Association of Patient Language with Guideline-Concordant Care for Individuals with Chronic Kidney Disease (CKD) in Primary Care

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INTRODUCTION

Adequate primary care has the potential to reduce the high morbidity among persons with chronic kidney disease (CKD).[1] However, major gaps in care are documented, and these gaps are larger among race/ethnic minority groups, compared with whites.[2] Whether a patient's level of English proficiency and language preference contributes to gaps in appropriate CKD care prior to kidney failure remains poorly understood.[3] Persons with limited English proficiency (LEP) are less likely than English speakers to receive optimal care, independent of self-reported race/ethnicity.[4] We evaluated the association of non-English language preference with guideline-concordant CKD care among adults with low eGFR who had active primary care in a well-resourced clinic with easy access to multimodal medical interpretation.

METHODS

We used University of California, San Francisco (UCSF) electronic medical records (EMR) data to identify a cohort of persons with CKD in primary care as previously described.[5] We defined CKD as two eGFR measurements between 15 and < 60 ml/min/1.73 m^2 at least 3 months apart.[6] This study was approved by the institutional review board at UCSF.

Patients were considered non-English language preferring if the EMR documented preferred language was not English. We considered providers and patients to be language-concordant if records indicated that the provider spoke the non-English language preferred by the patient.

Outcomes of interest were evidence-based processes of care from international guidelines:[6] (1) testing for albuminuria, which is required for risk stratification; (2) testing for hemoglobin A1c for diabetics; (3) prescription of inhibitors of the renin-angiotensin system (ACEi/ARB) for patients with diabetes or hypertension; (4) prescription of a statin for patients age > 50 years; (5) BP $< 140/90$ mmHg; and (6) hemoglobin A1c < 7 for patients with diabetes, during the study period. Covariates included patient demographics, comorbidities, insurance type, and number of primary care visits, as previously described.[5]

We compared characteristics by patient language preference (English vs. non-English) using chi-squared tests. We estimated the relative risk of each outcome for patients with non-English language preference compared with English-language preference using multivariable modified Poisson regression models with logarithm link, clustered on provider and adjusting for potential confounders. Finally, we stratified analyses by provider-patient language concordance.

RESULTS

Among 1726 persons with CKD, 17% preferred a language other than English. The most common language preferred was Cantonese (30%), followed by Spanish (14%), Russian (13%), Vietnamese (10%), Mandarin (8%), and Korean (7%). Compared with English preference, those with a non-English preference were older, had more comorbidities, were more likely to have Medicare, and had higher number of primary care visits (Table 1).

Approximately half (49%) of the providers reported speaking a language in addition to English, and patient and provider language were considered concordant for 89% of patients.

After adjusting for age and sex, there was a 34% higher rate of albuminuria testing among those with non-English preference, but differences were attenuated after adjustment for other covariates (RR 1.03 (0.90, 1.17)). Compared with patients with English preference, those with non-English preference had a 13% higher rate of a statin prescription after adjustment for age and sex, and this difference was attenuated after adjustment for other covariates (RR 1.01 (0.94, 1.09)). We found no differences by language preference for other comparisons (p values $\geq$ 0.2). Results did not vary when stratified by provider-patient language concordance ($p > 0.05$).

Table 1 Characteristics of 1726 Patients with eGFR-Based CKD Who Have Active PCP Follow-up by Patient Language Preference

	Non-English	English	Total	p value
	No. (%)	No. (%)	No. (%)	
	n = 287	*n* = 1439	*n* = 1726	
Demographic characteristics				
Age				< 0.001
22–64	33 (12%)	571 (40%)	604 (35%)	
65–74	106 (37%)	601 (42%)	707 (41%)	
75–80	148 (52%)	267 (19%)	415 (24%)	
Male	125 (44%)	762 (53%)	887 (51%)	0.004
Race/ethnicity				< 0.001
White	34 (12%)	754 (52%)	788 (46%)	
Asian/API	178 (62%)	266 (19%)	444 (26%)	
Black	2 (1%)	239 (17%)	241 (14%)	
Hisp/Latino	38 (13%)	90 (6%)	128 (7%)	
Other	35 (12%)	90 (6%)	125 (7%)	
Comorbidities				
Cerebrovascular disease	46 (16%)	166 (12%)	212 (12%)	0.03
Congestive heart failure	34 (12%)	134 (9%)	168 (10%)	0.19
Coronary artery disease	80 (28%)	304 (22%)	384 (22%)	0.01
Diabetes mellitus	163 (57%)	540 (38%)	703 (41%)	< 0.001
Hyperlipidemia	213 (74%)	970 (67%)	1183 (69%)	0.02
Hypertension	255 (89%)	1144 (80%)	1399 (81%)	< 0.001
Insurance				
Insurance type				< 0.001
Medicare	220 (77%)	817 (57%)	1037 (60%)	
MedicareAdv/private	30 (11%)	460 (32%)	490 (28%)	
Medicaid/Medi-cal	36 (13%)	143 (10%)	179 (10%)	
Self-pay/CoveredCA	1 (0%)	19 (1%)	20 (1%)	
Care utilization				
PC visits				< 0.001
1–4	49 (17%)	523 (36%)	572 (33%)	
5–6	55 (19%)	254 (18%)	309 (18%)	
7–9	103 (36%)	363 (25%)	466 (27%)	
> 10	80 (28%)	299 (21%)	379 (22%)	
CKD stage				
eGFR				0.80
15–29.99	22 (8%)	128 (9%)	150 (9%)	
30–44.99	61 (21%)	298 (21%)	359 (21%)	
45–59.99	204 (71%)	1013 (70%)	1217 (71%)	

Table 2 The Association of Patient Language Preference with CKD Processes of Care

	N Yes (row %)	Age, sex-adjusted		p value	Fully adjusted		p value
		RR	CI		RR	CI	
ACR order							
English (*n* = 1439)	593 (41%)		Ref			Ref	
Non-English (*n* = 287)	153 (53%)	1.34	(1.17, 1.53)	0.00	1.03	(0.90, 1.17)	0.66
A1c order							
English (*n* = 540)	529 (98%)		Ref			Ref	
Non-English (*n* = 163)	160 (98%)	0.99	(0.97, 1.02)	0.64	0.99	(0.96, 1.02)	0.58
Statin Rx							
English (*n* = 1315)	865 (66%)		Ref			Ref	
Non-English (*n* = 284)	219 (77%)	1.13	(1.06, 1.22)	0.00	1.01	(0.94, 1.09)	0.80
ACE/ARB Rx							
English (*n* = 1199)	867 (72%)		Ref			Ref	
Non-English (*n* = 264)	192 (73%)	0.98	(0.89, 1.08)	0.68	0.90	(0.82, 0.99)	0.02
BP control							
English (*n* = 1439)	1075 (75%)		Ref			Ref	
Non-English (*n* = 287)	213 (74%)	1.03	(0.96, 1.11)	0.43	1.05	(0.96, 1.14)	0.30
A1c < 7							
English (*n* = 529)	301 (57%)		Ref			Ref	
Non-English (*n* = 160)	94 (59%)	0.95	(0.75, 1.20)	0.66	0.97	(0.75, 1.25)	0.80

Age, sex-adjusted: adjusted for age, sex only; clustered on provider (n = 152)
Fully adjusted: additionally adjusted for race/ethnicity, insurance type, number of PC visits, CKD stage, and count of comorbid conditions

DISCUSSION AND CONCLUSIONS

We found that language preference was not significantly associated with rates of guideline-concordant processes of care for CKD in a well-resourced primary care clinic with universal access to interpreters (Table 2). Moreover, considering language concordance between patient and provider did not change our findings.

A strength of this study is its novelty and relatively large and diverse sample. Limitations include use of EMR data which may lead to misclassification in ascertainment for study variables. In addition, we cannot determine if an interpreter was present at every appointment.

This study adds important information to our understanding of differences in CKD care for persons of under-represented groups and low socioeconomic status.[2] Specifically, in a setting in which all patients have insurance, consistent access to a primary care, and universal access to professional interpreters, equity of care is achievable. While guideline-concordant care may not perfectly correlate with improved clinical outcomes, our findings highlight the importance of investing in deploying well-resourced primary care for diverse populations.

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