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**Editorial**

Recently, a tourist from an under-developed country, visiting the Mississippi Delta for the first time remarked, “This looks just like my home.” This statement highlights the similarities that exist today between urban and rural communities across international boundaries. Recently, there has been a growing movement towards improving the life quality in distressed communities by augmenting scientific research findings with strong community participation.

Engaging the community, especially as equal partners, can be a daunting task for academicians, as it requires rethinking how research is conducted. As scientists, we have been trained as experts to collect, analyze, and disseminate data. Our academic community has done a relatively successful job in conducting conventional research and disseminating the information in refereed journals, however, less work has been done to translate these findings to something meaningful for the community. Oftentimes, these populations have valuable resources that have maintained, protected, and “empowered” their own communities. The underutilization of community input and involvement has created a level of mistrust and disrespect for research. It has become our challenge to rebuild bridges between the academy and community by creating an environment that understands the benefits of equal partnering. It is only through this shared relationship, that we can truly begin to combat the disparities that plague our rural and urban communities.

This edition of the *On-line Journal of Rural and Urban Research* presents several articles discussing critical health and educational issues impacting urban and rural communities. In the months to come, this journal will feature collaborative work between the academy and community; scientifically and conceptually based commentaries; and research to shape intervention development and policy making. It is our intention that this journal will educate, promote scholarly growth, and “empower” communities to alleviate many of the challenges impeding their quality of life. We are excited and optimistic regarding the potential impact this journal can have in improving the quality of life for rural and urban residents.

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# “Professor Johnson Goes to School”

Dr. Joseph W. Warren, Andrews University

**Abstract**

*Professor Johnson’s Reflective Memoirs* is a fictional narration of Professor John Leslie Johnson who finds creative and productive ways to make “real world” applications of the scholarly theories he studies and develops. After many years of college-level teaching, Professor Johnson was inspired to revolutionize his classroom pedagogy with innovative best practices as described in Ken Bain’s book, *What the Best College Teachers Do.* Prior to Bain’s seminal text, Professor Johnson had developed considerable expertise and curriculum materials in conflict resolution theory and practice. However, his most powerful component of Professor Johnson’s instructional competency is Elder’s *Eight Elements of Critical Thinking*. *Professor Johnson’s Reflective Memoirs* document the urgency that empirical scholarship, of all types, must positively transform the human condition as well as add knowledge to knowledge.

Key words: Identify formation, Out/In Group, Social Cohesion

Professor John Leslie Johnson sat quietly and deeply reflective after the sobering lecture by Dr. Fujisawa on the alarming rise in aggressive behaviors among preschoolers. The major finding that arrested his thinking was how aggressive and passive-aggressive children build and destroy social cohesion among their peers. Perhaps, he thought, this partially explained the fluid formation, disintegration and reformation characteristic of all social groups. Could this theory be one reason why his efforts to teach and model conflict resolution skills for students at Town and Country Elementary School met consistently with mixed results?

Twelve-year old Omar was desperately trying, again, to master Professor Johnson’s “ten second rule for delayed verbal discourse.” As volunteer conflict resolution specialist for the Spring Hope School District, Professor Johnson often coined new terms and phrases to create and reinforce deep connections with the students. Many of the teachers and administrators also readily accepted the “inventive vocabulary” to reinforce Professor’s Johnson’s pedagogy. With focused anticipation, Mrs. Taylors’s entire class of 30 six graders were breathless as Omar begin to count silently by slowly raising each finger, “One,” “Two,” “Three.” At the silent collective count of “Ten,” the class erupted into jubilant chants: “Omar has self-control,” “Omar is so good,” and “Omar, Omar, Omar.” The whole class was joyfully out of control while Mrs. Taylor hugged Omar so deeply that Professor Johnson feared Omar might suffer a bruised rib. Professor Johnson allowed this “sinner being saved” celebration for precisely 30 seconds. He needed to instantly confirm and install his first “self-control.” convert.

In a mere ten seconds, after months of patient encouragement, Omar was transformed from Class Disruptor #1 to class hero. His normal aggressive and disrespectful behaviors metamorphed into what Professor Johnson recognized as the golden opportunity to share power with the newly proclaimed class co-leader. Professor Johnson was well aware of Bickmore’s research which documented the positive net outcomes of power sharing in all learning settings. For the next several classes, Omar and Professor Johnson collaborated seamlessly as they respectfully eyed each other during the conflict prevention modules: “Every Smile Gets A Smile,” “The Nicest Ways to Say NO.” and “Minding Your Own Business is the Way to Wealth.” As if by some unseen celestial presence, nearly the entire class accepted the new co-leadership model and responded by allowing “teachable moments” to occur without resistance or distraction.

However, Omar’s new leadership position was deeply annoying to Cathy-Joe who held court in the right rear corner of Mrs. Taylor’s classroom. Cathy–Joe respectfully ignored Professor Johnson’s weekly invasions into her sphere of influence. Strategically, she endured for exactly one hour his optimism before he retreated to Nash University, where he taught English and critical thinking. Cathy-Joe was generally unpopular and anxious to take offense over any mention of or questions about her diverse social network. Trefone’, Chi-Girl, Carlos, Boris and Cathy-Joe decided they could create or resolve any conflict without the assistance of Professor Johnson. Collectively, they enjoyed the notoriety of being Allport’s classical “out-group.”

Professor Johnson, particularly courteous to the right-rear corner constituency, perceived that the group’s agenda was not to overtly disrupt Mrs. Taylor’s class but to covertly sabotage all instructional strategies and her efforts to manage the classroom. Cathy-Joe’s could not know that Mrs. Taylor long ago accepted the core axiom of responsible pedagogy. At all cost and by every means necessary, don’t allow resistant learners to derail the learning process for the compliant and cooperative learners.

Professor Johnson, cognizant of current research on the relationship between identity formation and readiness for conflict resolution instruction, immediately recognized an opportunity to draw Cathy-Joe into his circle of trust. Cathy-Joe’s deepest unmet need had nothing to do with Professor Johnson or Mrs. Taylor. The primary driver of Cathy-Joe’s emotional misalignment was her severe self-esteem deficit which fueled her ill-formed personal identity. Cathy-Joe, like the first-person narrator in Lynn Sharon Schwartz’s short story “The Middle Classes,” was a young, idealist and impressionable girl with multiple identity options. Professor Johnson, by adopting the persona of “Mr. Simmons,” the story’s hero, conceived a strategy to dismantle and rebuild Cathy-Joe’s self-image so smoothly that she would be not beware of her most amazing transformation.

With Omar’s co-leadership, the willing support of the class, and Mrs. Taylor’s intentional acts of kindness, Cathy-Joe’s “rear-room kingdom” was under full siege by the greatest force in the

universe, Professor Johnson’s principle-based affection for the hearts and minds of young people.

*Lessons Learned*

* Professor Johnson read widely in conflict resolution theory as well as young adult literature.
* Professor Johnson understood that children are intuitively conflicted and need balanced adults to guide them into emotional/identity maturity.
* Professor Johnson employed peer assistance as a central strategy in his efforts to teach and model conflict resolution.
* Professor Johnson critically analyzed the emotional needs of each student and developed a person-specific strategy to encourage positive conduct instead of disruptive behaviors.

# Why HIV Rapid Testing Makes Sense on College Campuses: Lessons Learned at a Historically Black College and University (HBCU)

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**Abstract**

Many obstacles have precluded college students from seeking HIV testing, particularly across African-American campuses. These factors include the time between testing and result provision, denial, and associated HIV stigma. These factors, in combination with current health disparities in diagnosis and treatment of HIV, are barriers to addressing the HIV epidemic of African American communities. A recent study (Payne et al., 2006) found favorable results after offering free, rapid HIV testing to African American college students in a non-traditional setting on a historically Black college/university (HBCU). Fifty percent of the students consented to be tested for HIV and all tested negative. This paper explores the lessons learned from Payne et al.’s (2006) innovative approach, elucidating the factors that contributed to the success of this HIV intervention. With the benefits that could emerge from rapid testing on college campuses and the low cost of the intervention, routine HIV testing on college campuses is an important public health initiative in reducing the spread of HIV. In particular, rapid testing offers a route to address the HIV epidemic and potentially reduce the impact among African Americans, by providing a venue to access and increase the percentages of African American students who receive testing.

Key words: HIV, testing, college students, HBCU

*The Challenge*

The Centers for Disease Control and Prevention (CDC) estimates that in the U.S., approximately one third of individuals (HIV positive = 30%, HIV negative = 39%)1 who were tested for HIV failed to return for their results. Knowledge of HIV serostatus is an important element of HIV prevention and treatment efforts, as treatment and prevention are not possible without knowing one’s HIV status.2 Among the estimated 850,000-900,000 Americans living with HIV in 2000, approximately one fourth (180,000-280,000) were unaware of their HIV infection status.3

Several factors are barriers to HIV testing. One factor includes the time lag involved in testing and the delivery of test results. Traditionally, HIV testing has required two medical visits and potentially two separate tests, with a person then waiting an additional two weeks for results. The second factor that is a barrier to HIV testing is denial of risk and stigma around HIV infection. Denial and stigma have been a constant presence throughout the HIV epidemic and have made it difficult to effectively diagnose and treat individuals who are positive.  HIV testing is in itself an intervention, which can significantly dent the denial and stigma of this terrible disease; through the process of HIV testing, individuals personalize their own risk. 4   During testing, an individual contemplates the possibility that they could be HIV infected. This personalization acknowledges that there is a risk that they could be positive, even if that risk is small.

Racial/ethnic health disparities that exist around HIV testing and treatment for African-Americans. A recent multi-site project from the CDC reported that late testers are more likely to be African-American or Hispanic who have been exposed to HIV through heterosexual contact.4 In addition, over 51% of new HIV infections in the United States are in African-Americans.  In addition, African Americans are also 10 times more likely than Caucasians to die of AIDS.5  This health disparity in African American HIV testing and treatment cuts across socio-economic and education levels. 5

Compared with their non-minority peers, African American college students are at a significantly increased risk for HIV-infection.6 An epidemiologic investigation of young HIV-positive African American men who have sex with men (MSM) college students in North Carolina revealed high rates of HIV risk behaviors and an epidemic of HIV infection. 7 A retrospective review of 18-30 year old men in North Carolina indicated an increase in the diagnosis of HIV among male college students, from 2 cases in 2000 to 56 cases diagnosed between January 2001 and May 2003. Of the 56 students diagnosed during this time, 49 were African American. 8 Overall, these results indicate that while African-Americans are significantly less likely to seek testing, they are also at a dramatically higher risk for HIV infection and death from AIDS. The high rates of HIV in the African-American community combined with the presence of denial and stigma call for innovative responses in HIV testing.

*The Strategy*

Payne and colleagues (2006)9 sought to pilot test a feasibility study of HIV testing on a HBCU campus. In this innovative approach, an evaluation of rapid HIV testing was conducted in a nontraditional setting. Payne et al. (2006) found acceptable rates of HIV testing, with 50% (n=116) of the African American college student sample consenting to rapid HIV testing offered at the university-counseling center. Testing was done over the course of 20 minutes using an FDA-approved rapid test.  This study deliberately addressed some reported barriers of HIV testing 10 by providing an easily accessible and convenient testing site, at no cost for students. In addition, offering the test in a non-traditional setting with non-college-affiliated providers decreased the stigma of receiving HIV testing. These results indicate the amenability of this population to HIV intervention and prevention efforts. Payne et al. (2006) found that providing more accessible testing sites significantly increased the percentages of African American students who sought testing.

*Lessons Learned*

In completing this innovative approach, several crucial considerations regarding the effective implementation of rapid testing on college campuses emerged. First, testing must occur in a supportive environment where confidentiality is respected.  Many student health centers are staffed by other students, which makes it difficult for HIV testing to be done confidentially.  Innovative methods that ensure that HIV testing is available *and* confidential are fundamental.

Second, rapid testing is ideal for college campuses because of the potential risks of the target population. Data suggest that homosexual and heterosexual college students consistently engage in high-risk behaviors including inconsistent condom use, 11-15 use of drugs and alcohol prior to sex, 15-17and sex with multiple partners. 11,15 Despite engaging in these high-risk activities, college students have a low perceived risk of HIV infection. 18-20 The urgency to implement rapid testing on college campuses is particularly important for African American college students who present with a higher prevalence of HIV infection than their majority group peers, yet are less likely to be aware of their HIV status.

Third, testing on college campuses may be implemented fairly easily. Non-health care providers can be trained in HIV Test Counseling. HIV testing can be done at health fairs or integrated into health services as long as confidentiality is clearly protected. Non-traditional settings may be more convenient for students, as they can casually walk-in to the testing site.

  Rapid HIV testing is extremely important in HIV prevention and intervention efforts. With the high rate of infection occurring across college samples, rapid testing at colleges provides an ideal route for intervention. Moreover, providing rapid testing at HBCUs offers the unique opportunity to reduce the current racial/ethnic health disparities that exist around HIV in the African American community.

The CDC is now recommending that HIV testing be routinely offered in multiple medical settings to all sexually active adults, even those who consider themselves to be at low risk.  Students at HBCUs could greatly benefit from innovative programs that implement these recommendations.  Initiatives such as these have the potential to respond constructively to the terrible epidemic of HIV in the African American community.

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# The Influence of Race and Gender in the Utilization of Invasive Procedures when Patients have Medicaid or Free Care

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**ABSTRACT**

This study examines cardiovascular disease treatment by conducting a retrospective review of data to determine whether invasive racial and gender disparities occurred in a state operated teaching hospital in Louisiana when patients presented for care with Medicaid or Free Care. Despite controlling for age, principal diagnoses, comorbidity, diabetes, cigarette addiction, and marital status, while only including indigent patients with Medicaid or Free Care, the study found that African Americans were less likely to undergo a cardiac catheterization and a coronary artery bypass graft surgery when compared to Caucasians. These racial disparities were not due to patient demographics or study design. Gender disparities, however, could not be substantiated in the study.

Key Words: Health care, Disparities, Race, Gender, Cardiovascular Disease, and Medicaid

*Introduction*

Medicaid and related State healthcare programs’ eligibility requirements are based on income and resource guidelines that are recognized by federal and state law. Once patients are deemed eligible for these programs, they are entitled to health insurance that assists them in paying for all or a portion of their medical bills. This insurance gives impoverished patients access to medical care and treatment that can prolong life. Therefore, these redistributive programs are designed to reduce disparities between individuals that can afford insurance and those that cannot. Unfortunately, based upon previous studies, there is concern that disparities may actually exist inside these programs.

Following, many researchers have found that racial disparities exist in health care 1-16. More specific to the purpose of this study, several studies have found that African Americans underwent fewer invasive cardiac procedures than Caucasians 10,12-13, &16, and at least one study found that African American females underwent fewer procedures than African American males,

Caucasian females, and Caucasian males 17. Furthermore, these disparities were found despite the fact that socioeconomic status, age, sex, payer type, disease severity, and access to care were controlled for 18.

It is important to note, however, previous researchers that examined treatment disparities in cardiovascular disease 10,12-13, 16-17 did so at private hospitals, Veteran Affairs facilities, and other facilities where African Americans comprise the minority of patients served. In fact, African Americans comprised only a few percentage points of the cohorts in most of these studies. For example, the African American population in Ferguson et al. 19 and Ford et al.’s 20 studies were 8 and 5 percent respectively. Therefore, one would expect disparities in facilities that treat few minorities. This then begs the question, “Did cardiac invasive usage disparities occur because hospitals seldom treat African Americans, or, are disparities pervasive and able to be generalized throughout America?”

Another limitation is that these studies used insurance, zip codes, or other analogous variables to measure socioeconomic status. It seems the best way to control for socioeconomic status is to examine patients within similar economic strata. This paper will examine patients that receive Medicaid and a related Louisiana program (Free Care) that subsidizes medical care. Therefore, will racial disparities occur when impoverished patients are examined?

Last, many researchers included all cardiovascular disease categories 10,12-13, 16-17. Yet, previous research concluded that disparities diminished when the cohort only included patients diagnosed with IHD and MI 19. As a result, only IHD and MI diagnoses are included in the study. Therefore, will disparities persist when only including these diagnoses?

To answer these questions concerning the pervasiveness of cardiac disparities, a study was conducted at a State managed hospital that serves mainly African Americans. The study also consists of patients that are deemed poor by the State of Louisiana and the Federal government. This research hypothesized that African Americans and women will receive fewer invasive cardiac procedures than Caucasians and males respectively.

*Methodology*

Site

One metropolitan public hospital, which belongs to a multi-hospital system, served as the site of the study. This hospital is located in the southeastern part of Louisiana and is responsible for treating primarily indigent patients. Moreover, other hospitals in the system refer their patients to this hospital because it is the only one in the southeastern region of the state that performs invasive cardiac procedures (cardiac catheterization, percutaneous transluminal coronary angioplasty, and coronary artery bypass graft surgery).

Because these hospitals belong to one healthcare system, they use the same financial database, Shared Medical Systems (SMS), to bill patients and providers. In order to accomplish this, SMS stores vital health information on each patient which included the variables needed to accomplish the purpose of this study. Furthermore, data were obtained from July 1998 to July 2000 because these were the only dates available at the time of the study.

Prior to conducting the study, consent was sought from the Institutional Review Board (IRB) at Southern University A&M – Baton Rouge and from the health system. All personal identifiers (for example, social security numbers and hospital identification numbers) were encrypted in the dataset obtained from SMS.

*Patient Population*

The cohort in the study encompasses only those patients that were on some type of government assistance: Medicaid and Free Care. Free Care patients are similar to Medicaid patients in that they have to meet income guidelines, and, upon doing so, are eligible for their healthcare to be subsidized by the State of Louisiana when they present for care at this hospital system. Additionally, only patients with principal diagnoses indicating Ischemic heart disease (IHD) and myocardial infarction (MI) were included. These diagnoses consist of acute MI, unstable angina, chronic ischemic heart disease, and angina pectoris. Furthermore, the model excludes comorbid diagnoses of stroke, cancer, renal failure, psychiatric illnesses, abuse of drugs and alcohol, HIV, cirrhosis, dementia, lung disease, and congestive heart failure (CHF). These conditions were excluded because they were found to preclude the likelihood that a physician would recommend an invasive procedure 18.

Last, the model controlled for comorbid (secondary) diagnoses. These diagnoses are cigarette addiction, stress, and diabetes. The extent to which these diagnoses influence utilization is unknown. However, these comorbid categories may play an essential part in the utilization of invasive procedures. For instance, disparities may occur because these conditions are more prevalent in one race, thus, impacting a patient’s likelihood of having an invasive procedure.

*Statistical Analysis*

A retrospective longitudinal review of SMS data was used to assess whether poor patients had higher use of invasive or non-invasive procedures. These data were analyzed using a multinomial logit statistical technique. This model was used because the dependent variable is categorical—meaning that a patient could either have a non-invasive treatment, a cardiac catheterization (ICD-9-CM codes 37.21-37.23 and 88.55-88.57), a percutaneous transluminal coronary angioplasty (ICD-9-CM code 36.0), or a coronary artery bypass graft surgery (ICD-9-CM codes 36.2 and 36.10-36.20). The dependent variable was coded as such: non-invasive procedure = 2, cardiac catheterization (CC) = 3, percutaneous transluminal coronary angioplasty

(PTCA) = 4, and coronary artery bypass graft surgery (CABG) = 5. Therefore, patients presenting for care with IHD and MI were treated non-invasively, or invasively, with a CC, PTCA, or a CABG.

Some patients presented several times and were treated with more than one type of procedure. To alleviate these duplicates, patients could have only presented once for each procedure. For example, a patient may have presented and had a CC. The same patient may have presented several months later and had a CABG. In this example, the patient was coded as having only a CC. If a patient had a CABG or a PTCA first, then the patient would have been coded as having a CABG or a PTCA respectively. Additionally, some patients received a non-invasive treatment first, and after follow up visits, received an invasive treatment. In these cases the first invasive treatment after the patient was treated non-invasively was counted as physicians may try to treat the patient non-invasively first before referring them to have an invasive procedure. For example, if a patient presented and first had a CC and secondly a CABG after being treated non-invasively, the patient was coded as having a CC.

Also, invasive and non-invasive utilization were examined while controlling for explanatory variables simultaneously. These variables include age, principal diagnoses, comorbidity, diabetes, cigarette addiction, and marital status. Principal diagnoses were grouped into four different conditions: (1) myocardial infarction, ICD-9-CM codes 410.0 through 410.9, (2) unstable angina, codes 411.1 or 411.8, (3) chronic ischemia, 414.0, 414.8, or 414.9, (4) and angina, 413.0 through 413.9. Dichotomous variables (0-not having the condition and 1-having the condition) represented each diagnosis. Generally, the more comorbid diagnoses a patient has, the sicker the patient. These comorbid diagnoses were coded using continuous variables. For example, one represented one additional diagnosis; two represented two additional diagnoses, and so forth. Age was divided into seven ranges and classified as 0 through 30, 31 through 40, 41 through 50, 51 through 60, 61 through 70, 71 through 80, and 81 years or older. Age was coded using dichotomous variables. Dichotomous variables were used to measure whether a patient was married or not. Patients that were not married are those who are divorced, separated, single, or widowed. Stress was used as a proxy for social factors. Stress is measured by ICD-9-CM codes 308 and 308.9. Furthermore, stress was coded using dichotomous variables. Lastly, control variables which include diabetes (ICD-9-CM code 250), and social factors (cigarette addiction ICD-9-CM code 305.1 and obesity ICD-9-CM code 278.0) were examined in the study. These variables were included because previous research found that they had an impact on the utilization of cardiac treatment 10,12-13, 16-17, 18. For instance, African Americans may have higher comorbidities when compared to Caucasians, thus explaining why disparities occur. Therefore, these variables were controlled for while the association between race, gender, and the treatment was examined. To decipher if health care differs based upon gender, male and female patients were coded using dichotomous variables. Next, race encompasses Caucasians, African Americans, Hispanics, Asians and other. Furthermore race was coded by using dichotomous variables.

*Results*

Detailed in Table 1, the cohort consisted of 909 patients. African Americans comprised 49.4 percent of the cohort, while Caucasians and other races posited 47.6 and 3 percent respectively. African Americans typically comprise 60 percent of the hospitals’ patient population. However, the African American percentage was reduced when patients were removed because their diagnoses were too severe to warrant an invasive treatment. These diagnoses which included renal failure, dementia, and so forth were detailed in the methodology section. Furthermore, 55 percent of the cohort were male, and the majority of patients age range was from 41 to 70 (93.1 percent). Additionally, more patients received a CC than a non-invasive treatment. Normally, more patients are treated with non-invasive treatment. This is probably due to the fact that only ischemic and acute MI diagnoses were included in the model and that teaching hospitals generally conduct more procedures than non-teaching hospitals 21-22.

Table 1

Descriptive Statistics for the Patient Population

|  |  |  |  |
| --- | --- | --- | --- |
| Explanatory Variables | | Number | Percent |
| Race |  | |  |
| African American | | 449 | 49.4 |
| Caucasian | | 433 | 47.6 |
| Other | | 27 | 3 |
| Gender | |  |  |
| Male | | 502 | 55.2 |
| Female | | 407 | 44.8 |
| Age | |  |  |
| 1-30 | | 7 | 0.8 |
| 31-40 | | 33 | 3.6 |
| 41-50 | | 223 | 24.5 |
| 51-60 | | 385 | 42.4 |
| 61-70 | | 238 | 26.2 |
| 71-80 | | 18 | 2 |
| 81 and older | | 5 | 0.6 |
| Procedure | |  |  |
| Non-Invasive | | 332 | 36.5 |
| CC | | 351 | 38.6 |
| PTCA | | 110 | 12.1 |
| CABG | | 116 | 12.8 |

Table 2 presents the results for the utilization of a CC. After controlling for explanatory variables and holding them to their base values, shifting from Caucasians to African Americans results in a 0.69 reduction in the expected ratio of having a CC. Thus, African Americans were less likely to undergo a CC compared to Caucasians (P = 0.05). In fact, 37 percent of African Americans had a CC and 40.6 percent of Caucasians utilized the procedure.

When considering gender, males were slightly more likely than females to undergo a CC (odds ratio 1.15). However, this analysis failed to find a statistically significant difference between males and females (P > 0.05). Therefore, no significant gender differences were found in the study.

All but one of the other explanatory variables was statistically significant in the model. As comorbidity increased, patients were less likely to undergo a CC (P = .00). This means that sicker patients were less likely to utilize a CC.

###### Table 2

Multinomial Regression Results for Cardiac Catheterization Utilization (CC)

Dependent Variable = CC

|  |  |  |  |
| --- | --- | --- | --- |
| Explanatory Variable | B | Std. Error | Exp(B) |
| Intercept | -14.81\*\*\* | 1.83 |  |
| Comorbidity | -0.20\*\*\* | 0.04 | 0.82 |
| Marital Status | 0.23 | 0.26 | 1.26 |
| African American/Caucasian | -0.37\* | 0.18 | 0.69 |
| Other races | -0.17 | 0.53 | 0.84 |
| Age 41 to 50 | 0.32 | 0.40 | 1.38 |
| Age 51 to 60 | 0.12 | 0.44 | 1.13 |
| Age 61 to 70 | -0.07 | 0.49 | 0.94 |
| Age 71 to 80 | -1.12 | 0.76 | 0.33 |
| Over 81 | -14.43 | 0.00 | .000 |
| Diabetic | -0.57 | 0.40 | 0.57 |
| Cigarette | 0.00 | 0.31 | 1.00 |
| Obesity | 0.54 | 0.60 | 1.72 |
| Male/Female | 0.14 | 0.16 | 1.15 |

Note: \* p<0.05, \*\*p<.01, \*\*\*P<.00

Table 3 posits the results for the utilization of a PTCA. After explanatory variables were controlled for, shifting from Caucasians to African Americans results in a 0.76 reduction in the expected ratio of having a PTCA. Thus, African Americans were less likely to undergo a PTCA compared to Caucasians (P > 0.05). However, the model failed to yield a statistically significant difference. This was evidenced by the near equal utilization percentage between African Americans and Caucasians (11.8 and 12.2 percent respectively).

Males were slightly more likely than females to undergo a PTCA (odds ratio 1.37). However, this analysis also failed to find a statistically significant difference between males and females (P > 0.05). Therefore, no significant gender differences were found in the study. The other statistically significant (P = .00) variable was comorbidity. The more diagnoses a patient had the less likely they were to undergo a PTCA.

###### Table 3

Multinomial Regression Results for PTCA Utilization

Dependent Variable = PTCA

|  |  |  |  |
| --- | --- | --- | --- |
| Explanatory Variable | B | Std. Error | Exp(B) |
| Intercept | -15.92\*\*\* | 2.61 |  |
| Comorbidity | -0.21\*\*\* | 0.06 | 0.81 |
| Marital Status | -0.19 | 0.36 | 0.83 |
| African American/Caucasian | -0.28 | 0.26 | 0.76 |
| Other races | 0.19 | 0.67 | 1.21 |
| Age 41 to 50 | 0.03 | 0.55 | 1.03 |
| Age 51 to 60 | 0.13 | 0.59 | 1.13 |
| Age 61 to 70 | -0.24 | 0.67 | 0.79 |
| Age 71 to 80 | -1.44 | 1.24 | 0.24 |
| Over 81 | -14.40 | 0.00 | .000 |
| Diabetic | -0.62 | 0.65 | 0.54 |
| Cigarette | 0.29 | 0.43 | 1.34 |
| Obesity | 0.51 | 0.86 | 1.67 |
| Male/Female | 0.32 | 0.24 | 1.37 |

Note: \* p<0.05, \*\*p<.01, \*\*\*P<.00

Lastly, Table 4 posits the results for the utilization of a CABG. After controlling for explanatory variables and holding them to their base values, shifting from Caucasians to African Americans results in a 0.43 reduction in the expected ratio of having a CABG. Just like the CC procedure, there was a statistically significant difference in the African American/Caucasian utilization rates for a CABG (P = .00). Therefore, African Americans were less likely to undergo a CABG when compared to Caucasians (9.6 and 15.5 percent respectively).

However, when considering gender, males were slightly less likely than females to undergo a CABG (odds ratio .78). Once again, the model failed to find a statistically significant difference between males and females in the utilization of a CABG (P > 0.05).

Other statistically significant variables were found in the model. As comorbidity increased, patients were less likely to undergo a CABG (P < .05). Lastly, obese patients were more likely to undergo a CABG than non-obese patients (P = .00).

Table 4

Multinomial Regression Results for CABG Utilization

Dependent Variable = CABG

|  |  |  |  |
| --- | --- | --- | --- |
| Explanatory Variables | B | Std. Error | Exp(B) |
| Intercept | -28.18\*\*\* | 1.94 |  |
| Comorbidity | -0.12\* | 0.06 | 0.88 |
| Married | -0.37 | 0.36 | 0.69 |
| African American/Caucasian | -0.83\*\*\* | 0.26 | 0.43 |
| Other races | 0.70 | 0.60 | 2.02 |
| Age 41 to 50 | 0.80 | 0.69 | 2.24 |
| Age 51 to 60 | 0.35 | 0.72 | 1.41 |
| Age 61 to 70 | 0.29 | 0.78 | 1.34 |
| Age 71 to 80 | -15.59 | 0.00 | 0.00 |
| Over 81 | -14.39 | 0.00 | 0.00 |
| Diabetic | -0.60 | 0.59 | 0.55 |
| Cigarette | 0.11 | 0.43 | 1.11 |
| Obesity | 1.94\*\*\* | 0.57 | 6.93 |
| Male/Female | -0.25 | 0.23 | 0.78 |

Note: \* p<0.05, \*\*p<.01, \*\*\*P<.00

*Discussion*

This research hypothesized that African Americans and women will receive fewer invasive cardiac procedures than Caucasians and males respectively. After controlling for age, principal diagnoses, comorbidity, diabetes, cigarette addiction, and marital status, African Americans were less likely to receive a CC, PTCA and a CABG when compared to Caucasians. However, only CC and CABG utilization were found to be statistically significant. Therefore, in this cohort, consisting of patients receiving government assistance in Louisiana, African Americans utilized 3.6 percent fewer CC’s and 5.9 percent fewer CABG’s when compared to Caucasians. Therefore, the hypothesis is accepted for CC and CABG utilization.

Although disparities existed, they were far fewer than most studies 1-2,4,5,9-11,13,15,16,23-24. For instance, Wenneker and Epstein 16 found that Caucasians underwent twice as many bypass surgeries as African Americans. Another study found that the national rate of CABG was 27.1 per 10,000 for Caucasians, but only 7.6 for African Americans. Even though these disparities existed throughout the nation, they were greatest in the southeastern states, particularly in rural areas 7. Whittle et al. 24 found that Caucasian patients consistently underwent invasive cardiac procedures more often than African American patients. Lastly, Peterson et al. 12 indicated that African Americans were 54 percent less likely to receive a coronary bypass surgery.

The research also hypothesized that females will receive fewer invasive cardiac procedures than males. In the study, males were slightly more likely to receive a CC and a PTCA and slightly less likely to receive a CABG when compared to females. However, the results were not statistically significant. This occurred despite the fact that age, principal diagnoses, comorbidity, diabetes, cigarette addiction, and marital status were controlled for. Therefore, this research rejects that hypothesis. Moreover, the findings contradict previous research that indicated that females were less likely to receive cardiac invasive treatment when compared to males 17,25 . In fact one study found that both Caucasians and African American females were less likely to be referred than Caucasian and African American males.

Following, the results of the study are robust due to two details regarding the site. The first is that the study was conducted at a teaching hospital. Typically, there are multiple tiers of treatment that are performed at teaching hospitals. For example, a medical student, or a resident, or both, are responsible for the initial treatment of the patient. Then a staff physician will see the patient and supervise the previous treatment that was given. Because each patient is subjected to multiple physician oversight, one would expect fewer utilization disparities. Secondly, the sites of this study occurred at hospitals that serve a majority of African American patients. Again, one would expect that fewer utilization disparities would occur because physicians are accustomed to treating African Americans. Therefore, if disparities occur in this setting, they also are expected to take place in other healthcare systems.

It must also be pointed out, however, that there are some limitations that could influence the results. First physician bias is not examined. For instance, this study does not suggest that physicians were biased against African Americans. It only concludes that African Americans and Caucasians had different cardiac utilization rates. Moreover, one study indicates that disparities may be due to communication barriers 24. This study was unable to examine this facet of the treatment process. Secondly, patient preferences were not examined. For instance, these disparities might have occurred because African American patients preferred not to undergo an invasive procedure. Two studies found that African Americans preferred less invasive treatment than Caucasians 24,26. Third, the fact disparities were found in two procedures (CC and CABG) and not in the other (PTCA) are perplexing. Last, the statistical technique did not allow gender to be stratified by ethnicity. One study that disaggregated males and females by ethnicity found that African American males were less likely to receive an invasive cardiac treatment when compared to Caucasian males and Caucasian females were more likely to receive the treatment when compared to African American females 17. Therefore, stratifying males and females by ethnicity, in this study, might have produced a different result.

*Conclusion*

This study found that African Americans receive fewer CC and CABG procedures when compared to Caucasians, but, the study failed to find gender disparities in utilization rates. These results for African Americans, which validate similar studies, have important public policy implications. First, despite the best intentions, disparities occur in government insurance programs. The goal of redistributive programs, like government sponsored health insurance programs, is to ensure that resources are shifted from one segment of society to the other. Specifically in the case of Medicaid and Free Care, the aim is to give low income individuals access to health insurance. However, as this paper concludes, racial disparities exist within programs that are designed to correct for unequal access. For this reason, Congressional issued directives, like the one to the Institutes of Medicine in 1999, are laudable. Nevertheless, recommendations that ensued from the institute were only aimed at increasing awareness about disparities among the general public, health care providers, insurance companies, and policymakers 27. Therefore, policies did not follow the report. Next, disparities have long range effects (outcomes) and future research should study them as such. To clarify, most health related research focuses on outputs, like utilization, visits, access, and so forth, as this one does. However, unequal utilization, for example, has long range consequences that impact government and society. For instance, what financial costs does society ultimately pay when people do not have routine health care? How is overall work productivity (GDP) impacted by unequal health care? What affect does this have on communities? What impact does unequal utilization have on life expectancy? At least two studies have indicated that invasive cardiac procedures can prolong life 28-29. Also, is lower life expectancy a function of lifestyles and habits or unequal health care? Although these questions are often difficult to answer, they enable policymakers to see the broad consequences of disparities, thus increasing the likelihood that policies will ensue to address these concerns. Therefore, future research should focus on the long term impacts of healthcare so as to guide policymakers in enacting prudent policies.

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# Public Opinion on Childhood Obesity as a Driving Force for Policy and Intervention Development

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**Abstract**

Childhood obesity is a complex issue in which evidence describing strategies and methods for prevention are needed. It is important that the public’s perception of childhood obesity is understood. This includes determining attitudes about childhood obesity and assessing support for an array of policies and prevention initiatives. A multidisciplinary research team at The University of Southern Mississippi conducted the Mississippi Public Perception of Childhood Obesity telephone survey. Childhood obesity information was elicited from 1,352 Mississippi adults. Telephone interviewing was conducted using WinCATI on a sample selected using random-digit dialing. Data were weighted to reflect race, sex, and age distribution of the population. All analysis was performed using SPSS 14.0. There is widespread knowledge and understanding of the existence and problems resulting from or associated with childhood obesity. Mississippians have varying levels of concern, interest, and suggestions on how to address this problem. Data shows variation in their opinions by ethnicity, gender, age, and family composition; therefore, sensitivity to these disparities is warranted.Although more research is needed, obesity initiatives do exist and can be further used in Mississippi. To be successful, these initiatives require policy development, long-term strategies, and interventions based on solid evidence and best practices.

Key Words: Childhood Obesity; Public Opinion; Health Policy; Intervention Development

*Introduction*

Childhood obesity is on the rise and is a critical public health concern facing all Americans. The purpose of the study is to investigate public perceptions regarding childhood obesity in Mississippi in order to help formulate new health policies and develop obesity related interventions. Child overweight is the term used by the Centers for Disease Control and Prevention (CDC) but is also used interchangeably with child obesity, as a recent report by American Medical Association’s expert Task Forcer1. Children are classified as overweight if they are greater than or equal to the 95th percentile on the CDC sex-specific Body Mass Index

(BMI) for age growth chart, or at risk for overweight if they are between the 85th and 94th percentiles on the CDC sex-specific BMI for age and growth chart2.

Results from the 2003-2004 National Health and Nutrition Examination Survey (NHANES), using measured heights and weights, indicate that an estimated 17% of children and adolescents ages 2-19 years are overweight. Overweight increased from 7.2% to 13.9% among 2-5 year olds and from 11% to 19% among 6-11 year olds between 1988 and 1994 and again from 2003 to 2004. Among adolescents ages 12-19, overweight increased from 11% to 17% during the same period 2-4. This trend suggests that the numbers are increasing for American youth, who will enter young adulthood already at risk for chronic health conditions related to their childhood obesity.

When the overweight definition is applied to data from earlier national health examination surveys, it is apparent that overweight in children and adolescents was relatively stable from the 1960s to 1980. However, from NHANES II (1976-1980) to NHANES III, the prevalence of overweight nearly doubled among children and adolescents. In the time interval between NHANES II and III, the prevalence of overweight among children ages 6-11 years increased from an estimated 7% to 11%, and among adolescents ages 12-19 years, increased from 5% to 11%. One of the national health objectives for 2010 is to reduce the prevalence of overweight from the NHANES III baseline of 11%. However, the NHANES 2003-2004 overweight estimates suggest that since 1994, overweight in youths has not leveled off or decreased, and is increasing to even higher levels. The 2003-2004 findings for children and adolescents suggest the likelihood of another generation of overweight adults who may be at risk for subsequent overweight and obesity related health conditions2-4.

Childhood obesity is of vital importance to the State of Mississippi, which has the highest rate of child obesity in the United States5. The prevalence of child obesity in Mississippi is well-documented, not only by NHANES (2004), but also by CAYPOS and by YRBSS data, which show Mississippi children to be more overweight than ever, causing an increase in child obesity rates nationally6-7. The health consequences of child obesity include: higher risk of developing particular diseases, such as but not limited to, type II diabetes, hypertension, high cholesterol, cancer, asthma, orthopedic problems, and others8-11. Besides diseases, there are also risks of developing potentially life-threatening psychological problems such as depression, eating disorders, discrimination and stigmatization, negative self image, and passivity and withdrawal from peers12-19.

The significance of childhood obesity in America has led to calls for urgent action with much attention focusing on prevention efforts20-22. To help overcome obesity issues it is important to focus on the problem of childhood obesity and research solutions to those problems23. Due to the complex nature of the many causes of childhood obesity, strategies likely to prevent childhood obesity must address many different social and environmental factors. The

public’s desirability of social actions which can be addressed in the political realm need to be better understood in order to develop effective policies and interventions3, 24-25.

Because obesity has become a major concern for American youth, many governmental and nongovernmental national-level activities and/or advances related to childhood obesity have occurred in the past half-century. In 1956, the President’s Council on Physical Fitness was founded in response to “concern about the physical fitness of America’s children compared with their European counterparts”26. In 1974, The Children’s Advertising Review Unit was founded through the National Advertising Review council as a strategic alliance between the major advertising trade associations to promote responsible children’s advertising26. In 1994, the Division of Adolescent and School Health “cooperative agreement” funds were established at the CDC to help increase health eating in children. Ten states received the first round of funds in 1994. Twenty-three states received funds in the most recent awards in 200627. From 2001 to 2006, the VERB Youth Media Campaign was a national multiethnic, multimedia campaign targeted at youths ages 9-13 to encourage more physical activity and increase awareness of the importance of exercise. Despite successful results, the program was eliminated in 2006. In 2004, Preventing Childhood Obesity: Health in the Balance was release by the Institute of Medicine (IOM), following a Congressional request. The report called for placing a higher national priority on the dramatic rise in childhood obesity and outlines the need to engage a range of sectors including, government and the food industry and developing better strategies for obesity prevention and reduction27. In 2005, We Can! Ways to Enhance Children’s Activity and Nutrition program was launched by the United States Department of Health and Human Services (DHHS) to provide a resource for parents and caregivers to help children ages 8-13 in maintaining a healthy weight28. In 2006, Food Marketing to Children and Youth: Threat or Opportunity? was released by IOM. According to this report, the food, beverage, and restaurant industry in the U.S. spends more than $10 billion a year on marketing food and beverages to children and youth. The IOM committee recommends that this industry should improve its self-regulation or government should intervene with additional regulations and legislation27. The increase in activities and initiatives over the past five years suggests that Americans are becoming more aware of the childhood obesity epidemic and the need for improvement.

Oliver and Lee conducted “the first study of public attitudes toward obesity and obesity policy” in the spring of 2001. These researchers found that most Americans were not seriously concerned with obesity and they showed low support for obesity-related policies29. More recently, researchers have found that Americans are seriously concerned about obesity and its impact on the nation30-32. Harvard and APHA studies provide limited information concerning what policies and interventions are supported by the public. However, the Douglas study investigated (in more detail) public perceptions concerning intervention strategies to combat childhood obesity. The Douglas study also identified specific school, community, and media interventions that the public supports and opposes, and what consequences the public will accept in combating childhood obesity30.

This study aimed to investigate public perceptions regarding childhood obesity in Mississippi. The main research questions are: 1) Is childhood obesity a personal issue or a community issue? 2) Should government play a significant role in reducing obesity? 3) What obesity related policies and interventions would be favored or opposed?

*Methods*

In this study, a state-wide sample was polled via telephone to obtain responses to questions related to childhood obesity using the Mississippi Public Perception of Childhood Obesity Survey. The protocol for this study was reviewed and approved by the Human Subjects Review Board at The University of Southern Mississippi. This telephone survey was presented to the respondents as voluntary and anonymous.

The sample consisted of a representative pool of Mississippians throughout the state. The sampling frame was purchased from the Survey Sampling International, and included 16,000 telephone numbers. The sample was randomly selected using the Random-Digit Dialing technique. The research team surveyed a total of 1,427 Mississippians. Among those, 44 respondents used non-residential telephone lines for the interview and 12 respondents refused to tell which type of telephone lines they were using. Five respondents were less than 18 years of age. Four respondents did not report their gender and age; therefore, the appropriate weights could not be assigned based on the post-stratification of data to approximate Mississippi’s population distribution. As a result, a total of 75 respondents did not meet the selection criteria and were excluded from the analysis. The final analysis included 1,352 respondents.

The survey questions were modeled after questions in a representative national survey conducted by the Robert Wood Johnson Foundation (RWJF) and the Harvard School of Public Health so that comparisons could be made between Mississippi and available national data. The survey questions and response categories are listed in the box.

The survey was conducted by the Center for Research, Evaluation, Assessment, and Training Services (CREATeS) at The University of Southern Mississippi, using Computer-assisted Telephone Interviewing (WinCATI). The survey consisted of seven Demographic items (presence of one or more children <18 years of age in the home, race, gender, income, highest grade completed, and height and weight of adult respondent [used to calculate BMI]). The survey also contained 17 questions related to attitudes about the seriousness of child obesity, whether obesity is a personal or community issue, the role government should play, and questions regarding attitudes about laws related to activity, nutrition, vending, advertising, taxes, and funding. Answer choices were written in a manner to appropriately relate to the question. For example, answer choices may be: favor, oppose, or no opinion; very serious, somewhat serious, not too serious, not at all serious, or no opinion; favor strongly, favor somewhat, neither favor nor oppose, oppose, oppose somewhat, or oppose strongly. The survey was circulated

among a panel of five experienced researchers for face and content validity and to identify potential sources of error prior to its use.

Analyses were performed using frequencies, percentages and cross tabulations. The analysis was based on a total of 1,352 respondents. Among those 28% were men and 72% were women. This gender distribution is significantly different from the distribution of men and women in Mississippi’s population. Also, respondents ages 65 years or older accounted for 26.5% of the sample, while they only accounted for12% of that age group in the population. To compensate for these biases, sample data were weighted based on the 2005 Census Bureau population estimates by age group, race and sex, in the State of Mississippi. The survey weights were calculated and assigned to the respondents in data analyses.

To further analyze the data, respondents’ weight status using BMI was calculated. BMI is a measure of body weight for a specified height and was computed for each respondent based on height (in meters) and weight (in kilograms). The height in feet and inches is first converted to height in meters using the formula: Height (in m) = [(feet × 12) + inches] ×0.0254 m/in. The weight in pounds was then converted to weight in kilograms using the following formula: Weight (in kg) = Weight (in lbs) × 0.4536 kg/lb. BMI is defined as the individuals body weight divided by the square of his height. In this study, BMI was divided into the following categories: 1) underweight (BMI <18.5), 2) normal weight (18.5 <BMI <24.9), 3) overweight (25 <BMI < 29.9), and, 4) obese (BMI >30).

The data management, post-stratification weights, and analysis were conducted using SPSS 14.0 (SPSS, Inc, Chicago, IL) to calculate summary statistics and to adjust these estimates to reflect the differences in the population using weights. SPSS frequency procedure was used to calculate percentages of overall perceptions on childhood overweight and its related questions. SPSS crosstabs procedure was used to calculate the perceptions among different subgroups, such as race, gender, age, education level, and BMI status. Though respondents’ household incomes were asked in the survey, researchers did not conduct further analysis based on household income since over 53.3% of respondents refused to answer this question. For the question, “How concerned are you about your oldest child being or becoming obese, or seriously overweight?” we subset the data and analyzed respondents who have children in their household under the age of 18 using SPSS select cases procedure.

*Results*

About 95% of Mississippi adults surveyed consider childhood obesity to be a serious national problem (includes very serious and somewhat serious categories). However, Mississippians were almost evenly divided on whether reducing childhood obesity was a personal issue (46.7%) that kids and their families should deal with on their own, or a community issue (45%) that needs to be addressed by the entire community, including schools and community groups. Interestingly, this one question had the highest number of “no opinion” responses in the entire survey (8.3%).

The almost evenly split responses and the number of “no opinions” suggests that there is not a consensus on this issue of personal responsibility, or the need for community action. About 56% of Mississippians thought that government should play a significant role in reducing obesity, while approximately 36.6% were against the government intervening. These findings indicate more agreement for a governmental response to childhood obesity, as opposed to a community or a personal issue orientation.

An issue on which a higher consensus was reached is one related to foods and drinks in schools. About 78.5%, 77.5%, and 73.4% of Mississippi adults favored passing a law to convert vending machines from carrying high-sugar, high-fat food to carrying healthy snacks and beverages in elementary, middle, and high schools respectively.

Respondents were asked whether they would favor or oppose a variety of school and government initiatives to fight obesity in children. More than half of the respondents favored nine of the 11 initiatives. The majority of Mississippians indicated that they would oppose twoinitiatives: “prohibiting television from running advertisements for food and drinks like candy, chips, and soda during children’s programming,” and, “setting a limit on the number of fast food restaurants located near schools”.The most popular school initiatives included: requiring 30 minutes of daily physical activity for grades K-12 (94%), including nutrition/fitness/health in school curricula (92.2%), and offering only healthy lunches in school (86.5%). The most popular government initiatives included: funding recreation programs for children and teens (90.7%) and including nutritional information on fast food menus (84.8%).

When examining the perceptions of childhood obesity in Mississippians by race, gender, and age, more African Americans (76.4%) view childhood overweight as a very serious problem than Caucasians (70%) by a difference of 6.4%. About 17.8% of African Americans view this as somewhat serious compared to 25.5% of Caucasians. More women (76%) view childhood overweight as a more serious problem than men (68.2%) by a difference of almost 8%. However, when those who consider childhood overweight as somewhat of a problem are combined with those who believe it to be a very serious problem, the percentages of women (98%) and men (97%) indicate overwhelming and almost equal agreement that it is a problem. About 20.7% of females view this as somewhat serious compared to 24.7% of males. About 79.6% of respondents who were 55 years of age or older view childhood overweight as a very serious problem compared to 69.1% of those younger than 55 years old. Approximately 14.4% of older respondents (55+) view this as somewhat serious compared to 26% of younger respondents (<55).

When examining the perceptions of childhood obesity in Mississippians by educational status it was found that those of different educational levels have similar opinions about the seriousness of childhood overweight being a problem. About 72.2% of respondents with four years of college or higher education view childhood overweight as a very serious problem, while 71.9% of those with lower levels of education (some college, high school graduates, and those

with less than a high school diploma) view it as a serious problem. About 25.3% of respondents with four years of college or higher education view this as somewhat serious compared to 21.9% of respondents with lower educational levels.

When examining the perceptions of childhood obesity in Mississippians by BMI, more obese (74.6%) and overweight (72.7%) Mississippians view childhood overweight as a very serious problem than respondents who have a normal weight (68.2%). Interestingly, those who were categorized as underweight had the highest belief that childhood overweight was a very serious problem (81.3%). About 20.8% of obese respondents view this as somewhat serious compared to 27.4% of respondents with normal weight. Only 32.5% of parents with children under the age of 18 were very concerned about their children being or becoming obese or seriously overweight. This finding suggests that parents are less concerned about overweight in their own children.

When comparing the perceptions of childhood obesity for Mississippians with the nation, Mississippians’ responses on the survey questions agreed in direction with many of the responses from the national survey (Harvard); however, some opinions differed in strength of belief from those in the national survey. Mississippians tended to respond more favorably toward many of the initiatives presented. For example, Mississippians were more favorable to the following: the government playing a significant role in reducing child obesity (56%) than the nation (38%); laws to limit vending machines in elementary, middle, and high schools (78.5%, 77.5%, 73.4%) than the nation (71%, 67%, 59%); law requiring BMI assessments for children in schools (66.4%) than the nation (51%); law taxing soft drinks and use the money to fight child obesity (58.9%) than the nation (50%); and, law requiring fast food restaurants to post nutritional information (84.8%) than the nation (79%).

*Conclusion*

Results indicate that there is widespread recognition of the problem of childhood overweight in Mississippi. Mississippians have varying levels of concern and interest in how to address this problem. Mississippians tended to be more favorable than the nation to many of the suggested initiatives related to reducing child overweight. For example, there was a 15% (66.0%, Mississippi and 51%, national) difference for the support of requiring the BMI assessment. Also, there was approximately a 9% difference (58.9%, Mississippi and 50%, national) for the support of taxing soda and soft drinks and using the proceeds to fight obesity. The finding that only 32.5% of parents with children under the age of 18 were very concerned about their children being or becoming overweight/obese is supported by research indicating that parents often do not recognize that their child is overweight.  This information is particularly important because it supports the need for public policy interventions.

Reducing child overweight will require steadfast commitments to data driven, fully funded, comprehensive and broad-based initiatives. To inform initiatives, Mississippians need more research data on the problem itself, as well as on the associated problems of overweight.

While more research is desperately needed, initiatives and practices to address overweight do exist and can be used in Mississippi. To accomplish these initiatives will require the development of long-term strategies and interventions based on solid evidence and best practices. Intervention based on data and best practices must then be evaluated, using indicators such as changes in prevalence data, and those results should be used to further improve the interventions and initiatives in Mississippi. Formulation of health policies and effective interventions are imperative.

As with most surveys, potential sources of error were present in this study. These include sampling error (with only a sample of 1,352 Mississippians used to represent the whole state). Also, sources of measurement error may be due to problems in the wording of questions, question order, interviewer effects, or the reliability of the respondents to answer truthfully.

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# Comparison of In-Class and Online-Learning Students’ Performance and Attitudes in an Introduction to Biological Science Course Instruction

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**Abstract**

Face-to-face learning has been perceived as a conventional process of transformation of knowledge. Today, online education is part of a new culture with many distinct characteristics that has grown tremendously over the years. It fills a necessary niche in the changing role of education. Through online education, many adult students with full-time jobs and families are able to continue their studies. However, this form of learning is subject to criticism. In this research, we hypothesized that online learning enhances student performances based on innovative technologies. To test this hypothesis, we compared an “introduction to biological science online course” with an equivalent course taught in a traditional face-to-face format on a variety of outcome measures. Comparisons included student ratings of instructor, student experiences, course qualities; and learning outcome measures such as quizzes, tests, exams, and course grades. Data generated from the present study demonstrated that students perform similarly when compared on the basis of final average course grade on exams in both traditional and online courses. Additionally, the present study indicated that learners generally enjoy online learning, and there are many students who still enjoy classroom instruction. Finding of this research project provides helpful information and explanation to the Vice president of the Academic Affairs, Deans, Department Chairs, and all others people who are concerned about the performance of students in online education.

**Keywords:** Performance, assessment, online learning, attitudes, classroom

*Introduction*

Today's students are busy with work and family. Completing a degree is not their only priority. Between work and family, students find a distance learning opportunity to continue their education without giving up their present commitments and family income. Therefore, to reach non-traditional students and to meet their educational needs around the world, more colleges and universities are turning to distance learning education. Current instructional technology potentially provides effective learner-centered, personalized education for non-traditional and non-residential students around the globe. There is a growing body of research that has measured traditional class with online methods of teaching by comparing the outcomes of entire traditional

and online courses based on homework, lecture, assessment, and discussion components (Johnston 2001; Maki and Maki 2002; Rivera and Rice 2002).

Although students are anxious to use web-based resources and their technologies, few studies have reported the benefits of distance learning education in health and social care professional curriculum (Lewis et al. 2001; Buckley 2003). However, the benefits of online learning in an Introduction to Biological Science curriculum remain extensively unexplored. Hence, the present research study was designed to compare the students’ performance and their attitudes between traditional and online class instruction.

*Research design and methods*

Two sections of Introduction to Biological Science Course were taught in Fall 2006 in the Department of Biology at Jackson State University, Jackson, Mississippi. One section was delivered completely online and another one traditionally in the classroom. Students self-enrolled themselves in either traditional or online course sections according to their time schedule, internal or external motivations, and family obligations. The students’ performance and attitudes between online and the traditional delivery methods were compared in this study. The course evaluation consisted of 18 lectures, 4 assignments (homework), 5 quizzes, 1 mid-term examination and 1 final examination. Both the online and traditional courses utilized WebCT, a course management tool commonly used in our campus to enhance course materials. For both courses; the syllabus, textbook, quizzes, examinations, and assignments were identical, and both courses were taught by the same instructor during the same semester.

The primary difference between the traditional students and the online students was the method of lecture delivery. Lectures for the traditional students were provided live in

a traditional classroom setting using PowerPoint slides obtained from McGraw-Hill Higher Education and developed by the instructor to fit the need of the students. These lectures for traditional classroom were delivered once a week at a fixed lecture schedule. Lectures for the online students were provided using the same PowerPoint slides in an online environment. Online students were able to visualize the lectures whenever and wherever they feel more comfortable to learn. Although the medium used for such interactions varied, students enrolled in each course had equal access to interact with the instructor. Students enrolled in traditional course interacted with the instructor either in the classroom, during scheduled office hours, by phone or emails, or by appointment. Students in the online course contacted the instructor during virtual office hours by telephone, e-mail using WebCT, during scheduled office hours, or using online audio chat.

Prior to each scheduled written examination, review sessions were held on-campus for students enrolled in the traditional course. For the online students, the announcement was posted on WebCT to prepare them for the examinations. In addition, there were five scheduled face-to-face meetings between the online students and the instructor. These sessions were held on the

main campus at Jackson State University in the computer room and were used for reviewing of the material covered, advising students, and testing.

*Data analysis*

At the end of the semester, prior to the completion the course, both students enrolled in traditional and online course versions were asked to complete the Students Instructional Rating System (SIRS) consisting of 17 items measured on four (4) scales denoted 1 = almost never, 2 = sometimes, 3 = usually, and 4 = almost always (Table 1). In addition, online students were asked to complete the student survey ranging from strongly disagree to strongly agree to evaluate their perceptions on online learning. This survey consisted of 10 items measured on five (5) scales [1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree] (Table 2). Results from the SIRS were expressed as means ± SDs and results from survey were expressed in percentage (%). Statistical analysis of assessment of course delivery method was done using one way analysis of variance (ANOVA) to compare traditional students (control group, n=10) and online students (experimental group, n = 15) performance (Table 3). *P*-values less than 0.05 were considered statistically significant. Results of the final average course grade distribution were presented graphically in the form of histograms, using Microsoft Excel computer program. There were 2 traditional students and 5 online students who withdrew from the course during the first and second week of the semester. These students were not incorporated in our data analysis.

*Results*

Table 1 shows thecomparative Student Instructional Rating System (SIRS) mean scores between traditional and online course instructions. The SIRS provides an opportunity for students to evaluate the instruction they receive in relation to the provisions of the Code of Teaching Responsibility, and the various instructional models in operation in the University. It was used in the present study to evaluate the instructor’s teaching performance, effectiveness, and students’ self course evaluation. Students responding to the SIRS agreed on a number of practical steps that helped them succeed in their courses (Table 1).

Both students in traditional and online class instructions gave a favorable rating on the instructor’s performance and effectiveness in the course they took based on their opinion on preparation for class, freedom to ask question, time management, and communication (items # 1, 4, 7, and 11). The traditional students agreed slightly more strongly than the online students that the course was well organized (item # 2). The in-class students felt the freedom to ask question with other students and the instructor was more helpful with the online students, but neither group rated this factor as more than moderately helpful (item # 5). The traditional students felt more enthusiastic than did the online students (item # 10). This may be because on-campus students depend more heavily on the professor verbal explanations and class demonstrations, whereas online students have to rely on online discussions more consistently for guidance and reference. Both groups rated their intellectual challenge quite positively (item # 16). Both groups

were satisfied with the overall evaluation of the course (item # 17), suggesting that they received a fair evaluation (item # 15). In summary, the SIRS evaluation results from the course discussed here suggest that face-to-face learning students were even more positive about the value of the course than online students.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 1. Comparative SIRS Mean Scores Between Traditional and Online Course Instructions** | | | | |
|  | | **Traditional**  **Instruction** | **Online**  **Instruction** |  |
| **Item**  **Number** | **Variable** | **Mean SD** | **Mean SD** |
| 1 | Preparation for class | 3.93 0.26 | 3.77 0.60 |
| 2 | Organization of course | 3.87 0.35 | 3.31 0.95 |
| 3 | Receptiveness to students’ viewpoint | 4.00 0.00 | 3.31 0.95 |
| 4 | Availability to help | 3.93 0.26 | 3.54 0.66 |
| 5 | Freedom to ask question | 3.73 0.70 | 3.46 0.97 |
| 6 | Concern with students’ learning | 4.00 0.00 | 3.46 0.97 |
| 7 | Communication | 4.00 0.00 | 3.46 0.97 |
| 8 | Major points | 3.93 0.26 | 3.46 0.97 |
| 9 | Evaluation | 4.00 0.35 | 3.62 0.65 |
| 10 | Enthusiasm | 3.87 0.00 | 3.54 0.66 |
| 11 | Time management | 4.00 0.00 | 3.62 0.65 |
| 12 | Course objectives | 3.93 0.26 | 3.54 0.66 |
| 13 | Evaluation objectives | 3.93 0.26 | 3.46 0.97 |
| 14 | Class meeting | 4.00 0.00 | 3.46 0.97 |
| 15 | Fair evaluation | 4.00 0.00 | 3.54 0.66 |
| 16 | Intellectual challenge | 3.60 0.74 | 3.54 0.66 |
| 17 | Overall evaluation | 4.00 0.00 | 3.46 0.97 |
| 18 | AVG | 3.92 0.10 | 3.50 0.73 |

Table 2 shows the percent of online students who agreed or strongly agreed with each statement on the online course evaluation**.** Students responding to the survey agreed or strongly agreed on a number of practical steps that helped them succeed in their online courses. With an 87% (item # 1) favorable response to the satisfaction of the distance learning course and 90% (item # 2) favorable response to the online activities suggest that students were highly satisfied with the instructor and the course. Items # 3-9 indicated that 85% to 97% of online students responded favorable to assessments such as exams, quizzes, discussion groups, computerized homework, and video analysis, which helped their learning. Item # 10 indicated that online students would like to have more interaction with the professor so that the course should not be a self-study course.

Table 3 outlines the performance of students in traditional classroom method compared with the performance of students in online module. The result generated from this study indicated that online students scored significantly higher (*p < 0.05*) on quizzes and homework assignments compared to traditional students. No statistically significant differences were found on mid term grade performance between traditional and online students. On the other hand, traditional students performed well on final exam compared to online students. Despite the slight differences, the average final course grades demonstrated that students performed comparably in both learning modules.

|  |  |  |
| --- | --- | --- |
| **Table 2: Percent of Students Who Agreed or Strongly Agreed with Each Statement on the Online Course Evaluation.** | | |
| **Item Number** | **STATEMENT** | **PERCENT** |
| 1 | Satisfied with course | 87 |
| 2 | Activities fit well together | 90 |
| 3 | Exams helped my learning | 96 |
| 4 | Way course taught helped my learning | 92 |
| 5 | Web-based lectures helped my learning | 86 |
| 6 | Discussion groups helped my learning | 85 |
| 7 | Quizzes helped my learning | 86 |
| 8 | Computerized homework helped my learning | 93 |
| 9 | Video analysis or simulation helped my learning | 97 |
| 10 | Satisfied with amount of interaction with professor | 75 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 3. Statistical Analysis of Assessments/ Outcomes by Course Delivery Method** | | | |
|  | **Traditional Instruction** | **Online Instruction** |  |
| **Sample size** | **N = 10** | **N =15** |
|  | **Mean SD** | **Mean SD** | **P-values** |
| Quizzes | 83.44 6.49 | 89.58 11.05 | 0.0043  **P < 0. 05** |
| Assignments/computerized  homework | 88.11 3.53 | 92.42 9.44 | 0.0092  **P < 0. 05** |
| Mid-Term Exam | 80.24 5.00 | 79.56 9.57 | 0.3166  **P > 0.05** |
| Final Exam | 85.88 1.14 | 82.97 10.77 | 0.0022  **P < 0. 05** |
| Final Average | 84.14 7.16 | 85.16 8.79 | 0.2312  **P > 0.05** |

Figure 1 represents the final average grade distribution between traditional and online class instructions. The traditional class comprised the smallest set (n= 10), with the online class consisting of 15 participants. The range of self-reported cumulative grade point averages was slightly lower for the control group (traditional students) as compared with the experimental group (online students), which was probably due to variances in sample sizes or the method of course delivery. However, the mean grade point averages were not significantly different for both groups.



Figure 1: Final average course grade distribution between traditional and online class instruction.

*Discussion*

The present study demonstrated that the performance and attitudes of traditional students were similar to those in the online version. [WebCT](http://www.webct.com) allowed students to download the course syllabus, PowerPoint presentations and audio clips at any time, from any computer with an internet connection. It was used in the present study to create online quizzes, tests, assessments, assignments; to control student access to class activities (syllabus, quizzes, tests, assessments, assignments, discussion groups, emails, and course content); and to provide students with individualized feedback on their performance. The drop-out (withdrawal) rate of students’ enrolled in the online class was higher (22.7%) compared to the proportion (16.6%) of students who withdrew from the traditional course. Despite the drop-out rate seen in the present study, the ultimate goal of our research was to compare the students’ performance and their attitudes towards traditional and online class instruction. A previous study reported that student drop-out rates in an online course are higher than in a traditional class (Lynch, 2001).

Students enrolled in traditional course had an average final course grade of 84.14% compared to 85.16% in the online student. However, the statistical analysis indicated there was no significant difference (P > 0.05) between the students enrolled in traditional course compared

to students in online course. This means that the academic performance was similar between the two groups. Although there was a slight increase on the average final course grade of online students, the academic significance of a difference of less than one percentage (1%) point cannot be considered significant. We believe that the use of web-based activities such as video analysis, simulation, and email did positively impact traditional and online students’ performance. Consistent with our finding, several published studies have reported that there is no significant difference in student performance between online and traditional classes (Phipps and Merisotis1999; Miller and Webster 1997). Hiltz reported that she did not find a significant difference in students’ grades when comparing their performance in the virtual classroom to their performance in the traditional classroom (Hiltz 1994, 1999). Similarly, others authors have reported that they found no significant difference in students’ grades between those enrolled in social work research methods web-based classes and those enrolled in the traditional class (Royse 1999; Gagne and Shepherd 2001). Current literature indicated that online students participate actively than students in traditional courses (Shea et al. 2002; Hiltz and Shea 2005). In contrary, only a few reports have pointed out that a small percentage of students chose to never enrolled in distance learning course (Smith 1996).

The present study also demonstrated that online delivery method was very effective, but performance, as measured by final course grades, showed a significantly lower mean score for students enrolled in traditional module compared to students enrolled in online module. Interestingly, student attitudes in both traditional and online courses did not differ in terms of technology used to deliver the course content. Students in both courses had relatively positive attitudes regarding technology and felt moderately self-efficacious about using technology. Based on this research observation, professors should be aware that attitudes may not influence students’ decisions to enroll in online courses. This suggests that students may choose to take online courses because of the convenience, flexibility, learning goals and lifestyles. Therefore, integrating the technology into biological sciences education appears to be greatest when it is used as a supplement to enhance traditional classroom instruction.  Passig and his collaborator found that when using multimedia approaches, the student not only studies the subject matter but also learns how to deal with the synthetically programmed environment (Passig and Levin 2000).

*Limitations*

There are some limitations to this research study. Although both data sets are not significantly different, the sample size of the traditional class (n = 10) is smaller than the sample size of the online class (n = 15). In addition, the present study only examined the results of two classes taught by one professor. The traditional students were primarily adult learners. Our data obtained in this research lacked some degree of confidentiality and we relied on self-reports. Finally, the students enrolled in the online section were not uniformly knowledgeable in the use of the WebCT and its technologies. Although the present study was not ideal, it gave instructors and administrators enough positive experience to rely on for future education. It provided

students self-assessments that impact student career decision-making, learning styles, study skills, personality type, and readiness for online learning.

***Conclusions***

The present study indicated that students generally like online learning, and there are many of them who still like classroom instruction. Our findings are consistent with previous analysis from the Institute for Higher Education Policy Report indicating that learning outcomes of students in online courses are similar to those of students in traditional classes and that the attitudes of the distance learners are generally positive (Phipps and Merisotis 1999, 2000). This has to do with the learning activities available in an online environment. With regard to the course structure and materials in the online class, one of our students stated: “I was very impressed with the organization, hands-on activities and the Professor involvement.” She further stated: “I found that WebCT forces me to keep trying at the homework problems until they are correct, which gave me a better understanding of the material.” We believe that organization and involvement are key components for a successful online course. These key components include self motivation of students, attitudes of instructors, available resources, and time to work on the computer.   Data generated from this study showed that traditional and online courses can be very successful when using WebCT to enhance the course, but one cannot underestimate the importance of the professor’s involvement with the students. The online survey also indicates that many students would like to have enough interaction with the professor to keep online course from being an independent study.

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