Other clinical practice guidelines for kidney disease Stages 1-4 in NHANES 1999-2004 participants

Introduction

In 2002, the National Kidney Foundation published Kidney Disease Outcomes Quality Initiative (KDOQI) guidelines intended to provide a common framework for defining and staging chronic kidney disease (CKD). Other clinical practice guidelines for CKD stages 1-4 followed, covering dyslipidemia management, bone metabolism and diseases, hypertension, anemia, and diabetes.

As the prevalent end-stage renal disease (ESRD) stage 5 population is projected to reach 712,290 by 2015, these guidelines aim to slow CKD progression and reduce morbidity and mortality. CKD patients are more than 6 times likelier to die, mainly from nonrenal cardiovascular disease (CVD), than to reach end-stage disease.

We used NHANES 1999-2004 data with the goal of providing a baseline assessment of current CKD population health and adherence to KDOQI recommendations for management of hypertension.

Methods

- Analyses were limited to NHANES 1999-2004 MEC-examined participants age older than 20 (n = 14,213). CKD was identified following KDOQI classification guidelines.
- Current blood pressure was calculated as the mean of up to four readings of both systolic and diastolic pressure (SBP and DBP) and rounded to the nearest integer.
- Current blood pressure was classified according to the JNC 7 guidelines: Normal: <120/80 (mm Hg) Pre-hypertension: SBP 120-139 or DBP 80-89 Stage 1: SBP 140-159 or DBP 90-99 Stage 2: SBP ≥160 or DBP ≥100 Individuals were classified as hypertensive if they were in JNC-7 Stage 1 or Stage 2 for non-CKD/non-diabetic patients or ≥130/80 for CKD/diabetic patients or were currently using a prescription medication for hypertension.
- Awareness, treatment, and control were assessed. Control defined as <140/90 for non-CKD/non-DM patients, and <130/80 for CKD and DM patients.

Results

- The percentage of CKD patients with advanced stages of measured hypertension increases as CKD stage increases (Figure 1).
- CKD patients without a prior history of CVD were nearly 5 times more likely to be hypertensive than non-CKD patients, while patients with a history of CVD were approximately twice as likely to be hypertensive (Figures 2 & 5, interaction p<0.01).
- Hypertensive CKD patients in stages 1 and 2 were 40% less likely to be aware of their hypertension, 43% less likely to treated, and 78% less likely to be in control of their hypertension (<130/80; Figures 3 & 5).
- Hypertensive CKD patients in stages 3 and 4 were as likely to be aware of and treated for hypertension compared with non-CKD patients, but were 50% less likely to be in control of their hypertension (<130/80; Figures 3 & 5).
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- Compared with all non-CKD patients, not just hypertensive patients, CKD patients were much less likely to meet target blood pressure (Figure 4).
- Use of ACE I/ARB was less among CKD patients than non-CKD patients (Figures 6 & 5).

Conclusions

- CKD patients in the early stages of their disease, stages 1-2, were two to five times more likely to be hypertensive compared with non-CKD patients but were 40% less likely to be aware of their hypertensive status. Additionally, patients with more advanced CKD, stages 3-4, were no more likely than non-CKD patients to be aware of their condition.
- Similarly, CKD stage 1-2 patients were 43% less likely to be treated for their hypertension compared with non-CKD patients, and CKD patients in stage 3-4 were only as likely as non-CKD patients to be treated.
- CKD patients were nearly 50% to 80% less likely to be in control of their hypertension.
- These findings highlight the need for targeted screening programs to identify CKD patients early in the course of their disease to increase awareness and treatment of hypertension.

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