.

References

11. Treatment Needs in Seniors (Age 65 and over). National Institute of Dental and Craniofacial Research. <https://www.nidcr.nih.gov/research/data-statistics/treatment-needs/seniors>. Accessed November 23, 2019.
12. Behavioral Survey Data. 2016 County Level Reports | Florida Department of Health. <http://www.floridahealth.gov/statistics-and-data/survey-data/behavioral-risk-factor-surveillance-system/index1.html>. Accessed November 23, 2019.
13. Cruz-Pamplona M , Jimenez-Soriano Y , Sarrión-Pérez MG . Dental considerations in patients with heart disease. *J Clin Exp Dent*. 2011;3(2):e97- 105. <http://www.medicinaoral.com/odo/volumenes/v3i2/jcedv3i2p97.pdf>
14. Ito H-O. Infective endocarditis and dental procedures: evidence, pathogenesis, and prevention. *The journal of medical investigation : JMI*. <https://www.ncbi.nlm.nih.gov/pubmed/16953053>. Published August 2006. Accessed November 23, 2019.
15. DASH Eating Plan. National Heart, Lung, and Blood Institute. <https://www.nhlbi.nih.gov/health-topics/dash-eating-plan>
16. Dental Care. Alzheimer's Disease and Dementia. <https://www.alz.org/help-support/caregiving/daily-care/dental-care>. Accessed November 23, 2019.
17. Volkert D, Chourdakis M, Faxen-Irving G. et al ESPEN guidelines on nutrition in dementia. *Clinical Nutrition*.2015;34: 1052e1073
18. Delwel S, Binnekade TT, Perez RSGM, Hertogh CPM, Scherder EJA, Lobbezoo F. Oral hygiene and oral health in older people with dementia: a comprehensive review with focus on oral soft tissues. *Clinical oral investigations*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5748411/>. Published January 2018. Accessed November 23, 2019.
19. Ship JA. Diabetes and Oral Health. *Journal of American Dental Association*. [https://jada.ada.org/article/S0002-8177\(14\)65193-X/pdf](https://jada.ada.org/article/S0002-8177(14)65193-X/pdf). Published October 2003. Accessed November 23, 2019.
20. Persson GR. Diabetes and Periodontal Disease: An Update for Health Care Providers. *Diabetes Spectrum*. <https://spectrum.diabetesjournals.org/content/24/4/195>. Published November 1, 2011. Accessed November 24, 2019.
21. Wolfman T. Healthy Nutrition for Healthy Teeth, Eatright.org Academy of Nutrition and Dietetics, 2018. <https://www.eatright.org/food/vitamins-and-supplements/nutrient-rich-foods/healthy-nutrition-for-healthy-teeth>

References

22. Nutrition therapy services. <https://www.medicare.gov/coverage/nutrition-therapy-services>. Accessed: 11/27/2019
23. HIV Cases. FLHealthCHARTS Data Viewer.
<http://www.flhealthcharts.com/charts/OtherIndicators/NonVitalHIVAIDSViewer.aspx?cid=0471>. Accessed November 23, 2019.
24. Bonito AJ. Management of Dental Patients Who Are HIV Positive: Summary. AHRQ Evidence Report Summaries.
<https://www.ncbi.nlm.nih.gov/books/NBK11965/>. Accessed November 24, 2019.
25. Ayinampudi BK, Gannepalli A, Pacha VB, Kumar JV, Khaled S, Naveed MA. Association between oral manifestations and inhaler use in asthmatic and chronic obstructive pulmonary disease patients . J NTR Univ Health Sci [serial online] 2016; 5:17-23.
Retrieved from: <http://www.jdrntruhs.org/text.asp?2016/5/1/17/178950> . Accessed November 23, 2019.
26. Heber D, Li Z. Nutrition Intervention in Cancer. Nutrition Intervention in Cancer.2016;100 (6):1329-1340.DOI: 10.1016/j.mcna.2016.06.011
27. Gaeckle NT, Heyman B, Criner AJ, Criner GJ. Markers of Dental Health Correlate with Daily Respiratory Symptoms in COPD. Chronic Obstructive Pulmonary Diseases:Journal of the COPD Foundation. Date? <https://journal.copdfoundation.org/jcopdf/id/1185/Markers-of-Dental-Health-Correlate-with-Daily-Respiratory-Symptoms-in-COPD>. Accessed November 24, 2019.
28. Gautam Rawal G, Yadav S. Nutrition in chronic obstructive pulmonary disease: A review. Journal of translational internal medicine.2015;3(4):151-154.
29. Collins P, Yang I, Chang Y-C, Vaughan A. Nutritional support in chronic obstructive pulmonary disease (COPD): an evidence update. Journal of Thoracic Disease.2019;11(17):s2230-s2237. doi: 10.21037/jtd.2019.10.41

Evaluation

CE report Survey

<https://redcap.nova.edu/redcap/surveys/?s=FAM99MJYNA>

GWEP Training Knowledge Survey



<https://redcap.nova.edu/redcap/surveys/?s=CHETXK48Y4>

THANKS

