Factors associated with health insurance status in an Asian American population in New York City: Analysis of a community-based survey

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Abstract

Background—Immigrants comprise approximately 13% of the US population and 33% lack health coverage. Asian Americans are the fastest growing immigrant group; many lack a usual source of care. This study examines factors associated with health insurance among Asian American immigrants living in New York City.

Methods—Community needs assessments were conducted among Asian American subgroups in New York City from 2013–2015; analysis was completed in 2017 and 2018. Descriptive statistics examined factors associated with health insurance status while stratifying by Asian ethnic subgroup; multivariable logistic regression models further assessed these associations (P<0.05 significance level).

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Compliance with Ethical Standards

Results—Approximately 19% of the study population (n=1,399) was uninsured. Logistic regression models adjusted for all factors. Among East Asians, insurance status was associated with female sex (OR=2.8, p=0.005), excellent/very good health status (OR=3.5, p=0.014), and seeing a private doctor when sick or injured (OR=3.2, p=0.033). Among South Asians, insurance status was associated with high school/some college and college education (OR=2.6 and 2.9, respectively, p=0.039 and p=0.021), having a routine health check in the past year (OR=6.4, p<0.001), no diabetes diagnosis (OR=2.7, p=0.030), and a tuberculosis diagnosis (OR=4.7, p=0.019). Among Southeast Asians, insurance status was associated with less than high school education (p<0.05), living in the US >20 years (OR=3.7, p=0.009), having a routine health check in the past year (OR=5.6, p=0.025), and seeing a private doctor when sick or injured (OR=2.6, p=0.018).

Conclusions—Health insurance status was associated with differing factors among each subgroup. Findings may inform strategies to address challenges and barriers of healthcare access to immigrants, making healthcare more accessible to this underserved population.

Keywords

health disparity research; racial/ethnic minority; health insurance; Asian Americans; immigrants

Introduction

In 2013, approximately 13% of the US population was a first generation immigrant, and an additional 12% was a second generation immigrant [1]. Asian Americans comprised 29.5% of foreign-born individuals [2]. Additionally, between 2000 and 2015, the Asian American population grew 72%, the fastest growth of any major racial/ethnic group [3]. The Asian American population is incredibly diverse, varying in nativity, migration patterns, language, education, socioeconomic status, and access to health resources [4–6]. However, data on Asian Americans often remains aggregated, masking key subgroup differences [7].

Health care in the US exceeds that in other high-income countries, despite the fact that the US does not have publicly financed universal health care [8]. Immigrants are less likely to access and use health care when compared to the US native-born population [9, 10]. In 2009, 33% of the foreign-born population was uninsured, while 12.5% of the native-born population was uninsured [11]. Similar findings have been shown for Asian Americans; data from the 2003–2005 National Health Interview Survey found that US-born Asians were more likely to be insured than foreign-born Asians [12]. In 2012, it was estimated that as many as 6 million immigrants could be potentially helped through universal health coverage [13].

Many of the key provisions from the 2010 Patient Protection and Affordable Care Act (ACA) began in October 2013, and by 2016 major changes in insurance rates were seen [14]. The best information on health insurance coverage among Asian American subgroups in New York City (NYC) comes from the U.S. Census Bureau American Community Survey (ACS). In NYC, immigrants can qualify for health insurance coverage without waiting periods, regardless of time lived in the US [15]. In 2014, uninsurance rates were highest among Koreans (21.7%), followed by Chinese (12.8%), Bangladeshis (12.1%), Asian

Indians (11.5%), and Filipinos (10.0%), compared to 8.7% among whites. Additionally in NYC, overall uninsurance rates decreased from 14.8% in 2010 to 7.8% in 2016. Drops in uninsurance rates were also seen for major Asian ethnic groups, with the largest decrease seen for Koreans, with a change from 28.0% to 10.7% during this time period [16].

Due to their lower levels of coverage, Asian Americans are less likely to have a usual source of care compared to non-Hispanic White Americans [17]. Moreover, poor health outcomes are common among immigrant subgroups due to cultural, linguistic, and socioeconomic barriers in accessing health care services [18–21]. A small qualitative study found that foreign-born Asian Indians tend to be unfamiliar with routine care for disease prevention when immigrating to the US, and chronic diseases are only discovered when emergency services are utilized [22]. Moreover, having a usual source of health care varies by Asian ethnic group, while having insurance was the only common pathway for all Asian groups [17].

A lack of health insurance coverage is both a social concern and policy issue, as having health insurance drives healthcare seeking behaviours across the population [18, 17] and health insurance coverage is strongly associated with screening outcomes such as flu vaccination and cancer screening (e.g. breast, cervical, and colorectal) [18, 23–25]. The ACA aimed to increase access to care and improve health outcomes for disadvantaged populations, however disparities continue to persist [18, 17, 20]. The objective of this study is to identify factors associated with health insurance status in an Asian American population of NYC using cross-sectional survey data collected between 2013 and 2015, a key time when the ACA was being implemented across the US, while stratifying by Asian American ethnic subgroup.

Methods

Sample and study population

The Community Health Resources and Needs Assessment (CHRNA) was a cross sectional survey collected by the NYU Center for the Study of Asian American Health (CSAAH). The survey was community-based and was administered in-language among individuals self-identifying as Asian American living in the NYC metropolitan region between the years 2013 and 2015, with most surveys completed in 2014 (69.6%) and 2015 (28.2%). Survey methods have been previously described [26].

Participants of Asian descent were recruited through community-based convenience sampling in partnership with Asian American-serving community organizations across the metropolitan New York area. The survey was conducted during community events such as religious and cultural festivals, health fairs, and informational events. All participants were residents in the NYC metropolitan area and were aged 18-85 years. A health interview survey using validated questions was used to collect details of participant demographics, health status, healthcare access, and presence of risk factors for non-communicable diseases.

Key Measures

The outcome variable was health insurance status, determined using answers to the following question: "What kind of health insurance do you have?" Responses were grouped into two categories for the purposes of the analysis: Insured (those who responded that their health insurance was through Medicaid, Medicare, Family Health Plus, Child Health Plus, private, work or company insurance, or other) and uninsured (those who responded "no health insurance"). Participants who stated that they didn't know what kind of health insurance they had or who declined to state an answer were excluded from this study.

Control Variables

Socio-demographic variables included: Asian ethnic group (South Asian: Bangladeshi, Asian Indian, Himalayan, Pakistani, or Sri Lankan; East Asian: Chinese, Japanese, or Korean; and Southeast Asian: Cambodian, Filipino, Vietnamese, Indonesian, Thai, or Burmese); sex, age groups (continuous for logistic regression), US nativity, English spoken fluency, education, income, employment, and income. Additional health variables included: general health status, lack of accessibility to necessary healthcare in the last 12 months, last routine health check-up, health seeking behaviour when sick or injured, self-reported high cholesterol, self-reported diabetes, self-reported high blood pressure, self-reported tuberculosis, self-reported hepatitis B, and self-reported mental health related problems.

Statistical Analyses

All analyses were stratified by Asian ethnic group (East Asian, South Asian, and Southeast Asian). Descriptive statistics were computed for demographics and all other variables included in the study. To examine the association between each independent variable and health insurance status, bivariate analyses were conducted; Chi-square tests determined statistical significance at $p < 0.05$. Multivariable logistic regression was used to examine the independent association of the variables of interest with health insurance status in each of the three Asian ethnic subgroups. Any variables that were significantly associated with health insurance status in bivariate analyses were entered into the models in two steps; model 1 includes demographic variables, while model 2 (fully adjusted) also includes health characteristics. When running descriptive statistics, individuals replying "don't know" or who refused to answer were excluded from the denominator, unless stated elsewhere. IBM SPSS version 23.0 (Armonk, NY) was used in 2017 and 2018 to conduct analyses.

Data collection was approved by the NYU School of Medicine Institutional Review Board as an exempted human subjects study. This secondary data analysis was approved by the University of Warwick Biomedical and Scientific Research Ethics Sub-committee.

Results

Of 1,579 participants, 61 were excluded due to missing data on their health insurance status. An additional 119 individuals were born in the US, and further excluded from analysis. Table 1 provides descriptive results for all the variables included in the analysis. A total of 1,399 participants remained for inclusion in this study. The sampled population was stratified by Asian ethnic subgroup and insurance status. The East Asian subgroup consisted

of 426 participants (82% insured), the South Asian subgroup consisted of 576 participants (82% insured), and the Southeast Asian subgroup consisted of 397 participants (79% insured). See Table 1.

Table 1 presents socio-demographic differences in insurance status stratified by Asian ethnic subgroup. Length of stay in the US was significant for all groups; individuals living in the US for longer were more likely to have health insurance. Among East Asians and Southeast Asians, individuals of a younger age (18-44) were significantly less likely to be insured than those of an older age. Additionally, among East Asians, individuals who were working were significantly more likely to be insured than those who were not working. East Asians with a higher education were significantly more likely to have health insurance; however, Southeast Asians with a higher education were significantly less likely to have health insurance. Similar differences were seen between East Asians and Southeast Asians; English fluency and income had significant associations with insurance in each group, but the directional changes differed. Additional socio-demographic findings can be found in Table 1.

Table 2 presents health-related differences in insurance status stratified by Asian ethnic subgroup. Last routine health check was significant for all groups; individuals having had a check in the past year were significantly more likely to have insurance than those having a check in more than a year or never. General health status was associated with insurance status among East Asians and Southeast Asians; among East Asians, individuals self-reporting excellent/very good health were significantly more likely to be insured, while among Southeast Asians, individuals reporting fair/poor were significantly more likely to be insured. East Asians and Southeast Asians who reported seeing a private doctor when sick or injured were significantly more likely to be insured than those reporting other health sources. Additionally, South Asians self-reporting a high cholesterol diagnosis, diabetes diagnosis, or a tuberculosis diagnosis were significantly more likely to be insured compared to those who did not self-report that health diagnosis, and Southeast Asians self-reporting a high blood pressure diagnosis were significantly more likely to be insured compared to those who did not report that diagnosis.

Table 3 presents the results of the multivariable logistic regression models stratified by Asian ethnic subgroup. Results differed by Asian ethnic subgroup.

East Asians

In model 1 adjusting for all socio-demographic factors, women were 2.0 times more likely than men to be insured (CI: 1.1-3.6, p=0.015), older individuals were more likely to be insured (OR: 1.02, CI: 1.00-1.05, p=0.042), individuals living in the US for greater than 20 years were 4.7 times more likely than individuals living in the US for 5 years to be insured (CI: 1.7–13.3, p=0.004), and individuals speaking English very well were 6.1 times more likely than individuals speaking English not well/not at all to be insured (CI: 1.2-29.9, p=0.026). When adjusting for additional health-related factors (model 2), female sex remained significant (OR:2.8, CI: 1.4-5.6, p=0.005), while individuals self-reporting excellent/very good health were 3.5 times more likely than individuals reporting fair or poor health to be insured (CI: 1.3-9.7, p=0.014)., and individuals who went to a private doctor

when sick or injured were 3.2 times more likely than individuals doing nothing or taking medicine at home to be insured (CI: 1.1-9.7, p=0.033).

South Asians

In model 1 adjusting for all socio-demographic factors, individuals with a college education were 2.1 times more likely, and individuals with a high school/some college education were 2.0 times more likely than individuals with less than a high school education to be insured (CI: 1.1-4.5, p=0.021 and CI: 1.0-3.8, p=0.039, respectively), and individuals living in the US for greater than 20 years were 2.7 times more likely than individuals living in the US for 5 years to be insured (CI: 1.1-6.7, p=0.033). When adjusting for additional health-related factors (model 2), education remained significant; individuals with a college education were 2.9 times more likely and individuals with a high school/some college education were 2.6 times more likely than individuals with less than a high school education to be insured (CI: 1.3-6.3, p=0.009 and CI: 1.2-5.5, p=0.011, respectively). In addition, individuals receiving a routine health check in the last year were 6.4 times more likely than individuals never receiving a health check to be insured (CI: 2.3-17.9, p<0.001), individuals not receiving a diabetes diagnosis were 2.7 times more likely than those receiving a diabetes diagnosis to be insured (CI: 1.1-6.6, p=0.030), and individuals receiving a tuberculosis diagnosis were 4.7 times more likely than those not receiving a tuberculosis diagnosis to be insured (CI: 1.3-17.2, p=0.019).

Southeast Asians

In model 1 adjusting for all socio-demographic factors, females were less likely than males to be insured (OR=0.5, CI: 0.3-0.9, p=0.017), individuals with a college education and individuals with a high school/some college education were less likely than individuals with less than a high school education to be insured (OR: 0.3, CI: 0.1-0.9, p=0.035 and OR: 0.3, CI: 0.1-1.0, p=0.049, respectively), and individuals living in the US for greater than 20 years were 4.4 times more likely than individuals living in the US for 5 years to be insured (CI: 1.8-10.6, p=0.001). When adjusting for additional health-related factors (model 2), gender and years in the US remained significant; females were less likely than males to be insured (OR=0.4, CI: 0.2-0.8, p=0.007), and individuals living in the US for greater than 20 years were 3.7 times more likely than individuals living in the US for 5 years to be insured (CI: 1.4-910.1, p=0.009). In addition, individuals receiving a routine health check in the last year were 5.6 times more likely than individuals never receiving a health check to be insured (CI: 1.2-25.2, p=0.025), and individuals who went to a private doctor when sick or injured were 2.6 times more likely than individuals doing nothing or taking medicine at home to be insured (CI: 12-5.9, p=0.018).

Discussion

Health insurance coverage was low in this population; overall, approximately 19% of this Asian American population was uninsured, with the highest rate seen among Southeast Asians (22%). It is likely that uninsurance rates in this Asian population are high because much of the data was collected in the year 2014, before changes from the ACA became

reachable for all individuals. After passage of the ACA, a drop in uninsured status by racial/ethnic groups over time has been shown [27], and changes can also be seen among Asian American subgroups when looking at American Community Survey data by year [28]. However, uninsured rates among particular Asian American groups (Korean and Vietnamese, for instance), remain higher than uninsured rates for whites; in 2014, 11.7% of whites were uninsured, compared to 13.6% of Koreans and 12.6% of Vietnamese [27, 28]. Similar findings have been shown in NYC, where all major Asian ethnic subgroups saw a decrease in uninsurance status before and after the ACA, yet uninsurance rates remain high among Koreans (17.1% –2015 and 10.7% –2016) [16]. When examining uninsurance rates in our data, the highest were seen among Indonesians (40.0%), Thai (38.9%), and Koreans (30.5%), while the lowest were seen among Japanese (5.4%), Burmese (6.8%), and Cambodians (7.1%). In comparison, the overall uninsurance rate in NYC for 2016 was 7.8% [16]. These findings further emphasize the need to disaggregate Asian American data in NYC and elsewhere [7].

Women were more likely to be insured than men among East Asians (both models) and South Asians (model 1). Previous studies have found that women are more likely than men to utilize healthcare services [29, 30], and future research should examine differences in health insurance coverage among Asian American subgroups.

Older East Asian adults were more likely to be insured before adjusting for all health-related factors. The fact that younger adults in these groups were less likely to be insured may be due to the fact that they are more likely to view themselves in good or excellent health [17]. A nationally representative sample of US adults found that younger individuals were less likely to have health insurance [31]. Acculturation may also explain healthcare coverage [19], as more recent immigrants may be less likely to engage in healthcare due to factors such as immigrant status and language proficiency [18]. From our findings, individuals who had lived in the US for greater than 20 years (model 1 East Asians and South Asians; model 1 and fully adjusted model for Southeast Asians) were more likely to have insurance coverage than individuals living in the US for 5 years. A previous study found a mediating effect of health insurance between length of time in the US and health status [32]; future research should examine the association between time in the US, health insurance, and health status among immigrant populations.

English proficiency was associated with insurance among East Asians before adjusting for all health-related factors; other studies have found language to be an important barrier to utilizing the health care system and understanding necessary information about insurance [18, 17, 19]. However, speaking English very well was only significant among East Asians in model 1.

Previous studies have shown that higher levels of education are associated with health behaviors [33], but there is not a direct link between education and health insurance. Individuals with lower income (which often correlates with lower education) can qualify for low-cost insurance through Medicaid [34]. In our analysis, we found that higher education levels were associated with insurance among South Asians, but lower education levels were associated with insurance coverage among Southeast Asians. Comprehension and

understanding healthcare services likely increases the likelihood of engaging in these services and having a usual source of care, which could be attributed to both English fluency and education [17].

Income was not significantly associated with insurance status when placed in our models; this is inconsistent with the Medicaid coverage criteria of insuring individuals up to 138% of the federal poverty level [20, 35]. Individuals earning over the average income are more likely to be uninsured, coinciding with the theory that the "Cadillac Tax" disproportionately affects families earning $38,000-100,000 [36]; in Table 1, we found that individuals making greater than $55,000 were more likely to be insured. A limitation of our study was that income was not reported by 20-30% of individuals; a new category was created to capture any individual refusing to report income or reporting "don't know."

It is likely that employment type may also be a better demographic indicator; however, employment (working vs. not working) was not significant once in regression models and was not included). Previous research suggests that type of employment (e.g. self-employed, blue collar, service industry) may impact access to health insurance. For example, a study examining Asian Americans in the 2005-2012 California Health Interview Survey (CHIS) found that Asian Americans who owned or worked for small businesses were significantly less likely than those who worked for large companies to be uninsured (25% vs. 7%); Additionally, large variations existed between Asian subgroups [37]. Previous research has suggested that employment type may be related to access and type of health insurance [38–40]. Future research should capture type of work in order to better understand insurance by job category.

As part of the ACA, programs have been implemented to improve the management of chronic diseases. In our population, self-reporting of diabetes was inversely associated with insurance status and self-reporting for tuberculosis was positively associated with insurance status among South Asians. Other chronic conditions were no longer significant when placed into logistic regression models. However, insurance and access to healthcare is important in identifying risks for chronic diseases early, as diabetes and hypertension rates are increasing among many Asian American subgroups [41]. Insured respondents are more likely to be screened by their doctors for chronic diseases and those without insurance are less likely to be up-to-date with their chronic disease screenings [35, 42]. Preventive care such as routine screening and vaccinations are effective in reducing chronic conditions, which can significantly cut healthcare costs in the long run [43]. We found that having a recent routine check-up in the past year was significantly associated with health insurance among South Asians and Southeast Asians, while visiting a private doctor when sick or injured was significantly associated with health insurance among East Asians and Southeast Asians, suggesting that having health insurance provides a greater opportunity for these groups to seek needed care.

Limitations

Several limitations in this study should be noted. The study sample was collected through community-based convenience sampling in NYC, thus our sample is not generalizable to

other Asian populations in NYC or elsewhere. Additionally, much of the published literature on insurance status among Asian Americans has focused on California [17, 37, 38, 23, 44, 40, 24] or national datasets [45, 41, 18, 46, 35, 6, 43, 39, 47, 32, 10, 12]; it is difficult to compare our findings to Asian groups in these studies. Similarly, health insurance guidelines are different outside of New York State, and immigrants in other locations often have a five-year waiting period for public insurance eligibility [15, 13]. Second, the results are based on self-reported information from the respondents and are therefore subjected to recall and reporting bias and subsequent threats to reliability. Third, this study is cross-sectional and most of the data was collected in 2014. Because changes from the ACA were really seen beginning in 2015 and 2016, we cannot take ACA enrolment into account. Finally, variables such as income and employment do not contain adequate information to describe the demographics of this population.

Despite the limitations, this study is novel in that sample includes Asian American subgroups often underrepresented in existing local and regional surveys, allowing for disaggregated analysis by a larger Asian ethnic subgroup. Understanding differences in insurance status by Asian subgroup is key in addressing Asian American health disparities, since different subgroups may require varying strategies to increase both insurance coverage and access to healthcare. In addition, health insurance access differs by state; thus policymakers must understand not only differences within Asian American subgroups, but also differences in qualifying for health insurance coverage. Results from this study may have important implications for future health reform efforts. For example, there is a need to target more recent Asian American immigrants across all of the groups, but extra effort may be required among East Asians who do not speak English well. Future research should examine Asian subgroup differences that further disaggregate by Asian subgroup; unfortunately, our sample was not large enough to do this, but differences in insurance status were identified by more detailed Asian American subgroup.

In conclusion, this study found health insurance status to be associated with various factors in these Asian American subgroups, with differing factors among each subgroup. This study provides insight into the association between demographic factors and health insurance status of immigrants in a privatized healthcare system. Findings may inform strategies to address challenges and barriers of healthcare access to immigrants, making healthcare more accessible to this underserved population.

Acknowledgments

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Table 1

Socio-demographics stratified by insurance status and ethnic subgroup, n (%)

	East Asian			South Asian			Southeast Asian		
	Insured N=349	Uninsured N=77	P-Value	Insured N=474	Uninsured N=102	P-Value	Insured N=315	Uninsured N=82	P-Value
Gender			0.006			0.184			0.010
Male	114 (32.8)	38 (49.4)		212 (44.7)	53 (52.0)		142 (45.1)	24 (29.3)	
Female	234 (67.2)	39 (50.6)		262 (55.3)	49 (48.0)		173 (54.9)	58 (70.7)	
Age			<0.001			0.304			0.002
18-44	110 (33.0)	31 (42.5)		248 (53.1)	53 (52.5)		137 (43.6)	40 (48.8)	
45-64	99 (29.7)	32 (43.8)		170 (36.4)	42 (41.6)		129 (41.1)	41 (50.0)	
65+	124 (37.2)	10 (13.7)		49 (10.5)	6 (5.9)		48 (15.3)	1 (1.2)	
Length of Stay in US			<0.001			0.016			<0.001
<=5 Years	24 (7.7)	18 (24.0)		111 (24.4)	35 (36.1)		46 (15.1)	24 (34.8)	
6-10 Years	46 (14.7)	19 (25.3)		126 (27.8)	28 (28.9)		52 (17.1)	17 (24.6)	
11-20 Years	97 (31.1)	26 (34.7)		126 (27.8)	26 (26.8)		61 (20.1)	15 (21.7)	
>20 Years	145 (46.5)	12 (16.0)		91 (20.0)	8 (8.2)		145 (47.7)	13 (18.8)	
English spoken fluency			0.011			0.227			0.025
Very well	43 (12.5)	2 (2.6)		140 (29.6)	22 (21.6)		82 (26.4)	14 (17.3)	
Well	122 (35.5)	23 (29.9)		198 (41.9)	45 (44.1)		111 (35.7)	42 (51.9)	
Not well/Not at all	179 (52.0)	52 (67.5)		135 (28.5)	35 (34.3)		118 (37.9)	25 (30.9)	
Level of Education			0.017			0.069			0.001
Less than HS	104 (30.4)	18 (24.3)		131 (27.8)	40 (39.2)		78 (25.6)	6 (7.6)	
HS/some college	87 (25.4)	31 (41.9)		163 (34.5)	31 (30.4)		95 (31.1)	24 (30.4)	
College graduate	151 (44.2)	25 (33.8)		178 (37.7)	31 (30.4)		132 (43.3)	49 (62.0)	
Employment			0.019			0.472			0.091
Working	170 (48.9)	49 (63.6)		285 (60.5)	65 (64.4)		200 (63.7)	59 (73.7)	
Not working	178 (51.1)	28 (36.4)		186 (39.5)	36 (35.6)		114 (36.3)	21 (26.3)	
Income			<0.001			0.169			0.013
<$25,000	100 (28.7)	9 (11.7)		152 (32.1)	41 (40.2)		90 (28.6)	31 (37.8)	
$25,000-$55,000	57 (16.3)	25 (32.5)		134 (28.3)	20 (19.6)		85 (27.0)	28 (34.1)	

	East Asian			South Asian			Southeast Asian		
	Insured N=349	Uninsured N=77	P-Value	Insured N=474	Uninsured N=102	P-Value	Insured N=315	Uninsured N=82	P-Value
>$55,000	99 (28.4)	12 (15.6)		85 (17.9)	15 (14.7)		71 (22.5)	6 (7.3)	
Missing/DK, declined	93 (26.6)	31 (40.3)		103 (21.7)	26 (25.5)		69 (21.9)	17 (20.7)	
Asian Subgroup, row %			**0.003**			**<0.001**			**<0.001**
Chinese	155 (86.1)	25 (13.9)							
Korean	107 (69.5)	47 (30.5)							
Japanese	87 (94.6)	5 (5.4)							
Asian Indian				82 (79.6)	21 (20.4)				
Bangladeshi				135 (88.2)	18 (11.8)				
Pakistani				78 (86.7)	12 (13.3)				
Himalayan				110 (72.8)	41 (27.2)				
Sri Lankan				69 (87.3)	10 (12.7)				
Filipino							68 (73.9)	24 (26.1)	
Vietnamese							77 (90.6)	8 (9.4)	
Cambodian							65 (92.9)	5 (7.1)	
Indonesian							42 (60.0)	28 (40.0)	
Burmese							41 (93.2)	3 (6.8)	
Thai							22 (61.1)	14 (38.9)	

Note: Boldface indicates statistical significance (p<0.05)

US, United States; HS, high school; DK, don't know

Table 2

Health characteristics stratified by insurance status and ethnic subgroup, n (%)

	East Asian			South Asian			Southeast Asian		
	Insured N=349	Uninsured N=77	P-Value	Insured N=474	Uninsured N=102	P-Value	Insured N=315	Uninsured N=82	P-Value
General Health Status			**0.009**			0.962			**0.001**
Excellent/very good	133 (38.2)	15 (20.0)		136 (28.8)	30 (30.0)		115 (36.5)	26 (32.1)	
Good	95 (27.3)	24 (32.0)		200 (42.4)	41 (41.0)		102 (32.4)	43 (53.1)	
Fair/Poor	120 (34.5)	36 (48.0)		136 (28.8)	29 (29.0)		98 (31.1)	12 (14.8)	
Last routine health check			**<0.001**			**<0.001**			**<0.001**
In the past year	292 (84.9)	37 (51.4)		415 (89.0)	64 (65.3)		258 (83.2)	45 (60.8)	
More than a year	38 (11.0)	29 (40.3)		39 (8.4)	21 (21.4)		47 (15.2)	20 (27.0)	
Never	14 (4.1)	6 (8.3)		12 (2.6)	13 (13.3)		5 (1.6)	9 (12.2)	
Inability to obtain care in the last 12 months			**<0.001**			0.366			0.804
Yes	42 (12.4)	24 (31.2)		59 (12.5)	16 (15.8)		61 (20.0)	17 (21.3)	
No/Don't Know	298 (87.6)	53 (68.8)		413 (87.5)	85 (84.2)		244 (80.0)	63 (78.8)	
When sick or injured…			**<0.001**			0.075			**0.008**
Private doctor	269 (79.1)	29 (40.3)		243 (52.1)	37 (38.1)		111 (35.9)	15 (18.3)	
CHC/hospital OPD or clinic/Hospital ER/pharmacy	40 (11.8)	23 (31.9)		155 (33.3)	41 (42.3)		104 (33.7)	28 (34.1)	
Traditional healer/Religious leader	8 (2.4)	3 (4.2)		13 (2.8)	5 (5.2)		11 (3.6)	5 (6.1)	
Nothing/Medicine at home	23 (6.8)	17 (23.6)		55 (11.8)	14 (14.4)		83 (26.9)	34 (41.5)	
Self-reported diagnoses (yes vs. no/DK)									
Diabetes	45 (13.8)	11 (14.5)	0.879	85 (18.4)	9 (9.2)	**0.027**	40 (13.3)	8 (10.3)	0.473
High blood pressure	86 (25.8)	21 (28.8)	0.605	97 (20.7)	14 (14.0)	0.124	95 (31.0)	12 (16.0)	**0.009**
High cholesterol	103 (30.9)	20 (26.7)	0.467	132 (28.2)	14 (14.0)	**0.003**	97 (31.8)	19 (24.4)	0.202
Tuberculosis	7 (2.2)	3 (4.1)	0.280	9 (1.9)	7 (6.9)	**0.013**	6 (2.0)	0 (0.0)	0.258
Hepatitis B	11 (3.5)	3 (4.1)	0.732	10 (2.2)	0 (0.0)	0.222	8 (2.7)	1 (1.3)	0.693
Mental health/Depression	16 (5.1)	0 (0.0)	0.050	19 (4.1)	3 (3.0)	0.780	19 (6.3)	1 (1.3)	0.145

Note: Boldface indicates statistical significance (p<0.05)

CHC, community health center; OPD, outpatient department; ER, emergency room; BP, blood pressure; DK, don't know

Table 3

Multivariable logistic regression examining characteristics associated with insurance status, stratified by Asian ethnic subgroup.

	East Asian				South Asian				Southeast Asian			
	Model 1 (n=360)		Model 2 (n=325)		Model 1 (n=541)		Model 2 (n=503)		Model 1 (n=362)		Model 2 (n=341)	
	OR (95% CI)	P-value	OR (95% CI)	P-value	OR (95% CI)	P-value	OR (95% CI)	P-value	OR (95% CI)	P-value	OR (95% CI)	P-value
Gender												
Female	2.0 (1.1–3.6)	**0.015**	2.8 (1.4–5.6)	**0.005**	1.5 (1.0–2.4)	0.074	1.5 (0.9–2.6)	0.122	0.5 (0.3–0.9)	**0.017**	0.4 (0.2–0.8)	**0.007**
Age	1.02 (1.00, 1.05)	**0.042**	1.02 (1.00–1.05)	0.080	1.02 (1.00–1.04)	0.067	1.00 (0.98–1.02)	0.833	1.00 (0.98–1.02)	0.866	0.99 (0.96–1.01)	0.509
Education												
HS/Some	0.6 (0.3–1.2)	0.134	0.7 (0.3–1.6)	0.386	2.0 (1.0–3.8)	**0.039**	2.6 (1.2–5.5)	**0.011**	0.3 (0.1–1.0)	**0.049**	0.2 (0.1–0.9)	**0.030**
College graduate	1.0 (0.5–2.3)	0.932	1.8 (0.7–4.8)	0.240	2.1 (1.1–4.5)	**0.021**	2.9 (1.3–6.3)	**0.009**	0.3 (0.1–0.9)	**0.035**	0.2 (0.1–0.8)	**0.022**
Length of Stay in US (ref= 5 years)												
6-10 Years	1.7 (0.7–4.1)	0.254	1.4 (0.5–4.4)	0.561	1.4 (0.8–2.5)	0.272	1.3 (0.6–2.5)	0.495	1.7 (0.8–3.7)	0.170	1.2 (0.5–3.0)	0.632
11-20 Years	1.7 (0.7–4.2)	0.216	1.1 (0.3–3.3)	0.908	1.3 (0.7–2.5)	0.383	1.3 (0.6–2.6)	0.499	2.0 (0.9–4.3)	0.098	1.5 (0.6–3.7)	0.358
>20 Years	4.7 (1.7–13.3)	**0.004**	3.5 (0.9–13.0)	0.062	2.7 (1.1–6.7)	**0.033**	2.3 (0.8–6.5)	0.104	4.4 (1.8–10.6)	**0.001**	3.7 (1.4–10.1)	**0.009**
Spoken English (ref= Not well/not at all)												
Very well	6.1 (1.2–29.9)	**0.026**	5.5 (0.6–53.2)	0.102	1.0 (0.4–2.4)	0.961	0.7 (0.3–1.9)	0.458	2.5 (0.9–6.4)	0.067	2.0 (0.7–6.3)	0.212
Well	1.7 (0.8–3.3)	0.146	1.4 (0.6–3.2)	0.420	0.8 (0.4–1.5)	0.397	0.6 (0.3–1.4)	0.272	1.0 (0.5–2.0)	0.930	1.0 (0.4–2.3)	0.995
General health status (ref=Fair/Poor)												
Excellent/very good			3.5 (1.3–9.7)	**0.014**			1.1 (0.5–2.5)	0.730			1.3 (0.4–3.8)	0.688
Good			1.1 (0.5–2.5)	0.841			1.1 (0.5–1.9)	0.931			0.8 (0.3–2.0)	0.599
Last routine health check (ref=Never)												
In the past year			3.4 (0.8–14.9)	0.102			6.4 (2.3–17.9)	**<0.001**			5.6 (1.2–25.2)	**0.025**
>1 year			0.6 (0.1–3.0)	0.568			2.9 (0.9–9.5)	0.076			2.3 (0.5–10.9)	0.287
When sick or injured (ref=Nothing/medicine at home)												
Private doctor			3.2 (1.1–9.4)	**0.033**			1.6 (0.7–3.6)	0.240			2.6 (1.2–5.9)	**0.018**
CHC/OPD or clinic/Hospital ER/pharmacy			1.0 (0.3–3.2)	0.994			1.1 (0.5–2.6)	0.739			1.7 (0.7–3.8)	0.219
Traditional healer/Religious leader			2.9 (0.3–23.8)	0.326			2.4 (0.4–12.3)	0.308			3.8 (0.7–22.0)	0.136

| | East Asian | | | | South Asian | | | | Southeast Asian | | | |
| | Model 1 (n=360) | | Model 2 (n=325) | | Model 1 (n=541) | | Model 2 (n=503) | | Model 1 (n=362) | | Model 2 (n=341) | |
	OR (95% CI)	P-value	OR (95% CI)	P-value	OR (95% CI)	P-value	OR (95% CI)	P-value	OR (95% CI)	P-value	OR (95% CI)	P-value
Inability to obtain care in the last 12 months (ref=yes)												
No/Don't know			2.0 (0.8–5.0)	0.118								
Diabetes diagnosis (ref=yes)												
No/Don't know							2.7 (1.1–6.6)	**0.030**				
Tuberculosis diagnosis (ref=No/Don't know)												
Yes							4.7 (1.3–17.2)	**0.019**				
Hypertension diagnosis (ref=No/Don't know)												
Yes											1.1 (0.5–.2.6)	0.816

Note: Boldface indicates statistical significance (p<0.05)

US, United States; HS, high school; OPD, outpatient department; ER, emergency room; BP, blood pressure; DK, don't know