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# Evaluation of Disparities in Healthcare Experiences Between Racial Identities and Age Cohorts

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Evaluation of Disparities in Healthcare Experiences Between Racial Identities and Age Cohorts

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Abstract

**Background**:  Healthcare consumers have their own perspectives and expectations of what should occur during an encounter of care; these unmet expectations create healthcare disparities. However, there is limited data regarding healthcare experiences among racial and aging groups.

**Objectives**:  To compare the physical and emotional responses of healthcare experiences among racial/ethnic and aged cohorts in the United States.

**Methods**:  Applying a descriptive-correlational design, secondary data from the 2014 Behavioral Risk Factor Surveillance System related to healthcare experiences among racial groups (White, Black, Hispanic, and Asian) and aged cohorts (18-39, 40-54, and 55- 69 years) were assessed.

**Results**:  In the sample, there were 78.3% Whites, 7.9% Blacks, 12.4% Hispanics and 1.4% Asians; 42.9% were 55-69, 30.1% were 40-54, and 27% were 18-39 years. Blacks reported the greatest disparity with 8.5% reporting being treated worse than other races, experienced physical (8.5%) or emotional (16.2%) symptoms due to race during their healthcare encounters. For Hispanics, 4.9% reported being treated worse; 6.4% experienced physical and 8.8% experienced emotional symptoms due to race. For Asians, ratings for the three categories were 3.2%, 6.2%, and 9.8% respectively.  White respondents reported the least disparity; the ratings for their three categories were 2.0%, 1.4%, and 2.8% respectively (analysis related to race, $p<0.001$). The age group representing the largest disparity was 40-54 for all categories; while 55-69 ranked highest for best healthcare experiences.

**Conclusion**:  Prevailing disparities among all racial and age groups exist; minorities and middle-aged Americans are at greater risk for not receiving optimal healthcare treatment due to industry biases and perception of treatment.

Evaluation of Disparities in Healthcare Experiences Between Racial Identities and Age Cohorts

**Background**

The United States population is made up of approximately 324 million people with a birth almost every 8 seconds; whereas, the crude death rate has remained constant at approximately 8.33 per 1,000 population for the last 3 years in the United States (Knoema, 2016 & United States Census Bureau, 2017). Those living in the United States make up predominantly one of four racial classifications White (76.9%), Black (13.3%), Hispanic (17.8%), and Asians (5.7%) of the overall population (United States Census Bureau, 2017). In comparison, individuals in these racial classifications fall into one of four major generational age groups that are represented as healthcare consumers: Baby Boomers (1946-1964), Generation X "Gen X" (1965-1976), Millennial "Gen Y" (1977-1995), and Centennials "Gen Z" (1996-present) (The Center for Generational Kinetics, 2016). Millennials are the largest generational group currently with 79.41M (24.7%) of population followed by Baby Boomer 75.52 M (23.3%), Centennials 73.61M (21.6%), and Generation X 65.72M (20.5%) (Knoema, 2016). Each cohort of generational ages has their own unique set of characteristics that drives their performance, relationships, expectation, and work ethics.

Historical events provide the foundation for the development of generational characteristics. Baby Boomers have been known to be the generation that "lives to work" reaching for the need to have stability and structure after being part of a generation that suffered two separate World Wars (Calhoun & Strasser, 2005). Generation X is known for their need to "work to live" philosophy and will only remain in a job role if the company offers them the opportunity to grow from within. Their loyalty lies at the individual level not at the organizational level (Goldamn & Schalmz, 2006). Meanwhile the Millennial generation "live in

the moment" and were born during an era where the child's needs came first, resulting in the on my terms mentality (Goldman & Schalmz, 2006).  Lastly, the Centennial generation is based on current age factors that are still not fully defined.  Some characteristics identified are their need to make a positive impact in society; they will be the highest educated, self-reliant, and innovative of any generational age group (The Center for Generational Kinetics, 2016).

Generational age cohorts have interpersonal characteristics that play into their perception of their healthcare experiences and how they address healthcare disparities. It has been widely documented that healthcare consumers either over or under utilize the healthcare industry and it varies by generational age.  Baby Boomers have been cataloged as the generation that maintains regular medical maintenance creating the most healthcare usage of all generations, while other generational groups tend to utilize healthcare services less frequently (Berkowitz & Schewe, 2011). The Millennial generation has the opposite effect on the healthcare system as the Baby Boomer group.  The Millennials propagate that they are the invincible generation that does not fall to the misfortune of illness or injury (Berkowitz & Schewe, 2011). Utilization of healthcare services differs among all generational groups but there are key drivers that are based on generational characteristics.

The perceived experiences that individuals have while managing their health can determine the utilization frequency for which they receive care.   Healthcare utilization frequency has been studied through the use of racial or age group qualifiers.  Not all ethnic groups are provided with the same opportunities to treatment by the healthcare delivery system. For example, African-Americans and Hispanics have been identified as having known disparities in treatments and experiences within women's services (Dehlendorf, Park, Emeremni, Comer, Vincett, & Borrero, 2014.)  The American Medical Association (2016) stated that while there has

been drastic improvement in healthcare; there are still shortfalls in quality of care for minorities and racial groups across the United States.

The value of healthcare is perceived differently within each defined age and racial group. Therefore, understanding the complexities of the key drivers that create healthcare disparities such as race, age, and healthcare experiences can contribute to the development of comprehensive action plans to support higher quality of care and outcomes.

## Problem Statement

Healthcare disparities have existed for hundreds of years although improvements have occurred over the past few decades, but have these inequalities been fully addressed?  There are racial classes that perceive their healthcare and treatment plans to be substandard compared to other racial groups and age cohorts.  Additional efforts need to focus more directly on the totality of expectation and healthcare biases of ethnic and age groups that are directly affected by the deficient healthcare including the broad scope of preventative medicine through end-of-life care.

## Purpose

There has been documented evidence to support the awareness that healthcare disparities exist in the healthcare marketplace.  The purpose of this study was to examine the differences in healthcare experiences between racial identity groups and defined age cohorts.  Identification of which age cohort and racial groups that were typically impacted offered a framework for the development of associated action plans to rectify those disparities.  The long-term goal was to identify strategies to address how to normalize the perceived healthcare experiences that lead to healthcare disparities while collectively improving the quality of care and overall health of those living in the United States.

## Specific Aims

The specific aims that were addressed in this study are:

1. Exploration of the demographic characteristics of participants in the 2014 Behavioral Risk Factor Surveillance System (BRFSS) Questionnaire by race and age groups.

2. Comparison of the perception of the healthcare experiences of participants in the 2014 BRFSS Questionnaire by the demographic characteristics of race and age.

**Research Hypotheses**

The research hypotheses evaluated the perceived healthcare experience differences among age cohorts and racial groups from the 2014 BRFSS Questionnaire.  Consequently, the following research hypotheses were tested:

$H_1$: There are differences in perceived experiences of seeking healthcare between racial/ethnic groups and age cohort.

$H_2$: There are differences in perceived physical manifestation of symptoms resulting from how individuals were treated based on race and generational age.

$H_3$: There are differences in perceived emotional response from how individuals were treated based on race and generational age.

**Significance**

The significance of this study was to expose the healthcare experiences of patients based on specific variables (age and race) and how those experiences potentially created healthcare disparities. Even though there has been a prevalence of systematic changes in the healthcare delivery system model, those disparities continued to cause defects in healthcare quality and patient outcomes.  This study evaluated the need for a more comprehensive and targeted approach at specific age and racial groups to eliminate healthcare inequalities.  Research has

shown that disparities continue to effect patient's experience and plan of care in certain subspecialties services lines. This research detached the labels associated with subspecialties and identified an overall gap in care linked to perceived healthcare experiences with demographical data that has been shown to promote the creation of disparities.

The results of this study establish a meaningful contribution to the profession of nursing through the dissemination of knowledge pertaining to patient experiences and how those experiences impact compliance with treatment plans and outcomes. The significance of understanding the baseline expectation related to healthcare experience based on racial groups and age cohorts provides advanced practice nurse practitioners with a foundation to develop a relationship to improve patient engagement. The Institute of Healthcare Improvement (IHI) states that part of their triple aim were to improve population health, experiences, and reduce healthcare expenditure (Cooper, Astroth, & Smith, 2016); which can all be accomplished through distribution of knowledge from this study.

The impact of this study should lead to drafting policy to improve healthcare disparities in connection with regional and national demographical data to support further education on healthcare consumers in the market. The conclusions should also encourage additional discussion around improving key stakeholder involvement with specific demographic groups for further policy development.

**Literature Review**

Healthcare disparities are an important factor in overall cost of healthcare services in the United States. According to Kaiser Family Foundation estimates, 30% of all healthcare expenditure for minority populations is due to healthcare disparities (Artiga, 2016). In the article *Unequal Treatment: what healthcare providers need to know about racial and ethnic*

*disparities in healthcare,* healthcare disparity was defined to include bias, prejudice, and

stereotyping (Institute of Medicine, 2002). When observing all instances when healthcare

disparities are revealed, it may not always be in an environment that is related to individuals that

are challenged socioeconomically or considered minorities. Socioeconomic challenges and

personal prejudices of the providers and clinicians can also unintentionally cause healthcare

disparities.

**Disparities by Race and Age**

There have been documented disparities that appear within ethnicity cohorts and age. A

2014 study looked at the disparities in college students that suffered from depression or anxiety.

This study examined a sample of 13,028 college students across 26 campuses (Hunt, Eisenberg,

Lu, & Gathright, 2015). This study reviewed disparities based on age and ethnicity utilizing the

Patient Health Questionnaire-9 (PHQ-9) measuring for depression. The level of significance was

set at *p<0.05,* with older Hispanic students identified as having the highest incident of

depression based on PHQ-9, followed by older Asians compared to similar age Caucasian

students (Hunt, Eisenberg, Lu, & Gathright, 2015). Based on the Institute of Medicine (IOM)

definition of disparities there is clearly a discrepancy in resources based on positive depression

screening scores associated with documented disparity.

Another study that was performed utilizing beneficiaries who responded to the Medicare

Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey assessed the racial

difference based on age and care coordination experiences. A sampling of 260,974 beneficiaries

responded to the survey. The data was analyzed using 2 different regression models for each of

the five racial indicators. The disparity report showed that during a routine office visits for

Hispanic, African-American, and Asian or Pacific Islander (API) ancestry patients, the primary

provider had their medical records or other pertinent medical information accessible less frequently than for elder (>age 65) Caucasian patients.  This resulted in these patient populations questioning their value over worth to the healthcare community.  Additional analysis revealed similar finding for Caucasians compared to other racial groups when looking at provider assistance in managing care and medication explanations, $p<0.01$ and $p<0.001$ respectively (Martino, Elliott, Hambarsoomian, Weech-Maldonado, Gailott, Haffer, & Hays, 2016).

Another study showed discrepancies in the perceived racial disparities of African-American women when compared to Caucasian women of similar age (41-46) who were being evaluated for systemic lupus erythematatosus (Vina, Hausmann, Utset, Masi, Liang, & Kwoh, 2015).  Surveying 343 women from various socioeconomic status and educational backgrounds, Vina et al., 2105, found that 56% of African-American women had a higher perception of racism or discrimination than those of Caucasian women while seeking treatment for systemic lupus erythematosus.  The experience of these African-American women was grounded on perceived discrimination, which leads to significant alteration in lupus exacerbation or the discontinuation of the course of treatment thereby producing a healthcare disparity.

These studies have shown that healthcare disparities are present in a variety of healthcare settings and can be triggered by unintentional, perceived, and biased behavioral activity.  It has been established that disparities are not limited to specific racial groups or age cohorts.  All patients are subject to the similar healthcare inequalities; although based on these limited examinations of research, some racial group are less likely to fall victims to healthcare disparities than others.

**Disparities by Healthcare Experience**

Healthcare disparities are also created through the experiences and communication that an individual has with their medical team and interactions with the facility environment (location of offices or directions).  Healthcare experience is defined by Agency for Healthcare Research and Quality (AHRQ), as a "range of interactions that patients have with the healthcare system, including their care from health plans and from doctors, nurses, and staff in hospitals, physician practices, and other healthcare facilities" (AHRQ, 2017).  When the healthcare system does not make the patient the center of care or engage them in the treatment plan, patients are less likely to adhere to recommendations from their providers.  Communication between the provider and patient is key to ensuring quality of care and eliminating healthcare disparities based on perceived experiences by patients (AHRQ, 2017).  In 2010, Epstein, Fiscella, Lesser, & Stange, studied how eliminating the patient center care module creates healthcare disparities as patients perceived that the healthcare system included providers that did not value the patients or their opinion regarding healthcare decisions.

Biases in treatment plans have been occurring for years, for example, "Tuskegee Study of Untreated Syphilis in the Negro Male."  This study began in 1932 to study the effects of syphilis treatment on black males, but ultimately no patient received a treatment regiment to cure syphilis (CDC, 2015).  When patients feel that they are getting inadequate treatment for their medical condition it negatively impacts their experience within the healthcare system.  The patient who has excellent experiences has been shown to have better outcomes, less unnecessary visits, and more adherences to clinical recommendations (AHRQ, 2017).

The University of Wisconsin School of Medicine in collaboration with Institute of Health Research and Policy in Chicago, Illinois conducted a study to look at perceptions of negative healthcare experiences and behavioral changes in three racial groups: African-American,

Mexican-Hispanics, and Caucasians.  This study performed a cross-sectional survey using a convenience sample of 600 adults from socioeconomically diverse neighborhoods within Chicago city limits.  The *p- value* was set at *p*<0.05 for variables of annual doctor visits and self-reporting health status; while all other variables set *p-value* at *p*<0.001 (Schwei, Johnson, Matthews, & Jacobs, 2017).  The perception of a negative healthcare experience resulted in 51% of all study participants avoiding further healthcare visits based on a poor experience and the associated cost of care (Schwei, Johnson, Matthews, & Jacobs, 2017).  The patients in this study rationalized their avoidance to seeking acute medical or preventive care to their perception that it was futile to seek medical care or preventive if as a patient they were treated poorly as a patient.  Patients elected to save their healthcare dollars and not seek additional treatment.  This ultimately resulted in exponentially high healthcare costs due to the lack of preventive care or treatment for current medical conditions.

An additional finding within this study was that there were no significant differences between racial groups in perceived negative experiences.  But what the study did identify was a significant difference based on educational attainment and negative experiences.  Patients who had obtained at least a bachelor's degree perceived their healthcare experience to be significantly worse than those whose educational status was less than a high school diploma (Schwei, Johnson, Matthews, & Jacobs, 2017).  Those with at least a bachelor degree perceived their healthcare experience to be less than optimal and reporting avoidance of care compared to those who reported a better experience.

Minorities in general are also at risk for suboptimal experience when it comes to seeking healthcare treatment.  A study by Sorkin, Ngo-Metzger, & DeAlba (2010) explored the impact of quality of care associated with healthcare experiences specifically related to discrimination for

minorities. The study concluded that physician medical decisions were influenced by an individual's ethnicity. The patients reported that their quality of care and healthcare experience was affected by the physician interpretation of appropriate standard of care based on ethnicity (Sorkin, Ngo-Metzger, & DeAlba, 2010). Although all minority groups were more likely to express that they were discriminated when compared to Caucasians patients, patients of Asian and Hispanic descent reported the most discrimination at a rate of 45% for Asians and 56% for Hispanic patients.

Perceived or actual poor healthcare experiences lead to decreased adherence to healthcare treatment plans, decreased quality of care, and increased healthcare cost for the healthcare system. To ensure that healthcare systems have high quality and low cost, the healthcare system needs to advocate for a more robust focus on the positive healthcare experiences for all individuals.

### Theoretical Framework

Healthcare consumers are exposed to a variety of experiences due to the complex and fragmented interaction between clinicians, support staff, and healthcare systems in general. The consequences of these experiences lead to healthcare disparities. Disparities are important in today's healthcare market place because of the impact it has on overall cost, health, and patient experiences. The "Triple Aim" of healthcare includes the three subcategories of reducing cost, improving health, and improving the patient experience of care (Institute of Healthcare Improvement [IHI], 2017). The IHI developed the framework around improvement of the healthcare experience while also improving overall quality and reducing cost. The link between patient experiences, quality, and cost reductions has been established by the Institute of Medicine

(2012), Kaiser Family Foundation (2016), and American Medical Association (2016) as key drivers to improving the patient experience and quality of patient care.

In 1991 William Strauss and Neil Howe developed the Generation Theory as a way to describe personal characteristics of the population through generational age cohorts in the United States (Strauss & Howe, 1991; Duo, 2012). Strauss and Howe established through their research that individuals have culturally different interactions, emotional responses, and physical responses based on their generational age cohort (Codrington, 2008). Based on an individual's ingrained characteristics, assumptions can be made about potential healthcare related experience leading to the perception of health-related disparities. The Generation Theory was used as a theoretical foundational model to compare differences in generational cohorts, race, and experiences abstracted from the BRFSS.

## Identifying and Defining Variables

The operational definition for variables helps to clarify how the variables are measured. In this study, the dependent variable, healthcare experience, is measured by three indicators from Module 13 of the 2014 BRFSS:

*Health Experience (Dependent)* is defined as a patient's experience when receiving healthcare treatment within the last 12 months. The survey question was "Within the past 12 months when seeking healthcare, do you feel your experiences were worse than, the same as, or better than people of other races?" We used data from respondents whose answer fell into three categories: worse than other races, same as other races, and better than other races. We excluded respondents whose answer to this question was "worse than some races, better than others", "only encountered people of the same race", "no health care in past 12 months", "Don't know, not sure", or "refused".

*Physical Symptoms (Dependent) is* defined as the respondent's experienced physical symptoms associated with perceived healthcare experience based on race.  Physical symptoms could include headache, upset stomach, muscle tensing, or pounding heart that occurred within the last 30 days. This variable is measured as "yes" or "no."

*Emotional Symptoms (Dependent)* is defined as the respondent's experienced emotional symptoms associated with perceived healthcare experience.  Emotional symptoms could include frustration, sadness, or anger that occurred within the last 30 days. This variable is measured as "yes" or "no."

The two primary independent variables are age cohort and race/ethnicity. *Age* was stratified by age groupings for purposes of comparing each cohort to each other separately.  The Center for Generational Kinetics was used to collate each demographic age into appropriate generational cohort (The Center for Generational Kinetics, 2016). Race is measured by self-reported race and ethnicity. In this study, we included only four racial/ethnic groups: White, Blacks, Hispanics, and Asian.

We also included other demographic variables including gender (male or female), education level (less than high school or high school and above), annual household income (<$35,000; $35,000-$49,999; $50,000-$74,999; and >=$75,000), marital status (married or not married), and employment status (employed, unemployed, or retired).
The detailed information regarding the study variables and their operational definitions are reported in table 1.

## Methodology Overview

### Research Design

Using secondary data, this study employed a descriptive-correlational design to establish a relationship between variables.  This study evaluated the disparities in healthcare experiences between racial identities and age cohorts. The data was abstracted from the Behavioral Risk Factor Surveillance System (BRFSS) Questionnaire of 2014 developed by the Center for Disease Control and Prevention (CDC).

## Power Analysis

Power analysis provides the appropriate sample size estimation to control type II error. For the purpose of this study power analysis was performed utilizing the following data points: effective size (Cohen's *d)*: 0.5, statistical power level: 0.8, probability level (alpha): 0.5, which yielded a sample size of 128 for a two-tailed hypothesis test (Soper, 2017).   However, because this data is readily available in the 2014 database, we did include all respondents who meet the inclusion criteria.

## Study Population / Sample

The target population was adults 18 to 69 years old making up four racial groups and three distinct generational cohorts.  The sample in BRFSS was selected through probability sampling based on an available telephone numbers in the governmental database.  Survey respondents were non-institutionalized adults 18 or older living in a private residents or some form of college housing.  The information within the survey was de-identified.  The sample population was derived from adults who completed the BRFSS survey questionnaire and resided in any of the 50 states, District of Columbia, or three U.S. territories.

This study explored healthcare experience based on racial identity and age cohorts.  Of those that participated in the 2014 BRFSS survey only those that meet the inclusion criteria was utilized in this study.  The inclusion criteria were: (1) age 18 to 69 years old, (2) self-reported

race of White, Black, Hispanic, or Asian, (3) respondents who completed module 13 of BRFSS

2014.

**Recruitment**

There was no recruitment process for this study.  The data was collected in 2014 and

remains available for use by the public (CDC, 2014).

<div align="center">**Instrumentation and Measurements**</div>

The BRFSS is comprised of three sections including core components, optional BRFSS

modules, and state-added questions.  There were 19 optional modules performed during the

survey period of January 2014 through December 2014 (CDC, 2015).  The survey was developed

through the partnership of a governing body representing state health officials selected to

represent regions, the BRFSS coordinating work group, and CDC program managers (CDC,

2015).  In 2014, Module 13: Reactions to Race was added to the BRFSS survey questions.

Demographic variables that were used to describe the sample included gender, educational level,

annual income, marital status, and employment status.  This one-time module was utilized for

purpose of understanding perceived experience and emotional responses from individuals of

different races.

National comparison studies have been performed to examine the reliability and validity

of the data outcomes in the BRFSS survey.   Scholarly periodicals were published between 2004-

2011 and validated and supported the results of the survey findings through systematic reviews,

study validation, and national comparisons groups (CDC, 2017).  The results from the BRFSS

were shown to be a valid and reliable source of information that allows researchers to use the

data as foundational knowledge for future healthcare studies.

<div align="center">**Data Collection Procedure**</div>

The data collection process for the BRFSS 2014 CDC survey was performed through the use of a telephonic survey utilizing both landline and cellular modalities.  The hours of operational calls occurred during day and evening hours seven days per week and calls were conducted by specially trained survey interviewers from the BRFSS state coordinator's office or supervisor's field office specifically trained to deliver the BRFSS questionnaire (CDC, 2015).  Prior to being released to perform the actual BRFSS survey in the field all survey candidate had to pass an evaluation based on performance within the practice environment.  To ensure quality standards while working in the field, survey interviewers were subject to monthly training reviews, real-time monitoring, and post survey callbacks (CDC, 2015).

The survey questionnaire was performed for one calendar year operating from January 2014 through December 2014.  Those that participated in the survey were selected through probability sampling from any of the 50 states, District of Columbia, or three U.S. territories (Puerto Rico, Guam, U.S. Virgin Islands). The CDC developed a database, Ci3 WinCATI, which allowed each state to upload their monthly survey results.

There was no data collector profile for BRFSS survey interviewers.  The core strategies behind performing the questionnaire was to guarantee impartiality and non-judgmental. Additional qualities of a good telephone survey candidate were that they were multi-taskers, calm under pressure, and active listeners (Research and Marketing Strategies, 2015). Strategies to increase response rate included data collectors alternating calls during day and evening hours to capture those candidate that were unable to answer calls during a prior call period (CDC, 2015).

 In this study, BRFSS data was downloaded into IBM SPSS Statistical 24 software from the CDC's BRFSS data site. We applied the inclusion criteria to select the sample.

The generalized timeline for this study began in January 2017 and concluded in May 2017.  This study was reviewed for determination by The George Washington University (GWU) Institutional Review Board (IRB) in April 2017 and it was determined that the study did not meet the criteria for the definition of human subject research.  The GWU IRB stated that no further IRB oversight was necessary unless the project focus changed.  The primary advisor, Dr. Qiuping (Pearl) Zhou, was selected in April 2017 and a secondary advisor solidified in June 2017.  Data collection and analysis began in the summer of 2017.  The first draft submission of the research proposal was submitted in February 2018 with the final research proposal submitted to primary and secondary advisor for review in March 2018.

## Data Analysis Plan

IBM SPSS Statistical 24 software system was used to analyze the data.  The data was verified for accuracy by the primary advisor and the secondary academic scholar.  Descriptive statistics was utilized to provide general foundational knowledge of data set (frequency and percentage).  Chi-squared was used to study the relationships between two categorical variables.  For research hypothesis 1 ($H_1$) perceived experiences of seeking healthcare between age cohort and between racial/ethnic groups, a chi-squared ($X^2$) analysis was performed.  For research hypothesis 2 ($H_2$) perceived physical manifestation of symptoms resulting from how were individuals treated based on race and age, a chi-squared ($X^2$) analysis was performed.  For research hypothesis 3 ($H_3$) perceived emotional response from how individuals were treated based on race and age, a chi-squared ($X^2$) analysis was performed.  Statistical significance was set at 0.05.

## Ethical Considerations

This research study was a collection of secondary data released to the public from the CDC. The protection of privacy for subjects was not an ethical concern as the data was de-identified prior to release to the public by the CDC. The provision to maintain confidentiality was not an ethical concern as the data set was available for public review on the CDC website. The data was secured on a laptop that had password protection. The GWU IRB reviewed and deemed that this research study did not engage in a human subject test; therefore no further IRB oversight was necessary unless the focus of the study changed. The GWU IRB determination letter date April 20, 2017, was kept on file by the researcher if needed for future review.

### Results

There were 350,576 respondents who were between the ages of 18 to 69 and 329,055 who reported belong one the four race/ethnicity groups. In 2014, only Minnesota, Mississippi, and New Mexico included the race-related healthcare experience module with 19,757 respondents who met the inclusion criteria. The characteristics of the sample are reported in table 2.

As showed in table 2, 76.3% of the respondents perceived that they were treated the same as other races, while 2.5% felt they were treated worse than other races, and near 8.7% felt they were treated better than other races. In the previous 30 days, 2.6% of the respondents experienced physical symptoms and 4.7% experienced emotional symptoms due to their healthcare experience.

Among the sample, 27% were 18-39 years old, 30.1% were between ages 40 to 54, and 42.9% were from 55 to 69. The majority of the samples were white (78.3%), followed by Hispanics (12.4%), Black (7.9%), and Asians (1.4%). More than half of the sample were females (55.6%), married (61.4%), had an education attainment greater than high school (69.2%), and

employed at the time of the survey (65.1%). For annual household income, 30.8% were lower than 35K and 31.5% were more than 75K. The rest fell in the middle.

**Hypothesis testing regarding age cohort**

Healthcare experience perceived in the past twelve months between age cohorts exposed that all age groups had a perceived negative experience related to race during a healthcare visit. The age group of 40-54 perceived the highest race related disparity, with 3.5% reported being treated worse than other races. Age group 55-69 reported the lowest disparity, with 2.4% reported being treated worse than other races. 3.0% of the 10-39 year old group reported being treated worse than other races. There was a statistical significance in perceived experience related to race in the past twelve months for age cohorts ($X^2$ 86.40; p<0.001).

There was perceived manifestation of physical symptoms in the past thirty days associated with race-related healthcare experience. Individuals in the age cohort of 40-54 had the most manifestations of physical symptoms of any cohort at 3.3%. The rate was similar for the 18-39 year group at 3.1%. The rate for the 55-69 year groups was the lowest at 1.8%. The differences among the three age cohorts regarding race-related physical symptoms during their healthcare encounter were significant ($X^2$ 34.95; p<0.001).

Similar patterns were observed for perceived race-related emotional symptoms experienced in the past thirty days when seeking healthcare. The age group 40-54 experienced the highest rate of emotional response at 6.0%. The age group of 18-39 reported emotional symptoms at 5.5%, while the eldest group reported emotional symptoms at 3.3%. There was a statistical significance in the emotional response of each age cohort ($X^2$ 64.66; p<0.001). A full review of age hypothesis results can be reviewed on table 4.

**Hypothesis Testing Regarding Racial Differences in Healthcare Experience**

Race is another important element that contributes to how individuals perceive their race-related healthcare experiences throughout the healthcare system.  Blacks had the worst race-related healthcare experience compared to other races during the previous 12 months at 8.5%; followed by Hispanics at 4.9%, Asians at 3.2% Only 2% whites reported being treated worse than other races during their healthcare encounter. In the sample, 10.8% of White perceived their experience to be better than the other races, while 8.3% Blacks, Hispanics, 7.3% Asians, and 5.9% Hispanics perceived being treated better than other races. These differences were statistically significant ($X^2$ 268.07; p<0.001).

Manifestation of race-related physical symptoms occurred in all racial group with Blacks having the highest presentation of physical symptoms during their healthcare encounter in the past 30 days at 8.5%; followed by 6.4% in Hispanics and 6.2% in Asians.  White individuals had the lowest rate of race-related physical symptoms of 1.4%. There was statistical significance in the manifestation of physical symptoms in racial groups ($X^2$ 459.80; p<0.001).

The Black group represented the most perceived race-related emotional response of all race groups over the past 30 days at 16.2%; followed by Asians at 9.8%, Hispanics at 8.8%, and Whites at 2.8%. There was a statistical significance in the perceived emotional response in the past 30 days of all racial groups ($X^2$ 678.52; p<0.001). Among the racial sample group the Blacks represented the least favored outcomes in all healthcare related experiences.  A full review of racial hypothesis results is available in table 5.

**Demographic Variables and Race-Related Healthcare Experience**

Demographic variables and race-related healthcare experience are summarized in table 3. Individuals having a high school diploma or less education had higher percentile of reporting being treated worse than other racial groups at 4.6% (n=243) compared to more educated

counterparts with greater than high school education at 2.2% (n=260).  (p<0.001). In addition, 4.2% of lower education group versus 1.9% of higher education group reported experiencing race-related physical symptoms during their past 30-day healthcare encounter, p<0.001. For race-related emotional symptoms, high school or lower group were6.4% (n=384) while the greater than high school group were 4.0%, p<0.001.

Unmarried individuals exhibited similar findings to that of educational level where their healthcare experience being worse than other races 3.9% (n=256), physical symptoms 3.9% (n=289), and emotional symptoms 6.2% (n=466) were significantly higher than the 2.3%, 1.8% and 3.8% among their married counterparts.  (all significant at p<0.001).

Unemployed reported the worse race-related health experience than other employment groups; with 5.8% (n=198) reported being treated worse than other races, 5.4% (n=216) experienced physical symptoms and 8.2% (n=331) experienced these were significantly higher than the employed and retired groups (p<0.001 for all employment-related analyses).

Annual income showed that the respondents making less than $35,000 annually indicated the worst emotional experience of all categories at 8.0% (n=482), while individuals making greater than $75,000 annually represented the best experience in all three categories; experience, physical response, and emotional response.

The female gender reported the worse outcomes for two of the three categories physical symptoms 2.9% (n=319) and emotional symptoms 5.0% (n=549) when compared to their male counterparts; while the male gender reported their healthcare experience was worse at 3.0% (n=228).  All demographic variable data denoted statistical significance.

**Discussion**

There is a perception by patients that the healthcare system has a biased demeanor based on age and ethnicity.  These disparities can be reflected as a positive or negative observation. This research provided evidence of statistically significant positive correlations, for Whites and Blacks of all age groups who perceived they had a "better than" healthcare experience compared to other racial and age groups as noted in the primary hypothesis ($H_1$).  There was an also statistical significant correlation in the demographics analysis for those patients who obtained higher than high school education levels, retired individuals, and those that had an annual income of $75,000 or more.  There are bias concepts supported in the literature that were reproduced in this study that individuals with more advantages have a perceived "better than expected" healthcare experience.  This was evident in the 1932 study "Tuskegee Study of Untreated Syphilis in Negro Male" conducted by the United States Public Health Services.  This study exploited the underserved population of Black men in rural Alabama where Black men were denied appropriate syphilis antibiotics.  Another study by The University of Wisconsin School of Medicine collaborated on research that looked at healthcare experience based on racial group with a compare group of minorities against Whites.  The results showed those in the minority group had a negative healthcare experience resulting in a 51% decline in future healthcare visits (Schwei, Johnson, Matthews, & Jacobs, 2017).

The second hypothesis ($H_2$) explored the disparity differences based on race and age through a perceived physical manifestation of symptoms.  The discriminatory behavior of the healthcare team produces a physiological response in certain patients.  Researchers have discovered that individuals who are exposed to prejudice and bias discrimination further contributed to the healthcare disparities and symptomatic physical changes in patients.  The documented changes included increases in stress level, anxiety, heart rate, and decreased cardiac

output (Sawyer, Major, Casad, Townsend, & Mendes, 2012). This research supported the hypothesis by concluding a statistically significant correlation between all races of all age groups. Demographic analysis revealed a statically significant relationship in all sub-categorical grouping (education level, marital status, employment, annual income, and gender).

The final hypothesis ($H_3$) proven was an individual's perceived emotional response elicited by a poor healthcare interaction. An emotional response maybe elicited if an individual feels they were discriminated against. Within the research there was a defined statistically significant correlation between a perceived emotional response in all identified racial and age groups. The demographic variables provided additional support beyond race and age that any biasness regardless of lifestyle status could induce a higher emotional response in individuals. All sub-categories of demographic variables showed a statistical significance. A research study supported that healthcare inequalities can provoke an emotional response that triggers an immune response in patients with systemic lupus erythematosus (SLE); this study was conducted in 2015 with African-American women. In an additional study performed by CAHPS in 2013, non-Caucasian patients were evaluated by ill prepared providers unlike their counterpart White patients, whose provider reviewed their medical records prior to examination and reviewed it prior to the examination. This lack of provider preparedness stimulated the emotional response of decreased personal value.

**Limitations**

One of the major limitations to this study was lack of data collection about what specifically triggered the respondent to categorize an interaction as a poor healthcare experience, physical response, or emotional response. This additional information would have provided a stronger foundation for revising cultural sensitive training, developing new educational

framework for novice medical clinicians, and consequently improving patient quality outcomes.

The second limitation was the lack of response from the Asian and Hispanic community.  The

third limitation would be the module 13 of the 2014 BRFSS was only picked-up by three states

Minnesota, Mississippi, and New Mexico.  Increases in the sample size through engagement of

additional states and diversifying the racial groups would have significantly increased the

globalized value and legitimacy behind this study for these minority populations.

**Implications/Recommendation for Practice, Policy, and Research**

The implication of this study exposes some of the biases that exist in the healthcare

system that creates disparities.  These disparities lead to an increase in healthcare expenditure

and poor patient outcomes.  Healthcare is more than just caring for another person; it has become

a business environment of customer service standards, which are tied to reimbursement.

Clinicians no longer dictate how care is performed; it is a collaborative approach to caring for the

person regardless of the creed, ethnicity, age, sexual orientation, or lifestyle status.  This study

provides the healthcare community with the foundational knowledge that there are

discriminatory acts that occur in everyday care of people who have medical needs.  When these

needs are not adequately addressed the cost of healthcare increases, mortality rates increase, and

patient quality outcomes decrease.

The results of this study should be used to inform clinicians, nurses, and providers of the

impact they have on a patient and how the patient's perceived experience can shape future

healthcare policy.  An educational platform for medical professionals centered on cultural

awareness and non-judgmental decision-making needs to be established to ensure that all

populations of patients are evaluated, treated, and respected as equals.  This could be

accomplished partially through curriculum development for institution of higher education such

as vocational, colleges/universities, and continuing education hours.  In addition to education,

policies can be created to support these types of programs and mandate that all healthcare

workers take some version of comprehensive training that captures the global needs of respect

and non-biased decision-making.

## Conclusion

The negative impact of healthcare disparities is not a unique problem in the healthcare

marketplace.  The challenge has been to identify those who are affected, rationale, and the source

of the disparities so that a solution can be developed.  This research begins by breaking down the

silos of who are the most vulnerable racial and age groups affected in association with

demographical advantages and disadvantages.  Biasness and discriminatory actions create a

healthcare gap that generates trust related issues and reduces quality outcomes for patients.

Level setting expectations and targeting those vulnerable populations will allow the healthcare

community to combat healthcare disparities in a way that positively impacts patient outcomes.

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**Table 1: Variables**

| Variables | Variable Type and Form | Theoretical / Descriptive Definition | Operational Definition / Specification |
|---|---|---|---|
| | | | |
| Age | Independent / Nominal | Age in years based on generational age cohort | Age grouping by individuals assigned generational cohort<br>1= 18-39<br>2= 40-54<br>3= 55-69 |
| Race | Independent / Demographics / Nominal | Biological or genetic traits based on various sets of physical characteristics | 1= White<br>2= Black<br>3= Hispanic<br>4= Asian |
| Healthcare Experience | Dependent / Nominal | Perception of healthcare experience based on other races | Was the perceived experience compared to other races when seeking healthcare in the last 12 months<br>1= Worse than other races<br>2= The same as other races<br>3= Better than other races |
| Physical Symptoms | Dependent / Nominal | Developed physical symptoms associated with experience based on race | Developed headache / upset stomach / tensing of muscles / pounding of heart based on perception of treatment related to race while engaged in healthcare treatment in the last 30 days<br>1= Yes<br>2= No |
| Emotional Symptoms | Dependent / Nominal | Developed emotional symptoms associated with experience base on race | Developed frustration / anger / sadness based on perception of treatment related to race while engaged in healthcare treatment in the last 30 |

| | | | days<br>1= Yes<br>2= No |
|---|---|---|---|
| Gender | Demographic / Nominal | Patient's biological sex | 1=Male<br>2=Female |
| Educational Level | Demographic / Nominal | Highest grade or years of school completed | 1= High School or lower<br>2= Greater than High School |
| Annual Household Income | Demographic / Ordinal | Income for one calendar year | 1=<$35,000<br>2=$35,000 - $49,999<br>3=$50,000 - $74,999<br>4=≥$75,000 |
| Marital Status | Demographic/ Nominal | Status of current relationship | 1=Unmarried<br>2=Married |
| Employment Status | Demographic / Nominal | Status of current employment | 1=Employed<br>2=Unemployed<br>3=Retired |

**Table 2: Characteristics of the sample**

| Variable | Frequency | Percentage |
|---|---|---|
| (H$_1$) Healthcare experience in the past 12 months | | |
| • Worse than other races | 503 | 2.5% |
| • The same as other races | 15,083 | 76.3% |
| • Better than other races | 1,712 | 8.7% |
| (H$_2$) Experienced physical symptoms associated with perceived healthcare experience based on race in past 30 days | | |
| • Yes | 514 | 2.6% |
| • No | 19,113 | 96.7% |
| (H$_3$) Experienced emotional symptoms associated with perceived healthcare experience based on race in past 30 days | | |
| • Yes | 930 | 4.7% |
| • No | 18,709 | 94.7% |
| Age Cohort | | |
| • 18-39 years | 5,335 | 27.0% |
| • 40-54 years | 5,953 | 30.1% |
| • 55-69 years | 8,469 | 42.9% |
| Race/Ethnicity | | |
| • White (Non-Hispanic) | 15,461 | 78.3% |
| • Black (Non-Hispanic) | 1,566 | 7.9% |
| • Hispanic | 2,450 | 12.4% |
| • Asian (Non-Hispanic) | 280 | 1.4% |
| Gender | | |
| • Male | 8,765 | 44.4% |
| • Female | 10,992 | 55.6% |
| Marital Status | | |
| • Married | 7,558 | 38.3% |
| • Not married | 12,131 | 61.4% |
| Education | | |
| • High school or lower | 6,078 | 30.8% |
| • Greater than high school | 13,679 | 69.2% |
| Employment | | |
| • Employed | 12,858 | 65.1% |
| • Unemployed | 4,047 | 20.5% |
| • Retired | 2,806 | 14.2% |
| Annual Income | | |
| • Less than $35K | 6,092 | 30.8% |
| • $35K-$49,999 | 2,517 | 12.7% |
| • $50K-$74,999 | 3,107 | 15.7% |
| • Greater than $75K | 6,224 | 31.5% |

**Table 3: Variable Demographic Summary Table**

| | Experience | | | | Physical Symptoms | | | Emotional Symptoms | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Worse | Same | Better | $\chi^2$, p value | Yes | No | $\chi^2$, p value | Yes | No | $\chi^2$, p value |
| **Education** | n=17,298 | | | | n=19,627 | | | n=19,639 | | |
| High School or Less | 4.6% (n=243) | 88.7% (n=4,649) | 6.6% (n=348) | $\chi^2$ 159.85 | 4.2% (n=254) | 95.8% (n=5,759) | $\chi^2$ 87.60 | 6.4% (n=384) | 93.6% (n=5,644) | $\chi^2$ 51.27 |
| Greater than High School | 2.2% (n=260) | 86.5% (n=10,434) | 11.3% (n=1,364) | p<0.001 | 1.9% (n=260) | 98.1% (n=13,354) | p<0.001 | 4.0% (n=546) | 96.0% (n=13,065) | p<0.001 |
| **Marital Status** | n=17,243 | | | | n=19,561 | | | n=19,575 | | |
| Unmarried | 3.9% (n=256) | 86.6% (n=5,693) | 9.5% (n=627) | $\chi^2$ 38.11 | 3.9% (n=289) | 96.1% (n=7,204) | $\chi^2$ 75.45 | 6.2% (n=466) | 93.8% (n=7,042) | $\chi^2$ 59.83 |
| Married/Partnered | 2.3% (n=244) | 87.6% (n=9,342) | 10.1% (n=1,081) | p<0.001 | 1.8% (n=220) | 98.2% (n=11,848) | p<0.001 | 3.8% (n=458) | 96.2% (n=11,609) | p<0.001 |
| **Employment** | n=17,266 | | | | n=19,581 | | | n=19,594 | | |
| Employed | 2.3% (n=261) | 90.2% (n=10,435) | 7.5% (n=872) | $\chi^2$ 408.38 | 2.1% (n=271) | 97.9% (n=12,519) | $\chi^2$ 164.61 | 4.3% (n=544) | 95.7% (n=12,243) | $\chi^2$ 170.13 |
| Unemployed | 5.8% (n=198) | 82.1% (n=2,822) | 12.1% (n=417) | | 5.4% (n=216) | 94.6% (n=3,787) | | 8.2% (n=331) | 91.8% (n=3,685) | |
| Retired | 1.9% (n=42) | 79.7% (n=1,802) | 18.4% (n=417) | p<0.001 | 0.9% (n=26) | 99.1% (n=2,762) | p<0.001 | 1.8% (n=50) | 98.2% (n=2,741) | p<0.001 |
| **Annual Income** | n=15,821 | | | | n=17,841 | | | n=17,850 | | |
| Less than $35K | 5.4% (n=287) | 86.1% (n=4,547) | 8.5% (n=448) | | 5.1% (n=307) | 94.9% (n=5,725) | | 8.0% (n=482) | 92.0% (n=5,560) | |
| $35K-$49,999 | 2.9% (n=64) | 88.6% (n=1,937) | 8.5% (n=186) | $\chi^2$ 242.19 | 2.5% (n=62) | 97.5% (n=2,448) | $\chi^2$ 232.99 | 4.8% (n=121) | 95.2% (n=2,388) | $\chi^2$ 207.77 |
| $50K-$74,999 | 1.6% (n=45) | 87.7% (n=2,442) | 10.7% (n=297) | p<0.001 | 1.3% (n=39) | 98.7% (n=3,057) | p<0.001 | 3.3% (n=102) | 96.7% (n=2,993) | p<0.001 |
| Greater than $75K | 1.0% (n=55) | 87.3% (n=4,861) | 11.7% (n=652) | | 1.0% (n=60) | 99.0% (n=6,143) | | 2.7% (n=165) | 97.3% (n=6,039) | |
| **Gender** | n=17,298 | | | | n=19,627 | | | n=19,639 | | |
| Male | 3.0% (n=228) | 87.9% (n=6,659) | 9.0% (n=685) | $\chi^2$ 11.20 | 2.2% (n=195) | 97.8% (n=8,507) | $\chi^2$ 8.75 | 4.4% (n=381) | 95.6% (n=8,324) | $\chi^2$ 4.45 |
| Female | 2.8% (n=275) | 86.6% (n=8,424) | 10.6% (n=1,027) | p=0.004 | 2.9% (n=319) | 97.1% (n=10,606) | p=0.003 | 5.0% (n=549) | 95.0% (n=10,385) | p=0.035 |

**Table 4: Hypotheses Data Summary Table: AGE**

| Hypotheses Data Summary Table: AGE | | | |
|---|---|---|---|
| Statistical Significance *P*<0.05 | | | |
| | 18-39 | 40-54 | 55-69 |
| $H_1$ Experience | n=17,298    $X^2$ 86.40    p<0.001 | | |
| Worse | 3.0% (n=147) | 3.5% (n=183) | 2.4% (n=173) |
| Same | 89.1% (n=4,310) | 87.9% (n=4,648) | 85.4% (n=6,125) |
| Better | 7.8% (n=379) | 8.6% (n=455) | 12.2% (n=878) |
| $H_2$ Physical | n=19,627    $X^2$ 34.95    p<0.001 | | |
| Yes | 3.1% (n=165) | 3.3% (n=194) | 1.8% (n=155) |
| No | 96.9% (n=5,145) | 96.7% (n=5,717) | 98.2% (n=8,251) |
| $H_3$ Emotional | n=19,639    $X^2$ 64.66    p<0.001 | | |
| Yes | 5.5% (n=294) | 6.0% (n=355) | 3.3% (n=281) |
| No | 94.5% (n=5,018) | 94.0% (n=5,563) | 96.7% (n=8,128) |

**Table 5: Hypotheses Data Summary Table: RACE**

| Hypotheses Data Summary Table: RACE | | | | |
|---|---|---|---|---|
| **Statistical Significance *P*<0.05** | | | | |
| All Races (n=19,757) | White | Black | Hispanic | Asian |
| **H$_1$ Experience** | n=17,298    X$^2$ 268.07    p<0.001 | | | |
| **Worse** | 2.0% (n=271) | 8.5% (n=115) | 4.9% (n=109) | 3.2% (n=8) |
| **Same** | 87.2% (n=11,756) | 83.2% (n=1,128) | 89.2% (n=1,977) | 89.5% (n=222) |
| **Better** | 10.8% (n=1,451) | 8.3% (n=112) | 5.9% (n=131) | 7.3% (n=18) |
| **H$_2$ Physical** | n=19,627    X$^2$ 459.80    p<0.001 | | | |
| **Yes** | 1.4% (n=209) | 8.5% (n=132) | 6.4% (n=156) | 6.2% (n=17) |
| **No** | 98.6% (n=15,168) | 91.5% (n=1,412) | 93.6% (n=2,276) | 93.8% (n=257) |
| **H$_3$ Emotional** | n=19,639    X$^2$ 678.52    p<0.001 | | | |
| **Yes** | 2.8% (n=437) | 16.2% (n=251) | 8.8% (n=215) | 9.8% (n=27) |
| **No** | 97.2% (n=14,938) | 83.8% (n=1,300) | 91.2% (n=2,222) | 90.2% (n=249) |