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Dental Care Utilization among North Carolina Rural Older Adults

Thomas A. Arcury, PhD¹, Margaret R. Savoca, PhD², Andrea M. Anderson, MS³, Haiying Chen, PhD³, Gregg H. Gilbert, DDS, MBA, FAAHD⁴, Ronny A. Bell, PhD⁵, Xiaoyan Leng, PhD³, Teresa Reynolds, BA⁵, and Sara A. Quandt, PhD⁵

¹Department of Family and Community Medicine, Wake Forest School of Medicine, Winston-Salem, NC

²Department of Nutrition, University of North Carolina at Greensboro, Greensboro, NC

³Department of Biostatistical Sciences, Division of Public Health Sciences, Wake Forest School of Medicine, Winston-Salem, NC

⁴Department of General Dental Sciences, School of Dentistry, University of Alabama at Birmingham, Birmingham, AL

⁵Department of Epidemiology and Prevention, Division of Public Health Sciences, Wake Forest University School of Medicine, Winston-Salem, NC

Abstract

Objectives—This analysis delineates the predisposing, need, and enabling factors that are significantly associated with regular and recent dental care in a multi-ethnic sample of rural older adults.

Methods—A cross-sectional comprehensive oral health survey conducted with a random, multi-ethnic (African American, American Indian, white) sample of 635 community-dwelling adults aged 60 years and older was completed in two rural southern counties.

Results—Almost no edentulous rural older adults received dental care. Slightly more than one-quarter (27.1%) of dentate rural older adults received regular dental care and slightly more than one-third (36.7%) received recent dental care. Predisposing (education) and enabling (regular place for dental care) factors associated with receiving regular and recent dental care among dentate participants point to greater resources being the driving force in receiving dental care. Contrary to expectations of the Behavioral Model of Health Services, those with the least need (e.g., better self-rated oral health) received regular dental care; this has been referred to as the Paradox of Dental Need.

Conclusions—Regular and recent dental care are infrequent among rural older adults. Those not receiving dental care are those who most need care. Community access to dental care and the ability of older adults to pay for dental care must be addressed by public health policy to improve the health and quality of life of older adults in rural communities.

Keywords

dental care utilization; aging; gerontology; rural health; minority health; public health policy

Corresponding and Reprint Author: Thomas A. Arcury, PhD, Department of Family and Community Medicine, Wake Forest University School of Medicine, Medical Center Boulevard, Winston-Salem, NC 27157-1084, tarcury@wfubmc.edu.

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Introduction

Rural older adults in the United States have worse oral health compared to their urban counterparts.^{1–5} However, few data are available on the utilization of dental care services among rural older adults. Historically, rural communities have had limited access to formal health services. Although access to primary medical care in rural communities has improved in the past several decades,^{6–7} access to specialty medical care and dental care remains inadequate.^{8–9} Federal health insurance programs, such as Medicare, have improved health care access of rural older adults, but these programs include little coverage of dental services. Delineating factors associated with regular dental care utilization among older adults should help inform policy changes needed to improve dental services and oral health among older adults.

Analysis of factors affecting regular dental care utilization among rural older adults is limited.¹⁰ Gilbert and colleagues^{11–13} have provided the most detailed analyses of dental care utilization among middle-aged and older adults. They categorized adults as regular attenders (those who receive regular dental care) or problem-oriented attenders (those who only receive dental care when they have a problem). Among dentate adults, being white, female, having the ability to pay for services, and a positive attitude toward dental care were related to being a regular dental attender. Importantly, they found that those with greater need for dental care, as determined by having more dental disease and worse self-rated oral health, were actually less likely to receive it, referring to this as the Paradox of Dental Need.¹³

Other investigators have focused on older adults. Wu and colleagues¹⁴ showed that 66.8% of adults aged 60 and older (in 1999–2002 and 2003–2004) had received dental care within the past year, with 68.9% of white and 48.5% of African American older adults receiving dental care within the past year. Higher socioeconomic status was a major factor positively associated with receiving dental care. Among 65 and older Canadians, 36.5% of dentate and 13.5% of edentulous adults received regular dental care.¹⁵ Higher education, main supporting person not a family member, few activity of daily living restrictions, and residence in an urban area were associated with regular dental care among the dentate, while higher education, main supporting person not a family member, higher income, recent dental problems, and longer duration of denture use were associated with regular dental care among the edentulous. Macek and colleagues¹⁶ reported that 71% of dentate and 20% of edentulous US adults aged 55 and older received recent dental care. Those who were male, non-white, poor, and had no dental insurance were less likely to have received care.

The Behavioral Model of Health Services^{11,17–18} provides a framework for the analysis of dental health care utilization. This model proposes that health care behavior, including regular dental care and recent dental care, is influenced by three sets of factors: predisposing, enabling, and need. Predisposing factors exist prior to a disease, such as demographic characteristics, education or health beliefs, and predispose a person to use a service. Enabling factors are resources, such as income, insurance or social support, that affect a person's ability to access a health care service. Need factors are a person's illness characteristics that require the use of services. Previous research suggests predisposing, need, and enabling factors that should be included in this analysis.¹¹ The objective of this analysis is to delineate the predisposing, need, and enabling factors that are significantly associated with regular dental care and recent dental care in a multi-ethnic sample of rural older adults.

Methods

Sample Design

The Rural Nutrition and Oral Health (RUN-OH) Study was conducted in two rural North Carolina counties. Both of the counties are classified as nonmetropolitan.¹⁹ In 2008, the counties had 1.7 and 1.8 dentists per 10,000 residents, compared to 4.3 dentists per 10,000 residents for the state.²⁰ Participants were located using a random dwelling selection and screening procedure based on a multistage cluster sampling design in which the primary sampling units (clusters) were stratified and selected with probability proportionate to their sizes. The eligible resident in 635 of the 859 eligible dwelling units completed the interview, for a response rate of 73.9%. The sampling procedure was designed and implemented by the investigators in consultation with the University of Illinois Survey Research Laboratory, which provided weights for participants based on size of the clusters from which they were selected, and their probability of selection within each dwelling unit.

Data Collection

Data collection was completed between January 2006 and March 2008, by local, trained interviewers in face-to-face home interviews lasting 1.5 to 2.5 hours. Ten percent of each interviewer's interviews were verified by telephone. The questionnaire included sections addressing personal characteristics, current oral health problems, and social interaction and social engagement. Persons with at least one natural tooth were asked to undergo an in-home oral assessment. Among 413 dentate participants, 362 completed the oral assessment, for a participation rate of 87.6%. Oral assessments were conducted by dental hygienists who performed tooth counts and collected other components of oral health. The two hygienists who conducted the assessments underwent training, calibration, and supervision by a research dentist as described elsewhere in detail.⁵ Participants were given an incentive valued at \$10.00 at the completion of the interview, and an additional incentive valued at \$20.00 at the completion of the oral assessment. The research protocol for this study was approved by the Wake Forest University School of Medicine Institutional Review Board.

Measures

This analysis has two outcome measures: reporting regular dental care, and reporting recent dental care. Reporting regular dental care was based on an interview item which asked participants whether they saw a dentist on a regular basis, only when they had a problem, or had never been to a dentist. Those answering that they saw a dentist on a regular basis were included in the group who received regular dental care. Those who answered that they only saw a dentist when they had a problem ("problem-oriented attenders")²¹ and those who never saw a dentist were included in the group of those not receiving regular dental care. Reporting recent dental care was based on an interview item which asked participants the length of time since they had last visited a dentist. Those answering that they had visited a dentist in the past year, were placed in the recent dental care category; those who responded more than a year or did not know were placed in the no recent dental care category.

Measures of predisposing factors were sex, age (60–69, 70 and older), ethnicity (African American, American Indian, white) based on participant self-identification, education (less than high school, high school, more than high school), and dental anxiety (Corah Dental Anxiety Scale).²² Enabling factors included current employment, having Medicaid, poverty status, having dental insurance, having a regular place for dental care, and social interaction. Current employment had the values not employed, employed part-time, and employed full-time. Having Medicaid, dental insurance, and a regular place for dental care were dichotomous measures. Poverty status was based on household income and was dichotomized as above or at/below the poverty line. A social interaction score was based on

a measure reported by Mendes de Leon and colleagues.²³ Participants reported the number of non-co-resident children, other relatives, and friends they interacted with each month. The number of children, other relatives, and friends seen each month was recorded as the actual number and truncated at 10 for those with 10 or more. Participants also reported the number of times they spoke on the telephone each week with children, relatives, and friends (all truncated at 10). The social interaction score is the sum of these 6 factors. Total values ranged from 4 to 60, with values placed in the categories 4 to 15, 16 to 30, and 31 to 60.

Need factors were self-rated oral health, number of teeth, oral pain, sore or bleeding gums, ever having periodontal disease, gingival recession, tooth mobility assessment, decayed teeth, and filled teeth. Self-rated oral health had the values of poor or fair versus good, very good, or excellent. Number of teeth had the values of 1–10, 11–20, and more than 20. For dentate participants, tooth counts were obtained from the oral examination. If the participant refused the oral examination (n=51), self-reported number of teeth obtained at the survey was used. The Spearman's correlation of self-report and examination in those who had both was 0.92 ($p<0.0001$). Oral pain, sore or bleeding gums, and ever having been diagnosed with periodontal disease were dichotomous measures based on self-reports. For dentate participants who completed the oral clinical examination, gingival recession was measured in millimeters, and mobility assessment was measured on a 3-point scale where 1=slight, 2=moderate, and 3=severe mobility. Gingival recession was categorized as having any tooth at or above the threshold of 4 mm. Mobility assessment was coded as having any teeth that scored 2 or more, or not. Visual tooth status was recorded as sound, decayed, filled, missing, crowned, implant, or presence of decayed root fragment. Decayed teeth and filled teeth were dichotomous measures that indicated any or none.

Analysis

All analyses were conducted using the weighted data as provided by the University of Illinois Survey Research Laboratory. Data were summarized by using weighted means and standard errors (SEs) for continuous variables, and weighted frequencies and percents for categorical variables. Unadjusted associations between receiving dental care and predisposing, enabling, and need factors were tested using Rao-Scott Chi-Square tests for categorical variables and ANOVA for continuous variables. Logistic regression models were then used to assess the simultaneous associations between receiving regular dental care and these factors. Several different models were run due to high levels of missing data for the Dental Anxiety Index and measures from the oral examination (gingival recession, mobility assessment, decayed teeth, filled teeth). The model including those participants with all measures is reported. However, differences with models including participants that were excluded due to missing values are noted. All analyses were completed using SAS version 9.2 (SAS Institute, Inc, Cary, NC). A p-value of 0.05 was considered statistically significant.

Results

Participant Characteristics

About one-quarter of all participants (172, 27.1%) reported receiving regular dental care, and about one-third (233, 36.7%) reported receiving recent dental care. Most (478, 72.1%) reported seeing a dentist only when experiencing an oral health problem. Five participants (0.8%) reported they had never been to a dentist or some other response. Of the 413 dentate participants, 163 (39.5%) received regular dental care, while 9 (4.1%) of the 222 edentulous participants received regular dental care. Similarly, 210 (50.8%) dentate participants and 23 (10.4%) edentulous participants received recent dental care. Due to the small number of

edentulous participants who received regular or recent dental care, the remaining analyses are restricted to dentate participants.

Dentate participants were similar to the total study sample for sex (about 55% female) and ethnicity (about 22% African American, 31% American Indian, and 47% white) (Table 1). However, compared to the total study sample, dentate participants were somewhat younger (49.6% versus 44.7% aged 60 to 69 years) and better educated (25.8% versus 19.8% greater than high school). Dentate participants were similar to the total study sample for current employment (over 80% not currently employed). Compared to the total study sample, a smaller percentage of dentate participants were poor, with 20.4% versus 31.4% receiving Medicaid, and 25.5% versus 32.1% below the poverty line. Compared to the total study sample, a larger percentage of dentate participants had a regular place for dental care and reported oral pain. A greater percentage of the dentate sample had fair or poor self-rated oral health (52.5% versus 45.0%) and oral pain (14.1% versus 10.9%), but fewer reported sore or bleeding gums (17.5% versus 21.5%).

Bivariate Analysis

Fewer dentate participants received regular dental care (39.5%) than received recent dental care (50.7%). However, similar predisposing, enabling and need factors are associated with receiving regular dental care and recent dental care (Table 2). Among the Predisposing Factors, white ethnicity, greater education, and lower dental anxiety each had significant associations with receiving more regular and recent dental care. Neither sex nor age was associated with receiving regular or recent dental care.

Among Enabling Factors, employment and social interaction were not associated with receiving regular or recent dental care. Fewer older adults who received Medicaid received regular dental care than those who did not receive Medicaid. Incomes at or above the poverty line, having dental insurance, and having a regular place for dental care were all associated with receiving regular and recent dental care.

Need Factors indicating long-term conditions were associated with receiving regular and recent dental care among these rural older adults. These included self-rated oral health of excellent, very good or good; having a higher number of natural teeth; less gingival recession; less tooth mobility; having no decayed teeth; and having filled teeth. Indicators of other oral health problems (oral pain, sore or bleeding gums, and periodontal disease) were not associated with receiving regular or recent dental care.

Multivariable Analysis

Predisposing Factors education and dental anxiety maintained statistically significant associations for receiving regular dental care in multivariable analysis (Table 3). Those with less than a high school education were less likely to receive regular dental care than those with greater than high school education. As dental anxiety increased, the odds of receiving regular dental care decreased. Having a regular place for dental care remained the only Enabling Factor associated with regular dental care; those with no regular place for dental care had lower odds of receiving regular dental care. Self-rated oral health was one of two Need Factors that remained associated with receiving regular dental care. Those with greater self-rated oral health had greater odds of receiving regular dental care. Those with no filled teeth had lesser odds of receiving regular dental care.

Dental anxiety was the sole Predisposing Factor that maintained a statistically significant association for receiving recent dental care; as dental anxiety increased, odds of receiving recent dental care decreased. Having a regular place for dental care remained the only Enabling Factor associated with recent care; those with no regular place for dental care had

lower odds of receiving recent dental care. Three Need Factors remained associated with receiving recent dental care. Those with greater self-rated oral health and with no decayed teeth had greater odds of receiving recent dental care. Those with no filled teeth had lesser odds of receiving recent dental care.

Discussion

Little more than one-quarter and one-third of these rural older adults received regular dental care or recent dental care, respectively. Few of the edentulous older adults received regular or recent dental care. The levels of regular and recent dental care among the rural older adults in this study are far lower than that reported for older adults in the US and elsewhere. Most research has focused on recent dental care. For example, in 1999, 71% of dentate and 18% of edentulous US adults aged 65 and older reported a dental visit in the previous year.¹⁶ Using two panels of the National Health and Nutrition Examination Survey (1999–2002; 2003–2004), Wu et al.¹⁴ reported that 66.8% of adults aged 60 and older had received dental care within the past year, with 68.9% of white and 48.5% of African American older adults receiving dental care. Based on 1991–92 data, Browthwell et al.¹⁵ reported that 36.5% of dentate Canadian adults aged 65 and older and about 13.5% of edentulous Canadian adults aged 65 and older reported a dental visit in the previous six months. In a sample of English adults aged 65 and older, Lang and colleagues²⁴ found that 69.9% received regular dental check-ups.

The majority of older adults (72%) remain “problem-oriented attenders” for dental care.¹¹ Among dentate rural older adults, regular dental care is more common than among their edentulous counterparts, but about six in ten only seek dental care to address a problem. The lack of regular dental care (or any dental care) among edentulous rural older adults is a major concern. The lack of regular dental care among rural older adults in North Carolina mirrors results for Florida older adults a decade earlier.¹¹ The consistency of these results suggests little improvement regarding access and utilization for dental care among rural older adults.

Predisposing and enabling factors were associated with receiving regular and recent dental care among dentate participants. Having greater resources, including higher educational attainment, having insurance, and having greater income, were associated with obtaining dental care. These results are similar to findings from the review by Kiyak and Reichmuth¹⁰ of barriers and enablers of dental service use among older adults. Similarly, the asset of having a regular place for dental care was also associated with obtaining regular and recent dental care. Older adults having a regular place for dental care in the communities in which this study was conducted is an asset; these counties have few dentists (1.7 and 1.8 dentists per 10,000 residents in 2008).²⁰ In bivariate analysis, fewer minority than white older adults received regular dental care, and this is consistent with other studies.^{14,25,26} However, ethnicity was no longer a predictor of receiving dental care in multivariable analysis. Rather, education and a regular place for dental care were associated with receiving care, indicating that structural rather than ethnic factors are the primary factors driving dental care. This is similar to the situation reported by Wu et al.¹⁴ for national data.

Contrary to expectations of the Behavioral Model of Health Services, those with the least need (e.g., better self-rated oral health), received regular dental care. These results reflect earlier research documenting the Paradox of Dental Need: those with the greatest need are those least likely to receive care.¹²

It is clear that most dentate rural older adults in this study with poor oral health are not receiving regular or recent dental care. It is also clear that those not receiving dental care are

those who most need care. Rural older adults without any teeth are receiving almost no dental care, yet they would benefit from regular care to ensure early detection of oral cancer and numerous other oral pathological soft tissue and hard tissue conditions, as well as optimizing the function and esthetics of existing prostheses. Human and financial resources are keys to increasing regular dental care among these rural older adults. Policy needs to address providing resources to older adults that will allow them to have access to dental care. For example, Medicare could be expanded to include regular dental care. County health departments could expand programs that educate older adults about the need for regular dental care

The results of this research should be considered in light of their limitations. They are based on a cross-sectional survey design; it is not possible to document causal relationships. The results are subject to the recall bias of the participants. The research was conducted in two rural southern counties; this may limit generalization of results to adults in other regions. However, the research includes a large, random, ethnically diverse sample. The survey is complemented by an oral examination, which provides results consistent with self-reported oral health status.

Among older adults, receiving regular dental care is less common than receiving recent dental care, but the factors associated with both types of care are similar. Community access to dental care and the ability of older adults to pay for dental care must be addressed by public health policy if we are to improve the health and quality of life of older adults in rural communities.

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Table 1

Predisposing, Enabling, and Need Factors for Total Sample and by Dentate Status.

	Total Sample		Dentate Participants		Edentulous Participants	
	N	Column %	N	Column %	N	Column %
Total Sample	635	100.0	413	100.0	222	100.0
Predisposing Factors						
Sex						
Female	344	54.1	235	56.8	109	49.1
Male	291	45.9	178	43.2	113	50.9
Age (years)						
60 to 69	284	44.7	205	49.6	79	35.5
70 and older	351	55.3	208	50.4	143	64.5
Ethnicity						
African American	136	21.4	93	22.4	43	19.4
American Indian	195	30.7	127	30.7	68	30.9
White	304	47.8	194	46.9	110	49.7
Education						
Less than high school	354	55.7	195	47.1	159	71.6
High school graduate	156	24.5	112	27.1	44	19.8
Greater than high school	125	19.8	106	25.8	19	8.6
Dental Anxiety	533	7.50 (0.27) *	360	7.60(0.25) *	173	7.31 (0.55) *
Enabling Factors						
Current Employment						
Not currently employed	544	85.8	337	81.4	208	94.0
Part-time	55	8.7	46	11.2	9	1.2
Full-time	35	5.5	31	7.4	4	1.9
Medicaid						
Yes	199	31.4	84	20.4	115	52.1
No	434	68.6	328	79.6	106	47.9
Poverty Status						
At or Above Poverty Line	431	67.9	308	74.5	123	55.5

	Total Sample		Dentate Participants		Edentulous Participants	
	N	Column %	N	Column %	N	Column %
Predisposing, Enabling, and Need Factors						
Below Poverty Line	204	32.1	105	25.5	99	44.5
Dental Insurance						
Yes	64	10.1	56	13.4	9	3.9
No	571	89.9	358	86.6	212	96.1
Regular Place for Dental Care						
Yes	403	64.0	306	74.5	97	44.3
No	227	36.0	105	25.5	122	55.7
Social Interaction Score						
0 to 15	168	26.4	117	28.3	51	23.0
6 to 30	203	31.9	116	28.0	87	39.2
31 to 60	265	41.7	181	43.8	84	27.8
Need Factors						
Self-rated Oral Health						
Fair or poor	284	45.0	216	52.5	68	31.1
Excellent, very good, good	347	55.0	195	47.5	151	68.9
Number of Teeth						
None	--	--	--	--	222	100.0
1 to 10	--	--	105	25.4	--	--
11 to 20	--	--	131	31.6	--	--
More than 20	--	--	178	43.0	--	--
Oral Pain						
Yes	69	10.9	58	14.1	11	5.1
No	566	89.1	355	85.9	210	94.9
Sore or Bleeding Gums						
Yes	135	21.5	72	17.5	63	28.9
No	496	78.5	341	82.5	155	71.1
Periodontal Disease						
Yes	--	--	186	45.1	--	--
No	--	--	227	54.9	--	--
Gingival Recession						

Predisposing, Enabling, and Need Factors	Total Sample		Dentate Participants		Edentulous Participants	
	N	Column %	N	Column %	N	Column %
1+ teeth above threshold	--	--	146	46.2	--	--
0 teeth above threshold	--	--	170	53.8	--	--
Mobility Assessment						
1+ teeth above threshold	--	--	76	22.2	--	--
0 teeth above threshold	--	--	264	77.8	--	--
Decayed Teeth						
Yes	--	--	135	39.5	--	--
No	--	--	207	60.5	--	--
Filled Teeth						
Yes	--	--	259	75.6	--	--
No	--	--	83	24.4	--	--

* Mean (Standard Error)

Bivariate Relationships between receiving regular dental care or having had recent dental care and predisposing, enabling, and need factors for dentate rural older adults (N=413).

Table 2

Predisposing, Enabling, and Need Factors	Regular Dental Care Dentate Participants				Recent Dental Care Dentate Participants				P-value*
	Yes		No		Yes		No		
	N	Row %	N	Row %	N	Row %	N	Row %	
Total Sample	163	39.5	250	60.5	210	50.7	204	49.3	
Predisposing Factors									
Sex									0.8395
Female	91	38.9	144	61.1	121	51.6	114	48.4	
Male	72	40.2	107	59.8	89	49.6	90	50.4	
Age (years)									0.3530
60 to 69	81	39.8	123	60.2	98	47.7	107	52.3	
70 and older	82	39.2	127	60.8	112	53.7	96	46.3	
Ethnicity									0.0019
African American	30	32.7	62	67.3	42	45.7	50	54.3	
American Indian	34	26.9	93	73.1	50	39.1	77	60.9	
White	99	50.9	95	49.1	118	60.8	76	39.2	
Education									<.0001
Less than high school	40	20.5	155	79.5	68	34.7	127	65.3	
High school graduate	50	44.6	62	55.4	68	60.4	44	39.6	
Greater than high school	73	68.7	33	31.1	74	69.9	32	30.1	
Dental Anxiety	142	6.30 (0.30) [†]	218	8.65 (0.38) [‡]	189	6.65 (0.30) [‡]	171	8.72 (0.46) [‡]	0.0009
Enabling Factors									
Current Employment									0.3064
Not currently employed	134	39.9	202	60.1	170	50.6	166	49.4	
Part-time	21	45.5	25	54.5	28	60.0	18	40.0	
Full-time		25.2	23	74.8	12	37.9	19	62.1	
Medicaid									0.1323
Yes	20	23.7	64	76.3	35	41.1	49	58.9	

Predisposing, Enabling, and Need Factors	Regular Dental Care Dentate Participants						Recent Dental Care Dentate Participants						P-value*	
	Yes			No			Yes			No				
	N	Row %	N	Row %	N	Row %	N	Row %	N	Row %	N	Row %		
No	143	43.6	185	56.4	175	53.4	153	46.6					0.0013	
Poverty Status														
At or Above Poverty Line	144	46.6	164	53	175	56.8	133	43.2						
Below Poverty Line	19	18.4	86	81.6	35	32.9	71	67.1						
Dental Insurance														0.0021
Yes	33	58.8	23	41.2	38	68.2	18	31.8						
No	130	36.5	227	63.5	172	48.0	186	52.0						
Regular Place for Dental Care														0.0003
Yes	154	50.3	152	49.7	188	61.3	118	38.7						
No	9	9.0	95	91.0	22	21.1	83	78.9						0.9468
Social Interaction Score														
0 to 15	47	39.8	70	60.2	57	49.0	60	51.0						
6 to 30	45	39.1	70	60.9	60	51.7	56	48.3						
31 to 60	71	39.5	109	60.5	93	51.2	88	48.8						
Need Factors														
Self-rated Oral Health														<.0001
Fair or poor	48	22.1	168	77.9	80	37.1	136	62.9						
Excellent, very good, good	115	59.0	80	41.0	130	66.3	66	33.7						0.0002
Number of Teeth														
None	--	--	--	--	--	--	--	--						
1 to 10	12	11.2	93	88.8	35	33.4	70	66.6						
11 to 20	50	38.3	81	61.7	58	44.6	72	55.4						
More than 20	101	57.1	76	42.9	116	65.5	61	34.5						
Oral Pain														0.3237
Yes	17	29.2	41	70.8	25	42.5	33	57.5						
No	146	41.1	209	58.9	185	52.1	170	47.9						
Sore or Bleeding Gums														0.5423
Yes	22	30.4	50	69.6	33	46.1	39	53.9						

Predisposing, Enabling, and Need Factors	Regular Dental Care Dentate Participants						Recent Dental Care Dentate Participants					
	Yes			No			Yes			No		
	N	Row %	P-value*	N	Row %	P-value*	N	Row %	P-value*	N	Row %	P-value*
No	141	41.4	200	58.6	176	51.7	165	48.3	0.4117			
Periodontal Disease									0.0976			
Yes	63	34.0	123	66.0	89	48.0	97	52.0				
No	100	43.9	127	56.1	120	53.0	107	47.0				
Gingival Recession									0.0009			
1+ teeth above threshold	39	26.6	107	73.4	61	41.7	85	58.3				
0 teeth above threshold	88	52.0	81	48.0	102	59.8	68	40.2				
Mobility Assessment									0.0311			
1+ teeth above threshold	19	25.1	57	74.9	31	40.9	45	59.1				
0 teeth above threshold	112	42.3	153	57.7	138	52.3	126	47.7				
Decayed Teeth									<.0001			
Yes	27	20.1	108	79.9	43	32.2	92	67.8				
No	104	50.3	103	49.7	127	61.0	81	39.0				
Filled Teeth									<.0001			
Yes	126	48.6	133	51.4	151	58.2	108	41.8				
No	6	6.7	78	93.3	19	22.9	64	77.1				

* P-values are based on Rao-Scott Chi-Square tests for categorical variables and ANOVA for continuous the variable dental anxiety.

† Means and standard errors.

Table 3
 Logistic Regression Results for Dentate Rural Older Adults Modeling the Probability of Receiving Regular Dental Care and Receiving Recent Dental Care.

	Regular Dental Care		Recent Dental Care			
	OR	95% CI	OR	95% CI		
Predisposing, Enabling, and Need Factors						
Predisposing Factors						
Age: 60 to 69 vs. 70 and older	1.09	0.51	2.33	0.83	0.43	1.60
Sex: female vs. male	1.19	0.53	2.70	1.46	0.62	3.41
Ethnicity						
African American vs. White	1.36	0.38	4.91	1.79	0.60	5.35
Native American vs. White	0.45	0.18	1.09	0.79	0.34	1.86
Education						
Less than high school vs. greater than high school	0.29	0.09	0.89	0.42	0.15	1.20
High school graduate vs. greater than high school	0.47	0.18	1.22	0.99	0.43	2.28
Dental Anxiety (continuous)	0.81	0.73	0.90	0.84	0.76	0.93
Enabling Factors						
Medicaid: no vs. yes	0.74	0.18	2.96	0.98	0.33	2.92
Poverty Status: above poverty line vs. below poverty line	1.30	0.31	5.48	0.52	0.16	1.72
Dental Insurance: no vs. Yes	0.56	0.18	1.77	0.37	0.12	1.07
Regular place for dental care/advice: no vs. yes	0.11	0.02	0.83	0.16	0.04	0.62
Need Factors						
Self-rated oral health: excellent, very good, good, vs. fair, poor	4.85	1.98	11.91	2.87	1.39	5.90
Number of teeth						
1 to 10 vs. greater than 20	0.38	0.13	1.11	0.79	0.19	3.30
11 to 20 vs. greater than 20	1.09	0.43	2.77	0.77	0.29	2.06
Gingival recession: 0 vs. 1+ teeth above threshold	1.22	0.41	3.61	1.02	0.46	2.26
Mobility assessment: 0 vs. 1+ teeth above threshold	1.16	0.40	3.34	0.89	0.39	2.07
Decayed teeth: no vs. yes	1.87	0.92	3.80	2.27	1.19	4.32
Filled teeth: no vs. yes	0.27	0.11	0.67	0.26	0.08	0.88