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A fifteen-year gap between oral health of Blacks and Whites persists in the United States.

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ABSTRACT

Aim: The purpose of our study is to consider racial differences across three survey questions related to adult oral health in the National Oral Health Surveillance System (NOHSS) between 1999 and 2014.

Methods: NOHSS tracks population level progress made towards improved oral health in US. NOHSS adult indicators of oral health data were extracted for years 1999 to 2014 and trends were studied by race. This project was approved by University of Michigan Medical School Committee on Research as "not regulated as human subjects research."

Results: Among adults 18 and older in 1999, 70.7% of Whites and 60.3% of Blacks had attended a dentist in past year. By 2014, 68.4% of Whites and 56.5% of Blacks attended a dentist in past year.

Among adults aged 65 and older in 1999, 24.5% of Whites and 33.2% of Blacks had lost all natural teeth due to dental caries or gingival/periodontal disease. By 2014, 14.3% of Whites and 22.1% of Blacks had lost all natural teeth.

Conclusions: There have been overall gains in key indicators of oral health in the US, however, these gains have not created equity as Blacks remain far behind Whites in the NOHSS adult oral health indicators.

INTRODUCTION

Can the color of your skin affect the healthcare you receive? Recent research evaluated the verbal and non-verbal interaction of hospital physicians with Black and White patients at the end of life and found far fewer positive non-verbal and rapport-building cues with Blacks.[1] Similar research has shown that physicians were more verbally dominant in conversations with Black patients than with White.[2] Extensive research has shown that pain experienced by Blacks is undertreated compared to Whites.[3,4,5,6] Unfortunately, this finding holds true when the patient is a child.[7] However, it is important to acknowledge that relational issues between doctor and patient are not the only factor affecting health outcomes of minorities in the United States (US). Research by the Center for American Progress has demonstrated that there is a wealth gap between Blacks and Whites.[8] Moreover, financial resources tend to be more volatile for Blacks and there is no trend toward closure of that racial gap.[9] This gap affects resources available to seek and gain healthcare services.

Research among heart failure patients has shown that there is a racial difference in health literacy even after adjusting for other variables like socioeconomic status and social support.[10] Clearly, there is a multitude of factors working together to create health disparities between Blacks and Whites in the US.

The Center for Disease Control and Prevention (CDC) reports that Blacks can expect lower life expectancy than Whites[11] in the US and that gap is growing. In fact, infant mortality rate among Blacks in the US is increasing while the rate for

Whites is decreasing.[12] Finally, there is also evidence that Blacks experience poorer oral health outcomes than Whites,[13,14] however, there is little known about long term trends between racial groups in oral health. Public health programming frequently targets socioeconomic factors, like access to insurance. The goal of such programs are to enable lower income groups to have similar access to care as higher income groups. However, research has demonstrated that only 71% of the gap between Blacks and Whites in preventive dental services received can be explained by socioeconomic status[14] – resolving health disparities cannot occur without specifically addressing the issue of race.

The purpose of the current study is to evaluate trends in the three key indicators of adult oral health developed by the CDC and the Association of State and Territorial Dental Directors in the National Oral Health Surveillance System (NOHSS).

METHODS

National Oral Health Surveillance System (NOHSS) is a partnership between Division of Oral Health (part of the Centers for Disease Control and Prevention) and the Association of State and Territorial Dental Directors. The NOHSS is a survey tool that tracks burden of oral disease and monitors population level progress made towards improved oral health in the US. The purpose of the current study is to consider racial differences across the three NOHSS indicators[15] of adult oral health (listed below) between 1999 and 2014:

1. Adults aged 18 and over who have visited a dentist in the past year.
2. Adults aged 65 and over who lost all natural teeth due to dental caries or gingival/periodontal disease.
3. Adults aged 65 and over who lost six/more teeth due to dental caries or gingival/periodontal disease.

Responses to the above queries from NOHSS for the indicators of adult oral health are publically available datasets. This dataset was imported into the data analysis software, JMP[16], and stratified by race. JMP functions as a data visualization software and enables trends analyses to be conducted. This project was approved by University of Michigan Medical School Committee on Research as “not regulated as human subjects research (HUM00148281).”

RESULTS

All data is presented in age-adjusted rates which enables a more reasonable comparison between groups with differing age distributions. In the primary NOHSS dataset, there is an increasing number of participants responding to the question related to “adults aged over 18 who have visited the dentist in the past year” from 103,278 in 1999 to 302,516 in 2014. Figure 1 represents answers to this question and shows that among adults 18 and older in 1999, 70.7% of Whites; 60.3% of Blacks; and 57.1% of Hispanics had attended a dentist in the past year. By 2014, 68.4% of Whites; 56.5% of Blacks; and 54.2% of Hispanics attended a dentist in the past year.

Figure 2 shows that among adults aged 65 and older in 1999, 24.5% of Whites; 33.2% of Blacks; and 20.2% of Hispanics had lost all of their natural teeth due to dental caries or gingival/periodontal disease. Across the 15 years of the dataset, information was captured from 122,807 Whites; 13,257 Blacks; and 4,949 Hispanics Americans. By 2014, 14.3% of Whites; 22.1% of Blacks; and 13.4% of Hispanics had lost all of their teeth.

Figure 2 also shows that among adults aged 65 and older in 1999, 51.5% of Whites; 69.3% of Blacks; and 47.9% of Hispanics had lost 6 or more teeth due to dental caries or gingival/periodontal disease. This survey question was answered by 277,207 Whites; 29,586 Blacks; and 10,679 Hispanic Americans over the 15 years of data collection from 1999 to 2014. By 2014, 35.6% of Whites; 55.5% of Blacks; and 34.5% of Hispanics had lost 6 or more teeth.

DISCUSSION

Data from the CDC shows that adults 20-64 year olds have, on average, 24.9 teeth.[17] For Whites, that average was 25.2 and for Blacks it was 23.7. One may argue that this is not a clinically significant finding and, therefore, not an area of concern. Additionally, CDC data showed that the percentage of Whites with no teeth was 3.96% and the percentage of Blacks was 4.14% which is a small difference.[18] However, the current study included information from hundreds of thousands of individuals and had findings that may look deeper than just averages (Figure 1). The current study revealed that, in 2014, the percentage of Blacks who had lost 6 or more teeth (55.5%) was higher than the percentage of Whites who had lost 6 or more teeth in 1999 (51.5%). Similarly, the percentage of Blacks who had lost all of their teeth in 2014 (22.1%) was only slightly better than the percentage of Whites who lost all of their teeth in 1999 (24.5%). By 2014, only 14.3% of Whites had lost all of their teeth. This evaluation has highlighted that within the limitations of the NOHSS indicators, although the oral health of Blacks has improved, they are similar to the oral health of Whites 15 years ago. Existing public health programs have targeted low income and uninsured individuals and have been successful in improving the minimum standard for oral health in the US. These programs have addressed "equality" by giving lower income groups better access to dental services. However, there is still no "equity" for Blacks as they continue to suffer large gaps in oral health outcomes compared to Whites.

A universal healthcare system in isolation is an example of "equality" – it provides all citizens access to the same healthcare services. However, this does not take into consideration the fact that some people face language barriers, others face transportation barriers and still others face barriers of low health literacy and recognition of a need for care for themselves. Contrastingly, "equity" would

dictate that those with language barriers received additional services (which is in conflict with equality) like interpreter services. The end result of equity is that everyone has access to all the health and support services that they need to thrive. Whereas, the end result of equality is that everyone has the same access to healthcare which may result in maintained gaps between wealthy or highly educated populations and poorer or less educated ones. What equality in a healthcare system does is it raises the minimum standard and the current study suggests that public health programs have only succeeded in raising the minimum standard in oral health but done little to close gaps between Blacks and Whites.

The current study also presents data on the proportion of adults who visited a dentist in the past year (this does not differentiate between emergency or routine visits and is described in Figure 1). We found that this measure of access suggests circumstances have not improved much for Whites or Blacks over 15 years. The current study demonstrates that there have been overall gains in key indicators of oral health, however, a much larger proportion of Blacks remain worse off than Whites.

Unfortunately in the United States, there is a parallel between racial and socioeconomic lines. That is, Blacks and Hispanic Americans are overrepresented in lower socioeconomic cohorts. Blacks and Hispanic Americans also experience higher poverty rates within their race.[18] In fact, statistics from the Federal government also suggest Blacks and Hispanics are more likely to be chronically in poverty than Whites and Asians.[18]

In order to bring “equity” for Blacks in oral health there may be a need for race specific oral healthcare policy which may be a controversial ideology. In the US, adult Medicaid (state governed insurance for lower income groups) coverage of dental services is very limited. Expanded dental coverage through Medicaid for

Blacks may reduce gaps between Blacks and Whites, however, this may not be a realistic health policy.

A recent literature review from field experts has come to similar conclusions – that "racial health inequalities should be of primary concern for both policy makers and researchers."[19] However, authors add the caution that much of the inequality can be attributed to the overrepresentation of racial minorities in lower income groups.[19]

Previous research has shown that Blacks and Hispanics are more likely to have government insurance than Whites.[20] The gap in access and utilization of healthcare services was studied between 1977 to 1996 and it was found that the Black-White gap did not narrow over the 19 year period of the study.[21] A 1994 study showed that Blacks enrolled in Medicare were less likely than similarly enrolled Whites to gain access to any of the 16 most common hospital procedures.[22] File review revealed that there was delayed diagnosis and failure to manage chronic disease among Black patients. Clearly, insurance, access and even quality of care can be cross-influenced by race – this matter is complex and multifactorial.

Limitations

This study has several important limitations that should be considered in evaluating the data. Firstly, information is sought from individuals in a retrospective many which means there could have been recall bias by participants. Secondly, the NOHSS's three indicators of adult oral health are fairly superficial questions that lack depth about true barriers to care. Thirdly, the dataset does not break down by race and socioeconomic (SES) status – as previously discussed, race and SES have a strong relationship in the United States and it would have been more ideal to separate the effect of SES.

Findings from the current evaluation of the NOHSS indicators for adult oral health suggest that existing public health strategies have not improved the gap between Blacks and Whites in 15 years in the United States - new approaches to policy are necessary.

CONCLUSION

In the US, public health strategies and legislative changes have succeeded in increasing the minimum standard in oral health over the last 15 years. However, they have not succeeded in closing the gap in oral health between Blacks and Whites and failed to bring equity.

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Figure Legends.

Figure 1.

Figure 1 is a line graph indicating the number of adults (18 and older) who responded to the NOHSS survey saying they had visited a dentist in the last year. This is broken down by years (1999-2014) and by race (line colors indicating different racial groups). Our data shows that in 1999, 70.7% of Whites; 60.3% of Blacks; and 57.1% of Hispanics had attended a dentist in the past year. By 2014, 68.4% of Whites; 56.5% of Blacks; and 54.2% of Hispanics attended a dentist in the past year.

Figure 2.

Figure 2 is a line graph indicating the number of adults (65 and older) who responded to the NOHSS survey saying they lost some teeth. The broken lines indicate those who lost 6 or more teeth due to caries or gum disease. The non-broken lines indicates those who lost all of their teeth due to caries or gum disease. This is broken down by years (1999-2014) and by race (line colors indicating different racial groups). Our data shows that in 1999, 24.5% of Whites; 33.2% of Blacks; and 20.2% of Hispanics had lost all of their natural teeth due to dental caries or gingival/periodontal disease. By 2014, 14.3% of Whites; 22.1% of Blacks; and 13.4% of Hispanics had lost all of their teeth.

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Figure 1. Percentage of Adults aged over 18 years who have visited a dentist in the past year (by Race)

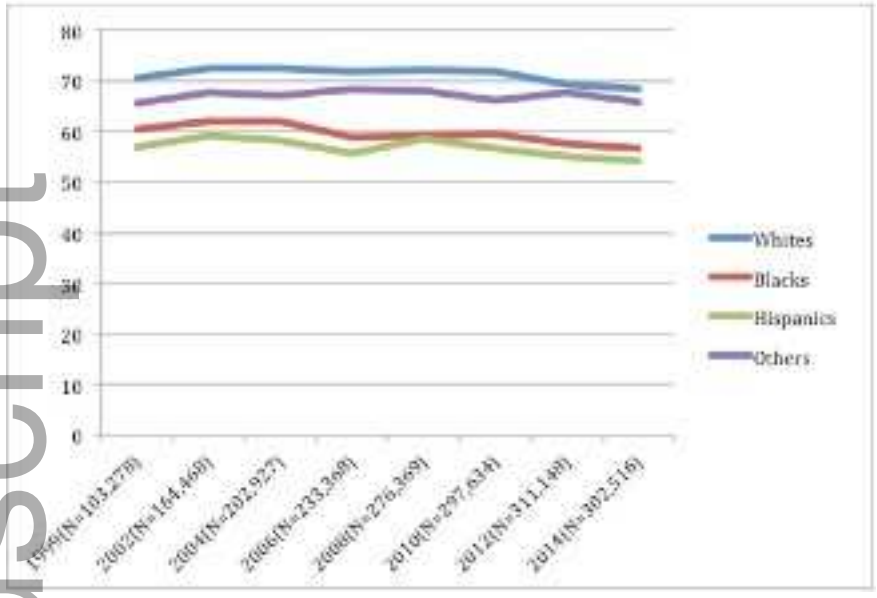

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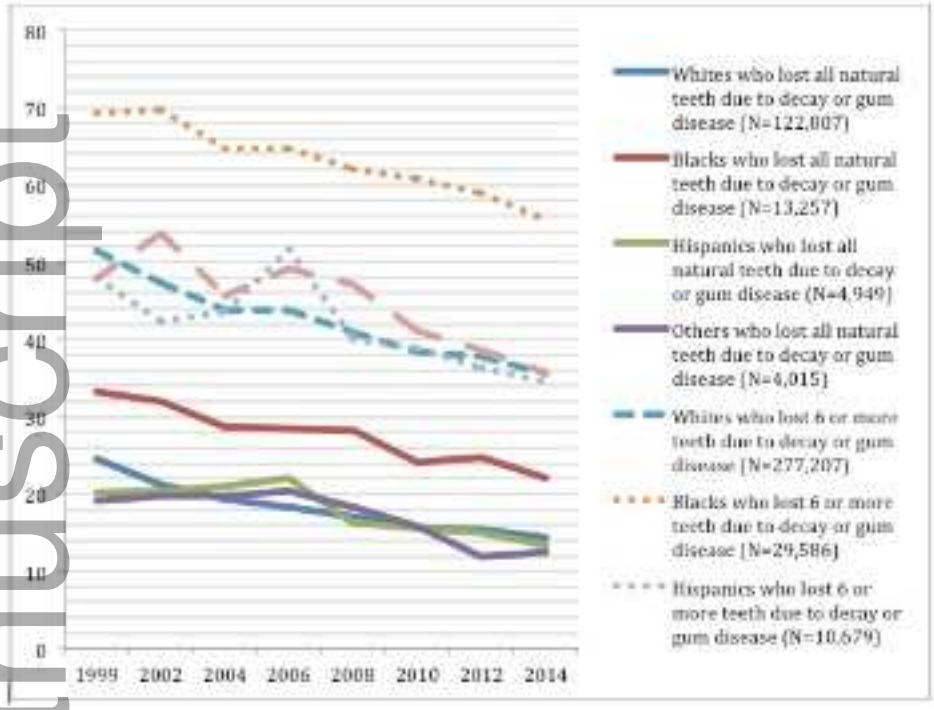
Figure 2. Percentage of Adults over 65 who have lost teeth (by Race)



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