

Chronic Kidney Disease in Persons with Multiple Chronic Diseases, NM, 2014

Chronic kidney disease is a general term for a group of disorders that affect the structure and function of the kidney. Severity of the disease is determined by either the presence of kidney damage, the amount of albuminuria, or the decrease in kidney function determined by the glomerular filtration rate (GFR). Chronic kidney disease is generally associated with age, diabetes, hypertension, obesity, and cardiovascular disease.¹

With the aging of the United States population, chronic disease has become an increasing concern. Many people with chronic disease have multiple chronic diseases, which is termed multimorbidity.² Individuals with multimorbidity suffer from numerous adverse health effects, increased health care needs, and higher health care costs.³ In the United States, 80% of Medicare spending is spent on beneficiaries who suffer from 4 or more chronic conditions.

Methods

Three years, 2012-2014, of New Mexico Hospital Inpatient and Discharge Dataset (HIDD) were used for this analysis. The HIDD is a statewide dataset for inpatient hospitalizations occurring in non-federal hospitals in New Mexico. For part of this analysis, Indian Health Service hospitalization data was included in the analysis. Variables used included diagnosis code fields (up to 18 codes reported per hospitalization), sex, race/ethnicity, age at the time of admission, and patient date of birth. All rates were age adjusted using the 2000 U.S. Standard Population and are reported per 10,000 population.

Diagnostic definitions for chronic conditions used in this analysis were defined using the Centers for Medicare and Medicaid Services (CMS) specifications (last updated September 2014 for ICD-9-CM coding). The specifications outline inclusion and exclusion criteria for 27 different chronic conditions. Information on these specifications can be found at <https://www.ccwdata.org/web/guest/condition-categories>.

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For this analysis, readmission is defined as the same patient being admitted to a hospital more than once in a calendar year with a diagnosis of chronic kidney disease.

Results

In 2014, there were 28,473 (14.6%) hospitalizations for chronic kidney disease in New Mexico representing 19,855 unique patients. This represented a 6.0% increase in the number of hospitalizations for chronic kidney disease compared to 2013. Males had a higher rate of chronic kidney disease compared to females, 98.8 hospitalizations per 10,000 population compared to 79.4 among female patients. Patients 65 years and older represented the largest group (59.6% of all chronic kidney disease hospitalizations). The crude rate of chronic kidney disease hospitalizations among patients 65 years and older was 397.6 hospitalizations per 10,000 population, compared to 111.2, 36.0, and 10.0 among patients 50-64 years, 19-49 years, and less than 18 years, respectively. Only 5.7% of patients solely suffered from chronic kidney disease, while 70.3% of chronic kidney disease patients suffered from 4 or more chronic conditions (as defined by CMS). The most prevalent dyads among chronic kidney hospitalizations were:

19-49 year olds: Hypertension (60.2%) and anemia (50.6%)

50-64 year olds: Hypertension (72.8%) and diabetes (55.5%)

65 years and older: Hypertension (77.5%) and diabetes (45.8%)

The Northwest region had the highest rate of chronic

kidney disease at 105.4 per 10,000 population. The Southwest region had the lowest rate at 69.3 (Figure 1). The Northwest and Metro regions have had the highest annual rates of chronic kidney disease for all three years. The Northeast and Southwest regions have had the lowest annual rates for all three years. The annual rates of chronic kidney disease appear to be stable as there has been little change in the rate over the three years for all health regions.

African Americans had the highest rate of chronic kidney disease at 132.1 per 10,000 population followed by American Indians (122.6). Asian/Pacific Islanders had the lowest rate of chronic kidney disease (Figure 1). This pattern persisted for all three years, 2012-2014. Although African Americans have had the highest rate of chronic kidney disease for all three years, the rate has been decreasing. Among Hispanics, although the annual rate is lower compared to other race/ethnicities, the annual rate increased from 2012 to 2014. An increase in the annual rate was also observed among Asian/Pacific Islanders.

In 2014, there were 13,844 patients with both chronic kidney disease and hypertension (69.7% of all chronic kidney disease patients). The overall age adjusted rate of hypertension in New Mexico in 2014 was 516.9 hospitalizations per 10,000 population. African Americans had the highest age adjusted rate of chronic kidney

disease and hypertension at 102.6 per 10,000 population followed by American Indians at 91.9 (Figure 2).

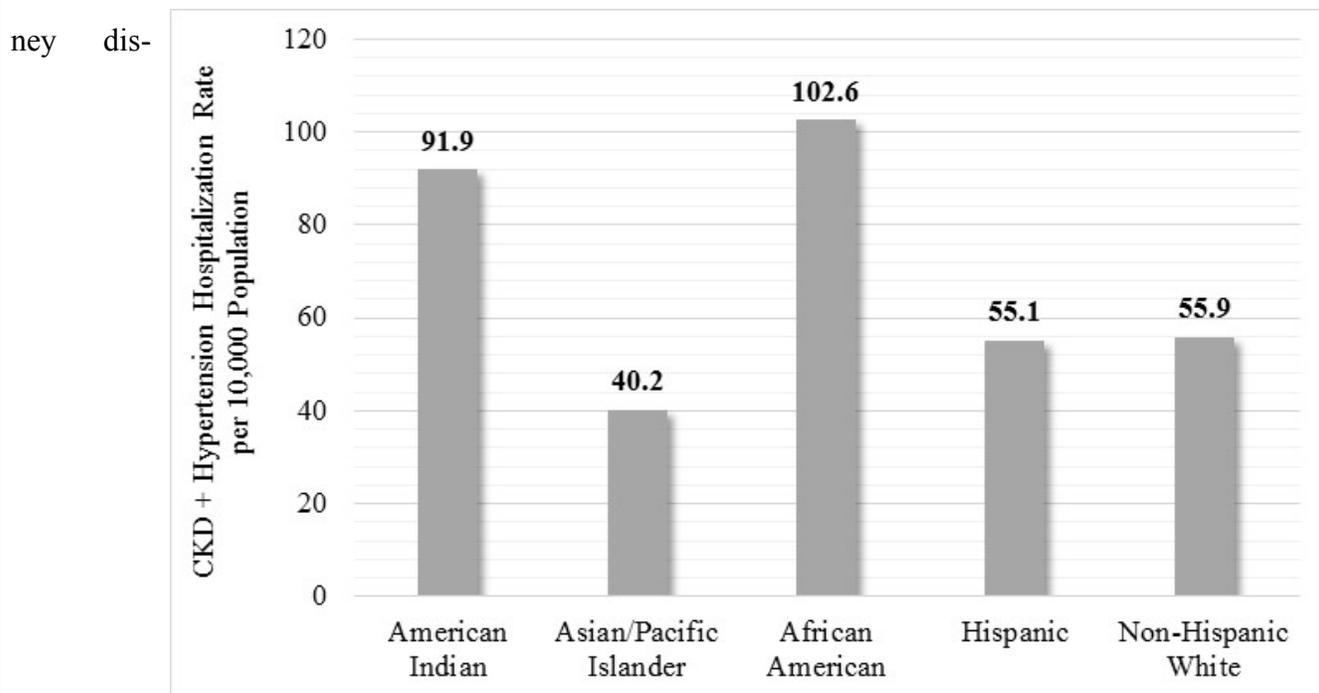
In 2014, there were 8,849 patients with both chronic kidney disease and diabetes (44.6% of all chronic kidney disease patients). The overall rate of diabetes in New Mexico in 2014 was 263.4 hospitalizations per 10,000 population. Among patients with chronic kidney disease and diabetes, American Indians had the highest rate at 79.9 per 10,000 followed by African Americans at 66.5 (Figure 3).

Discussion

Kidney disease is a chronic disease that can occur at any age. The prevalence of kidney disease is increasing internationally. The costs associated with this disease are staggering especially when patients require kidney transplantation or dialysis. The relationships between chronic kidney disease and hypertension and/or diabetes are well known, but this analysis highlights that certain demographics, including age, race/ethnicity, or gender, can influence the interplay of these diseases. By understanding the interplay of multiple factors, including genetics and patient environments, targeted treatment plans can be developed.

With the United States population aging, more people will suffer from multiple chronic diseases, including chronic kidney disease. Studies have shown that the coexistence of multiple chronic conditions increases

Figure 2. Age adjusted hospitalization rates of chronic kidney disease and hypertension by race/ethnicity, New Mexico, 2014



the mortality risk, causes the decline of physical and mental functioning, and negatively impacts quality of life.⁴ If these negative factors are known, why aren't more resources being allocated to prevent the development of chronic conditions in one patient? Recommendations for preventing chronic kidney disease, and other chronic diseases, include better surveillance, screening for diseases, education, and awareness. Many of the chronic diseases are interrelated with some causing others, while other diseases exacerbate one another. Many patients with chronic kidney disease have either diabetes, hypertension, or all three chronic conditions. If patients are able to manage one of their chronic diseases, it may be possible to have beneficial effects on the others.

Limitations

Limitations of this analysis include the lack of data for New Mexico resident hospitalizations from out of state hospitals and federal hospitals including Veterans Affairs (VA). A second limitation of this analysis is that although this analysis included Indian Health Service (IHS) data, some of the facilities only report primary diagnosis codes. For the definition of chronic kidney disease, any of the associated diagnosis codes can appear in any of the diagnosis code fields (in the case of HIDD that would be up to 18 diagnosis fields). With only one diagnosis code reported, it is impossible to analyze the data from a multimorbidity lens.

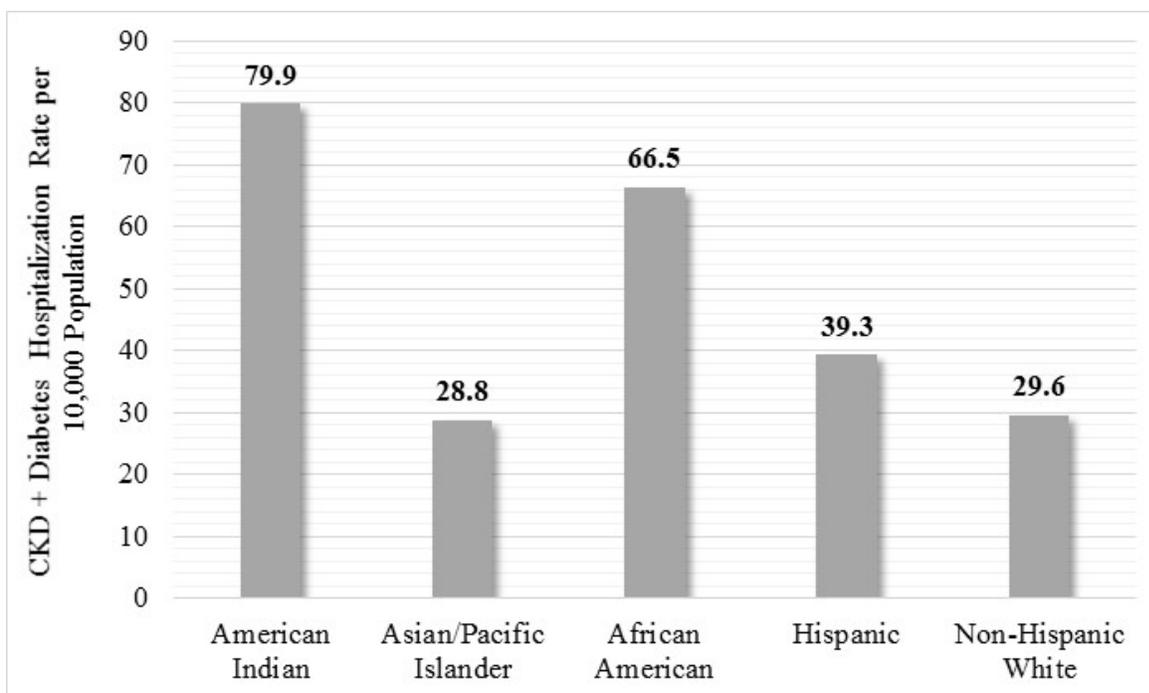
Recommendations

Chronic kidney disease can be managed, but there needs to be a significant public health effort to target prevention, early detection, and management of this disease. This analysis has shown that chronic kidney disease is more prevalent among certain racial/ethnic groups, like African Americans and American Indians, and this could be due to a combination of genetics and environmental factors. With the knowledge gained from this analysis, programs can be better targeted to specific patients.

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Figure 3. Hospitalization rates of chronic kidney disease and diabetes by race/ethnicity, NM, 2014



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Figure 1. Hospitalization rates of chronic kidney disease by health region and race/ethnicity, NM, 2012-2014

