Beyond Hispanics: Sub-Ethnic Differences in Depression, Post-Traumatic Distress, and Suicidal Ideation Among Patients with Coronary Heart Disease

Objectives: Our study of cardiac outpatients participating in a mental health screening program aimed to explore: a) sub-ethnic differences in the severity and/or prevalence of depression, post-traumatic stress disorder, and suicidal ideation, and b) whether intrusion and avoidance symptoms of distress equally or differentially predict severity of depression among sub-ethnic groups.

Design: Five hundred ninety Caucasian (n=103) and immigrant Hispanic (n=487) cardiac outpatients were recruited. Participants completed measures of depression and post-traumatic stress symptoms and were categorized into sub-ethnic groups according to regional and national origins.

Results: For regional comparisons, South American and Caribbean Hispanic patients exhibited greater symptoms of depression than US born Caucasians (UBC). Significant differences in the proportion of patients screening positive for depression were found among regional sub-ethnic groups. When these groups were further stratified by national origin, Colombian and Dominican patients demonstrated higher levels of depression than UBC patients. Dominican patients reported greater levels of distress than UBC patients. Significant differences in rates of positive depression screens were found among comparisons between UBC and Hispanic national sub-ethnic groups. Finally, stepwise regression analyses revealed that intrusion symptoms predicted depression severity better than avoidance symptoms among all of sub-ethnic groups tested.

Conclusion: The findings suggest that collapsing ethnic sub-groups into catchall ethnic labels may undermine high resolution screening strategies for concurrent medical and psychiatric conditions. (*Ethn Dis.* 2013;23[3]:296–303)

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Introduction

It is well-documented that patients with coronary heart disease (CHD) present with an elevated risk for symptoms and diagnoses of psychiatric disorders. Notably, elevated severity and rates of depression and post-traumatic stress disorder (PTSD) have been reported among patients with both acute and stable CHD.[1–3] Approximately 20% of patients with CHD are diagnosed with depression[2] and concurrent depression is associated with iatrogenic treatment and functional outcomes,[4,5] medication non-adherence,[6] and is a significant risk factor for cardiac mortality and morbidity after acute myocardial infarction (MI).[7] An additional clinical concern in this population is suicidal ideation (SI) with one study finding a prevalence of 12% among CHD patients.[8] With regard to concurrent PTSD, a recent study on 100 stable CHD outpatients found that 29% also had PTSD[9] and concurrent PTSD has been associated with adverse medical outcomes including medication non-adherence[10] and physiological changes linked to advancement of cardiac disease.[11] These findings have led to recommendations for systematic screening of psychiatric symptoms in medical settings. However, the majority of these studies have been restricted to Caucasian samples.

To date, studies that have investigated ethnic differences in the prevalence and severity of psychiatric symptoms among patients with CHD have yielded mixed findings. One study of 571 patients with coronary artery disease demonstrated that Hispanics exhibited higher levels of depression than Caucasians and African-Americans.[12] Other research among patients with chronic heart failure found no differences in levels of depression and anxiety between Hispanics and Caucasians[13] and research among primary care patients have generally found no ethnic differences in depression severity.[14] Unfortunately, existing studies have been solely restricted to those utilizing broad-ethnic categories.

In recent decades there have been growing concerns over limitations associated with using broad ethnic labels (ie, Hispanics) in public health research. Broad ethnic labels often underestimate important within-group heterogeneity[15] and can bring about excessive stereotyping or ineffectual categorizations.[16] Given the higher cultural resolution provided by sub-ethnic categories relative to broad ethnic labels,[17,18] the literature suggesting focus on sub-ethnic categories has expanded and it has become increasingly important to establish its significance among psychiatrically and medically vulnerable populations.

Consistent with this trend, empirical evidence suggesting that findings at the broad-ethnic level are not necessarily congruent with those at the sub-ethnic level are available.[18] Studies among non-CHD samples, for example, suggest that Caribbean Hispanics confer a greater risk for depression,[19] PTSD,[20] and SI,[21] while Dominicans are particularly vulnerable towards PTSD.[22] As such, a more refined understanding of concurrent psychiatric symptoms among patients with CHD requires examination at a sub-ethnic level and

using categories that afford higher resolution.[23]

Previously, one study reported data demonstrating that, among a large sample of cardiac outpatients, Hispanic patients scored significantly higher on measures of depression, but not PTSD, relative to Caucasians.[24] No ethnic differences in SI were reported. The study was the first to examine ethnic differences in both depression and PTSD among an ethnically diverse sample of cardiac patients. However, as with other studies, the authors adopted the common practice of relying on broad ethnic indexes.

Our study of cardiac outpatients participating in a mental health screening program aimed to explore: a) sub-ethnic differences in the severity and/or prevalence rates of depression, distress associated with PTSD, and SI, and b) whether intrusion and avoidance symptoms of distress equally or differentially predicted severity of depression among sub-ethnic groups. We restricted our focus to comparison between Hispanic

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and Caucasian sub-ethnic groups, with the latter as the reference group. We predicted that broad-ethnic findings[24] would not necessarily fully generalize to findings from the sub-ethnic level.

METHOD

Participants/Procedures

Participants in this study were 590 patients who were registered for an outpatient cardiology visit at Elmhurst Hospital. This sample was drawn from a larger cohort of patients ($N = 1003$) who were screened for concurrent psychiatric symptoms between June 2005 and November 2007 as part of the Interdisciplinary Cardiology Outpatient Program at Elmhurst Hospital Center (I-COPE). Elsewhere, our group has reported full details of this mental health screening program, patient characteristics, and study procedures of the initial sample.[24] Elmhurst Hospital Center services a socioeconomically uniform patient population. As part of the New York City Health and Hospitals Corporation (HHC), it accepts patients who have no health insurance or public insurance (eg, Medicaid, other managed care) and the vast majority of patients are immigrants. There are no patients with access to private health insurance. All procedures were approved by the Institutional Review Board at the Mount Sinai School of Medicine.

Coding

Sub-ethnic groups were operationalized based upon self-reported ethnic categorizations in conjunction with data regarding participant national origins. Inevitably, adequate sample sizes were given attention for statistical purposes. First, Hispanic participants were grouped according to those born in Central/South America, the Caribbean, and Mexico. A further distinction was made within the Hispanic group for a second set of comparisons. We differentiated between those born in Colombia,

Ecuador, Dominican Republic, Puerto Rico, and Mexico, restricting the sample to the largest sample sized sub-ethnic groups derived from the Hispanic patient group. The validity and increased benefit of using these distinctions has been supported in previous studies[25–27] The Caucasian sub-groups were first contrasted with the first set of Hispanic sub-groups, followed by comparisons with a second set of sub-groups. Tables 1 and 2 present the demographic data for the three samples of comparisons. Table 3 presents raw scores on psychiatric outcomes and proportion of patients screening positive for depression, PTSD, and SI stratified by sub-ethnic group.

Measures

Demographic Variables

Medical record reviews were conducted to obtain information on demographic variables including sex, age, ethnicity, and country of origin. The ethnicity category available in the medical record was derived from patient self-report among a list of forced-choice options. Our study only included patients who identified Hispanic or Caucasian as their ethnicity. Multiracial was not an option but patients could have selected other.

Patient Health Questionnaire-9

The Patient Health Questionnaire-9[28] (PHQ-9) comprises nine self-reported items that directly match the nine diagnostic criteria on which diagnosis of *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) Major Depressive Disorder (MDD) is suggested. Several studies have established its good reliability and validity.[29] Of note, studies[30,31] using ROC curve analyses to investigate the predictive validity of the PHQ-9 has found the measure to discriminate well between those individuals with and without major depression as assessed by the

Table 1. Demographic characteristics of sample I, N=590

	South Hispanic n=301	Caribbean Hispanic n = 137	US-Caucasian n=67	Central Hispanic n=22	European n=36	Mexican n=27	F or χ² Value
Age, mean (SD)	62.75 (13.56)	63.89 (14.08)	63.19 (13.23)	56.91 (17.46)	68.31 (10.14)	44.07 (16.93)	11.49[a]
Sex							
Male, n (%)	171 (56.8)	74 (54.0)	46 (68.7)	9 (40.9)	22 (61.1)	14 (51.9)	7.08
Female, n (%)	130 (43.2)	63 (46.0)	21 (31.3)	13 (59.1)	14 (38.9)	13 (48.1)	

[a] $P<.001$.

Structured Clinical Interview for DSM-IV disorders[32] and the Mini-International Neuropsychiatric Interview.[33] Furthermore, some studies have confirmed cross-ethnic structural validity,[34,35] lack of differential item functioning,[34] and measurement invariance[36] of the PHQ-9. In addition to using the PHQ-9 as a continuous measure of depressive severity, we used values ≥10 to screen for cases of MDD.[30] This cut-off has shown good sensitivity and specificity.[30] Finally, we used the last item on the PHQ-9 ("thoughts that you would be better off dead or of hurting yourself") as a proxy for SI with any score >0 indicating the presence of SI.

Impact of Events Scale

The Impact of Events Scale[37] (IES) comprises 15 self-reported items that assess particular reactions in relation to any stressful event. We adapted this measure to specify that participants should key items to heart disease, effectively serving as a screening tool for PTSD. This is consistent with procedures used by other studies using the IES among cardiac populations.[10,38]

The instrument comprises two related but distinct dimensions of reactions to trauma: intrusion and avoidance. The first dimension consists of 7 items and refers to automatic thoughts, feelings, and memories of the event (ie, intrusive ideas, images, pangs of emotions, or nightmares). Sample items include: "I have waves of strong feelings about the illness" and "I had dreams about the illness." The second dimension comprised 8 items and refers to cognitive or behavioral efforts directed at avoiding reminders of events (ie, ideas, emotions, or situations). Sample items include: "I stayed away from reminders of the illness" and "I tried to remove the illness from my memory." Good reliability and validity have been confirmed in several studies.[39,40] Furthermore, studies have found comparable reliability of the IES among cardiac populations[41] relative to other traumatic populations.[42] Importantly, studies have demonstrated that higher scores on the IES can predict higher levels of later distress[43–45] and PTSD.[46] Finally, studies have validated the IES among Spanish-speaking patients.[47] In addition to using the IES as a continuous

measure of post-traumatic stress symptoms, we used a screening cut-off of 19 for identifying cases of PTSD, which has demonstrated excellent sensitivity and adequate specificity.[48]

Statistical Analyses

All analyses were conducted using SPSS 18.0 statistical package (SPSS Inc., Chicago, IL, USA). In order to improve the distributional characteristics of the data, the PHQ, IES, and Intrusion and Avoidance subscales were transformed using Box-Cox power transformations with a λ value of .40.[49] Following recommendations,[50] we anchored all scales to 1 before transformations. To facilitate interpretation, however, we report on raw mean scores and their standard deviations.

Descriptive statistics were used to compare the demographic profiles and frequencies of psychiatric symptoms across the three samples used in the study. A series of one-way analyses of variance (ANOVAs) were used to examine between-group differences on continuous psychiatric variables. Consistent with recommendations for post-hoc tests involving unequal and modest

Table 2. Demographic characteristics of sample II, N = 462

	Colombian n=155	Dominican n=99	Ecuador n=88	US-Caucasian n=67	Mexican n=27	Puerto Rican n=26	F or χ² Value
Age, mean (SD)	62.32 (12.92)	61.45 (14.54)	64.09 (14.92)	63.19 (13.23)	44.07 (16.93)	70.50 (11.29)	11.49[a]
Sex							
Male, n (%)	86 (55.5)	51 (51.5)	51 (58.0)	46 (68.7)	14 (51.9)	14 (53.8)	5.48
Female, n (%)	69 (44.5)	48 (48.5)	37 (42.0)	21 (31.3)	13 (48.1)	12 (46.2)	

[a] $P<.001$.

Table 3.   PHQ and IES Scores and % above threshold for PHQ, IES, and SI by sub-ethnic group

	PHQ Mean (SD)	PHQ Threshold	IES Mean (SD)	IES Threshold	Intrusion Mean (SD)	Avoidance Mean (SD)	Suicide Threshold
US-C	4.10 (5.51)	15.9	9.02 (14.98)	17.2	4.22 (7.52)	4.79 (7.92)	8.3
Euro	5.85 (5.88)	25.9	13.08 (17.21)	24.0	5.64 (8.08)	7.68 (10.18)	7.4
Central-H	7.05 (6.05)	27.3	12.40 (15.00)	22.7	6.80 (8.27)	5.60 (7.59)	13.6
South-H	6.57 (6.29)	27.6	13.84 (15.09)	31.2	6.09 (7.01)	7.20 (8.58)	11.6
Caribbean-H	7.64 (6.78)	37.9	14.17 (14.12)	30.7	6.17 (6.93)	7.84 (8.00)	12.2
Colombian	7.27 (6.61)	33.8	13.43 (14.67)	31.4	5.90 (6.71)	7.02 (8.41)	13.0
Ecuadorian	5.72 (5.65)	18.8	14.34 (15.53)	29.2	6.80 (7.61)	6.62 (7.99)	7.5
Dominican	7.90 (6.87)	39.0	15.20 (14.36)	35.2	6.79 (7.20)	8.20 (7.87)	12.4
PR	8.25 (7.02)	41.7	11.52 (13.86)	19.1	4.90 (6.87)	6.62 (7.88)	20.8
Mexican	4.33 (4.40)	18.5	12.75 (13.46)	25.0	5.46 (6.37)	7.50 (8.43)	3.7

PHQ, Patient Health Questionnaire-9; IES, Impact of Events Scale; SI, suicidal ideation; US-C, US-born Caucasians; Euro, European-Caucasians; Central-H, Hispanics from Central America; South-H, Hispanics from South America; Caribbean-H, Hispanics from Caribbean; PR, Hispanics from Puerto Rico.

sample sizes,[51] the Games-Howell test was used to clarify the nature of any observed effects. Chi-tests or Fischer's exact tests were conducted to compare categorical variables (screening positive for depression, PTSD, SI, and comorbid depression and PTSD). Finally, we used stepwise multiple regressions to examine the differential predictive contributions of sex and distress on depression as a function of sub-ethnic group.

RESULTS

Comparison Sample I

Demographics

A total of 590 (336 male, 254 female) were included in the first set of comparisons with an average age of 62.40 (SD = 14.33). The sample comprised the following sub-ethnic groups stratified by regional origin: US-Caucasians ($n=67$), European-Caucasians ($n=36$), Central Hispanics ($n=22$), South Hispanics ($n=301$), Caribbean Hispanics ($n=137$), and Mexico ($n=27$). Groups did not significantly differ on ratio of sexes. A one-way ANOVA revealed significant differences in age across groups, $F (1, 583) = 12.16, P=.001$. Mexicans were significantly younger relative to all other groups except Central Hispanics (Games-Howell test; all $Ps=.000$).

Psychiatric Comparisons

Groups significantly differed on proportion screening positive for depression, $\chi^2 (5) = 11.57, P=.04$. Fisher's exact tests revealed no significant differences in screening positive for PTSD or SI.

Independent t tests revealed that females scored significantly higher on the PHQ, $t (529) = -3.67, P=.000$ and the IES, $t (598) = -3.06, P=.002$. There were significant differences between sex on screening positive for PTSD $\chi^2 (1) = 8.92, P=.003$ and depression, $\chi^2 (1) = 8.12, P=.004$. Examination of ratios revealed that females were more likely to screen positive for PTSD than males (56% vs 30%), as well as depression (53% vs 30%). There was no difference in ratio of sexes screening positive for SI.

Comparison II

Demographics

The second sample comparison comprised 462 patients (262 Male, 200 Female) with an average age of 62.00 (SD=14.66). The sample comprised the following sub-ethnic groups: US-Caucasians ($n=67$), Colombians ($n=155$), Ecuadorians ($n=88$), Dominicans ($n=99$), Puerto Ricans ($n=26$), and Mexicans ($n=27$). No differences between groups on ratio of sexes were found. There were significant differences in age across groups, $F (5, 456) =$ 11.49, $P=.000$. Mexicans were significantly younger relative to all others groups (Games-Howell post-hoc tests; all $P =.000$). As well, Colombians and Dominicans were significantly younger relative to Puerto Ricans (Games-Howell post-hoc tests; all $P<.016$).

Psychiatric Comparisons

Groups significantly differed in the ratio of patients screening positive for depression $\chi^2 (5) = 18.35, P=.003$, but not for PTSD. Fischer's exact tests revealed no significant differences in screening positive for SI. Independent t tests revealed that females scored significantly higher on PHQ, $t (416) = -3.07, P=.002$, but not IES. There were significant differences between sex on screening positive for depression $\chi^2 (1) = 6.12, P=.013$, but not PTSD. Examination of proportions revealed that females were more likely to screen positive for depression than males (35% vs 24%). There was no difference in proportion of sexes screening positive for SI.

Between-Group Comparisons of Continuous and Categorical Outcomes

Comparison I

A one-way ANOVA was conducted to test for group differences on PHQ scores. A significant main effect was found for group, $F (5, 525) = 3.86,$

$P=.002$, $\mu^2=.04$. Post-hoc Games-Howell tests revealed that South American ($P=.009$) and Caribbean Hispanics ($P=.002$), scored higher on the PHQ relative to US-Caucasians.

Three separate ANOVAs were conducted using group as the independent variable and IES, Intrusion, and Avoidance as dependent measures. No significant main effect emerged for any of the comparisons.

Comparison II

On the PHQ, an ANOVA demonstrated a significant main effect for group, F (5, 412) = 4.82, $P=.000$, $\mu^2=.06$. Post-hoc Games-Howell tests revealed that Colombians ($P=.002$) and Dominicans ($P=.002$) scored higher on the PHQ relative to US-Caucasians.

For the IES, there was a main effect for group, F (5, 351) = 2.39, $P=.037$, $\mu^2=.03$. Post-hoc Games-Howell test revealed that Dominicans ($P=.025$) scored higher than US-Caucasians. However, no main effects were observed for avoidance or intrusion (all Ps$>.05$).

Stepwise Multiple Regression

To determine which of the distress subscales – Intrusion or Avoidance – better predicts depression over and above sex, we conducted a series of stepwise multiple linear regressions. In the first step, sex, Intrusion, and Avoidance measures were entered. In the second step, we entered the sex × Intrusion and sex × Avoidance cross-products. Within both blocks, we used stepwise selection to identify significant predictors. Standardized betas for each regression model are presented in Table 4.

As can be seen, the separate aspects of distress were predictive of depression scores for all ethnic sub-groups. In some cases, both a distress factor and sex were retained as significant predictors, while in other cases, only intrusion was retained as significant predictors. Intrusion was the best predictor of depression in all sub-ethnic groups tested in order

of magnitude of prediction from highest to lowest: US-Caucasian ($\beta=.61$), Dominican ($\beta=.59$), Caribbean ($\beta=.57$), South Hispanic ($\beta=.52$), Colombian ($\beta=.52$), Ecuadorian ($\beta=.45$). The average proportion of variance of depression accounted for by Intrusion was 30.8% with a range from 20% to 37%. Further, sex continued to predict depression and was included in the final model in the two sub-ethnic groups in order of magnitude of prediction from highest to lowest (positive coefficient indicates prediction by female): Colombian ($\beta=.17$) and South Hispanics ($\beta=.12$). The average proportion of variance depression accounted for by sex was 15% ranging from 12% to 17%. The sex × Avoidance and sex × Intrusion cross-products were not significant for any of the sub-ethnic groups.

DISCUSSION

In our study, we investigated sub-ethnic differences in rates and severity of concurrent psychiatric symptoms among patients with CHD. In addition, we also examined whether intrusion and avoidance predicted depression equally or differentially in sub-ethnic groups. We predicted that findings at the broad-ethnic level would not neatly generalize to those found at the sub-ethnic level. Consistent with this prediction, differential results at the sub-ethnic level were established indicating a more complex patterning of results than found in a previous study[24] focusing on broad ethnic categories.

Hispanic patients from South America and the Caribbean showed greater depressive severity relative to US-Caucasian patients. Significant differences in prevalence of depression emerged across these groups with the highest rate observed among Hispanic patients from the Caribbean (38%) and lowest rate for US-Caucasian patients (16%). These findings are consistent with past research

indicating greater depressive symptoms and rates among Hispanics of Caribbean descent[19] and among medical populations[24] relative to Caucasians. However, they also extend similar findings to Hispanics of South American descent, a regional sub-group that has been given relatively little attention in the literature.

Shifting from regional to national origin breakdowns, Hispanics from Colombia and Dominican Republic showed higher depressive severity than US-Caucasian patients. While Puerto Rican patients did not score significantly higher than US-Caucasian patients, across these groups, prevalence of depression significantly differed with the highest rate observed among Puerto Rican patients (42%), followed by Dominican (39%) and Colombian (34%) patients. The relatively high rates of depression among Puerto Ricans, particularly in New York, have been confirmed by other reports.[19]

At the regional level, no differences in PTSD level were found. Prevalence of PTSD significantly differed across regional ethnic sub-groups with the highest rate found in Caribbean Hispanics (31%) and lowest among US-Caucasian patients (17%). Elevated severity and prevalence of PTSD among Caribbean Hispanics, relative to other Hispanics sub-groups, has been demonstrated in previous studies of non-CHD patients.[20] However, closer examination revealed that Dominican Hispanic patients showed more symptoms of PTSD relative to US-born Caucasian patients – a finding that emerged only at the national origin level. This is consistent with previous studies that have found Hispanic Dominicans to be particularly vulnerable to PTSD after traumatic event.[22] The authors posited that higher levels of known risk factors for PTSD such as poor social support may have underscored these findings. Surprisingly, these findings did not differ when examining differences for sub-factors of PTSD, namely, intrusion and avoidance. This finding is inconsistent with

Table 4. Best predictors of depression by sub-ethnic group

Group	Intrusion, β	Avoidance, β	Sex, β	R^2
US-C	.61[b]	X	X	.37
South-H	.52[b]	X	.12[a]	.30
Caribbean-H	.57[b]	X	X	.33
Colombian	.52[b]	X	.17[a]	.30
Ecuadorian	.45[b]	X	X	.20
Dominican	.59[b]	X	X	.35

β, standardized beta coefficient; R^2, coefficient of determination; US-C, US-born Caucasians; South-H, Hispanics from South America; Caribbean-H, Hispanics from Caribbean; X, non-significant excluded predictor.
[a] $P<.05$.
[b] $P<.001$.

the Marsella et al[52] theory that argued since avoidance symptoms are under conscious control while intrusion symptoms are physiologically predicated, the former are more liable to learned cultural impacts and therefore, are more variable across cultures.

It is of note that the findings from this study did not find any evidence of within group variability. The lack of within group variability in this study was somewhat unexpected in light of past research indicating sub-ethnic differences in depression, PTSD, and SI within Hispanic subgroups.[17–19,22]

Intrusion was the best and sole predictor of depressive severity across all ethnic sub-groups tested. This finding is consistent with previous literature indicating that, in general, intrusion is a more robust predictor of depressive severity.[43] The association between avoidance-related strategies and depressive symptoms may best be seen as indirect rather than as direct.[43] The findings suggest a considerable amount of commonality in distress-related predictors of depression across cardiac

Hispanic patients from South America and the Caribbean showed greater depressive severity relative to US-Caucasian patients.

patients from ethno-culturally diverse sub-groups.

We did not find a consistent sex bias in the proportions screening positive for and severity of depression, PTSD, or SI. At the regional level, we found that women showed higher levels of depression and distress, and they also screened positive to a greater degree for depression and PTSD. As regards to comparisons stratified by national origin, analyses between Caucasians and Hispanic sub-groups revealed that women had greater levels of and positive screening overall for only depression. Therefore, the findings are only somewhat consistent with past studies finding a robust sex bias toward depression,[53] PTSD,[54] and SI.[55] One speculative possibility is that the effect of sex on psychiatric outcomes was usurped by the ethnic diversity in the samples analyzed.

Several limitations of our study should be kept in mind when interpreting the findings. First, given that this study was conducted in a single specialty clinic within one medical institution, the findings may not readily generalize to distributions of patients at other medical clinics or settings. Second, the negligible effect sizes for ethnic differences calls into question whether such statistically significant differences would translate into clinically or ethno-culturally meaningful differences. Third, we did not measure CHD severity in this study, permitting the possibility that the findings are due to differential disease

severity among the sub-ethnic groups. Indeed, there is research suggesting a heightened risk to CHD among Hispanics.[56] Fourth, we did not include other relevant covariates in our regression analyses that would have been important to collect including education, years in country, and family history of psychiatric disorders. A final limitation relates to the fact that the source of ethnic differences found in this study remains elusive. A prevailing assumption held in ethnic-related studies has been that there is a direct association between ethnicity and outcome variables, however, ethnicity is more appropriately regarded as a distal variable that achieves its effects through proximal variables such as minority status, acculturation and so forth.[57]

In summary, differential findings at the sub-ethnic level relative to those at the broad-ethnic level supports recent calls towards broadening research beyond broad ethnic categories. Practically speaking, our findings suggest that medical and psychiatric professionals may benefit from taking into consideration ethnic sub-populations when screening and treating psychiatric co-morbidity among patients with CHD. Finally, although the importance of avoidance symptoms have been emphasized as they are related to medication non-adherence among CHD patients, our findings demonstrated the contribution of intrusion symptoms to depression (ie, SI), suggest that targeting both symptom clusters is clinically relevant.

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