

## RESEARCH LETTER

## Kidney Disease–Related Mortality Among Asian Americans



To the Editor:

In the United States, cardiovascular risk and mortality vary across subgroups of Asian adults.<sup>1–3</sup> South Asian adults have a higher cardiovascular risk than East Asian adults.<sup>1,2</sup> As a result, South Asians may have a higher risk of cardiovascular complications, such as chronic kidney disease (CKD). Other risk factors for CKD specific to this population are not well described but may be related to genetic predisposition or social determinants of health. The high morbidity associated with CKD calls for further investigation into the burden of kidney disease within this population.

We used publicly available data from the Centers for Disease Control and Prevention (CDC) Wide-Ranging Online Data for Epidemiologic Research (WONDER) to identify deaths from all causes and those from kidney disease [ICD-10 diagnostic codes for chronic renal failure (N18.0-18.9)] between 2018-2020.<sup>4</sup> The database includes the single underlying cause of death and demographic information (such as race/ethnicity) as described on the death certificate and reported to the National Vital Statistics System. It contains population counts only for selected racial/ethnic groups. We followed the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) reporting guidelines. Detailed methods can be found in [Supplementary Item S1](#).

We included individuals aged 20 years or older and of non-Hispanic origin. We compared the mortality rates from kidney disease across Asian subgroups (Asian Indian, Chinese, Filipino, Japanese, and Vietnamese), Black, and White individuals and further stratified by sex and age. We excluded the other Asian category owing to heterogeneity

within this group. Z-tests compared the proportional mortality rates from kidney disease by race and ethnicity, sex, and age, using non-Hispanic Whites as references. A 2-tailed  $P < 0.05$  was considered statistically significant. Statistical analyses were conducted in SAS (v9.4) and Microsoft excel (v16.0.1).

The proportion of deaths attributed to kidney disease was significantly higher among all Asian subgroups when compared with those of the non-Hispanic Whites ( $P < 0.05$  for all, [Table 1](#) and [Supplementary Table S1](#)), and consistent in sex-stratified analysis ([Fig 1](#)). The highest kidney disease proportional mortality rate was among Filipino individuals aged 60 years or older (2.4%,  $P < 0.001$  when compared with those of the non-Hispanic Whites), followed by Black individuals of the same age (2.3%,  $P < 0.001$ ). In age-stratified analysis, there was an increased proportional mortality rate among Asian Indian, Filipino, and Black individuals at 20-39 years and 40-59 years ( $P < 0.05$  for all). In general, higher proportional mortality rates from kidney disease were found in younger age groups among Asian Indian, Filipino, and non-Hispanic Black adults. The mean age at death from kidney disease was the lowest among non-Hispanic Black adults.

We found that kidney disease is a more common cause of death among individuals of Asian ancestry compared with those of non-Hispanic White individuals, who seem to be at particularly high risk when compared with others. In fact, the proportional mortality rates from kidney disease among Filipino adults were higher than among non-Hispanic Black individuals, a group in which disproportionate risks of kidney failure and death are well-documented. Drivers of disparities in kidney disease mortality rates among Asian adults are multifactorial, such as increased risk factor prevalence,<sup>3</sup> nativity, and social determinants of health. However, we are unable to

**Table 1.** Proportional Mortality from Kidney Disease by Race and Ethnicity in the United States, 2018-2020

Race and Ethnicity	N (%) of Deaths <sup>a</sup>	Age at Death (y), mean ± SD		Proportional Mortality From Kidney Disease, % <sup>b</sup>				
		All-Cause	Kidney Disease	Age Group (y)				PMR (95% CI) <sup>c</sup>
				20-39	40-59	≥60	All	
Non-Hispanic Asian	3,086 (1.6)	76.5 ± 15.2	79.0 ± 12.1	0.4 <sup>d</sup>	0.9 <sup>d</sup>	1.7 <sup>d</sup>	1.6 <sup>d</sup>	1.53 (1.50-1.57)
Asian Indian	453 (1.5)	72.4 ± 16.2	76.0 ± 12.9	0.5 <sup>d</sup>	0.9 <sup>d</sup>	1.6 <sup>d</sup>	1.5 <sup>d</sup>	1.44 (1.34-1.53)
Chinese	685 (1.3)	78.9 ± 15.2	83.1 ± 10.8	0.2	0.4	1.4 <sup>d</sup>	1.3 <sup>d</sup>	1.29 (1.21-1.36)
Filipino	992 (2.2)	74.3 ± 15.1	76.5 ± 12.3	0.8 <sup>d</sup>	1.3 <sup>d</sup>	2.4 <sup>d</sup>	2.3 <sup>d</sup>	2.20 (2.13-2.26)
Japanese	337 (1.3)	84.0 ± 12.5	83.4 ± 11.9	0	1.4 <sup>d</sup>	1.3 <sup>d</sup>	1.3 <sup>d</sup>	1.24 (1.13-1.35)
Korean	289 (1.4)	76.3 ± 15.6	79.4 ± 12.4	0.3	1.0 <sup>d</sup>	1.5 <sup>d</sup>	1.4 <sup>d</sup>	1.37 (1.25-1.49)
Vietnamese	330 (1.5)	72.6 ± 16.0	77.2 ± 12.4	0.2	0.8	1.6 <sup>d</sup>	1.5 <sup>d</sup>	1.43 (1.32-1.54)
Non-Hispanic Black	22,549 (2.0)	68.1 ± 17.2	71.4 ± 14.0	0.6 <sup>d</sup>	1.7 <sup>d</sup>	2.3 <sup>d</sup>	2.0 <sup>d</sup>	2.00 (1.98-2.01)
Non-Hispanic White	69,457 (1.0)	75.8 ± 15.4	78.9 ± 12.3	0.2	0.1	1.1	1	1.00 (ref)

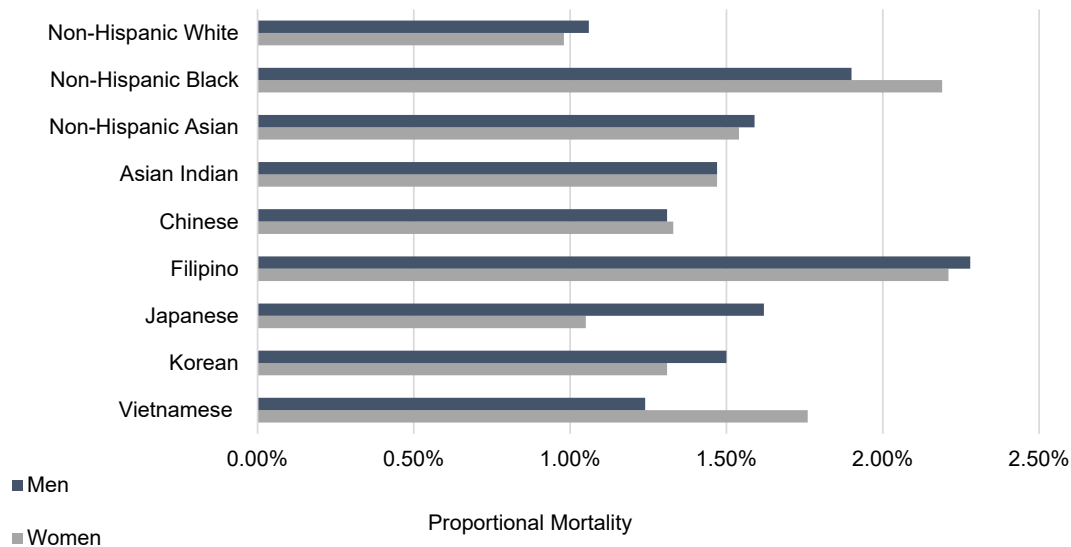
PMR, proportional mortality ratio.

<sup>a</sup>Deaths from kidney disease for those aged greater than 20 years between the years 2018-2020. All individuals were non-Hispanic. Note that the overall Non-Hispanic Asian group excludes the other Asian category which is not otherwise represented in the table.

<sup>b</sup>Proportional mortality: percentage of deaths due to kidney disease (number of deaths from kidney disease divided by number of deaths from all-causes within each subgroup, multiplied by 100).

<sup>c</sup>PMR: proportion of deaths from kidney disease for a subgroup divided by proportion of deaths from kidney disease for non-Hispanic White individuals.

<sup>d</sup>Indicates statistically significant difference ( $P < 0.05$ ) in proportional mortality compared with non-Hispanic White individuals.



**Figure 1.** Proportional mortality from kidney disease by race/ethnicity. Proportional mortality is the percentage of deaths due to kidney disease (number of deaths from kidney disease divided by number of deaths from all-causes within each subgroup). Among men, proportional mortality was statistically significantly different among all racial/ethnic groups compared to non-Hispanic White men ( $P < 0.05$ ). Among women, proportional mortality was statistically significant different among all racial/ethnic groups except Japanese, compared to non-Hispanic White women ( $P < 0.05$ ).

explain how these factors disproportionately increased the risk among South Asian populations when compared with those of East Asian adults.<sup>5</sup>

Our findings expanded on previous reports of increased cardiovascular risk among South Asian populations, and heterogeneity in cardiovascular deaths among Asian subgroups.<sup>1</sup> Deaths among those with CKD are likely because of excess cardiovascular disease risk in this population, and hence, we emphasize the need for early screening and treatment of cardiovascular risk factors in patients with CKD.

These findings must be interpreted in the context of the study design, which relies on crude measures from aggregated observational data that are subject to misclassification errors. We were unable to calculate standardized mortality rates owing to the limitations of the WONDER database. Although proportional mortality rate allows for comparison across populations, it incompletely characterizes the effect of competing causes of death. The proportional mortality ratio overcomes this but may overestimate risk in populations with lower overall mortality. Additional limitations of the CDC WONDER database include a lack of information on conditions contributing to death or multifactorial causes of death. Therefore, these findings likely underestimate kidney disease associated deaths. Differential misclassification is possible owing to clinician coding biases, which we are unable to assess with this data set. Finally, the COVID-19 pandemic may have led to early deaths in some groups.

In summary, mortality from kidney disease is higher among Asian subgroups when compared with those of the non-Hispanic White populations across age categories. These findings highlight the need for early screening,

detection, and risk modification of CKD and its risk factors among Asian adults and precision medicine approaches to prevent CKD progression in this high-risk group.

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## SUPPLEMENTARY MATERIAL

**Supplementary File (PDF)**

**Item S1.** Supplemental Methods.

**Table S1.** Number of Deaths Because of Kidney Disease by Race/Ethnicity Overall and by Age Group.

## ARTICLE INFORMATION

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