

Nativity and Occupational Class Disparities in Uninsurance and Routine Preventive Care Use Among Asian Americans

Dolly A. John · A. B. de Castro · Bonnie Duran ·
Diane P. Martin

Published online: 18 June 2013
© Springer Science+Business Media New York 2013

Abstract Using data from 1,530 Asian respondents of the 2002–2003 National Latino and Asian American Study, we examined how nativity and occupational class are associated with uninsurance, no routine physical check-up in the past year and no dental/eye exam use in the past year using weighted multivariate logistic regression models. Recent immigrants had increased odds of uninsurance and no dental/eye exam use than US-born Asians which became nonsignificant after controlling for occupational class and covariates. Unemployed and service workers had increased odds of uninsurance than white-collar workers even after controlling for income and limited English proficiency (LEP). Approximately 35–40 % of blue-collar and service workers reported neither type of preventive care use. Even after controlling for LEP, income, uninsurance, having a regular doctor or place of care, service workers had significantly increased odds of no physical check-up and no dental/eye exam use and blue-collar workers had marginally significant increased odds of no dental/eye exam use.

Significant occupational disparities exist in access and preventive care use with workers in service occupations being particularly underserved.

Keywords Asian Americans · Nativity · Occupational disparities · Health insurance · Routine preventive care · Health disparities

Introduction

Uninsurance or lacking any health insurance has many harmful consequences ultimately resulting in poorer health and shortened lives [1, 2]. The uninsured are less likely to use clinical preventive services and more likely to die from acute causes, delay or forego visits with providers, treatment when chronically ill, be diagnosed with later stage cancers, suffer poorer health outcomes and premature disease [1, 2]. Also, routine preventive care (e.g., annual physical, eye and dental exams) creates opportunity for early detection of disease, increased patient education and counseling, improved patient adherence with medications and healthy lifestyles and good patient-provider relationships [3–6].

National reports, though, document significant, persistent, and some worsening disparities in access and quality of care for Asian Americans compared to non-Hispanic Whites and by factors such as income and health insurance coverage [7]. For example, they remain more likely to lack a usual primary care provider, not receive colorectal and cervical cancer screening, face difficulties or delays in obtaining needed healthcare, and fare worse on some measures of timeliness and patient-centered care than non-Hispanic Whites. Yet, limited knowledge exists about factors underlying these disparities.

D. A. John (✉)
Department of Social and Behavioral Sciences, Harvard School
of Public Health, Landmark Center, 4th Floor, 401 Park Dr.,
Boston, MA 02215, USA
e-mail: djohn@hsph.harvard.edu

D. A. John · B. Duran · D. P. Martin
Department of Health Services, University of Washington
School of Public Health, Seattle, WA, USA

A. B. de Castro
School of Nursing, University of Washington, Seattle, WA, USA

B. Duran
Indigenous Wellness Research Institute, University of
Washington, Seattle, WA, USA

Eliminating these inequalities warrants better understanding of root causes that may operate outside the healthcare system. In particular, immigration-related factors may contribute to healthcare disparities for Asian Americans, of whom 69 % are immigrants and 39 % have Limited English Proficiency (LEP) [8]. Nativity is a significant yet understudied contributor of socioeconomic disparities in healthcare [9, 10]. Disproportionately represented in low-skill, low-wage jobs [11], immigrants are generally more likely to be uninsured and face multiple barriers in using health services than US-born. Recent immigrants face acculturative stresses (e.g., difficulties with speaking English, navigating the healthcare system) and are even less likely to be insured, use screening and preventive care than US-born [10, 12–19].

Immigrants also face barriers from policies limiting access to public benefits. Notably, the 1996 Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) denies documented immigrants access to means-tested programs such as Medicaid and Temporary Aid to Needy Families during the first 5 years of residence and tightened eligibility requirements. Additionally, the 2005 Deficit Reduction Act (DRA) requires proof of citizenship and identity for Medicaid applications and renewals. Some studies suggest these federal policies may have reduced immigrants' access to care and discouraged immigrants from seeking healthcare and benefits even when insured and eligible for them [20, 21]. Gaps in the literature underscore disentangling the relative contributions of immigrant-related attributes (e.g., nativity, language) to health service use, understanding immigrants' nonfinancial barriers and to what extent enabling factors (e.g., income, health insurance) account for nativity-related differences in healthcare [10].

Work also constitutes a major determinant of healthcare disparities [22]. Occupation, which is sometimes conflated with employment status, directly influences income and important work-related health benefits (e.g., access to employer-sponsored health insurance coverage, dental and vision coverage, paid leave) [22–27]. Accordingly, occupational class, a socioeconomic status (SES) indicator, warrants further consideration for understanding disparities. Theorized to operate through material (e.g., income, health insurance) and psychosocial pathways, occupational class differences are associated with widening health inequities over time [23, 24, 28, 29].

Examining differences in health service use by occupational class, and not just employment status, may reveal how some workers may face greater risk for health inequalities. Prior studies suggest that occupational disparities may be associated with healthcare disparities [30, 31]. Using 2000 National Health Interview Survey data, occupational class disparities are documented for

healthcare access (e.g., uninsurance, seeing a dentist in past year, obtaining needed care) [30]. Using 2002–2003 National Latino and Asian American Study data, occupational disparities in age and gender-adjusted rates of uninsurance are documented for Asian Americans [32]. Using 2006 Current Population Survey data, a national study of Asian Americans suggested that uninsurance gaps for six Asian ethnic groups could be attributed to lack of employer provided health insurance for service, blue-collar and self-employed workers and for noncitizens [31]. However, because this study relied on a national survey unavailable in Asian languages, it may have captured Asian American respondents with higher education, higher income, and English language fluency compared to the general Asian American population. English-speaking and non-English speaking Asians differ greatly in demographics, health, and healthcare access, and surveys excluding linguistic minorities may understate their healthcare problems [33].

We examined how nativity and occupational class may explain disparities in uninsurance (indicator of potential access critical for gaining entry into the healthcare system) and use of routine preventive healthcare services—no routine physical checkup and no dental/eye exam in the past year (indicators of realized access signifying entry and timely use of the healthcare system) using data from a national survey that sampled non-English speaking Asians. Andersen's Behavioral Model for Health Care Utilization served as our theoretical framework [34]. Designed to predict and explain use, it suggests that use of health services is a function of one's predisposing characteristics (e.g., demographics, social structure), factors that enable or impede use (e.g., health insurance), and perceived and evaluated need for care.

Methods

Data Source and Study Population

We analyzed data from 2,095 Asian respondents to the National Latino and Asian American Study (NLAAS), the first nationally-representative epidemiological survey to assess mental illness and mental health service use among Asian Americans [35, 36]. The NLAAS involved a complex, multi-stage stratified probability sample design [37] and recruited adults living in the non-institutionalized population of the coterminous United States or Hawaii between May 2002 and November 2003. Chinese, Vietnamese and Filipino ethnic groups were represented with large samples while other ethnic groups (e.g., Japanese, Korean, Asian Indian) were included in the 'Other Asian' category. Trained bilingual lay interviewers administered the instrument in the respondents' choice of language:

English, Chinese, Vietnamese, or Tagalog (response rate = 66 %). The analytic sample included 1,530 respondents in the labor force, as defined by the US Bureau of Labor Statistics—including those currently employed or unemployed but looking for work, excluding students, retirees, disabled and homemakers.

Measures

Outcomes

Uninsurance was defined as not having any current health insurance coverage through one's own/spouse's employer, self-purchased private coverage, public coverage through Medicare or Medicaid, or any other source of coverage (e.g., VA care) assessed with detailed questions.

No routine physical check-up in the past year was defined as reporting no visit to a doctor, hospital, or clinic for a routine physical check-up (including a gynecological exam for women) in the past 12 months.

No routine dental/eye exam in the past year was defined as reporting no visit to a dentist or optician for a routine check-up or exam in the past 12 months.

Main Independent Variables

Nativity Given the policy significance of 5 years of residence for immigrants to obtain need-eligible federal benefits, nativity was characterized using length of residence: US-born, immigrants living in US more than 5 years, recent immigrants living in US for 5 years or less.

Occupational Class Respondents were asked "What kind of work do you normally do? That is, what is your job called?" Categories of service, blue-collar, and white-collar were assigned based on primary employment in any of the 2000 US Standard Occupation Classification groups. Separate categories included the "unemployed" (reporting being unemployed but looking for work) and "other" [in the army ($n = 6$), refusals ($n = 10$), "don't know" ($n = 5$) or missing ($n = 23$), vague job descriptions that could not be classified ($n = 50$)].

Statistical Analysis

We obtained descriptive statistics by nativity and occupational class. Associations were examined using design-based Pearson's χ^2 statistic with the Rao and Scott second-order correction [38] and multivariate logistic regression models. To control for important differences in immigration context and health among disparate sub-groups [39,

40], we explored conducting analyses stratified by ethnicity. However, our study would have been underpowered to reliably detect differences within ethnic sub-groups. Descriptive statistics are disaggregated by ethnicity. Multivariate analyses controlled for ethnicity in the models. As further described, analyses controlled for age, gender, ethnicity, marital status, LEP (speaking English fair/poor vs. excellent/good), education, annual household income (characterized based on the 2000 Federal Poverty Level (FPL)—poor: <100 % FPL, near-poor: 100–199 % FPL, income ≥ 200 % FPL), having a regular doctor or place of care, and health need (self-rated physical health, self-rated mental health, reporting any of 5 major chronic conditions—cancer, asthma, diabetes, chronic obstructive pulmonary disease, cardiovascular disease—based on being ever told by a doctor or health professional).

Regression models estimated unadjusted and adjusted odds ratios (ORs) and their 95 % confidence intervals for nativity and occupational class. To understand potential pathways for disparities in uninsurance, we adjusted for enabling factors—English proficiency and income. To understand potential pathways for disparities in routine preventive care use, we adjusted for enabling factors (English proficiency, income, health insurance, having a regular doctor or place of care) while controlling for predisposing (age, gender, ethnicity, education, marital status) and need factors (self-rated physical and mental health, reporting having at least one of 5 chronic conditions) theorized by Andersen's Behavioral Model to explain health services use. Rates of missing data for key analytic variables were low (≤ 1 %). Of 1,530 eligible observations, 1,523, 1,521 and 1,519 observations with complete data for all analytic variables were used in the full multivariate models of uninsurance, no physical check-up and no eye/dental exam, respectively.

All analyses were conducted in Stata/MP 12.1 (Stata-Corp, College Station, TX) using the *svy* family of commands, weighted to accommodate NLAAS's complex sample survey design [37, 41] and provide results representative of the Asian American population. Models were specified and parameters estimated using standard procedures for models fit to complex sample survey data [42, 43]. The overall significance of the model and regression coefficients were assessed using the multivariable Wald test and design-adjusted Wald tests. Model fit was evaluated with goodness-of-fit assessed using Archer and Lemeshow's goodness-of-fit test for logistic regression models, the F-adjusted mean residual test, which takes survey design into account [44, 45] and discrimination was assessed using the frequency-weighted area under the receiver-operating characteristic curve or c-statistic. We found no evidence of lack of fit for the full models (uninsurance: $F(9, 25) = 0.62$, $p = 0.768$; no physical check-

up: $F(9,25) = 0.51$, $p = 0.851$; no routine dental/eye exam: $F(9,25) = 1.00$, $p = 0.465$), which also had acceptable to excellent discrimination (c-statistics for uninsurance, no physical check-up and no routine dental/eye exam: 0.7706, 0.7726, 0.7241, respectively). To help interpret results from the multivariate models, we computed the average marginal effects which indicate the differences in probabilities of outcomes compared to the reference groups controlling for covariates. We also computed and graphed the predicted probabilities of each outcome for an average individual of a particular nativity and occupational class group.

Results

Table 1 presents demographic characteristics of the weighted sample ($n = 5.5$ million). Seventy-six percent were immigrants with 13 % being recent immigrants. Sixty-two percent were in white-collar, 13 % were in blue-collar, and 10 % were in service occupations while 9 % were unemployed and 6 % were “other.” Additionally, 30 % had 12 years of education or less, 30 % had LEP and 18 % were poor/near poor. Compared to white-collar workers, blue-collar and service workers were more likely to be immigrants (both $p < 0.05$). They and unemployed workers were also more likely to have 12 years or less of education and LEP (all $p < 0.05$). Service and unemployed workers were also more likely to be poor/near poor ($p < 0.05$).

Uninsurance

A greater proportion of recent immigrants (19 %) than US-born (11 %) and longer term immigrants (13 %) was uninsured ($p = 0.06$) (Table 2). Despite 25 % of recent immigrants being poor (15 %) or near-poor (10 %), only 6 % reported Medicaid coverage. Occupational class differences in uninsurance were also significant (18 % of blue-collar, 20 % of service, 29 % of unemployed vs. 9 % of white-collar workers, $p < 0.001$). In sub-group analyses by nativity (results not shown), recent immigrants had the most pronounced differences across occupational classes (25 % of blue-collar, 50 % of service, 46 % of unemployed vs. 8 % of white-collar workers were uninsured, $p < 0.01$). Ethnicity-related differences in uninsurance were significant ($p < 0.01$) with Vietnamese having the highest rates of uninsurance (22 %).

In unadjusted analyses (Table 3), recent immigrants had increased odds of uninsurance than US-born [unadjusted OR: 1.99]. Also, blue-collar, service, and unemployed workers had increased odds of uninsurance than white-collar workers [unadjusted ORs: 2.22, 2.53 and 4.29,

respectively]. Controlling for demographic characteristics, nativity and occupational class remained significantly associated. After controlling for LEP and income, service workers and the unemployed had higher odds of uninsurance [adjusted ORs (AORs): 2.11 and 3.32, respectively]. Notably, the poor and near poor, typically eligible for public coverage, had higher odds of uninsurance than those with higher incomes. Being never married and having education of 12 years or less were also associated with higher odds of uninsurance.

Routine Preventive Care

Approximately one-quarter of Asian workers in 2002–2003 reported no routine physical check-up (26 %) and no routine eye/dental exam (27 %) (Table 2). Nativity-related differences were nonsignificant for no physical check-up, but significant for no dental/eye exam use (22 % of US-born, 27 % of longer-term immigrants, 37 % of recent immigrants, $p = 0.01$). Occupational class differences were significant for no physical check-up (34 % of blue-collar, 40 % of service, 21 % of unemployed workers vs. 23 % of white-collar workers, $p < 0.01$) and no dental/eye exam (37 % of blue-collar, 36 % of service, 36 % of unemployed workers vs. 22 % of white-collar workers, $p < 0.01$). Ethnicity-related differences approached significance for no physical check-up ($p = 0.06$) and were nonsignificant for no routine dental/eye exam.

In regression analyses, recent immigrants had increased odds of no routine dental/eye exam than US-born (unadjusted OR: 2.05). Blue-collar and service workers also had increased odds of no routine physical check-up (unadjusted ORs: 1.69 and 2.23, respectively) and no dental/eye exam (unadjusted ORs: 2.06 and 2.00, respectively) than white-collar workers. The disparity between service workers and white-collar workers in routine check-up and dental-eye exam persisted even after controlling for predisposing, enabling, and need factors (AORs: 2.24 and 1.60, respectively). The average marginal effects indicated significant and substantial differences with service workers having 14 % and 8 % higher probability (both $p < 0.05$) than white-collar workers for no physical check-up and no dental/eye exam, respectively. Being male, previously married, uninsured, and lacking a regular doctor or place of care were also associated with no routine physical check-up. In multivariate analyses for routine dental/eye exam, the odds ratio was attenuated and marginally significant for blue-collar workers (AOR: 1.65). They had a 9 % higher probability for no dental/exam than white-collar workers ($p = 0.06$). Younger age (18–34 years), less than 12 years of education, LEP, fair/poor self-rated physical health, being uninsured and lacking a regular doctor or place of care were also associated with no dental/eye exam use.

Table 1 Weighted sample characteristics of Asian Americans in the labor force, by occupational class: 2002–2003 National Latino and Asian American Study

	Eligible sample size, n = 1,530 n	Weighted pop. 5.5 million %	White-collar n = 918, 62 % %	Blue-collar n = 222, 13 % %	Service n = 151, 10 % %	Unemployed n = 145, 9 % %	Other n = 94, 6 % %	p value
Nativity								
US-born	335	24	27	16	15	22	26	0.041
Immigrant in US >5 years	994	63	61	76	69	57	62	
Recent immigrant in US ≤5 years	195	13	12	9	16	20	12	
Ethnicity								
Chinese	445	28	31	22	24	26	29	<0.001
Filipino	371	22	22	22	24	19	28	
Vietnamese	376	13	7	27	28	17	14	
Other Asian ^a	338	36	40	30	25	37	28	
Gender								
Men	801	53	51	75	46	39	56	0.082
Women	729	47	49	25	54	61	44	
Age (years)								
18–34	585	40	41	26	33	56	42	0.001
35–49	602	38	41	45	27	26	26	
50–64	314	20	16	27	31	18	31	
≥65	29	3	2	1	9	1	1	
Marital status								
Married	1,013	66	64	82	68	51	70	0.002
Never married	377	25	28	12	18	38	25	
Widowed, separated, divorced	139	9	8	6	14	12	6	
Education (years)								
<12	195	13	6	32	30	10	12	<0.001
12	262	17	10	37	24	25	23	
13–16	763	49	55	31	36	51	46	
≥17	309	22	29	1	10	14	19	
English language proficiency								
Fair/poor	545	30	22	50	52	35	31	<0.001
Excellent/good	985	70	78	50	48	65	69	
Annual household income/poverty								
Poor (<100 % FPL)	171	11	9	7	16	29	11	<0.001
Near poor (100–199 % FPL)	130	7	5	14	10	2	14	
Income ≥200 % FPL	1,229	82	86	79	74	69	75	

Table 1 continued

	Eligible sample size, n = 1,530 n	Weighted pop. 5.5 million %	White-collar n = 918, 62 % %	Blue-collar n = 222, 13 % %	Service n = 151, 10 % %	Unemployed n = 145, 9 % %	Other n = 94, 6 % %	p value
Health insurance								
Uninsurance	213	13	9	18	20	29	11	<0.001
Private, own/spouse's employer	1,043	68	76	63	54	43	58	
Private, self-purchased	102	8	6	9	13	5	16	
Medicare	39	3	3	4	5	0	2	
Medicaid	78	4	2	4	6	16	4	
Other (missing)	52 (3)	4	4	2	2	7	10	
No regular doctor or place of care	1,530	20	19	20	24	25	20	0.470

Percentages shown are weighted. Analyses accounted for the National Latino and Asian American Study's complex sample design. Differences are statistically significant at $p < 0.05$ based on design-based Pearson's chi-square tests of differences in proportions across categories

FPL Federal Poverty Level

^a The "other Asian" category included those who identified as Japanese, Korean, Asian Indian and other Asian ethnicity

Predicted Probabilities of Uninsurance and No Routine Preventive Care

Figure 1 depicts the predicted probabilities of each outcome estimated from the multivariate models. Each bar's height represents the predicted probability for an average individual of a particular nativity and occupational class group. For example, the predicted probabilities of uninsurance, no routine physical check-up and no routine dental/eye exam for an average Asian recent immigrant in a service occupation were 0.29, 0.56 and 0.52, respectively. The graphs depict key patterns related to nativity and occupational class:

1. Occupational class disparities exist with blue-collar and service workers consistently having higher probability of negative outcomes than white-collar workers within each nativity group. Surprisingly, they sometimes fared worse than unemployed workers, notably for no routine physical check-up.
2. Recent immigrants consistently had higher probabilities of negative outcomes for each occupational class (height of bar for each occupational class compared across nativity) and the most pronounced occupational class differences (differences in height of bars for blue-collar and service vs. white collar workers) compared to other nativity groups.

Discussion

Using a nationally representative sample including non-English speaking Asian Americans, our results demonstrate: (1) significant disparities in uninsurance and no routine preventive care use by occupational class, with service workers being particularly underserved, and (2) the persistence of some occupational disparities in preventive care use even after controlling for potential explanatory factors including income and health insurance. Rapid immigration-related growth of the Asian American population and a growing service economy composed increasingly of immigrants warrant better monitoring and understanding of immigration-related and occupational barriers in access and use of routine care [7, 11, 46]. We also discuss some implications for research, policy and practice.

We identify Asians who are more likely to be uninsured and lack routine preventive care based on immigration-related and occupational characteristics. Recent immigrants were more likely to be uninsured and have no dental/eye exam in the past year. Recent immigrant status was not associated with uninsurance after controlling for

Table 2 Uninsurance, no routine physical-check-up and no routine dental/eye exam in the past year for Asians in the US labor force, by nativity, occupational class and ethnicity: 2002–2003 National Latino and Asian American Study

	Eligible sample size n	Any public/private health insurance			Any routine physical check-up in past year			Any routine dental/eye exam in past year		
		Uninsured, %	Insured, %	<i>p</i> value	None, %	One or more, %	<i>p</i> value	None, %	One or more, %	<i>p</i> value
In labor force (5.5 million)	1,530	13	87	–	26	74	–	27	73	–
Nativity										
US-born	335	11	89	0.06	26	74	0.26	22	78	0.01
Immigrant in US >5 years	994	13	87		25	75		27	73	
Recent immigrant in US ≤5 years	195	19	81		32	68		37	63	
Occupational class										
White-collar	918	9	91	<0.001	23	77	<0.01	22	78	<0.01
Blue-collar	222	18	82		34	66		37	63	
Service	151	20	80		40	60		36	64	
Unemployed	145	29	71		21	79		36	64	
Other	94	11	89		22	78		24	76	
Ethnicity										
Chinese	445	14	86	<0.01	28	72	0.05	29	71	0.29
Filipino	371	10	90		20	80		22	78	
Vietnamese	376	22	78		31	69		30	70	
Other Asian ^a	338	11	89		26	74		27	73	

Percentages shown are weighted. Analyses accounted for the National Latino and Asian American Study's complex sample design. Differences are statistically significant at $p < 0.05$ based on design-based Pearson's chi-square tests of differences in proportions across categories. $p < .005$ are shown in bold

^a The "other Asian" category included those who identified as Japanese, Korean, Asian Indian and other Asian ethnicity

occupational class and covariates, suggesting that their higher uninsurance rates may be partly explained by occupational class differences in uninsurance.

Consistent with prior studies showing occupational disparities in access [30, 31], blue-collar and service workers were more likely to be uninsured than white-collar workers, and we also found this for no physical check-up and no dental/eye exam in the past year. Notably, 34–40 % of blue-collar and service workers reported neither type of preventive care use and fared worse than unemployed workers for physical check-up.

Our findings extend understanding of disparities by highlighting pathways of enabling resources of language, income and having a regular doctor or place of care. They support LEP being an impeding factor in being insured and using routine preventive care. Controlling for income and LEP reduced the disparity in uninsurance for blue-collar workers but not for service workers, suggesting that the affordability of health insurance coverage and the ability to navigate health insurance and the healthcare system may matter for blue-collar workers whereas the mere availability of affordable health insurance may take precedence for service workers and the unemployed. Service workers

tend to work for employers with few employees or are self-employed. They are much less likely to have access to healthcare benefits (e.g., medical, dental, vision) than white-collar workers [47]. Recent immigrants also face additional language-related barriers and restricted access to Medicaid and public safety nets, which is perhaps reflected by the steeper class differences seen for them.

The persistence of some occupational class disparities in routine preventive care use after controlling for income and health insurance warrants examining potential work-related barriers, and more broadly, systematically monitoring occupational disparities in health service use. One key finding was the independent effects of working in service occupations for use of physical check-up and dental/eye exam after accounting for key enabling factors (English proficiency, income, health insurance, having a regular doctor or place of care). Our results show that occupational disparities exist even after accounting for more commonly assessed SES measures of income and education, household-level economic deprivation measures (household income, health insurance through one's own or spouse's employer) and health need. Work, beyond being a source of income and health insurance, can directly (e.g., availability

Table 3 Results of logistic regression on uninsurance, no routine physical-check-up and no routine dental/eye exam in past year for Asians in the US labor force: 2002–2003 National Latino and Asian American Study

	Uninsurance in the past year						No routine physical check-up						No routine dental/eye exam					
	Adjusted for demographic factors			Adjusted for demographic + enabling factors ^c			Bivariate			Adjusted for predisposing, enabling and need factors ^d			Bivariate			Adjusted for predisposing, enabling and need factors ^d		
	OR	95 % CI	OR	95 % CI	OR	95 % CI	OR	95 % CI	OR	95 % CI	OR	95 % CI	OR	95 % CI	OR	95 % CI	OR	95 % CI
Nativity (US born^a)																		
Immigrant in US >5 years	1.21	(0.81–1.80)	1.39	(0.80–2.42)	1.18	(0.68–2.05)	0.96	(0.67–1.39)	0.74	(0.52–1.04)	1.27	(0.86–1.86)	1.08	(0.67–1.76)				
Recent immigrant in US ≤5 years	1.99*	(1.05–3.77)	2.65*	(1.21–5.84)	1.82	(0.90–3.69)	1.36	(0.82–2.26)	0.81	(0.47–1.38)	2.05**	(1.31–3.22)	1.40	(0.89–2.20)				
Occupational class (white-collar^a)																		
Blue-collar	2.22**	(1.24–3.97)	1.49	(0.81–2.76)	1.44	(0.76–2.72)	1.69*	(1.12–2.55)	1.22	(0.72–2.09)	2.06**	(1.22–3.50)	1.65	(0.99–2.75)				
Service	2.54***	(1.60–4.04)	2.01*	(1.18–3.43)	2.00*	(1.06–3.76)	2.23***	(1.63–3.04)	2.24***	(1.48–3.39)	2.00**	(1.33–3.00)	1.60*	(1.02–2.50)				
Unemployed	4.29***	(2.30–7.98)	3.34***	(1.94–5.76)	3.04***	(1.78–5.21)	0.89	(0.53–1.50)	0.64	(0.38–1.10)	1.96**	(1.27–3.04)	1.43	(0.76–2.68)				
Other	1.29	(0.61–2.75)	1.18	(0.60–2.31)	1.02	(0.48–2.20)	0.97	(0.40–2.33)	0.78	(0.38–1.59)	1.12	(0.61–2.05)	0.96	(0.54–1.68)				
Ethnicity (Filipino^a)																		
Chinese	1.47	(0.89–2.43)	1.66	(0.98–2.80)	1.38	(0.78–2.45)	1.50	(0.99–2.28)	1.30	(0.80–2.12)	1.46	(0.89–2.38)	1.06	(0.67–1.67)				
Vietnamese	2.56***	(1.55–4.23)	1.90*	(1.03–3.49)	1.16	(0.54–2.49)	1.80***	(1.27–2.55)	0.99	(0.62–1.56)	1.47*	(1.01–2.13)	0.59*	(0.37–0.94)				
Other Asian ^b	1.11	(0.62–1.97)	1.30	(0.70–2.40)	1.30	(0.69–2.48)	1.36	(0.96–1.92)	1.20	(0.79–1.82)	1.29	(0.79–2.12)	1.43	(0.96–2.11)				
Age (50–64 years^a)																		
18–34 years	1.48	(0.96–2.27)	1.66*	(1.10–2.52)	1.87**	(1.19–2.95)	1.37	(0.79–2.39)	1.23	(0.75–2.03)	1.26	(0.96–1.66)	1.53*	(1.09–2.16)				
35–49 years	1.07	(0.71–1.60)	0.93	(0.51–1.68)	0.99	(0.60–1.63)	1.10	(0.63–1.93)	0.95	(0.57–1.58)	0.81	(0.58–1.13)	0.81	(0.53–1.22)				
≥65 years	0.30	(0.07–1.33)	1.23	(0.75–2.00)	1.23	(0.74–2.05)	0.63	(0.14–2.81)	0.43	(0.13–1.46)	0.88	(0.32–2.42)	0.76	(0.30–1.95)				
Gender (women^a)																		
Men	1.45	(0.95–2.20)	0.32	(0.08–1.30)	0.25	(0.06–1.02)	3.05***	(2.01–4.63)	2.85***	(1.92–4.23)	1.32	(0.90–1.95)	1.27	(0.86–1.87)				
Marital status (married^a)																		
Never married	2.56**	(1.40–4.68)	3.24**	(1.45–7.25)	2.73**	(1.44–5.15)	1.24	(0.79–1.94)	0.86	(0.44–1.66)	1.39	(0.93–2.09)	1.25	(0.72–2.16)				
Widowed, separated, divorced	1.80	(0.99–3.28)	2.04	(0.96–4.34)	1.73	(0.77–3.86)	1.44	(0.80–2.59)	1.69*	(1.05–2.75)	1.22	(0.81–1.83)	1.23	(0.76–1.99)				
Education (≥17 years^a)																		
<12 years	4.12***	(1.99–8.54)	3.86***	(1.90–7.84)	2.43*	(1.10–5.37)	1.57	(0.83–2.96)	1.28	(0.58–2.82)	3.10***	(1.93–4.96)	1.72*	(1.01–2.95)				
12 years	3.28***	(1.71–6.27)	3.04**	(1.53–6.05)	2.12*	(1.01–4.44)	1.36	(0.79–2.34)	1.20	(0.71–2.03)	1.73*	(1.07–2.79)	1.10	(0.70–1.73)				
13–16 years	2.10*	(1.15–3.84)	2.23*	(1.11–4.46)	1.91	(0.96–3.80)	0.94	(0.58–1.51)	1.04	(0.64–1.71)	1.25	(0.82–1.92)	1.09	(0.72–1.66)				

Table 3 continued

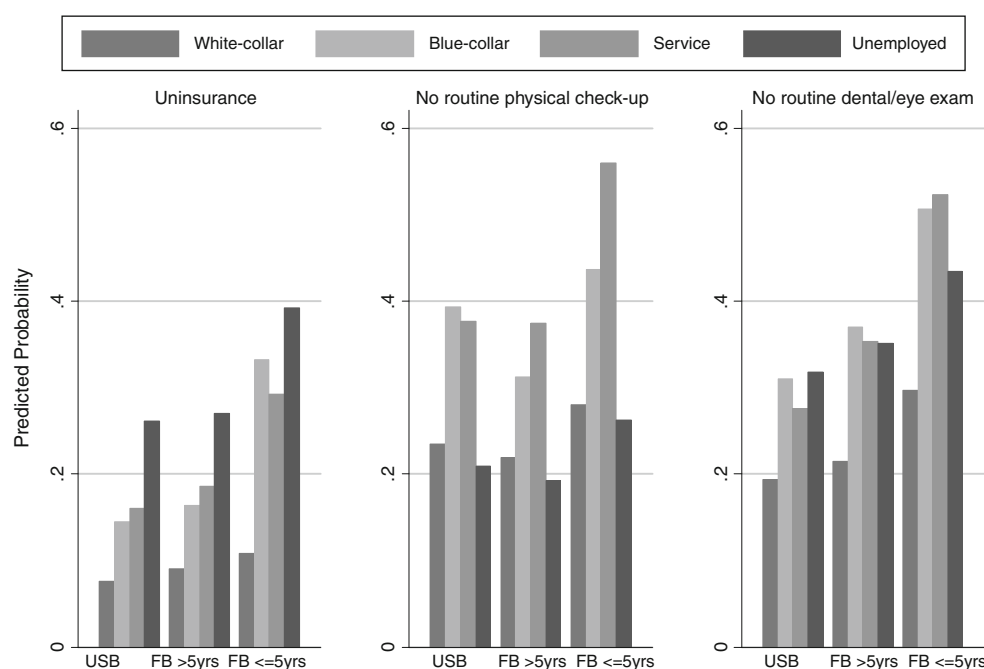
Uninsurance in the past year				No routine physical check-up				No routine dental/eye exam			
Bivariate				Adjusted for demographic + enabling factors ^c				Bivariate			
Adjusted for demographic factors				Adjusted for predisposing, enabling and need factors ^d				Adjusted for predisposing, enabling and need factors ^d			
OR	95 % CI	OR	95 % CI	OR	95 % CI	OR	95 % CI	OR	95 % CI	OR	95 % CI
English language proficiency (excellent/good ^a)											
Fair/poor	2.51***	(1.62–3.89)		1.91*	(1.02–3.57)	1.45*	(1.03–2.05)	1.26	(0.71–2.23)	2.55***	(2.12–3.08)
Annual household income (income ≥ 200 % FPL ^a)											
Poor (<100 % FPL)	4.85***	(2.63–8.93)		2.95***	(1.66–5.23)	1.27	(0.79–2.06)	0.93	(0.49–1.76)	1.56	(0.85–2.88)
Near Poor (100–199 % FPL)	4.01***	(2.50–6.44)		3.17***	(1.90–5.26)	1.59	(0.95–2.66)	1.15	(0.67–1.97)	2.36***	(1.37–4.05)
Health insurance (has public/private insurance ^a)											
Uninsurance						3.46***	(2.49–4.81)	2.01**	(1.31–3.09)	3.39***	(2.41–4.77)
Regular doctor or place of care (yes ^a)						6.38***	(4.37–9.33)	5.05***	(3.42–7.46)	2.40***	(1.75–3.27)
No										1.79***	(1.35–2.38)
Self-rated physical health (excellent, very good or good ^a)						1.02	(0.66–1.58)	1.02	(0.66–1.57)	2.44***	(1.84–3.24)
Fair/poor										1.75***	(1.24–2.46)
Self-rated mental health (excellent, very good or good ^a)						1.29	(0.76–2.21)	1.11	(0.69–1.77)	2.87***	(1.77–4.65)
Fair/poor										1.53	(0.92–2.56)
Any chronic conditions (no ^a)						0.63**	(0.45–0.87)	0.72	(0.45–1.15)	1.08	(0.75–1.55)
Yes										1.35	(0.96–1.88)
Unweighted sample size, n		1,523			1,523				1,521		1,519

Statistically significant results ($p < 0.05$) are shown in bold

Analyses adjusted for the complex sample survey design of the National Latino and Asian American Study

OR odds ratio; FPL Federal Poverty Level

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; ^a Reference category; ^b "Other Asian" included those identifying as Japanese, Korean, Asian Indian, other Asian ethnicity; ^c Multivariate model for uninsured controlled for age, gender, ethnicity, marital status, education, Limited English Proficiency (LEP), annual household income; ^d Multivariate model for outcomes of no routine physical check-up and no routine dental/eye exam controlled for predisposing factors (age, gender, ethnicity, marital status, education), enabling factors (LEP, annual household income, having a regular doctor or place of care) and health need (self-rated physical health, self-rated mental health, reporting have any of 5 major chronic conditions—cancer, asthma, diabetes, chronic obstructive pulmonary disease, cardiovascular disease)



Source: Analysis of data from 2002–2003 National Latino and Asian American Study

Fig. 1 Predicted probabilities of uninsurance, no routine physical check-up in past year, no routine dental/eye exam in the past year for Asian Americans in the US labor force, by occupational class and nativity categories. FB >5 years = immigrant in US >5 years, FB <=5 years = recent immigrant in US ≤5 years, USB = US born. Predicted probabilities of each outcome calculated from multivariate logistic regression models accounting for the complex sample survey design of the National Latino and Asian American Study. Multivariate model for uninsurance controlled for age, gender, ethnicity,

marital status, education, Limited English Proficiency (LEP), annual household income. Multivariate model for no routine physical check-up and no routine dental/eye exam controlled for predisposing factors (age, gender, ethnicity, marital status, education), enabling factors (LEP, annual household income, having a regular doctor or place of care) and health need (self-rated physical health, self-rated mental health, reporting any of 5 major chronic conditions—cancer, asthma, diabetes, chronic obstructive pulmonary disease, cardiovascular disease)

of leave) and indirectly (e.g., long or inflexible work hours) affect health service use. Our findings suggest a disparity between blue-collar and white-collar workers in dental/eye exam use but it was inconclusive given the marginally significant result and needs further study.

Our findings urge consideration of the non-financial aspects of access to reduce disparities. A classic conceptualization of access highlights 5 dimensions—affordability, availability, accessibility, accommodation, and acceptability—that capture the fit between the patient and the healthcare system [48]. Income, health insurance, having a regular doctor or place of care, significant enabling factors associated with routine preventive care use, tap into the availability and affordability dimensions. Better understanding the roles of work-related barriers (e.g., working hours, lack of paid leave), health literacy and cultural factors that may impede use may aid in efforts to deliver accessible, acceptable and accommodating routine preventive care.

To reduce disparities in routine preventive care use, our findings support improving access to health insurance and healthcare. Expanding health insurance coverage, increasing its availability and affordability could improve access

and use for blue-collar and service workers. Amending federal policies such as PRWORA and DRA could enable low-income and recent immigrant workers to access the public safety net if need-eligible. Though recent immigrants have lower medical care expenditures than the US-born [49], they were excluded from the recently passed landmark health reform purported to improve access for all Americans and reduce healthcare disparities [50]. Waiting to access the healthcare system until eligible and affordable forgoes crucial opportunities for prevention and increases chances for late diagnoses and delays in seeking needed care, sometimes too late. Additionally, understanding why the poor and near poor, usually protected by the public safety net, were more likely to be uninsured than higher income individuals, independent of LEP, deserves further study to examine the role of potential barriers such as lack of awareness and social stigma in using public services versus ineligibility. To increase preventive care use, our findings also support improving access to a regular doctor or place of care and targeted, outreach efforts to certain Asian workers, particularly service workers and those with LEP.

Our study has some notable limitations. We used a conventional measure of occupational class which may underestimate occupational class disparities [30, 51] compared to other occupational class measures (requires data not captured by NLAAS). Yet, our findings are noteworthy for showing occupational class contributes to disparities in use independently of traditionally assessed SES measures of education and income. We could not separately assess dental and eye exam use which suggests our results are likely conservative. The NLAAS did not assess aspects of coverage (e.g., preventive benefits, cost-sharing) and cultural beliefs which may also be associated with routine preventive care use. Small sample sizes prevented assessing potential effect modification by nativity and ethnicity. The NLAAS assessed self-reported data. Response biases arising from difficulty understanding survey items and/or providing socially desirable responses are possible. However, the NLAAS underwent careful testing and implementation to minimize such biases [35]. Because the NLAAS was cross-sectional, we also limit our findings to the associations examined and make no causal inferences.

Conclusion

To our knowledge, this is the first study to investigate how nativity and occupational class may explain disparities in the use of routine preventive care among Asian Americans. Access is the “timely use of personal health services to achieve the best possible health outcomes” [2]. We found significant occupational class disparities in gaining entry into the healthcare system through health insurance and in timely use of routine preventive care which persisted even after controlling for education, income and key factors enabling health service use. Approximately 35–40 % of workers in blue-collar and service occupations reported no physical check-up and no dental/eye exam in the past year. These disparities were most pronounced among recent immigrants. Our findings are relevant for addressing persistent disparities in timeliness of care. Asian workers who might most benefit from routine preventive care are underserved, particularly workers in service occupations. Addressing these healthcare inequalities is imperative and requires greater attention to the relevant contexts of immigration and work that contribute to them.

Acknowledgments We appreciate responses provided by participants of the National Latino and Asian American Study. We gratefully acknowledge pre-doctoral training support received by Dolly John from the Northwest Center for Occupational Health and Safety and T32 HS013853 AHRQ/NRSA Training Grant from the Agency for Healthcare Research and Quality. We are also immensely grateful for guidance and valuable feedback from David Takeuchi, Domin Chan and anonymous reviewers.

References

1. Institute of Medicine. Committee on the consequences of uninsurance. Care without coverage: too little, too late. Washington, DC: National Academy Press; 2002.
2. Institute of Medicine. Committee on Health Insurance Status and Its Consequences. America's uninsured crisis: consequences for health and health care. Washington, DC: National Academies Press; 2009.
3. Oboler SK, Prochazka AV, Gonzales R, Xu S, Anderson RJ. Public expectations and attitudes for annual physical examinations and testing. *Ann Intern Med.* 2002;136:652–9.
4. Prochazka AV, Lundahl K, Pearson W, Oboler SK, Anderson RJ. Support of evidence-based guidelines for the annual physical examination: a survey of primary care providers. *Arch Intern Med.* 2005;165:1347–52.
5. Stone EG, Morton SC, Hulscher ME, Maglione MA, Roth EA, Grimshaw JM, Mittman BS, Rubenstein LV, Rubenstein LZ, Shekelle PG. Interventions that increase use of adult immunization and cancer screening services: a meta-analysis. *Ann Intern Med.* 2002;136:641–51.
6. Laine C. The annual physical examination: needless ritual or necessary routine? *Ann Intern Med.* 2002;136:701–3.
7. Agency for Healthcare Research and Quality. 2010 National Healthcare Quality & Disparities Reports. Agency for Healthcare Research and Quality, Rockville, MD; 2011 <http://www.ahrq.gov/qual/>.
8. Reeves T, Bennett C. We the People: Asians in the United States. Census 2000 Special Reports, CENSR-17. 2004.
9. Adler NE, Rehkopf DH. US disparities in health: descriptions, causes, and mechanisms. *Annu Rev Public Health.* 2008;29: 235–52.
10. Deroose KP, Bahney BW, Lurie N, Escarce JJ. Review: immigrants and health care access, quality, and cost. *Med Care Res Rev.* 2009;66:355–408.
11. Capps R, Fix M, Fortuny K. Trends in the low-wage immigrant labor force, 2000–2005. 2007.
12. Kaiser Family Foundation. Immigrants' health care coverage and access. 2003; 2009.
13. Kaiser Family Foundation. Five basic facts on immigrants and their health care (#7761). 2008.
14. Carrasquillo O, Carrasquillo AI, Shea S. Health insurance coverage of immigrants living in the United States: differences by citizenship status and country of origin. *Am J Public Health.* 2000;90:917–23.
15. Buchmueller TC, Lo Sasso AT, Lurie I, Dolfin S. Immigrants and employer-sponsored health insurance. *Health Serv Res.* 2007;42: 286–310.
16. Deroose KP, Escarce JJ, Lurie N. Immigrants and health care: sources of vulnerability. *Health Aff (Millwood).* 2007;26:1258–68.
17. McCauley LA. Immigrant workers in the United States: recent trends, vulnerable populations, and challenges for occupational health. *AAOHN J.* 2005;53:313–9.
18. Okie S. Immigrants and health care—at the intersection of two broken systems. *N Engl J Med.* 2007;357:525–9.
19. Nwadiora E, McAdoo H. Acculturative stress among Amerasian refugees: gender and racial differences. *Adolescence.* 1996;31:477–87.
20. Kaushal N, Kaestner R. Welfare reform and health insurance of immigrants. *Health Serv Res.* 2005;40:697–721.
21. Ku L, Matani S. Left out: immigrants' access to health care and insurance. *Health Aff (Millwood).* 2001;20:247–56.
22. Lipscomb HJ, Loomis D, McDonald MA, Argue RA, Wing S. A conceptual model of work and health disparities in the United States. *Int J Health Serv.* 2006;36:25–50.

23. Krieger N, Williams DR, Moss NE. Measuring social class in US public health research: concepts, methodologies, and guidelines. *Annu Rev Public Health*. 1997;18:341–78.
24. Lynch J, Kaplan G. Socioeconomic position: In: Berkman LF, Kawachi I, editors. *Social epidemiology*. New York: Oxford University Press; 2000. p13–35.
25. Navarro V, Muntaner C. Political and economic determinants of population health and well-being : controversies and developments. Amityville: Baywood; 2004.
26. Fiscella K, Franks P, Gold MR, Clancy CM. Inequality in quality: addressing socioeconomic, racial, and ethnic disparities in health care. *JAMA*. 2000;283:2579–84.
27. Macintyre S, McKay L, Der G, Hiscock R. Socio-economic position and health: what you observe depends on how you measure it. *J Public Health Med*. 2003;25:288–94.
28. Marmot MG, Wilkinson RG. *Social determinants of health*. New York: Oxford University Press; 1999.
29. Chandola T, Ferrie J, Sacker A, Marmot M. Social inequalities in self reported health in early old age: follow-up of prospective cohort study. *BMJ*. 2007;334:990.
30. Krieger N, Barbeau EM, Soobader MJ. Class matters: US versus UK measures of occupational disparities in access to health services and health status in the 2000 U.S. National Health Interview Survey. *Int J Health Serv*. 2005;35:213–36.
31. Huang K, Carrasquillo O. The role of citizenship, employment, and socioeconomic characteristics in health insurance coverage among Asian subgroups in the United States. *Med Care*. 2008; 46:1093–8.
32. Alegria M, Cao Z, McGuire TG, Ojeda VD, Sribney B, Woo M, Takeuchi D. Health insurance coverage for vulnerable populations: contrasting Asian Americans and Latinos in the United States. *Inquiry*. 2006;43:231–54.
33. Lee S, Nguyen HA, Jawad M, Kurata J. Linguistic minorities in a health survey. *Public Opin Q*. 2008;72:470–86.
34. Andersen RM. Revisiting the behavioral model and access to medical care: does it matter? *J Health Soc Behav*. 1995;36:1–10.
35. Alegria M, Vila D, Woo M, Canino G, Takeuchi D, Vera M, Febo V, Guarnaccia P, Aguilar-Gaxiola S, Shrout P. Cultural relevance and equivalence in the NLAAS instrument: integrating etic and emic in the development of cross-cultural measures for a psychiatric epidemiology and services study of Latinos. *Int J Methods Psychiatr Res*. 2004;13:270–88.
36. Pennell BE, Bowers A, Carr D, Chardoul S, Cheung GQ, Dinkelmann K, Gebler N, Hansen SE, Pennell S, Torres M. The development and implementation of the National Comorbidity Survey Replication, the National Survey of American Life, and the National Latino and Asian American Survey. *Int J Methods Psychiatr Res*. 2004;13:241–69.
37. Heeringa SG, Wagner J, Torres M, Duan N, Adams T, Berglund P. Sample designs and sampling methods for the collaborative psychiatric epidemiology studies (CPES). *Int J Methods Psychiatr Res*. 2004;13:221–40.
38. Rao JNK, Scott AJ. On Chi Squared tests for multiway contingency tables with cell proportions estimated from survey data. *Ann Stat*. 1984;12:46–60.
39. Uehara ES, Takeuchi DT, Smukler M. Effects of combining disparate groups in the analysis of ethnic differences: variations among Asian American mental health service consumers in level of community functioning. *Am J Community Psychol*. 1994;22: 83–99.
40. Williams DR, Collins C. US Socioeconomic and Racial Differences in Health: patterns and Explanations. *Annu Rev Sociol*. 1995;21:349–86.
41. Heeringa SG, Liu J. Complex sample design effects and inference for mental health survey data. *Int J Methods Psychiatr Res*. 1998;7:56–65.
42. Hosmer DW, Lemeshow S. *Applied logistic regression*. New York: Wiley; 2000.
43. Heeringa SG, West BT, Berglund PA. *Applied survey data analysis*. Boca Raton, FL: Chapman Hall/CRC Press; 2010.
44. Archer KJ, Lemeshow S. Goodness-of-fit test for a logistic regression model fitted using survey sample data. *Stata J*. 2006;6: 97–105.
45. Archer KJ, Lemeshow S, Hosmer DW. Goodness-of-fit tests for logistic regression models when data are collected using a complex sampling design. *Comput Stat Data Anal*. 2007;51:4450–64.
46. Kaiser Family Foundation and APIAHF. *Health Coverage and Access to Care Among Asian Americans, Native Hawaiians and Pacific Islanders*. 2008; 2009.
47. U.S. Bureau of Labor Statistics. *National Compensation Survey, Employee Benefits in the United States*, March 2009; Bulletin 2731.
48. Penchansky R, Thomas JW. The concept of access: definition and relationship to consumer satisfaction. *Med Care*. 1981;19: 127–40.
49. Ku L. Health insurance coverage and medical expenditures of immigrants and native-born citizens in the United States. *Am J Public Health*. 2009;99:1322–8.
50. Khimm S. Why immigrants get short shrift on health reform. *Washington Post* 2010.
51. Barbeau EM, Krieger N, Soobader MJ. Working class matters: socioeconomic disadvantage, race/ethnicity, gender, and smoking in NHIS 2000. *Am J Public Health*. 2004;94:269–78.