

Gender, Acculturative Stress and Caribbean Immigrants' Health in the United States of America

An Exploratory Study

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ABSTRACT

Given that the health of many immigrants declines after increasing years in their host countries and that there may be gender differences in these experiences, this exploratory study's main objective was twofold: a) assess the relationship between acculturative stress and negative health (ie both mental and physical) and b) determine if there were any gender differences in these stress-health relationships. Gender-stratified analyses were conducted on a sample of 418 (males = 158, females = 260) English-speaking immigrants (the majority of whom were Jamaicans – males = 81%, females = 86%) that lived in the District of Columbia, Virginia, and Maryland (DC Metropolitan Area, United States of America (USA). Mail-order surveys were used to collect the data over a six-month period in 2002. Data for the main independent variable, acculturative stress, were collected using five indices (ie personal problems, group affiliations, adjustment to life in the USA, lonely feelings and feeling socially satisfied). Data for the major dependent variable, health, were collected using four indices (ie symptoms of depression, physical health conditions, the rating of one's health and the feeling of control one had over one's health). After controlling for selected covariates, both males ($r = 0.42$, $p < 0.001$) and females ($r = 0.19$, $p < 0.05$) reported a positive relationship between personal problems and depression. In other cases, female immigrants, with increasing personal problems, reported more physical health problems ($r = 0.20$, $p < 0.05$). Male immigrants who had more group affiliations ($r = 0.22$, $p < 0.05$), and who reported more loneliness ($r = .26$, $p < 0.05$) had less symptoms of depression. These exploratory results suggest the potential importance of selected variables (eg personal problems and depression) in efforts at improving the health of Caribbean immigrants.

Género, Estrés Aculturativo y Salud en los Inmigrantes del Caribe en los Estados Unidos de Norteamérica

Un Estudio Exploratorio

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RESUMEN

Dado que la salud de muchos inmigrantes se deteriora con el transcurso de los años en el país anfitrión, y puesto que puede haber diferencias de género en estas experiencias, este estudio exploratorio persigue un doble objetivo: a) evaluar la relación entre el estrés aculturativo y la salud negativa (es decir, tanto mental como física); y b) determinar si hay diferencias de género en estas relaciones salud-estrés. Se llevaron a cabo análisis estratificados por género, de una muestra de 418 (varones = 158; hembras = 260) inmigrantes de habla inglesa (la mayor parte de los cuales eran jamaicanos; varones = 81%; hembras = 86%) que vivían en el Distrito de Columbia, Virginia y Maryland (Área Metro-politana DC, EE.UU.). Se utilizaron encuestas por correo para recoger datos por un periodo de seis meses en el 2002. Los datos de la principal variable independiente – el estrés acumulativo – se recogieron usando cinco índices (a saber, problemas personales, afiliación por grupo, ajuste a la vida en los EE.UU., sentimientos de soledad, y el sentirse socialmente satisfechos). Los datos de la principal variable dependiente – la salud – fueron reunidos utilizando cuatro índices (a saber, síntomas de depre-

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sión, condiciones de salud física, la opinión evaluativa sobre la propia salud, y el sentimiento de control que uno tiene sobre su propia salud). Tras el control de covariantes seleccionadas, tanto los varones ($r = .42$, $p < 0.001$) como las hembras ($r = 0.19$, $p < 0.05$) reportaron una relación positiva entre los problemas personales y la depresión. En otros casos, los inmigrantes mujeres, con problemas personales cada vez mayores, reportaron más problemas físicos de salud ($r = 0.20$, $p < 0.05$). Los inmigrantes hombres que tenían más afiliaciones de grupo ($r = 0.22$, $p < 0.05$), y que reportaron mayor soledad ($r = 0.26$, $p < 0.05$), tuvieron un número más bajo de síntomas de depresión. Estos resultados exploratorios sugieren la importancia potencial de las variables seleccionadas (eg. los problemas personales y la depresión) en el esfuerzo por mejorar la salud de los inmigrantes caribeños.

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INTRODUCTION

As a result of the process of globalization, large-scale patterns of immigration have intensified in recent years. With the increase in immigration comes many concerns, such as the health of immigrants in their selected host countries. Of particular importance in this paper, is the role (acculturative) stress plays in the health of Caribbean immigrants living in the United States of America (USA) and how this stress-health relationship is distributed across gender lines.

Given its strong economic attraction, the USA is the most appealing destination country for immigrants, especially those coming from the Caribbean (1), who have historically immigrated to the USA. Based on the last USA Census in 2000, the civilian non-institutionalized population is estimated to include 32.5 million foreign born, representing 11.5 per cent of the population. Caribbean immigrants comprise approximately 9.6 per cent (or 3.1 million) of this immigrant population (2) and there is great heterogeneity among this population. As opposed to differences in country of birth, race and ethnicity, gender differences have been somewhat overlooked, hence their stratifying importance in this study.

Documented evidence suggests that immigrant communities fare worse than the native population according to various health indicators, even though they have been selected at entry for their good health and ability to work (3). Additionally, immigrants, regardless of their gender, have higher rates of psychological distress than their host populations (4). Immigrant women are particular high risk for distress (5).

A comprehensive review of research published in the 1990s (6) demonstrated that most of the studies (83%) that compared gender differences in psychological distress documented greater distress in immigrant women. More of these gender-related comparative studies are needed to determine whether variables typically associated with immigrants' distress have differential implications for women and men (6).

There is a persistent tendency to portray and theorize immigrant populations solely in terms of male migrants. This seems ironic given that more recent migration patterns indicate that women are migrating first, since there are usually better opportunities for them to find employment (7). Migration studies have documented the distinctive behaviour of men and women immigrants (8). While there have been

notable exceptions, many theoretical accounts of different immigrant trajectories in the USA remain essentially reports of men (9). This bias is potentially problematic given that gender dynamics can be highly influential in affecting the social outcomes of immigrant communities by interacting with the structure of opportunities that local environments provide (10). With the aforementioned limitations in mind, this study explored the relationship between acculturative stress and Caribbean immigrants' health for gender differences (if any).

BACKGROUND INFORMATION

While the number of Black Caribbean immigrants is growing, it has been said that (according to the 2000 US Bureau of the Census,) approximately 2.8 million foreign-born immigrants are from the Caribbean region, yet they remain largely invisible in the USA (11). Until recently, there was little attention given to understanding the special experiences of Black Caribbean immigrants. According to Guy (12), because of Caribbean immigrant's physical appearance, they are often seen in the same light as part of the overall Black community. Guy went on to say that immigrants of the Caribbean community are like an "invisible" and forgotten community (12).

To better understand the growing influx of the Caribbean immigrant population, one has to appreciate movements in the global marketplace. It has been said that the emigration of Black Caribbean immigrants to the USA can be understood as part of a global pattern of labour migration from poorer countries to wealthier ones (13). According to Guy (12) "*This movement is propelled by the expansion of the global capitalist economy under the hegemony of USA economic interests*" (p. 18). Poverty rates in the Caribbean are high: 80 per cent in Haiti, 34 per cent Jamaica and 21 per cent in Trinidad and Tobago (14).

Jamaicans and Haitians, who primarily migrate to New York and South Florida, are among the largest number of newly arriving immigrants to the USA (15). Afro-Caribbeans, or Black Caribbeans, as they are sometimes called, are mainly settled in other major USA cities, such as Fort Lauderdale and Boston. Until recently, sparse research has been directed to better understanding the experiences of Afro-Caribbean immigrants in the USA (16). A contributing

factor was that their status was overshadowed by immigration from Mexico, Latin America and Asia. Since the 1980s (2), the majority of immigrants to the USA have come from those latter regions.

Although there has been a paucity of health-related empirical research, especially in the USA on Black immigrants in general (*eg* from Africa and the Caribbean) and Caribbean immigrants in particular, the heterogeneity of the Black population in the USA has become very recognized (17). One area where there has been some empirical research is in the area of immigrants' mental health.

The mental health of immigrants has been debated and researched in psychiatry since the end of the 19th century (18). For example, early studies reported poor mental health among immigrant populations and argued that acculturation or assimilation into a mainstream dominant culture was needed to improve the mental health status of immigrants (19). However, unfortunately, empirical research on acculturation and mental health has shown conflicting results (20). Some of the more recent studies in these areas have been conducted on Latino immigrant and USA populations.

Studies on Latino immigrants and USA residents have shown consistent differences in rates of mental disorders between immigrant and USA born residents. For example, the Los Angeles Epidemiologic Catchment Area Study reported that USA born Mexican Americans had higher rates of mental disorders than did Mexican immigrants (21). One of the main explanations for these outcomes has been the "healthy immigrant effect." Essentially, theories of migration of the fittest (22) have been used to explain how immigrants have fewer mental disorders than do USA born populations. Specifically, those who are the healthiest are possibly also those who migrate (12). However, in some cases, this healthy immigrant effect has not been seen when comparisons were made between immigrant populations in the USA and comparable populations that remained in their home countries (23).

To date, there is a paucity of empirical research on mental health problems among Afro-Caribbean immigrants. One notable exception involves two studies in England that reported higher depressive symptoms in Caribbean Immigrants as compared with the general population (24) and higher rates of diagnoses of depression in Caribbean immigrants as compared with general practice patients (25).

Another notable exception to empirical research conducted on the health of immigrants from the English-speaking Caribbean, which is germane to the present research, was a randomized trial treatment of depression of women who received county health and welfare services in Maryland and Virginia from March 1997 to May 2001 (26). It was reported that after controlling for other predictors, USA born Black women had odds of probable depression that were 2.94 times greater than the African-born women ($p < 0.0001$, 95% CI: 2.07, 4.18) and 2.49 times greater than Caribbean-born

women ($p < 0.0016$, 95% CI: 1.41, 4.39) (17). While these limited studies addressed the mental health and adjustment patterns of immigrant Black women *versus* USA born Black women, there is an even greater lack of studies examining intragroup variation, *ie* within Black Caribbean immigrants, regarding mental health and adjustment-related outcomes. This being the case, the importance of the exploratory nature of this study is further underscored.

The largest source of immigrants to the USA, as a whole, is Latin America (including the Caribbean). However, this is not the case for the District of Columbia (DC)-Metropolitan Area which includes surrounding areas in the adjoining states of Maryland and Virginia. Based on data compiled from immigrants coming to the Washington Metropolitan Area between 1990 to 1998, it was reported that Latin American and Caribbean immigrants were less numerous than those from Asia. Latin Americans represented 31 per cent of recent arrivals in the region. The leading Latin American and Caribbean source countries for the Washington region in descending order were El Salvador, Peru, Bolivia, Jamaica, Guatemala, Nicaragua, Mexico, Trinidad and Tobago, the Dominican Republic and Columbia (27).

As the only two English-speaking Caribbean countries from the group of dominant Latin American and Caribbean countries in the DC-Metropolitan Area, between the years 1990–1998, Jamaica immigrants represented 2.1 per cent (or 5082) of the total incoming immigrant population to the region and Trinidad and Tobago immigrants represented 1.1 per cent (or 2747) (27).

In terms of basic demographic information, it was said that (according to the 2000 US Census) approximately 70 per cent of the Afro-Caribbean population in the USA was born overseas, earned a median annual income of \$40 000 and attended school on an average of 12.8 years. It was also reported that approximately 7.3 per cent of Afro-Caribbeans were unemployed and 17.2 per cent lived below the poverty level (28). The negative racial and discriminatory experiences of these immigrants upon arrival, in addition to other emergent experiences, argue for the possible role that stress and acculturation (or acculturative stress) play in the reported health of Caribbean immigrants to the USA.

While stress is defined in many ways, it is more appropriately viewed as a process precipitated by situations or events perceived as threatening, based on past experiences and personality traits (29, 30). For purposes of this study, stress is viewed in interaction terms as a physical, emotional and/or behavioural response to stressors, defined as "environmental and internal demands and conflicts among them that tax or exceed a person's resources" (31). It has been reasoned elsewhere that stress, along with other conditions such as social status and poverty can make individuals (*ie* vulnerable immigrants) more susceptible to a variety of health problems (14). For example, acculturative stress may result in a particular set of emotions and behaviours including

depression and anxiety, feelings of marginality and alienation, heightened psychosomatic symptoms and identity confusion (32).

Acculturative stress is viewed as the phenomenon individuals or groups experience in their adjustment to a new culture. It is manifested as a reduction in the psychological, somatic and social balance of individuals or groups. Essentially, the variation in the intensity of this stress relies heavily on the (perceived) discrepancies between immigrants and their new countries along various lines (*eg* education, gender, language and race). The more radical and different the host culture is in comparison to immigrants' native cultures, the more acculturative stress will be experienced. Migration, even when it is voluntary and planned, is a potentially stressful event (33).

For Caribbean immigrants, the interconnection between race, ethnicity and assimilation or acculturation is very important. Whereas assimilation, which is a major contributor to acculturation, is desirable for many immigrants, this may not be the case for many Caribbean immigrants. As a matter of fact, full-blown acculturation may be stressful for many Caribbean immigrants based on their views on the matter. It has been suggested that for Caribbean immigrants, race and ethnicity have very different meanings, acculturation is not the desired or ultimate end, and social mobility and the preservation of ethnicity are not antithetical (12). More specifically, for many Caribbean immigrants, they perceive a loss of status when they assimilate or become Black Americans. Because of their dominant racial and social status in the Caribbean, a minority status, resulting from assimilation, is perceived as a step down, so in many cases their cultural distinctiveness is maintained (34). In a related manner, it has been reported that Jamaicans in New York cling to their "Jamaicanness" with the view that assimilation with Black Americans may mean being stigmatized as part of a group which experiences low status in American society (35). The main objective of this exploratory study was twofold: (a) to assess the relationship between acculturative stress and negative health (*ie* both mental and physical) and (b) to determine if there were any gender-related differences in these stress-health relationships, adjusting for a selection of possible covariates.

SUBJECTS AND METHODS

The study design was an exploratory, descriptive, cross-sectional survey conducted in the District of Columbia (DC) and the surrounding Metropolitan suburbs of Maryland and Virginia. The study was approved by the Institutional review Board (IRB) at Howard University. This exploratory study was the first of its kind conducted in the eastern region of the USA, especially in the Washington DC Metropolitan Area. At the time the study was conducted, approximately 75 000 Caribbean immigrants resided in the District of Columbia and the Metropolitan areas of Maryland and Virginia (2). Given the exploratory nature of the study, only a small

(0.8%) sample of the estimated Caribbean population in the area was selected.

Sample and Procedure

Based on the difficulty of reaching the Caribbean population in the Washington DC-Metropolitan area, it was initially decided to select the majority of the sample from sampling frames, or listings of names, gathered from three designated Jamaican National/Cultural Associations and one Caribbean Cultural Association located in the District of Columbia (DC) and Maryland. From each of the four lists used, every 10th name was selected until each list yielded 200 names, making the overall sample 600. Each selected name had a corresponding address and, in many cases, a contact number was available. Questionnaires consisting of self-administered questions and/or statements relating to the main variables of interest in the study (acculturative stress, health and demographics) were mailed to the selected 600 addresses in mid-January 2002. Data collection occurred for approximately six months. Repeated or follow-up calls were made in some cases to encourage participants to volunteer and return their completed questionnaires. Both confidentiality and anonymity were emphasized in a cover letter, along with a preamble, in the package sent to each potential participant. After a six-month period, 418 completed (and usable) questionnaires were returned by mail accounting for a 69% response rate. As a result of the relative difficulty associated with accessing the targeted Caribbean immigrant population, this response rate was considered to be adequate.

Given the disproportionate number of Jamaicans in the designated area, Jamaicans were the largest targeted group, followed next by residents from Trinidad and Tobago and Guyana. Because the title of the paper includes Caribbean Immigrants and the majority of participants were Jamaicans, preliminary analyses were conducted to ascertain if any differences existed between participants from the other Caribbean countries represented in the sample. It is important to note that exploratory analyses of immigrants' scores did not reveal any notable differences on the main independent and dependent indices. This being the case, it was deemed acceptable, then, to retain the label Caribbean Immigrants in the title. A preliminary examination of the relatively small numbers of immigrants who were non-Jamaicans revealed no substantial inter-country variation on scores associated with the main independent and dependent variables of the study. Therefore, because of the non-existence of any meaningful inter-country variation among the data, for the sake of simplicity, the sample is referred to collectively as Caribbean immigrants in the study.

Instruments

The self-administered survey was pre-tested and consisted of three sections:

- 1) Socio-demographic and background information (*eg* age, education, marital status, household income, permanent resident status (Table 1).
- 2) Acculturative stress was measured by five factors: i) a 16-item, specially created, Likert scale, which assessed prob-

lems related to daily difficulties, needed adjustments and relationships (split-half correlation of 0.82); ii) a 9-item Likert scale assessing active group memberships (*eg* in cultural, sports organizations – split-half correlation of 0.85); iii) a single item relating to participants' adjustment to life in the USA; iv) a single item assessing the extent of feeling lonely; and v) a single item assessing satisfaction with social life conditions. Following the data collection, a split-half procedure was conducted to assess the reliability coefficients on designated questionnaire indices, some of which are reported above.

3) Health was measured using four factors: i) The Center for Epidemiologic Studies Depression Scale (36) (CES-D), which is a 20-item, non-diagnostic instrument for interpreting levels of symptoms of depression for the general population (coefficient alpha = 0.85). Given the exploratory nature of the study, the CES-D was not used for diagnostic purposes; instead, the cumulative reports of these symptoms were used to indicate immigrants' at-risk mental impairment. ii) To assess at-risk physical impairment (*eg* how often affected by: headaches, asthma, heart problems), a literature-derived, 18-item index was created (split-half correlation of 0.83). Two single item, Likert response questions were asked concerning iii) how do you rate your health? and iv) how much control do you have over your health?

4) Other correlates constituted the remaining section on the questionnaire. Basically, six variables were involved i) in terms of positive coping strategies, the responses to three questions (*eg, when faced with a problem, how often do you try to forget it?*) were combined; ii) in terms of social support, the responses to two questions (*eg, how often do you talk to someone when you have important matters to address that are bothering you*) were combined; iii) a single question was asked about length of stay in the USA; iv) a single question was asked about missing things and people (*eg, family, food, church, beach*) in the Caribbean; v) in terms of health protective behaviours (*eg, do you protect yourself by: eating sensibly, watching your weight, not smoking*), a modified 18-item, (yes, no response) index (split-half correlation of 0.81) was used, which was derived from previous research (37); and vi) self-esteem was measured by the 9-item, Rosenberg's Self-Esteem Scale (38) (split-half correlation of 0.80).

Data Analysis

A combination of univariate and bivariate statistics were used and variables were stratified according to participants' reported gender. Descriptive statistics were used to describe the major socio-demographic and background information about the subjects (Table 1). This was followed by mean differences using t-test for independent samples. To explore for the main relationship involving gender-related differences (if any) between acculturative stress and immigrants' health, controlling for other selected covariates, partial correlation analyses were used after the sample was stratified into males

and females. The Statistical Package for the Social Sciences (SPSS) Version 13.0 was used to conduct the analyses.

RESULTS

Demographic and Background Information

The questionnaire was completed by 418 respondents. Table 1 presents the first of a series of stratified analyses along gender lines; there were more females ($n = 258$) than males ($n = 160$); and males (mean = 40.5 years) were slightly older than females (mean = 37.9 years). The majority of participants were from Jamaica followed by Trinidad and Tobago. Most of the males (45.6%) had a professional school education and most of the females (36.4%) had a college and/or technical school education. Most males (37.3%) had a total annual household income of \$60 000 or more, while most females (46.9%) had incomes of \$30 000 – \$59 000). While most males (55.7%) were married, most females (55.4%) were single (which could include being widowed and separated). Most males (78.5%) and females (87.6%) were permanent residents of the USA.

At a simple bivariate level (Table 1), there were important differences between male and female immigrants on the major independent variables (acculturative stress), the major dependent variables (health) and control variables (other correlates). Because of space limitations, only the gender-related mean differences that were statistically significant are mentioned. Of the five sub-indices that comprised acculturative stress, statistical mean differences were seen in three variables. Female immigrants had higher mean scores for personal problems ($M = 27.95$) and group affiliations ($M = 29.70$) than their male counterparts ($M = 26.51$, $p < 0.05$; 28.32 , $p < 0.01$). However, male immigrants reported being more socially satisfied ($M = 4.15$) than their female counterparts ($M = 3.94$, $p < 0.05$). Regarding selected health outcomes, female immigrants reported more depressive symptoms ($M = 27.69$) and physical health problems ($M = 24.05$) compared with their male counterparts ($M = 25.88$, $p < 0.01$; 22.35 , $p < 0.001$). Regarding the other correlates, it was only time lived in the USA that showed a significant difference, where females ($M = 219$ months) versus males ($M = 206$ months, $p < 0.05$) reported spending more time in the USA.

Mean Differences in Variables Related to Acculturative Stress, Health and Other Correlates By Gender-Education Levels

In an attempt to assess variation within the designated variables associated with acculturative stress, health and other correlates, these mean differences were assessed for each variable across the six gender-education level categories using ANOVA (Table 2). Because of space limitations, only the highest mean scores and the lowest mean scores that achieved statistical differences across the 6-variable groups are reported. In the case of acculturative stress, group affili-

Table 1: Percentage and mean differences of background characteristics and main variables of the sample by gender (n = 418)

	Males (n = 160 ^a)		Females (n = 258 ^a)		Variable	Males (n = 160 ^a) Mean	Females (n = 258 ^a) Mean
	No	(%)	No	(%)			
Country of Birth					Age (years)	40.5	37.9*
Jamaica	128	(81.0)	222	(86.0)			
Trinidad and Tobago	14	(8.9)	9	(3.5)	Acculturative Stress		
Guyana	2	(1.3)	11	(4.3)	Personal problems (PP)	26.51	27.95*
Grenada	2	(1.3)	3	(1.2)	Group affiliations (GA)	28.32	29.70**
Barbados	5	(3.2)	8	(3.1)	Adjustment to USA (AUS)	3.92	4.03
Virgin Islands	1	(.6)	3	(1.2)	Lonely feelings (LF)	1.72	2.02
Dominica	1	(.6)	0	(.0)	Socially satisfied (SS)	4.15	3.94*
Other	3	(1.9)	2	(.8)			
Education					Health		
High school or less	39	(24.7)	77	(29.8)	Depression (D)	25.88	27.69**
College + tech school	45	(28.5)	94	(36.4)	Physical health (PH)	22.35	24.05***
Professional school	72	(45.6)	84	(32.6)	Rating health (RH)	3.50	3.45
					Control over health (COH)	3.58	3.52
Household Income (US \$p.a.)					Other Correlates		
< \$29 999	41	(25.9)	83	(32.2)	Positive coping	9.96	9.91
\$30 000–\$59 999	57	(36.1)	121	(46.9)	Total support	6.59	6.67
\$60 000 or more	59	(37.3)	49	(19.0)	Protective health behavior	12.31	12.15
Marital Status					Time lived in USA	206.00 ^c	219.00*
Single ^b	66	(41.8)	143	(55.4)	Things missed in the		
Married	88	(55.7)	105	(40.7)	Caribbean	10.70	10.80
					Self-esteem	33.21	33.12
Permanent Resident							
Yes	124	(78.5)	226	(87.6)			
No	30	(19.0)	26	(10.1)			

Note: ^aTotals may vary because of missing values; ^bsingle included those widowed and separated; ^cmonths; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (2-tailed)

Table 2: Mean differences between acculturative stress, health variables and selected control variables by combined gender and education levels (n = 418^a)

Variable	Combined Gender and Education Levels ^a					
	Male-LE HS ^b Mean (No)	Male-Coll ^c Mean (No)	Male-Prof Sch ^d Mean (No)	Fem-LE HS ^b Mean (No)	Fem-Coll ^c Mean (No)	Fem-Prof Sch ^d Mean (No)
Acculturative Stress						
Personal problems (PP)	29.16 (38)	30.67 (45)	25.21 (72)	29.75 (77)	29.14 (94)	29.49 (84)
Group affiliations (GA)	17.67 (39)	23.00 (45)	22.75 (72)	20.47 (77)	17.80 (94)	25.15 (84)**
Adjustment to US (AUS)	3.92 (39)	3.78 (45)	4.11 (72)	4.04 (77)	4.04 (94)	4.12 (84)
Lonely feelings (LF)	2.18 (39)	1.62 (45)	1.53 (72)	1.97 (77)	2.17 (94)	1.98 (84)***
Socially satisfied (SS)	4.05 (39)	4.29 (45)	4.11 (72)	3.97 (77)	4.00 (94)	3.92 (84)
Health						
Depression (D)	29.87 (39)	35.78 (45)	26.75 (72)	34.64 (77)	34.73 (94)	31.02 (84)
Physical health (PH)	26.21 (39)	32.11 (45)	24.56 (70)	31.78 (77)	30.33 (94)	30.04 (84)*
Rating health (RH)	3.36 (39)	3.62 (45)	3.56 (72)	3.42 (77)	3.52 (94)	3.46 (84)
Control over health (COH)	3.36 (39)	3.62 (45)	3.57 (72)	3.47 (77)	3.66 (94)	3.60 (84)
Selected Control Variables						
Self-esteem (SE)	30.23 (39)	33.13 (45)	32.86 (72)	30.87 (77)	32.05 (94)	32.96 (84)**
Protective health behaviour (PHB)	12.28 (39)	17.84 (45)	12.94 (72)	13.13 (77)	13.69 (94)	16.64 (84)*
Time lived in the US (TUS)	1.39 (38)	1.53 (43)	1.59 (69)	1.32 (73)	1.46 (85)	1.51 (80)**
Age at last birthday (ALB)	35.78 (39)	42.38 (45)	44.33 (72)	37.89 (77)	38.07 (94)	42.48 (84)**

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (2-tailed); ^aTotals may vary because of missing values; ^bless than and equal to high school; ^ccollege and technical school; ^dprofessional school.

ations showed mean differences. Females with a professional education had the greatest amount of affiliations ($M = 25.15$) while males with less than a high school education had the lowest amount ($M = 17.67$, $p < 0.001$). In terms of feeling lonely, males with less than a high school education had the highest scores ($M = 2.18$) and males with a professional education had the lowest scores ($M = 1.53$, $p < 0.001$). Regarding health outcomes, males with a college education reported the most ($M = 32.11$) physical health problems and men with a professional school education reported the least physical health problems ($M = 24.56$, $p < 0.05$). In terms of selected control variables, males with a college education reported the highest level of self-esteem ($M = 33.13$) and males with less than a high school education reported the lowest level of self-esteem ($M = 30.23$, $p < 0.01$). Males with a college education reported the highest amount of health protective behaviours ($M = 17.84$) and men with less than a high school education reported the lowest amount of protective health behaviour ($M = 12.28$, $p < 0.05$). Lastly, in terms of age at last birthday, males with a professional education had the oldest ages ($M = 44.33$) and males with less than a high school education were the youngest ($M = 35.78$, $p < 0.01$).

The Relationship Between Acculturative Stress and Health, Controlling For Selected Covariates

As seen in Table 3, from the results of partial correlation analysis, where both genders were separated, the overall dominant relationship of the study was confirmed *ie* that an inverse relationship exists between acculturative stress and immigrants' health. Additionally, some gender-related stress-health relationships similarities and differences were evident. All other covariates seen in Table 3 (*eg* positive coping, total support, protective health behaviour) as well as some demographic variables seen in Table 1 (*eg* age, education and household income) were used as control covariates. Because of space limitations, only the main correlation coefficients that achieved statistical significance, and in the expected direction for both male and female participants, are mentioned. Other inter-matrix correlation coefficients for both acculturative stress and health can be seen in Table 3.

As seen from Table 3, regarding the relationship between acculturative stress and health, there were significant positive relationships between personal problems and depressive symptomatology for both males ($r = 0.42$, $p < 0.000$) and females ($r = 0.19$, $p < 0.05$) with men exhibiting a stronger relationship. However, only female participants' personal

Table 3: Correlation between acculturative stress, adjustment and health by gender adjusting for selected partial correlates^a
($n = 418$)

Variables	Coefficients Males ($n = 158$) ^b Coefficients Females ($n = 260$) ^c								
	PP	GA	AUS	LF	SS	D	PH	RH	COH
Personal Problems (PP)	–								
Group affiliations (GA)	-0.28**	–							
Adjustment to US (AUS)	-0.17	-0.12	–						
Lonely feelings (LF)	-0.54***	-0.03	-0.25*	–					
Socially satisfied (SS)	0.37**	-0.06	-0.14	-0.34**	–				
Depression (D)	0.23*	-0.22*	0.20	-0.48***	0.42***	–			
Physical health (PH)	-0.21*	-0.24**	0.18	0.16	-0.01	0.26*	–		
Rating health (RH)	0.42***	0.01	-0.27**	0.01	0.06	0.20	0.28**	–	
Control over health (COH)	0.19*	0.01	-0.27**	0.16	-0.01	–	–	0.21*	–
	0.20*	0.19	-0.14	0.01	0.06	0.20	0.28**	–	
	-0.12	-0.07	0.04	0.02	0.29**	–	–	–	
	-0.04	0.06	-0.19	-0.08	-0.01	-0.03	-0.30**	–	
	0.09	-0.10	-0.01	0.14	-0.11	0.06	–	0.14*	–
	-0.03	0.07	-0.05	-0.16	0.08	-0.01	-0.06	0.14*	–
	0.05	-0.15	0.03	-0.04	-0.14	0.02	-0.19*	0.16	–

Note: * $p < 0.05$ (2-tailed); ** $p < 0.01$ (2-tailed); *** $p < 0.001$ (2-tailed)

^aControl variables used in the partial correlation analyses included: age last birthday; educational background; household income; self-esteem; positive coping; time living in the USA, total support received from others; and protective health behaviours done.

^bMale partial coefficients

^cFemale partial coefficients

problems were related to their reports of physical health issues ($r = 0.20, p < 0.05$). Gender differences were also seen where only females' reports of adjustment to life experiences in the USA were inversely related to their physical health ($r = -0.27, p < 0.01$) and male participants' increasing levels of loneliness were positively associated with their reports of depressive symptoms ($r = 0.26, p < 0.05$). Additionally, only men reported an inverse relationship between increase levels of group affiliations and decreasing levels of depression symptoms ($r = -0.22, p < 0.05$).

DISCUSSION

The focus in this section is more on the results derived from the more complex bivariate analyses that adjusted for a variety of potentially confounding covariates (*eg* length of time spent in the USA). The main exploratory relationship of the study that acculturative stress is positively associated with negative health (39) was supported, especially depressive symptomatology for both men and women. This is the only stress-health relationship that was consistent for both males and females, irrespective of the fact that females reported both higher mean levels of personal problems (27.95 *vs* 26.51, $p < 0.05$) and depression symptoms (27.69 *vs* 25.88, $p < 0.01$) compared to males (Table 1). Therefore, public health efforts to improve the mental health of both male and female Caribbean immigrants should focus on possible stress management techniques aimed at reducing immigrants' personal problems (stress), which in turn could have a beneficial effect on their likelihood of experiencing depression (mental health). Further multivariate empirical studies are needed to control for any confounding biases that may account for females to over-report about their health. Gender differences in morbidity have been widely confirmed in representative health surveys in North America and Europe. Significantly more women than men suffer from somatic complaints. It has been said that the gender gap in symptom reporting may be largely explained by low social class status, high levels of chronic distress and poor perceived/self assessed health (40). While some of these potentially confounding factors (*eg* education level) were controlled in this study, more factors need to be controlled in future studies.

Other supportive acculturative stress-health relationships were more gender based and also have important implications for future healthcare intervention efforts directed at reducing Caribbean immigrants' stress and, subsequently, their gender-based health. In the case of female immigrants, personal problems were also related to increased levels of physical health problems. Additionally, the more adjusted they were to living in the USA, the less likely they were to feel depressed. These female-related outcomes suggest, at a preliminary level, that intervention efforts can be directed at reducing immigrants' personal problems (*eg* through counselling and health education) and improving their adjustment to life in the USA (*eg* through community and ethnic-related social events). Both of these conditions were related to high-

er levels of (negative) physical health and depression, respectively. In the case of men, the more affiliated they were with others the less likely they were to report depressive symptoms. Additionally, the more they felt lonely, the more likely they were to report depressive symptoms. Therefore, in the case of Caribbean immigrant males, efforts must be made in the healthcare and related communities to increase their social support structures, which in turn will likely improve how lonely they feel. Both of these conditions were related to men experiencing high levels of depression. However, given that social and relational variables for psychological distress may also vary by gender (6), the need for future multivariate, controlled studies assessing the stress-health relationship among Caribbean immigrants living in the USA is further underscored.

These general and gender-based results mentioned above are especially important given the increasing numbers of Caribbean immigrants (both male and female) living in the USA (1, 2). The exploratory nature of the study notwithstanding, these preliminary findings can be important as efforts are made to fashion culture-specific interventions to reduce possible stress-health relationships among English-speaking Caribbean immigrants in the USA.

Although the results of the study cannot be completely extrapolated to all English-speaking Caribbean immigrants, the findings are important for a variety of specific reasons: 1) Given the paucity of this kind of exploratory and empirical research, especially in the Eastern Region of the USA, as well as the increasing numbers of Caribbean immigrants in the region, the results are ground-breaking and lead to more expansive research; 2) Although males and females did not differ significantly on many of the individual items of the various acculturative stress and health indices (*ie* when item analyses were done on the indices), on a bivariate level, and without adjusting for possible covariates (*eg*, age, income, protective health behaviours, self-esteem) from a cumulative perspective (Table 1) females disproportionately had higher mean scores on positive items (*eg*, increasing group affiliations and adjustment to life in the USA), as well as on negative items (personal problems, feelings of loneliness, depression and physical health). At least at this level, these results are consistent with previous studies indicating that female immigrants tend to be disproportionately affected by immigration and the subsequent adjustments in their host countries (41), as well by psychological distress and depression (42, 43). After controls were introduced, the most important finding of the study is the overall support for a positive relationship between acculturative-related stress (as operationalized in the study) and undesirable health outcomes. This was more evident for symptoms of depression that were associated with both males and females (PP-D in Table 2). Gender differences, when they did occur (*eg* PP-PH, AUS-D for females and GA-D, LF-D for males – Table 2), were even more important.

In summary, it can be said that support was received for the main exploratory objective of the study, which was to explore whether a positive relationship exists between Caribbean immigrants' reported acculturative stress and negative health outcomes (more so for depressive symptoms). Gender differences, especially for females (43), although reported in the literature, were not convincingly supported after selected covariates were controlled. These findings have important implications for the acculturation hypothesis, where immigrants' risks of negative (mental) health increased with length of stay in the host country (44, 45). Additionally, there are important implications for understanding the contribution immigrants' health has to the morbidity and the mortality statistics of the host country. Using more comprehensive research designs (*eg* probability samples of larger sizes), future studies on Caribbean immigrants in the USA can build on these findings and institute appropriate intervention strategies to lower the suggestive acculturative stress-health relationship for both males and females.

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