The Association of Perceived Abuse and Discrimination After September 11, 2001, With Psychological Distress, Level of Happiness, and Health Status Among Arab Americans

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Objectives. We assessed the prevalence of perceived abuse and discrimination among Arab American adults after September 11, 2001, and associations between abuse or discrimination and psychological distress, level of happiness, and health status.

Methods. We gathered data from a face-to-face survey administered in 2003 to a representative, population-based sample of Arab American adults residing in the greater Detroit area.

Results. Overall, 25% of the respondents reported post–September 11 personal or familial abuse, and 15% reported that they personally had a bad experience related to their ethnicity, with higher rates among Muslims than Christians. After adjustment for socioeconomic and demographic factors, perceived post–September 11 abuse was associated with higher levels of psychological distress, lower levels of happiness, and worse health status. Personal bad experiences related to ethnicity were associated with increased psychological distress and reduced happiness. Perceptions of not being respected within US society and greater reported effects of September 11 with respect to personal security and safety were associated with higher levels of psychological distress.

Conclusions. Perceived post–September 11 abuse and discrimination were associated with increased psychological distress, reduced levels of happiness, and worse health status in our sample. Community-based, culturally sensitive partnerships should be established to assess and meet the health needs of Arab Americans. (*Am J Public Health.* 2010;100:284–291. doi:10.2105/AJPH.2009.164954)

The events of September 11, 2001, adversely affected Americans both near and far from the destruction, with different psychological consequences across different demographic lines. Studies have shown that Hispanics,[1] women,[2,3] younger individuals,[3] and those with a history of anxiety or depression[2] have experienced greater psychological distress and have been more at risk for adverse health outcomes. To date, however, there has been no representative, population-based investigation of the psychological impact of September 11 and its aftermath on Arabs or Muslims living in the United States.

In the United States, prejudice, discrimination, and violence against Muslims and Arabs have increased since September 11.[4] Estimates of the American Muslim population vary widely but average 5.4 million,[5–9] consisting of equivalent numbers of African Americans, South Asians, and Arabs.[9] In addition, up to 2.5 million non-Muslim Arabs reside in the United States.[10] The Federal Bureau of Investigation (FBI) reported a 1600% increase in hate crimes against these populations in the year after the events of September 11.[10–13] Similarly, in a population-based survey of Middle Eastern Arabic-speaking adults in the United States, approximately 30% of Arabs and 50% of Muslims reported discrimination in the 8 months after September 11.[14] Mosques and Muslim-owned business were vandalized, and individuals Muslim in appearance were verbally abused, physically assaulted, and, in some cases, murdered.[12] Anti-Muslim and anti-Arab hate crimes continue to be at higher levels than before September 11.[15,16]

US governmental policies have also targeted Muslims and Arabs and their community organizations. Muslim civic and religious organizations have been raided by the FBI,[17,18] Muslim charities have had their assets frozen,[19] and racial profiling has occurred at airports and on the streets.[20] Further coloring the social environment are the US-led wars in Afghanistan and Iraq. These wars may create increased tension between the general American population and people of Afghani and Iraqi ancestry residing in the United States, in addition to increasing psychological distress among the US-based relatives of Iraqis and Afghanis.

An important but largely unanswered question is how this climate has affected the health of American Arab and Muslim populations. Racial and ethnic discrimination is associated with increased psychological distress[21,22] and anxiety,[23] increased risk for adverse mental health outcomes,[22,23] and poorer health status.[21,24,25] Moreover, immigrants who perceive increased discrimination in their new country are more likely to have high levels of psychological distress and decreased levels of trust in society, potentially leading to underuse of mental health services by those in need.[26] However, research within US Arab or Muslim communities in the post–September 11 environment is scant. To date, only a handful of small studies have been conducted, and these investigations have involved convenience samples.[27,28]

To address the lack of representative surveys of Arab Americans, we examined the psychological and health effects of perceived discrimination and abuse approximately 2 years after September 11, 2001, in a representative sample of Arab American adults residing in greater Detroit. The Detroit-area Arab community is the largest such community outside of the Middle East; a result of its size, affluence, and long history in the United

States, it possesses arguably greater social capital than other US-based Arab communities.[29]

Our research questions were as follows: How prevalent is reported abuse and discrimination in our study population? How are reports of abuse or discrimination associated with self-reported psychological distress, level of happiness, and health status? What role do sociodemographic factors play in reported abuse or discrimination? We examined these questions among individuals who took part in the 2003 Detroit Arab American Survey (DAAS).[30]

METHODS

The DAAS, a representative survey conducted from July to December 2003, included all adults of Arab or Chaldean descent living in Michigan's Wayne, Oakland, and Macomb counties. Approximately 490 000 Arabs reside in Michigan, of whom more than 80% live in these 3 counties.[10] Arabs are the third largest ethnic population in the state, with a history dating back multiple generations.[31,32] Chaldean Americans are descendants of people from the northern Tigris-Euphrates Valley who have their own language and are Catholic Christians. Thus, although they may share aspects of culture and domains of concern with other Arab Americans, they represent a distinct ethnic group.[33,34]

The DAAS survey was designed through a community–academic collaboration in which both Muslim Arab and Chaldean (Christian) Arab groups were represented. A dual-frame probability sample design was used. An area probability frame was employed to select area segments from year 2000 census tracts in which 10% or more of individuals classified themselves as Arab or Chaldean in ancestry, and a list frame was used to select housing units from the mailing and membership lists of 13 Arab American and Chaldean American organizations.

The area probability component was based on a 3-stage sample design that comprised a primary-stage sample of area segment units, a second-stage sample of housing units within area segments, and, finally, random selection of one eligible adult from each household. Within the list frame, a systematic random sample of individual addresses was employed, with random selection of one eligible adult respondent in each household. The survey was administered via face-to-face interviews. Individuals residing in institutions, in group quarters, or on military bases were excluded.[35] A total of 1389 eligible households were identified, and 1016 adults from these eligible households completed the study interview (73% participation rate).

Independent Variables

We examined 4 principal independent variables. First, respondents reported personal abuse they or a household member had experienced by answering yes or no to the question "In the last 2 years, have you personally, or anyone in your household, experienced verbal insults or abuse, threatening words or gestures, physical attack, vandalism or destruction of property, or loss of employment, due to your race, ethnicity, or religion?" Second, whether respondents had themselves directly experienced post–September 11 discrimination was determined via the question "Since 9/11, have you personally had a bad experience due to your Arab or Chaldean ethnicity?"

Third, respondents were asked to rate their level of agreement, on a 5-point Likert-type scale, with the statement "Arab Americans are not respected by the broader American society." Fourth, they were asked "How much—if any—have the events of 9/11 shaken your own personal sense of safety and security?" Responses were made on a 4-point Likert-type scale.

Other independent variables were gender, age (younger than 30 years, 30–55 years, older than 55 years), marital status, religious affiliation, and educational level (less than high school, some college, advanced degree). Finally, we assessed household income (less than $30 000, $30 000–$75 000, and above $75 000), health insurance status, and years of residence in the United States.

Outcome Measures

The 3 outcome variables were Kessler Psychological Distress Scale (K10) score, self-reported level of happiness, and self-reported health status. The K10 is a validated population screening tool addressing anxiety and depressive disorders that compares well with the General Health Questionnaire[36] and the Medical Outcomes Study Short-Form 12-Item Health Survey.[37,38] It consists of 10 items, rated on a 5-point Likert-type scale, that are summed to yield a score between 10 and 50. Higher scores denote a higher likelihood of a mood or anxiety disorder.[39,40] The Cronbach alpha coefficient for the K10 in our sample was 0.89. We computed a K10 score for each respondent and used Markov chain imputation if at least 7 of the 10 questions were answered.[41] Of the 1016 respondents, 1005 responded to at least 7 of the 10 items.

As a means of assessing health status, respondents were asked "How would you describe your overall state of health these days? Would you say it is excellent, very good, good, fair, or poor?"[42] This 1-item measure has been shown to be an independent predictor of future mortality even after baseline physical health status and lifestyle factors have been taken into account.[43] As a measure of level of happiness, respondents answered the question "Taking all things together, would you say you are very happy, happy, not very happy, or not happy at all?" Responses were made on a 4-point Likert-type scale.[44]

Data Analysis

We calculated descriptive statistics, including means and proportions, without survey weights and used logistic regression to compare dichotomous outcomes. In all other analyses, survey weights incorporating sample selection, nonresponse, and poststratification factors were applied to each respondent, and a single-unit scaled strategy for variance estimates was employed. Stata version 9 (StataCorp, College Station, TX) was used in conducting all analyses.

Linear regression was used to examine the bivariate relationships between all independent variables and K10 scores. We conducted 4 separate multivariate linear regression analyses for each of the variables related to perceived post–September 11 abuse and discrimination, adjusting for socioeconomic and demographic factors. Predicted K10 scores were obtained and tabulated. We used ordered logistic regression models to assess level of happiness and health status. Bivariate analyses examined associations between the independent variables and level of happiness and health status, and unadjusted odds ratios (ORs) were calculated.

Next, we conducted 4 separate multivariate ordered logistic regression analyses assessing associations of the variables related to perceived post–September 11 abuse and discrimination with level of happiness and health status after adjustment for socioeconomic and demographic factors. In these analyses, independent variables were as follows: personal or familial abuse (model A), perceptions of lack of respect for Arab Americans in US society (model B), extent to which September 11 has shaken personal sense of security and safety (model C), and personal bad experiences related to ethnicity (model D).

To examine differences in outcomes according to religious affiliation, we tested interaction effects between religious affiliation and the perceived post–September 11 abuse and discrimination variables in the multivariate models for each outcome. Regression diagnostics for outliers, heteroskedasticity, and discrimination and checks for multicollinearity were performed via visual inspection of residual plots and computation of variance inflation factors for regression models.

RESULTS

The mean age of the 1016 respondents was 43.6 years (SD=16.5; range = 18–88; Table 1). Fifty-four percent of the respondents were female, and 58% were Christians. Most had lived in the United States for more than 10 years (81%), had health insurance coverage (83%), and were married (71%).

Perceived Abuse and Discrimination

Twenty-five percent of the respondents (22% of Christians and 29% of Muslims; $P<.05$) reported post–September 11 personal abuse or abuse of household members related to race, ethnicity, or religion. In addition, 15% of the respondents (12% of Christians and 19% of Muslims; $P<.01$) reported that they personally had a bad experience related to their Arab or Chaldean ethnicity. Twenty-five percent of those reporting personal bad experiences did not report personal abuse or abuse of household members, and 54% of those reporting personal or familial abuse did not report personal bad experiences. There were no significant gender differences in reports of abuse and personal bad experiences.

TABLE 1—Demographic Characteristics of Respondents (n = 1016): 2003 Detroit Arab American Survey

Characteristic	No. (%)
Age, y	
< 30	220 (22)
30–55	515 (51)
> 55	281 (28)
Female	538 (54)
Religion	
Christian	579 (58)
Muslim	422 (42)
Other	13 (1)
Married	724 (71)
Education	
< High school	453 (45)
Some college	439 (44)
Advanced degree	113 (11)
Household income, $	
< 30 000	313 (36)
30 000–75 000	257 (29)
> 75 000	304 (35)
Has lived in US > 10 y	821 (81)
Has health insurance coverage	839 (83)

Multivariate Analyses of Abuse and Discrimination Variables

Kessler Psychological Distress Scale. The sample's mean K10 score was 20.77 (SD=6.4; Table 2). After adjustment for respondent characteristics, reported personal or familial abuse ($P<.003$), personal bad experiences related to one's ethnicity ($P<.001$), and the perception that Arab Americans are not respected in US society ($P<.002$) were all associated with higher K10 scores. Those who reported greater effects of September 11 with respect to their personal safety and security had higher K10 scores ($P<.001$); however, this finding was significant only at the .08 level. There were no differences between Muslims and Christians in terms of the effects of perceived abuse and bad experiences on K10 scores.

Self-reported levels of happiness. One percent of the respondents reported not being happy at all, 7% reported being not very happy, 53% reported being happy, and 39% reported being very happy (Table 3). Reports of post–September 11 ethnicity-related bad experiences were associated with lower levels of happiness in both bivariate and multivariate ordered logistic models (model D; OR=0.55; 95% confidence interval [CI]=0.40, 0.74). Multivariate models showed that personal or familial abuse (model A; OR=0.50; 95% CI=0.35, 0.72) and perceptions of lack of respect for Arab Americans in US society (model B; OR=0.76; 95% CI=0.61, 0.96) were associated with lower levels of happiness as well. Although the bivariate analyses showed that respondents who reported that September 11 had shaken their personal security and safety reported lower levels of happiness (model C; OR=0.84; 95% CI=0.74, 0.95), this effect was attenuated by sociodemographic characteristics in the multivariate models.

Greater educational attainment (models A–D; ORs=1.32–1.47), higher household income (models A–D; ORs=1.31–1.40), health insurance coverage (models A–D; ORs=1.96–2.05), and having lived in the United States for more than 10 years (models A–D; ORs=1.68–1.87) increased the odds of respondents reporting higher levels of happiness. Religion had no independent effects on level of happiness.

Self-reported health status. Three percent of the respondents reported poor health and 28% reported excellent health, with 14%, 26%, and 30%, respectively, reporting fair, good, and very good health (Table 4). Reported personal or familial abuse was associated with worse health after adjustment for sociodemographic characteristics (model A; OR=0.70; 95% CI=0.50, 0.98), as were respondents' reports that September 11 had shaken their personal safety and security (model C; OR=0.81; 95% CI=0.67, 0.97). Reports of personal bad experiences were positively associated (OR=1.51; 95% CI=1.11, 2.04) with health status in the bivariate but not the multivariate analyses. The perception that American society does not respect Arab Americans was not significantly associated with health status.

In all 4 multivariate ordered logistic models, increasing age had a negative association with health status (models A–D; ORs=0.45–0.48), whereas increasing education and household income were positively associated with health status (models A–D; ORs=1.70–1.80 and 1.58–1.67, respectively).

TABLE 2—Adjusted Kessler Psychological Distress Scale (K10) Scores, by Selected Respondent Characteristics: 2003 Detroit Arab American Survey

Principal Independent Variable	K10 Score[a]	*P*	R^2
Personal or familial abuse		.003	0.040
Yes	22.65		
No	20.39		
Arab Americans not respected in US society		.002	0.053
Strongly disagree	18.93		
Disagree	19.86		
Neither agree nor disagree	20.79		
Agree	21.72		
Strongly agree	22.65		
Extent to which September 11 has shaken personal sense of security and safety		.001	0.048[b]
Not at all	18.65		
Minimally	19.76		
A good amount	20.87		
Extremely	21.98		
Personal bad experience related to ethnicity		<.001	0.035
Yes	23.09		
No	20.61		

Note. Each of the 4 multivariate linear regression models adjusted for age, gender, religion, educational level, income, marital status, length of residence in the United States, and health insurance coverage.
[a]The K10 is a validated population screening tool addressing anxiety and depressive disorders. It consists of 10 items, rated on a 5-point Likert-type scale, that are summed to yield a score between 10 and 50. Higher scores denote a higher likelihood of a mood or anxiety disorder.
[b]For this regression model, $P = .08$; all other models were significant at $P < .05$.

The relationship between male gender and health status was positive in the bivariate analyses, but this effect no longer held in the multivariate ordered logistic models. Religion had no independent effects on reported health status.

DISCUSSION

This study is the first of which we are aware to assess the effects of perceived post–September 11 abuse and discrimination on self-reported health measures in a population-based, representative sample of Arabs living in the United States. A quarter of the respondents reported either personal abuse or abuse of household members, and 15% reported personally having bad experiences related to their ethnicity, with rates in both areas being significantly higher among Muslims than among Christians. Of those who reported personal or familial abuse, more than half did not report that they themselves directly had a bad experience related to their ethnicity.

Levels of psychological distress were high in this sample, especially among those who reported either personal or familial abuse or personally had bad experiences related to their ethnicity. Furthermore, increasing perceptions of lack of respect for Arab Americans in US society and greater reported effects of September 11 on respondents' personal safety and security were associated with higher levels of distress. Reports of post–September 11 abuse and discrimination were also associated with lower levels of happiness and worse self-reported health status.

The post–September 11 environment has raised the visibility of Arab communities in the West through increased media attention, mitigating the health benefits derived from social integration with and relative invisibility within these societies.[45] Moreover, the post–September 11 increase in anti-Muslim and anti-Arab discrimination and violence[13,46] provides researchers with an opportunity to assess the health effects of post–September 11 abuse and discrimination, as experiences of prejudice and discrimination have been linked to increased psychological distress and poorer mental and physical health.[25]

Small post–September 11 studies suggest that Arab women may be at increased risk for discrimination and psychological distress[28] and that perceived religious discrimination may be associated with paranoia among Muslim Americans.[27] The only representative cross-sectional investigation of Muslims or Arabs in a similar situation of which we are aware focused on the London subway bombings.[47] In that study, 62% of Muslims reported substantial stress, and Muslim religious affiliation exhibited the strongest association with stress of any demographic variable.

Our study built on this research through our use of a representative, population-based sample of the Arab population in greater Detroit. Similar to previous studies, we found negative associations between perceived discrimination and well-being, in that perceived post–September 11 abuse and bad experiences were associated with higher levels of psychological distress, lower levels of happiness, and worse health status.

In contrast to other work, we did not find in our multivariate models that Muslim religious affiliation was associated with worse outcomes in these 3 areas. Although a higher percentage of Muslims than Christians reported abuse and discrimination, Muslim religious affiliation was not independently associated with psychological distress, levels of happiness, and health status, nor were there differences between Muslims and Christians with respect to the effects of post–September 11 discrimination and abuse. Thus, we hypothesize that although Muslim religious affiliation may be a risk factor for exposure to post–September 11 abuse and discrimination, this abuse and discrimination in itself, regardless of religion, may have produced increased psychological distress, lower levels of happiness, and worse health status. This hypothesis warrants further investigation. Similarly, in contrast to other studies, women did not report significantly more abuse than men, nor was female gender significantly associated with health status or level of happiness.[28]

By allowing for cross-population comparisons, our use of the K10 lends strength to our

TABLE 3—Unadjusted and Adjusted Odds Ratios for the Relationship Between Independent Variables and Reported Levels of Happiness: 2003 Detroit Arab American Survey

	Model A		Model B		Model C		Model D	
Independent Variable	Unadjusted OR (95% CI)	AOR (95% CI)	Unadjusted OR (95% CI)	AOR (95% CI)	Unadjusted OR (95% CI)	AOR (95% CI)	Unadjusted OR (95% CI)	AOR (95% CI)
Personal or familial abuse	0.70 (0.48, 0.94)	0.50** (0.35, 0.72)						
Arab Americans not respected in US society			0.90 (0.75, 1.08)	0.76* (0.61, 0.96)				
September 11 has shaken personal sense of security and safety					0.84** (0.74, 0.95)	0.89 (0.78, 1.01)		
Personal bad experience related to ethnicity							0.66* (0.47, 0.94)	0.55*** (0.40, 0.74)
Educational level	1.65*** (1.31, 2.07)	1.42** (1.13, 1.78)	1.65*** (1.31, 2.07)	1.47* (1.07, 2.03)	1.65*** (1.31, 2.07)	1.32* (1.04, 1.66)	1.65*** (1.31, 2.07)	1.44** (1.14, 1.82)
Health insurance coverage	2.74*** (1.61, 4.65)	1.96** (1.29, 2.99)	2.74*** (1.61, 4.65)	2.05** (1.23, 3.39)	2.74*** (1.61, 4.65)	2.02** (1.26, 3.22)	2.74*** (1.61, 4.65)	1.89** (1.22, 2.92)
Household income	1.75*** (1.43, 2.14)	1.40** (1.14, 1.72)	1.75*** (1.43, 2.14)	1.31* (1.01, 1.70)	1.75*** (1.43, 2.14)	1.37** (1.13, 1.65)	1.75*** (1.43, 2.14)	1.36** (1.12, 1.65)
Length of residence in United States	2.60*** (1.78, 3.81)	1.71* (1.13, 2.57)	2.60*** (1.78, 3.81)	1.87* (1.08, 3.24)	2.60*** (1.78, 3.81)	1.72* (1.15, 2.57)	2.60*** (1.78, 3.81)	1.68* (1.12, 2.52)
Muslim religious affiliation	0.63** (0.48, 0.85)	0.80 (0.60, 1.08)	0.63** (0.48, 0.85)	0.96 (0.71, 1.31)	0.63** (0.48, 0.85)	0.81 (0.61, 1.09)	0.63** (0.48, 0.85)	0.79 (0.60, 1.04)

Note. AOR = adjusted odds ratio; CI = confidence interval; OR = odds ratio. Multivariate ordered logistic regression models adjusting for marital status, gender, and income did not meet statistical significance.
*$P < .05$; **$P < .01$; ***$P < .001$.

finding of high levels of psychological distress in our sample. The overall mean K10 score of 20.77 indicates that our respondents were at medium risk for anxiety or depressive disorders, in contrast with the low-risk scores found in a general Australian population and a sample of Bostonians (14.2 and 9.2, respectively).[48,49] This score translates to a 12-month probability of 48.5% of having an anxiety or affective disorder, which is higher than the 32.4% probability for the US population as a whole.[48,50] Furthermore, scores between 19 and 24 merit counseling and reference to self-help materials (whereas scores above 24 merit referral to a specialist given that adults with scores in this range are at a greater risk of suicide).[51,52]

K10 scores were higher among respondents who reported personal or family abuse and personal bad experiences after September 11, as were scores among those who had stronger perceptions of lack of respect in US society for Arab Americans and those who reported increased effects of September 11 on their personal safety and security. Although these K10 scores remained in the medium-risk category, the increase in score increased the specificity of the screening tool from 90% to 97%, thus increasing the likelihood of individuals screening positive for a mood or anxiety disorder.[48] These associations should be interpreted with caution because the cross-sectional nature of our study does not allow causal relationships to be posited and the K10 has not been specifically validated within the Arab American population.

Reports of personal or familial abuse or personal bad experiences had stronger negative associations with level of happiness than did any of the socioeconomic or demographic factors assessed. Given that perceived discrimination is strongly tied to mental health outcomes and that mental health often predicts happiness in Arab populations, these findings provide the strongest indication of the negative impact of perceived post–September 11 abuse and discrimination on respondents' well-being.[53] This does not undermine the importance of social determinants of mental health, however, in that health insurance coverage, higher levels of education, and higher household incomes all independently increased the odds of respondents reporting higher levels of happiness.

Although perceived post–September 11 abuse and greater effects of September 11 on

TABLE 4—Unadjusted and Adjusted Odds Ratios for the Relationship Between Independent Variables and Self-Reported Health Status: 2003 Detroit Arab American Survey

	Model A		Model B		Model C		Model D	
Independent Variable	Unadjusted OR (95% CI)	AOR (95% CI)	Unadjusted OR (95% CI)	AOR (95% CI)	Unadjusted OR (95% CI)	AOR (95% CI)	Unadjusted OR (95% CI)	AOR (95% CI)
Personal or familial abuse	1.24 (1.00, 1.55)	0.70* (0.50, 0.98)						
Arab Americans not respected in US society			1.09 (0.93, 1.27)	0.91 (0.75, 1.11)				
September 11 has shaken personal sense of security and safety					0.77** (0.66, 0.90)	0.81* (0.67, 0.97)		
Personal bad experience related to ethnicity							1.51** (1.11, 2.04)	1.04 (0.71, 1.52)
Male	1.37** (1.13, 1.66)	1.26 (0.99, 1.61)	1.37** (1.13, 1.66)	1.18 (0.86, 1.63)	1.37** (1.13, 1.66)	1.26 (0.98, 1.63)	1.37** (1.13, 1.66)	1.28* (1.00, 1.64)
Educational level	2.20*** (1.81, 2.67)	1.80*** (1.43, 2.28)	2.20*** (1.81, 2.67)	1.74*** (1.31, 2.32)	2.20*** (1.81, 2.67)	1.70*** (1.34, 2.16)	2.20*** (1.81, 2.67)	1.74*** (1.36, 2.23)
Age	0.45*** (0.36, 0.56)	0.46*** (0.35, 0.61)	0.45*** (0.36, 0.56)	0.46*** (0.35, 0.60)	0.45*** (0.36, 0.56)	0.48*** (0.36, 0.64)	0.45*** (0.36, 0.56)	0.49*** (0.37, 0.64)
Income	2.00*** (1.70, 2.38)	1.67*** (1.41, 1.97)	2.00*** (1.70, 2.38)	1.58*** (1.32, 1.90)	2.00*** (1.70, 2.38)	1.65*** (1.39, 1.95)	2.00*** (1.70, 2.38)	1.64*** (1.39, 1.95)

Note. AOR = adjusted odds ratio; CI = confidence interval; OR = odds ratio. Multivariate ordered logistic regression models adjusting for religion, marital status, length of residence in the United States, and health insurance coverage did not meet statistical significance.
*$P < .05$; **$P < .01$; ***$P < .001$.

respondents' personal security and safety were associated with lower reported health status, advancing age had the strongest such association. This finding may have been the result of an increased disease burden within the aging population and, thus, lowered perceptions of health status. Higher household income and educational level, on the other hand, increased the odds of reporting better health. These social characteristics may have tempered the effects of September 11 on our respondents, providing evidence that socioeconomic factors (higher income and education) increase perceptions of positive health even in the face of abuse and discrimination. Alternatively, individuals of higher socioeconomic status may have greater access to health resources that enable them to obtain care when needed, may have stronger coping and problem-solving skills, or may be healthier to begin with.

Limitations

Although the representative sampling of the DAAS lends strength to our findings, our use of that survey also introduced limitations. For example, the survey included only limited measures of psychological distress, abuse, and discrimination and was entirely reliant on self-reported information. Also, the survey did not include measures of health service use, and thus the clinical significance of our findings is unknown. However, the work of the Arab American Association of New York, as well as mosque-based research, has shown an increasing number of individuals seeking psychological counseling from mosques and churches since September 11 owing to a lack of targeted services and a general mistrust of mental health programs.[4]

Another limitation is that the study's cross-sectional survey does not allow for causal inferences. Although we uncovered associations between the variables we assessed and perceived post–September 11 abuse and discrimination, we cannot determine whether respondents who reported abuse and discrimination, perceived a lack of respect for Arab Americans in US society, or perceived a loss of personal safety and security after September 11 had higher psychological distress levels, lower levels of happiness, or worse health status at baseline.

Finally, given the unique characteristics of our greater Detroit Arab population, it may not be possible to generalize our findings to other Muslim or Arab populations. In light of the large size and long history of the study community, and given that increased ethnic density has been shown to have positive health effects and yield social capital, perceived post–September 11 abuse and discrimination may have had less of an impact in this community than in communities where Arabs and Muslims are present in smaller numbers or are mostly new immigrants.[54] Specifically, increased ethnic density is associated with fewer experiences of racism and less psychological distress, thus it may have been a protective factor in our study community.[55,56]

Furthermore, given that most of the respondents had health insurance coverage, it is possible that those who were adversely affected by abuse and discrimination may have been better able to seek care than those in a community with less access. Thus, any negative associations of perceived post–September 11 abuse and discrimination with psychological distress, levels of happiness, and reported health status may be greater in less concentrated Arab populations within the United States.

Conclusions

Perceived discrimination and abuse may influence people's overall health by causing negative emotional states that subsequently lead to mental health conditions such as depression and stress disorders. These disorders in turn may have a direct impact on biological processes or behavioral patterns that affect risk of physical disease.[57] However, the extent to which reports of discrimination and emotional stress translate into negative health behaviors (e.g., substance abuse) and the causal process by which these stressors exert their effect are unclear.

Within the Arab American population, perceived loss of personal control has been found to partially mediate the links between reported discrimination experiences and psychological distress.[58] Further efforts to elucidate these links and mechanisms are warranted. On a population scale, experiences of racial and ethnic discrimination may contribute to disparities in health, given that these experiences negatively affect mental and physical health, leading to an increased burden of disease.[25]

In summary, we found adverse health effects of perceived post–September 11 abuse and discrimination—in terms of increased psychological distress, lower levels of happiness, and poorer perceptions of health status—in the greater Detroit Arab community. The Arab community in the United States represents an ideal population with which to partner in an effort to better understand the pathways by which racial/ethnic and religious discrimination may lead to adverse health behaviors and outcomes. Such partnerships also hold the potential for developing culturally sensitive programs and interventions to assess and meet health needs stemming from post–September 11 abuse and discrimination. ■

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Contributors

A. I. Padela originated the study; acquired, analyzed, and interpreted the data; and led the writing of the article. M. Heisler aided in study design, contributed to analysis and interpretation of the data, and critically revised the article.

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