RESEARCH LETTER

Health-Related Social Needs Screening Tool Among Patients Receiving Hemodialysis: Evaluation of Sensitivity and Specificity

To the Editor:

There is mounting evidence that health-related social needs are prominent among patients receiving hemodialysis and contribute to disparities in outcomes.[1-4] Despite this, health-related social needs are not systematically identified. The plethora of health-related social needs screening questions available have not been evaluated among people receiving hemodialysis, and the optimal way to identify health-related social needs remains unclear. The Centers for Medicare & Medicaid Services compiled their recommended screening questions in the Accountable Health Communities (AHC) Health-Related Social Needs Screening Tool.[5,6] We estimated the sensitivity, specificity, and positive and negative predictive values of the AHC tool housing[7] and food[8] insecurity questions among a sample of people treated with hemodialysis.

We screened and interviewed 32 adults receiving hemodialysis about their health-related social needs. The interviews were conducted from April 2022 to July 2022 at 3 DaVita Kidney Care units in Austin, Texas (Table S1). Eligible participants were aged ≥18 years, received in-center hemodialysis, and had Medicaid insurance. Participants completed the AHC screening tool and interview during a hemodialysis session. The AHC tool was administered in English or Spanish, and interviews were conducted in English or Spanish according to the preference of the participants. One interviewer identified as a biracial (White/Afro-Caribbean), bilingual (Spanish and English) Latina female from Puerto Rico, the other was a White (Eastern European), English-speaking female. The study was approved by the Institutional Review Board of the University of Texas, Austin (STUDY00001374).

Interviews were audio recorded, translated, transcribed verbatim, and deidentified (Datagain). We reviewed transcripts for reports of housing insecurity and/or food insecurity, and compared findings with the AHC tool responses. We calculated the sensitivity, specificity, and positive and negative predictive values of the AHC housing insecurity and food insecurity questions. We calculated 95% confidence intervals using Stata.[9]

We evaluated 1 housing insecurity question. We considered individuals to screen positive if they reported "not having a steady place to live," or "having a steady place to live but being worried about losing it in the future." During semistructured interviews, we asked participants to describe their living situation and probed about their experiences with homelessness. We considered someone to be housing insecure if they mentioned being currently homeless, or reported inability to pay housing costs, or reported overcrowded living conditions.

We assessed the performance of 2 food insecurity questions independently and used them together. For the first food insecurity question, we considered individuals to screen positive if they reported that in the past 12 months they often or sometimes were "worried their food would run out before getting money to buy more." For the second question, we considered individuals to screen positive if they reported that often or sometimes in the past 12 months "the food they bought just didn't last and they didn't have enough money to buy more." During semistructured interviews, we asked participants about their ability to access healthy foods, and considered someone to be food insecure if they mentioned inability to pay for food, not having enough food, not having a grocery store nearby, or receiving Supplemental Nutrition Assistance.

Among 32 participants, mean (SD) age was 56 (12) years, 14 (44%) identified as male, 16 (50%) reported as African American race, 17 (53%) identified as Hispanic/Latino/a/x, 13 (41%) spoke Spanish, 30 (94%) were unemployed, 27 (84%) reported an annual income <$25,000, and 17 (53%) reported receiving Supplemental Nutrition Assistance (Table S1).

A total of 14 participants (44%) screened positive for housing insecurity with the AHC tool (Table 1). A total of 10 participants (31%) were found to be housing insecure during semistructured interviews. The sensitivity, specificity, positive predictive value, and negative predictive values for the AHC housing insecurity question were 100%, 82%, 71%, and 100%, respectively.

A total of 16 individuals (50%) screened positive for food insecurity using the first food insecurity question, 18 (56%) screened positive using the second question, and 20 (63%) had a positive response to at least 1 question. A total of 21 participants were found to be food insecure during semistructured interviews. The sensitivity, specificity, positive predictive value, and negative predictive values for the first question were 57%, 64%, 75%, and 44%, respectively. The sensitivity, specificity, positive predictive value, and negative predictive values for the second question were 62%, 55%, 72%, and 43%, respectively. The sensitivity, specificity, positive predictive value, and negative predictive values for using both questions were 71%, 55%, 75%, and 50%, respectively.

Strengths of our study include being among the first to evaluate health-related social needs measures among English and Spanish speaking people receiving hemodialysis. Limitations of our study include the single-city setting which may limit generalizability, small sample size, and the potential impact of the comfort level of the participants with interviewers who were not of their same race, ethnicity, or gender.

Among 32 people receiving hemodialysis with low socioeconomic status, we found that the AHC housing insecurity question was highly sensitive and specific. Food insecurity questions had lower sensitivity and specificity, but sensitivity improved when answers to 2 questions were considered together. Future, larger scale

Table 1. Performance Characteristics of Accountable Health Communities Health-Related Social Needs Screening Tool Questions.

AHC HRSN Screening Tool Questions[5]	Housing Insecure		Question Characteristics (95% CI)
	Yes n = 10	No n = 22	SN: 10/10 = 100% (69-100) SP: 18/22 = 82% (60-95) PPV: 10/14 = 71% (42-92) NPV 18/18 = 100% (81-100)
What is your living situation today?[7]			
I have a place to live today but I am worried about losing it in the future OR I do not have a steady place to live, n=14	10	4	
I have a steady place to live, n=18	0	18	
	Food Insecure		
	Yes n=21	No n=11	SN: 12/21 = 57% (34-78) SP: 7/11 = 64% (31-89) PPV: 12/16 = 75% (48-93) NPV: 7/16 = 44% (20-70)
Within the past 12 months, were you worried that your food would run out before you got money to buy more.[8]			
Often true OR sometimes true, n=16	12	4	
Never true, n=16	9	7	
Within the past 12 months, were there occasions when the food you bought just didn't last and you didn't have money to get more.[8]			SN: 13/21 = 62% (38-82) SP: 6/11 = 55% (23-83) PPV: 13/18 = 72% (47-90) NPV: 6/14 = 43% (18-71)
Often true OR sometimes true, n=18	13	5	
Never true, n=14	8	6	
Positive response to either food insecurity question			SN: 15/21 = 71% (48-89) SP: 6/11 = 55% (23-83) PPV: 15/20 = 75% (51-91) NPV: 6/12 = 50% (21-79)
Yes, n=20	15	5	
No, n=12	6	6	

Note. Determined during semistructured interviews.
Abbreviations: AHC HRSN, Accountable Health Communities Health-Related Social Needs Screening Tool; NPV, negative predictive value; PPV, positive predictive value; SN, sensitivity; SP, specificity.

efforts to assess health-related social needs among people with kidney failure could enable earlier identification and intervention with the potential for improved clinical outcomes.

Tessa K. Novick, MD, MSW, MHS, Michelle Osuna, PhD, and Deidra C. Crews, MD, ScM

SUPPLEMENTARY MATERIAL

Supplementary File (PDF)

Table S1: Participant Characteristics

ARTICLE INFORMATION

Authors' Affiliations: University of Texas at Austin, Dell Medical School, Austin, Texas (TN, MO); Division of Nephrology, Department of Medicine, Johns Hopkins University School of Medicine (DC); and Johns Hopkins Center for Health Equity, Johns Hopkins Medical Institutions, Baltimore, Maryland (DC).

Address for Correspondence: Tessa K. Novick, MD, MSW, 1601 Trinity St, HDB 10.550, Austin, TX 78712. Email: Tessa.novick@austin.utexas.edu

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