



Hypertension among Asians in Los Angeles County: Findings from a multiyear survey

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ABSTRACT

Few studies have examined the prevalence of hypertension among Asians living in the United States. Multiyear data from the Los Angeles County Health Survey were used to investigate the prevalence of hypertension among Asians and Asian subgroups, and risk factors associated with the disease, using descriptive analysis and multivariate logistic regression. Age-adjusted prevalence of hypertension in Asians was 23.4%. Among Asian subgroups, age-adjusted prevalence of hypertension was lowest among Chinese (20.0%), and highest among Filipinos (32.7%), and several factors were identified as associated with hypertension. Hypertension among Asian-Americans is a serious public health concern, requiring culturally sensitive best practices, and evidence-based approaches to improve prevention and control among Asians.

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1. Background/objective

Asians have emerged as the fastest growing major ethnic minority population in the United States, currently comprising 5.6% of the U.S. population and 36% of immigrants (United States. Dept. of Commerce. U.S. Census Bureau, 2012; 2010 American Community Survey and other Census Bureau data; Pew Research Center, 2012). However, few studies have examined the prevalence of hypertension among Asians living in the United States.

The primary objective of this study was to investigate the prevalence of hypertension among adult (18 years or older) Asians and Asian ethnic subgroups in Los Angeles County (LAC), which has the largest county population of Asians in the U.S. In 2014, Asians comprised approximately 15% of the LAC population (about 1,500,000) (Population Estimates, n.d.). A secondary objective of this study was to investigate risk factors associated with hypertension among Asians.

2. Methods

We aggregated data from the four most recent cycles of the Los Angeles County Health Survey (2005, 2007, 2011, and 2015), a periodic, random-digit-dial telephone survey of the non-institutionalized population of Los Angeles County. Methodologic changes were made to the survey beginning in 2011. In the 2011 and 2015 surveys, the Los Angeles County Health Survey (LACHS) incorporated cell phone users and

adopted a more sophisticated raking procedure in weighting the survey data. These changes were made to maintain survey representativeness and validity and are similar to those made to the Behavioral Risk Factor Surveillance System in 2011 (Pierannunzi et al., 2012). Additional details regarding the survey design, content, and weighting methodology are reported elsewhere (Simon et al., 2001; Yi et al., 2015). Interviews were conducted in English, Spanish, Mandarin, Cantonese, Korean, and Vietnamese, with one adult randomly selected from each household. Asians comprised 3191 individuals in the sample. The comparison groups included Latinos (n = 11,420), whites (n = 13,442), and blacks (n = 3188). The remaining survey sample consisted of 585 adults who identified as Pacific Islander, American Indian/Alaska Native, and Other. These were excluded from the study due to inadequate sample sizes. The final study sample included 31,241 adults.

Hypertension was defined by a positive response to the question “Have you ever been told by a doctor or other health professional that you have high blood pressure or hypertension?” Similar definitions of self-reported doctor-diagnosed hypertension have been used in other studies (Tormo et al., 2000; Ikeda et al., 2014).

We conducted descriptive analysis to quantify the prevalence of hypertension and other factors that had previously been demonstrated to be associated with hypertension. Furthermore, we performed multivariate logistic regression among Asian respondents to examine the associations between hypertension and demographic characteristics (age and gender), socio-economic status (education and federal poverty level), acculturation proxies (nativity, number of years living in the US, and language used most at home), body mass index (BMI), and health behaviors (physical activity, smoking and drinking). All analyses were

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conducted using Statistical Analysis System version 9.3 (SAS Institute Inc., Cary, NC).

3. Results

3.1. Demographic characteristics of the Asian sample

The characteristics of the study sample (unweighted): among the adult Asians (3191) 53.8% were female. The median age was 49.0 years. 14.5% were 18–29 years old, 37.7% were 30–49 years old, 26.7% were 50–64 years old, and 21.2% were 65 years or older. 35.2% were Chinese, 14.6% were Korean, 17.1% were Filipino, 10.3% were Japanese, 6.8% were Vietnamese, 7.5% were South Asian and 8.4% were Other Asian.

The characteristics of the weighted study population of Asian subgroups are detailed in Table 1.

3.2. Prevalence of hypertension among Asians compared to other races/ethnicities

The age-adjusted prevalence of hypertension was lower among Asians compared to other race/ethnic groups in 2005. However, hypertension increased by 18% among Asians, from 19.6% in 2005 to 23.1% in 2015. Hypertension prevalence did not increase among other racial/ethnic groups over this time period (Table 2).

The age-adjusted prevalence of hypertension among Asians (23.4%) was lower than that of blacks for all years, was lower than that of Latinos in 2005, 2007 and 2015 but not 2011, and was lower than that of whites in 2005, but surpassed whites in 2007, 2011 and 2015.

3.3. Prevalence of hypertension among Asian subgroups

Among Asian subgroups, the age-adjusted prevalence of hypertension was the lowest among Chinese (20.0%), and highest among

Table 1
Characteristics of the Study Population of Asian Subgroups^a.

Characteristic	Chinese (n = 1122) weighted % (95% ci)	Korean (n = 547) weighted % (95% ci)	Filipino (n = 466) weighted % (95% ci)	Japanese (n = 330) weighted % (95% ci)	Vietnamese (n = 217) weighted % (95% ci)	South Asian (n = 240) weighted % (95% ci)	Other Asian (n = 269) weighted % (95% ci)
Age (yrs)							
18–29	23.9 (20.6, 27.3)	19.4 (14.4, 24.4)	29.1 (22.9, 35.2)	17.4 (10.8, 24.1)	18.6 (11.0, 26.1)	30.6 (22.6, 38.7)	22.8 (15.8, 29.9)
30–49	38.3 (34.8, 41.8)	40.9 (35.8, 46.0)	40.7 (35.0, 46.4)	29.3 (23.3, 35.2)	45.2 (36.8, 53.5)	49.1 (41.0, 57.1)	41.8 (34.5, 49.2)
50–64	22.3 (19.4, 25.2)	20.9 (17.0, 24.8)	20.4 (16.4, 24.4)	30.3 (24.5, 36.0)	25.7 (18.6, 32.7)	12.4 (8.2, 16.6)	24.1 (17.7, 30.5)
65+	15.4 (13.2, 17.7)	18.9 (15.4, 22.4)	9.8 (7.1, 12.6)	23.1 (18.2, 27.9)	10.6 (6.6, 14.7)	7.9 ^b (4.2, 11.6)	11.3 (7.3, 15.3)
Gender							
Female	50.5 (46.9, 54.2)	45.8 (40.5, 51.0)	44.7 (38.8, 50.6)	45.3 (38.7, 52.0)	50.1 (41.8, 58.5)	66.1 (58.4, 73.8)	48.7 (41.2, 56.3)
Male	49.5 (45.8, 53.1)	54.2 (49.0, 59.5)	55.3 (49.4, 61.2)	54.7 (48.0, 61.3)	49.9 (41.5, 58.2)	33.9 (26.2, 41.6)	51.3 (43.7, 58.8)
Hypertension							
Yes	19.6 (16.9, 22.3)	22.5 (18.2, 26.7)	28.5 (23.4, 33.6)	29.2 (23.7, 34.7)	22.2 (15.5, 28.8)	15.5 (9.9, 21.1)	23.1 (17.1, 29.1)
No	80.4 (77.7, 83.1)	77.5 (73.3, 81.8)	71.5 (66.4, 76.6)	70.8 (65.3, 76.3)	77.8 (71.2, 84.5)	84.5 (78.9, 90.1)	76.9 (70.9, 82.9)
Education							
< HS	14.4 (11.8, 16.9)	11.2 (7.9, 14.5)	3.0 ^b (0.2, 5.8)	1.0 ^b (0.0, 1.9)	30.5 (23.0, 38.1)	0.7 ^b (0.0, 1.6)	7.8 ^b (3.1, 12.5)
HS/some college	39.0 (35.3, 42.7)	39.4 (34.0, 44.8)	45.2 (39.2, 51.2)	43.4 (36.6, 50.1)	42.4 (34.2, 50.6)	35.2 (26.8, 43.6)	41.3 (33.5, 49.2)
College or post graduate degree	46.6 (43.0, 50.2)	49.4 (44.1, 54.7)	51.8 (45.8, 57.8)	55.7 (48.9, 62.4)	27.1 (18.9, 35.2)	64.2 (55.8, 72.5)	50.9 (43.1, 58.6)
Household income							
0–99% FPL	20.3 (17.3, 23.3)	15.7 (12.3, 19.1)	17.1 (12.0, 22.1)	2.9 ^b (0.9, 4.8)	21.3 (15.2, 27.3)	9.3 ^b (4.8, 13.8)	11.1 ^b (6.0, 16.3)
100–199% FPL	24.6 (21.5, 27.7)	30.5 (25.7, 35.4)	18.5 (13.9, 23.2)	13.7 (8.3, 19.0)	27.0 (19.7, 34.4)	17.3 (10.9, 23.6)	23.5 (16.8, 30.3)
200% or above FPL	55.1 (51.5, 58.7)	53.8 (48.6, 58.9)	64.4 (58.5, 70.3)	83.5 (77.9, 89.1)	51.7 (43.4, 60.0)	73.4 (66.2, 80.7)	65.3 (57.8, 72.8)
Nativity							
Foreign born in US 0–9 yrs	23.7 (20.4, 27.0)	23.6 (18.8, 28.4)	16.3 (11.8, 20.8)	5.7 (1.6, 9.9) ^b	22.8 (15.5, 30.1)	30.5 (22.6, 38.4)	14.6 (8.4, 20.7)
Foreign born in US 10+ yrs	53.8 (50.1, 57.4)	62.5 (57.3, 67.6)	52.0 (46.1, 58.0)	15.8 (11.1, 20.6)	62.8 (54.1, 71.5)	52.9 (44.8, 61)	57.6 (49.8, 65.3)
US Born	22.5 (19.4, 25.6)	14.0 (10.7, 17.2)	31.6 (25.9, 37.4)	78.4 (72.6, 84.2)	14.4 ^b (6.8, 22.1)	16.6 (10.8, 22.3)	27.9 (20.9, 34.8)
Language most used at home							
Asian language	72.8 (69.6, 76.1)	81.9 (77.6, 86.1)	32.2 (26.6, 37.9)	11.5 (6.8, 16.2)	84.2 (76.5, 91.8)	28.6 (21.2, 36)	29.0 (21.7, 36.3)
English	27.2 (23.9, 30.4)	18.1 (13.9, 22.4)	67.8 (62.1, 73.4)	88.5 (83.8, 93.2)	15.8 ^b (8.2, 23.5)	71.4 (64.0, 78.8)	71.0 (63.7, 78.3)
Smoking status							
Non-smoker/former smoker	89.4 (86.9, 91.9)	81.6 (77.0, 86.2)	87.2 (82.9, 91.5)	89.9 (86.0, 93.8)	86.1 (80.3, 91.9)	92.3 (88.0, 96.5)	91.3 (87.9, 94.7)
Current/non-regular	10.6 (8.1, 13.1)	18.4 (13.8, 23.0)	12.8 (8.5, 17.1)	10.1 (6.2, 14.0)	13.9 (8.1, 19.7)	7.7 ^b (3.5, 12.0)	8.7 (5.3, 12.1)
Alcohol drinking							
Non-drinkers	60.8 (57.2, 64.5)	57.6 (52.3, 62.9)	57.8 (51.9, 63.8)	47.3 (40.7, 54.0)	63.7 (55.2, 72.2)	58.5 (50.7, 66.3)	61.8 (54.4, 69.3)
Low-mod drinkers	31.4 (27.9, 34.9)	25.3 (20.6, 30.1)	26.5 (21.2, 31.8)	42.9 (36.3, 49.5)	16.4 (9.6, 23.3)	34.4 (26.9, 41.8)	25.6 (19.4, 31.8)
Heavy or binge drinkers	7.7 (5.7, 9.7)	17.1 (12.8, 21.3)	15.7 (11.0, 20.4)	9.7 ^b (5.1, 14.4)	19.9 (12.7, 27.0)	7.1 ^b (3.2, 11.0)	12.5 ^b (6.5, 18.6)
Physical activity ^c							
Meets guidelines	46.0 (42.4, 49.7)	41.2 (35.9, 46.5)	57.7 (51.9, 63.4)	49.0 (42.2, 55.7)	46.6 (38.2, 54.9)	54.9 (46.9, 62.9)	50.0 (42.4, 57.6)
Some PA	17.0 (14.3, 19.7)	12.9 (9.2, 16.5)	16.3 (11.9, 20.6)	15.9 (10.8, 21.0)	20.7 (14.1, 27.3)	17.2 (11.2, 23.1)	21.1 (14.7, 27.5)
Inactive	37.0 (33.5, 40.5)	46.0 (40.8, 51.1)	26.1 (21.1, 31.0)	35.1 (28.9, 41.4)	32.7 (24.7, 40.8)	27.9 (20.7, 35.2)	28.9 (22.2, 35.6)
Regular BMI standard ^d							
Under/normal	71.2 (67.7, 74.7)	65.6 (60.1, 71.1)	48.6 (42.6, 54.6)	62.4 (56.1, 68.8)	70.2 (61.8, 78.7)	56.7 (48.6, 64.7)	55.8 (48.1, 63.5)
Overweight	22.5 (19.3, 25.6)	30.8 (25.6, 36.0)	37.6 (31.7, 43.5)	29.2 (23.4, 35)	25.3 (17.8, 32.8)	35.6 (27.9, 43.3)	34.2 (26.8, 41.5)
Obesity	6.3 (4.2, 8.4)	3.6 ^b (0.8, 6.4)	13.8 (9.7, 18.0)	8.4 (4.9, 11.9)	4.5 ^b (0.0, 10.3)	7.7 ^b (3.3, 12.2)	10.0 (5.8, 14.2)

^a Data are weighted proportions. South Asian includes Asian Indian, Sri Lankan, Pakistani, and Bangladeshi.

^b The estimate is statistically unstable (relative standard error ≥ 23%) and therefore may not be appropriate to use for planning or policy purposes.

^c To meet Physical Activity Guidelines at least one of the following at least one of the following criteria must be fulfilled: 1) Vigorous Activity - hard physical activity causing heavy sweating, large increases in breathing and heart rate - for 20+ minutes, ≥ 3 days/wk, 2) Moderate Activity - cause light sweating, slight increases in breathing and heart rate - for 30+ minutes, ≥ 5 days/wk, 3) A combination of Vigorous and Moderate Activity meeting the time criteria for ≥ 5 days/wk. [REFERENCES: Vigorous Activity: U.S. Department of Health and Human Services. Healthy People 2010: Understanding and Improving Health. 2nd ed. Washington, DC: U.S. Government Printing Office, November 2000. Moderate Activity: Centers for Disease Control and Prevention/American College of Sports Medicine. <http://www.cdc.gov/nccdphp/dnpa/physical/recommendations/index.htm>].

^d Overweight: 25 ≤ BMI < 30.0 kg/m². Obesity: BMI ≥ 30.0 kg/m².

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