

Health Care Utilization Among Adults With CKD and Psychological Distress



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Rationale & Objective: Despite extensive research on health care access for individuals with chronic kidney disease (CKD), there is little research on the relationship between health care access barriers and psychological distress.

Study Design: An observational study based on the publicly available 2013 to 2017 US National Health Interview Survey data.

Setting & Participants: 3,923 respondents 18 years or older who self-reported a diagnosis of CKD in the preceding 12 months.

Predictor(s) and Outcome(s): Psychological distress was measured using the Kessler Psychological Distress Scale (K6). Barriers to health care access included lack of health insurance coverage, lack of a usual source of health care, and financial barriers to accessing/obtaining health care, including medical specialist services, prescription drugs, mental health counseling, and dental care.

Analytical Approach: Multinomial logistic regression with 3 levels of K6 scores (no distress, mild to moderate distress, and serious distress) as the dependent variable.

Results: 15% of respondents reported mild to moderate and 11% reported serious psychological distress. Compared with those with no distress, those with mild to moderate and serious distress were younger but less likely to have worked in the preceding year, had more chronic medical conditions, and visited an emergency department more frequently. Multivariable regression models show that each financial barrier to health care access (likely due to lack of health insurance) was significantly associated with mild to moderate and serious distress.

Limitations: CKD diagnosis was self-reported and CKD stage was unknown. Because this is a cross-sectional study, associations cannot be assumed to imply causal relationships.

Conclusions: Access to sick and preventive/routine care should be improved. People with CKD should be assessed for psychological distress, treated as needed, and offered case management and social services to help them navigate the health care system and alleviate personal stressors.

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An estimated 30 million (15%) US adults have chronic kidney disease (CKD).¹ Low-income and racial/ethnic minority patients with CKD shoulder a disproportionate burden of the disease partly due to their poorer health care access and lower quality of care.²⁻⁶ Data from the 2000 to

among maintenance dialysis patients, including lower all-cause mortality, better vascular access (ie, fistula or mature graft), and the likelihood of transplantation.^{1,9,10}

Lack of health insurance, health care continuity, and/or high out-of-pocket medical expenses are barriers to accessing health care and adhering to life-sustaining treatment regimens for many people with CKD. Medicare, a health insurance program administered by the US government, covers almost all people 65 years or older. It also pays for dialysis and other health services for patients with ESRD younger than 65 years who are US citizens or permanent residents. However, those who are ineligible for Medicare (due to lack of ESRD diagnosis or adequate Social Security-covered work history/credits) often delay treatment until acute medical problems emerge, requiring emergency dialysis treatment that results in higher rates of mortality and complications from comorbid medical conditions.^{11,12} Those younger than 65 years at all stages of CKD are least likely to obtain medical care⁷ because they may lack employment-based health insurance and be Medicare ineligible.

Individuals with a CKD diagnosis also disproportionately experience psychological distress, notably depression and anxiety, compared with those with other chronic illnesses.¹³⁻¹⁸ The high prevalence of psychological distress

Editorial, p. 147

2010 National Kidney Foundation's Kidney Early Evaluation Program (KEEP) showed that more Hispanics and African Americans than whites at all CKD stages reported not having seen a physician.⁷ A review of studies in 10 countries (developed and developing) found that of patients with moderate to severe CKD, those who were socioeconomically disadvantaged or an ethnic minority had poorer access to cardiovascular and nephrology health services and higher rates of cardiovascular events and mortality.⁸

Timely nephrology referrals/consultations and pharmacotherapy, along with diet and lifestyle changes, can slow progression into kidney failure or end-stage renal disease (ESRD) and prevent other health problems (eg, heart disease and stroke); they are also associated with increased readiness for dialysis and improved outcomes

among patients with CKD is attributable to: (1) biophysiological symptom burdens from CKD, such as neuromuscular, gastrointestinal, and sexual dysfunction; chronic pain; fatigue; and sleep disturbances; (2) need for sustained adherence to complex life-sustaining treatment regimens; (3) difficulties navigating insurance and social service programs; (4) the substantial impact of these stressors on work, family, and other social roles and social support; and (5) among in-center hemodialysis patients, “emotional contagion” or witnessing adverse outcomes in dialysis peers.^{13,19-23} Psychological distress is higher in younger age groups (due to more disruptions from the illness), women, whites, divorced/widowed and unemployed individuals, and those with lower education and income.^{22,24-26} In a study of African Americans with CKD, unemployment, low income, and lower life quality and satisfaction were independently and significantly associated with higher depressive symptoms, even after controlling for estimated glomerular filtration rate.²⁷ Psychological distress negatively affects treatment adherence and outcomes, including time to dialysis initiation, hospitalizations, quality of life, and death.^{22,28-32}

Psychological distress may also come from experiencing barriers to health care access. A study of US adults found associations between serious psychological distress and lack of health insurance coverage and money for prescription medications.³³ Another found that expanded eligibility under Medicaid (a health insurance program for low-income individuals jointly administered by the federal and state governments) due to the Affordable Care Act increased coverage, reduced problems paying medical bills, and reduced serious psychological distress among low-income parents.³⁴ However, despite the plethora of research on limited access to care among patients with CKD due to low income and lack of health insurance, little research has been done on the relationship between health care access and psychological distress among people with CKD.

Using nationally representative data, the present study examined the association of psychological distress among adults (aged ≥ 18 years) with a CKD diagnosis and their self-reported health care use, as well as barriers to accessing/obtaining health care in the preceding 12 months. The study hypothesis was that psychological distress will be significantly associated with lack of health insurance coverage, lack of a usual source of health care, and financial barriers to accessing health care, controlling for chronic health conditions other than CKD and socioeconomic factors. The findings may further highlight the importance of improving health care access for those with CKD and meeting their psychological needs.

METHODS

Data and Sample

We used the 2013 to 2017 public use data files of the National Health Interview Survey (NHIS), an annual

cross-sectional household survey that is the principal source of information on the health and health care access of the civilian noninstitutionalized US population.³⁵ For each sampled household, interviews were conducted (mostly face to face) with an adult family member who answered questions about each family member’s demographic and health status characteristics. The NHIS also collects more detailed health and lifestyle data from 1 sample adult from each household, which was used in the present study. Combining all 5 years of NHIS data resulted in a sample of 164,696 adults aged 18 to 85 years or older (NHIS public use data sets do not provide the chronological age of those aged ≥ 85 years). Of these, 3,923 reported a CKD diagnosis in the preceding 12 months. We focused on these adults with CKD for hypothesis testing.

The study used deidentified public use data sets and thus was exempt from human subjects review by the authors’ institutions.

Measures

CKD was defined as a response of “yes” to the question of whether the participant had “weak or failing kidneys” diagnosed by a physician or other health care provider in the 12 months preceding the interview. (Data for CKD stage and whether the diagnosis was new or ongoing were not collected.) Hereafter, those who responded affirmatively will be referred to as adults with CKD.

Psychological distress was assessed using the 6-item Kessler Psychological Distress Scale (K6) screen, a global measure of serious mental illness during the 4-week period before test administration.³⁶ The 6 items were: how often one felt nervous, restless/fidgety, so depressed that nothing cheered you up, hopeless, worthless, and that everything was an effort in the past 30 days (0 = none of the time, 1 = little of the time, 2 = some of the time, 3 = most of the time; and 4 = all of the time). Cronbach alpha for the 6 items among the sample persons with a CKD diagnosis in this study was 0.88. Scores of 13 to 24 are a measure of probable serious mental illness, defined as meeting diagnostic criteria for a *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition) disorder and experiencing significant impairment in functioning.³⁶ Scores of 8 to 12 are a measure of probable mild to moderate mental illness, indicating a high probability of a diagnosable mental illness but with less severe impairment in functioning.³⁷ Thus, in this study, we categorized K6 scores into 3 levels: no distress (scores of 0-7), mild to moderate distress (scores of 8-12), and serious distress (scores of 13-24).

Health care use in the preceding 12 months was examined with the following: (1) whether the respondent saw a general practitioner, medical specialist, and mental health professional; (2) the number of emergency department (ED) visits (none, 1, 2-3, and ≥ 4); and (3) whether the respondent was hospitalized overnight. We also reported health insurance types: Medicare, Medicaid,

private insurance, and Veteran's Administration (VA)/military insurance.

Barriers to accessing health care in the preceding 12 months were measured using the following: (1) lack of health insurance coverage (ie, uninsured); (2) not having had a usual place of sick care and routine/preventive care, namely a physician's office, health maintenance organization, clinic, or health center. We categorized those who reported no usual place of care or mentioned ED, hospital outpatient department, some other place, or not going to one place often as not having a usual place; (3) not having been able to afford medical specialist care; (4) not having been able to afford prescription drugs and/or used any cost-saving strategies, including skipping doses, taking less medicine, delaying filling a prescription, asking physician for lower-cost medication, buying medications from another country, and/or using alternative therapies; (5) not having been able to afford mental health care/counseling; and (6) not having been able to afford dental care.

Covariates were: (1) the number (0-8) of chronic medical conditions other than CKD that the respondent ever had had diagnosed and reported difficulty managing (hypertension, heart disease, stroke, diabetes, liver disease, lung disease, arthritis, and cancer), (2) age, (3) sex, (4) race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, Asian, American Indian/Alaska Native, and multiracial/unknown), (5) marital status (married/partnered, divorced/separated, widowed, and never married), (6) work status in the past year, and (7) ratio of family income to the poverty threshold (<200%, 200%-399%, ≥400%, and missing). For descriptive purpose only, we also reported whether the respondent reported difficulty managing depression/anxiety in the preceding 12 months.

Data Analysis

All analyses were conducted using Stata/MP 15's svy function to account for NHIS' stratified multistage sampling design. First, we used χ^2 tests and 1-way analysis of variance to compare demographic, socioeconomic, and clinical characteristics; health care use; and barriers to health care access among adults with CKD grouped by K6 score (no, mild to moderate, and serious distress). To test the study hypothesis (barriers to health care access will be associated with both mild to moderate and serious psychological distress compared to no distress), we used multinomial logistic regression with the 3 levels of K6 scores as the dependent variable. In a hierarchical approach, we first entered lack of insurance as the sole independent variable with chronic medical conditions and socioeconomic covariates and then added the remaining barriers to health care access. Variance inflation factor diagnostics, using a cutoff of 2.50,³⁸ showed that multicollinearity among the independent variables and covariates (listed in the measures section) was not a concern. Multinomial logistic regression results are presented as relative risk

ratios (RRRs) with 95% confidence intervals (CIs). Statistical significance was set at $P < 0.05$.

RESULTS

Characteristics of Adults With Past-Year CKD Diagnosis by K6 Levels

As shown in Table 1, of adults with CKD diagnosed in the preceding year, 74.3% reported no distress, 15.2% reported mild to moderate distress, and 10.6% reported serious distress. Overall, about half these adults with CKD were 65 years or older, a little more than half were women, a little more than a third were racial/ethnic minorities, and just over a quarter worked for pay at least sometime in the preceding year. The serious-distress group was the youngest and included a lower proportion of non-Hispanic blacks but higher proportions of the other racial/ethnic minorities and divorced/separated and never married individuals. Compared to the no-distress group, both the mild-to-moderate- and serious-distress groups included lower proportions that worked in the preceding year. More than half (51.3%) of the serious-distress group, 47.7% of the mild-to-moderate distress group, and 37.8% of no-distress group had family incomes < 200% of poverty.

Compared to the no-distress group, the mild-to-moderate- and serious-distress groups also had more chronic medical conditions and conditions they had difficulty managing. The mild-to-moderate- and serious-distress groups did not differ on numbers of chronic medical conditions and conditions they had difficulty managing; however, a significantly higher proportion (nearly a quarter) of the serious-distress group than the mild-to-moderate-distress group reported that they had difficulty managing their depression/anxiety symptoms in the preceding year.

Health Care Use and Barriers to Health Care Access by K6 Levels

As shown in Table 2, the 3 distress groups did not differ in the proportions that saw a general practitioner and a medical specialist in the preceding year. However, the serious-distress group had the highest proportions of those who saw a mental health professional. Almost two-thirds of the serious-distress group and ~60% of the mild-to-moderate-distress group, compared to ~44% of the no-distress group, had at least 1 ED visit. More than 1 in 5 in the serious-distress group visited the ED 4 or more times. Additional analysis found that of participants who went to an ED, 34.1%, 37.7%, and 40.7% ($P = 0.20$) of the no-, mild-to-moderate-, and serious-distress groups, respectively, stated that they had no other health care source, and 9.1%, 9.6%, and 15.8% ($P = 0.04$) of the no-, mild-to-moderate-, and serious-distress groups, respectively, stated that the ED was their usual source of care. Hospitalization rates were also higher among the mild-to-moderate- and

Table 1. Characteristics of Adults With Past-Year CKD Diagnosis by Psychological Distress Level

	No Distress (K6<8)	Mild to Moderate Distress (K6=8-12)	Serious Distress (K6≥13)	P
Total	2,877 (74.3%)	592 (15.2%)	454 (10.6%)	
Age, y	63.9 ± 16.6	59.7 ± 15.8	56.2 ± 15.1	<0.001
Age group, y				<0.001
18-39	265 (10.7%)	77 (12.6%)	65 (14.1)	
40-54	387 (15.4%)	101 (20.7%)	118 (26.6)	
55-64	504 (17.8%)	158 (28.1%)	141 (32.2)	
65-74	757 (25.4%)	141 (19.9%)	79 (15.3)	
≥75	964 (30.7%)	115 (18.7%)	51 (11.9)	
Female sex	1,577 (51.8%)	358 (55.5%)	280 (58.0%)	0.1
Race/ethnicity				0.003
Non-Hispanic white	1,824 (65.9%)	348 (63.8%)	277 (63.5%)	
Non-Hispanic black	500 (14.7%)	104 (14.7%)	61 (10.0%)	
Hispanic	370 (13.8%)	92 (15.8%)	77 (16.7%)	
Non-Hispanic Asian	87 (3.2%)	19 (2.5%)	9 (1.8%)	
American Indian/Alaska Native	39 (0.9%)	10 (0.8%)	6 (2.4%)	
Multiracial/other	57 (1.6%)	19 (2.4%)	24 (5.6%)	
Marital status				<0.001
Married/partnered	1,172 (53.6%)	225 (51.6%)	135 (41.2%)	
Divorced/separated	626 (16.5%)	166 (21.0%)	160 (30.0%)	
Widowed	689 (17.1%)	107 (13.9%)	65 (11.4%)	
Never married	383 (12.5%)	93 (13.4%)	93 (17.2%)	
Missing	7 (0.2%)	1 (0.1%)	1 (0.3%)	
Worked in past year	747 (28.4)	120 (21.7%)	87 (16.1%)	<0.001
Family income (% of poverty level)				<0.001
<200%	1,120 (35.7%)	317 (47.7%)	245 (51.2%)	
200%-399%	755 (27.2%)	125 (24.5%)	96 (23.7%)	
≥400%	734 (28.1%)	106 (19.3%)	80 (16.4%)	
Missing	268 (9.1%)	44 (8.4%)	33 (8.7%)	
Health status				
No. of diagnosed medical conditions	2.82 ± 1.6	3.29 ± 1.5	3.43 ± 1.7	<0.001
Diabetes	1,105 (37.8%)	254 (41.6%)	183 (43.5%)	0.1
Hypertension	2,177 (74.0%)	460 (79.8%)	353 (76.9%)	0.07
Heart disease	1,237 (42.2%)	295 (48.8%)	244 (55.5%)	<0.001
Stroke	410 (13.9%)	106 (15.2%)	85 (19.2%)	0.07
Liver disease	202 (6.4%)	72 (11.7%)	56 (12.6%)	<0.001
Lung disease	735 (24.7%)	244 (39.3%)	218 (44.1%)	<0.001
Arthritis	467 (16.7%)	170 (27.1%)	144 (29.0%)	<0.001
Cancer	745 (25.5%)	138 (21.8%)	91 (21.2%)	0.1
No. of above medical conditions difficult to manage	0.95 ± 1.1	1.66 ± 1.3	1.71 ± 1.5	<0.001
Had difficulty managing depression/anxiety	77 (2.5%)	76 (11.7%)	117 (24.9%)	<0.001

Note: Values expressed as number (percent) or mean ± standard deviation. Probability values were calculated using Pearson χ^2 tests for categorical variables and 1-way analysis of variance for age and number of medical conditions. The n/N may be unequal to the percentages shown for the categorical variables as the proportions were calculated accounting for the survey sampling design.

Abbreviations: CKD, chronic kidney disease; K6, Kessler Psychological Distress Scale.

serious-distress groups. The serious-distress group had the lowest rates of Medicare. Both the mild-to-moderate- and serious-distress groups had lower rates of private health insurance and VA/military insurance, but higher rates of Medicaid than the no-distress group.

Also shown in Table 2, higher proportions of both the mild-to-moderate- and serious-distress groups than the no-distress group were uninsured and did not have a usual place of sick or routine/preventive care in the preceding year. The serious-distress group had the

highest proportions of those reporting financial barriers to seeing a medical specialist, obtaining prescription drugs, receiving mental health care/counseling, and obtaining dental care. For example, 27.6% of the serious-distress group reported that they could not afford medical specialist care, compared to 5.4% of the no/mild-distress group and 17.9% of the mild-to-moderate-distress group. In addition, 37.1% of the serious-distress group reported that they could not afford prescription drugs, as compared to 10.0% of the

Table 2. Health Care Utilization and Health Care Access Barriers Among Adults With Past-Year CKD Diagnosis by Psychological Distress Level

	No Distress (K6<8)	Mild to Moderate Distress (K6=8-12)	Serious Distress (K6 ≥ 13)	P
Total	2,877 (74.3%)	592 (15.2%)	454 (10.6%)	
Health Care Utilization in Preceding y				
Saw general practitioner	2,512 (88.3%)	524 (87.4%)	409 (90.5%)	0.5
Saw medical specialist	1,773 (62.7%)	383 (65.1%)	272 (61.4%)	0.6
Saw mental health professional	256 (8.9%)	121 (18.4%)	163 (36.6%)	<0.001
No. of ED visits in past y				<0.001
0	1,566 (56.2%)	247 (40.2%)	146 (34.8%)	
1	641 (23.3%)	109 (19.9%)	97 (21.8%)	
2-3	401 (13.1%)	137 (26.1%)	100 (22.4%)	
≥4	216 (7.5%)	97 (14.9%)	108 (21.0%)	
Hospitalization in past y	967 (32.0%)	247 (40.4%)	197 (41.5%)	<0.001
Health insurance types				
Medicare	1,942 (63.6%)	359 (58.2%)	228 (47.5%)	<0.001
Medicaid	576 (18.2%)	213 (32.6%)	197 (38.8%)	<0.001
Private health insurance	1,297 (47.5%)	160 (29.7%)	101 (25.1%)	<0.001
VA/military insurance	244 (8.6%)	50 (8.1%)	23 (6.0%)	0.4
Health Care Access Barriers in Preceding y				
No health insurance coverage	162 (5.7%)	46 (9.0%)	59 (12.9%)	<0.001
No usual place of sick or preventive care	265 (8.4%)	66 (13.5%)	59 (13.0%)	0.003
No usual place of sick care	245 (7.6%)	60 (12.5%)	57 (12.3%)	0.002
No usual place of preventive care	203 (6.6%)	49 (11.0%)	41 (9.2%)	0.01
Could not afford medical specialist	161 (5.4%)	93 (17.9%)	125 (27.6%)	<0.001
Could not afford prescription drugs or had to use cost-saving strategy	818 (29.4%)	280 (49.0%)	260 (54.7%)	<0.001
Could not afford prescription drugs	286 (10.0%)	142 (25.7%)	173 (37.1%)	<0.001
Had to use a prescription drug cost-saving strategy	754 (27.1%)	240 (41.8%)	229 (47.6%)	<0.001
Could not afford mental health counseling	44 (1.5%)	36 (5.4%)	86 (18.5%)	<0.001
Could not afford dental care	431 (14.4%)	186 (30.7%)	176 (38.6%)	<0.001

Note: Values expressed as number (percent). Probability values were calculated using Pearson χ^2 tests. The n/N may be unequal to the percentages shown for the categorical variables as the proportions were calculated accounting for the survey sampling design.

Abbreviations: CKD, chronic kidney disease; ED, emergency department; K6, Kessler Psychological Distress Scale; VA, Veterans Administration.

no-distress group and 25.7% of the mild-to-moderate-distress group.

Association of K6 Scores With Barriers to Health Care Access: Multivariable Regression Analysis Results

When lack of health insurance was entered as the sole independent variable in the multinomial logistic regression, it was significantly associated with serious distress (RRR, 1.84; 95% CI, 1.16-2.94; $P = 0.01$), controlling for chronic medical conditions and socioeconomic variables. However, as shown in Table 3, in the full models with all barriers to health care access, lack of health insurance and a usual place for sick or preventive care were not significant factors, whereas financial barriers to accessing medical specialists, prescription drugs, mental health counseling, and dental care were positively associated with higher odds of mild to moderate and/or serious distress, compared to no distress. For example, those who reported financial barriers to seeing medical specialists had twice the risk

(RRR, 1.94; 95% CI, 1.25-3.01) for mild to moderate distress and more than twice the risk (RRR, 2.31; 95% CI, 1.45-3.69) for serious distress than no distress. Those who reported financial barriers to obtaining prescriptions drugs or using cost-saving strategies also had a higher risk for mild to moderate and serious distress (RRR, 1.58; 95% CI, 1.20-2.09 for mild to moderate distress and RRR, 1.47; 95% CI, 1.04-2.08 for serious distress). Inability to afford mental health counseling was not a significant correlate of mild to moderate distress, but it was a significant factor for serious distress (RRR, 4.61; 95% CI, 2.55-8.33). Inability to afford dental care was not a significant correlate of serious distress, but it was for mild to moderate distress (RRR, 1.49; 95% CI, 1.08-2.07).

Of the covariates, the number of difficult-to-manage chronic medical conditions and family income < 200% of poverty were associated with higher odds of both mild to moderate and serious distress. Those who were divorced/separated compared to married/partnered had higher odds of serious distress only. Older age, being non-

Table 3. Association of Psychological Distress With Health Status, Health Care Access, and Financial Barriers to Health Care Access Among Those With Past-Year CKD Diagnosis

	Mild to Moderate vs No Distress	Serious vs No Distress
No health insurance coverage (vs any coverage)	0.83 (0.50-1.39)	0.97 (0.55-1.71)
No usual place of sick or preventive care (vs had usual place of sick and preventive care)	1.27 (0.83-1.95)	0.94 (0.58-1.54)
Could not afford medical specialist	1.94 (1.25-3.01) ^a	2.31 (1.45-3.69) ^b
Could not afford prescription drugs/used cost-saving strategy	1.58 (1.20-2.09) ^a	1.47 (1.04-2.08) ^c
Could not afford mental health counseling	1.34 (0.69-2.60)	4.61 (2.55-8.33) ^b
Could not afford dental care	1.49 (1.08-2.07) ^c	1.47 (0.95-2.29)
Covariates		
No. of medical conditions difficult to manage	1.51 (1.37-1.66) ^b	1.54 (1.37-1.72) ^b
Age (y)	0.98 (0.97-0.99) ^b	0.96 (0.95-0.98) ^b
Male (vs female)	0.94 (0.72-1.23)	0.98 (0.71-1.34)
Race/ethnicity		
Non-Hispanic white	Reference	Reference
Non-Hispanic black	0.84 (0.58-1.20)	0.56 (0.37-0.85) ^a
Hispanic	0.99 (0.67-1.47)	1.09 (0.71-1.67)
Asian	0.84 (0.43-1.65)	0.73 (0.29-1.84)
American Indian/Alaska Native	1.12 (0.39-3.23)	3.62 (0.46-28.71)
Multiracial/other	0.89 (0.46-1.72)	1.83 (0.94-3.59)
Worked (vs did not work) in past y	0.60 (0.41-0.87) ^a	0.32 (0.21-0.49) ^b
Marital status		
Married/partnered	Reference	Reference
Divorced/separated	1.04 (0.75-1.42)	1.76 (1.23-2.52) ^c
Widowed	0.94 (0.64-1.38)	1.10 (0.66-1.84)
Never married	0.85 (0.55-1.31)	1.18 (0.75-1.88)
Family income (% of poverty)		
≥400%	Reference	Reference
<200%	1.59 (1.14-2.22) ^a	1.73 (1.16-2.58) ^a
200%-399%	1.29 (0.90-1.85)	1.47 (0.94-2.28)
Missing	1.23 (0.71-2.15)	1.55 (0.77-3.11)

Note: Multinomial logistic regression results. Values expressed as relative risk ratio (95% confidence interval): N = 3,914; Design $df=904$; $F(42,8643)=11.23$;

$P < 0.001$.

^a $P < 0.01$.

^b $P < 0.001$.

^c $P < 0.05$.

Hispanic black, and employment during the preceding year were associated with lower odds of both mild to moderate and serious distress.

DISCUSSION

We examined the relationship between psychological distress and barriers to health care access among adults with CKD diagnosed in the preceding year. About 15% of these adults reported mild to moderate distress and 11% reported serious distress. These distress levels are comparable to those with other chronic health conditions (eg, a 10%-11% rate of serious distress among adults with cardiovascular disease³⁹). Compared with those who had CKD but no distress, those with mild to moderate and serious distress were younger but less likely to have worked in the preceding year, had more chronic medical conditions, and visited an ED more frequently. Notably, significant proportions of ED users in both the mild-to-moderate- and serious-distress groups reported that they used the ED

because it was their usual source of care or they had no other source of care. These 2 groups also had higher hospitalization rates. The higher health-related burdens among the mild-to-moderate- and serious-distress groups may have contributed to their lower employment rates and higher rates of ED use despite their younger age.

Given that a substantial proportion of these adults with CKD had family income $< 200\%$ of poverty, it is not surprising that significant proportions reported financial barriers to accessing/obtaining health care services, including medical specialist services, prescription drugs, and mental health counseling. Multivariable regression models show that these financial barriers to health care access were significantly associated with psychological distress. Our findings also suggest that these financial barriers partly stemmed from lack of health insurance because lack of health insurance became nonsignificant when these financial barriers were entered in the model. Nonsignificance of a usual source of care may occur because many used the ED as their usual source of care.

Variables denoting financial barriers to health care access and low income were independently associated with psychological distress, indicating that lack of health insurance and affordable health care are problems that cut across socioeconomic status, although both are more problematic among low-income adults with CKD. These findings mostly support the study's hypothesis. Multinomial logistic regression results also show that financial barriers were associated with mild to moderate and serious levels of distress to a similar extent. This supports our decision to compare 3 (no, mild to moderate, and serious) levels of K6 scores rather than serious distress versus no serious distress.

Our findings of higher psychological distress among younger age groups are congruent with previous studies.^{22,24} CKD among younger working-age people presents more disruptions in work and other areas of life. Treatment regimens, such as thrice-weekly in-center dialysis for ESRD, often pose challenges to maintaining full-time employment and negatively affect other social roles. Our findings suggest that employment may be a protective factor against psychological distress (likely because it can provide income, health insurance, and/or relief from sick roles and help maintain self-worth by being a contributing member of society).

The findings should be interpreted with the following study limitations in mind. First, because CKD diagnosis was self-reported, recall bias may have led to misclassifying disease status. Data for CKD stage would also have allowed for estimating the level of health care need. Second, data were lacking for whether those with CKD saw a nephrologist because only "specialist" care was mentioned. With projected increases in CKD, future iterations of the NHIS should include questions on the type of specialists that respondents consulted and other details about CKD and CKD care. Third, psychological distress may have led to exaggerating self-reported financial barriers (eg, depression and anxiety may have contributed to more negative perceptions of the situation), although such perceptions may be apt given the significant proportions of those with family income < 200% of poverty in the mild-to-moderate- and serious-distress groups. Fourth, stigma may have affected using mental health care, but data were not available to consider this variable. Fifth, because this is a cross-sectional study, only correlation, not causality, can be inferred. However, associations between psychological distress and health care access/use are likely bidirectional.

The significant association of psychological distress with health care access barriers among people with CKD has the following implications. First, access to sick and preventive/routine care, especially among low-income people with CKD without health insurance, should be improved to reduce high rates of ED visits and hospitalizations and psychological distress. Increased access to nephrology and other specialist care is also necessary for slowing disease progression and reducing

CKD-associated excess morbidity and mortality among low-income people with CKD.⁶ Expanded state Medicaid coverage for the low-income nonelderly population was found to be associated with a lower state-level incidence of ESRD and greater access to care, narrowing gaps in access to care between those with Medicaid and private insurance.³ Examination of system-wide unified CKD care models implemented by the Indian Health Service, Veterans Health Administration, and Kaiser Permanente also resulted in more CKD screenings, decreased incidence of ESRD, and/or slowing of CKD progression.⁴⁰⁻⁴³

Second, although Medicare requires mental health assessment of depression among dialysis patients by social workers, patients with early-stage CKD also need assessment for psychological distress and treatment when indicated to help better manage the illness and other associated medical and psychosocial problems. Although pharmacotherapy is the most prevalent treatment for depression and anxiety, given the high medication count among patients with CKD, psychosocial interventions should be considered. However, more research is needed to evaluate acceptable and effective psychosocial interventions for patients with CKD given the dearth of randomized clinical trials of such interventions in the United States.^{23,44} A study of attitudes of patients with ESRD toward interventions for addressing psychosocial needs found that responses were variable and individualistic, seemingly influenced by participants' personal coping strategies and suggesting the need for individually tailored rather than uniform approaches.⁴⁵ Moreover, priorities of patients with CKD may differ from provider concerns. For example, a study found that hemodialysis patients valued outcomes related to daily living—ability to travel, ability to maintain employment, better sleep, and less fatigue—over mortality risk.⁴⁶

Third, people with CKD and psychological distress should also be offered case management and social services to aid them in navigating the health care system and coping with personal stressors. Promising interventions for low-income patients with CKD who rely on safety-net facilities include education to enhance primary care providers' diagnostic and management skills, comprehensive care management programs led by nonphysicians, and electronic CKD registries and other digital technologies, such as enhancing patients' access to virtual nephrology expertise.^{6,47-49}

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