CHRONIC KIDNEY DISEASE AND HEALTH LITERACY

RELATIONSHIP BETWEEN HEALTH LITERACY, KNOWLEDGE OF SELF-MANAGEMENT BEHAVIORS, DISEASE AWARENESS, AND KIDNEY FUNCTION



CHRONIC KIDNEY DISEASE

Progressive and sustained kidney damage with or without reduction in renal function. (estimated GFR less than 60 ml/min/1.73m² for 3 months or more irrespective of cause).

eGFR rates used to measure stage of kidney disease.

Five stage scheme (based on KDQOL guidelines)

CKD Stage	Description	GFR (mL/min/1.73m ²		
	At risk	>60 (with CKD risk factors)		
Stage 1	Kidney damage with normal or increased GFR	≥ 90		
Stage 2	Kidney damage with mildly diminished GFR	60 - 89		
Stage 3	Moderately reduced GFR	30- 59		
Stage 4	Severely reduced GFR	15-29		
Stage 5	End-stage renal disease (Kidney failure)	<u>≤</u> 15		



BURDEN AND IMPACT OF CKD

- Incidence and Prevalence of CKD is increasing.
 - 2013 Prevalence=13.1% (USRDS).
 - More than 26 million Americans diagnosed with CKD.

Impact of CKD

- Higher PPPY costs incurred by patients with CKD than those without CKD.
- Costs higher in the later stages of disease.



"MarketScan represents data from employer group health plans.

Kidney Disease Statistics for the US. http://www.kidney.niddk.nih.gov/kudiseases/pubs/kustats/KU_Diseases_Stats_508.pdf

WHY THIS STUDY??

Risk factors of LHL

Sense of shame

a.

30

Complex selfmanagement behaviors required for CKD



Written materials at higher grade level

rs. In the factory, she worked very fast six days each week, someti ork pace was very fast, and he ushed her to do

years. In the Jactory, she wonset very tast several years, but site could suit wors so an 00 times each day. When she seved, her to the work because the few times she took neges and hands ganged, pirched, twisted, time diwork to with the family, her hands ushed, and pulled clothing parts, bundles, fit better. Eventually, the pain got so bad ins, and tools. She worked 10 hours she had trouble sleeping. He hands were start to the source of the start aker and painful, so it was



ool for a few years. In her family, o used in school and l ser brothers stayed in school and learned kills for work. She might be able to get vork cleaning houses, but that pays less t ewing and is hard work, too. She hopes vill let her hands heal so she can work ag

Look for root causes

Juanita's co-workers worried about what would happen to her and what could ha if they were injured too. Carmen used to be a health promoter in her village before she came to work in the factory. She learned how to help people in the village solve health problems b identifying the conditions that created the problems. Carmen invited Juanita and some othe women to her house to talk about Juanita's problem. Carmen began by asking the wor why Juanita's hands hurt, and after the answer, asked "But why?" again. As the worker they uncovered many causes for Juanita's problems.

Complicated med regimen



Other factors -HL and clinical outcome -No evidence in earlier stages of CKD

Progression/ kidney failure

STUDY PURPOSE

Examine the relationship between Health Literacy and:

i) CKD self-management knowledge

ii) eGFR

iii) CKD Awareness

METHODS

Location: University of New Mexico Health Sciences Center Outpatient Nephrology Clinic



METHODS

Study Population: Established adult patients with stages 1-4 CKD

Exclusion Criteria

Age <21 yearsNon English-speaking

Cognitive impairment (determined by 6 item validated screener). A SIS score of <4 indicates poor cognitive functioning.

Impaired vision (determined by Rosenbaum eye chart)/
Current acute kidney injury



METHODS

Two stage data collection: Initial phone contact, followed by clinic visit.

Instruments administered Newest Vital Sign (NVS)

- ► CKD-SMKT
 - -7 step process: Qualitative and quantitative review by expert jury.- 11 items
 - Overall Lexile score 470

Single item CKD awareness

"Have you ever been told that you have weak or failing kidneys (excluding kidney stones, bladder infections, or incontinence (i.e., no bladder control).

Demographics

Medical records: serum creatinine concn eGFR calculated using MDRD equation

Table 2

Final Chronic Kidney Disease Self-Management Knowledge Tool (CKD-SMKT)

Section A						
To help my kidneys, I need to:			True	False	Don't know	I have done this in the past 3–6 months
Know what my blood pressure goal is.				F	DK	YES NO
Take my blood pressure medicine(s) like my doctor tells me to.				F	DK	YES NO
Have my urine ("pee") tested at least once a year.				F	DK	YES NO
Get my blood checked every few months.				F	DK	YES NO
Eat more salt.				F	DK	YES NO
Keep a healthy body weight.			Т	F	DK	YES NO
Not take some over-the-counter pain medicines			Т	F	DK	YES NO
(Motrin [®] , Aleve [®] , Ibuprofen	ı, Naproxen).					
Section B	- a r					
Do you have diabetes? If YES, answer the 3 items below. If				False	Don't Know	
NO, skip to Section C. To he	lp my kidneys, I n	ed to:				
Keep track of my blood sugar each day.				F	DK	YES NO
Eat less sugar.			Т	F	DK	YES NO
Take my diabetes medicine(s) like my doctor tells me to.			Τ	F	DK	YES NO
Section C	1	2		3	4	5
How much do you know about your kidney health?	I know everything I need to know	g I know	a lot	I know so	ome I know a	a little I know nothing

RESULTS

Data collected between 3/21/12 and 7/31/12

Number of people approached = 181
Declined= 15
Failed screening=16
Fully interviewed = 150

Data Analysis
 - eGFR was log transformed.
 - Regressions performed after controlling for demographics

DEMOGRAPHICS









Do you have or have you been told that you have:

CKD AWARENESS AND HEALTH LITERACY



KNOWLEDGE OF CKD SELF-MANAGEMENT BEHAVIORS



CKD SELF-MANAGEMENT BEHAVIORS KNOWLEDGE BY CKD STAGE

Mean Knowledge percent correct



RELATIONSHIP BETWEEN HEALTH LITERACY AND EGFR



Model F (21,128)=2.39, p=0.002.

R square=0.282, R=0.531 Health Literacy significantly related to log eGFR after controlling for demographics. beta = 0.210, t=2.12; p=0.035

For each unit increase in NVS score, the eGFR increased by 23%.

RELATIONSHIP BETWEEN CKD SELF-MANAGEMENT BEHAVIORS AND EGFR

•



Model F (21,126) = 2.75, p<0.001

R square =0.315, R=0.56

 CKD self-management behaviors significantly predicted log eGFR, after controlling for demographics beta= - 0.28, t=-3.37, p=0.001

RELATIONSHIP BETWEEN CKD AWARENESS AND EGFR



• Model F (21,128)=2.97, p<0.00

R square= 0.33, R=0.57

CKD awareness significantly predicted log eGFR after controlling for demographics.
beta=0.34, t=3.37, p <0.001

SUMMARY

> Health literacy is an independent predictor of kidney function after controlling for confounders.

- There was a 23% increase in eGFR value for every unit increase in NVS score.

CKD awareness and self-management behavior knowledge are also independent predictors of kidney function.

CKD awareness was a better predictor of kidney function than health literacy.

ACKNOWLEDGEMENTS

Funding Sources:

SIUE STEP grant SOP Research Grant

Matthew Borrego, Ph.D.
Mary Vilay, Pharm.D.
Bruce Horowitz, MD
Alex Woersching
Luis Robles
Junvie Pailden, Ph.D.

School of Pharmacy, University of New Mexico School of Pharmacy, University of New Mexico School of Medicine, University of New Mexico School of Pharmacy, University of New Mexico School of Pharmacy, University of New Mexico College of Arts and Sciences, SIUE