

# Ethnic Differences in Separate and Additive Effects of Anxiety and Depression on Self-rated Mental Health Among Blacks

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## Abstract

**Aim** The aim of this study was to explore ethnic differences in the separate and additive effects of anxiety and depression on self-rated mental health (SRMH) of Blacks in the USA.

**Methods** With a cross-sectional design, we used data from a national household probability sample of African Americans ( $n=3570$ ) and Caribbean Blacks ( $n=1621$ ) who participated in the National Survey of American Life, 2001–2003. Demographic factors, socio-economic factors, 12-month general anxiety disorder (GAD) and major depressive disorder (MDD), and current SRMH were measured. In each ethnic group, three logistic regressions were used to assess the effects of GAD, MDD, and their combinations on SRMH.

**Results** Among African Americans, GAD and MDD had separate effects on SRMH. Among Caribbean Blacks, only MDD but not GAD had separate effect on SRMH. Among African Americans, when the combined effects of GAD and MDD were tested, GAD but not MDD was associated with SRMH.

**Conclusion** The separate and additive effects of GAD and MDD on SRMH among Blacks depend on ethnicity.

Although single-item SRMH measures are easy methods for the screening of mental health need, community-based programs that aim to meet the need for mental health services among Blacks in the USA should consider within-race ethnic differences in the applicability of such instruments.

**Keywords** Ethnic groups · Psychiatric disorders · Anxiety · Depression · Self-rated mental health

## Introduction

Since the earliest days of the Community Mental Health Movement, the application of brief cost-effective methods for estimating mental health needs in the community has been a central topic of interest of psychiatric epidemiology [1–5]. Recently, the Institute of Medicine (IOM) recommended the use of single-item self-rated health indicators of health care need [6–8]. The single-item self-rated mental health (SRMH) item asks respondents to rate their overall mental health as “excellent, very good, good, fair, or poor” [9]. SRMH has been shown to be a strong predictor of help-seeking behavior and use of professional services [10]. Low SRMH also predicts the degree to which the individual adheres to prescriptions for psychiatric disorders [11].

Self-assessment and the perception of one’s mental health as fair or poor prompt a complex cognitive process that is needed for decision-making related to use of mental health care [12–14]. Although trust toward the system, knowledge about the service network, ability to access those locations, and financial capability to pay for care are important [14], the process of seeking help typically does not begin until the individual perceives his or her own mental health as poor [10, 15–22].

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Given its importance for understanding the process of decision-making to seek specialty mental health care [23], there is interest in clarifying what SRMH measures represent [24–29]. SRMH is correlated with a range of multi-item mental health measures such as the K6 scale of nonspecific psychological distress and the Patient Health Questionnaire [25]. In addition, decline in SRMH is linked to risk of discrete mental disorders such as major depressive disorder (MDD), and generalized anxiety disorder (GAD) [1, 2, 24, 30, 31]. In fact, SRMH is employed in some primary care settings as a screening tool for risk of psychiatric disorders [32, 33].

The functionality of SRMH is complicated by the fact that race and ethnicity [24, 26, 28] modify the relationship of SRMH to other measures of mental disorder. For example, one study found that the relationship between SRMH and mental disorders was strongest in non-Hispanic Whites compared to non-Hispanic Blacks, Hispanics, and Asians [24]. Another study found that SRMH was significantly associated with any 12-month *DSM-IV* disorder among Filipinos, but not for Vietnamese and Chinese respondents [28]. As a result, the relationship between DSM disorders and SRMH within the context of ethnic differences is not well understood [28]. Furthermore, no studies to date have investigated the association between psychiatric disorders and SRMH for U.S. Black ethnic groups.

The purpose of this paper is to analyze data from the National Survey of American Life (2003) to identify the relationships among SRMH, MDD, and GAD. The paper uses nationally representative data for two ethnic groups, African Americans and Caribbean Blacks, to investigate the following research questions: (1) What are the separate and additive effects of meeting criteria for MDD and GAD on SRMH in a national sample of Blacks? (2) Does within-Black ethnicity modify the separate and additive effects of GAD and MDD on SRMH?

## Methods

### Survey

This was a secondary analysis of the National Survey of American Life (NSAL), 2001 to 2003. The NSAL data were collected by the Program for Research on Black Americans at the Institute for Social Research, University of Michigan, Ann Arbor. Study design and sampling have been described in detail elsewhere [34].

### Participants

Participants were 3570 African American and 1621 Caribbean Black adults (aged 18 or older).

### Ethics

The study has been approved by the University of Michigan Institutional Review Board. Participants received compensation for participating in this study.

### Interview

Most interviews were face to face and conducted within participants' homes. The overall response rate of the study was 72.3 %. The response rate was 70.7 % for African Americans and 77.7 % for Caribbean Blacks.

### Measures

**SRMH** Participants were asked “How would you rate your overall mental health—excellent, very good, good, fair, or poor?” Responses included five categories from excellent, very good, good, fair, and poor. A higher score indicates better global mental health [35]. We dichotomized this measure to fair/poor versus excellent/very good/good [36]. Single-item indicators of health have been applied to several aspects of health and well-being including life satisfaction [37]. Test-retest reliability for single items is high, ranging from 0.7 to 0.8 for brief time intervals [38]. These measures also show strong correlations with much longer scales [38]. A review showed that in 23 of 27 studies, self-rated health was associated with mortality above and beyond the effect of age, socioeconomic status, and, in several studies, chronic conditions and medical risk factors [39].

### Socio-demographic Data

Socio-demographic factors including age, gender, education level (less than high school, high school graduate, some college, college graduate), marital status (married, previously married, never married), employment (employed, unemployed, not in labor force), and geographical region (Northeast, Midwest, South, and West Census regions) were measured.

### Psychiatric Disorders in the Past 12 Months

A modified version of the World Mental Health Composite International Diagnostic Interview (WMH-CIDI) was used to evaluate anxiety and depression based on the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)*. The measure was developed for the World Mental Health project initiated in 2000 [40]. The CIDI requires trained lay interviewers to generate diagnoses of lifetime and recent *DSM-IV-TR/ICD-10* disorders [41]. Clinical reappraisal studies have documented generally good concordance for CIDI diagnoses with diagnoses made by psychiatrists [40,

42, 43]. The CIDI has shown to be valid among Blacks [44–46]. A comparison of the CIDI and the SCID for MDE for respondents in the clinical reappraisal sample has indicated higher concordance for African Americans ( $\kappa=0.43$ ; 95 %) than Whites ( $\kappa=0.27$ ) [44].

**Statistical Note**

To account for the complex sampling design, we used Stata 13.0 for data analysis. Standard errors were estimated using the Taylor series approximation technique; thus, all findings in this study reflect the study’s complex design. Within each ethnicity, we conducted three logistic regressions. First, we ran logistic regressions with the main effects of GAD or MDD. Then, we ran logistic regressions with GAD and MDD simultaneously in the model. In all models, SRMH was the outcome (fair/poor versus excellent/very good/good), 12-month GAD or (and) MDD were predictor(s), and socio-economic factors (age, education, marital status, and employment) were controls. Geographic region was not included in the regression analyses because the model did not converge because very few Caribbean Blacks were sampled from the south who may have GAD or MDD. *P* values less than 0.05 were considered statistically significant. Adjusted odds ratio (OR) and 95 % confidence interval (CI) were reported.

**Results**

Table 1 describes the demographics, socio-economics, and SRMH of African Americans and Caribbean Blacks.

Multiple ethnic differences were found in separate and combined effects of anxiety and depression on SRMH. Not being in labor force was associated with poor SRMH among Caribbean Blacks and African Americans, while age and gender were not correlated with SRMH. While among African Americans never married was protective for SRMH, never married Caribbean Blacks reported worse SRMH. Unemployment was only associated with poor SRMH among African Americans but not Caribbean Blacks. In addition, while all levels of education more than 11 years were protective for Caribbean Blacks, only 12 years of education was associated with better SRMH among African Americans (Tables 2 and 3).

Among African Americans, GAD and MDD were related to SRMH while all covariates were controlled. Among Caribbean Blacks, MDD but not GAD was linked to SRMH with all covariates controlled (Tables 3 and 4).

Table 4 shows the additive effects of GAD and MDD on SRMH. When GAD and MDD were entered simultaneously (and with all covariates) into a logistic regression model for African Americans, GAD, but not MDD, was significantly associated with SRMH. The additive effects of GAD and

**Table 1** Demographic and socio-economic characteristics of Caribbean Blacks and African Americans

Characteristics	African American <i>n</i> (%)	Caribbean Black <i>n</i> (%)
Gender		
Male	1271 (44.03)	643 (50.87)
Female	2299 (55.97)	978 (49.13)
Marital status		
Married	960 (32.91)	559 (37.56)
Partner	260 (8.74)	131 (12.58)
Separated	286 (7.16)	128 (5.37)
Divorced	524 (11.75)	178 (9.29)
Widowed	353 (7.90)	78 (4.29)
Never married	1170 (31.55)	542 (30.92)
Geographical region		
Northeast	411 (15.69)	1135 (55.69)
Midwest	595 (18.81)	12 (4.05)
South	2330 (56.24)	456 (29.11)
West	234 (9.25)	18 (11.14)
SRMH		
Excellent	1059 (31.0)	512 (37.50)
Very good	1166 (34.8)	491 (35.60)
Good	795 (23.00)	289 (15.20)
Fair	354 (9.60)	96 (7.90)
Poor	62 (1.60)	20 (3.80)
	Mean (SD)	Mean (SD)
Education	12.43 (2.23)	12.93 (1.00)
Age (years)	42.33 (14.50)	40.28 (5.78)
Income (\$ US)	36,846 (33,236)	47,017 (15,242)

Sampling weights have been applied

*SRMH* self-rated mental health, *SD* standard deviation

MDD on SRMH for Caribbean Blacks showed similar findings as separate effects for this group.

**Discussion**

This study found that GAD is associated with SRMH for African Americans and that MDD is associated with SRMH for Caribbean Americans. These findings suggest that the meaning and determinants of SRMH among Blacks are specific to ethnicity. These findings are consistent with previous research which has documented some racial and ethnic differences in the associations between mental disorders and SRMH [24, 26, 28]. Unfortunately, it is not clear how SRMH reflects the past, current, and future mental health of individuals with psychiatric disorders across different racial and ethnic populations [25, 29]. These results highlight the need for more research on how ethnicity modifies the role of MDD and GAD on SRMH [47–57].

**Table 2** Adjusted associations between 12-month depression and self-rated mental health among African Americans and Caribbean Blacks

	African Americans			Sig	Caribbean Blacks			Sig
	Odds ratio	95 % CI			Odds ratio	95 % CI		
Depression	5.26	1.98	13.98	0.002	7.20	1.50	34.59	0.016
Gender <sup>a</sup>	1.24	0.63	2.47	0.522	1.04	0.28	3.90	0.949
Age	0.99	0.97	1.01	0.480	1.01	0.96	1.06	0.674
Employment status <sup>b</sup>								
Unemployed	7.32	2.60	20.61	<0.001	0.10	0.01	0.93	0.043
Not in labor force	9.41	3.17	27.95	<0.001	5.44	1.33	22.35	0.021
Education level <sup>c</sup>								
12 years	0.44	0.22	0.89	0.023	0.06	0.01	0.40	0.005
13–15 years	0.59	0.18	2.00	0.389	0.03	0.00	0.27	0.003
More than 15 years	0.74	0.37	1.49	0.39	0.01	0.00	0.14	0.001
Marital status <sup>d</sup>								
Divorced/separated/widowed	0.91	0.40	2.07	0.819	0.57	0.03	11.36	0.702
Never married	0.35	0.13	0.94	0.038	15.23	1.99	116.64	0.011

*SE* standard error, *CI* confidence interval

<sup>a</sup>Reference group=male

<sup>b</sup>Reference group=education less than 12 years

<sup>c</sup>Reference group=employed

<sup>d</sup>Reference group=married

Finding that among African Americans GAD but not MDD is related to fair/poor SRMH may have different explanations. In line with studies in which the effect of anxiety on well-

being has stayed significant while depression is controlled [58, 59], one potential interpretation is that anxiety may be more bothersome than depression for African Americans. In

**Table 3** Association between 12-month anxiety and self-rated mental health among African Americans and Caribbean Blacks

	African Americans			Sig	Caribbean Blacks			Sig
	Odds ratio	95 % CI			Odds ratio	95 % CI		
Anxiety	13.90	6.15	31.43	<0.001	0.70	0.02	28.61	0.846
Gender <sup>a</sup>	1.17	0.61	2.27	0.623	0.58	0.13	2.51	0.446
Age	0.99	0.97	1.01	0.347	0.99	0.94	1.05	0.792
Employment status <sup>b</sup>								
Unemployed	7.38	2.57	21.21	<0.001	0.10	0.01	0.96	0.046
Not in labor force	10.19	3.37	30.77	<0.001	5.45	1.90	15.67	0.003
Education level <sup>c</sup>								
12 years	0.39	0.19	0.82	0.015	0.05	0.01	0.39	0.006
13–15 years	0.48	0.15	1.52	0.206	0.02	0.00	0.27	0.004
More than 15 years	0.76	0.36	1.58	0.445	0.01	0.00	0.13	0.001
Marital status <sup>d</sup>								
Divorced/separated/widowed	0.90	0.41	1.94	0.772	0.65	0.04	10.66	0.753
Never married	0.36	0.14	0.92	0.035	9.66	2.78	33.53	0.001

*SE* standard error, *CI* confidence interval

<sup>a</sup>Reference group=male

<sup>b</sup>Reference group=education less than 12 years

<sup>c</sup>Reference group=employed

<sup>d</sup>Reference group=married

**Table 4** Combined effects of 12-month anxiety and depression on self-rated mental health among African Americans and Caribbean Blacks

	African Americans			Sig	Caribbean Blacks			Sig
	Odds ratio	95 % CI			Odds ratio	95 % CI		
Anxiety	9.45	3.36	26.56	<0.001	0.06	0.00	4.76	0.199
Depression	2.70	0.68	10.77	0.153	12.84	2.52	65.32	0.004
Gender <sup>a</sup>	1.09	0.56	2.15	0.790	0.98	0.30	3.22	0.97
Age	0.99	0.97	1.02	0.537	1.01	0.97	1.06	0.591
Employment status <sup>b</sup>								
Unemployed	7.13	2.37	21.44	0.001	0.10	0.01	1.05	0.054
Not in labor force	9.61	3.19	28.99	<0.001	7.77	1.85	32.72	0.007
Education level <sup>c</sup>								
12 years	0.40	0.19	0.85	0.019	0.06	0.01	0.43	0.008
13–15 years	0.49	0.15	1.55	0.215	0.03	0.00	0.24	0.003
More than 15 years	0.76	0.37	1.57	0.447	0.01	0.00	0.14	0.001
Marital status <sup>d</sup>								
Divorced/separated/widowed	0.91	0.42	1.96	0.807	0.24	0.01	4.95	0.341
Never married	0.37	0.15	0.93	0.035	8.53	2.50	29.12	0.001

SE standard error, CI confidence interval

<sup>a</sup>Reference group=male

<sup>b</sup>Reference group=education less than 12 years

<sup>c</sup>Reference group=employed

<sup>d</sup>Reference group=married

this view, African Americans may better tolerate MDD than GAD. Finally, recency and age of onset of GAD and MDD may be different for African Americans. Although we do not know why GAD has a stronger effect on SRMH of African Americans, our findings elevate the significance of anxiety symptoms over and above the symptoms of depression in the lay public mental illness taxonomy of African Americans. Further research is needed on the mechanism behind this finding.

Although *DSM-5* views depression and anxiety as distinct psychiatric disorders, these disorders tend to be comorbid, have major overlap, and have fuzzy boundaries [60–66]. Non-specific response of anxiety and depression to treatments and interventions [67] has also questioned the independence of GAD and MDD [67]. Mergl et al. suggested that anxiety and depression may be “variations of a common theme,” as they both partially represent a common underlying pathology and involve similar genetic predisposition [61]. It has been shown that 72 % of individuals with lifetime anxiety have a history of depression and 48 % of lifetime depression cases have a history of anxiety [60].

Our findings suggest that GAD and MDD overlap substantially for African Americans, and when they overlap, symptoms of GAD may be much more prominent than symptoms of MDD with respect to subjective assessments of mental health as “fair/poor.” These findings are important with

respect to how these disorders are experienced within the culturally defined mental health framework of African Americans. Future research should concentrate more heavily on the practical utility of making rigid distinctions between these two disorders within community-based cultural frameworks where the important issue is to understand how help-seeking behaviors follow changes in self-assessed mental health as opposed to meeting criteria for any particular DSM disorder [68–71].

Differential correlation of psychiatric disorders and SRMH based on ethnicity can be interpreted as different validity of single-item SRMH measures as a screening tool for these two Black ethnic groups. Relying on such single items may result in larger false-negative rates among Blacks than Whites [26, 72]. Differential association between psychiatric disorders and SRMH has diagnostic and clinical implications for the practice of psychiatry with Blacks [73, 74]. This is particularly true for psychiatric diagnoses that rely on self-reported level of dysfunction in the process of interviewing the patient [68, 73, 74].

Our findings have implications for the applicability of SRMH as a screening tool for detection of individuals with a high likelihood of GAD and MDD. Although SRMH can be considered a useful tool for screening of GAD and MDD for African Americans, SRMH does not reflect 12-month GAD or Caribbean Blacks [28]. As for Caribbean Blacks SRMH

provides no meaningful information regarding GAD, other screening measures should be developed to detect Caribbean Blacks with GAD in the community setting. SRMH can still be a useful screening tool for detection of GAD and MDD in the community of African Americans. Such variation has important implications for the process of detection and treatment of GAD of Blacks in the community or primary care setting, where SRMH is a commonly used screening tool.

The findings reported have important implications for better understanding the central role of SRMH in linking mental health need to perceived need and health care utilization among Blacks in the USA. Based on our findings, SRMH may explain why ethnic groups of Blacks with a similar level of mental health need use mental health services differently [24, 26, 28]. Unfortunately, very little is known about the role of SRMH in linking mental health need and mental health service use of ethnic minority groups [15]. The Medical Expenditure Panel Survey (MEPS) 2000–2004 also showed that the effect of SRMH on service use is weaker for Blacks than Whites [75].

This study had a number of limitations. We only used anxiety and depression, and several common psychiatric disorders such as drug abuse, alcohol abuse, panic disorder, and post-traumatic stress disorder (PTSD) were not considered. We also did not know if participants had received any diagnosis related to a psychiatric disorder. Another limitation is that single-item scales are sensitive to the contextual effects of preceding questions in survey instruments [38]. Using nationally representative data was a unique strength of this study.

In conclusion, the findings reported here highlight the need for future research on the complex relationships among race, ethnicity, psychiatric disorders, and SRMH [24]. These findings are also relevant for a better understanding of how Caribbean Blacks and African Americans differ in how GAD and MDD influence self-defined mental health and perceived need for mental health care. In line with other studies that have documented ethnic differences in the relationship of psychiatric disorders and SRMH [28], the findings suggest the need for ethnic-specific strategies for promotion of mental health care use among Blacks. Due to different historical life experiences, socio-economic status, discriminatory experiences, trust toward the health care system, psychiatric disorders, and mental health care use between African Americans and Caribbean Blacks [44, 76–80], an understanding of ethnic differences should be an important component of mental health promotion programs for Blacks in the USA.

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from Interuniversity Consortium for Political and Social Research (ICPSR), Institute for Social Research at the University of Michigan.

**Conflict of Interest** The authors declare that they have no competing interests.

**Ethics** Harold W. Neighbors contributed to the design and the conduct of NSAL. Shervin Assari designed the current work, analyzed the data, and drafted the manuscript. Masoumeh Dejmian and Harold W. Neighbors contributed to the interpretation of the results and the drafting and revising of the manuscript. All authors confirmed the final draft.

Informed consent was obtained from all individual participants included in the study. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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