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Abdul-Rahman Suleiman
Wayne State University

Omar Afify
Wayne State University

Keith E. Whitfield
University of Nevada, Las Vegas, keith.whitfield@unlv.edu

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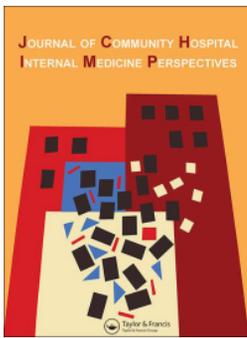
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The Effect of Stress, Acculturation, and Heritage Identity on Depression in Arab Americans

Abdul-Rahman Suleiman ^a, Omar Afify^a and Keith E. Whitfield^b

^aSchool of Medicine, Wayne State University, Detroit, USA; ^bDepartment of Psychology, University of Nevada Las Vegas, Las Vegas, USA

ABSTRACT

Introduction: Arab Americans are significantly affected by depression with prevalence as high as 50%. Our study assesses whether unique causes of depression such as stress, acculturation, and heritage identity play a role in the high prevalence of depression in Arab Americans.

Methods: We surveyed 142 self-identified Arab Americans using a convenience model. Participants answered questions about their level of perceived stress, everyday discrimination, and acculturative stress. They also answered questions regarding their level of acculturation and heritage identity. Finally, participants answered questions regarding their depressive symptoms. A score of 16+ on the depression scale was used as the cut-off for depression.

Results: The prevalence of depression in our sample was 60%. In our logistic regression model adjusted for age, sex, BMI and education, we found that perceived stress (OR = 1.21, 95% CI 1.10, 1.33, $p < 0.01$) and acculturative stress (OR = 1.02, 95% CI 1.00, 1.05, $p < 0.05$) were associated with greater odds of having depression in Arab Americans. We did not find that everyday discrimination, acculturation, or heritage identity were associated with depression in Arab Americans ($p > 0.05$).

Conclusions: Our study shows that perceived stress and acculturative stress increase the odds of depression in Arab Americans and therefore may play a role in the high prevalence of depression in this population. We hope our findings inform clinicians on the important underlying causes that may be causing depression in their Arab American patients.

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Arab American; Stress; Acculturation; Heritage identity; Depression

1. Introduction

Arab Americans are a growing ethnic minority with a population nearing 4 million [1]. Despite their large size, there is a dearth of knowledge regarding the health of Arab Americans. This is concerning as emerging evidence suggests that Arab Americans are particularly affected by depression with prevalence shown to be as high as 50% [2]. Yet, few studies have looked into unique causes of depression in Arab Americans. This is important as studies have shown that factors such as stress and acculturation may play a role in the prevalence of depression in Arab Americans and other minority groups [3,4].

Stressors that may be associated with depression in Arab Americans include the feeling of being stressed (perceived stress), stress as a result of discrimination experienced daily (everyday discrimination), and stress associated with the process of acculturating to a new culture (acculturative stress). These stressors have been previously implicated in the development of poor mental health in Arab Americans [4–6]. For example, everyday discrimination has been found to be associated with psychological distress and depression in Arab Americans [4,7,8]. Additionally, acculturative stress has been found to be associated with depression

in a sample of elderly Arab Americans [5]. Despite the increasing evidence linking stress with mental health in Arab Americans, no study has attempted to examine the effect of all three of these components of stress on depression in Arab Americans.

Mainstream identity (acculturation) and heritage identity are important factors that may be associated with depression in Arab Americans. Acculturation is the process by which immigrants assimilate to mainstream culture [9]. Acculturation has been previously found to predict better health-related behaviors and physical activity in Arab Americans and other minorities [2,9,10]. Additionally, findings regarding the effect of acculturation on depression have been mixed with both deleterious and protective effects reported in other minorities [11,12]. Unfortunately, however, only two studies have examined the potential effect acculturation may have on Arab American mental health [3,13]. Furthermore, only one directly looked at the effect it may have on depression in specific and none have examined if greater heritage identity was associated with depression in Arab Americans [3]. As a result, evidence regarding the effects of acculturation and heritage identity on depression in Arab Americans remains limited.

The objective of our study is to assess the effect of stress, acculturation, and heritage identity on depression in Arab Americans. We hypothesize that greater levels of stress such as perceived stress, everyday discrimination, and acculturative stress are associated with higher odds of having depression in Arab Americans. Additionally, we hypothesize that greater acculturation (mainstream identity) predicts lower odds of having depression, whereas greater heritage identity predicts higher odds of having depression in Arab Americans.

2. Methods

2.1. Study design and sample

This is a cross-sectional study with a convenience sample comprised of adults from the Detroit metropolitan area (DMA) aged 18 and older who self-identified as Arab American. We selected the Detroit metropolitan area (DMA) for our recruitment because it has the highest density of Arab Americans in the country [14]. Participants were recruited at the Arab Community Center for Economic and Social Services (ACCESS) facility in Dearborn, Michigan. ACCESS is a non-profit 501c3 that provides economic, social, and health services for the Arab American community [4].

Study personnel provided interested volunteers with a verbal and written explanation of the study in their preferred language of either English or Arabic. Participation in the study was anonymous and all participants provided verbal informed consent prior to their participation. Upon completion of the survey, including having their anthropometric measurements taken, they received a 25 USD gift card. Our research was approved by the Wayne State University institutional review board and all procedures followed were in accordance with the ethical standards of the IRB and the Helsinki Declaration of 1975, as revised in 2000.

The survey consisted of standardized questions regarding basic demographics, and validated instruments measuring stress, acculturation, heritage identity, and depression. The survey was translated to Modern Standard Arabic by the University of Massachusetts Amherst Translation Center. Subjects were allowed to choose whether to take the questionnaire in English or Arabic. Assistance was provided by study personnel who spoke both Arabic and English fluently.

2.2. Study measures

Our primary outcomes measured were stress, acculturation, heritage identity, and depression. To measure stress, participants filled out questions assessing perceived stress, everyday discrimination, and acculturative stress.

Perceived stress was measured using Dr. Cohen's 14-item perceived stress scale (PSS) measuring participants perception of the stress in their lives [15]. The PSS is a validated scale previously used in various large-scale population surveys. Scores from each item were summed into a total perceived stress score ranging from 0 to 56. The internal consistency of the PSS in our study was sufficient (Cronbach's coefficient alpha = 0.55).

Everyday discrimination was measured using Dr. William's 9-item everyday discrimination scale (EDS). The EDS was designed to measure chronic day-to-day experiences with discrimination instead of more acute or structural discrimination [16]. EDS has been validated and used previously in population surveys of the Arab American community [4]. An average of the scores from each item was calculated and ranged from 1 to 6. The internal consistency of the EDS was excellent (Cronbach's coefficient alpha = 0.93).

Acculturative stress was measured using an adapted form of Dr. Mena and Dr. Padilla's 24-item social, attitudinal, familial, and environmental acculturative stress scale (SAFE-R) [17]. SAFE-R was adapted and validated by Dr. Amer to measure acculturative stress in Arab Americans [17,18]. Scores from each item were summed into a total SAFE-R score ranging from 0 to 120. The internal consistency of the SAFE-R was excellent (Cronbach's coefficient alpha = 0.94).

We measured acculturation with Dr. Amer's modified 20-item Vancouver index of acculturation scale (VIA-A). VIA-A consists of 10 items that measure mainstream identification and 10 items that measure heritage identification in Arab Americans [18,19]. The VIA-A has been adapted for and validated in Arab Americans [18]. An average of the scores from each item measuring heritage identity was calculated. Additionally, all items measuring mainstream identity were also averaged. Averages for both heritage and mainstream identification ranged from 1 to 5. The internal consistency of the VIA-A was strong (Cronbach's coefficient alpha = 0.92).

Depression was measured using the Center for Epidemiological Studies – Depression (CES-D) 20-item scale [20]. We selected the CES-D scale because it has been found to be a validated and highly reliable measure of depression in Arab Americans [4,21–23]. In the CES-D, 16 questions measure depressive symptoms and 4 measure positive affect. Scores per item ranged from 0 to 3, and the 4 questions measuring positive affect were reverse coded to have scores ranging from 3 to 0. We summed the scores from the 20 questions measuring depressive symptoms into a total depression score ranging from 0 to 60. We calculated the prevalence of depression in our sample using the CES-D's recommended cutoff score for

depression of 16 or greater [24]. The internal consistency of the CES-D scale in our sample was reliable (Cronbach's coefficient alpha = 0.87).

The demographic variables we collected included the following: age, sex, religion, marital status, country of birth, whether participant is an immigrant or not, language spoken at home, employment status, and education level. We also collected anthropometric measurements consisting of height and weight of the individuals. We used height and weight to then calculate the BMI of all participants.

2.3. Analysis

Data analysis was conducted using SPSS 27 for Macintosh. Descriptive statistics were conducted on the sample. To test the effects of stress, acculturation, and heritage identity on depression in Arab Americans, we used a binomial logistic regression analysis while controlling for age, sex, BMI, and level of education.

3. Results

The sample consisted of 142 self-identified Arab Americans. The average age of participants was 39 (SD = 14.1). The sample was 70% women. Participants were predominantly immigrants. The average BMI of participants was 29 (SD = 8.0). The average CESD score was 19 with a standard deviation of 9.8. The prevalence of depression in our sample of Arab Americans was 60%. Complete descriptive statistics for the following demographic variables: age, sex, religion, country of birth, immigrant status, language spoken at home, marital status, highest level of education, and employment status can be found in Table 1.

3.1. Stress and depression

In our binomial logistic regression model adjusted for age, sex, BMI and education we found that perceived stress (OR = 1.21, 95% CI 1.10, 1.33, $p < 0.01$) and acculturative stress (OR = 1.02, 95% CI 1.00, 1.05, $p < 0.05$) were associated with greater odds of having depression in Arab Americans. For every one-unit increase in the total perceived stress or acculturative stress summary scores, the odds of having depression increase by 21% and 2% respectively. With regards to everyday discrimination, we did not find that everyday discrimination predicted depressive symptoms in Arab Americans ($p > 0.05$). Findings are reported in Table 2.

Table 1. Descriptive statistics: demographic information.

Variable	N (%)
Age	140
>39	68 (49%)
<39	72 (51%)
Sex	140
Male	41 (29%)
Female	99 (71%)
Religion	140
Muslim	131 (94%)
Christian	8 (6%)
Jewish	1 (1%)
Marital Status	141
Never Married	37 (26%)
Divorced	10 (7%)
Separated	4 (3%)
Widowed	14 (10%)
Married	76 (54%)
Country of Birth	135
Iraq	47 (35%)
USA	20 (15%)
Lebanon	18 (13%)
Syria	18 (13%)
Yemen	17 (13%)
Other	15 (11%)
Immigrant	138
Yes	103 (75%)
No	35 (25%)
Language Spoken at Home	139
Arabic	92 (66%)
Arabic, English	29 (21%)
English	14 (10%)
Other	4 (3%)
Employment Status	140
Unemployed	81 (58%)
Employed	59 (42%)
Education Level	138
None	6 (4%)
Grades 1–8	22 (16%)
High School	57 (41%)
College	47 (34%)
Grad School	6 (4%)

Table 2. Binomial logistic regression results: stress and depression.

Predictors	OR	Total Sample	
		95% CI	
		Lower bound	Upper Bound
Perceived Stress	1.21**	1.10	1.33
Everyday Discrimination	1.81	0.85	3.84
Acculturative Stress	1.02*	1.00	1.05
Age	1.05*	1.01	1.09
Sex	3.84*	1.30	11.35
BMI	0.97	0.91	1.03
Education	0.95	0.56	1.59

OR = Odds Ratio, 95% CI = 95% confidence interval, BMI = Body Mass Index.

* = $p < .05$, ** = $p < .01$.

3.2. Acculturation, heritage identity, and depression

In our binomial logistic regression model adjusted for age, sex, BMI and education we did not find that mainstream or heritage identity were significantly associated with depression in Arab Americans ($p > 0.05$). Findings are reported in Table 3.

Table 3. Binomial logistic regression results: acculturation and depression.

Predictors	Total sample		
	OR	95% CI	
		Lower bound	Upper Bound
Heritage Identity	0.78	0.37	1.65
Mainstream Identity	1.19	0.58	2.42
Age	1.02	0.99	1.05
Sex	2.11	0.93	4.83
BMI	0.98	0.94	1.03
Education	1.03	0.68	1.56

OR = Odds Ratio, 95% CI = 95% confidence interval, BMI = Body Mass Index.

* = $p < .05$, ** = $p < .01$.

4. Discussion

The objective of this study was to better understand the impact of stress, acculturation, and heritage identity on depression in Arab Americans. We found that 60% of our sample may have depression, which is higher than the 50% prevalence that previous literature has reported [22,25,26]. Additionally, we found that perceived stress and acculturative stress are associated with greater odds of Arab Americans having depression. We found no significant effect of everyday discrimination, acculturation, or heritage identity on depression in Arab Americans.

Previous literature has shown an association between stress and the prevalence of depression [4–6,27]. For example, Flores et al reported that perceived stress independently predicted depression in Mexican-American adults [28]. With regards to everyday discrimination, Johnson-Lawrence et al found that discrimination was associated with greater odds of developing depression in African Americans [29]. Interestingly, Johnson-Lawrence et al found that education was protective against the effects of discrimination in men but not women [29]. Additionally, Pachter et al showed also showed that discrimination was associated with greater odds of depression [30]. Interestingly, they also found the ethnicity moderates the effect on mental health outcomes [30]. As it relates to Arab Americans, Kader et al showed that everyday discrimination was associated with greater odds of depression [4]. Finally, acculturative stress has also been found to be associated with depression in Korean, Chinese, and Latino Puerto Ricans [31–33]. With regards to Arab Americans, Wrobel et al found that acculturative stress predicted depression in elderly Arab Americans [5]. However, Wrobel et al did not examine whether the effect was prevalent in young and middle aged Arab Americans [5]. With regards to our findings, we replicated the findings of Wrobel et al in our sample of Arab Americans with an average age of 39 suggesting that the effect of acculturative stress on depression in Arab Americans extends beyond the elderly [5]. Furthermore, we replicated the findings of Flores et al

suggesting that perceived stress is also associated with an increase in the odds of developing depression in Arab Americans [28]. Finally, our findings differ from the findings of Kader et al, as we did not find that everyday discrimination was associated with depression in Arab Americans [4]. Differences between our findings and Kader et al may be due to the fact that we included other domains of stress such as perceived stress and acculturative stress that may have driven the significant effect of everyday discrimination in their study.

A meta-analysis by Gupta et al found that acculturating towards American culture is protective against the development of depression in Asian Americans [11]. Whereas, Lorenzo-Blanco et al found that in a sample of Hispanic youth, acculturation was instead detrimental and associated with depression [12]. With regards to the effects of heritage identity, in a sample of young refugees in Norway, Oppedal et al found that stronger heritage identity was associated with lower depression levels [34]. However, in a sample of US racial and ethnic minority immigrants, Tikhonov et al found no association between heritage identity and depression [35]. As it relates to Arab Americans, Wilson et al found that more acculturated individuals had significantly lower levels of depression compared to non-acculturated individuals [3]. Unlike Wilson et al, we did not find that acculturation was associated with depression in Arab Americans. Furthermore, our findings on heritage identity most closely replicate the findings of Tikhonov et al suggesting that heritage identity is not associated with depression in Arab Americans and other racial and ethnic minorities [35].

This study faces several limitations. First, our sample is small and was recruited in the ethnic enclave, Dearborn, Michigan and therefore may not accurately represent Arab Americans throughout the country. Second, women comprised the majority of our sample (71%) and therefore there may be a gender bias in our results. Third, the study did not include a formal measure of financial status which may be a confounding variable in our results. Finally, our sample was recruited via a convenience sampling model and therefore there may be a selection bias as the sample consisted of participants seeking economic and health needs at ACCESS.

5. Conclusion

In summary, we found that perceived stress and acculturative stress increase the odds of having depression in Arab Americans. Everyday discrimination, acculturation, and heritage identity have no effect on depression in Arab Americans. To our knowledge, this study is among the few to look into the effects of stress and acculturation on depression in Arab Americans. Furthermore, this study is the

first to look into the effects of heritage identity on depression in Arab Americans. Our study adds to an important body of research on the mental health of Arab Americans. We hope our findings inform clinicians on the important underlying causes that may be causing depression in their Arab American patients.

Ethical approval and consent to participate

Our research was approved by the Wayne State University institutional review board and all procedures followed were in accordance with the ethical standards of the IRB and the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all individual participants included in the study.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Author's Contributions

AMS: Designed study, conducted analysis, drafted manuscript. OA: Assisted with analysis, drafted manuscript. KEW: Funded study, designed study, assisted with analysis and writing.

Geolocation

Detroit Metropolitan Area

ORCID

Abdul-Rahman Suleiman  <http://orcid.org/0000-0002-4540-4741>

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