

The risk typology of healthcare access and its association with unmet healthcare needs in Asian Americans

Yuri Jang¹  | Nan Sook Park² | Hyunwoo Yoon³ | Ya-Ching Huang⁴ |
Min-Kyoung Rhee¹ | David A. Chiriboga⁵ | Miyong T. Kim⁴

¹School of Social Work, The University of Texas at Austin, Austin, TX, USA

²School of Social Work, University of South Florida, Tampa, FL, USA

³School of Social Work, Texas State University, San Marcos, TX, USA

⁴School of Nursing, The University of Texas at Austin, Austin, TX, USA

⁵Department of Child and Family Studies, University of South Florida, Tampa, FL, USA

Correspondence

Yuri Jang, PhD, School of Social Work, The University of Texas at Austin, Austin, TX, USA.
Email: yjang12@austin.utexas.edu

Source of funding

This work was supported in part by a grant from the National Institute on Aging (R01AG047106—PI: Yuri Jang, PhD). The support for data collection was provided by the City of Austin's Asian American Quality of Life initiative (Contract No. 26-8275-39, PI-Yuri Jang, PhD).

Abstract

Using data from the 2015 Asian American Quality of Life Survey ($N = 2,609$), latent profile analysis was conducted on general (health insurance, usual place for care and income) and immigrant-specific (nativity, length of stay in the U.S., English proficiency and acculturation) risk factors of healthcare access. Latent profile analysis identified a three-cluster model (low-risk, moderate-risk and high-risk groups). Compared with the low-risk group, the odds of having an unmet healthcare need was 1.52 times greater in the moderate-risk group and 2.24 times greater in the high-risk group. Challenging the myth of model minority, the present sample of Asian Americans demonstrates its vulnerability in access to healthcare. Findings also show the heterogeneity in healthcare access risk profiles.

KEYWORDS

access to healthcare, Asian Americans, latent profiling, unmet healthcare needs

1 | INTRODUCTION

Acting on the national priority of eliminating disparities in healthcare, the United States has been making progress in reducing access gaps (Smedley, Stith, & Nelson, 2002; U.S. Department of Health & Human Services [DHHS], 2016). However, members of racial/ethnic minority groups continue to experience disproportionate health burdens and inequities (U.S. DHHS, 2016). The present investigation focuses on Asian Americans, a population that has been understudied and underserved in health disparities research and practice (Trinh-Shevrin, Islam, & Rey, 2009; Yoo, Le, & Oda, 2013). As a broad racial/ethnic category, Asian Americans are the fastest growing minority group in the United States (Cohn, 2015; Pew Research Center 2013). The 45.6% growth rate for Asian Americans from

2000 to 2010 is phenomenal, given that the corresponding figure for the U.S. total population is only 9.7% (Hoeffel, Rastogi, Kim, & Shahid, 2010). Yet despite their rapid population growth, relatively little attention has been paid to Asian Americans, and their healthcare needs remain poorly understood (Ghosh, 2009; Islam et al., 2010).

A substantial proportion of Asian Americans comprises foreign-born immigrants who face linguistic barriers (Pew Research Center 2013), but national surveys are often unable to address their cultural and linguistic challenges (Barnes, Adams, & Powell-Griner, 2008; Ngo-Metzger, Kaplan, Sorkin, Clarridge, & Phillips, 2004). Many population-based surveys use English as their primary survey language, which limits the participation of persons with limited English proficiency. Given the close association between English proficiency

and socioeconomic advantages, findings based on English-proficient samples of Asian Americans are likely to be biased upward. Indeed, studies using national surveys often portray Asian Americans favourably with respect to their access to healthcare (Chevarley, 2010; Shi, Lebrun, & Tsai, 2010; Shi & Stevens, 2005). According to the Medical Expenditure Panel Survey (MEPS), which used English as a primary survey language, Asian Americans have the lowest rate (2.8%) of unmet healthcare needs (i.e. the proportion of individuals who are unable to get medical care or were delayed in getting medical care in the past 12 months) of all racial/ethnic groups (Chevarley, 2010). This rate is considerably lower than the 5.1% reported by non-Hispanic white people. Such line of findings reinforces the stereotype that Asian Americans are generally healthy, self-sufficient, problem-free model minorities (Shi & Stevens, 2005; Shi et al., 2010; Yi, Kwon, Sacks, & Trinh-Shevrin, 2016). However, these findings could simply be attributable to the aforementioned sampling artefact (Jang, Yoon, Park, & Chiriboga, 2016; Ngo-Metzger et al., 2004). The present study is an attempt to revisit unmet healthcare needs among Asian Americans, using a sample that reflects cultural and linguistic diversity.

The present study developed a risk group typology for healthcare access and examined how the typology was associated with unmet healthcare needs. Using Andersen's (1995) behavioural health model, a sizeable body of literature has identified major barriers and facilitators of health service use. Yet most studies tend to focus on the independent effects of those factors by using a variable-centred method. An alternative approach is to use a person-centred method to directly identify groups/clusters of individuals who share a profile based on multiple risk factors. For example, Shi and Stevens (2005) grouped individuals by the total count of risks encountered within a set of general risk factors (low income, no insurance coverage and having no regular source of care) and found a gradient risk of having an unmet healthcare need where the vulnerability was highest in the group with all three risk factors. Given the interrelated but distinct natures of risk factors and the different weight that each risk factor carries, we used latent profile/class analysis as a way of systematically identifying group typologies. Latent profile/class analysis uncovers hidden subgroups from the sample data that share the key characteristics (e.g. risk factors) (Muthén, 2001; Thorpe, Thorpe, Kennelty, & Pandhi, 2011). The identification of subgroups also provides practical implications by prioritising the groups at particular risk and suggesting ways to approach them.

In the present study, latent profiling was performed not only on general risk factors (health insurance, usual place for care and income) but also on immigrant-specific risk factors (nativity, length of stay in the U.S., English proficiency and acculturation). Selection of the immigrant-specific factors was based on literature showing that foreign-born individuals who have stayed for shorter periods of time in the U.S. and/or have lower levels of familiarity with mainstream culture and language are more likely to encounter problems in obtaining healthcare (Derose, Escarce, & Lurie, 2007; Jacobs, Chen, Karliner, Agger-Gupta, & Mutha, 2006; Lillie-Blanton & Hoffman, 2005). The odds of having an unmet need determined by the identified risk group typology was estimated, controlling for the effect

What is known about this topic

- Asian Americans are the fast-growing but understudied population in health disparities research.
- Studies using national surveys often portray Asian Americans favourably with respect to their health and healthcare access.

What this paper adds

- With the inclusion of a considerable number of non-English-speaking individuals, the present sample presented a high rate of unmet healthcare needs.
- Latent profile analysis identified three risk groups of healthcare access (low-risk, moderate-risk and high-risk groups), and the groups presented an incremental odds of having unmet healthcare needs.

of socio-demographic and health characteristics (age, gender, marital status, education, ethnic origin, chronic disease and self-rated health).

2 | METHODS

2.1 | Data set

Data were drawn from the 2015 Asian American Quality of Life (AAQoL) survey. The survey is part of the City of Austin's AAQoL initiative to improve response to the rapid growth of the Asian American population. Self-identified Asian Americans aged 18 and older living in the Austin area were eligible to participate.

The 10-page questionnaire was originally developed in English and then translated into six Asian languages (Chinese, Vietnamese, Korean, Hindi, Gujarati and Tagalog). In case of Chinese, both traditional and simplified versions were prepared. The initial translations were conducted by eight professional translators and graduate-level bilingual researchers. For each language, the translated version was reviewed by two or more bilingual volunteers. Upon refinement of the questionnaire, each language version was pilot tested with 3–5 community members who spoke the target language, and their feedback was incorporated into the final version.

Surveys were conducted using a paper and pencil questionnaire in the participants' preferred language. Although the survey was designed to be self-administered, trained bilingual research assistants were available at each survey site for recruitment and assistance with survey administration. A total of 76 survey sessions took place at various sites across the City of Austin (e.g. churches, temples, grocery markets, small group meetings and cultural events) from August to December 2015. The project was publicised through media and ethnic community sources, and referrals for individuals, groups and organisations were actively sought. It took about 20 minutes to complete the 10-page questionnaire, and respondents were each paid US \$10 for their participation. The project

TABLE 1 Characteristics of the overall sample (N = 2,609)

	M ± SD or %
Background variable	
Age	
18–39	48.3
40–59	31.2
60 and older	20.5
Gender	
Female	55.2
Marital status	
Not married	33.4
Education	
<high school graduation	18.6
Ethnic origin	
Chinese	24.5
Asian Indian	22.0
Korean	18.1
Vietnamese	19.7
Filipino	10.2
Other	5.6
Chronic disease	
None	71.6
One	18.8
Two or more	9.6
Self-rated health	
Fair/poor	10.6
General risk factor	
Health insurance	
No coverage	14.8
Usual place for care	
No	38.1
Annual household income	
<\$30,000	27.4
Immigrant-specific risk factor	
Nativity	
Foreign-born	90.8
Years in the U.S.	15.6 ± 12.7
English proficiency	
Limited English Proficiency	62.4
Acculturation	2.82 ± 0.79
Healthcare needs	
Unmet needs	11.5

was approved by the university's Institutional Review Board (IRB), and the consenting procedure was conducted as instructed by IRB. A total of 2,614 individuals participated. After deleting five questionnaires which had missing information on more than 20% of the variables used in the present analyses, the final sample size was 2,609.

2.2 | Measures

2.2.1 | Risk variables

The variables selected for risk profiling included general risk factors (health insurance [0 = yes, 1 = no], usual place for care [0 = yes, 1 = no] and annual household income [0 = ≥ \$30,000, 1 = < \$30,000]) and immigrant-specific risk factors (nativity [0 = U.S.-born, 1 = foreign-born], length of stay in the U.S. [years], English proficiency and acculturation). English proficiency was assessed with a question about how well the respondent spoke English, using a 4-point response scale ranging from “not at all” to “very well.” Using the U.S. Census criteria (Pandya, McHugh, & Batalova, 2011), those who reported that they spoke English less than “very well” were categorised as a group with limited English proficiency (0 = English proficient, 1 = limited English proficiency). Acculturation was assessed by asking respondents to rate their level of familiarity with the culture and custom of mainstream America (1 = very low, 4 = very high).

2.2.2 | Unmet healthcare needs

Adapted from national surveys (Chevarley, 2010; Shi & Stevens, 2005), unmet healthcare needs were assessed with a single item asking respondents whether there was a time in the past 12 months when they needed medical care but could not get it. Responses were coded as “no” (0) or “yes” (1).

2.2.3 | Background characteristics

Demographic information included age group (0 = 18–39; 1 = 40–59; and 2 = 60 and older), gender (0 = male, 1 = female), marital status (0 = married, 1 = not married), education (0 = ≥ high school graduation, 1 = < high school graduation), and ethnic origin (0 = Chinese, 1 = Asian Indian, 2 = Korean, 3 = Vietnamese, 4 = Filipino and 5 = Other Asian). Chronic disease and self-rated health were used as indicators of health. Total count from the checklist of 10 chronic diseases and conditions (diabetes, cancer, arthritis, heart disease, high blood pressure, stroke, liver disease, kidney problem, asthma and chronic obstructive pulmonary disease) was recoded into three categories (0 = none, 1 = one and 2 = two or more). Respondents rated their current health on a 5-point scale. Responses were then dichotomised into “excellent/very good/good” (0) and “fair/poor” (1).

2.3 | Analytic strategy

After review of the descriptive characteristics of the sample, latent profile analysis of risk group typology was conducted on both general (health insurance, usual place for care and annual household income) and immigrant-specific (nativity, length of stay in the U.S., English proficiency and levels of acculturation) risk factors. The latent profile analysis was based on the assumption that an unobserved heterogeneity of risks in the sample could be captured through the

TABLE 2 Model selection criteria

Model	BIC	Entropy	LMR-LRT ($H_0 = k - 1$ class)	BLRT ($H_0 = k - 1$ class)
Two clusters	24,853.88	.79	$p = .00$	$p = .00$
Three clusters	23,243.99	.99	$p = .00$	$p = .00$
Four clusters	23,721.24	.79	$p = .00$	$p = .00$

BIC = Bayesian information criterion; LMR-LRT = Lo-Mendell-Rubin likelihood ratio test; BLRT = bootstrap likelihood ratio test.

generation of different risk groups (Muthén & Muthén, 2004; Nylund, Asparouhov, & Muthén, 2007; Vermunt, 2004).

An optimal cluster model was selected on the basis of a number of model-fit criteria. The identified groups were then compared in terms of their risk variables, background characteristics and unmet healthcare needs. Chi-square tests and ANOVAs were used for group comparisons. In the final step of analyses, the logistic model of unmet healthcare needs was estimated by including risk cluster types only (unadjusted model) and adding background characteristics as covariates (adjusted model). Analyses were performed using Mplus (Muthén and Muthén, Los Angeles, CA, USA) and SPSS (IBM Corp., Armonk, NY, USA).

3 | RESULTS

3.1 | Descriptive characteristics of the sample

Characteristics of the overall sample are summarised in Table 1. The sample included 640 Chinese (24.5%), 574 Asian Indians (22%), 471 Koreans (18.1%), 513 Vietnamese (19.7%), 265 Filipinos (10.2%), and 146 individuals from other Asian groups (5.6%). Examples of the ethnicities specified by participants in the 'other' group included Nepalese, Pakistani, Cambodian, Japanese, and mixed race/ethnicity. It is noteworthy that almost half of the participants (48.5%) requested surveys employing languages other than English. Selected by 17% of the overall sample, Chinese (in both the traditional and simplified versions) was the language used most frequently, followed by Korean (14.2%) and Vietnamese (14%). Preference for a non-English version was notably high for Chinese (68.6%), Korean (78.8%) and Vietnamese (71.3%). Overall, the availability of the survey questionnaire in Asian languages enabled many non-English-speaking individuals to participate.

The participants' ages ranged from 18 to 98, with an average of 42.8 ($SD = 17.1$). About 21% of the participants were 60 and older. More than half (55.2%) were female, and 33.4% were unmarried. About 19% had received less than a high school education. More than a quarter of the sample (28.4%) had at least one chronic disease on the list, and about 11% of the participants rated their health as either "fair" or "poor."

With regard to risk variables, about 15% of the sample had no health insurance coverage, and the proportion of the sample without a usual place for care was approximately 38%. More than a quarter had an annual household income below \$30,000. A large majority (90.8%) were foreign-born, and the length of stay in the U.S. ranged from 0.25 to 78 years, with an average of 15.6 ($SD = 12.7$). The rate of limited

English proficiency was quite high; about 62% reported that they spoke English less than "very well." The level of acculturation averaged 2.82 ($SD = 0.79$) out of the range of 1 to 4. About 12% of the sample reported that there had been a time during the last 12 months when they needed medical care but could not get it.

3.2 | Type of risk groups

A series of latent profile analyses was conducted to establish a typology of risk groups. Starting with a two-cluster model, the number of clusters was subsequently increased. This process was stopped at the four-cluster model because the models with more than four clusters did not converge properly. In order to determine the optimal number of clusters, the results of all converged models were compared. Several model-fit criteria were employed, including the Bayesian information criterion (BIC), entropy, the Lo-Mendell-Rubin likelihood ratio test (LMR-LRT), a bootstrap likelihood ratio test (BLRT) and posterior probabilities. Lower BIC values and higher entropy values (i.e. an index of classification quality) suggest higher model-fit and classification quality (Vermunt, 2004). The two likelihood ratio tests (LMR-LRT and BLRT) were used to compare adjacent models: the $(c - 1)$ -cluster model and the c -cluster model, with significant p values suggesting that the current model performed better than the prior model. The number of clusters was also determined by evaluating posterior probabilities, using the matrix of conditional probabilities for cases to be placed in their respective clusters; diagonal values closer to one indicated high classification quality.

Table 2 presents the results of latent profile analyses for the two-, three- and four-cluster models. The BIC values decreased from the two-cluster model to the three-cluster model and then increased in the four-cluster model. The three-cluster model contained the highest entropy value (0.99), and its diagonal posterior probabilities (data not shown in the table), at over 0.95, proved superior to the values from other cluster models. Although neither likelihood ratio test favoured a particular number of clusters, we selected the three-risk cluster model as the most optimal on the basis of the other fit indices and model parsimony.

Table 3 illustrates the profiles of each of the three risk cluster types. Based on the distribution of the risk variables, the clusters were labelled the "low-risk group," "moderate-risk group" and "high-risk group" respectively. Including 19% of the overall sample ($n = 504$), the low-risk group was characterised by low scores on both general and immigrant-specific risk factors. This group's members had the most favourable characteristics in terms of access to healthcare and cultural and linguistic familiarity with mainstream U.S. society. The moderate-risk group

TABLE 3 Profiles of the three risk groups of healthcare access

	M ± SD or %			
Type of risk	Cluster 1 Low-risk group (n = 504)	Cluster 2 Moderate-risk group (n = 1,252)	Cluster 3 High-risk group (n = 853)	F(χ ²)
General risk factor				
No health insurance	12.2	11.3	21.4	(44.3 ^{***})
No usual place for care	27.7	33.8	50.8	(89.5 ^{***})
Household income <\$30,000	17.4	24.4	38.5	(89.5 ^{***})
Immigrant-specific risk factor				
Foreign-born	70.6	94.2	97.8	(312.7 ^{***})
Years in the U.S.	23.4 ± 12.1	15.9 ± 12.5	10.5 ± 10.6	182.8 ^{***}
Limited English Proficiency	15.7	64.4	87.1	689.2 ^{***}
Acculturation	4.00 ± 0.80	3.00 ± 0.01	1.86 ± 0.36	17,114.5 ^{***}

****p* < .001.**TABLE 4** Other characteristics of the three risk groups of healthcare access

	M ± SD or %			
Type of risk	Cluster 1 Low-risk group (n = 504)	Cluster 2 Moderate-risk group (n = 1,252)	Cluster 3 High-risk group (n = 853)	F(χ ²)
Background characteristics				
Age				
18–39	56.8	47.3	44.8	54.9 ^{***}
40–59	30.7	33.9	27.5	
60 and older	12.5	18.8	27.6	
Female	52.0	54.8	57.5	3.97
Not married	44.2	31.5	29.9	33.2 ^{***}
<High school graduation	10.6	16.0	27.3	68.1 ^{***}
Ethnic origin				
Chinese	19.8	19.8	34.2	163.4 ^{***}
Asian Indian	17.5	22.5	23.9	
Korean	12.5	19.8	18.8	
Vietnamese	23.4	21.5	14.8	
Filipino	19.0	11.0	3.6	
Other	7.7	5.4	4.7	
Chronic disease				
None	72.4	74.8	66.4	21.9 ^{***}
One	20.4	16.6	21.3	
Two or more	7.3	8.6	12.3	
Fair/poor rating of health	5.0	7.7	18.4	81.9 ^{***}
Unmet healthcare needs	7.4	10.5	15.2	21.0 ^{***}

****p* < .001.

(*n* = 1,252) included the largest segment (48%) of the overall sample and was positioned in the middle in terms of the risk variables. The high-risk group (*n* = 853), which included one-third of the overall sample, fared worse in all risk variables. More than 21% of this group had no

health insurance coverage, over half did not have a usual place for care and about 39% had an annual household income of less than \$30,000. In addition, a majority (97.8%) of the high-risk group's members were foreign-born, and the group's average length of time in the U.S. was

TABLE 5 Logistic regression model of unmet healthcare needs

Variable	Odds ratio (95% confidence interval)	
	Unadjusted model	Adjusted model
Risk cluster type		
Low-risk group	1.0 [reference]	1.0 [reference]
Moderate-risk group	1.52 [*] (1.02–2.27)	1.52 [*] (1.01–2.30)
High-risk group	2.39 ^{***} (1.59–3.57)	2.24 ^{***} (1.45–3.46)
Background characteristics		
Age		
18–39		1.0 [reference]
40–59		0.83 (0.58–1.17)
60 and older		0.85 (0.57–1.28)
Gender		
Male		1.0 [reference]
Female		1.07 (0.82–1.40)
Marital status		
Married		1.0 [reference]
Not married		1.33 (0.99–1.79)
Education		
≥High school		1.0 [reference]
<High school		1.52 ^{**} (1.11–2.08)
Ethnic origin		
Chinese		1.0 [reference]
Asian Indian		0.54 [*] (0.34–0.87)
Korean		1.68 ^{**} (1.15–2.45)
Vietnamese		1.91 ^{**} (1.29–2.81)
Filipino		1.05 (0.61–1.80)
Other Asian		0.79 (0.39–1.60)
Chronic disease		
None		1.0 [reference]
One		1.70 ^{**} (1.21–2.37)
Two or more		1.75 ^{**} (1.12–2.73)
Self-rated health		
Excellent/very good/good		1.0 [reference]
Fair/poor		1.90 ^{**} (1.31–2.75)

* $p < .05$; ** $p < .01$; *** $p < .001$.

shortest ($M = 10.5$, $SD = 10.6$). More than 87% of the high-risk group had limited English proficiency, and the group's level of acculturation was the lowest ($M = 1.86$, $SD = 0.36$) among the three groups.

The profiles of the risk clusters were also compared on their background characteristics and unmet healthcare needs (Table 4). A statistically significant group difference was observed for all variables except gender. The high-risk group was more likely to include individuals aged 60 and over than were the other two groups. The low-risk group included a particularly high proportion of unmarried individuals, probably due to its inclusion of younger cohorts. The high-risk group was significantly more likely to have received less than a high school

education. In terms of ethnic origin, Chinese participants represented more than one-third of the high-risk group. The high-risk group had the highest proportion of individuals reporting two or more chronic diseases and was more likely to report fair/poor health. At 15.2%, the rate of unmet healthcare needs was particularly high in the high-risk group.

3.3 | Logistic regression model of unmet healthcare needs

Table 5 summarises the results of both the unadjusted and adjusted logistic regression models testing the effect of risk cluster type on unmet healthcare needs. The unadjusted model showed that, in comparison with the low-risk group, the odds of having an unmet need were 1.52 times greater in the moderate-risk group and 2.39 times greater in the high-risk group. Risk group membership remained significant in the adjusted model.

As for background characteristics, lower education increased the odds of having an unmet need. Koreans and Vietnamese participants showed greater odds of having an unmet need than Chinese participants, whereas Asian Indians had lower odds. The presence of disease and fair/poor ratings of health also increased the odds of having an unmet need.

4 | DISCUSSION

The premise of our investigation was that the current knowledge on Asian Americans as the "model minority" might be misleading due to upward bias stemming from the systematic exclusion of persons with limited English proficiency in population-based surveys (Islam et al., 2010; Jang et al., 2016; Trinh-Shevrin et al., 2009; Yi et al., 2016). To reach out to diverse groups of Asian Americans and increase the representativeness of the sample for this study, we used culturally and linguistically sensitive approaches (Islam et al., 2010; Jang et al., 2016). The strategies included providing not only Asian language versions of the survey questionnaire but also research personnel (e.g. recruiters and survey assistants) who shared the languages and cultures of the target populations. Furthermore, a strong partnership between the research team and key individuals and organisations within ethnic communities facilitated the participation of community members (Israel, Schulz, Parker, & Becker, 1998; Wallerstein & Duran, 2006). The fact that among a total of 2,609 participants in the present study, almost half (48.5%) used non-English versions of the survey questionnaire indicates that our culturally and linguistically sensitive approaches enabled many individuals who are conventionally unrepresented in national surveys to be included.

The rate of unmet healthcare needs in the present sample was particularly high. More than 11% of the sample reported that they had been unable to receive medical care in the past 12 months despite their needs. This rate is 2.3 times higher than that found in non-Hispanic white people (5.1%) and 4.1 times higher than that in Asian Americans (2.8%) in the MEPS, which used English as a primary survey language (Chevarley, 2010). Direct comparison of rates across different studies requires caution due to heterogeneity of methodology. Nevertheless,

with the inclusion of a considerable number of non-English-speaking individuals, our sample provided a contrary picture of healthcare access, challenging the existing myth of a model minority (Yi et al., 2016).

Findings from latent profile analysis provided a better understanding of the underlying issues. The three-cluster model comprising a low-risk group, a moderate-risk group and a high-risk group was found to be optimal, and the high-risk group demonstrated heightened vulnerabilities. At 15.2%, the rate of unmet healthcare needs in the high-risk group was notably high. Logistic regression further demonstrated the pronounced risk of unmet healthcare needs in the high-risk group. Chinese participants constituted a substantial proportion of the high-risk group, but they were less likely to have an unmet healthcare need than were the Vietnamese and Koreans. This might be attributable to a local health service environment unique to Chinese patients, who might be able to access needed medical care through Chinese-speaking medical professionals and alternative medicine. In line with previous studies of risk groups in healthcare access (Shi & Stevens, 2005; Thorpe et al., 2011), our findings present heterogeneous risk profiles within the sample and identify subgroups at particular risk. Findings highlight the importance of not only general access variables (health insurance, usual place for care and income) but also immigrant-specific variables (nativity, length of stay in the U.S., English proficiency and acculturation) in identifying risk groups of healthcare access. Further attention in policies and services should be paid to individuals who are in an early stage of immigration and/or with linguistic and cultural barriers.

The present study was limited by its cross-sectional design and a non-representative, regionally defined sample. Caution should be exercised in drawing causal inferences and generalising the findings to the larger population of Asian Americans. It should also be noted that the assessment was based on self-reported measures, and certain variables (e.g. English proficiency and acculturation) might be susceptible to reporter's bias. Future studies should also attend to the environmental contexts of health services. For example, the availability of healthcare providers who offer culturally and linguistically appropriate services (CLAS) in the area plays a critical role in determining individuals' use and perceptions of health services.

Despite these limitations, the present study sheds light on the importance of using culturally and linguistically sensitive approaches to reach out to the Asian American population, and it provides an opportunity to reflect on the myth of Asian Americans as a model minority. Furthermore, our findings on risk group typology suggest implications for interventions with respect to subgroups to be prioritised and areas to be targeted.

CONFLICT OF INTEREST

Conflicts of interest have been declared.

REFERENCES

- Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior*, 36(1), 1–10.
- Barnes, P. M., Adams, P. F., & Powell-Griner, E. (2008). *Health characteristics of the Asian adult population: United States, 2004–2006* (Advance data from Vital and Health Statistics No. 394). Hyattsville, MD: U.S. Department of Health and Human Services, National Center for Health Statistics.
- Chevarley, F. M. (2010). *Percentage of persons unable to get or delayed in getting needed medical care, dental care, or prescription medicines: United States, 2007* (Medical Expenditure Panel Survey Statistical Brief No. 282). Rockville, MD: Agency for Healthcare Research and Quality. Retrieved from http://meps.ahrq.gov/mepsweb/data_files/publications/st282/stat282.pdf.
- Cohn, D. (2015). *Future immigration will change the face of America by 2065*. Washington, DC: Pew Research Center. Retrieved from <http://www.pewresearch.org/fact-tank/2015/10/05/future-immigration-will-change-the-face-of-america-by-2065/>.
- Derose, K. P., Escarce, J. J., & Lurie, N. (2007). Immigrants and healthcare: Sources of vulnerability. *Health Affairs*, 26(5), 1258–1268.
- Ghosh, C. (2009). Asian American health research. In C. Trinh-Shevrin, N. S. Islam, & M. J. Rey (Eds.), *Asian American communities and health: Context, research, policy and action* (pp. 73–103). San Francisco: Wiley, Jossey-Bass.
- Hoefel, E. M., Rastogi, S., Kim, M. O., & Shahid, H. (2010). *The Asian population: 2010*. Washington, DC: U.S. Census Bureau. Retrieved from <https://www.census.gov/prod/cen2010/briefs/c2010br-11.pdf>.
- Islam, N. S., Khan, S., Kwon, S., Jang, D., Ro, M., & Trinh-Shevrin, S. (2010). Methodological issues in the collection, analysis, and reporting of granular data in Asian American populations: Historical challenges and potential solutions. *Journal of Health Care for the Poor and Underserved*, 21(4), 1354–1381.
- Israel, B., Schulz, A., Parker, E. A., & Becker, A. B. (1998). Review of community-based research: Assessing partnership approaches to improve public health. *Annual Review of Public Health*, 19(1), 173–202.
- Jacobs, E., Chen, A. H., Karliner, L. S., Agger-Gupta, N., & Mutha, S. (2006). The need for more research on language barriers in healthcare: A proposed research agenda. *Milbank Quarterly*, 84(1), 111–133.
- Jang, Y., Yoon, H., Park, N. S., & Chiriboga, D. A. (2016). The health vulnerability of immigrants with limited English proficiency: A study of older Korean Americans. *Journal of American Geriatric Society*, 64(7), 1498–1502.
- Lillie-Blanton, M., & Hoffman, C. (2005). The role of health insurance coverage in reducing racial/ethnic disparities in health care. *Health Affairs*, 24(2), 398–408.
- Muthén, B. O. (2001). Latent variable mixture modeling. In G. A. Marcoulides, & R. E. Schumacker (Eds.), *New developments and techniques in structural equation modeling* (2nd edn, pp. 1–33). Mahwah, NJ: Lawrence Erlbaum.
- Muthén, L. K., & Muthén, B. O. (2004). *Mplus user's guide*. Los Angeles, CA: Muthén & Muthén.
- Ngo-Metzger, Q., Kaplan, S. H., Sorkin, D. H., Clarridge, B. R., & Phillips, R. S. (2004). Surveying minorities with limited-English proficiency: Does data collection method affect data quality among Asian Americans? *Medical Care*, 42(9), 893–900.
- Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling*, 14(4), 535–569.
- Pandya, C., McHugh, M., & Batalova, J. (2011). *Limited English proficient individuals in the United States: Number, share, growth, and linguistic diversity*. Washington, DC: Migration Policy Institute.
- Pew Research Center (2013). *The rise of Asian Americans*. Washington, DC: Pew Research Center. Retrieved from <http://www.pewsocialtrends.org/files/2013/04/Asian-Americans-new-full-report-04-2013.pdf>.
- Shi, L., Lebrun, L. A., & Tsai, J. (2010). Assessing the impact of the health center growth initiative on health center patients. *Public Health Reports*, 125(2), 258–266.

- Shi, L., & Stevens, G. D. (2005). Vulnerability and unmet health care needs: The influence of multiple risk factors. *Journal of General Internal Medicine*, 20(2), 148–154.
- Smedley, B. D., Stith, A. Y., & Nelson, A. R. (Eds.) (2002). *Unequal treatment: Confronting racial and ethnic disparities in health care*. Washington, DC: National Academies Press.
- Thorpe, J. M., Thorpe, C. T., Kennealy, K. A., & Pandhi, N. (2011). Patterns of perceived barriers to medical care in older adults: A latent class analysis. *BMC Health Services Research*, 11, 181.
- Trinh-Shevrin, C., Islam, N. S., & Rey, M. J. (Eds.) (2009). *Asian American communities and health: Context, research, policy and action*. San Francisco: Wiley, Jossey-Bass.
- U.S. Department of Health & Human Services. (2016). A nation free of disparities in health and health care. Retrieved from http://minorityhealth.hhs.gov/npa/files/plans/hhs/hhs_plan_complete.pdf.
- Vermunt, J. K. (2004). Latent profile model. In M. S. Lewis-Beck, A. Bryman, & T. F. Liao (Eds.), *The SAGE encyclopedia of social science research methods* (pp. 554–555). Thousand Oaks, CA: Sage.
- Wallerstein, N. B., & Duran, B. (2006). Using community-based participatory research to address health disparities. *Health Promotion Practice*, 7(3), 312–323.
- Yi, S. S., Kwon, S. C., Sacks, R., & Trinh-Shevrin, C. (2016). Persistence and health-related consequences of the model minority stereotype for Asian Americans. *Ethnicity and Disease*, 26(1), 133–138.
- Yoo, G. J., Le, M. N., & Oda, A. Y. (Eds.) (2013). *Handbook of Asian American health*. New York: Springer.

How to cite this article: Jang Y, Park NS, Yoon H, et al. The risk typology of healthcare access and its association with unmet healthcare needs in Asian Americans. *Health Soc Care Community*. 2018;26:72–79. <https://doi.org/10.1111/hsc.12463>