Ethnic Disparities in Self-Reported Oral Health Status and Access to Care among Older Adults in NYC

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ABSTRACT *There is a growing burden of oral disease among older adults that is most significantly borne by minorities, the poor, and immigrants. Yet, national attention to oral health disparities has focused almost exclusively on children, resulting in large gaps in our knowledge about the oral health risks of older adults and their access to care. The projected growth of the minority and immigrant elderly population as a proportion of older adults heightens the urgency of exploring and addressing factors associated with oral health-related disparities. In 2008, the New York City Health Indicators Project (HIP) conducted a survey of a representative sample of 1,870 adults over the age of 60 who attended a random selection of 56 senior centers in New York City. The survey included questions related to oral health status. This study used the HIP database to examine differences in self-reported dental status, dental care utilization, and dental insurance, by race/ethnicity, among community-dwelling older adults. Non-Hispanic White respondents reported better dental health, higher dental care utilization, and higher satisfaction with dental care compared to all other racial/ethnic groups. Among minority older adults, Chinese immigrants were more likely to report poor dental health, were less likely to report dental care utilization and dental insurance, and were less satisfied with their dental care compared to all other racial/ethnic groups. Language fluency was significantly related to access to dental care among Chinese immigrants. Among a diverse community-dwelling population of older adults in New York City, we found significant differences by race/ethnicity in factors related to oral health. Greater attention is needed in enhancing the cultural competency of providers, addressing gaps in oral health literacy, and reducing language barriers that impede access to care.*

KEYWORDS *Oral health, Older adults, Access to care*

INTRODUCTION

Oral health is essential to older adults' general health and well-being.¹ Poor oral health is associated with pain, loss of teeth, poor nutrition, increased risk for systemic conditions, and serious morbidity and mortality in the case of oral cancer. The projected aging of the US population, coupled with the increasing number of adults retaining their teeth, is creating an unprecedented need for oral healthcare among older adults. However, many older adults experience significant barriers in

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obtaining necessary dental care, including a shortage of clinicians trained in the provision of oral care to older adults, a lack of perceived need for dental care, and a lack of insurance that covers dental care.¹⁻⁵ Consequently, older adults have the lowest rates of visiting a dentist compared with all other segments of the population: according to the Centers for Disease Control and Prevention, in 2006, 76% of children 2 to 17 and 62% of adults 18 to 64, compared to only 58% of adults 65 years and older, reported having had a dental visit during the previous year.⁶

As is true for other age groups, among older adults, the burden of oral disease is most significantly borne by minorities, the poor, and immigrants.¹ The projected growth of the minority and immigrant elderly population as a proportion of older adults heightens the urgency of addressing these oral health disparities. In New York City, 12% of the population is over the age of 65, and minorities make up one in every two elderly New Yorkers. In particular, the proportion of Asians and Hispanics is increasing disproportionately; from 1990 to 2000, the number of Asian elderly increased by 79%, and the number of Hispanic elderly increased by 26%.⁷ Moreover, recent estimates indicate that the poverty rate among New Yorkers 65 and older is 28%, the highest among all age groups.⁸

Although there is growing interest in addressing oral healthcare disparities among older adults, there are few data on oral health status, access to dental care, and utilization of dental services among low income minority and immigrant adults.^{9,10} The purpose of this study was to examine differences in self-reported dental status, dental care utilization, and reported levels of dental insurance, by race and by ethnicity, among adults over the age of 60 attending senior centers in New York City.

METHODS

Design and Sample

In 2008, the New York City Health Indicators Project conducted a survey of adults over the age of 60 who attend senior centers. The Health Indicators Project (HIP) baseline assessment included a representative sample of 1,870 older adults attending a random selection of 56 senior centers within the five boroughs of New York City (Bronx, Brooklyn, Manhattan, Queens, and Staten Island). The sample frame used a working list of 278 senior centers and ethnicity data provided by the Department for the Aging (DFTA). A 2-stage stratified random sampling design was based on: 1) borough; 2) senior center size; and 3) race/ethnicity, which was only used to compare and validate survey data with administrative data from the NYC DFTA, and thus was not used for sampling purposes. A systematic selection procedure (every Nth individual was selected to participate in the survey) was employed for subject recruitment.

The response rate for the study was 76.7%,* with a refusal rate of 20.3%.†

*The response rate is calculated in the following manner: $[\text{Completed interviews} / (\text{Completed interviews} + \text{Incomplete interviews} + \text{Refused interviews})] \times 100$.

†The refusal rate is calculated in the following manner: $[\text{Refused interviews} / (\text{Completed interviews} + \text{Incomplete interviews} + \text{Refused Interviews})] \times 100$.

Study Sites

Based on the sampling frame, 56 senior centers diverse in race/ethnicity and size were randomly selected for the New York City sample—10 in the Bronx, 16 in Brooklyn, 13 in Manhattan, 14 in Queens, and 3 in Staten Island.

Survey Instrument

A comprehensive, structured survey instrument was adapted and extended based on a pilot study of 10 senior centers (2 in each borough) and consisted of standardized questionnaire items from validated national and local surveys, such as the Behavioral Risk Factor Surveillance System (BRFSS), the National Health Interview Survey (NHIS), Medicare Current Beneficiary Survey (MCBS), and the New York City Community Health Survey (NYCCHS). The survey was translated into Spanish, Chinese, Russian, and Italian, and then back-translated into English to identify inconsistencies between the 2 versions.

Measures

Survey items included demographic measures and SES indicators, including self-reported race (White/Black/Asian) and ethnicity (Hispanic/non-Hispanic), age, gender, income, level of education, and marital status. Participants were asked where they were born, and if they were born outside of the United States; when they immigrated; and whether they spoke English at home, or another language. Questions about medical insurance coverage included questions on type of coverage, including Medicare/Medicaid and private insurance, and questions that explored the respondents' level of understanding of their benefits. Other measures included questions on functional status, mental and physical health status, comorbidities, social networks, depression, access to healthcare and preventive screenings, and neighborhood perceptions and features.

Oral Health/Dental Measures

The survey also included 5 questions related to oral health status, satisfaction with dental care, dental care utilization, and dental insurance coverage. All participants were asked: (1) Do you ever have difficulty eating or chewing solid foods because of problems with your mouth or teeth? (yes/no); (2) Have you lost any of your permanent teeth because of tooth decay or gum disease? (yes/no); (3) About how long has it been since you last saw a dentist? (include all types of dentists, such as orthodontist, oral surgeons, and all other dental specialists, as well as dental hygienist; anytime less than 12 months ago/more than 1 year, but less than 2 years ago/more than 2 years, but less than 3 years ago/more than 3 years, but less than 5 years ago/5 or more years ago/never); (4) How satisfied are you with the care you receive from your dentist? (very satisfied/somewhat satisfied/somewhat dissatisfied/very dissatisfied); and (5) Do you have any kind of insurance coverage that pays for some or all of your routine dental care, including dental insurance, prepaid plans such as HMO, or governmental plans such as Medicaid? (yes/no).

Recruitment and Data Collection

Trained bilingual research assistants conducted the participant interviews. Each senior center made use of a sign-in sheet to maintain daily counts of participants. One interviewer was assigned the role of "sign-in attendant," ensuring that participants registered as they entered the center, and to enable identification of

prospective participants. Respondents were chosen using an “every Nth” methodology, in which every third person was selected. Interviewers were directed by the monitor to a prospective participant who met screening requirements, and then had a recruitment script read to them.

Respondents were excluded from the study based on predetermined criteria that included age less than 60, overt cognitive impairment, lack of cooperation, too ill to participate, or did not speak the selected languages. If the individual met the screening requirements and was willing to participate, he/she had the informed consent form read to him/her. After obtaining informed consent, face-to-face interviews were administered in the respondent’s preferred language (English, Spanish, Chinese, Russian, or Italian). Upon completion of the survey, participants were given project-branded incentives (a canvas tote-bag, a DFTA visor, and rubber jar/bottle opener). Hunter College’s Institutional Review Board for the Protection of Human Subjects approved the study.

Analysis

The aim of these analyses was to examine whether there were differences, by race and by ethnicity, in dental status, dental care utilization, and dental insurance, among adults over the age of 60 attending senior centers in New York City. First, we categorized the participants by racial/ethnic group (Whites, Blacks, Hispanics of any race, and Asians). We then compared demographics; insurance; and characteristics related to place of birth, time in the United States, and language spoken at home across these groups. We examined, by race/ethnic group, responses to the 5 oral health-related questions included in the survey. In addition, since Medicaid coverage in New York State pays for many dental procedures, including restorations, periodontal treatment, extractions, and dentures, we examined the proportion of those reporting Medicaid coverage who also reported having dental insurance, in order to investigate whether older adults were aware that they indeed had dental coverage. For all comparisons, we used chi-square tests (for categorical variables) or analysis of variance (for continuous variables, for example, age) to determine whether differences between the groups were statistically significant.

Because elders have been shown to have low rates of dental care utilization, we were interested in determining correlates, *within* each racial/ethnic group, of reporting a visit to the dentist within the past year. We therefore conducted a logistic regression analysis for each racial/ethnic group, with the dependent variable defined as having seen a dentist over the previous year. Variables were chosen to be included in the models based if they were significant at $p \leq 0.05$.

RESULTS

Demographic Characteristics

Among the 1,870 seniors surveyed, 148 (7.9%) were missing data on race, or classified themselves as “other” than White, Black, Asian, or Hispanic and were therefore excluded from further analysis. Of the 1,722 seniors included in this analysis, 42.1% ($n=725$) were White, 20.2% ($n=348$) were Black, 24.6% ($n=423$) were Hispanic (of any race), and 13.1% ($n=226$) were Asian (all Chinese). Demographic characteristics of the study participants, by racial/ethnic group, are shown in Table 1. The proportion of Hispanics and Chinese respondents

reporting Medicaid coverage (59.8% of Hispanics and 57.3% of Chinese) was higher than that of Whites (18.5%) and Blacks (38.1%) ($p \leq 0.001$). Compared to Whites and Blacks, Chinese and Hispanics were more likely to be foreign born and less likely to speak English at home, and although only 10.7% of Chinese and 21.5% of Hispanics reported speaking English at home, Chinese reported less English language fluency compared to Hispanics. Sixty-six percent of Chinese reported that their ability to speak English was poor compared to 26% of Hispanics ($p \leq 0.001$).

Oral/Dental Measures

Responses to the oral health/dental questions are shown, by race/ethnic group, in Figure 1. Chinese older adults were about twice as likely to report difficulty eating because of problems with their teeth compared to both Whites and Blacks (33.5% of Chinese, vs. 15.1% of Whites, 17.8% of Blacks, and 23.0% of Hispanics; $p \leq 0.001$). Overall, almost 80% of older adults reported having lost a tooth to disease; a higher proportion of elders in the minority racial/ethnic groups reported having lost a tooth compared to Whites (Chinese 82.7%, Hispanics 82%, and Blacks 78.8%, compared to 75% of Whites; $p = 0.013$). Minority older adults were also less likely to report a dental visit in the past year, compared to Whites (49.0% of Blacks, 51.2% of Hispanics, and 52.1% of Chinese vs. 64.5% of Whites; $p \leq 0.001$). One in ten Chinese seniors had *never* seen a dentist.

Minority elders were also less satisfied with dental care than Whites (only 37.4% of Chinese reported being “very satisfied,” compared to 60.1% of Whites, 51.1% of Blacks, and 43.0% of Hispanics; $p \leq 0.001$).

Insurance

Hispanics (71.9%) were most likely to report dental coverage, while Chinese were least likely (47.5%; Figure 1). Two out of three Black elderly (66.0%) and half of all White elderly (53.4%) reported having dental insurance. Among those who reported having Medicaid coverage (which in NYC provides comprehensive coverage for dental care), 45.5% of Chinese reported that they did *not* have dental insurance compared with only 29.6% of Whites, 25.0% of Blacks, and 20.3% of Hispanics ($p \leq 0.001$). A greater proportion of Chinese elderly reported being confused about their healthcare benefits/coverage, compared to the other groups (28.6% vs. 20.5% Whites, 20.6% Blacks, and 21.0% Hispanics), although the differences among racial/ethnic groups did not reach statistical significance ($p = 0.07$).

Correlates of Dental Care Utilization

Table 2 shows the results of the 4 logistic regression analysis, one for each racial/ethnic group. For Whites and Hispanics, only education was a significant predictor of a dental visit in the past year: for both Whites and Hispanics, those with more than a high school education were almost twice as likely to have visited a dentist in the past year compared to those with only a high school education (HS) or less. For Blacks, only dental insurance was a significant predictor of a dental visit in the past year: those with dental insurance were 67% more likely, compared to those without, to have gone to a dentist in the past year.

For Chinese, only the ability to speak English was a significant predictor of a dental visit in the past year: those who reported that their ability was fair or better

TABLE 1 Demographic characteristics, risk behaviors, and health status, by race/ethnicity, adults age 60+ attending senior centers, New York City, 2004

	White (n = 725)	Black (n = 348)	Chinese (n = 226)	Hispanic, either race (n = 423)	Total (n = 1,722)
Male (%), n ^{a,**}	39.7% (288)	31.0% (108)	38.1% (86)	33.6% (142)	36.3% (624)
Age in years (mean, SD) ^{b,**}	78.4 (7.8)	74.3 (8.3)	74.7 (7.1)	72.8 (7.0)	75.7 (8.0)
Less than high school education (%), n ^{c,**}	18.4% (132)	34.7% (118)	50.0% (112)	62.7% (264)	36.6% (626)
Income <\$10,000 per year (%), n ^{d,**}	24.3% (115)	34.3% (82)	73.4% (135)	54.1% (171)	29.2% (503)
US born, including Puerto Rico (%), n ^{e,**}	75.7% (548)	72.9% (250)	4.0% (9)	64.7% (269)	63.0% (1,076)
Years since immigration (mean, SD) ^{f,**}	47.2 (19.7)	38.8 (15.7)	26.5 (15.4)	47.0 (14.5)	41.2 (18.3)
English spoken at home (%), n ^{g,**}	89.5% (649)	98.3% (342)	10.7% (24)	21.5% (91)	64.2% (1,106)
Ability to speak English, poor (%), n ^{h,**}	NA	NA	66.2% (137)	25.8% (94)	40.5% (231)
Insurance ^{h,**}					
Medicaid (%), n	18.6% (126)	37.7% (118)	58.1% (122)	60.1% (243)	38.0% (609)
Medicare (%), n	93.8% (665)	87.3% (288)	86.6% (184)	89.0% (364)	90.4% (1,501)

ANOVA tests were conducted for continuous variables, and chi-square analysis was used for categorical variables

^aHispanics and Blacks were more likely to be male than either Whites or Chinese; gender did not differ significantly between Whites and Chinese, nor between Hispanics and Blacks
^bWhites were significantly older than all other groups, and Hispanics significantly younger than all other groups ($p \leq 0.001$); there was no significant difference in age between Chinese and Blacks

^cWhites were significantly more likely to have finished high school compared to all other groups ($p \leq 0.001$); Blacks were more likely than Chinese and Hispanics to have finished high school ($p \leq 0.001$); Hispanics were more likely than Chinese to have finished high school ($p = 0.002$)

^dAll groups significantly differed from each other regarding income

^eChinese were less likely to be US born compared to all other groups ($p \leq 0.001$); Hispanics were less likely than both Whites and Blacks to be US born (both $p \leq 0.001$); there was no difference in rates of US born between Whites and Blacks

^fFor those not US born, Chinese reported fewer years in the United States compared to all other groups ($p \leq 0.001$). Hispanics had lived fewer years in the United States compared to Blacks ($p \leq 0.001$), but not compared to Whites

^gChinese were less likely than all other groups to speak English at home; all groups significantly differed from each other ($p \leq 0.001$)

^hAll groups differed from each other regarding the proportion with Medicaid, except for Asians and Hispanics; Whites were more likely than all other groups to have Medicare; Hispanics did not differ significantly from Chinese or Blacks, and Chinese did not differ significantly from Blacks

* $p < 0.05$; ** $p < 0.001$

FIGURE 1. Self-reported dental status, dental care utilization, and dental insurance, by race/ethnicity, adults age 60+ attending senior centers, New York City, 2004. Pairwise comparison results: ¹All groups significantly differ ($p<0.01$) except Black vs. White and Black vs. Hispanic. ²The only significant differences are Whites vs. Hispanics ($p=0.007$) and Whites vs. Chinese ($p=0.02$). ³Chinese differed from all other groups (all $p\leq0.001$). Others did not significantly differ from one another. ⁴All groups significantly different from all other groups (all $p\leq0.001$). ⁵Significant differences were found for Whites vs. Hispanics, Whites vs. Blacks, Chinese vs. Blacks, and Chinese vs. Hispanics (all $p\leq0.001$); no differences were found between Whites and Asians or between Hispanics and Blacks.

were more than twice as likely, compared to those who reported their spoken English was poor, to have gone to a dentist in the past year.

DISCUSSION

Among a diverse community-dwelling population of older adults in New York City, we found significant differences by race/ethnicity in factors related to oral health. Consistent with previous epidemiologic reports, non-Hispanic White respondents reported better dental health (less difficulty eating, fewer chance of teeth lost because of disease), higher dental care utilization, and higher satisfaction with dental care compared to all other racial/ethnic groups. However, White respondents also had higher levels of income and education, which are associated with greater utilization of dental healthcare services and better dental health.¹¹⁻¹⁴

Among minority older adults, Chinese immigrants were more likely to report poor dental health, were less likely to report dental care utilization and dental insurance, and were less satisfied with their dental care compared to all other racial/ethnic groups. These disparities may be related, in part, to significant differences in language fluency. Chinese were significantly less likely to speak English and more likely to be foreign born compared to all other respondents, including Hispanics. Numerous studies have found that communication barriers can adversely affect access to medical health services, health outcomes, and patient satisfaction.¹⁵⁻¹⁸

The association between dental healthcare utilization and/or satisfaction with dental care and language proficiency, which is often used as a proxy for

TABLE 2 Four multivariate analyses, one for each race/ethnicity, of factors related to dental visit in the past year

	Education	Ability to speak English	Dental insurance	In USA <20 years
White (<i>n</i> =685, <i>R</i> ² =0.02, -2 log likelihood=870.3)	1.93 (1.28, 2.89)*	NA	1.30 (0.94, 1.80)	NA
Black (<i>n</i> =321, <i>R</i> ² =0.02, -2 log likelihood=438.1)	1.40 (0.89, 2.30)	NA	1.67 (1.04, 2.67)*	NA
Chinese (<i>n</i> =175, <i>R</i> ² =0.08, -2 log likelihood=227.1)	1.34 (0.69, 2.60)	2.24 (1.02, 4.96)*	0.91 (0.49, 1.71)	1.80 (0.87, 3.72)
Hispanic (<i>n</i> =332, <i>R</i> ² =0.06, -2 log likelihood=439.1)	1.86 (1.15, 3.01)*	1.15 (0.69, 2.28)	1.50 (0.89, 2.46)	0.91 (0.69, 2.28)

Values represent odds ratio with 95% CI in parentheses. All models controlled for differences in age (number of years). In no model was either gender or income a significant predictor of dental visit within the past year

**p*<0.01

acculturation, is not as well studied. In this study, we found a correlation between ability to speak English and reporting a dental visit in the past year among Chinese immigrants. This finding was similar to that found in an analysis of the 2006 BRFSS, where no association between English proficiency and reporting a dental visit was found among Hispanics.¹⁹

It is important to note that although Hispanics were also less likely to speak English at home compared to Blacks and Whites, when compared to Chinese, they were much more likely to report an ability to speak and understand English, which may reflect a more accurate measure of language fluency. Therefore, it is possible that language barriers may not pose as significant a barrier to care among Hispanics as they do for Chinese immigrants. In addition, in New York City where Hispanics comprise 28% of the total population, language concordance may be easier to achieve. Language discordance is not likely the only barrier to care, however, since we found that despite greater English fluency among Hispanics, there were lower levels of satisfaction with dental care among both Chinese and Hispanics compared to Blacks and Whites. This finding may be an indication of low levels of both cultural and linguistic competency among dental care providers. A review by the Sullivan Commissions Report on Health Profession Diversity showed that minority patients in the United States have higher levels of satisfaction in race/ethnicity-concordant settings.¹⁴ A study of Chinese immigrants in Canada found that overwhelming strong preference of Chinese immigrants for ethnically and dialectically matched family physicians.¹⁴

Dentistry is the least diverse of healthcare professions.²⁰ For older minority adults, this lack of diversity is compounded by a general shortage of skilled geriatric dental care professionals, which together may result in oral healthcare delivery systems that may not be equipped to address the needs of older disparate populations. Greater attention is needed in increasing the diversity of the dental profession and the capacity of the dental workforce to meet the oral health needs of an increasingly diverse older population.^{10,14}

Disparities in oral health may also be related to attitudes and beliefs that vary by race/ethnicity and SES. A lack of perceived need for dental care is one of the strongest predictors of low dental care utilization among older adults when compared with adults under 50, and this may be particularly true for immigrants and ethnic minorities. Moreover, a significant proportion of individuals over age 65 do not view oral healthcare as an important part of their overall health and well-being.^{11,21} The Trial to Enhance Elders' Teeth and Oral Health found that Chinese subjects perceived low risk of disease compared to subjects of European descent.²² Similarly, Kiyak found that non-White elders tended to have less confidence in their ability to control their oral health, and those who were immigrants (primarily Asian and Hispanic) also reported less concern about the value of healthy teeth or saving their natural teeth.²³

Even when older adults perceive a need for care, a lack of dental insurance is likely to deter many from seeking treatment. Most elders lose employer-based dental insurance at retirement, Medicare does not cover routine dental care, and Medicaid provides only limited coverage in certain states.¹⁻³ New York is an exception as one of only 10 states to provide Medicaid coverage for adult oral healthcare, and the coverage is comprehensive.^{24,25} The availability of Medicaid coverage for dental services explains the relatively high rates of dental insurance reported in this low income group. Our finding that income was not associated with dental visit is also likely due to Medicaid coverage.

Of note, this investigation uncovered a previously unrecognized gap in knowledge regarding dental coverage that may be contributing to lower rates of utilization of dental services among racial/ethnic minorities and immigrants. Specifically, in trying to explain the association of language barriers and access among Chinese, we found that among Chinese, there was greater confusion about their benefits compared to other groups. Chinese in this study who reported having Medicaid coverage were significantly less likely to know that they had dental insurance than all other groups. If patients do not understand their benefits, they will be less likely to avail themselves of care that they may feel they cannot afford. As our results and other studies have shown, while dental insurance may be an essential prerequisite for access to care, it is likely insufficient by itself to eliminate disparities.^{1,26}

This study has several limitations. The survey did not provide information on several risk factors for poor oral health including diet, or oral hygiene behaviors, or potential predictors of health service utilization including oral health-related beliefs and perceptions of need. In addition, we lacked physical exam confirmation of self-reported oral health problems. However, the groups did not differ significantly in terms of risk factors, with over 90% reporting chronic disease, similar number of prescription medications, and low levels of smoking. In addition, the validity of the self-reported oral health questions used in this study, although taken from standard surveys, has not been confirmed. Finally, the cross-sectional nature of the data collection limits conclusions regarding causation.

CONCLUSION

National attention to oral health disparities has focused almost exclusively on children resulting in large gaps in our knowledge about effective approaches to prevention and treatment, and the optimal design and financing of oral healthcare delivery systems to address the oral health needs of an increasingly diverse and growing older adult population. Addressing these gaps will require investment in research, as well as training and education to improve the cultural competency of oral health providers and to expand the oral health workforce to include nondental providers and finally, a reassessment of oral healthcare financing.^{4,14,27}

Research is needed to elucidate the complex relationship of race, ethnicity, socioeconomic status, and culturally influenced factors that impact the oral health and oral healthcare seeking behaviors of immigrant and minority low income groups, especially among the elderly.^{28,29} Information about oral health literacy among ethnic minorities and immigrants is also lacking, and evidence supporting clinical and population-based approaches to promote oral health and prevent disease must be strengthened.

Additionally, it is unlikely that the number of elderly requiring healthcare will be matched by sufficient numbers of adequately trained physicians, dentists, and other health professional in the near future. Therefore, research is needed to evaluate new models of healthcare delivery and the impact of expanding the scope of services of dental hygienists and nondental health professionals to include oral health-related services. In addition, prevention often takes place outside of clinical settings; therefore, we need to explore opportunities to develop partnerships with community-based organizations who serve diverse older adult populations.^{9,30} Finally, the financing of oral healthcare for the elderly requires change. According to the Center for Medicaid and Medicare services, the out-of-pocket¹² contribution for a physician's service is approximately 10%, while

the out-of-pocket contribution for a dental visit is approximately 44%. Dental benefits should be a uniform part of Medicaid and Medicare.

The elderly have seen oral health improvements, yet gradients by race/income and education persist for dental disease. In order to address the complex reasons for these disparities, oral health must be fully integrated with research and policies to reduce *all urban* health disparities.

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