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Kathleen Cosgrove
Bridgewater State University

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Determinants of Health Disparities among African and Caucasian Americans with Chronic Kidney Disease, Renal Cell Carcinoma, and End-Stage Renal Disease

KATHLEEN COSGROVE

Introduction

Maladies of the kidneys, such as Chronic Kidney Disease (CKD), Renal Cell Carcinoma (RCC), and End Stage Renal Disease (ESRD) have been increasingly recognized in the United States as a public health concern and as key determinants of poor health outcomes (Garcia-Garcia & Jha, 2015; Hofmann & Purdue, 2014; Lipworth et al., 2011; Lipworth et al., 2012; McClellan et al., 2006) worldwide (Garcia-Garcia & Jha, 2015; Satko et al., 2007). Incidents of nephrology differ by race and eth-

nicity. Various nephrology studies, such as the Reasons for Geographic and Racial Differences in Stroke (REGARDS) Cohort Study (2006) and the National Cancer Institute (NCI) Surveillance and Epidemiology End Results (SEER) Cancer Statistics Review, provide evidence of the disparity that African American patients have an increased prevalence of severely impaired kidney function compared to Caucasian American patients.

According to the Mayo Clinic (2017), CKD describes the gradual loss of kidney function. The kidneys filter wastes and excess fluids from the blood, which are then excreted in the urine. When CKD reaches an advanced stage, dangerous levels of fluid, electrolytes, and wastes can build up in the body and cause further damage. CKD may not become symptomatic until kidney function is significantly impaired. Treatment focuses on slowing the progression of the kidney damage, usually by controlling the underlying cause. Gradual progression of CKD to end-stage kidney failure is fatal without dialysis or a kidney transplant (Mayo Clinic, 2017).

Renal disease is a slow-moving, progressive, and irreversible condition that is measured in five stages based on the patient's level of glomerular filtration rate (eGFR), the filtering capacity of the kidneys to clean the blood, take out waste, and manufacture urine. eGFR measures kidney function using a formula that includes a person's age, gender, race, and serum creatinine levels. Creatinine is a chemical waste molecule generated from muscle metabolism (Hofmann et

al., 2013; Hofmann et al., 2015; Mayo Clinic, 2017). eGFR under 60 milliliters (mL) may indicate kidney disease, while an eGFR of 15-29 requires dialysis or a kidney transplant to sustain life. Inevitably, CKD will result in a fatal prognosis of end-stage kidney failure. Diabetes and hypertension are two of the most determinant factors of end-stage renal disease (ESRD) in the United States, which most often develops during the fifth stage, following a CKD diagnosis (Hofmann et al., 2015; Mayo Clinic, 2017).

WebMD (2017) outlines how the five stages of CKD are determined by eGFR calculation. Stage 1, kidney damage with a normal or high eGFR of 90 or above requires monitoring by an urologist. Diagnosis and treatment of comorbid conditions slow disease progression and reduce cardiovascular risk. Stage 2, kidney damage with mildly low eGFR of 60-89, an estimate of disease progression is determined by an urologist. Comorbidities such as diabetes and high blood pressure are managed. Stage 3, kidney damage with moderately low eGFR of 30-59, evaluation and treatment of complications such as anemia and bone disease begin. Stage 4, kidney damage with severely low eGFR of 15-29, signals preparation for treating kidney failure, including, kidney replacement therapy. A nephrologist is consulted. Stage 5, kidney failure with a critically low eGFR of 15 or less requires dialysis, or, if the patient chooses, palliative care. Kidney replacement is the recommended procedure to sustain life, if uremia or renal waste is present in the blood (WebMD, 2017).

RCC is the most common type of kidney cancer in adults and occurs most often in men, ages 50 to 70 years old. The U. S. National Library of Medicine (2017) defines RCC as a type of kidney cancer that starts in the lining of very small tubes (tubules) in the kidney. The U.S. National Cancer Institute SEER review diagnosed more than 65,000 cancers of the kidney and renal pelvis in 2013, with 13,680 estimated deaths. New cases in 2017 total 63,990, while projected deaths estimate 14,400 (NCI SEER, 2017).

Incidents of small renal masses (SRMs) increase approximately 2% per year. Twenty-five percent of SRMs are benign. Treatment protocols to preserve kidney function have produced excellent oncologic results for tumor patients. Generally, elective partial nephrectomy (PN) for SRMs is the first-line medical approach. Surgically treated renal tumors less than 4 centimeters (cm) carry an excellent prognosis, <90% of a ten-year, recurrence-free survival rate. RCC tumors treated surgically exceed the 5-year survival rate by 95% in most studies (Blecher & Challancombe, 2016; Chang, Finelli, Berns, & Rosner, 2014; Shuch, Bratslavsky, Linehan, & Srinivasan, 2012; Yap, Finelli, Urbach, Tomlinson, & Alibha, 2014).

A less invasive, outpatient procedure, percutaneous probe ablation or cryotherapy is used to treat RCC patients with tumors >3cm. A surgical syringe filled with extremely cold liquid is inserted through the skin to freeze and obliterate targeted tumors and abnormal cells, while preserving the surrounding tissue. Success rates are inferior to PN; nonetheless, consid-

ered acceptable at <90% recurrence-free rate for some populations. Diagnostic rates of kidney tumor biopsies are <80% with a very low complication rate of <5% and a benign histology of 25%. Subsequently, the practice to biopsy lesions before treatment and repeat the process after a non-diagnostic biopsy is 80% successful. Concordance rates comparing biopsy results and surgical pathology approach 100% results for SRMs (Blecher & Challancombe, 2016; Chang et al., 2014; Yap et al., 2014).

ESRD is defined by the U. S. National Library of Medicine (2017) as the last stage of chronic kidney disease, when the kidneys can no longer support the body's needs. ESRD occurs when the kidneys malfunction and lose the ability to remove waste and excess water from the body. As a result, the kidneys are no longer able to maintain functionality at a level needed to sustain life day-to-day. Diabetes and hypertension are conditions that distress the kidneys and are two of the most common determinant factors of ESRD in the United States. ESRD predominantly develops after CKD. Cessation of kidney function happens over a course of 10 to 20 years before end-stage disease results (NLM NIH, 2017).

Epidemiology of CKD Disparity

The research of Garcia-Garcia and Jha (2015) explores how poverty negatively influences healthy behaviors, limits healthcare access, and minimizes environmental exposure to health information. The poor are more susceptible to disease due to high-risk community environments and social disadvantages, such

as the lack of access to goods and services, minimal exposure to clean water and sanitation, insufficient nutrition, and limited information about prevention and safety. Roadblocks to accessing adequate healthcare impede urban and rural impoverished communities and embody a shortage of regional medical facilities, fewer doctors and specialists, and lack of accessible transportation. Although the United States is a prominently developed country, the poor and ethnic minorities, predominantly African Americans, suffer from higher incidents of ESRD (Garcia-Garcia & Jha, 2015).

Data from the REGARDS Cohort Study reveal that in the United States, ethnic minorities most prevalently, African Americans, have the highest incident rates of ESRD. The racial disparity gap was 3.8, in contrast to Caucasian American patients, who, in 2000, accounted for 64% of the ESRD incident population and 77% of the overall U.S. population of ESRD cases. Age-adjusted ESRD rates in 2000 indicate 982 people per million among African Americans and 256 people per million among Caucasian American individuals with the disease (McClellan et al., 2006).

Correlation between low birth weight (LBW) and CKD, due to nutritional factors and kidney disease, has been described as notable in poor African Americans and Caucasian Americans living in southeastern regions of the USA, such as Tennessee, North Carolina, Kentucky, Mississippi, Georgia, and the like. Similarly, findings revealed a southeast Native cohort with LBW and early malnutrition was associated with later development of metabolic syndrome, diabetes, and di-

abetic nephropathy. A high prevalence of proteinuria, elevated blood pressure, and CKD of unknown etiology was discovered (Garcia-Garcia & Jha, 2015).

Lipworth and colleagues (2012) report that the disparity gap between Caucasian and African Americans affected by CKD continues to grow. Still, the causal circumstance responsible for the increasing prevalence of severely impaired kidney function among African American patients remains undetermined. Consistent factors associated with increased renal cell cancer risk in epidemiologic studies are obesity, hypertension, and cigarette smoking and account for less than half of cancers among Caucasian Americans. Due to enigmatic differences in incidence and mortality trends, African Americans are represented as the population at the highest risk (Lipworth et al., 2012).

Risk factors for ESRD are categorized by low income males with an annual salary below \$15,000.00 per year; minimal education; smoking; a history of diabetes and hypertension; and a history of myocardial infarction (MI/CABG), obesity, and high cholesterol. The risk of developing ESRD among African Americans vs. Caucasian Americans decreases after adjustments are made to the factors (Lipworth et al., 2012).

Cancer in itself is a complex topic; wherefore, a striking pattern of racial differences exists for CKD. An observed disparity in ESRD incidence between African Americans and Caucasian Americans may have occurred, in part, due to racial differences in the rate of progression of CDK to ESRD. In a San Francisco

Community Health Network population study, African Americans with stages 3 to 5 had a four-fold higher risk of progression to ESRD than Caucasian Americans after adjustment for socioeconomic status. Early stage CKD is deemed higher among Caucasian Americans compared with African Americans. This analysis is based on eGFR, the glomerular filtration rate, or how fast the kidneys are filtering blood and removing excess wastes and fluids. Results show the Caucasian American excess for mild CKD gives way to an excess for moderate to severe CKD in African Americans (Lipworth et al., 2012).

Perhaps, pattern changes in the progression of CKD may be due to lower mortality at higher eGFR levels among African Americans. Nonetheless, empirical evidence demonstrates death rates of African Americans are higher at all levels of CKD prior to ESRD. Rates of ESRD incidence are five times higher than rates of cardiovascular deaths among African Americans with hypertension. African Americans remain at risk for faster transitions to moderate and advanced CKD and eventually ESRD (Lipworth et al., 2012).

Access to Medical Treatment

The populations discussed in this paper accessed healthcare primarily from local community healthcare clinics and facilities and hospital emergency rooms. There were some populations in the Hoffman and Purdue (2014) study whose records were surveyed through the Kaiser Permanente Northern California system. The author of one of the articles contributed a note indicating that data collection did not assume that

some of the minority participants may have had a job with appropriate medical benefits. The benefits were determined by the access to testing and other care provisions and access to care data (Hofmann & Purdue, 2014).

Other global populations presented by members of the World Kidney Day Steering Committee, as indicated by Garcia-Garcia & Jha (2015), discussed the key links between poverty and CKD as consequent implications for the prevention of kidney disease and the care of kidney patients in various populations. Compelling evidence shows disadvantaged societies, those from low-resource, racial and minority, ethnic communities, and indigenous and socially disadvantaged backgrounds, suffer from marked increases in the burden of unrecognized and untreated CKD. The same inequity holds true in the United States (Garcia-Garcia & Jha, 2015).

ESRD is the only disease protected by a Medicare mandate and a series of Amendments: (P.L. 92-603) under the Social Security Act passed by the United States Congress in 1972, 1978; (P.L. 95-292) 1981; (P.L. 97-35) 2003; (P.L. 108-173) 2008; (P.L. 110-275) 2012; ATRA, P.L. 112-240). ESRD requires lifelong dialysis treatment. More commonly, nephrologists prefer to offer patients self-administered home treatment options such as hemodialysis, a catheter system that is injected primarily in the arm in a localized vein source or inserted in a stint installed in the arm. Peritoneal is a catheter implanted in the abdomen wall. Service is performed daily via machine and provides a 40% decrease

in mortality risk (CSM, 2012: Gehlert & Brown, 2012).

A kidney transplant has proven to be the most expensive yet more viably permanent solution to combat CKD; however, according to Gehlert & Brown (2012), Caucasian American males are more likely recipients of a kidney transplant than any other demographic group in the United States. African American ESRD patients are much less likely to be referred, placed on a waiting list, or receive a kidney transplant. The extent of the disparity points to the limited number of African American patients who willingly participate in preventative care, harbor distrust for the medical community, and lack informed knowledge about kidney transplantation and general, medical eligibility (Gehlert & Brown, 2012).

Recipients are required to partake in an extensive evaluation and be placed on a waiting list if they are unable to identify a living donor. A “paired” donor, or altruistic donor sourced from a support network such as United Network of Organ Sharing, Georgetown University Hospital, may be appropriate. Transplant recipients take immune-suppressants for the life of the kidney to avoid body rejection. If the plan fails, the patient returns to dialysis (Gehlert & Brown, 2012).

Healthy People 2020

Healthy People 2020 is a federally mandated objective funded in support by an annual block grant program, administered by the U. S. Department of Health and Human Services. One of the objectives of Healthy People 2020 is to increase the number of persons who

receive kidney transplants (Gehlert & Brown, 2012). Not all patients are medically suitable for transplant surgery due to comorbid health complications such as cardiovascular disease or psychosocial stress resulting from obesity. Patients self-determine treatment preferences (Gehlert & Brown, 2012).

National ESRD Program (NESRD) – Public Law (92-603)

The national ESRD law passed on October 30, 1972, after significant lobbying by patients, their families, and communities, in response to the rationing of dialysis care. Public Law (92-603) provides coverage of dialysis or kidney transplantation for all ESRD patients through Medicare, regardless of age, and pays expenses for kidney donors and paired donors. ESRD is the only disease category to guarantee eligibility through Medicare, provided the patient or spouse/parent/guardian can prove sufficient work history (CSM, 2012; Gehlert & Brown, 2012).

Demographics

Sixty-five plus is the fastest growing population age of ESRD patients. Patients present with more co-morbidities as they age, such as diabetes, hypertension, RCC, renal cancer, CKD, more psychosocial issues, and physical problems. Kidney disease disproportionately affects African Americans, Hispanics, Native Americans, and Alaskan Natives. Minorities and homeland native recipients are more likely to develop renal failure compared to Caucasian Americans with ESRD incidence. Caucasian Americans usually die of cardiovascular disease before reaching a level

of mature ESRD incidence (Gehlert & Brown, 2012; Tarver-Carr et al., 2012; Yap et al., 2014).

Two hundred, seventy-three per million Caucasian Americans vs. nine hundred, ninety-eight African Americans per million; five hundred, eight per million Hispanics; four hundred, ninety-five per million Native Americans; and two hundred, ninety-six per million Asians develop renal disease (Data collected from U.S. Renal Data, 2009). There is a greater prevalence of diabetes and hypertension in minority populations. Sixty percent of dialysis patients experience chronic pain. Sixty-six percent use prescription pain medication (Gehlert & Brown, 2012; Mafolasire et al., 2016).

Comparatively, Caucasian American males with kidney disparity are more likely to receive transplants than any other demographic in the U.S., while African Americans are much less likely to be referred for transplants and are more often placed on a waiting list. Potential reasons are an identified lack of preventative care, patient preference, socioeconomic status, distrust of the medical community, and lack of knowledge about transplantation and related medical conditions. (Gehlert & Brown, 2012; Mafolasire et al., 2016).

The National Cancer Institute SEER program reports approximately 1.6% of men and women will be diagnosed with kidney and renal pelvis cancer in their lifetime. In 2014, there were an estimated 483,225 people in the United States living with kidney and renal pelvis cancer. The number of new cases was estimated at 15.6 per 100,000 men and women per year, with

deaths estimated at 3.9 per 100,000 men and women per year. The percentage of patients surviving 5-years in 2014 was 74.1% (2017).

Cancer survival is estimated by stage at diagnosis. Stage refers to the extent of cancer in the body and determines treatment options. Abnormal cancer cells found in the part of the body where it started is referred to as localized or Stage 1. As cancer metastasizes, the stage is referred to as regional or distant. Kidney and renal pelvis cancers are diagnosed at the local stage 65.2% of the time. The 5-year survival rate for localized kidney and renal pelvis cancer is 92.6% (NCI SEER, 2017).

Emphasis on Poverty

Many studies demonstrate the bidirectional relationship between poverty and chronic kidney disease. Patients lacking financial means or adequate insurance coverage become vulnerable and are often burdened with meeting huge, out-of-pocket costs to cover ESRD treatment. The financial strain associated with kidney disease progression impacts patients and their families in ways that can thrust them into circumstances of extreme poverty (Garcia-Garcia & Jha, 2015).

Overall, the poor carry a higher disease burden and limited access to resources for meeting treatment costs. Neighborhood poverty is strongly associated with higher ESRD incidents for both African Americans and Caucasians. Despite the persistent disparity of ESRD across all poverty levels, greater risk exists for African Americans. Subsequently, the possibility

exists that African Americans suffer more from lower socioeconomic status than Caucasians (Volkaova et al., 2008).

Palliative Care/End of Life Issues

End of life issues and palliative care options are prevalent with ESRD. The life expectancy is 75% lower than similar patients with chronic, life-threatening conditions other than ESRD. Ceasing treatment leads to death. Ninety-six percent of the patients who stop dialysis treatment are deceased within a month (Gehlert & Brown, 2012).

Sixty percent of patients change their careers or apply for supplemental security income or Social Security Disability insurance (SSI or SSDI) due to ESRD treatment. The disease health maintenance process takes an emotional and financial toll on individuals and families to a level that can potentially leave them destitute (Gehlert & Brown, 2012).

Patients are recommended to follow a strict diet. Processed foods are not condoned. Foods with high potassium levels lead to heart failure. High phosphorous foods lead to bone disease and calcification of the heart. Kidney patient diets are tough to follow and difficult to uphold (Gehlert & Brown, 2012).

Challenges for Social Workers

As chronic renal disease slowly progresses to ESRD, clients face significant socio-emotional and lifestyle changes. The intrusiveness of the treatment causes multiple disease-related and treatment-related

psychological stressors. Clients are faced with a bleak prognosis of planning how long they can expect to live on dialysis, and how treatment will impact their quality of life and that of their families (Gehlert & Brown, 2012).

Many ESRD patients struggle with psychosocial issues and harbor legitimate, personal concerns. Clients are often coping with debilitating physical pain prior to their death. There are significant psychosocial ramifications for families adjusting and coping with the impact and life-changing finality of the disease. The significance of the psychosocial issues faced by clients and their families requires culturally competent, compassionate, and specialized intervention (Gehlert & Brown, 2012).

Typically, ESRD patients are referred to a hospital social worker, specializing in nephrology or renal social work. ESRD is the only disease category with a public policy mandate under Medicare, stipulating a Master's Degree-level social work clinician on health teams. Every dialysis facility and kidney transplant program is required to have a Master's Degree-level social worker on staff (Gehlert & Brown, 2012).

The integral purpose of a hospital social worker is to develop a flexible treatment plan, in collaboration with the client and the treatment team. Options should include coping mechanisms, talk therapy (Dialectic Behavior Therapy [DBT]), cognitive support (Cognitive Behavior Therapy [CBT]), writing therapy, and a safe and comfortable environment for the client to be

able to release and shed some of the pain and grief from the losses incurred as the disease transitions. Social workers are advised to be prepared by having a crisis intervention plan at the ready and a Plan B (Gehlert & Brown, 2012).

Each ESRD patient is unique and can present with various symptoms, such as impaired sense of taste, diminished appetite, and bone disease. Toxins build up in the blood, causing pain, anemic and uremic episodes, and can lead to symptoms of confusion, lethargy, sleep problems, and residual psychosocial effects. Energy becomes diminished as nutritional status is compromised (Cuppari & Ikizler, 2010; Gehlert & Brown, 2012). Overall quality of life is hindered. Complex medications may be prescribed to counteract symptoms. Reactions to medications are common until the patient's body adjusts to the dramatic life changes. Palliative care is also inevitable. Kidney disease takes a toll on the entire family and requires that all natural supports are available to help the patient navigate living with disease (Cuppari & Ikizler, 2010; Gehlert & Brown, 2012).

Interventions

Psychosocial issues faced by ESRD patients and their families are significant. Training as a nephrology social worker would be required to understand the intricate and complex needs and the specialized circumstances that challenge clients. Knowledge of public policy would be effective if planning to advocate for legislation to support kidney care issues and to help lower adjunct medical and prescription costs. We live

in transitional times. The only thing we can depend on is change; therefore, staying current on issues and trends in the field reflect a commitment to professional responsibility.

One of the most effective ways social workers can support their clients is by connecting them with accessible and available resources, including Medicare, Medicaid, housing, support groups, medical equipment, day-treatment facilities, and specialized programming. Helping our clients to master themselves and build confidence toward partnership with others is a monumental and honorable task.

In conclusion, in order to best serve our clients, we as social workers, must first be willing to challenge ourselves in a manner that honors the National Association of Social Workers (NASW) code of ethics. We have a fundamental duty to place the client's needs first. Being authentic with our clients requires a durability that depends on our commitment to mastering and accepting our own values as social workers.

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About the Author

Kathleen Cosgrove is pursuing her Master of Social Work at Bridgewater State University. Her research article was completed in the summer 2017 for a Medical Social Work class taught by Dr. Barbara Bond. Kathleen plans to work in the medical field as a hospital social worker. She will continue her writing endeavors.