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Racial Bias in Pain Perception and Treatment Among Healthcare Pre-Professionals

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RACIAL BIAS IN PAIN PERCEPTION AND TREATMENT AMONG HEALTHCARE PRE-PROFESSIONALS

by

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ABSTRACT

The novel coronavirus has impacted Black Americans who have had higher rates of infection, hospitalization and death compared to White Americans. Although higher rates of obesity and other chronic diseases like diabetes and high blood pressure have been implicated and, likely, play a substantial role in the disparity, racial biases among health care providers that affect the provision of care have yet to be examined. There is some evidence that racial bias among healthcare providers affects pain outcomes among Black American women with healthcare providers prescribing Black women pain medication less often than to White women (Badreldin, et. al., 2019; Bateman & Carvalho, 2019). Racial biases that result in disparities regarding testing, treatment and management of COVID-19 were addressed in this study. Participants were undergraduate and graduate nursing students from universities in the American South. They were shown a picture of a Black or White woman, and a vignette describing the patient's pain (Study 1) or COVID-19 symptoms (Study 2). Discrepancies in nursing students' pain ratings (Study 1), triage timing (Studies 1 and 2), COVID-19 test recommendations and treatment recommendations (Study 2) for Black and White women were assessed. No discrepancies were found in nursing students' pain ratings, triage timing, COVID-19 testing recommendations or treatment recommendations for Black and White women. Interestingly, Black participants (vs. White participants) rated patients' pain as more severe regardless of patients' race. Findings indicate that nursing students at southern universities do not hold racial biases as manifested by pain assessment and COVID-19 symptom treatment.

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The novel coronavirus (COVID-19) pandemic has highlighted health disparities between Black and White Americans. Black Americans are more affected by COVID-19 with a 2.6 times higher case rate, a 4.7 times higher hospitalization rate, and a 2.1 times higher death rate compared to White Americans (Center for Disease Control, CDC, 2020). Although high rates of preventable chronic diseases among Black Americans may account for some of the coronavirus disparities (Rajal, Rahami, & Imasial-Beigi, 2020; Henry & Lippi, 2020), there is evidence that other factors, including biases in the healthcare sector (Maina et al., 2018), may influence diagnoses, triage timing, and treatment, and may therefore be responsible for some of the racial disparities in coronavirus hospitalizations and deaths. Racial bias among healthcare professionals has been often cited (e.g., Hall et al., 2015; Mossey, 2011) regarding to the pain management treatment Black Americans receive in the healthcare sector.

Therefore, the goal of this project is to experimentally assess healthcare professionals' differences in the treatment of Black and White women as hypothetical (a) COVID-19 patients and (b) patients with chronic back pain. Below I review the literature most pertinent to the proposed project, including racial disparities in healthcare, racial disparities in COVID-19 diagnosis and treatment, racial pain stereotypes, superhumanization bias, implicit and explicit biases, individual differences in pain experience, current approaches to pain diagnostics and treatment, gender differences in pain perception and management, and conclude with the proposed experimental study.

Racial Disparities in Healthcare

Racial disparities in healthcare have recently been a frequent topic of discussion due to the high number of COVID-19 deaths among minorities (National Public Radio, NPR, 2020; The Washington Post, 2020; Yancy, 2020). Racial disparities are defined as racial or ethnic differences in the health care received not due to other systemic factors (American College of Physicians, ACP, 2010). There are several documented influences that contribute to the existence of racial disparities in healthcare including income, education, and health literacy (ACP, 2010). Black Americans are more likely to have a lower income, less education, and less health literacy (ACP, 2010) compared to White Americans. Those with lower income and less education often only have access to poor if any healthcare treatment. They often have little health literacy which impacts their interactions with physicians and how they are subsequently treated. Therefore, each of these factors can play a role in healthcare racial disparities such as the treatment received, further contributing to disparities in health outcomes (Williams & Rucker, 2000).

Black Americans are more likely to have poor health outcomes and have a higher proportion of individuals afflicted with multiple diseases compared to the general population

(CDC, 2018). Forty-eight percent of Black American adults suffer from obesity with one in two Black women having it. Black Americans also have high rates of heart disease with Black men being 30 percent and Black women being 60 percent more likely to have heart disease than their White counterparts. Black women are also 40 percent more likely to die of breast cancer and two to three times more likely to die during childbirth compared to White women (CDC, 2018; CDC, 2019).

There are also multiple studies detailing racial disparities in healthcare treatment for Black Americans which may be a contributing factor to the poor health outcomes (Feldman, & Kesselheim, 2018; Obermeyer et al., 2019; Williams & Thompson, 2017). When evaluating heart failure therapy recommendations, both the race of the patient and the age of the doctor were revealed to be key factors in the recommended therapy. Black patients, in general, were less likely to be recommended for heart transplants compared to White patients with healthcare professionals over 40 being more likely to recommend a heart transplant for White patients than Black patients. Using databases from the National Inpatient Sample (NIS) and National Hospital Ambulatory Medical Care Survey (NHAMCS), Udoetuk et al. (2020) found that Black patients were more likely to be given a malingering diagnosis (i.e., exaggerating or making up an illness) than White patients in inpatient settings.

Racial Disparities in COVID-19

COVID-19 has severely impacted minority groups, particularly Black Americans. They have a two times higher case and death rate compared to White Americans (Center for Disease Control, CDC, 2020). There are several possible contributions to the high case and death rates such as poor access to health care, stigma, poor living conditions and work circumstances, including the commonality of preventable chronic diseases such as hypertension, diabetes, obesity, and heart disease among Black Americans (CDC, 2020; Yancy, 2020). These preventable chronic diseases make individuals more susceptible to severe cases of COVID-19 (CDC, 2018; CDC, 2020). However, Black American's preventable chronic diseases were often mishandled by physicians prior to COVID-19 (Institute of Medicine, IoM, 2003). These previous mishandlings and misdiagnoses of the

preventable chronic diseases have now placed Black Americans at risk of contracting a severe case of COVID-19. The same biases and mishandlings previously mentioned may also play a role in the treatment that Black patients receive when they are diagnosed with COVID-19 and may provide some explanation for the high death rates.

Racial Bias and Stereotyping of Pain

There are many possible reasons for the systemic treatment disparities in the healthcare sector, one reason may be the biases and stereotypes that Black Americans often endure (Hollingshead et. al, 2016; Waytz, Hoffman, & Trawalter, 2001). Stereotypes are the widely held and fixed ideas about a specific group of people or things, and bias is a prejudice for or against another person or group of people (Jhangiani & Tarry, 2014). Black Americans often deal with a wide array of stereotypes and biases with those most relevant to this project being the belief that there are biological differences between Black and White Americans (Hoffman et al., 2016).

Superhumanization Bias

One common stereotype that comes from the belief of biological differences between Black and White people is that Black people are stronger and more powerful than White people. This is a type of benevolent prejudice, a surface-level, positive, preconceived notion about a group (Waytz et al., 2014). This type of prejudice may seem harmless or positive, but it can perpetuate other stereotypes, biases, prejudices, and racism (Waytz et al., 2014). Stemming from this stereotype is superhumanization bias, or the belief that Black people are stronger than other racial groups, can endure higher levels of pain, or are less sensitive to pain compared to other racial groups (Deska et al., 2020; Dore et al., 2014; Dore, Hoffman, Lillard, & Trawalter, 2018). Contributing to

superhumanization is animalization. This is a type of dehumanization where people are perceived as being animal-like (Solomon, 2017). Animalization has impacted Black people since slavery when they were seen and categorized as livestock and property. The belief that Black people are ape-like can help support the idea that Black Americans are superhuman, as apes are commonly believed to be strong. This dehumanization helps to perpetuate superhumanization bias.

Implicit and Explicit Racial Biases

Racial biases can be both implicit and explicit, each with the possibility of a damaging impact (Sabin & Greenwald, 2012). Explicit bias refers to the conscious attitudes and thoughts that individuals have about a particular person or social group (Greenwald & Banaji, 1995). Implicit bias refers to the unconscious attitudes toward and stereotypes about other social groups. While explicit bias can be evaluated by using self-report measures, implicit bias is most frequently measured using indirect measures such as the Implicit Association Test (IAT, Greenwald et al., 1998; Schimmack, 2019).

Explicit bias is better known because it is displayed and experienced overtly, whereas implicit bias can be a bit more difficult to discern (Burke et al., 2016). As healthcare professionals have the same exposure to biases that the general population does, it is possible that they may exhibit both implicit and explicit biases just as the rest of the population (Moskowitz, Stone, & Childs, 2012). These biases can be triggered by personal biases and/or by biases of those in an individual's circle of influence. Burke et al. (2016) found that medical students reported more positive feelings toward Black Americans when associating with Black Americans outside of the classroom. Medical students also reported feeling more comfortable expressing personal biases toward Black

Americans when they heard their superiors (professors, physicians, medical residents, etc.) making negative comments about Black American patients (Burke et al., 2016). Thus, informal experiences can influence students' beliefs and actions.

Implicit bias can affect the diagnosis that practitioners make (James, 2017; Moskowitz, Stone, & Childs, 2012). As this type of bias is not obvious, it can often go undetected and unaddressed, impacting medical decisions. Based on an extensive literature review, Marquié et. al (2014) found that most healthcare providers display some form of racial or ethnic bias regardless of their race or ethnicity. However, Black Americans were less likely than Whites to display implicit biases. Ryn et al. (2000) found that a patient race was associated with the practitioner ratings of patient intelligence, practitioner beliefs about patient adherence to medical advice, and practitioner beliefs about the potential of the patient to engage in risk behaviors. Given documentation of superhumanization bias and racial bias in general, on both implicit and explicit levels, this proposal sets to investigate whether they are manifested in racial discrimination by health care workers in (a) COVID-19 diagnosis and treatment, and (b) management of more chronic conditions such as chronic pain.

Perception of Pain

There is evidence of bias in the perception of other's pain beginning at a young age. Dore et al. (2014) found that five-year-old children rated the pain of Black targets the same as the White targets. By the age of seven, results were mixed, and at 10 years a clear bias was shown in the ratings of Black targets' pain as being lower than Whites. This study provides evidence that by the age of seven, children have developed some superhumanization biases and by 10 the biases can be fully formed. Interestingly, Dore et

al., (2018) found differing results when investigating White children's perception of hardship and pain. Their results indicated that as children aged, they were more likely to associate Blacks with economic hardship, but there was no evidence that perception of economic hardship impacted children's pain ratings for others. However, the association of hardship with higher pain tolerance shifts when looking at adults. A study done by Hoffman and Trawalter (2016) revealed that the perception of another's hardships can potentially bias perception of another's pain and possibly lead to racial bias. Racial bias was particularly evident for participants that believed hardship can lead to strength and when Blacks were perceived as having faced greater hardship than Whites (Hoffman & Trawalter, 2016).

Individual Difference in Pain Experience

The judgment of someone else's pain level is often based on one's own previous pain experiences and attitudes (Holm et al.,1989; Tait & Chibnall, 1998). Using the Survey of Pain Attitudes (SOPA), Tait and Chibnall (1998) identified several clusters of pain attitudes that they further categorized into profiles. Using the pain attitude profiles they found that regarding chronic pain, patients' attitude profiles could be indicators of their pain perception. Similarly, Holm et al. (1989) found that nurses' assessment of patients' pain was influenced by personal experiences with pain. Additionally, a study by Teske and colleagues (2016) found that as people gauge others' pain based on physiological symptoms, past experiences are often influential in providers' pain rating decisions.

Discrepancy between Patient Pain and Provider Ratings

Patients' rating of their pain often differs from the healthcare professionals' rating of the patients' pain (Chibnall, Tait, & Gammack, 2018; Holm et al.,1989; Marquié et al., 2003; Teske, Daut, & Cleeland, 1983). This discrepancy in ratings has the potential to affect patient-provider relationships which can further impact patient treatment. There is often a difference in patient and healthcare professionals' pain ratings based on the race of the healthcare professionals and the race of the patient (Mathur & Richson, 2014). Mathur et al. (2014) found that Black healthcare professionals were more sensitive to patients' pain regardless of race, whereas White healthcare professionals were more responsive to the pain of Whites compared to other races (Mathur & Richeson, 2014). Similarly, van Ryn (2002) found evidence that healthcare providers' interpersonal behavior (e.g., warmth, communication, question-asking) towards patients, may lend to the existence of racial and ethnic health disparities. Black American and Hispanic individuals tend to be at risk to experience higher ratings of postoperative pain intensity than non-Hispanic Whites (Perry et al., 2019). Despite this, Black Americans and Hispanics are more likely to have their pain rated lower than White Americans (Deska et al., 2020; Hack, 2019). Black Americans pain in particular was rated lower than the pain of White Americans by Black and White participants in a study by Marquié et al. (2003).

Prescription of Pain Medication as Pain Treatment

Inconsistencies are evident in the treatment of both chronic and acute pain among Black patients compared to White patients. Black Americans are often under-prescribed pain medications despite evidence of higher sensitivity to pain (Perry et al., 2019; Weisse, Foster, & Fisher, 2005). A study by Mende-Siedlecki et. al (2019) revealed that

not only did White participants have a higher threshold for determining Black facial expressions of pain, but they also prescribed less pain reliever to the Black faces that indicated pain. Prescription for pain relievers, particularly opioids, are based on several factors and have previously been prescribed more often to White, higher-income individuals (Rasu & Knell, 2017). These prescription differences are also evident across all types of pain including acute, chronic, and cancer pain and ages (Stjernswärd & Teoh, 1990).

Groenewald et al. (2018) conducted a study using a national database to evaluate one-year opioid prescriptions to children 0-17, and found that Black American, Hispanic, Native American, and Asian children were more likely to receive a non-opioid pain treatment than White children. A different study investigating the pain management of children with appendicitis in the emergency room similarly found that in general, Black children were less likely to be administered an opioid than White children (Goyal et al., 2015). When investigating the pain management plan for UTIs among children, Groenewald et al. found that physicians with higher implicit pro-white biases were more likely to prescribe pain medication to White patients and to prescribe it for longer compared to prescriptions for Black patients.

Similar disparities in pain treatment are found among adults. Using data from California's Controlled Substance Utilization Review and Evaluation System, Friedman et al. (2019) found that Whites are prescribed opioids at higher rates than their non-White counterparts. They also found that prescription medications were largely prescribed more often in areas with a greater prevalence of White Americans. In higher-income, largely White neighborhoods, 1 in 4 adults received opioid prescriptions, whereas, in lower-

income urban neighborhoods, 1 in 20 adults received a prescription (Friedman et. al., 2019). Similarly, Black American patients were less likely to be prescribed opioids by their oncologists (Shields, 2018). Findings by Hausmann et al. (2013) shown that there are racial disparities in monitoring and treating patients' long-term opioid therapy. Not only was pain documented less frequently for Black American patients than White American patients, but Black Americans were also less likely to be referred to a pain specialist. However, when Black Americans were screened for pain and referred to a pain specialist, they were more likely to receive drug screening tests and referrals to substance abuse specialists.

A study by Villwock et al. (2019) provides further support that Black Americans were much less likely than White Americans to receive opioids in both inpatient and emergency department facilities. Disparities in pain diagnosis and prescription also occur for various types of pain including acute and chronic pain (Hausmann et al., 2013). When evaluating analgesic (i.e., pain medication) prescription for extremity fractures, Todd and colleagues (2000) found that White patients were more likely to be prescribed analgesics than Black patients despite their pain being recorded similarly. Burgess et al. also found evidence that non-White physicians, particularly Black Americans, were more hesitant to prescribe opioids than their White counterparts.

Just as there are racial disparities in the prescription of opioids for chronic and cancer-related pain, there are also differences in the alternative analgesic medications such as naloxone. Naloxone has become a popular alternative to some opioids for chronic pain, as it is believed to be less addictive than opioids (Chen, Chen, & Mao, 2014).

Similar to previous research, the opioid alternative was prescribed less often to Black Americans than any other racial group, regardless of substance abuse history.

While there are many studies that revealed evidence of disparities in opioid prescription treatment, there are some studies that have found either the opposite or no differences in treatment. Tamayo-Sarver et al. (2003) indicated that patient race and ethnicity do not play a role in opioid prescription. They sent out different clinical vignettes to physicians, detailing patient's race and socioeconomic status. Results revealed that the physician's decision to prescribe opioid medication was not impacted by the patient's race. Additionally, a study by Shields et al. (2018) investigating pain assessment and treatment of advanced-stage cancer patients found that there were no racial differences in pain assessment and treatment by patient's primary care physicians. Miller et al. (2019) also found contradicting evidence, where medical students rated Black children as being in more distress due to pain and were more likely to suggest opioids for their pain than White children. Despite these findings, most literature indicates that there are some differences in pain treatment based on race with many studies indicate that White Americans are more likely to receive higher pain ratings and receive an opioid prescription than Black Americans (Goyal et al., 2015; Rasu & Knell, 2017; Groenewald et al., 2018; Santoro & Santoro, 2018).

Gender Differences in Pain Perception and Treatment

An extensive literature review revealed that not only are women more sensitive to pain than men, but they also respond differently depending on the analgesic and report their pain more frequently to doctors (Fillingim et al., 2009; Hoffmann & Tarzian, 2001; Mogil & Bailey, 2010). Despite the higher level of sensitivity and rates of reporting,

women's pain is often taken less seriously and treated less intensively. An extensive literature review by Hampton et al. (2015) revealed that women receive prescription and administration of opioids and other pain medications at lower rates than men. Gendered norms, such as the idea that women are able to bear more pain due to childbirth and provider bias are potential reasons for the gender differences in pain treatment (Miller et al., 2017; Samulowitz et al., 2018; Schäfer et al., 2016;).

Gender Differences in Pain Prescription and Treatment

There is also evidence of differences in pain perception based on physician race and gender (Weisse et al., 2001). It was found by Weisse et al. that White male physicians prescribed hydrocodone twice as often to White male patients than to Black patients for acute pain and prescribed twice as much hydrocodone to male patients than female patients for chronic pain. Interestingly, female physicians did the opposite. When investigating other types of chronic pain, it was found that when under higher cognitive load, male physicians were less likely to prescribe opioids for chronic back pain, whereas female physicians were more likely to prescribe opioids under higher cognitive load (Burgess et al, 2015; Hampton, Cavalier, & Langford, 2015; Weisse, Sorum, Sanders, & Syat, 2001).

The disparities in healthcare have been found to exist not only based on race but also at the intersection of race and gender (Elster, VanGeest, & Fleming, 2003; Byrd & Clayton, 2002). Using a written clinical vignette, Schulman et al. (1999) found that Black women were least likely to be recommended for a stress test to evaluate their cardiac symptoms despite displaying the same symptoms as their White female, male, and Black male counterparts. Similarly, Burgess et al. (2014) found that married, Black,

female patients were least likely of all races and genders to be screened for pain. Additionally, Butwicket et al. (2016) found that Black women received general anesthesia, which has a higher risk of complications and death during delivery, at higher rates than other races when having a cesarean delivery. This was evident both with and without an emergency indication. All non-White women were at increased odds of receiving general anesthesia, but Black women received it at the highest rates, therefore potentially placing Black women at a higher risk of maternal mortality (Butwick et al., 2016). This disparity is troubling considering that Black women are three to four times more likely to die from a pregnancy related death than White women (Liese et al., 2018; National Partnership for Women and Families, 2018

CHAPTER II – The Current Study

Despite the plethora of evidence that there are differences in the treatment of Black versus White Americans in the health care system there are still some areas that should be explored. There is somewhat mixed evidence whether belonging to a specific racial group per se affects patient's treatment of pain by healthcare providers, and this work will address that. Of the many studies cited throughout this literature review, few studies specifically investigated the disparities that can occur at the intersection of race and gender. This area is in need of further exploration due to the high rates of COVID-19 hospitalizations and maternal mortality among Black women in the U.S., and this project will specifically focus on Black women as patients.

There is also a need for exploration of various healthcare pre-professionals, particularly nurses. This is important because nurses have the most contact with patients and can be influential in pain diagnosis and treatment. Evaluating the racial bias among future healthcare professionals will help to develop interventions that can be implemented during training to better prevent and mitigate racial bias in healthcare. Nursing students are a group that could provide potential insight into such biases, as nursing students are in the midst of their training.

This project aimed to investigate the influence of healthcare pre-professional race and patient race on patient treatment. Particularly, I was interested in the potential differences in pre-professionals' (a) assessment of patients' pain and triage decisions (Study 1); and (b) COVID-19 testing recommendations and treatment (Study 2) by healthcare pre-professionals, when patients are either Black or White women. In addition,

I was also interested in the potential moderation of healthcare pre-professional's outcome measures by pre- professionals' gender and race. To investigate these questions, two experiments were carried out.

For Experiment 1; Hypothesis 1, I predicted that White patients would be rated as having more severe pain than Black patients by White but not Black participants. For Hypothesis 2, I predicted that White but not Black participants would give White patients a shorter triage time than Black patients.

For Experiment 2; Hypothesis 1, I predicted that White but not Black participants would recommend White patients more frequently than Black patients for COVID-19 testing. For Hypothesis 2, I predicted that White patients would be recommended more frequently for hospitalization than Black patients by White but not Black participants. For Experiment 2; Hypothesis 3, I predicted that Black but not White participants would rate Black patients as less likely to follow self-isolation recommendations compared to White patients.

CHAPTER III – Experiment 1

Method

Participants. Participants were recruited from the following universities and colleges in the American South; Alabama: University of Alabama at Huntsville, Bishop State Community College, and Troy University; Mississippi: University of Southern Mississippi, William Carey University, Pearl River Community College, Northwest Mississippi Community College, Meridian Community College, University of Mississippi, University of Mississippi Medical Center, Hinds Community College, and Belhaven University; Texas: Alamo Community College, Amarillo College, Baylor University, Dallas College, Galveston College, Lee College, and Northeast Texas Community College; Tennessee: Lee University, University of Memphis, and Vanderbilt University; and Louisiana: Delgado Community College, Louisiana State University, and Southeastern Louisiana University. Based on a *g*-power analysis (Faul et al., 2007), I aimed to recruit a sample of $N = 128$ ($n = 21$ per face) and was able to obtain a sample of $N = 154$. There were 14 cases that were missing all responses and 5 cases that were missing race. Since race was an independent variable in the analysis, all 18 cases were removed resulting in a final sample size of $N = 132$.The final sample was comprised of 108 (80%) White students and 27 (20) % Black students. 116 (88%) participants of the sample were female. Participants had to be 18 years or older and English speaking, but there were no race or gender requirements for the sample. Participants were between the ages of 19 and 56 ($M = 29$, $SD = 8.5$). Most participants were undergraduates ($n = 103$; 76.3%), while fewer were graduate students, ($n = 32$; 23.7%). Similarly, 47 (35.9%) were

in an Associate's Degree of Nursing program, 58 (44.3%) were in a Bachelors degree program, 14 (10.7%) in a Nurse Practitioner or Doctorate of Nurse Practitioner program, and 12 (9.2%) in a Doctoral (Ph.D.) nursing program. Initially, there was no compensation for study participation. However, due to a low response rate, I provided an opportunity for participants to win one of five $100 gift cards (see Appendix A).

Materials

Pictures. Six pictures of different women were used and shown to the participants (see Appendices B and C). There were three pictures of different Black women (representing a Black woman condition) and three pictures of different White women (representing a White woman condition). The pictures were taken from the Delaware Pain Database (Mende-Siedlecki et al., 2019). This pain database is composed of faces exhibiting painful expressions from over 200 ethnically diverse participants. The expressions of the participants have been normed across several pertinent dimensions including physical pain, race/ ethnicity, attractiveness, status, and perceived intensity.

Written Vignettes. Written vignettes were used in conjunction with the picture. Three vignettes described patient's complaints about different intensity of back or neck pain (see Appendix D). Back and neck pain were used because they are among the most common reasons that people visit the ER and can be symptoms of several different disorders (Friedman et al., 2011)

Pain Rating.

Numerical Rating Scale (NRS).

This is a ten-point scale (0-10) (see Appendix E). Currently, there is no standardized pain scale in the U.S., however, the NRS is a pain scale commonly used in

the U.S. emergency departments (Ferreire-Valente, Pais-Ribeiro, & Jensen, 2011). Because of its commonality in the hospital settings, it is similar to what nursing students will use when they enter their careers. This scale was administered to aid participants in rating the pain of the patients on the scale of 0 (no pain) to 10 (worst possible pain). Participants also used this scale as they determined the triage wait time for the patients in

Canadian Triage and Acuity Scale (CTA). The CTA is a chart that has five color-coded levels with each one indicating a certain level of urgency based on the patient's severity (see Appendix F). It is used frequently in the U.S emergency departments to aid in triage decisions (Christ et. al., 2010). Just as with pain ratings, there is no standardized triage timing procedure, however, this scale is commonly used and therefore nursing students may use it once they enter their careers. This scale was used following the NRS so that the participant can determine and state how long the patient in the picture should wait before being triaged (Table 1).

Procedure

The study was administered online via Qualtrics. Upon participants' confirmation that they were nursing students, they were then randomly assigned to either Experiment 1 or Experiment 2. No participants that participated in Experiment 1 participated in Experiment 2 and vice versa. Participants were then randomly assigned to either the Black woman or White woman condition and a vignette condition. Prior to beginning the study, nursing students completed an informed consent document. Upon opening the study, participants read instructions detailing that they will be viewing a picture of and reading a vignette about a patient (see Appendix G). Participants were then informed that after reading the vignette and looking at the patient they will be asked questions about the

vignette. In each condition, participants were exposed to only one vignette (one out of three) and one picture (one out of three representing either a Black or White woman). It was randomly determined which vignette and which picture representing the condition (one out of three White women for the White woman condition and one out of three for the Black woman condition) participants were exposed to. Each picture used displayed an individual grimacing from pain. The written vignette details the pain that they are experiencing and described some of their actions that indicate levels of pain. After looking at the picture and reading the vignette, the participants were provided with the NRS rating scale. They were then instructed to use the scale to rate the pain of the patient (see Appendix H). After using the NRS to rate the patient's pain, the participants were then given the CTA to complete. Next, they were asked to use the CTA and their NRS to evaluate and state, "How long should the patient wait before being triaged, in minutes?" and "How likely is this patient to be drug seeking?" (see Appendix H). Finally, participants were asked to provide basic demographic characteristics, and debriefed after data collection was completed

Results and Discussion

Preliminary Results

Outliers.

Participant (N =154) scores were assessed for missing data and erroneous responses. All missing data was tested for randomness by comparing the percentage of missing data for each item. Missing data on variables analyzed ranged from 9.1% on the item asking, "On a scale of 1-10, with 1 being the lowest and 10 being the highest what would you rate the patients' pain?" to 14.9% on the item asking, "How long should this

patient wait to be triaged?". The Missing Value Analysis in SPSS was used to assess the missing data for underlying patterns in the missing data and none were indicated. As the variables were only one item, it was inappropriate to impute for missing values so, missing items were excluded on a question-by-question basis. Scores were determined to be outliers if they were beyond +/- 3 standard deviations from the mean. Skew was assessed by dividing the skew statistic by the Standard error and there was no skew greater than 1.96. Therefore, it was not a product of population skew, so no transformations were required. Correlations were used to assess if the duration to complete the survey was related to participant responses indicated that there were no differences in responses based on the time taken to complete the survey *ps*>.348. Therefore, no participants were eliminated based on time to complete survey. Of note, the respondents were 12% (*n* = 16) male and 88% (*n* = 116) female, so no gender analysis was conducted because of the imbalanced gender distribution.

Vignettes.

In order to determine whether vignette types (neck pain, lower back pain and upper back pain) were rated differently by participants, a one-way (Vignette type) ANOVA was conducted on each of the dependent variables (pain rating, pain level, drug usage, triage wait time, and pain condition). Results indicated a significant vignette type difference for *pain level*, F (2, 131) =9.215, p <.001; η^2_p =.12 with Tukeys HSD indicating that Vignette 3 (neck pain) was rated significantly higher (M = 3.28, SD = .80) compared to pain ratings for Vignette 1 (lower back pain; M = 2.62, SD = .79, p <.001) and Vignette 2 (upper back pain; M = 2.65, SD = .83, p <.001), with no differences between Vignette 1 and Vignette 2. A significant difference was also found for *triage*

wait time, F (2, 124) =11.386, p <.001; η^2_p = .16. Tukeys HSD revealed that Vignette 3 was again rated significantly higher mean (M = 3.49, SD = .82) compared to Vignette 1 (M = 2.55, SD = .85; p <.001) and Vignette 2 (M = 2.81, SD = 1.00; p =.002), with no differences between Vignette 1 and Vignette 2. Additionally, a significant difference was found for *pain condition*, F (2, 128) = 6.683, p = .002; η^2_p = .10. Tukeys HSD again revealed that Vignette 3 had a significantly higher mean (M = 3.16, SD = .76) compared to Vignette 1 (M = 2.56, SD =.55; p =.006) and Vignette 2 (M = 2.59, SD = .96; p =.005), with no differences between Vignette 1 and Vignette 2. Because Vignette 3 differed from the other vignettes on several dependent variables, a Chi Square analysis (participant race X vignette) was conducted to determine whether race pattern (percentage of White versus Black participants) differed by vignette. Chi Square results indicated no participant race pattern differences by vignette type, $\chi 2$ (2) = 2.74, p = .25. Given the absence of the participant race pattern by vignette type and variability of pain patterns of chronic pain patients in the real clinical settings, the decision was made to retain data from all the vignettes, and collapse data across the type of vignette in the final analyses.

Faces.

A one-way (Face type) ANOVA was conducted on each of the five dependent variables but no significant differences by face type were found, all *ps* > .22.

Main Analyses

First, a 2 (participant race) x 2 (patient race) MANOVA with triage time and pain ratings as the dependent variables was conducted to assess for the hypothesized two-way, participant race x patient race, interactions on those variables. There was no significant interaction on the linear composite of dependent variables, F (2, 119) =1.25, p =.29; η^2_p

= .021. Results indicate no differences in pre-professionals' treatment of patients pain or triage decisions based on the race of the patient or/and race of provider.

There was no main effect of patient race on the linear composite of dependent variables, F (2, 119) = 1.13, p = .33; η^2_p = .02. However, there was a main effect of participant race on the linear composite of dependent variables, F (2, 119) = 4.04, p =.02, η^2_p= .06 with a follow-up ANOVA indicating that Black participants rated pain levels significantly higher (M = 8.85, SD = 1.16) compared to White participants (M = 8.23, SD = 1.11), F (1, 132) = 6.88, p =.01; η^2_p = .05. As such, Hypothesis 1 that White patients would be rated as having more severe pain than Black patients by White but not Black participants, was not supported. Similarly, Hypothesis 2 that White but not Black participants would give White patients a shorter triage time than Black patients, was not confirmed.

The results in Experiment 1 indicated no evidence of racial bias in the perception of patient pain among nursing students in the Deep South. These findings are both heartening and revealing about the existence of racial bias in nursing students who are future healthcare providers.

These results conflict with previous research indicating that Black Americans receive lower pain ratings and longer triage wait times than White Americans (e. g., Hoffman, et al., 2016; Qiao, 2016). More importantly, the results indicate a reduction or absence of racial biases. Such findings are not unique, for example, Druckman and colleagues (2017) found little evident racial bias in pain ratings based on patient race as have others (Williams, et. al., 2015).

While no differences were found based on the race of the patient, differences were revealed based on the race of the participant, such that Black participants provided higher

pain ratings than White participants. These results are in support of previous research that found Black Americans to be more responsive to others' pain than White Americans (Mathur, 2014; van Ryn 2002). Perhaps one explanation may be the high rates and young age at which Black Americans interact with and are exposed to pain, potentially affecting the way they perceive the pain of others (Baker & Green, 2005; Green, et. al., 2003; Holm, et. al., 1989; Teske, et. al., 2016).

CHAPTER IV – Experiment 2

Method

Participants. Participants were recruited from the following universities and colleges in the American South; Alabama: University of Alabama at Huntsville, Bishop State Community College, and Troy University; Mississippi: University of Southern Mississippi, William Carey University, Pearl River Community College, Northwest Mississippi Community College, Meridian Community College, University of Mississippi, University of Mississippi Medical Center, Hinds Community College, and Belhaven University; Texas: Alamo Community College, Amarillo College, Baylor University, Dallas College, Galveston College, Lee College, and Northeast Texas Community College; Tennessee: Lee University, University of Memphis, and Vanderbilt University; and Louisiana: Delgado Community College, Louisiana State University, and Southeastern Louisiana University. Based on a *g*-power analysis (Faul et al., 2007), I aimed to recruit a sample of $N = 128$ ($n = 21$ per face) and was able to obtain an original sample of $N = 152$ participants. Originally, 20 participants reported their race as Asian, other, or were missing race and they were removed from the dataset because there were not enough participants from these racial groups to include them into proposed statistical analyses leading to a final sample of $N = 132$. The racial make-up of the sample was the following: White students ($n = 101$, 76.5%) and Black students ($n = 31$, 23.5%). Participants were between the ages of 19 and 64 with an age mean of 30.0, $SD = 10.0$ and 114 (86.4%) females. The sample was again largely comprised of undergraduates ($n = 89$, 67.4%), followed by graduate students ($n = 43$, 32.6%). Furthermore, there were

Associates degree students (*n* = 48, 37.2%), Bachelor's degree students (*n* = 45, 34.9%), Master of Science degree in Nursing students (*n* = 1, .8%), Nurse practitioner or Doctorate of Nurse practitioner students (*n* = 21, 16.3%), and Doctoral (Ph.D.) Nursing students (*n* = 14, 10.9%). Initially, there was no compensation for study participation. However, due to a low response rate, I provided an opportunity for participants to win one of five $100 gift cards (see Appendix A).

Materials

Pictures. Six pictures of different women were used (see Appendices I and J). There were three pictures with a Black woman and three pictures with a White woman. The pictures used were taken from the Delaware Pain Database (Mende-Siedlecki et. al., 2019), analogous to Experiment 1.

3 Written Vignettes. A written vignette was used in conjunction with the picture (see Appendix K). Three vignettes described the patient's complaints about stomach pains and nausea (Vignette 1), vomiting and mild diarrhea (Vignette 2), slight cough, sore throat, and severe shortness of breath (Vignette 3) These symptoms are frequently associated with COVID-19 (CDC, 2020).

Diagnosis. Participants were asked questions about what diagnosis they would give the patients in picture. They were asked: "How likely is this patient to test positive for COVID-19?" with five –point Likert scale response options ranging from *Very Likely* to *Very Unlikely* and "Should this patient be tested for COVID-19?" with the response options *Yes or No* (see Appendix L).

Treatment. Participants were also asked how they would treat the patients' symptoms. They were asked: "How likely are you to recommend this patient be

hospitalized?", "How likely are you to recommend that this patient self-isolate?", "How likely are you to recommend this patient self-quarantine for 14 days?", "How likely is this patient to follow a self-isolation recommendation?", "How likely is this patient to follow a self-quarantine recommendation?" All questions were answered using 5-point

Procedure

The study was administered online. Upon participants' confirmation that they were nursing students, they were then randomly assigned to either Experiment 1 or Experiment 2. No participants that participated in Experiment 1 participated in Experiment 2 and vice versa. Participants were then randomly assigned to either the Black woman or White woman condition. Following the completion of informed consent, participants read instructions stating that they will be viewing a picture of and reading a vignette about a patient complaining of various symptoms. Participants were then informed that after reading the vignette and looking at the patient they would be asked questions about the vignette (see Appendix G). In each condition, participants were exposed to only one vignette (one out of three) and one picture (one out of three representing either a Black or White woman). It was randomly determined by Qualtrics which vignette and which picture representing the condition (one out of three White women for the White woman condition and one out of three for the Black woman condition) participants are exposed to.

The written vignettes detail their symptoms including cough, sore throat, slight shortness of breath, and mild nausea. After viewing the picture and reading the vignette, participants answered questions to determine the patient's diagnosis, treatment, and compliance (see Appendix G). After viewing the picture, reading the vignette, and

completing the diagnosis and treatment surveys, students were asked to provide basic demographic characteristics, and were debriefed after data collection was completed.

Results and Discussion

Preliminary Results

Outliers.

Participant (N = 152) scores were assessed for missing data and erroneous responses. In addition to the cases missing race or reporting their race as Asian or other there were 5 cases that were missing all responses that were r1emoved as well, resulting in a final sample of *N* =133. All other missing data was tested for randomness by comparing the percentage of missing data for each item. Missing data on variables analyzed ranged from 0.7% on the item asking about "How likely are you to recommend this patient self-isolate/ self-quarantine?" to 5.9% on the item asking about "How likely is this patient to test positive for COVID-19?" The Missing Value Pattern Analysis in SPSS was used to assess the data for patterns in the missing data however, no underlying patterns were indicated in the missing data. As the variables were only one item, it was inappropriate to impute for missing values so, missing items were excluded on a question-by-question basis. Scores were determined to be outliers if they were beyond +/- 3 standard deviations from the mean. Skew was assessed by dividing the skew statistic by the Standard error and there was no skew greater than 1.96. Therefore, it was not a product of population skew, so no transformations were required. Correlations were used to assess if the duration to complete the survey was related to participant responses indicated that there were no differences in responses based on the time taken to complete the survey *p*s>.146. Therefore, no participants were eliminated based on time to complete

the survey. Of note, there were 18 (13.6%) males, 114 (86.4%) females in the final sample and as such no gender analysis was conducted.

Vignettes.

In order to determine whether vignette type (stomach pain, stomach problems, and cough) were rated differently by participants, a one-way (Vignette type) ANOVA was conducted on each of the dependent variables (positive test, test recommendation, self-isolate/ quarantine recommendation, hospitalization recommendation, and self-isolation/ quarantine adherence). Results indicated a significant vignette type difference for *test recommendation*, F (2, 132) = 3.46, p =.035, η^2_p = .051. A Tukeys HSD showed that Vignette 3 (cough) (M = 1.00, SD = .00) was given a COVID-19 test recommendation significantly more often compared to Vignette 1 (stomach pain; M =1.13, SD = .35; p <. 032). Similarly, results indicated a significant vignette type difference for *test positive*, F (2, 125) = 9.12, p < .001; η^2_p = .13. A Tukeys HSD revealed that Vignette 3 (M = 3.57, SD =.70) was rated significantly higher than Vignette 1 (M =3.16, SD = .93; p <. 001). Interestingly, a significant vignette type difference was found for *isolation/ quarantine recommendation*, F (2, 132) = 4.00, p =.02; η^2_p = .06. A Tukeys HSD revealed that Vignette 3 (a cough/sore throat; M = 4.08, SD = .90) was recommended for isolation/quarantine significantly more often than Vignette 1 (stomach pains; M =3.49, SD = 1.18; p =.017). No differences were found between Vignette 1 and Vignette 2 (vomiting) or Vignette 2 and Vignette 3. Chi Square results indicated no association between participant race and vignette type, $\chi 2$ (2) = 1.87, p = .39. As with Experiment 1, there was no vignette type X patient race pattern established and as such,

the data from all vignettes, and collapse it across the type of vignette was retained and included in the final analyses.

Faces.

A one-way (Face Type) ANOVA was conducted with Face type as the IV and hospitalization, self-isolation/quarantine recommendation, and test recommendation on each of the dependent variables, but no significant differences by face type were found, all *ps* > .14

Main Analyses

First, a 2 (patient race) x 2 (participant race) MANOVA with hospitalization, test recommendation, and self-isolation/self-quarantine adherence as dependent variables was conducted to assess for the hypothesized two-way participant race x patient race interactions on those variables. Similar to study one, there was no significant interaction on the linear composite of dependent variables F (5, 118) = .49, p =.79, η^2_p =.02. There was no main effect of participant race on the linear composite of dependent variables, F (5, 118) = 2.0, p = .08; η^2_p = .08, and no main effect for patient race, F (5, 118) = .89, p = .49; η^2_p = .04. A 2 (patient race) x 2 (participant race) logistic regression with the dependent variable testing recommendation to assess for COVID-19 infection was conducted. The interaction was not significant, χ^2 (2) = 2.151, p =.34. As such, Hypothesis 1 in which it was predicted that White but not Black participants would recommend White patients more frequently than Black patients for COVID-19 testing, was not confirmed. Similarly, Hypothesis 2, in which it was predicted that White patients would be recommended more frequently for hospitalization than Black patients by White but not Black participants, was not confirmed. Finally, Hypothesis 3, in which it was

predicted that Black but not White participants would rate Black patients as less likely to follow self-isolation recommendations compared to White patients, was not confirmed.

No racial bias was detected in the COVID-19 management. While these results are very encouraging, there is still a limited range of knowledge, and the ever-changing information regarding COVID-19 and its symptoms. As such, it is possible that participants did not have enough knowledge to make a testing recommendation or self-isolation/ quarantine recommendations. Of note is that nursing students are unlikely to provide recommendations for COVID-19 tests, as such, even with the current knowledge available, nursing students may not have relevant training about COVID-19 symptoms.

CHAPTER V – General Discussion

The purpose of this paper was to investigate the influence of healthcare pre-professionals' race and patients' race on patient treatment. Particularly, we were interested in the potential differences in pre-professionals' assessment of patients' pain and triage decisions (Experiment 1); and COVID-19 testing recommendations and treatment (Experiment 2) when patients are either Black or White women. For Experiment 1 we found no evidence of racial bias in the assessment of patients' pain or triage decisions. Similarly, for Experiment 2 there was no evidence of racial bias in COVID-19 testing recommendations or COVID-19 treatment.

Experiment 1 results indicated no differences in pre-professionals' treatment of patients pain or triage decisions based on the race of the patient or/and race of provider. These results conflict with previous studies indicating that Black Americans receive lower pain ratings and longer triage wait times than White Americans (Hoffman, et al., 2016; Qiao, 2016). Similarly, no differences in pain rating were found based on the race of the provider and race of the patient, providing support for research indicating that adult patient-physician concordance is not a factor in patient outcomes (e.g., Altman, et al., 2020; Kumar, et al., 2009). However, these results may not translate to child patient-physician outcomes as evidenced by Greenwood, et al., 2020.

Interestingly, differences emerged based on the race of the participant such that Black participants rated patient pain higher than White participants. These results are in support of previous research that found Black Americans to be more responsive to the pain of others than White Americans (Mathur, 2014; van Ryn 2002). Perhaps the high

rates and young age at which Black Americans interact with and are exposed to pain potentially affect how they perceive the pain of others (Green, et. al., 2003; Baker & Green, 2005; Holm, et. al., 1989; Teske, et. al., 2016).

In addition, a null finding for triage wait time was not in line with previous research (Karve, et. Al., 2007; Zhang, et. Al., 2020). One possible explanation for the discrepancy may be the nursing students' lack of real-world experience which can affect the assessment and management of patients (Giusti, Reitano, & Gili, 2018). Additionally, it may also be that nursing students develop racial biases after entering the field and working with more experienced nurses who openly express biases in the workplace similar to the findings of Burke, et. al., 2016. Lastly as with Experiment 1, Experiment 2 revealed no effects of patients' race and/or participants' race for COVID-19 testing recommendation, or adherence to a self-isolation/ quarantine recommendation. Considering the still limited range of knowledge, and the ever-changing information about COVID-19 and its symptoms, it is possible that participants did not have enough knowledge to make a testing recommendation or self-isolation/ quarantine recommendations at the time of data collection (maybe specify months here). In addition, nursing students are unlikely to provide recommendations for COVID-19 tests. As such, even with the current knowledge available, nursing students may not have relevant

The findings of both Experiment 1 and Experiment 2 are both enlightening and informative. The null findings across the studies point to an absence or reduction of racial biases. Previous works by Druckman et al. (2017) as well as Williams et al. (2015) found little evidence of racial bias in providers' pain ratings based on patient race. Study results may translate into real world changes as students with no racial bias move into

the clinical settings and treat or interact with patients during their careers. Additionally, these results are also indicative of a larger downward trend in implicit racial bias across generations (Charlesworth & Banaji, 2019; Mardsen, 2012). Study results also suggest that other factors, such as access to good healthcare and environment, may be more influential than individual biases in Black Americans health outcomes (Byrne, 2001; see Feagin & Bennefield for review; Louie & Wilkes, 2017).

Importantly, study results may also be a byproduct of the implementation of the 2017 Diversity, Equity, and Inclusion (DEI) requirements in the accreditation (American Association of Colleges of Nursing, 2017). The DEI requirements' purpose is to improve education quality, enhance readiness and potential of nursing students, and address disparities in healthcare. As such, the findings of this study may be the early effects of the implementation of the DEI requirements.

Similarly, it is important to note the potential influence of the ongoing racial unrests in the U.S. due to the murder of George Floyd and subsequent protests that began during 2020 (New York Times, 2021) on participant responses. At the time of data collection, the officer that killed George Floyd was on trial (New York Times, 2021). The protests and trial brought to light many of the disparities, including those caused by the COVID-19 pandemic, that Black Americans face. Similarly, the events led many to evaluate their biases and take active steps in addressing them (Vox, 2020). Subsequently, these events may have led to a heightened racial awareness among nursing students during their participation in the study, potentially affecting their responses.

Limitations

This research project is not without limitations. Firstly, as mentioned previously, the complicated nature of COVID-19 and the evolving information available to the public is one limitation. When the COVID-19 vignettes and questions were developed, there was a dearth of information available regarding the symptoms and indicators of severe COVID-19 cases. Similarly, during survey development there were a limited number of COVID-19 tests available in the U.S. However, during survey administration access to COVID-19 tests became more readily available. Lastly, information regarding COVID-19 testing and treatment decisions was scarce, therefore there were no validated tools to assess testing and treatment decisions.

Secondly, the composition of the samples was an additional limitation. The samples were largely comprised of Bachelor of Nursing (BSN) and Associates Degree of Nursing (ADN) students. Supplementary analyses controlling for the type of the program did not change the pattern of the results, yet a larger sample of graduate level students from various training programs might alter the results received. Furthermore, there were fewer Black students than White students in the sample. While there were enough Black students to detect statistically significant differences, the inclusion of more Black participants could perhaps highlight other differences between the groups. Similarly, this study was carried out among nursing students in Southern states, therefore the results of this study may not be generalizable to other areas of the U.S.

Thirdly, another limitation may be the use of pictures and vignettes in place of in-person patient-healthcare professional interactions. In the real-world settings nursing students are able to see the patient and review their symptoms in person, which may affect participants' responses. However, previous work has indicated that results from

online studies are often duplicated in in-person studies (Casler, Bickel, & Hackett, 2013). Similarly, patient pain management for patients receiving pain treatment online was comparable to patients who received pain management in-person (Dear, et al., 2018), indicating that the results from this work may also translate to the real-world setting.

Lastly, an important limitation to note is the use of the previously unvalidated vignettes in both Study 1 and Study 2. However, the vignettes developed for this project were found to effectively convey information. More specifically, for the Emergency Room vignettes, Vignette 3, which conveyed a more intense pain level, was given a higher mean score than Vignettes 1 and 2, which conveyed lower pain levels. Similarly, the COVID-19 vignettes had similar mean ratings across Vignettes 1, 2, and 3 as they all conveyed various symptoms but at similar levels of pain.

Future Research

Moving forward, the continued assessment of differences in providers' pain perception and ratings between Black American and White American patients is vital. While previous research has indicated that patients' race is a distinct factor when treating pain, the results of Study 1 indicate that the race of the healthcare professional may be just as important.

Black Americans of all ages have better outcomes when they are treated by a Black physician (Anderson, et al., 2020; Greenwood, et al., 2020). While this work has not been able to determine the interactive effects of patients' race and providers' race, given findings from previous literature showing that they do exist, future research should attempt to replicate the results of Study 1 and 2.

Additionally, investigating the perception of pain and pain treatment among healthcare professionals in other fields and in different stages of their careers is of importance as different types of education may lend to different outcomes (Bartel, et al., 2014; Blegen, 2001). Similarly, it may be that current nursing students are exposed to diversity or cross-cultural curriculums that were implemented to reduce biases. As such, nurses currently in the field who have not been exposed to the same training may be prone to biases due to cohort effects and lack of exposure to a diversity curriculum. Nurse practitioners' and physician assistants' pain ratings and treatment decisions compared to those of physicians may be of particular interest. While patient satisfaction has been found to be the same across providers, there is limited research on the potential differences in diagnosis and treatment between the two groups (Hooker, Cipher, & Sekscenski, 2005). Current evidence suggests that both nurse practitioners and physician assistants are able to provide the same level of care as physicians for routine patients but the results are mixed regarding more complex patients (Stephen, et al., 2016; Cohen-Mansfield, et al., 2011). Investigating pain rating and treatment is one area that may be useful in better understanding the potential differences and similarities between nurse practitioners', physician assistants', and physicians' diagnosis, treatment, and patients' outcomes.

Conversely, future research should investigate pain perception and treatment decisions among various racial groups of providers as well as with patients of different races. American Indians have some of the worst health outcomes in the U.S. but are underrepresented in pain research placing them at an even larger disadvantage in addressing said disparities (Indian Health Services, 2019; Salsberg, et al., 2021).

Likewise, Hispanic Americans also have poor health outcomes and receive pain treatment similarly to that of Black Americans than to White Americans (Colen, et al., 2018; Odlum, et al., 2020). Moving forward, investigating the differences for those groups will be important to raise further awareness of the need to address health disparities.

Lastly, more research on COVID-19 is vital as evidenced by the on-going pandemic and its effects on people all over the world (British Broadcasting Corporation, 2021; Hou, et al., 2020; Ji, et al., 2021). There is still much knowledge to be gained about factors that affect healthcare professionals' perception and treatment of various COVID-19 symptoms. Treatment decisions of healthcare professionals in hospital settings are of particular interest. High stress and high load situations can affect healthcare professionals' treatment decisions leading to disparities in patients' treatment (Cimotti, et al., 2012; Groombridge, et al., 2019; Shanafelt, et al., 2010; Welp, Meier, & Manser, 2015; Cimotti, et al., 2012). The height of the COVID-19 pandemic saw unprecedented levels of stress and fatigue among physicians and nurses potentially affecting healthcare professionals and their treatment decisions leading to additional disparities in patients' outcomes (Carmassi, et al., 2020; Johnson, Ebrahimi, & Hoffart, 2020; Prasad, et al., 2021; Shen, et al., 2020; Johnson, Ebrahimi, & Hoffart, 2020). Furthermore, healthcare professionals in hospitals working with COVID-19 patients were faced with ventilator and other supply shortages leading to the rejection of patients from admission departments or rationing available ventilators (Ranney, Griffeth, & Jha, 2020; The Atlantic, 2020; The Atlantic 2020).

Conclusion

The purpose of this paper was to investigate the potential differences in pre-professionals' assessment of patients' pain and triage decisions (Study 1); and COVID-19 testing recommendations and treatment (Study 2) when patients are either Black or White women. While no effects of patients' race and participants' race were found for pain ratings, pain treatment, or COVID-19 symptom treatment, Black participants rated patients' pain higher compared to White participants. Even though hypotheses were not confirmed there were some significant results regarding the vignettes and Black participants indicating that there may be some underlying relationships in need of additional research. The findings suggest that the race of the healthcare provider may be a contributing factor in patient treatment regardless of patient race. Most importantly, the findings of this study indicate that nursing students in the Deep South do not hold racial biases in the perception of patients' pain. The results are part of a larger trend suggesting that racial bias is on the decline in the U.S. These findings have larger implications in nursing education and nursing practice and help to expand knowledge regarding healthcare pre-professionals' perception and treatment of patients' pain and COVID-19 symptom

Table 1

Experiment 1 Variable Correlations

Variable	1	2	3	4	5
1.Pain Rating		.283**	.248**	.233**	-.105
2. Pain level			.828**	.747**	-.273**
3. Patient Condition				.792**	-.293**
4. Triage Time					-.334**
5. Drug Seeking					-
M (SD)	8.33 (1.14)	2.84 (.85)	2.75 (.82)	2.93 (.97)	2.20 (.90)

Table 2

Experiment 2 Variable Correlations

Variable	1	2	3	4	5
1.Should this patient be tested for COVID-19?		.426**	.388**	.035	.071
2. How likely is this patient to test positive for COVID-19?			.652**	.019	.133
3. How likely are you to recommend this patient self-isolate/ self-quarantine?				.013	.222**
4. How likely are you to recommend this patient be hospitalized?					.150
5. How likely is this patient to follow a self-isolate/ self-quarantine?					-
M (SD)	1.07(.26)	3.57(.95)	3.85(1.08)	3.24(1.21)	3.37(1.02)

APPENDIX A – Student Announcement

Dear Prospective Participant,

My name is Raegan Bishop. I am a graduate student at The University of Southern Mississippi. I am currently conducting an anonymous study investigating nursing students perception of patient pain and treatment. To participate in this study, you must be an undergraduate or graduate nursing student and 18 years or older. If you meet this criterion, I invite you to participate in study by completing the online questionnaire using the link below. Participants that complete the study will be entered to win on of five $100 gift cards.

All information contained in this study will be private and used only for research purposes. According to protocol number 20-460, this study has been approved by the Institutional Review Board (IRB) at the University of Southern Mississippi. When there is no longer a need for the data gathered it will be deleted. The survey will take approximately twenty minutes. Please answer the questions to your comfort level. Thank you for your consideration.

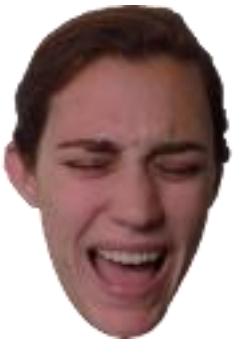
https://usmep.co1.qualtrics.com/jfe/form/SV_a3RcZrkN3WsGObj

Best wishes,

APPENDIX B – Experiment 1 White Patients

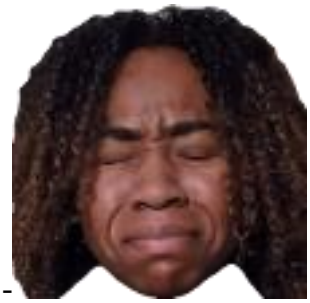
Patient 1-

Patient 2-



Patient 3-

APPENDIX C – Experiment 1 Black Patients

Patient 1- 

Patient 2- 

Patient 3- 

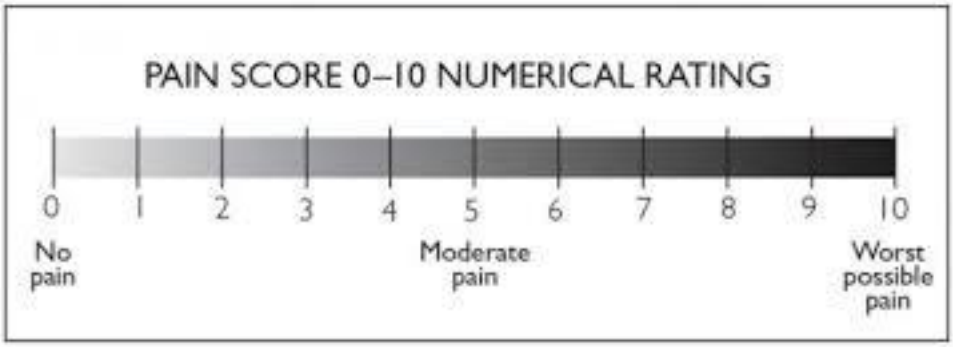
APPENDIX D – Pain Vignettes

1. Lucy is a 30-year-old woman visiting the emergency room complaining of lower back pain. She has chronic back pain that she began experiencing eight months ago but the pain has progressively become more severe over the last three days. The pain is immobilizing, and she has been unable to work for the past three days. She is having difficulty sleeping and can only walk for short distances. She has attempted to self-medicate using 600 mg of ibuprofen however, it has not reduced her pain level.

2. Jane is a 30-year-old woman visiting the emergency room complaining of upper back pain. She began experiencing the pain about a year ago but two hours ago she began to experience severe pain. She has self-medicated using 600 mg of ibuprofen prior to visiting the ER but she is still experiencing back pain. Jane has minor range of motion and she is unable to sit up straight without experiencing intense pain.

3. Emily is a 30-year-old woman visiting the emergency room complaining of severe neck pain on her right side. She is also experiencing a slight numbness in her right hand as well. Emily began experiencing the pain at work earlier in the day before giving a presentation. However, her pain has become more severe despite her attempt to self-medicate with 600 mg of ibuprofen. Emily has minor range of motion and any neck movement causes her intense pain.

APPENDIX E – Numerical Rating Scale



APPENDIX F – Canadian Triage and Acuity Scale

Level I	Resuscitation	see patient immediately
Level II	Emergency	within 15 minutes
Level III	Urgency	within 30 minutes
Level IV	Less Urgency	within 60 minutes
Level V	Non Urgency	within 120 minutes

APPENDIX G – Study Introduction

In this study you will be see a picture of a patient, read about their symptoms, then answer the questions that follow. This study will take approximately 15 minutes to complete. Please answer the questions to the best of your ability. Please click the arrow at the bottom to continue.

APPENDIX H – Experiment 1 Questionnaire

1-Pain Perception

Your patient is unable to provide their pain rating please complete the following using the Numerical Rating Scale

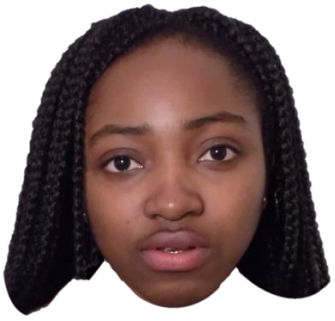
1. On a scale of 1-10, with 1 being the lowest and 10 being the highest what would you rate the patients' pain?

2-Triage Time

Use the patient information and Canadian Triage Acuity Measure to answer the following:

1. At what level is this patient with Level V being the lowest and Level I being the highest?
   Answer choices: Level I, Level II, Level III, Level IV, Level V
2. How critical is the patient's condition?
   Answer choices: Resuscitation, Emergency, Urgency, Less Urgency, Non-Urgency
3. How long should the patient wait before being triaged, in minutes?
   Answer here_____
4. How likely is this patient to be drug seeking?
   Answer choices: Very likely, Likely, Neutral, Unlikely, Very Unlikely

APPENDIX I – Experiment 2 Black Patients

Patient 1- 

Patient 2- 

Patient 3- 

APPENDIX J – Experiment 2 White Patients

Patient 1-

Patient 2-

Patient 3-

APPENDIX K – COVID-19 Vignettes

1. Lucy is a 30-year-old woman visiting the Urgent Care Center presenting a variety of symptoms. She is complaining of stomach pains and nausea and has not had anything to eat or drink in the last 3 days. She has had a fever of 100 degrees Fahrenheit for the past three days. She believes she may have severe food poisoning but has not eaten out at a restaurant since she had dinner with friends four nights prior.

2. Jane is a 30-year-old woman visiting the Urgent Care Center presenting a variety of symptoms. She is complaining of vomiting, and mild diarrhea and has not had anything to eat or drink in the last 3 days. She has had a fever of 100 degrees Fahrenheit for the past three days. She had dinner at a restaurant with four friends the day before.

3. Emily is a 30-year-old woman vising the Urgent Care Center presenting a variety of symptoms. She is experiencing a slight cough, sore throat, and severe shortness of breath, making it difficult for her to talk or walk for short distances. She stated that she had food poisoning last week after she had dinner with friends last week.

APPENDIX L – COVID-19 Questionnaire

1-Diagnosis

1.How likely is this patient to test positive for COVID-19?
Answer choices: Very likely, Likely, Neutral, Unlikely, Very Unlikely

2.Should this patient be tested for COVID-19?
Answer choices: Yes, No

2-Treatment

1. How likely are you to recommend this patient self-isolate?
Answer choices: Very likely, Likely, Neutral, Unlikely, Very Unlikely

2.How likely are you to recommend this patient be hospitalized?
Answer choices: Very likely, Likely, Neutral, Unlikely, Very Unlikely

3.How likely are you to recommend this patient self-quarantine for 14 days?
Answer choices: Very likely, Likely, Neutral, Unlikely, Very Unlikely

3-Following treatment

1.How likely is this patient to follow a self-quarantine recommendation?
Answer choices: Very likely, Likely, Neutral, Unlikely, Very Unlikely

2. How likely is this patient to follow a self-isolation recommendation?
Answer choices: Very likely, Likely, Neutral, Unlikely, Very Unlikely

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