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## Disparities in Mental Health Utilization among Persons with Chronic Diseases

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## **Disparities in Mental Health Utilization among Persons with Chronic Diseases**

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### **Abstract**

This study used Aday and Andersen's Behavioral Model of Health Services Use to examine the role of chronic disease and the joint impact of race and chronic disease type on mental health utilization. Using data from Community Tracking Survey Household Survey, we tested the assumption that chronic disease, chronic disease type, and race are related to lower rates of mental health visits when adjusted for predisposing, enabling, and need factors. After adjusting for population characteristics, we found that race significantly moderated the impact of chronic disease type on mental health utilization, showing that African Americans with cardiovascular disease were half as likely as whites with cardiovascular disease to have a mental health visit, and Hispanics relative to whites with other chronic diseases were two thirds as likely to have a mental health visit. Overall, chronic disease status was positively associated with mental health utilization. However, adjusted for chronic disease, mental health status, predisposing, enabling and need factors, African Americans and Hispanics were significantly less likely than whites to have a mental health visit. Clinicians and providers must be alert to the full spectrum of needs in underserved populations.

**Key Words:** chronic diseases, mental health, racial/ethnic groups, mental health visits

### **Introduction**

The United States has attempted to improve the delivery of mental health services to the socially, culturally, and economically disadvantaged starting with the Community Mental Health Act of 1963 and later in 1978 with President Carter's Mental Health Commission (Foley and Sharfstein, 1983). These early efforts focused on improving mental health services while taking into account culture and ability to pay.

However, these efforts and other federal approaches have produced less than optimal results. In 1999, the Surgeon General's report on mental health concluded mental health practices and delivery have not been designed to meet the needs of the ethno-cultural minority population in the United States (U.S. Department of Health and Human Services, 1999). The supplement to the 1999 report, *Mental Health: Race, Culture, and Ethnicity*, revealed disparities in access and quality between racial and ethnic groups compared to whites (U.S. Department of Health and Human Services, 2001). In 2002, President Bush's Freedom Commission on Mental Health noted that the current mental health system is inefficient and stymies the patient and the provider (President's New Freedom Commission 2003). After decades of concern with mental health services and racial and ethnic groups, the United States still has not adequately addressed and identified relevant barriers.

The literature is somewhat mixed concerning rates of mental illness among minority groups and whites. The Centers for Disease Control and Prevention (CDC 2004-A) reported African American and Hispanics are more likely to report a greater number of mentally unhealthy days and more frequent mental distress than Whites.

Earlier studies found African Americans were more likely to suffer from panic and sleep disorder than Whites (Bell, Dixie-Bell, and Thompson 1986; Neal & Turner 1991). Using data from the Epidemiologic Catchment Area Study (ECA), Zhang and Snowden (1999) found phobic disorder was more prevalent in African Americans than Whites. However, findings by Kessler et al. (1994) revealed lower lifetime levels of mental illness (affective disorders and substance use disorders) for African Americans compared to Whites without adjusting for other predictors of mental illness. The study findings were based on the National Comorbidity Survey of noninstitutionalized US residents (Kessler et al., 1994). The findings that mental illness is less prevalent in African Americans and Hispanics than Whites should be critically examined, considering that minorities are more likely to be among underserved, high-need populations such as inner cities, low income rural communities, and the homeless. These populations tend to have higher rates of mental illness than general population (Teplin, 1990; Koegel, Burnam & Farr, 1988), more likely to use emergency rooms as their usual source of care which almost precludes use of mental health care except for serious mental illness emergencies, less likely to be included in phone surveys, and thus less likely to be included mental illness estimates. Consequently, mental illness in racial and ethnic groups is likely to be significantly underreported.

Racial/ethnic groups use fewer mental health services than whites (Cooper et al., 1999; Padgett, Patrick, Burns, & Schlesinger, 1994; Tamkin-Greener & Clark, 1988; Scheffler & Miller 1989). After controlling for socio-demographic variables and the level of need, the percentage of African Americans receiving mental health services is only half that of Whites (U.S. Department of Health and Human Services, 2001). Padgett et al. (1994) examined ethnicity and use of outpatient mental health services and found Blacks were least likely by both rate of use and number of visits per capita to use outpatient mental health services, followed by Hispanics and then Whites. After adjusting for covariates, Whites had 1.7 times greater odds of making a visit compared with Blacks and Hispanics. An earlier study showed Whites have a 106% higher probability of use of mental health services than nonwhites (Tamkin-Greener & Clark 1988). Furthermore, Scheffler and Miller (1989) found that the average number of visits per year was higher among whites compared to Blacks and Hispanics after controlling for age, salary, and insurance coverage. Why are there such disparities in mental health service utilization between whites and racial/ethnic groups?

The literature is replete with barriers that limit racial/ethnic groups' use of mental health services. Health insurance is a predictor of mental health service utilization which places racial/ethnic groups at a disadvantage (Padgett et al., 1994; Miranda, Lawson, & Escobar, 2002; Sheffler & Miller, 1989; Snowden & Thomas, 2000). Over half of African Americans and Latinos are poor or near poor contrasted with 25% of whites, and 20% and 35% respectively have no health insurance compared to 12% of whites. Next, physician patient racial concordance issues also may also serve as a barrier to mental health use (Sue, Fujino, Hu, Takeuchi & Zane, 1991; Snowden & Cheung, 1990). Sue et al. (1991) found racial/ethnic groups used more mental health services and had better outcomes when they received care from mental health professionals of their ethnic group. Minorities comprise almost 30% of the U.S. population, but less than 10% of the physician workforce and less than 7% of psychiatrists are Hispanic, African American, or American Indian which may pose a problem when these groups seek mental health care (Center for Mental Health Services, 2000). Racism may still serve as an unquantifiable, professional-driven barrier to mental health service utilization by minorities (Eisenberg, 1979; Chung, Mahler, & Kakuma, 1995). Eisenberg (1979) conducted a literature review on sociologic influences on decision-making by clinicians. Social class and race were some factors that affected clinical decision-making by the providers. Patients of lower socioeconomic status were diagnosed as more aberrant and were more likely to be treated by medical students than middle class psychiatric patients. Whites were

referred to specialists more often than blacks. African Americans' mental health treatment ended earlier when they received care from a white physician (Chung et al., 1995). The aforementioned barriers and factors that influence mental health utilization by racial/ethnic groups have been studied by researchers for decades with little change in the desired outcome, increased mental health use.

### **New Contribution**

This study will examine the empirical associations between chronic diseases and mental health utilization, to explore two potential issues: the possibility that the presence of chronic disease may detract priority from seeking treatment across racial/ethnic groups (cancer, diabetes, and cardiovascular disease). The chronic disease groups, heart disease, cancer, and diabetes are the leading causes of death and disability in the United States, accounting for 7 of every 10 deaths, and affecting the quality of life of 90 million Americans. People with chronic conditions use more health care services, including physician visits and hospital care services (Partnership for Solutions, 2002). Racial/ethnic groups appear disproportionately impacted by chronic diseases (CDC, 2004-B). The mortality rate of heart disease is 31% higher for blacks compared to whites. The overall cancer incidence (504.4 vs 478.4 per 100,000) and mortality rates (247.4 vs. 197.6 per 100,000) are significantly higher for blacks compared to whites (Ries et al, 2002). In 2002, diabetes was the sixth leading cause of death in the U.S. and racial/ethnic groups were more likely to have diabetes compared to whites (CDC, 2005-A) and more likely to die from it.

Thus far, the literature on chronic diseases and mental disorders has been largely limited to identifying the prevalence of mental disorders among patients with chronic diseases. Using data from the 2002, National Health Interview Survey, Ferketich and Binkley (2005) found the prevalence of psychological distress was higher in those who reported congestive health failure, myocardial infarction, or coronary heart disease relative to those without these conditions. They also found only 1 out of 3 visit a mental health professional. Dersh, Gatchel, Polatin and Mayer (2002) found chronic occupational spinal disorder patients had a higher prevalence of psychiatric disorders such as major depression and anxiety disorders compared to population estimates. Diabetes almost doubles the chance of depression compared to those without diabetes (Anderson et al., 2000). Depression occurs in almost 65% of heart patients and 25% of cancer patients (Stiefel, Kornblith & Holland, 1990). Significant depression affects around 1 out of 20 adults in the general population, however 1 out of 3 adult heart attack survivors and as many as 27%

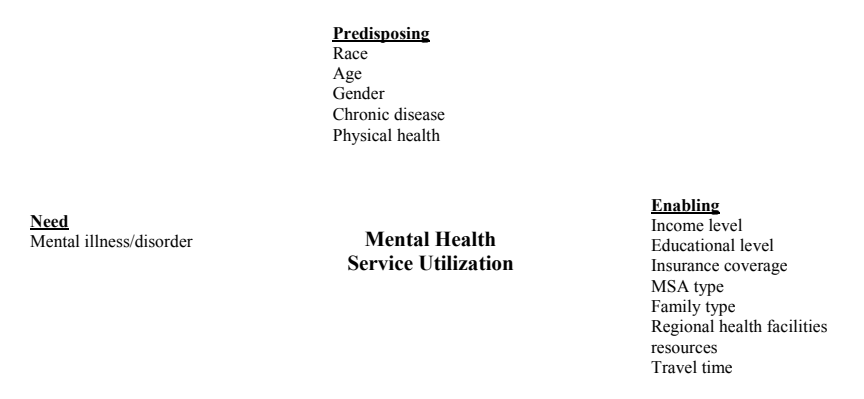
of stroke survivors are impacted by significant depression (Regier et al., 1993; Lesperance, Frasure-Smith, & Talajic, 1996; Depression Guideline, 1993).

To our knowledge, the impact of race (racial disparities) on mental health utilization among chronic disease patients has not been explored. Within that context, the findings can help provide evidence of other important factors that may impact mental health service utilization by racial/ethnic groups. We selected chronic diseases from the Agency for HealthCare Research and Quality's Priority Populations List which includes cancer, cardiovascular disease, diabetes, and HIV (Institute of Medicine, 2003). These chronic conditions show significant racial/ethnic disparities in morbidity and mortality. This study will also describe the differences in utilization of mental health services among White, Black, and Hispanic adults ages 18 to 64 adjusted for health insurance type, metropolitan area, transportation, family type, and geographic access to mental health services. Toward that end, we want to identify the strongest predictors among the "characteristics of the population at risk" on not using mental health services for racial/ethnic groups with a mental health disorder.

### **Conceptual Framework**

Our conceptual framework is guided by Aday and Andersen's Behavioral Model of Health Services Use. This model was a modification of Andersen's earlier model which had the following goal: "to assist the understanding why families use health services; to define and measure equitable access to health care; to assist in developing policies to promote equitable access" (Andersen, 1995). Aday and Andersen (1974) sought to revise the model by focusing on the intersection between need and use, along with other population and health system factors that impact use. This model along with the parent model by Andersen have been used to study factors predictors and determinants of health care use in underserved and vulnerable populations (Kilbourne et al, 2004; Gallagher, Anderson, Koegel, & Gelberg 2004; Goodwin & Andersen, 2003; Gelberg, Andersen, & Leake, 2000).

**FIGURE 1. Factors impacting mental health service utilization.**



**Variables under Observation**

This study examines mental health service utilization as a function of three sets of population-related characteristics posited by Aday and Andersen, predisposing, enabling, and need variables. Predisposing characteristics predate the illness for which health care services are needed and influence the likelihood of health service utilization (Aday & Andersen, 1974). Enabling factors are resources that facilitate the use of desired or needed health services. The third component of population characteristics, the need factor (mental illness/disorder represented by the score on the Mental Component Summary), is that condition which health care services are sought. Ware, Kosinski and Keller (1996) found the Physical Component Summary Scale (PCS-12) and the Mental Component Summary Scales (MCS-12) to be reliable scales for the PCS-36 and MCS-36. A higher PCS or MCS score represents better physical and mental health status, respectively. The dependent variable, mental health visit, is a dichotomous dummy variable that describes whether or not the person reports having visited a mental health professional, such as psychiatrists, psychologists, psychiatric nurses, or clinical social workers, during the past 12 months. The predisposing, enabling, and need variables are listed in Figure 1.

**Methods**

**Data Sources**

The sample consisted of the Restricted-Use Version of data from the 1998-1999 Community Tracking Study (CTS) Household Survey, conducted by the Center for Studying Health System Change. The data was



collected from persons living in 60 randomly selected community's nationwide (Metcalf et al. 1996). A detailed discussion of the CTS sampling and operations is provided elsewhere (Kemper et al. 1996; Strouse et al. 1998).

To ensure accurate representation of the United States population in the sample, communities were stratified by region, community size, and type. Data were collected from households, physicians, and employers in the same markets. The data allowed for analysis at both national and community levels. Telephone interviews were supplemented by in-person interview for households without telephones. The interviews were conducted in English and Spanish, completing interviews for 58,956 individuals from 32,047 family insurance units (FIUs) with a total response rate of 63 percent. These analyses focus on the sample of individuals aged 18 or more (n=48,720).

### **Study Objectives**

1. Identify the role of chronic disease in mental health service utilization adjusting for predisposing, enabling, and need factors.
2. Identify the moderating impact of race on utilization of mental health services in the presence of concurrent chronic diseases, adjusting for predisposing, enabling, and need factors.
3. Identify the predictors of mental health utilization after adjusting for chronic disease status, race, and other predisposing, enabling, and need factors.

### **Statistical Analyses**

Descriptive, bivariate, and multivariate analyses were conducted. This study used cross-tabulations to detect an association between predisposing, enabling, and need variables and the dependent (outcome) variable (mental health visit) by examination of  $X^2$  and the probability level (P value). Frequency distributions were used to evaluate the predisposing, enabling, and need factors across racial groups. We conducted multivariate logistic regression modeling to identify the impact of the independent variables (predisposing, enabling, and need) on mental health visits. Finally, we examined the impact of race with the different chronic diseases, to detect any moderating effect of race on service utilization, given a concurrent chronic disease). Odds ratios were used to assess the relative likelihood of a mental health visit across the race groups and chronic disease types.

## Results

Characteristics of the study sample are shown in Table 1. There were 48,720 observations which represent a population estimate of 187,644,958: 36,842(78%) non Hispanic whites, 5,324(11%) African Americans, and 4,597(10%) Hispanics. Almost 2 out of 3 in this sample were between 18 and 49 and the majority (83%) were high school graduates or higher (Table 1). There were significant differences in educational status and income by race. Larger proportions of African Americans and Hispanics had less than 12 years of and were more likely to report an income between 0 to \$9,999 compared to whites. The prevalence of one or more chronic disease was 46.90% among whites, 47.0% among African American, and 34.07 among Hispanics.

The overall sample mean MCS-12 was slightly higher for whites compared to other groups in the study: 52.59 for whites, 51.37 for African Americans, and 50.62 for Hispanics (see Table 2). The mean PCS-12 was also similar for all groups: 48.96 for whites, 47.02 for African Americans, and 49.29 for Hispanics. The mean MCS-12 score for those with no mental health visit was higher (52.83 vs 43.79) (see Table 3) than those with a mental health visit. Those with no mental health visit but having a chronic disease had a higher mean MCS score compared to those with a chronic disease and had a mental health visit (52.30 vs. 42.14), as expected (see Table 4). When classified by chronic disease type however, whites had a significantly ( $p<.001$ ) higher mean MCS-12 than African Americans and Hispanics for all chronic disease types, indicating that whites within each of the chronic disease categories on average, had better mental health status than African Americans and Hispanics (see Table 3). The means MCS and PCS 12 scores in the U.S. population are 50 (scores range from 0-100) with a standard deviation of 10 (Ware, Kosinski, Keller 1996).

Over 81% of mental health visits were made by whites followed by 9% for African Americans and Hispanics which is slightly different from the sample proportions of 75% white, 12% African Americans and Hispanics (see Table 1). Overall greater mental health visits were associated with 12 years of education (31%), private insurance (56%), and incomes between 10,000-29,999 (27%). Living alone (39%), large metropolitan area of residence (76%), shorter travel time to a clinic (less than 10 minutes) were also associated with more mental health visits.

### Chronic Disease

Descriptive statistics show differences in mental health visits by chronic disease status (see Table 1). Those who reported a chronic disease were more likely than those without a chronic disease to use mental

TABLE 1. Descriptive statistics.

Variables	Population Size	Weighted Percent	Mental Health Visits (Weighted%)
Total	195746246	100.00%	3614 (100.00%)
Gender			***
Male	94173972	48.11%	1381 ( 40.35%)
Female	101572274	51.89%	2233 ( 59.65%)
Age			***
18-34	63867440	32.63%	1113 ( 31.45%)
35-49	62463741	31.91%	1496 ( 41.86%)
50-64	37501241	19.16%	731 ( 18.62%)
65 +	31913824	16.30%	274 ( 8.07%)
Race			***
White	142367279	72.73%	2912 ( 78.16%)
Afr.Am.	22776787	11.64%	298 ( 8.95%)
Other	8101288	4.14%	124 ( 3.72%)
Hispanic	22500893	11.49%	280 ( 9.18%)
Education			***
6-11	31659111	16.17%	409 ( 14.43%)
12	70480496	36.01%	1097 ( 30.79%)
13-15	49137393	25.10%	963 ( 29.95%)
16 +	44469245	22.72%	1145 ( 24.83%)
Insurance Type			***
Uninsured	27515837	14.06%	327 ( 10.95%)
Medicare	36312582	18.55%	614 ( 18.84%)
Private	120867749	61.75%	2281 ( 56.47%)
Other	11050078	5.65%	392 ( 13.74%)
Income			***
0-9999	29378503	15.44%	675 ( 23.06%)
10000-29999	57786857	30.38%	840 ( 27.15%)
30000-49999	43928542	23.09%	723 ( 21.00%)
50000-79999	36827254	19.36%	657 ( 16.94%)
80000 +	22297605	11.72%	500 ( 11.85%)
Family type			***
Single person	60174616	30.74%	1322 ( 38.63%)
Married w/o kids	55514041	28.36%	687 ( 18.42%)
Married with kids	63058501	32.21%	1092 ( 28.31%)
Single with kids	14396225	7.35%	458 ( 13.05%)
Non-nuclear family	2602863	1.33%	55 ( 1.59%)
Regional Health Facility/Resources			**
Large metropolitan	140721962	71.89%	3186 ( 75.77%)
Small metropolitan	13544627	6.92%	111 ( 6.90%)
Non-metropolitan area	41479657	21.19%	317 ( 17.33%)
Travel Time			***
<= 10min	56351252	39.65%	1147 ( 35.89%)
11-20min	49218916	34.63%	1146 ( 34.22%)
21-30min	20742816	14.59%	484 ( 17.43%)
31-60min	13037687	9.17%	294 ( 9.97%)
> 60min	2773938	1.95%	68 ( 2.50%)
Chronic Disease			***
Yes	98559582	52.98%	2153 ( 63.26%)
No	87461504	47.02%	1334 ( 36.74%)

Test of Independence \*: 0.01 <= p < 0.05, \*\*: 0.001 <= p < 0.01, \*\*\*: p < 0.001

TABLE 2. Mental and physical component scales by race.

Variable	Sample Size	Mean	SE
Whites Mental Component Scale	36842	52.59	.08
Whites Physical Component Scale	36842	48.96	.11
African Americans Mental Component Scale	5324	51.37	.16
African Americans Physical Component Scale	5324	47.02	.25
Hispanics Mental Component Scale	4597	50.62	.20
Hispanics Physical Component Scale	4597	49.29	.17

TABLE 3. Mental component score.

	Sample Size	Mean	SE
No mental health visit	45105	52.83	.07
Mental health visit component scale	3614	43.79	.35
No chronic disease	26671	52.81	.07
With chronic disease	22049	51.45	.11
No mental health visit/no chronic disease	24961	53.25	.07
Mental health visit/chronic disease	1904	42.14	.40
Mental health visit/no chronic disease	1710	45.69	.44

TABLE 4. Mental component score by chronic disease type and race.

Race/Ethnicity	Chronic Condition	Mean	SE	n
Whites	Diabetes	50.61	0.28	2499
	Cancer	53.04	0.24	2298
	Cardiovascular	51.98	0.12	11760
	Others	51.54	0.16	9430
	No chronic	53.09	0.09	19562
Blacks	Diabetes	48.29	0.43	615
	Cancer	47.43	2.07	66
	Cardiovascular	49.74	0.31	1845
	Others	49.18	0.33	1367
	No chronic	52.58	0.20	2823
Hispanics	Diabetes	45.83	0.73	357
	Cancer	49.20	2.43	60
	Cardiovascular	47.71	0.53	1010
	Others	47.79	0.51	813
	No Chronic	51.63	0.20	3031
	Total Sample	52.81	0.07	26671

health services, 64% vs. 36% respectively. The difference in mental health visits by chronic disease status was significant ( $p<.05$ ).

The multivariate analysis revealed that chronic disease status was positively associated with the likelihood of a mental health visit, after adjusting for race, mental health status, and all other predisposing, enabling, and need variables (see Table 5). Those with any of the selected chronic diseases for this study had higher odds (.31 higher) of having a

TABLE 5. Mental component score.

Variables (Ref.)	All Population Odds Ratio (95% CI)	
<b>Gender (Male)</b> Female	1.16 (1.05, 1.28)	*
<b>Age (18-34)</b> 35-49 50-64 65+	1.34 (1.21, 1.50) 0.70 (0.61, 0.81) 0.09 (0.07, 0.12)	*** *** ***
<b>Race (White)</b> Afr. Am. Hispanic	0.45 (0.37, 0.54) 0.65 (0.54, 0.78)	*** ***
<b>Education (6-11)</b> 12 13-15 16+	1.01 (0.85, 1.21) 1.41 (1.14, 1.73) 1.40 (1.15, 1.70)	 *** ***
<b>Insurance Type (Uninsured)</b> Medicare Private Other	3.65 (2.88,4.62) 0.85 (0.72, 1.00) 2.36 (1.96, 2.84)	*** * ***
<b>Income (0-9999)</b> 10000-29999 30000-49999 50000-79999 80000+	0.79 (0.69, 91) .87 (0.75, 1.03) .89 (0.71, 1.12) 1.02 (0.84, 1.24)	    *
<b>Family Type (Single person)</b> Married w/o kids Married w/kids Single with kids Non-nuclear family	0.49 (0.42, 0.58) 0.56 (0.49, 0.65) 1.14 (0.98, 1.33) 0.72 (0.40, 1.28)	*** ***   
<b>Regional Health Facility/Resources (Large metropolitan area)</b> Small metropolitan area Non-metropolitan area	1.00 (0.85, 1.17) 0.78 (0.66, 0.92)	 *
<b>Travel Time (&lt;=10 min.)</b> 11-20 min. 21-30 min. 31-60 min. >60 min.	1.11 (1.00, 1.23) 1.39 (1.20, 1.61) 1.20 (0.98, 1.47) 1.26 (0.88, 1.81)	 * ***  
<b>Physical Component Scale</b>	0.98 (0.98, 0.99)	***
<b>Chronic Disease (No)</b> Yes	1.31 (1.16, 1.48)	***

\* : 0.01 <= p < 0.05, \*\* : 0.001 <= p < 0.01, \*\*\* : p < 0.001

TABLE 6. Multivariate logistic regression of mental health visits adjusted for MCS-12.

Variables (Ref.)	All Population Odds Ratio (95% CI)	
<b>Gender (Male)</b> Female	1.07 (0.97, 1.19)	
<b>Age (18-34)</b> 35-49 50-64 65+	1.28 (1.16, 1.42) 0.76 (0.66, 0.88) 0.15 (0.11, 0.20)	*** *** ***
<b>Race (White)</b> Afr. Am. Hispanic	0.45 (0.37, 0.56) 0.60 (0.49, 0.72)	*** ***
<b>Education (6-11)</b> 12 13-15 16+	1.16 (0.97, 1.39) 1.67 (1.35, 2.07) 1.73 (1.41, 2.13)	 *** ***
<b>Insurance Type (Uninsured)</b> Medicare Private Other	3.12 (2.43, 4.01) 0.98 (0.83, 1.15) 2.35 (1.95, 2.84)	***  ***
<b>Income (0-9999)</b> 10000-29999 30000-49999 50000-79999 80000+	0.88 (0.76, 1.02) 1.02 (0.87, 1.19) 1.10 (0.97, 1.40) 1.29 (1.06, 1.56)	   *
<b>Family Type (Single person)</b> Married w/o kids Married w/kids Single with kids Non-nuclear family	0.53 (0.45, 0.63) 0.57 (0.50, 0.66) 1.10 (0.93, 1.30) 0.70 (0.38, 1.28)	*** ***  
<b>Regional Health Facility/Resources (Large metropolitan area)</b> Small metropolitan area Non-metropolitan area	1.01 (0.85, 1.21) 0.79 (0.66, 0.94)	 *
<b>Travel Time (&lt;=10 min.)</b> 11-20 min. 21-30 min. 31-60 min. >60 min.	1.09 (0.98, 1.20) 1.31 (1.12, 1.52) 1.04 (0.85, 1.27) 1.10 (0.77, 1.59)	   **
<b>Mental Component Scale</b>	0.94 (0.93, 0.94)	***
<b>Physical Component Scale</b>	0.99 (0.98, 0.99)	***
<b>Chronic Disease (No)</b> Yes	1.13 (1.00, 1.28)	***

\*: 0.01 <= p < 0.05, \*\*: 0.001 <= p < 0.01, \*\*\*: p < 0.001

mental health visit compared to without a chronic condition. Race was a predictor of a mental health visit. African-Americans were about half as likely as whites to report a mental health visit and Hispanics had about two-thirds the likelihood of whites to report a mental health visit. Other significant predictors of a mental health visit were age, years of education, insurance type, travel time, and income level, all else being equal. Those who were between the ages of 35-49, 16 years or more of

**TABLE 7. Multivariate logistic regression of mental health visits by chronic disease type adjusted for MCS-12.**

Variables	All Population Odds Ratio (95% CI)
<b>Diabetes</b>	
Whites	1.94 (0.98, 1.56)
African Americans	0.81 (0.50, 1.31)
Hispanics	0.79 (0.49, 1.28)
<b>Cardiovascular Disease</b>	
Whites	1.22 (1.07, 1.39)**
African Americans	0.73 (0.56, 0.96)**
Hispanics	0.84 (0.64, 1.12)
<b>Cancer</b>	
Whites	1.07 (0.81, 1.41)
African Americans	0.88 (0.28, 2.70)
Hispanics	0.10 (0.01, 1.12)*
<b>Other Chronic Disease</b>	
Whites	1.29 (1.13, 1.48)**
African Americans	0.77 (0.55, 1.07)
Hispanics	0.69 (0.52, 0.92)**

\*, <= p < 0.1, \*\*, <= p < 0.05

**TABLE 8. Multivariate logistic regression of mental health visits by chronic disease type.**

Variables	All Population Odds Ratio (95% CI)
<b>Diabetes</b>	
Whites	1.50 (1.21, 1.87)***
African Americans	1.01 (0.62, 1.65)
Hispanics	1.22 (0.77, 1.92)
<b>Cardiovascular Disease</b>	
Whites	1.46 (1.28, 1.66)***
African Americans	0.86 (0.66, 1.12)
Hispanics	1.23 (0.94, 1.60)
<b>Cancer</b>	
Whites	1.28 (0.99, 1.65)
African Americans	1.31 (0.43, 4.04)
Hispanics	0.13 (0.01, 1.74)
<b>Other Chronic Disease</b>	
Whites	1.52 (1.32, 1.74)***
African Americans	0.94 (0.69, 1.28)
Hispanics	0.94 (0.70, 1.25)

\*, <= p < 0.1, \*\*, <= p < 0.05 \*\*\*: 0.001 <= p < 0.01, \*\*\*: p < 0.001

education, insured by Medicare, married with children, travel time to clinic of 11-20 minutes, and family incomes of 80,000 and greater were more likely to report a mental health visit. As expected those with higher MCS-12 and PCS-12 were less likely to use a mental health visit, all else equal. Neither the predisposing variable, gender, nor the enabling variable, metropolitan size was significantly related to mental health visits.

We examined the moderating effect of race on the impact of chronic disease type on the likelihood of a mental health visit. The terms are significant (see Table 7). Whites with cardiovascular disease, and with "Other chronic disease" were significantly more likely than the sample population without a chronic disease to report a visit (ORs 1.22 and 1.29 respectively). African Americans with cardiovascular disease were significantly less likely than the sample population with no chronic diseases to report a visit (OR=0.73). Comparing whites and African Americans with cardiovascular disease, African Americans were a little over half as likely as whites to have had a visit (0.73/1.22). Hispanics with "Other chronic disease" (skin cancer, arthritis, HIV, or asthma) were about two thirds as likely as the sample population without a chronic disease to have visited a mental health provider. There was no significant difference in mental health visits by race among diabetes, and those who reported no chronic disease. Other variables of interests, such as age, family income, family type, travel time, mental health status, and physical health status remained significant predictors of mental health visits.

## Discussion

The study finds that adjusted for predisposing, enabling, and need factors, chronic disease, and specific chronic disease by race impact mental health visits. After adjusting race, mental health status, and other predisposing, enabling, and need factors, those who reported a chronic disease were 13% more likely to report a mental health visit compared to those who did not report a mental health visit. This difference in mental health visits between those with and without a chronic disease might be expected due the increased burden of mental disorders in those with chronic diseases (Anderson, et al., 2000; Stiefel, Kornblith & Holland, 1990; Regier et al. 1993; Lesperance et al., 1996; Depression Guideline, 1993). Our findings support previous studies that show that racial/ethnic groups are less likely to have a mental health visit (Cooper et al., 1999; Padgett et al., 1994; Tamkin-Greener & Clark 1988; Scheffler & Miller 1989). After controlling for chronic disease, mental health status, predisposing, and enabling factors, African Americans (55%) and Hispanics were (45%) less likely than whites to have a mental health visit. After adjusting for predictors of health services utilization such as income, educational level, health insurance coverage, the differences in mental health utilization by race remained significant. Other factors not examined by the first model might be influencing the difference mental health visits by those with chronic disease.



To further explore these effects, models that included chronic disease type (cardiovascular, diabetes, cancer, and other) were analyzed. Adjusting for the predisposing, enabling, and need factors, chronic disease type by race was both a negative and positive predictor of mental health visits in this sample. We found whites with cardiovascular disease were 22% more likely to report a mental health visit compared to those without chronic disease, adjusted for other factors. This supports the findings by Ferketich and Binkley (2005) that 1 out of 3 cardiovascular patients with psychological distress had visited a mental health professional. However, when the population characteristics variables were controlled for, African Americans with cardiovascular disease were 27% less likely than the sample population without a chronic disease to report a mental health visit. Hispanics with cancer were 90% less likely to report a mental health visit compared to the sample population without a chronic disease. Lastly, Hispanics with an "other" chronic disease (skin cancer, asthma, arthritis, or HIV) were 31% less likely to report a mental health visit compared to those without a chronic condition. Toward that end, whites with an "other" chronic condition were 29% more likely to report a mental health visit compared to those without a chronic condition. When compared with whites with the same chronic disease category, the differences are larger. Models that included interaction terms for race and chronic disease types were estimated as well. These models were not an improvement on the models presented here.

Unadjusted for predisposing and enabling factor such as income level, educational level, health and mental health status, differences in mental health utilization may be attributed to racial/ethnic groups being more likely to be poor and uninsured compared to whites (Lillie-Blanton, Rushing, & Ruiz, 2003), both being documented predictors of mental health visits. However the differences persist when these predisposing, enabling, and need factors are adjusted for in the models. Trust may still be an issue for minorities when accessing mental health services. Using data from the psychiatric epidemiologic survey of 3,004 households in St Louis, Sussman, Robins, and Earls (1987) found African Americans were more likely than whites to report fear as a reason for not seeking care for mental health problems. The literature is also clear that racial/ethnic groups are likely to mistrust health care providers and health care systems which may impact service utilization (LaVeist, Nickerson, & Bowie, 2000; Brandon, Isaac, & LaVeist, 2005; Boulware, Cooper, & Ratner, 2003; Corbie-Smith, Thomas, & Saint George, 2002; McGary, 1999; Gamble, 1997). However, our models did not include these potentially important variables which is a study limitation.

## Conclusion

This study extends the research in the area of mental health utilization by testing the assumption chronic disease, chronic disease type and race is related to lower rates of mental health visits when adjusted for predisposing, enabling, and need factors. As the study data are cross-sectional, we cannot attribute a causal nature to the population characteristics (predisposing, enabling, and need factors) and mental health visits. Our study finds that some combinations of chronic disease type and racial/ethnic groups have fewer mental health visits compared to those without chronic disease. While the mental health status indicator (MCS score) shows lower mental health status among racial/ethnic groups relative to whites for all chronic group categories, their lower utilization of mental health services warrants further investigation. Cardiovascular disease, stroke, and cancer are among the leading chronic conditions that limit activities of daily living (National Heart, Blood, and Lung Institute, 2000) and disparities persist between racial/ethnic groups and whites for these conditions (National Heart, Blood, and Lung Institute, 2000; National Heart, Blood, and Lung Institute, 1999; CDC, 2005-B). In light of relationship between some mental health disorders and chronic diseases, this paints a disturbing picture for racial/ethnic groups with chronic disorders. Racial/ethnic groups are less likely to use mental health services, however when they do seek care they receive lower quality of care (U.S. Department of Health and Human Services, 2001). The U.S. Department of Health and Human Services reported, "The greater (mental health) disability burden to minorities is of grave concern to public health, and it has very real consequences" (U.S. Department of Health and Human Services, 2001). In-depth study of the impact of chronic disease and race on mental health visits is critical, given the growth in the minority population, which is projected to reach 50% of the population by 2050 (U.S. Census Bureau, 2002). Lastly and most importantly, clinicians who treat racial/ethnic groups with chronic diseases must be cognizant of the full spectrum of needs in these groups.

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