Assessing Chronic Kidney Disease Knowledge, risk, and beliefs among Detroit residents

OAKLAND UNIVERSITY WILLIAM BEAUMONT

Maidah Raja[1], Swathi Radhakrishnan[2], Rebecca Milan[2], Caress Dean PhD[2], Deidre Hurse, PhD[1]

1. Oakland University William Beaumont School of Medicine 2. Oakland University

Introduction

- Chronic kidney disease (CKD) is a condition in which kidneys are damaged leading to excess buildup of fluids and toxins in the body.[8]
- Chronic kidney disease is one of the top ten causes of death in the United States.[8]
- In Detroit, the prevalence of CKD between 2018-2020 was 4%, higher than the state average of 3.4%.[4]
- Despite the high prevalence of CKD, only 10% of residents with the condition are aware of their disease status[2].
- Rates of hypertension and diabetes, the two leading risk factors of chronic kidney disease, are also high in Detroit.6,7
- International studies have shown that knowledge of Chronic kidney disease is low among populations in Iran, Australia, Palestine, Jordan, and Singapore.[1,3,5,9,10]
- However, to the best of our knowledge, there have been no studies to date that demonstrate chronic kidney disease knowledge in an urban American city.
- Assessing chronic kidney disease knowledge can guide disease specific education efforts.

Aims and Objectives

(1) evaluate CKD knowledge; (2) determine CKD risk through a screening questionnaire; (3) associate kidney disease knowledge with risk, preventative practices, and demographic factors among individuals living in Detroit, Michigan.

Methods

- This was a cross-sectional descriptive study with data collection occurring between May 2018-August 2021
- IRB approval was obtained to complete the study.
- A convenience sample of adults 20 years or older living in Detroit, Michigan without a history of hemodialysis or kidney transplant was surveyed.
- Participants completed a validated Qualtrics survey on kidney function, CKD symptoms, risk factors, beliefs, risk, and healthy practices.
- Data collection occurred both in person and online and an incentive was given for online survey completion.
- Descriptive statistics and linear regression was done to examine the relationship between participants' CKD knowledge and their beliefs, risk, preventative practices, and demographic factors.
- Analysis was performed using SAS and STATA MP17 softwares.

Results

- 435 eligible residents participated in the study and 378 were analyzed after cleaning of the data
- The sample was majority female (58%) and African American (55%) with 34% having a college degree or higher.
- Participants were least knowledgeable about dry and itchy skin as a symptom of CKD
- Most participants were unaware of untreated anemia as a risk factor for CKD
- African Americans had a lower knowledge score when compared to white respondents
- Those with a lower education level had a lower knowledge score when compared to to post graduate respondents
- Knowledge score was positively associated with belief score, CKD risk score, and healthy practices score

Table 1. Relationship between CKD Knowledge score and demographic characteristics, CKD risk level and CKD beliefs, n=378

Characteristics	β	95% CI	p-value
Race/Ethnicity			
White	Reference		
African American	-1.66	(-3.26 to -0.06)	***0.041***
Hispanic, Latino Or Spanish Origin	-0.83	(-3.25-1.58)	0.499
Other	-1.22	(-3.29-0.85)	0.249
Education			
Post graduate	Reference		
High school or less	-2.48	(-4.70 to -0.25)	***0.029***
Some college	-1.67	(-3.50-0.15)	0.073
College graduate	0.05	(-1.77-1.60)	0.915
Risk level for CKD based on CKD screening tool	0.64	(0.10-1.18)	***0.019***
Believe that there are 5 stages of CKD and each needs medication and lifestyle changes			
No/I don't know	Reference		
Yes	7.40	(6.21-8.59)	***<.0001***

Table 2. Pearson's correlation among the different scores of Detroit residents (n=378; except for CKD score correlation, n=370)

	Knowledge score	Belief score	CKD risk score	Practices score
Practice score	**0.1294 (p=0.0118)**	**0.1453 (p<0.0001)**	**0.2445 (p<0.0001)**	1.000

Conclusions

- Detroit residents have limited knowledge about chronic kidney disease
- Disease specific education should focus on symptoms and risk factors to allow for early detection of CKD.
- Targeted interventions are warranted for African Americans and those with a lower education level
- Continued education is needed for those at high risk for CKD to prevent disease development and progression.

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