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Improved Screening and Diagnosis of Chronic Kidney Disease in the Older Adult With Diabetes

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ABSTRACT

The aim of the study was to improve the frequency of diagnosing chronic kidney disease (CKD) in seniors with diabetes. Less than 10% of those with stages 2 or 3 CKD and less than 50% with stage 4 CKD know they have renal impairment. A pre-post study design was implemented in 2 primary care facilities. The study sample was 222 older adults aged > 55 years with diabetes. A medical record audit verified the number of patients diagnosed with CKD doubled from 16 preintervention to 32 postintervention ($P = .014$). The intervention delivered current compliance practice data, practice guidelines, and incorporated teamwork strategies.

Keywords: chronic kidney disease, diabetes, interprofessional practice, older adult, screening, teamwork

Diabetes is the most prevalent cause of kidney failure, yet most people with diabetes are not screened to national guidelines.[1] Approximately 40% of people with chronic kidney disease (CKD) have diabetes.[1,2] As a consequence, most Americans with CKD do not know they have impaired renal function. According to the United States Renal Data System (USRDS)[1] less than 10% of those with stages 2 or 3 CKD know and less than 50% know they have stage 4 CKD. It is not until stage 5 that the diagnosis of CKD is often made. Further evidence tells us that the underinsured and the elderly have a higher prevalence rate of diabetes and therefore are at higher risk for CKD.[1]

These facts support the development of new strategies to improve the screening rates of CKD. Proper screening will lead to diagnosing the earlier stages of CKD, which offers the opportunity to educate patients about their chronic condition and prevent the progression of CKD. These facts helped to frame the clinical question for this study by asking, "Will proper screening of CKD in the older adult with diabetes lead to an improved capture rate of CKD?"

Proper screening, along with appropriate interventions, are paramount to early detection and reducing many complications associated with diabetes.[3] A staggering 1 in 3 Americans and 48.3% of our seniors (aged > 65 years) have elevated blood glucose, which is considered a state of prediabetes.[3] Of this population, 15% to 30% are predicted to develop type 2 diabetes over the next 5 years, further exacerbating the existing burden of 9.4% of Americans (29.1 million) who have diabetes.[3]

Diabetes, just like prediabetes, has a greater effect on our seniors and those who are underinsured. For those aged 65 years and older, the prevalence rate of diabetes is a stunning 25.2%[4] and is even higher for those who are underinsured. The National Center for Chronic Disease Prevention and Health Promotion[4] describes prevalence rates for diabetes vary significantly based on educational level, which is an indicator of socioeconomics. For those lacking a high school diploma the prevalence rate of diabetes is the highest at 12.6% compared with 9.4% in the general population.[4] Drilling down to the prevalence rate of diabetes in the "underinsured senior

population" is unclear due to lack of research, but it is fair to assume the prevalence rate is much higher than in the general population.

As with diabetes, the risk of CKD and its severity increases with age. In the US, the incidence of end-stage renal failure in 2014 for those 22 to 44 years old was 128.8 per million.[1] The incidence jumps to 1,265 per million for those aged 65 to 74 years and to 1,556 per million for those older than 75 years.[1] National and international organizations assert further research is needed concerning CKD in the elderly to better guide screening and treatment.[2]

The Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group[5] recommends the following tests yearly for those with diabetes: (1) urine microalbumin-to-creatinine ratio (first-morning void preferred), (2) estimated glomerular filtration rate (eGFR), and (3) serum creatinine. However, national data show that only 33.3% of Medicare beneficiaries with diabetes had annual urine microalbumin screening, and 33.8% of people aged 65 and older with CKD obtained recommended serum creatinine, lipids, and microalbuminuria together with a medical evaluation.[1]

The purpose of this study was to improve the frequency of capturing the diagnosis of CKD in the older adult with diabetes through improved screening in 2 primary care facilities that provide care for the underinsured.

METHODS

The project received prior approval through the University of Southern Indiana Institutional Review Board. Medical record data were number coded, deidentified, and results were only reported in aggregate form to protect patient privacy.

Study Design

This study used a pre-post intervention design. The intervention contained 3 parts aimed at the primary care team: (1) provide data about their current practice of screening for CKD and the prevalence rate of CKD diagnosis in those with diabetes, (2) provide educational activities about practice guidelines for CKD screening,[5,6] and (3) incorporate teamwork strategies in their daily practice to facilitate proper screening. Each aspect of the intervention, led by the nurse practitioner (NP), is explained in detail in the "Intervention" section of this report.

Patients' medical record data were collected from the preceding 18-month preintervention period to serve as a benchmark for comparison of the intervention's impact. We chose 18 months because it allowed enough time to determine several factors, including an established relationship between the patient and the provider, trending laboratory values of kidney health, and adequate time to make the diagnosis of CKD. The second data collection phase included only those patients with follow-up visits for 3 months after the intervention.

Participants and Settings

The project setting comprised 2 nonfederally funded facilities where underinsured patients received access to primary care services. Physicians, physician assistants, and NPs were the primary care providers. The team included nurses, a dietary coach, medical assistants, and receptionists.

The study sample population consisted of records of all adult patients (N = 4,397) from the 2 facilities. Adults with diabetes who were not pregnant met the initial inclusion criteria. A sample of 503 patients was identified. Also excluded were patients who had a prior nephrology referral (n = 24) and for loss to follow-up for a return visit during the 18 months that comprised the preintervention phase (n = 26). The population of 453 patients was further subdivided into those aged 55 years and older for a sample population of 222 adults with diabetes. Thus, 49% of the patients with diabetes were aged 55 years and older.

Intervention

The first of 3 parts of the intervention involved providing data about each facility's current rate of ordering microalbumin, glomerular filtration rate, creatinine, and the prevalence rate of CKD diagnosis in those with diabetes. The entire primary care team of each facility received information on current practice data (previous 18 months) presented in the aggregate with no identification of provider name or type using visual media during an organizational meeting. National statistics from Healthy People 2020[7] was presented as a benchmark to establish facility goals. By presenting the data in a safe