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## Stress Effects on Psychological Distress among Asian Americans: Structural Equation Modeling Analysis

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### Abstract

We examined the relationship between stress and psychological distress as moderated by religious affiliation among Asian Americans. We conducted secondary analysis of data from respondents who self-identified as Chinese, Filipino, or Vietnamese ( $N = 1,614$ ) from the National Latino and Asian American Study. We used structural equation modeling to investigate relationships between culturally nuanced stress indicators (discrimination, stressful family relationships, and financial difficulties) and psychological distress. The moderation effect of religious affiliation on the relationship between stress and psychological distress was examined using multiple-group analysis. Analyses suggested a statistically significant positive main effect of each stress variable on psychological distress. No support of a moderation effect was found; religious affiliation did not significantly attenuate the impact of stress on psychological distress in this Asian heritage community sample. Our findings highlight the need for further examination of religious involvement rather than religious affiliation as a buffer against daily stress experienced by Asian Americans.

**Keywords:** mental health outcomes; immigrants; religious affiliation; National Latino and Asian American Study; discrimination

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## **1. Introduction**

The effects of stress on mental health have been investigated in epidemiological studies for decades. The assumption is that exposure to negative or stressful life events precedes and increases the risk of adverse mental health outcomes. Among immigrants from underserved ethnic groups, such as Asian Americans, studies have indicated that stressors related to acculturative experiences have a significant impact on mental health [1–3]. Stressors frequently associated with negative acculturative experiences include experiences of discrimination, stressful family relationships, and financial difficulties.

Consistent with general population findings [4, 5], the adverse effect of discrimination on mental health outcomes, such as psychological distress [1, 6], depression symptoms [7–9], or other mental disorders [10, 11], has been demonstrated among Asian Americans.

Previous research has shown that family relationships or support affects mental health [12–14]. Stressful family relationships can be particularly stressful for Asian Americans, who may have traditional cultural values of harmony and are likely to depend on their family for most of their social support [15, 16]. Among Asian American families, conflict is associated with increased psychological distress [17–20].

Although financial success and high educational attainment among some subgroups of Asian Americans have contributed to misconceptions of Asians as financially successful, closer examination has revealed that the poverty rate among Asian Americans is higher than that of non-Hispanic Whites (11.6% vs. 8.8%, respectively) and is especially higher among some subgroups of Asian Americans; Vietnamese (14.0%) and Chinese (13.4%) typically fare better than Filipinos (5.2%) [21]. Financial stress has been significantly associated with both self-rated physical and mental health among Asian Americans [22]. Explanations for this relationship between financial hardship and mental health distress include a lack of resources, access to health care, and insurance benefits [23].

Despite the pernicious consequences of these stressors, their harmful effects can be moderated by various factors, including religious affiliation. There is general agreement that having a religious affiliation is beneficial to mental health outcomes. Previous studies reported that people with a religious affiliation experience fewer psychiatric disorders than those with no affiliation [24, 25]. Religion is intricately interwoven with other aspects of Asian Americans' identities and life experiences. Traditional Asian cultural values influence the religious expression of Asian Americans, even among those adopting Westernized Christian beliefs [26]. Many Asian Americans share a formalized, traditional, hierarchical, and group-oriented culture that emphasizes action (ritual, worship attendance, charity) rather than beliefs. In this context, religious affiliation can serve as a meaningful proxy measure for religion or religiosity among Asian Americans. Filipino and Vietnamese immigrants without any religious affiliation had the highest mean psychological distress scores, compared to groups with any religious affiliations [27].

Despite growing evidence of the positive effects of religion on mental health, most studies of underrepresented groups have focused on African Americans. The proportion of Asian Americans in much of the literature has been small and not conducive to analysis. Other findings have been either anecdotal or based on small unrepresentative samples. Another gap in previous studies is that the relationship between stress and psychological distress has been independently examined. Examining the influence of different stressors on the psychological distress experienced by Asian Americans in the same model is important to ongoing efforts to develop preventive and early intervention services.

The purpose of the current study was to test the relationships between culturally relevant stressors and psychological distress and to investigate whether these relationships varied in accordance with religious affiliation. We hypothesized that culturally relevant stressors would be significantly related to psychological distress and that there would be an attenuated relationship between stress and psychological distress among Asian Americans reporting a religious affiliation (vs. no affiliation). Ameliorating the mental health needs of underrepresented minorities through collaboration with community-based entities such as religious or spiritual communities is consistent with the priorities outlined in the President's New Freedom Commission Report [28].

## **2. Materials and Methods**

### **2.1. Data source**

We used public data from the Asian American sample of the National Latino and Asian American Study (NLAAS). The NLAAS was the first nationally representative community household survey of Latino and Asian Americans 18 years of age or older living in the United States. The NLAAS, as the first psychiatric epidemiological and service use study specifically sampling Asian Americans and Latinos, provided information on the prevalence of mental illness, sociocultural factors associated with disorders, and mental health service use [29, 30]. The core scientific objectives, survey instruments, sampling frames, and sample selection procedures were based on the National Comorbidity Survey Replication and the National Survey of American Life [30]. The survey was available in native languages only for three explicitly targeted groups (Chinese, Filipino, and Vietnamese), possibly misleading the representation of other Asian groups in terms of response rates and study results. Hence, the current study only used three ethnic groups for analysis. There were 14 cases of missing data for the religious affiliation variable, so cases with missing values were not included in the analyses. The sample for the current study included 1,614 Asian Americans.

### **2.2. Independent variables**

Three stress variables were used to examine culturally nuanced stress of Asian American respondents: everyday discrimination, stressful family relationships, and financial strain.

The everyday discrimination scale consisted of nine items measuring the frequency with which respondents routinely experienced unfair treatment. Respondents were asked to describe their reaction

to statements such as, “You are treated with less courtesy than other people.” The response categories ranged from 1 (*almost every day*) to 6 (*never*). The items were reverse coded so that a higher score equated to more discrimination experiences. The reliability of the scale in the current sample was good ( $\alpha = .82$ ).

Three scales were used to examine different aspects of family relationships: family conflict, family pride, and family cohesion. The Family Conflict Scale consisted of five items measuring the frequency with which respondents experienced cultural and familial conflicts about values and goals, with higher scores indicating more family conflict. Responses were measured on a 3-point scale ranging from 1 (*hardly ever or never*) to 3 (*often*). An example item is, “Because you have different customs, you have had arguments with other members of your family.” The scale had good reliability in the current study ( $\alpha = .76$ ). The scale of family pride was a seven-item subscale from the Family Environment Scale [31, 32]. Respondents indicated their opinions on statements regarding their family that covered an array of shared familial cultural values such as trust between family members, loyalty to the family, family pride, and a general orientation toward family. The four response categories ranged from 1 (*strongly agree*) to 4 (*strongly disagree*). Higher scores reflected a lack of family pride. The scale had high reliability in the current study ( $\alpha = .90$ ). Family cohesion was measured by three items focusing on elements of family closeness and communication. Higher scores represented lower levels of family cohesion. An item example is “Family members feel very close to each other.” The four response categories ranged from 1 (*strongly agree*) to 4 (*strongly disagree*). The scale had good reliability in the current study ( $\alpha = .84$ ).

The financial strain scale assessed financial hardship experienced by respondents. The items were measured on a four-point Likert scale with higher scores reflecting greater financial strain. Scale items are “How difficult is it for you to pay your monthly bills: very difficult, somewhat, not very, or not at all?” and “In general, would you say you have more, just enough, or not enough money to meet your needs?” The reliability of the scale in the current sample was good ( $\alpha = .78$ ).

### **2.3. Outcome variable**

Psychological distress was measured with the 10-item Kessler Psychological Distress Scale [33]. This scale measures the frequency of general psychological distress experienced during the previous 30 days (e.g., “During the last 30 days, about how often did you feel depressed?”). The item was measured on a 5-point scale ranging from 5 (*never*) to 1 (*all of the time*). Items were reverse coded so that higher scores reflected higher psychological distress. The possible range of scores was 10–50. The internal consistency in the current study sample was high ( $\alpha = .88$ ).

### **2.4. Religious affiliation**

Religious affiliation was measured by self-report. Responses were dichotomized as having a religious affiliation or not having a religious affiliation.

## **2.5. Sociodemographic variables**

Respondents self-reported gender, age, marital status and their ethnicity (Chinese, Vietnamese, or Filipino). The survey also assessed current work status (currently not employed, currently employed, not in workforce) and education (< 12 years, 12 years, 13–15 years, >16 years). The use of these categories is consistent with other studies using the same data [34].

## **2.6. Statistical Analysis**

Structural equation modeling (SEM) was used to examine the relationships between stressors and psychological distress of Asian Americans. We employed a two-step approach to SEM: measurement modeling and structural modeling. A measurement model examines how observed variables come together to represent the theory in the form of latent construct(s). A structural model represents relationships among those latent constructs. After building a measurement model with adequate fit, a structural model was tested to examine the relationship between stress and psychological distress among Asian Americans.

As the first step of building a measurement model, we used an item-parceling approach to form indicators of latent constructs of psychological distress, discrimination, and stressful family relationships. Parcels are aggregations (sums or averages) of several individual items. Parceling is a measurement practice that is used most commonly in multivariate approaches to psychometrics, particularly for use with latent variable analysis techniques (e.g., exploratory factor analysis, SEM). Although the relationship between stress variables and psychological distress can be examined in the path analysis framework, several studies reported the superiority of using parcels as indicators of a latent construct over a path analysis model using total scale scores [35]. Another benefit of using parcels is the enhanced reliability of indicators and a reduction in the number of parameters to be estimated. Creating item parcels seemed appropriate to meet the typical assumptions of normality distribution in SEM, because response categories for stress variables in the current study were ordinal. Prior to creating item-parcel indicators, factor analysis was performed to examine the dimensionality of each measurement [36]. To create and test the latent construct of stress using parcels, two constructs were examined: stressful family relationships and everyday discrimination. The dimensionality of each measure was tested using exploratory factor analysis. For psychological distress, we used four-factor model in confirmatory factor analysis. Financial strain was only measured with two items, so the mean of the two items was used as an observed variable instead of a latent variable.

The moderation effect of religious affiliation on the relationship between stress (stressful family relationships, discrimination, and financial strain) and psychological distress was tested using a multiple-group approach. In multiple-group analysis, when a model includes a mean structure, both the intercepts and factor loadings of the continuous factor indicators are held equal across groups as the default to specify measurement invariance. To represent religious affiliation as a group, a binary variable of whether respondents had a religious affiliation was used. The moderation analysis was

conducted in three steps: (1) equality constraints were placed on the factor loadings and intercepts (null model); (2) additional equality constraints were placed on three regression coefficients across two groups, which represented the path from stressful family relationships, discrimination, and financial strain to psychological distress; and (3) the difference in the model fit was tested using a chi-square difference test. For psychological distress, the Satorra-Bentler chi-square difference test was used.

The fit of the model was assessed with multiple indexes: root mean square error of approximation (RMSEA) [37], comparative fit index (CFI) [38], and the Tucker-Lewis index (TLI) [39]. Mplus statistical software was used to conduct SEM analysis of complex survey data using the TYPE=COMPLEX function [40]. The multiple linear regression standard errors were computed using a sandwich estimator. Maximum likelihood parameter estimates with standard errors and a chi-square test statistic are robust to nonnormality and nonindependence of observations when used with TYPE=COMPLEX.

### **3. Results**

The sample ( $N = 1,614$ ) of respondents was 47.5% male, 68% married, and 65% currently employed. Chinese respondents comprised the largest ethnic group in the sample (45.5%), followed by Filipinos (34%) and Vietnamese (20.5%). The average age of respondents was 41.5 years, with a range of 18 to 95 years. The respondents were highly educated; 34.4% had a college degree and an additional 25.2% had at least some college education. Most respondents were foreign-born (80.18%) and immigrated to the United States after the age of 18 years (60.96%). The largest religious affiliation group was Christian (50.53%,  $n = 823$ ), followed by those with no affiliation (25.84%,  $n = 348$ ) and those who affiliated with non-Christian religions (23.63%,  $n = 443$ ). A description of the sample by religious affiliation is presented in Table 1.

We conducted confirmatory factor analysis of the Kessler Psychological Distress Scale as a four-factor model. The factor model fit the data very well ( $\chi^2 = 148.681$ ,  $df = 31$ , RMSEA = .048, CI = .041–.056, CFI = .932, TLI = .901). Individual factor loadings were moderate to high in magnitude; loadings ranged on the negative affect factor from .635 to .754, on the agitation factor from .844 to .850, on the nervous factor from .704 to .737, and on the fatigue factor from .512 to .693.

Table 2 summarizes results of the confirmatory factor analysis of stress using three family relationship scales with ordinal variables. The model fit the data very well ( $\chi^2 = 324.080$ ,  $df = 87$ , RMSEA = .041, 90% CI = .036–.046,  $p = .999$ , CFI = .989, TLI = .987). Factor loadings on the family pride subscale ranged from .813 to .896, on family cohesion from .862 to .956, and on family conflict from .601 to .871. All factor loadings were significant at  $p < .001$ . The correlations of the factors were moderate to high, ranging from .533 to .946. Based on these results, three parcel items were created for each construct using the domain representative approach as described by Coffman and MacCallum [35].

Table 1. Descriptive statistics for demographic variables by religious affiliation

	Total	Religious affiliation	No religious affiliation	Rao-Scott ( <i>df</i> )
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	
Gender				0.79 (1)
Male	753 (47.35)	580 (46.66)	173 (49.32)	
Female	861 (52.65)	686 (53.34)	175 (50.68)	
Ethnicity				162.03 (2)***
Chinese	594 (45.46)	307 (30.99)	287 (86.97)	
Vietnamese	518 (20.53)	482 (25.79)	36 ( 5.42)	
Filipino	502 (34.01)	477 (43.22)	25 ( 7.61)	
Marital status				16.16 (2)***
Married/cohabitate	1136 (67.98)	892 (51.68)	244 (63.06)	
Never married	331 (22.78)	247 (14.94)	84 (30.32)	
Other <sup>a</sup>	147 ( 9.24)	127 ( 7.53)	20 (6.62)	
Work status				.31 (2)
Employed	1069 (64.50)	828 (64.84)	241 (63.52)	
Not employed	113 ( 6.18)	93 ( 6.29)	20 ( 5.85)	
Not in workforce	432 (29.32)	345 (28.87)	87 (30.63)	
Education				8.97 (3)*
< 12 years	288 (18.16)	238 (19.43)	50 (14.55)	
High school	302 (18.30)	244 (18.91)	58 (16.56)	
Some college	410 (25.16)	343 (26.26)	67 (21.98)	
College degree	614 (38.38)	441 (35.40)	173 (46.92)	
	<i>M</i> ± <i>SE</i>	<i>M</i> ± <i>SE</i>	<i>M</i> ± <i>SE</i>	<i>F</i> ( <i>df</i> )
Age	41.51±0.63	42.91±0.70	37.45±1.19	3763.19 (1)***
Financial strain	3.90±0.06	3.99±0.06	3.63±0.10	84572.42 (1)***
Daily discrimination	16.11±0.23	15.98±0.28	16.40±0.33	3327.89 (1)***
Family pride	9.44±0.10	8.25±0.41	8.36±0.92	413.15 (1)***
Family cohesion	4.03±0.04	3.88±0.05	4.46±0.12	6424.04 (1)***
Family conflict	6.48±0.06	6.51±0.07	6.36±0.11	8079.94 (1)***
Psychological distress	13.34±0.14	13.24±0.15	13.62±0.21	8151.72 (1)**

Note. This table presents weighted percentages for categorical variables and weighted means and standard errors for interval variables. Frequencies are unweighted.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

<sup>a</sup>Separated, divorced, or widowed.

Table 2 Standardized factor loadings of a three-factor model of family relationships

Item	Family Pride	Family Cohesion	Family Conflict
Respect one another	.813		
Share similar values and beliefs	.835		
Things works well as a family	.828		
Trust and confide in one another	.882		
Feel loyal to family	.896		
Are proud of family	.830		
Can express feelings with family	.886		
Spend free time together		.890	
Feel very close to one another		.956	
Family togetherness is important		.862	
Being too close interferes with goals			.601
Argue about different customs			.737
Feel lonely due to lack of family unity			.871
Family relations are less important			.871
Personal goal conflict with family			.762

Using item parceling, three latent variables were built: one endogenous variable (psychological distress) and two exogenous variables (stressful family relationships, discrimination). Financial strain was used as an observed variable. Using these variables, the main effect of three types of stress on psychological distress was tested. The model fit the data well ( $\chi^2 = 34.491$ ,  $df = 30$ ,  $RMSEA = .01$ ,  $p = 1.00$ ,  $CI = .000-.022$ ,  $CFI = .999$ ,  $TLI = .999$ ). All three paths from stress to psychological distress were statistically significant at  $p < .001$  and the parameter estimates ranged from .12 to .29 (Figure 1).

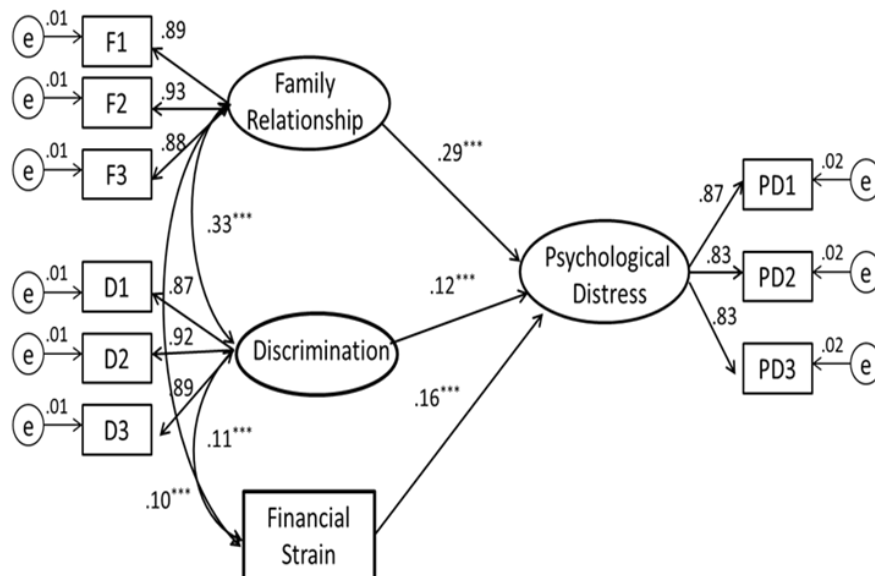


Fig. 1. Structural equation model of stress and psychological distress



Using multiple group analysis, a moderation analysis was conducted in three steps as previously described. The nested model was the more restrictive model, with more degrees of freedom than the null model. Both models fit the data well. The fit index values of the null and nested models are presented in Table 3. Although each model fit the data well, in the null (comparison) model, the three coefficients from stress to psychological distress were allowed to vary and differed between the two religious affiliation groups. In the no affiliation group, the paths from discrimination to psychological distress and financial strain to psychological distress were not significant ( $b = .059, p = .449$ ;  $b = .104, p = .143$ , respectively). The path between family and psychological distress was significant ( $b = .214, p = .026$ ). For the group with any religious affiliation, all three paths remained statistically significant.

Table 3. Multiple group analysis: Comparison of models for psychological distress

Model	$\chi^2$	<i>df</i>	Scaling correction factor	RMSEA	90% CI RMSEA	CFI	TLI
Null	108.265	72	1.862	.025	.014–.034	.993	.991
Nested	114.095	75	1.858	.025	.015–.034	.993	.991

Note. RMSEA = root mean square error of approximation; CI = confidence interval; CFI = comparative fit index; TLI = Tucker-Lewis index.

The Satorra-Bentler scaled chi-squared difference test (TRd) was used to test the differences between the two models. The two models were not significantly different (TRd = 5.902,  $df = 3, p = .116$ ), which suggests religious affiliation did not have a moderating effect on the relationship between stress and psychological distress.

Although there was no moderation effect of religious affiliation on the relationship between stress and psychological distress in the entire model, there was the possibility of a moderation effect with one or more types of stress. Therefore, as a post hoc test, all seven models were tested and a chi-square difference test was computed between each of the seven models with varying degrees of constraints and nested models (M0: all three path constraints), as presented in Table 4. Only one model (M1: free estimation on stressful family relationships to psychological distress) was significant ( $p = .038$ ), indicating that religious affiliation had a moderating effect on the relationship between stressful family relationships and psychological distress.

The results showed a significant positive main effect of stress on psychological distress. As we hypothesized, higher levels of stressful family relationships, discrimination, and financial strain were significantly related to higher psychological distress. Among three examined stress variables, stressful family relationships most strongly predicted psychological distress among Asian American study participants. Although discrimination has been reported to adversely affect the mental health of ethnic minorities including Asian Americans in previous studies, it was the least predictive variable in terms of psychological distress in the current study. It is plausible that selected indicators used to create a latent factor of stressful family relationships represented cultural nuances that are important to Asian

Americans. The importance of family relationships in everyday life may contribute more to psychological distress compared to discrimination, which is likely to be experienced but not necessarily on daily, basis thus contributing relatively less to psychological distress. Further research may be needed to understand the impact of other stressors not included in the current model that may influence the mental health outcomes of Asian Americans. Qualitative methodology may deepen our understanding of specific cultural nuances or the context of stressful situations influencing psychological distress and group differences.

Table 4. Post hoc tests

Model	Maximum likelihood ratio	df	Probability
M1: parameter A free	4.295	1	.038
M2: parameter B free	1.783	1	.181
M3: parameter C free	1.692	1	.193
M4: parameter AB free	4.797	2	.091
M5: parameter BC free	3.288	2	.193
M6: parameter AC free	5.318	2	.070
M7: parameter ABC free	5.830	3	.120

*Note.* Parameter A = stressful family relationship; parameter B = everyday discrimination, parameter C = financial strain.

It is plausible that other variables not included in the model accounted for the observed relationship between stress and psychological distress. Future studies should examine alternative explanatory models between stress and psychological distress. In the second analysis, religious affiliation was specified as a moderator of the relationship between stressors and psychological distress. Multiple group analysis revealed that religious affiliation did not alter the relationship between stressors and psychological distress. This result is contrary to our predictions based on previous research. However, it is difficult to conclude whether the moderation effect of religious affiliation truly does not exist or whether the study failed to detect it.

There are several possible reasons why religious affiliation was not associated with the relationship between stress and psychological distress in the current study. One reason is related to the characteristics of the study sample. As noninstitutionalized individuals living in the community, respondents had limited differences in the level and variance of distress. Based on previous studies, religion has especially strong effects on the health and mental health of people experiencing great stress or illness [41, 42]. The current study findings may have indirectly supported the previous study results by showing no significant differences among two groups of people with affiliation and no affiliation. Additionally, future research with clinical populations with severe physical or mental conditions may lead to different results. Diversity within religious groups may also influence the findings of moderation analysis. Previous studies reported diversity within the same religious groups or denominations within Chinese churches [43].

Another possible reason why religious affiliation did not modify the relationship between stress and health outcome is the pervasive and strong Asian cultural influence on respondents' reaction on stressors. In the current study, two of the three stress variables (family relationships and everyday discrimination) were culturally contextualized variables. Considering the strong impact of these stressors among Asian Americans regardless of religious affiliations, having a religious affiliation may not be strong enough to overcome this powerful cultural influence via social support, use of religious coping skills, or other mechanisms.

The final and most compelling reason for the lack of a moderation effect in the current study is related to religious affiliation. Religious variables used in the NLAAS were single-item variables (e.g., religious affiliation, frequency of attendance in religious services, and use of religious coping). Affiliation is an underlying construct that represents many different values, moral beliefs, and practices. The current result highlights a need to examine possible proximal variables of religion that can capture the latent construct of religion. In addressing those concerns, future studies should identify latent groups using multiple indicators of religion and test the moderation effect of these groups on the relationship between stress and mental health outcomes.

The current study has three notable limitations. Religious affiliation was dichotomized for the analysis (as having a religious affiliation or not), neglecting possible within group differences. As Christian-based and non-Christian-based groups may differ in level of stress and psychological distress, this within-group difference should be examined in future research to provide a better understanding of the heterogeneity of this population. For the purpose of a clear understanding of the results, other Asian Americans of many different ethnic descents and possible religious affiliations were not included in the current study. This could be a limitation in understanding the variations among and within specific subgroups of Asian Americans. Another limitation of the study is its cross-sectional nature, which means that causality cannot be established.

This study has implications for health and mental health professionals working with Asian Americans. Services and various preventive programs offered in ethnic communities may need to focus on health and well-being as a family issue rather than an individual concern. An inclusive curriculum addressing various sociocultural factors contributing to family relationships and training on topics such as effective communication skills may be effective. In addition, collaboration with Asian American clergy and other religious leaders is essential to increase mutual understanding of the role of these individuals in the mental health of Asian Americans. Having a religious affiliation may give individuals and families access to emotional and tangible resources and services.

#### **4. Conclusion**

The current study is significant in that it considered social and cultural issues of the study population to examine the relationship between stress and psychological distress in a broader sociocultural context. Understanding this understudied group can provide a foundation for developing culturally responsive

interventions for diverse groups in the community or developing “coherent public policies and systematic guidelines aimed at making treatment decisions and services more responsive to the needs [of Asian Americans]” [29:209]. This study used culturally relevant indicators of stress to capture a more accurate picture of the influence of stress on mental health outcome. The use of nationally representative data on Asian Americans overcame one previous limitation, the nongeneralizability of prior study findings. Most studies examining mental health outcomes among Asian Americans have been based on specific geographic locations and used small sample sizes, making it difficult to generalize the findings to other Asian American populations in the United States. Developing the scientific knowledge base not only involves reaching new conclusions, but also eliminating alternative hypotheses or explanations [44]. When little is known about the population being studied, this approach is even more critical. Because scientific investigation of mental health among Asian Americans is relatively new, particularly regarding the intersection of stress, religion, and mental health, addressing fundamental research questions is a critical first step to building a body of evidence for evidence-based practice.

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