

Excess Mortality among Asians in California during the COVID-19 Pandemic



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Introduction

California houses one of the nation's largest population of Asians of over 5.8 million, yet Asians are under studied in public health, especially during this COVID-19 pandemic. Health disparities amongst Asians such as hospitalization rates and infection risk are observed across the United States. For example, Asians are about twice as likely to be hospitalized from COVID-19 infections as their white counterparts. In San Francisco, Asians accounted for approximately half of COVID-19 deaths even though they only made up about 14% of cases. Moreover, Asian population is commonly mistaken for a homogenous group despite its heterogeneity among the population. Therefore, each group's experience with the COVID-19 pandemic can vary based on different cultures and practices, socioeconomic status, and education. Excess deaths due to the COVID-19 pandemic were prevalent amongst the Asian population in the US, however, subgroups that were the most affected are unknown. Excess mortality is an important indicator because it can capture deaths that may have been caused by COVID-19 but were otherwise categorized as different causes. This study can prove useful because it can not only capture excess COVID-19 deaths among different Asian subgroups but can also potentially be used to explore social determinants of health among different Asian subgroups and drive targeted social or policy interventions towards more vulnerable Asian communities in California.

Methodology

Death certificate data from March 2016 to October 2020 were used to predict the expected deaths for Asians in California using the ARIMA model; actual observed deaths from March 2020 to April 2021 were also collected from the same data set. Excess mortality was defined as the difference between observed deaths and expected deaths. Risk ratio (RR) was defined as the ratio of observed and expected deaths. This indicator was utilized to analyze the percent increase in deaths during the COVID-19 pandemic. Population sizes for each respective subgroup were extracted from the American Census (ACS) data for per capita analysis. Per capita death was calculated by dividing excess deaths by the respective population size. Groups were stratified by age, sex, country of birth, education, and ethnicity. All data extraction, manipulation and analysis were conducted in Rstudio.

Results

	Excess Deaths	Risk Ratio	Per 100,000
Entire State	129345 (12088.99, 13792.55)	1.36	220
Age			
0-24 years old	99 (-47, 249)	1.14	6
25-54 years old	1285 (1120, 1453)	1.38	47
55-64 years old	1629 (1447, 1812)	1.44	211
65-74 years old	2813 (2465, 3167)	1.46	502
75-84 years old	3127 (2939, 3315)	1.36	1141
85+ years old	4132 (3547, 4725)	1.3	3324
Sex			
Male	7291 (6840, 7739)	1.39	256
Female	5550 (5063, 6042)	1.31	175
Country of Birth			
China	1432 (893, 1979)	1.24	206
Philippines	3780 (3140, 4425)	1.47	433
South Korea	1098 (972, 1226)	1.4	342
Vietnam	1893 (1760, 2026)	1.45	348
United States	2217 (1891, 2550)	1.33	101
Other country	2663 (2420, 2907)	1.32	192
Education			
No high-school degree	2250 (2078, 2426)	1.33	446
High-school degree	3772 (3424, 4125)	1.36	601
Some college	2047 (1874, 2220)	1.31	219
College degree and beyond	4547 (3577, 5534)	1.43	189
Ethnicity			
Indian	647 (431, 868)	1.26	79
Chinese	2388 (2111, 2670)	1.27	154
Filipino	3816 (3143, 4500)	1.45	287
Japanese	900 (722, 1080)	1.25	357
Korean	1111 (979, 1245)	1.38	238
Vietnamese	1631 (1434, 1829)	1.45	240
Others	2194 (1691, 2702)	1.48	236

Discussion

There were excess deaths of 129345 Asians in the entire state of California during the observed period. Older-aged individuals above the age of 75 years old suffered the highest excess deaths per capita (4465 deaths per 100,000). Asian males also experienced higher excess deaths per capita (256 deaths per 100,000) compared to their female counterparts (175 deaths per 100,000). By birth, people who were originally born from Philippines had the greatest excess deaths per capita (433 deaths per 100,000) whereas people born in the US suffered the least excess deaths per capita (101 deaths per 100,000). Among different Asian ethnic subgroups, Filipinos also suffered the second largest excess deaths per capita (287 deaths per 100,000). Moreover, individuals with lower education status below a high-school degree suffered the largest excess deaths per capita (1047 per 100,000). This study shows disproportionate deaths in older individuals, males, people with lower education status, and immigrants, especially amongst Filipinos. Excess deaths amongst these groups can be potentially explained by low utilization of testing and higher positivity rates when tested. As a result, fatality rates may be higher when infected with COVID-19. Asians may also be presenting sicker at hospital admission due to a more severe stage of the disease, therefore, are more likely to die. It is also important to note that racism and hate crimes against Asians were widely prevalent across the United States during this period which could demonize these groups to seek testing and treatment. In all, this study captures disparities amongst different Asian subgroups and can be used to drive targeted policy interventions towards more vulnerable Asian communities in California.

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