Hypertension among Adult Asians in Los Angeles County: Findings from the Los Angeles County Health Survey

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BACKGROUND

- Hypertension (HTN) is associated with morbidity and mortality from many diseases, including coronary heart disease, which is the leading cause of death in Los Angeles County.[1]

- However, little is known about HTN in ethnic Asian subgroups, a rapidly growing population in the United States.[2]

OBJECTIVES

- The primary objective of this study was to investigate the prevalence of HTN among adult (18 years or older) Asians in Los Angeles County.

- The second objective of this study was to investigate the risk factors associated with HTN among Asians.

METHODS

- Data are from the three most recent cycles of the Los Angeles County Health Survey (2005, 2007, & 2011), a population-based random digit dial telephone survey.

- Interviews were conducted in English, Spanish, Mandarin, Cantonese, Korean, and Vietnamese, with one adult randomly selected from each household.

- The final sample included 23,884 adults. Asians comprised 2,430 individuals in the sample (not including PIs). The comparison group included 20,892 Latinos, whites, or blacks. The remaining survey population consisted of 562 adults who identified as "other" races/ethnicities and were excluded from the study.

- We classified individuals as having HTN if they gave a positive response to the following question: "Have you ever been told by a doctor or other health professional that you have high blood pressure or HTN?"

- We conducted descriptive analysis to quantify the prevalence of HTN and other factors.

- We performed multivariate logistic regression to examine the associations between HTN 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, physical activity, smoking and drinking.

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

RESULTS

1. Demographic characteristics of the Asian sample

- This adult Asian sample (2,430) contains 53.9% females.

- 28.7% were 18-39 years old, 23.5% were 40-49 years old, 27.0% were 50-64 years old, and 20.6% were 65 years or older. The median age was 49.0 years old.

- 34.8% were Chinese, 19.3% were Korean, 13.0% were Filipino, 11.0% were Japanese, 6.9% were Vietnamese, 6.8% were South Asian and 8.2% were other Asian.

2. Trends in prevalence of HTN among Asians compared to other races/ethnicities

- The age-adjusted prevalence of HTN was lower among Asians compared to other race/ethnic groups in 2005. However, HTN increased by 32% among Asians, from 19.6% in 2005 to 25.9% in 2011. HTN prevalence did not increase among other racial/ethnic groups over this time period (Table 1).

Table 1. Trend[a] in age-adjusted prevalence of HTN among Asians, compared to other races/ethnicities, Los Angeles

Race/Ethnicity	2005 (n=8,361)	2007 (n=7,019)	2011 (n=7,942)
Asian [b]	19.6 (17.1, 22.1)*	24.8 (21.6, 28.0)	25.9 (22.3, 29.4)
Latino	25.9 (24.1, 27.1)	26.5 (24.7, 28.3)	24.4 (22.4, 26.3)
white	22.8 (21.1, 24.5)	22.8 (21.0, 24.6)	21.9 (20.3, 23.4)
black	37.0 (32.8, 41.2)	39.1 (34.4, 43.9)	38.3 (34.5, 42.1)

[a] Test for trend: p=0.002 for Asians, p>0.05 for Latinos, whites, and blacks.
[b] After controlling for age, Asian vs. white, *p<0.05

- Compared to other races/ethnicities, the age-adjusted prevalence of HTN among Asians was lower than that of blacks for all years, was lower than that of Latinos in 2005 and 2007 but not 2011, and was lower than that of whites in 2005, but surpassed whites in 2007 and 2011.

3. Prevalence of HTN among Asian subgroups

- Among Asian subgroups, the age-adjusted prevalence of HTN was the lowest among Vietnamese (19.6%), and highest among Filipino (34.0%) (Table 2).

- The age-adjusted prevalence of HTN was significantly higher among Filipinos (p<0.05), compared to whites.

Table 2. Age-adjusted prevalence of HTN, and adjusted odds ratios of HTN among Asian subgroups, Los Angeles

Race/Ethnicity	Prevalence of HTN % (95% CI)	Adjusted OR[¥] (95% CI)
white	22.5 (21.5, 23.5)	1.00
Asian	23.6 (21.8, 25.4)	--
Vietnamese	19.6 (13.8, 25.4)	0.83 (0.53, 1.31)
Chinese	20.5 (17.8, 23.3)	0.85 (0.68, 1.06)
Korean	22.1 (17.6, 26.5)	0.95 (0.71, 1.27)
South Asian[ξ]	22.5 (16.1, 28.8)	0.99 (0.53, 1.85)
Other Asian	23.0 (16.8, 29.1)	1.12 (0.71, 1.76)
Japanese	23.6 (19.6, 27.6)	1.16 (0.87, 1.56)
Filipino	34.0 (28.2, 39.8)	1.94 (1.39, 2.70)

¥ Model included Asian subgroups, age (categorical), gender.
ξ Includes Asian Indian, Sri Lankan, Pakistani, Bangladeshi.

RESULTS (Continued)

4. Factors associated with HTN among Asians

- The prevalence of HTN was highest among Asians aged 65 years or older, with less than a high school education, who were living below poverty, current or former smokers, overweight or obese, and foreign born but lived in the U.S. over 10 years (Table 3).

- After adjusting for all covariates, Asian adults aged 40-49, 50-64, 65+ years were 2.7, 6.2, and 18.5 times more likely to report being diagnosed with HTN, compared with those aged 18-39 years.

- Asian adults who lived below the federal poverty level were 1.6 times more likely to report being diagnosed with HTN than those with incomes at or above 200% of the federal poverty level.

- Asian adults who were current or former regular smokers were 1.5 times more likely to report being diagnosed with HTN compared with occasional or non-smokers.

- Asian adults who were low-to-moderate or non- drinkers were 2.0 and 1.9 times more likely to report being diagnosed with HTN, compared with heavy or binge drinkers.

- Asian adults who were categorized as overweight or obese were 2.1 and 3.1 times more likely to report being diagnosed with HTN than their normal-to-underweight peers.

Table 3. Unadjusted prevalence of HTN, crude and adjusted odds ratios of HTN among Asians, Los Angeles

Characteristic	% (95% CI)	Crude OR (95% CI)	Adjusted OR[ξ] (95% CI)
Gender			
Male	25.2 (22.1, 28.4)	1.00	1.00
Female	21.7 (19.1, 24.2)	0.82 (0.65, 1.02)	0.87 (0.65, 1.17)
Age Groups (years)			
18-39 years old	7.6 (5.1, 10.2)	1.00	1.00
40-49 years old	17.6 (13.7, 21.5)	2.54 (1.62, 3.98)	2.67 (1.62, 4.38)
50-64 years old	33.8 (29.4, 38.1)	6.16 (4.10, 9.26)	6.17 (3.95, 9.65)
≥ 65 years old	57.9 (52.8, 63.0)	16.80 (11.08, 25.46)	18.50 (11.65, 29.37)
Education			
Less than high school	32.0 (25.1, 39.0)	1.00	1.00
High school	22.0 (17.2, 26.8)	0.61 (0.40, 0.93)	0.77 (0.47, 1.26)
Some college or trade school	25.3 (20.3, 30.3)	0.72 (0.47, 1.09)	0.95 (0.56, 1.62)
College or post graduate degree	21.5 (18.9, 24.1)	0.58 (0.41, 0.82)	0.79 (0.50, 1.25)
Federal Poverty Level			
≥ 200% FPL	21.8 (19.3, 24.2)	1.00	1.00
100%-199% FPL	24.0 (19.7, 28.2)	1.14 (0.87, 1.50)	1.10 (0.76, 1.60)
0-99% FPL	29.8 (23.9, 35.6)	1.53 (1.12, 2.11)	1.62 (1.06, 2.48)
Smoking Status			
Occasional/non-smoker	21.4 (19.2, 23.6)	1.00	1.00
Current/former regular smoker	29.3 (24.8, 33.8)	1.53 (1.18, 1.97)	1.49 (1.07, 2.09)
Alcohol Drinking			
Heavy or binge drinkers	12.8 (8.1, 17.5)	1.00	1.00
Low-mod drinkers	24.1 (20.0, 28.2)	2.13 (1.32, 3.43)	2.04 (1.14, 3.65)
Non-drinkers	24.9 (22.3, 27.5)	2.25 (1.45, 3.51)	1.86 (1.06, 3.25)
Physical Activity			
Meets guidelines	23.4 (20.4, 26.5)	1.00	1.00
Not meet guidelines	23.5 (17.7, 29.3)	1.05 (0.73, 1.51)	1.05 (0.66, 1.65)
No activity	23.5 (20.5, 26.5)	1.01 (0.79, 1.28)	0.80 (0.59, 1.07)
BMI Status			
Normal/underweight	18.8 (16.6, 21.1)	1.00	1.00
Overweight	31.8 (27.4, 36.2)	1.98 (1.53, 2.55)	2.06 (1.52, 2.79)
Obese	34.4 (24.2, 44.5)	2.19 (1.37, 3.49)	3.08 (1.75, 5.42)
Nativity			
Foreign born in US 0-9 years	12.9 (8.7, 17.1)	1.00	1.00
Foreign born in US 10+ years	28.7 (25.9, 31.6)	2.79 (1.87, 4.16)	1.18 (0.73, 1.91)
US born	21.1 (17.5, 24.7)	1.87 (1.21, 2.88)	1.08 (0.61, 1.92)
Language Most Spoke at Home			
Asian language	23.3 (20.7, 26)	1.00	1.00
English	23.6 (20.4, 26.7)	1.01 (0.80, 1.27)	1.19 (0.83, 1.71)

[ξ] Among all Asians, Hosmer-Lemeshow Goodness-of-Fit Test: X²=5.83, p=0.67, indicating fit the model well.

DISCUSSION

- The prevalence of HTN increased rapidly among this adult Asian sample from 2005 to 2011. This increase in HTN prevalence among Asians residing in Los Angeles County parallels the increasing rates of HTN reported among Asians living in rapidly urbanizing countries such as China and India.[3]

- The prevalence of HTN varied among Asian subgroups, and was highest among Filipinos. Increased attention should be paid to this Asian subgroup at increased risk for HTN.

- Several factors were identified as associated with HTN in this Asian sample. This can inform the development of effective prevention programs targeting the population that this sample represents.

- It is unclear why being a non- or low-to-moderate drinker was associated with HTN diagnosis compared to being a heavy or binge drinker. The finding calls for further investigation.

CONCLUSIONS

- The prevalence of HTN is rapidly rising among Asians in Los Angeles County.

- Risk factors for HTN in ethnic Asian subgroups mirror those in the population at large.

- Culturally sensitive approaches should be incorporated into evidence based interventions to prevent and control HTN.

LIMITATIONS

- Data are cross-sectional and can not be used to infer causation.

- Data are self-reported and therefore responses might be subject to recall bias.

- The Los Angeles County Health Survey is primarily a landline survey. Thus, data does not represent individuals living in group quarters, such as nursing homes, college dormitories or jails.

SELECTED REFERENCES

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