Racial Differences in Somatic Symptoms of Depression

George W. Williams, IV[1]
Morehouse College

Abstract

Though causality has not been established, the comorbidity of pain and depression is prevalent (Edwards et al. 2001; Green et al. 2003; McCracken 2001; Tan et al. 2005). In clinical and community investigations black populations have been found to have more intense experiences of somatic pain and higher rates pain and depression comorbidity (Dunlop et al. 2003; Johnson-Umezulike 1999). This study explores the potential benefit of using somatic symptoms as suitable indicators in screening for depression in black patients. Through a three-model hierarchal linear regression model of data from the 2006 National Health Interview Survey, the research attempts to support the hypothesis that somatic symptoms can be used by primary care physicians to overcome challenges that result from cultural differences in discussions of depression. For black and non-black participants, somatic symptoms are better predictors of self-reported depressive symptoms than socio-demographic factors. Only joint pain/aching/stiffness and pain in the jaw/front of ear reported by black participants increased those respondents' likelihood of scoring higher on a 24-point self-reported depressive symptoms index.

1 Please address all correspondence to George Williams, IV: gwwiv10@gmail.com

Introduction

The existence of a variety of racial and ethnic health disparities has been well researched and substantially supported (Green et al. 2003a; Lasser et al. 2006; Lillie-Blanton et al. 2008; Weisse et al. 2001; Williams and Jackson 2005). Issues surrounding the diagnosis and prognosis of depressive disorders are among the disparities in health that have been explored.

Depressive disorders have been ranked as a leading contributor to the global burden of disease and prevalence rates are projected to rise during the first several decades of the twenty-first century (Murray and Lopez 1997). In the United States, a national community sample that was surveyed by Blazer et al. (1994) found that 17 percent were at risk of experiencing depressive symptoms. Smaller, local clinical investigations of primary care patients have resulted in considerable high rates of between about 20 percent (Kroenke et al. 2007) and 27 percent (Bair et al. 2003). Over the past two decades, disparities in the diagnosis and prognosis of depression have become to be considered a necessary part of mental health research.

Previous investigations reported that black and African-American populations have a greater risk of experiencing depression (Centers for Disease Control and Prevention 1998; Dunlop et al. 2003). Black and African-American populations also report higher rates of depression and pain comorbidity (Edwards et al. 2001; Green et al. 2003b; Green et al. 2003c; Johnson-Umezulike 1999; McCracken 2001; Riley et al 2002; Selim et al. 2001; Tan et al. 2005). The correlation between race and risk of depression proves to be significant even after controlling for sociocultural and socioeconomic variables (Jones-Webb and Snowden 1993). The issue of racial/ethnic disparities in rates of depression has been compounded by reports of disparities in diagnosis as well; African-American primary care patients are more infrequently diagnosed than their white counterparts are (Borowsky et al. 2000; Skaer et al. 2000).

The purpose of the present study was to investigate whether or not black populations have a higher risk of depression than other racial groups and whether or not somatic symptoms could be potentially good indicators to screen for depression in black patients.

Background

Somatic Symptoms of Depression

The relationship between pain and depression has been strongly identified by a preponderance of research findings (Bener et al. 2006; Fishbain et al. 1997). Means-Christensen et al. (2008) determined that a patient's report of a pain symptom resulted in a 2.5 to near ten-fold increase in positive screens for panic disorder or depression. Researchers have proposed a number of biological explanations for the relationship (Delgado 2004; Heuser 1998; Petrovic et al. 2004; Strigo et al. 2008) but none have been determined to be superior and no causal relationship has been established between pain—neither acute nor chronic—and depression. Without causality being determined, the relationship is significant and even highly common. A review of literature on comorbidity calculated the average rate of patients who had somatic and depressive symptoms to be about two-thirds (Williams et al. 2006). While the areas of pain and types of somatization have varied in these studies, a particularly strong association exists between low back pain and depression (Bacon et al. 1994; Rush, Polatin and Gatchel 2000).

Racial/Ethnic Differences in Somatic Symptoms

Research has indicated that African Americans tend to report more intense and severe experiences of pain (Carey and Garrett 2003; Edwards, Fillingim and Keefe 2001; Sheffield et al. 2000). Considering pain is a subjective experience that is nuanced by a participant's attitudes and values regarding behavior and communication (Bates and Rankin-Hill 1994; Goldberg and Remy-St. Louis 1998; Lawlis et al. 1982), these findings are not surprising. Additionally, when more intense and severe experiences of pain are identified in African Americans there is also a greater level of reported pain-related disability and interference with daily activities (Plesh, Crawford and Gansky 2002; Green et al. 2004; McCracken et al. 2001; Riley Gilbert and Heft 2002; Tan et al. 2005). Cleland, Palmer, and Venzke (2005) found that greater behavioral inhibiting pain in African Americans was associated with higher levels of depression in comparison with other ethnic groups. Existing research also points to important racial/ethnic differences not only in the experiences of pain but in pain-related coping methods as well. In dealing with pain, African Americans tend to employ passive coping methods and are less likely to seek medical care (Hastie, Riley, and Fillingim 2005). These health behaviors have important implications for mental health screenings of African Americans

and suggest the potential benefit of using somatic symptoms to diagnose depression.

Racial/Ethnic Differences in Experiences of Depression

Racial/ethnic differences in depression-related experiences complicate the diagnosis of mental health illness in African American patients. While African Americans tend to indicate greater sympathy for those with diagnosed mental illness, they are more likely than their White counterparts to attach a stigma to mental disorders and consequently less likely to utilize and receive mental health services (Cooper, Corrigan and Watson 2003; Kessler et al. 2001; Mojtabai, Olfson and Mechanic 2002; Office of the Surgeon General 2001; Perlick et al. 2001; Snowden 1999). Kales et al. (2006) found that when they do seek treatment for mental health illness, African Americans are more likely to see primary care physicians rather than psychiatrists. In their review of research on the evaluation and treatment of depression in African Americans, Das et al. (2006) found that African Americans were more likely than other ethnic groups to exhibit somatic and neurovegetative symptoms of depression. They suggest that these differences in depressive symptoms may complicate detection and diagnosis in African American populations.

Screening for Depression in Black Patients

Considering depression is a prevalent and debilitative illness that can lead to less favorable outcomes and greater health care utilization, it is important to recognize cultural differences in views of emotion and meanings of depression and acknowledge that typically Eurocentric conceptualizations and operationalizations of depression are not universally suitable (Jenkins, Kleinman & Good 1991). It has been recognized that mental health services have not sufficiently considered these cross-cultural differences (Neighbors 1997; Strakowski et al. 1996). For example, acute pain has not typically been included in widely used depression diagnostic criteria (Williams et al.). More commonly used criteria (e.g. HRSD, DSM-IV-TR) tend to place greater emphasis on mood and cognitive symptoms, which are less likely to be characteristic of how African Americans reveal their depression. Results from prior studies suggest the need for an exploration of the use of a potentially more suitable depression diagnostic method with African American patients that concentrates on somatic symptoms.

The present study will test the following hypotheses:

1. Self-reported somatic symptoms will have a positive effect on the likelihood that respondents will report depressive symptoms

2. As compared with non-black respondents, black respondents will be more likely to report somatic symptoms along with depressive symptoms

Methods

Sample Procedure. Except for a limited number of studies (Blazer et al. 1994), few investigations have used nationally representative samples to study variances in mental health. The sample was constructed using secondary data from the 2006 National Health Interview Survey by the National Center for Health Statistics, which has adapted the survey over the course of five decades to track national U.S. health. The Sample Adult File section of the 2006 NHIS was used for the present study because it uses several questions to test for depressive symptoms. The Sample Adult File consists of respondents who were identified in a surveyed household as willing to answer more in-depth questions about their individual health.

Survey Participants. The sample consists of 24, 275 adults, 18 and older. Forty-four percent of respondents were female and 56 percent were male. Middle aged (35-60) respondents made up a majority of the sample (44.8 percent). The average age of the sample was 46.95 (SD = 17.991). Nearly 16 percent of respondents identified themselves as black.

Measures

Independent Variables. All variables except age were recoded, some to be made dichotomous, with the intent of conducting a hierarchical linear regression: Gender (0 = female, 1 = male), Race (0 = other, 1 = black), Education (0 = less than college graduate, 1 = college graduate, 2 = advanced degree), Marital Status (0 = not married, 1 = widowed or divorced, 2 = married). Two questions regarding health care access were used: Do you have a place that you usually go to when you are sick (no, yes, or more than one); Do you usually go to that place to seek preventive care (yes or no). Five questions were used to survey respondents (yes or no) about recent experiences with somatic symptoms: Had symptoms of joint aching/stiffness in the past 30 days; Had persistent neck pain in the

past 3 months; Had persistent low back pain in the past 3 months; had pain in jaw/front of ear in the past 3 months; Had severe headache/migraine in the past 3 months.

Dependent Variable. The survey has six questions that test for depressive symptoms in participants: During the past 30 days, how often did you feel 1) so sad that nothing could cheer you up, 2) nervous, 3) restless or fidgety, 4) hopeless, 5) that everything was an effort, 6) worthless? The questions were recoded (0 = none of the time, 1 = a little of the time, 2 = some of the time, 3 = most of the time, 4 = all of the time) and then used to compute a depression index ($\alpha = .864$) with a 24 point scale. The higher a participant's score on the scale, the more severe their depression was: mild form (score of 6-11), moderate form (score of 12-17), severe form (score of 18-24).

Analysis. Multivariate regression analyses were used to examine the association between mean depression index scores and the risk factors identified. The sample was stratified by race to determine if there was racial variance in the correlates of self-reported depressive symptoms. This study also investigated potential racial differences in responses to each of the six depression index items.

Results

Table 1 shows mean scores on the self-reported depressive symptoms index for sociodemographic factors. It shows that middle-aged respondents (35-60) scored higher (M = .227, SD = .580) than the two other age groups into which the rest of the sample was categorized. Women scored (M = .236, SD = .580) significantly higher than men. There was no difference when mean scores were calculated for the variable of race. Black respondents scored virtually the same as non-black respondents (M = .206, SD = .555 and M = .205, SD = .541 respectively).

Difference in level of education also showed no significant disparity in mean index scores: less than college degree (M = .205, SD = .541), college degree (M = .203, SD = .544), advanced degree (M = .208, SD = .564). The highest and lowest family income/poverty threshold groups averaged higher index scores (under .99, M = .223, SD = .567; above 4.00, M = 2.14, SD = .562) than respondents whose family's ratio was 1.00 to 1.99 (M = .205, SD = .544) and 2.00 to 3.99 (M = .205, SD = .540).

TABLE 1

Means and Standard Deviations on Self-Reported Depressive Symptoms Index Score for the Sociodemographic Factors of Age, Gender, Race, Education, Family Income and Marital Status

Sociodemographic Factors	Descriptive Data		
	N	Mean Index Score	SD
Age			
18-34	7099	.189	.508
35-60	11404	.227	.580
61 and above	5772	.182	.506
Gender			
Male	10715	.166	.489
Female	13560	.236	.580
Race			
Black	3790	.206	.555
Other	20485	.205	.541
Education			
Less than college degree	1873	.205	.541
College degree	4203	.203	.544
Advanced degree	1339	.208	.564
Family income/poverty threshold*			
Under .99	2723	.223	.567
1.00 to 1.99	3597	.205	.544
2.00 to 3.99	5076	.205	.540
4.00 and above	5590	.214	.562
Marital Status			
Not Married	6779	.218	.548
Widowed, Separated, Divorced	6129	.287	.640
Married	11367	.154	.473

*Not Reported: 7289

Married respondents tended to score lower (M = .154, SD = .473) while widowed, separated and divorced respondents scored much higher (M = .287, SD = .640). The average index score of respondents who were not married or never married (M = .218, SD= .548) was higher than the married status group but lower than the widowed, separated and divorced group.

A comparison by race of mean index scores for the factors of somatic symptoms and health care options and use is shown by Table 2. Low back pain and severe headache/migraine were the only somatic symptoms for which a comparison of responses by race showed differences in mean index scores. Black participants who indicated that they had low back pain during the previous 3 months were more likely to exhibit depressive symptoms (M = .389, SD = .730) when compared to non-black participants (M = .127, SD = .423). On the same question, non-black participants who responded in the negative were more likely to exhibit depressive symptoms (M = .413, SD = .730) than their black counterparts (M = .131, SD = .445). The mean index score for black participants who indicated experiencing severe headache/migraine during the previous three months was lower (M = .457, SD = .800) than non-black participants who responded similarly (M = .510, SD = .804).

For questions of health care options and use and index scores, there were two important racial differences. Black respondents who reported having more than one place that they usually go when they are sick had higher index scores (M = .487, SD = .885) than non-black respondents (M = .251, SD = .579). For both racial groups, respondents who reported having more than one place to usually go when sick had higher index scores than respondents from their respective groups that reported having no place or only one place that they usually go when they are sick.

TABLE 2

Means and Standard Deviations on the Self-Reported Depressive Symptoms Index for the Somatic Symptoms and Health Care Options and Use Factors

Variables	**Black Sample**			**Other Sample**		
Somatic Symptoms	N	Mean	SD	N	Mean	SD
Symptoms of joint pain/ aching/stiffness past 30 days						
No	2619	.126	.431	14268	.133	.436
Yes	1171	.383	.733	6217	.371	.698
Had neck pain, past 3 months						
No	3248	.169	.499	17463	.152	.463
Yes	542	.426	.779	3022	.501	.797
Had low back pain, past 3 months						
No	2693	.131	.445	5608	.413	.730
Yes	1097	.389	.730	14877	.127	.423
Had pain in jaw/front of ear, past 3 months						
No	3609	.185	.525	19557	.185	.512
Yes	181	.608	.898	928	.623	.860
Had severe headache/ migraine, past 3 months						
No	3217	.160	.486	17345	.150	.456
Yes	573	.457	.800	3140	.510	.804
Health Care Options/ Use						
Have a place usually go when sick						
No	637	.240	.602	3360	.203	.539
Yes	3114	.195	.539	16878	.205	.540
More than one	39	.487	.885	247	.251	.579
Usually go there for routine/preventative care*						
No	215	.261	.639	1104	.243	.606
Yes	2908	.193	.536	15858	.204	.537

*Missing cases: 4190

A comparison of mean index scores of both racial groups for the question of whether or not respondents usually go to their choice place of health care for preventative care, shows that when black respondents do seek preventative care their likelihood of exhibiting depressive behaviors is notably less (M = .193, SD = .536) than those who do not (M = .261, SD = .639). For non-black respondents the likelihood of exhibiting depressive symptoms is similarly less likely in those who do seek preventative (M = .204, SD = .537) than those who do not (M = .243, SD = .606); however, the change in mean index scores for the factor of seeking preventative care at a choice place of health care is greater for black respondents than it is for non-black respondents.

TABLE 3

Means and Standard Deviations on the Self-Reported Depressive Symptoms Index for the Index Items

	Black Sample		**Other Sample**	
Depression Index Questions: In the past 30 days, how often have you felt …	Mean	SD	Mean	SD
so sad nothing cheers you up?	.417	.827	.408	.821
nervous?	.525	.894	.521	.905
restless/fidgety?	.555	.972	.556	.972
hopeless?	.222	.673	.212	.648
that everything was an effort?	.475	.966	.453	.945
worthless?	.172	.620	.168	.598

The results from the three-model hierarchical linear regression test are shown in Table 4. In each of the three models, reports by respondents of the existence of any of the five identified types of somatic symptoms was associated with a greater likelihood of experiencing more severe levels of depression. Black respondents who reported symptoms of join pain/aching/stiffness and pain in the jaw/front of ear were more likely to score higher on the self-reported depressive symptoms index ($p \leq .001$) from Table 3. The significant difference between black respondents and non-black respondents in the positive effect of self-reports of these two types of somatic symptoms on the likelihood of self-reports of depressive symptoms remained throughout all three models—even after controlling for other sociodemographic factors in Model 3. In Model 2, when variables for health care options/care were included, black respondents having one or more places to go when they are sick scored higher on the self-reported depressive symptoms index ($p \leq .01$) while similar responses from non-black respondents had nearly no effect on their index scores. The beta coefficient for this variable remained constant (.051) for black respondents even after other sociodemographic factors were included. For both black and non-black respondents, when routine and preventative care was sought at their usual places of care, there was a decrease in the likelihood of experiencing depressive symptoms. Among the sociodemographic factors that were tested for, only marital status had a statistically significant effect on respondents' index scores ($p \leq .0001$). Black and non-black, married respondents were less likely to report depressive symptoms.

Conclusion

The purpose of the present study was to explore whether or not somatic symptoms could be good indicators to screen for depression—particularly in black populations. Results from this study support the conclusion that self-reported somatic symptoms had a positive effect on the likelihood that respondents also reported depressive symptoms. When joint pain/aching/stiffness and pain in the jaw/front of ear were reported by black respondents, they were more likely to score higher on the self-reported depressive symptoms index as compared to their non-black counterparts.

Black respondents who reported having one or more usual places to go when sick were more likely to report depressive symptoms while the effect of health care service options on index scores had very little effect for non-black respondents. Considering there was a decrease in index scores for respondents who reported seeking routine and preventative care, the prevalence of depressive symptoms in black respondents who do

have health care service options may be a result of those respondents not seeking routine and preventative care.

TABLE 4

Hierarchical Models of Independent Variables on Self-Reported Depressive Symptoms Index for Black Adults Compared to Other Races

	Model 1		Model 2		Model 3	
	Black (β)	Other (β)	Black (β)	Other (β)	Black (β)	Other (β)
Variable						
Somatic Symptoms						
Symptoms of joint pain/aching/stiffness past 30 days	.132***	.105***	.125***	.102***	.131***	.108***
Had neck pain, past 3 months	.031	.101***	.044**	.098***	.043*	.098***
Had low back pain, past 3 months	.113***	.111***	.122***	.110***	.123***	.111***
Had pain in jaw/front of ear, past 3 months	.088***	.072***	.083***	.075***	.081***	.074***
Had severe headache/ migraine, past 3 months	.116***	.152***	.094***	.153***	.083***	.147***
Health Care Options/ Care						
Have a place usually go when sick			.051**	.002	.051**	.000
Usually go there for routine/preventative care			-.032	-.020*	-.027	-.018*
Sociodemographic Factors						
Age					-.006	-.010
Gender					-.032	-.011
Education					.011	-.003
Family income/ poverty threshold					.032	0.12
Marital Status					-.075***	-.070***
R^2	.094	.119	.094	.118	.102	.123

*p≤.05
** p≤.01
***p≤.001

One of the benefits of using the 2006 NHIS was that the sample is nationally representative and few studies on the co-morbidity of pain and depression have used large samples. Since the intent of the present study was to explore whether or not somatic symptoms would be good indicators to screen for depression in patients, one of the limitations of the study is that the somatic and depressive symptoms are self-reported rather than objectively identified. Objective medical examinations can be especially beneficial in health disparities studies because cultural differences exist in how patients discuss their health. Another limitation of the present study is that there was potentially significant cultural differences in question responses among black respondents. Future studies of racial and ethnic differences in the co-morbidity of pain and depression should explore differences, for example, between Caribbean and African American black participants.

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