

**Socio-demographic Determinants of
Tooth Loss among Diabetic and Non-
Diabetic American Adults, BRFSS,
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DISCLOSURE STATEMENT

**We have no financial disclosure to make.
The project is based on publicly available
data from the Centers for Disease Control
and Prevention**

LEARNING OBJECTIVES

Upon completion of this session, participants will be able to:

- Identify socio-demographic factors contributing to teeth loss among diabetic adults
- Identify barriers to dental health services use among diabetic adults
- Articulate possible strategies to overcome the barriers to dental health experienced by diabetics

BACKGROUND

Oral health has been shown to have a great impact on the general health and the overall quality of life of an individual.

Poor oral health can lead to:

- Oral diseases
- Tooth loss
- Chronic diseases
- Malnutrition & changes in dietary intake
- Increased pain & discomfort
- Irregular sleep patterns (Locker,)
- Changes in smile & appearance
- Changes in ability to make facial expressions
- Changes in speech
- Changes in taste & smell
- Changes in ability to chew & swallow (Acs; U.S., 2000)
- Low self-esteem & negative self worth (Huff, Kinion, Kendra & Klecan, 2006)

BACKGROUND

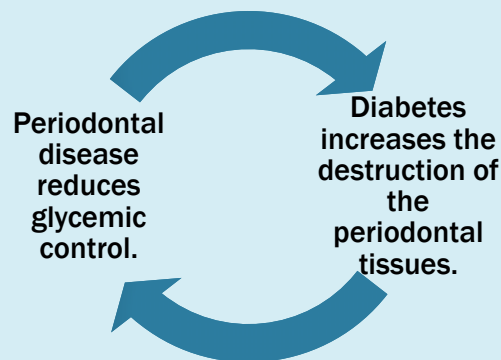
The Centers for Disease Control and Prevention considers diabetes mellitus to be one of the greatest public health burdens in the United States.

It is estimated that 25.8 million (8.3%) Americans and 11.3% of American adults are living with diabetes.

Diabetes is a major or leading cause of several health conditions and complications including heart disease, stroke, kidney failure, non-traumatic lower limb amputation, blindness, and severe periodontal disease.

BACKGROUND

Studies have shown a bidirectional relationship between diabetes and periodontal disease (Nelson, 2008; Taylor & Borghakke, 2008; Valerio et al., 2011).



BACKGROUND

- Oral health has been shown to have a great impact on the general health and the overall quality of life of an individual.
- Studies have shown disparities among the social and psychological impacts of oral health.
- Individuals who lose teeth have compromised nutritional intake;
- The problem is exacerbated among diabetic patients who improperly manage the disease

METHODS

- We analyzed data for diabetic and non-diabetic adult Americans (n=442,397) from the 2010 Behavioral Risk Factor Surveillance System (BRFSS) using STATA 12 software package for Windows.
- In addition to descriptive statistics, multivariate regression techniques were used.
- Data were weighted and adjusted for the complex sampling strategy used in the data collection.



BACKGROUND

Research has shown evidence of socio-demographic and socioeconomic disparities in oral health (Gilbert, Duncan & Shelton, 2003; Lasser et al., 2006)

- Gender
- Race/Ethnicity
- Region of Residence
- Education
- Employment Status
- Income
- Health Insurance Status

An inverse relationship exists between health behaviors and oral health (Sabbah, Tsakos, Sheiham & Watt, 2009)

- Last Doctor Visit
- General Health Status
- BMI
- Alcohol Intake
- Smoking Status
- Exercise Status
- Last Dental Visit
- Last Dental Cleaning

DEPENDENT VARIABLES

■ Tooth loss measured as

BRFSS question “ *How many of your permanent teeth have been removed because of tooth decay or gum disease? Include teeth lost to infection, but do not include teeth lost for other reasons, such as injury or orthodontics.* “

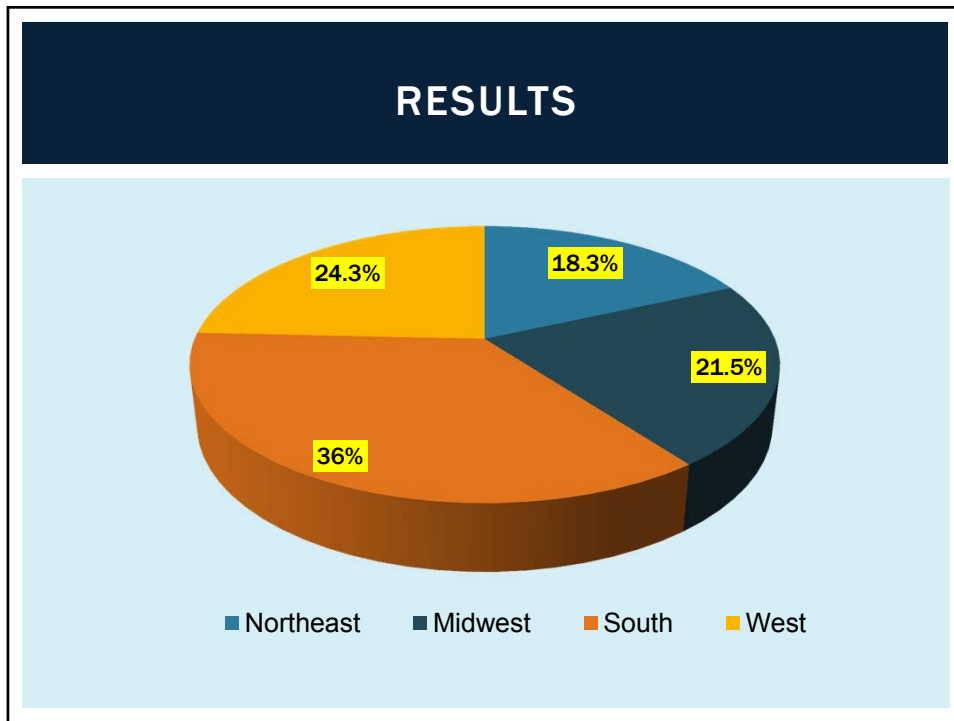
- 1 to 5
- 6 or more, but not all
- All
- Don't know/Not sure
- None
- Refused
- Not asked or Missing

RESULTS

	Obs	Weighted %
Gender		
Female	167,292	48.8%
Male	275,105	51.2%
Last Dental Visit		
<12 Months Ago	300,041	67.8%
>12 Months Ago	142,356	32.2%
Last Dental Cleaning		
<12 Months Ago	278,547	64.2%
>12 Months Ago	163,850	35.8%

RESULTS

	Obs.	Weighted %
Race/Ethnicity		
White	345,411	68.0%
Black/African-American	35,455	9.7%
Hispanic	31,443	14.1%
Others	30,088	8.2%
Region		
Less than \$20,000	76,896	15.5%
\$20,000-\$34,999	83,972	16.7%
\$35,000-\$49,999	57,765	11.9%
\$50,000 and over	162,262	42.9%
Missing	61,502	13.1%

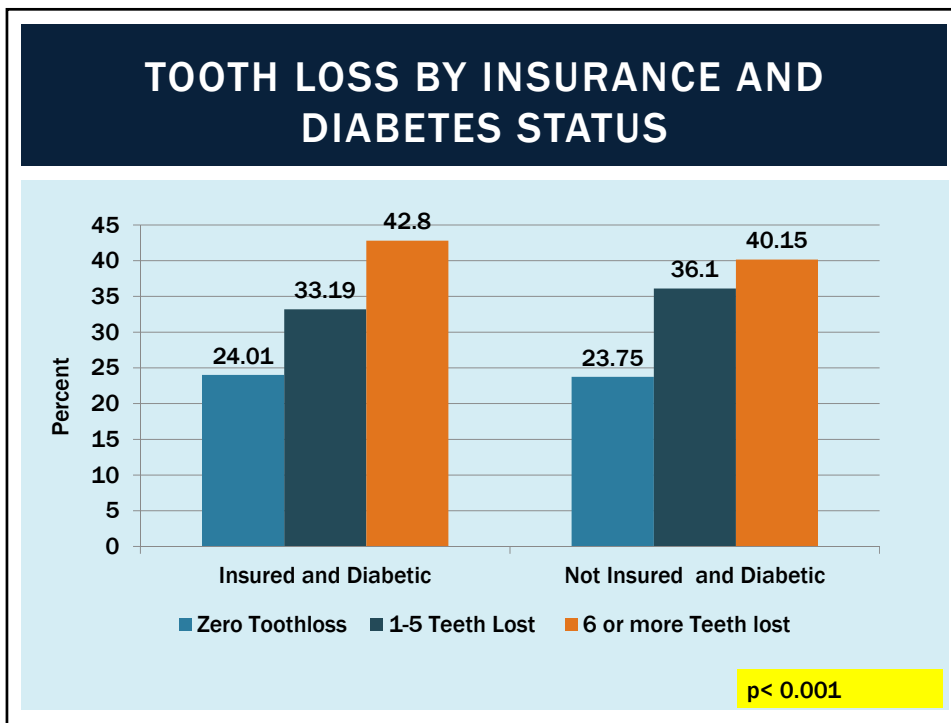


TOOTH LOSS BY DEMOGRAPHIC CHARACTERISTICS

	Zero Teeth Loss		1-5 Teeth Lost		6 or more Teeth Lost		p-value
	Obs.	Weighted %	Obs.	Weighted %	Obs.	Weighted %	
Race							0.0001
White	155733	38.40	109330	19.10	80348	10.50	
Black/African-American	10335	4.04	13081	3.64	12039	2.06	
Hispanic	13955	7.58	11966	5.09	5522	1.38	
Others	12875	4.66	9958	2.48	7255	1.08	
Gender							
Male	73187	27%	55907	15%	38198	6.74%	0.0001
Female	119711	27.6%	88428	15.3%	66966	8.3%	

RESULTS							
	Zero Teeth loss		1-5 Teeth Lost		6 or more Teeth Lost		P-value
	Obs.	Weighted %	Obs.	Weighted %	Obs.	Weighted %	
Income							0.0001
< \$20,000	18485	5.78	24068	5.24	34343	4.45	
\$20,000-34,999	26841	7.08	30116	5.82	27015	3.81	
\$35,000-49,999	24402	5.95	21241	4.08	12122	1.85	
≥ \$50,000	98092	28.70	49121	11.40	15049	2.75	
Missing	25078	7.19	19789	3.73	16635	2.16	
Insurance							0.0001
Yes	173147	46.60	126866	25.00	94141	12.80	
No	19751	8.08	17469	5.32	11023	2.13	

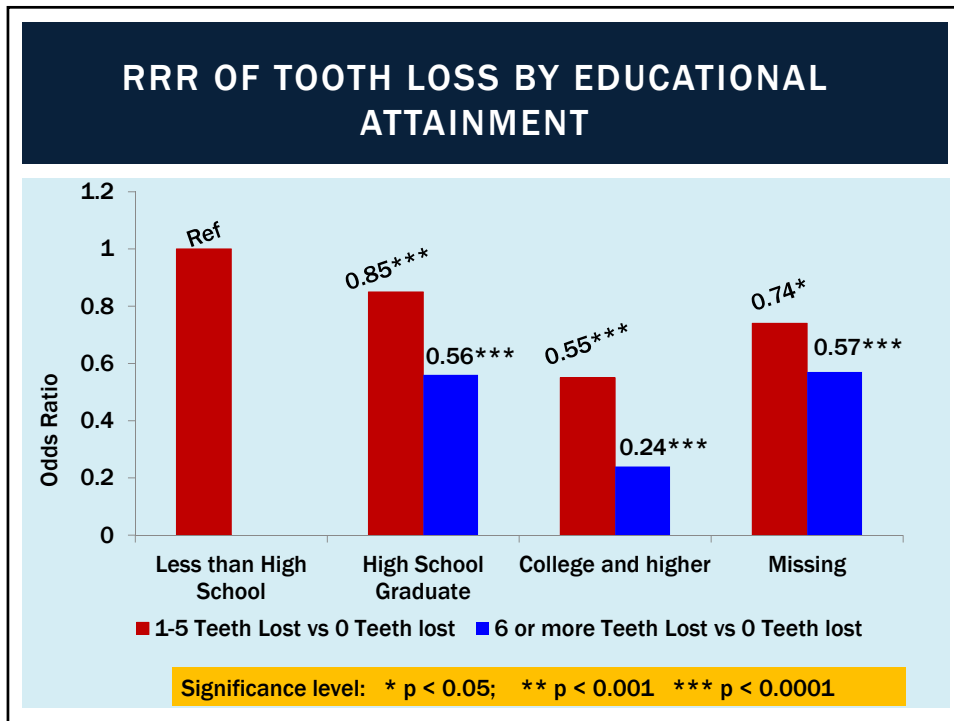
TOOTH LOSS BY DIABETES STATUS							
	Zero Teeth loss		1-5 Teeth Lost		6 or more Teeth Lost		P-value
	Obs.	Weighted %	Obs.	Weighted %	Obs.	Weighted %	
Males Diabetic Status							0.0001
Yes	5791	25.54	7913	34.91	8966	39.55	
No	67396	46.60	47994	33.19	29232	20.21	
Female Diabetic Status							0.0001
Yes	7570	22.92	10705	32.41	14751	44.67	
No	112141	46.32	77723	32.11	52215	21.57	



RRR OF TOOTH LOSS BY DEMOGRAPHIC CHARACTERISTICS

	1-5 Teeth Lost vs 0 Teeth lost		6 or more Teeth Lost vs 0 Teeth Lost	
	RRR	95% CI	RRR	95% CI
Gender				
Female	1.0			
Male	0.98	0.947 - 1.009	1.13***	1.084 - 1.177
Race/Ethnicity				
White	1.00		1.00	
Black/African-American	1.96***	1.850 - 2.075	1.97***	1.835 - 2.112
Hispanic	1.36***	1.288 - 1.445	0.69***	0.638 - 0.756
Others	1.38***	1.292 - 1.469	1.29***	1.183 - 1.403

Significance level: * p < 0.05 ** p < 0.001 *** p < 0.0001



CONCLUSION

- Several variables were statistically significant both at the bivariate and multivariate analysis.
- Lack of or delayed dental visit and dental cleaning had significant impact on tooth loss
- Stratified by insurance coverage, having diabetes was significantly associated with tooth loss
- Stratified by gender, having diabetes was significantly associated with tooth loss
- Risk of tooth loss decreased with increased level of education

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