CHRONIC KIDNEY DISEASE AND HEALTH LITERACY

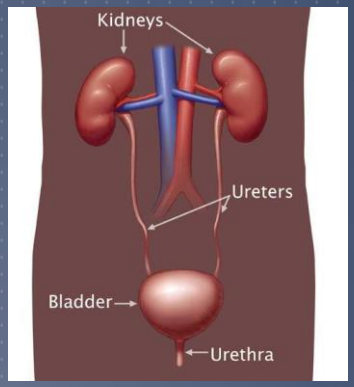
RELATIONSHIP BETWEEN HEALTH LITERACY, KNOWLEDGE OF SELF-MANAGEMENT BEHAVIORS, DISEASE AWARENESS, AND KIDNEY FUNCTION

CHRONIC KIDNEY DISEASE

- Progressive and sustained kidney damage with or without reduction in renal function. (estimated GFR less than 60 ml/min/1.73m^2 for 3 months or more irrespective of cause).

- eGFR rates used to measure stage of kidney disease.

- Five stage scheme (based on KDQOL guidelines)

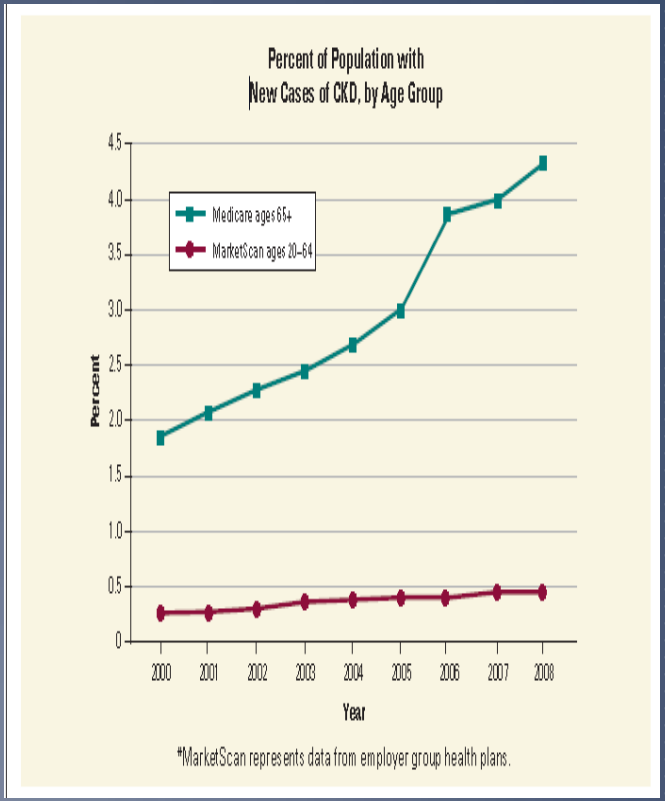


CKD Stage	Description	GFR (mL/min/1.73m^2
	At risk	>60 (with CKD risk factors)
Stage 1	Kidney damage with normal or increased GFR	$\geq$ 90
Stage 2	Kidney damage with mildly diminished GFR	60 - 89
Stage 3	Moderately reduced GFR	30- 59
Stage 4	Severely reduced GFR	15-29
Stage 5	End-stage renal disease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



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

WHY THIS STUDY??

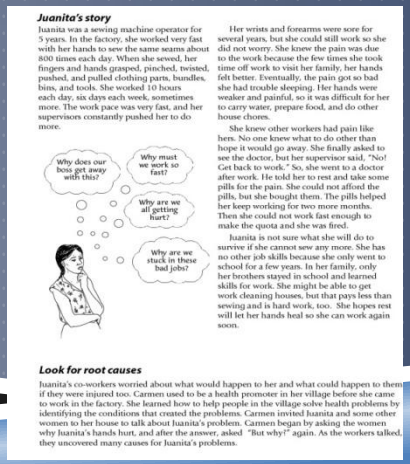
Risk factors of LHL

Sense of shame

Complex self-management behaviors required for CKD

Complicated med regimen

Written materials at higher grade level



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

CKD Progression/ kidney failure

STUDY PURPOSE

Examine the relationship between Health Literacy and:

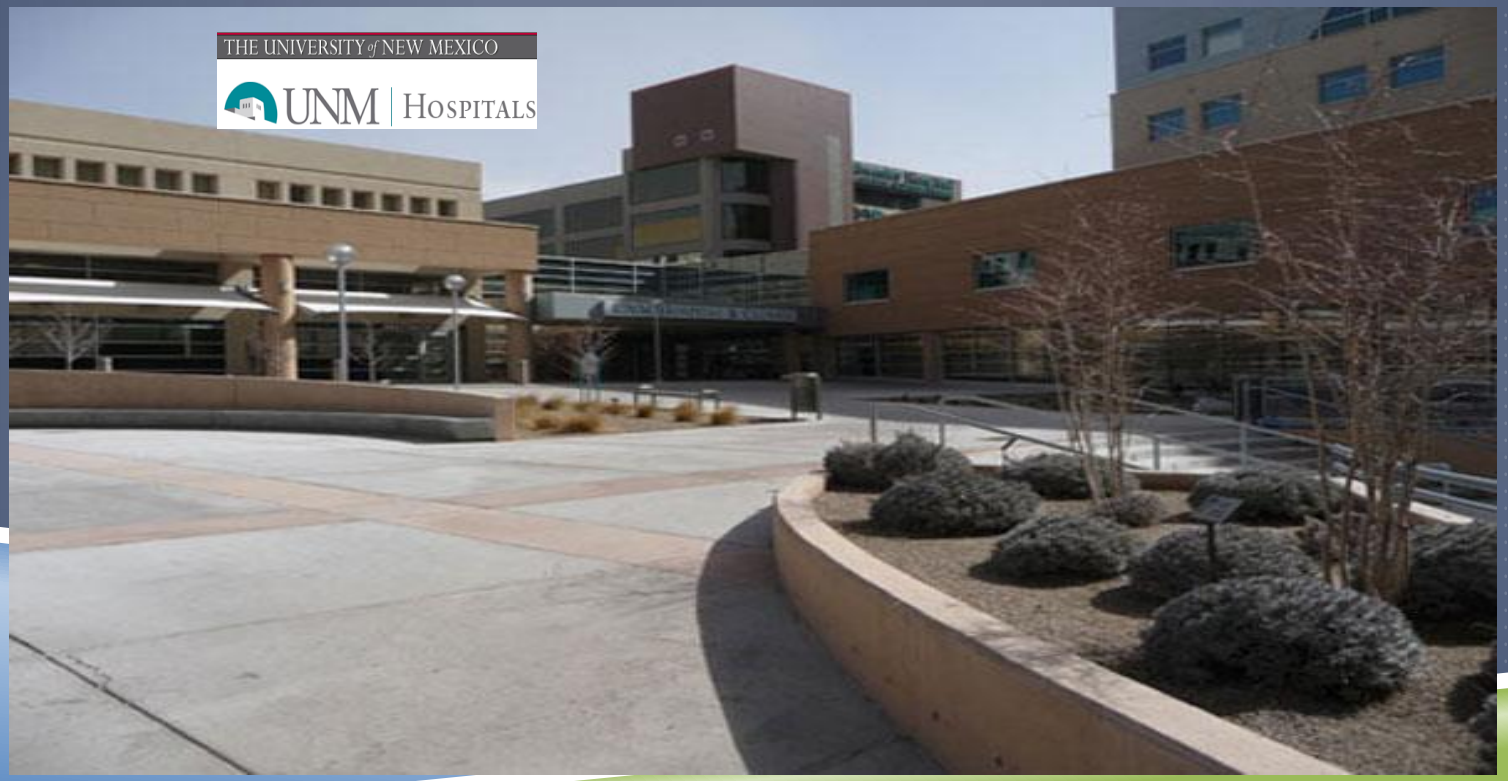
i) CKD self-management knowledge

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 years
  - Non 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.	T	F	DK	YES NO
Take my blood pressure medicine(s) like my doctor tells me to.	T	F	DK	YES NO
Have my urine ("pee") tested at least once a year.	T	F	DK	YES NO
Get my blood checked every few months.	T	F	DK	YES NO
Eat more salt.	T	F	DK	YES NO
Keep a healthy body weight.	T	F	DK	YES NO
Not take some over-the-counter pain medicines (Motrin®, Aleve®, Ibuprofen, Naproxen).	T	F	DK	YES NO
Section B *Do you have diabetes? If YES, answer the 3 items below. If NO, skip to Section C. To help my kidneys, I need to:*	**True**	**False**	**Don't Know**	
Keep track of my blood sugar each day.	T	F	DK	YES NO
Eat less sugar.	T	F	DK	YES NO
Take my diabetes medicine(s) like my doctor tells me to.	T	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	I know a lot	I know some	I know a little	I know nothing

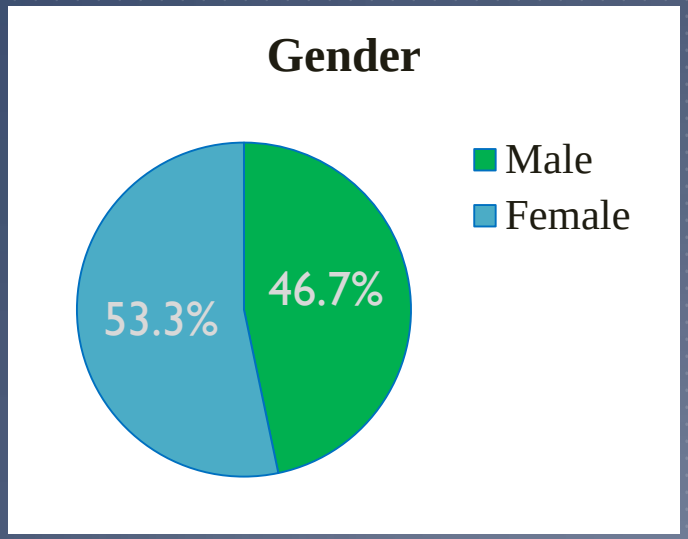
RESULTS

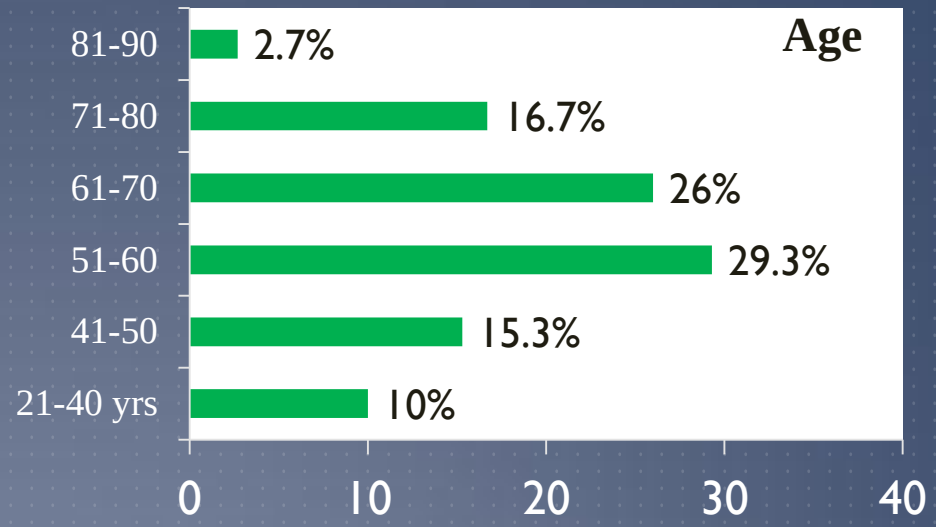
- Data collected between 3/21/12 and 7/31/12

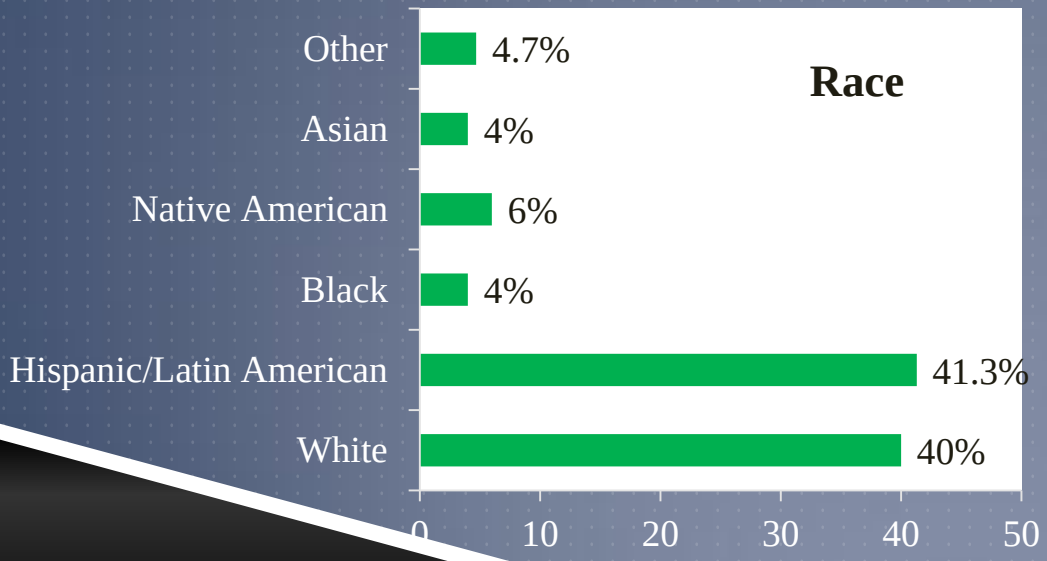
- Number of people approached = 181
- Declined= 15
- Failed screening=16
- Fully interviewed = 150

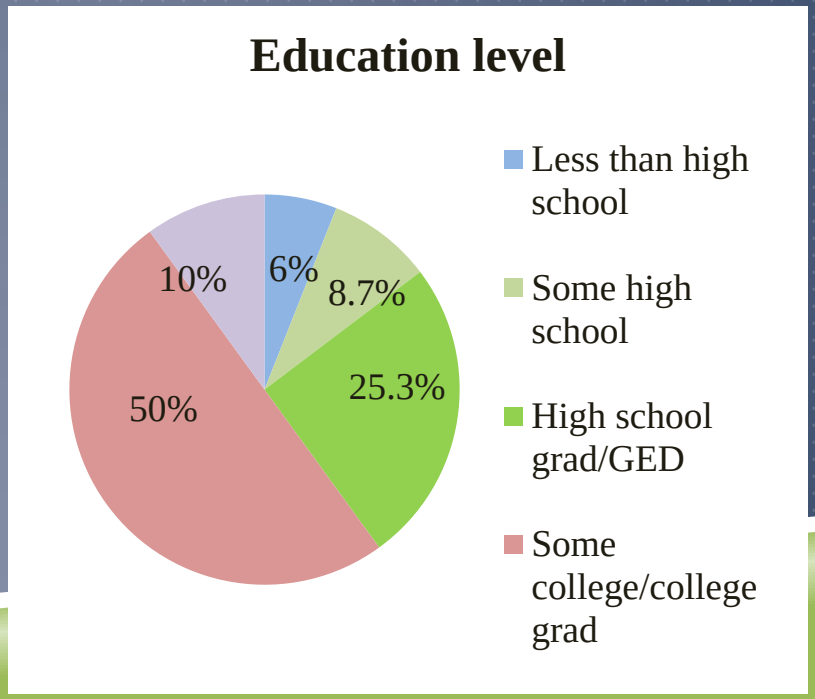
- Data Analysis
  - eGFR was log transformed.
  - Regressions performed after controlling for demographics

DEMOGRAPHICS









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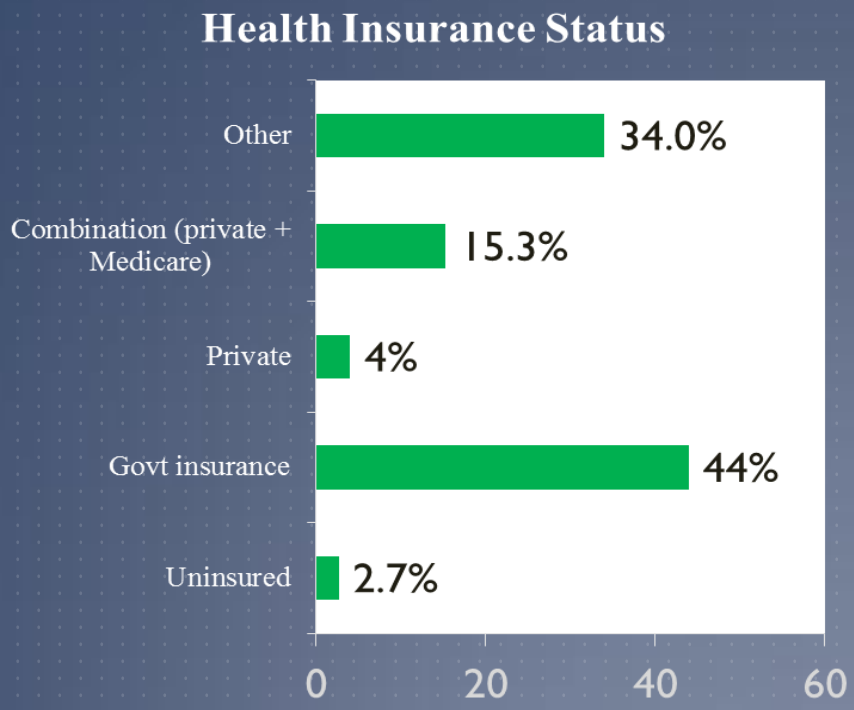

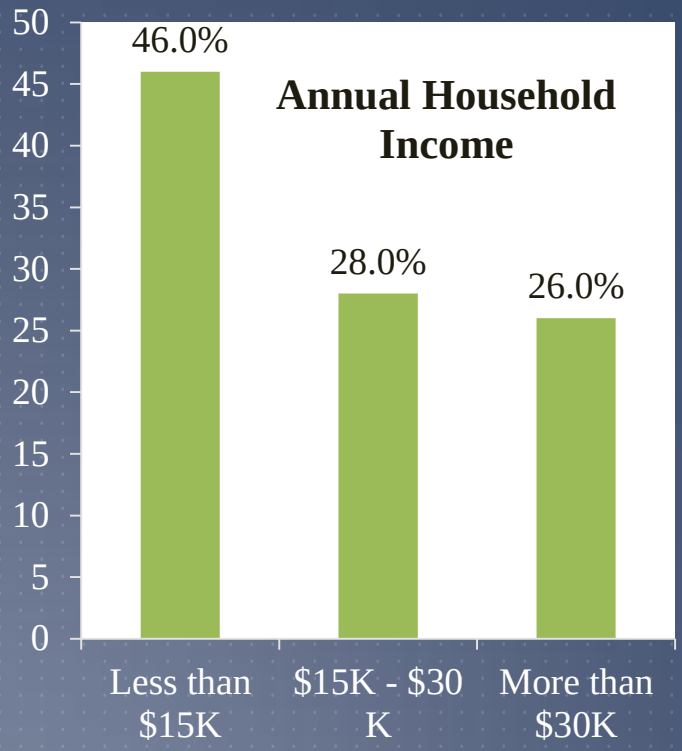

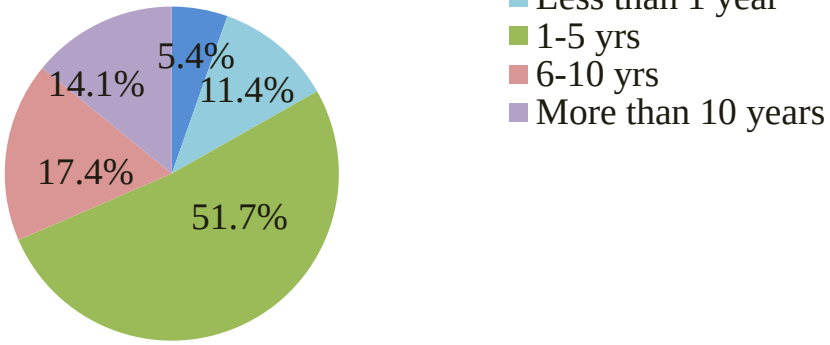

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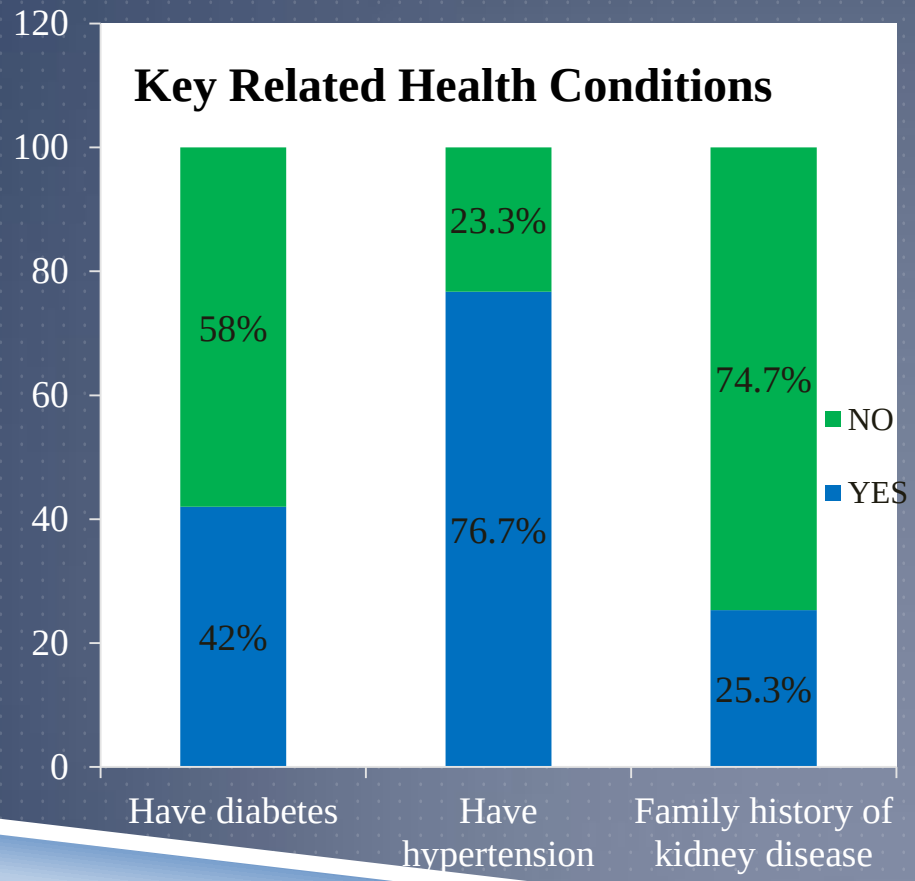
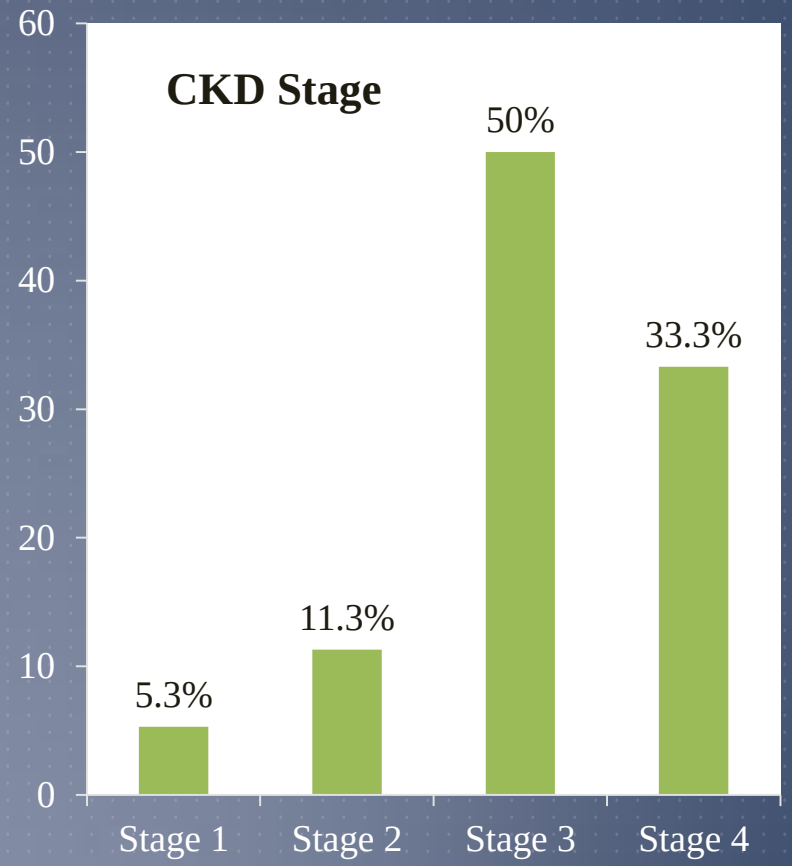
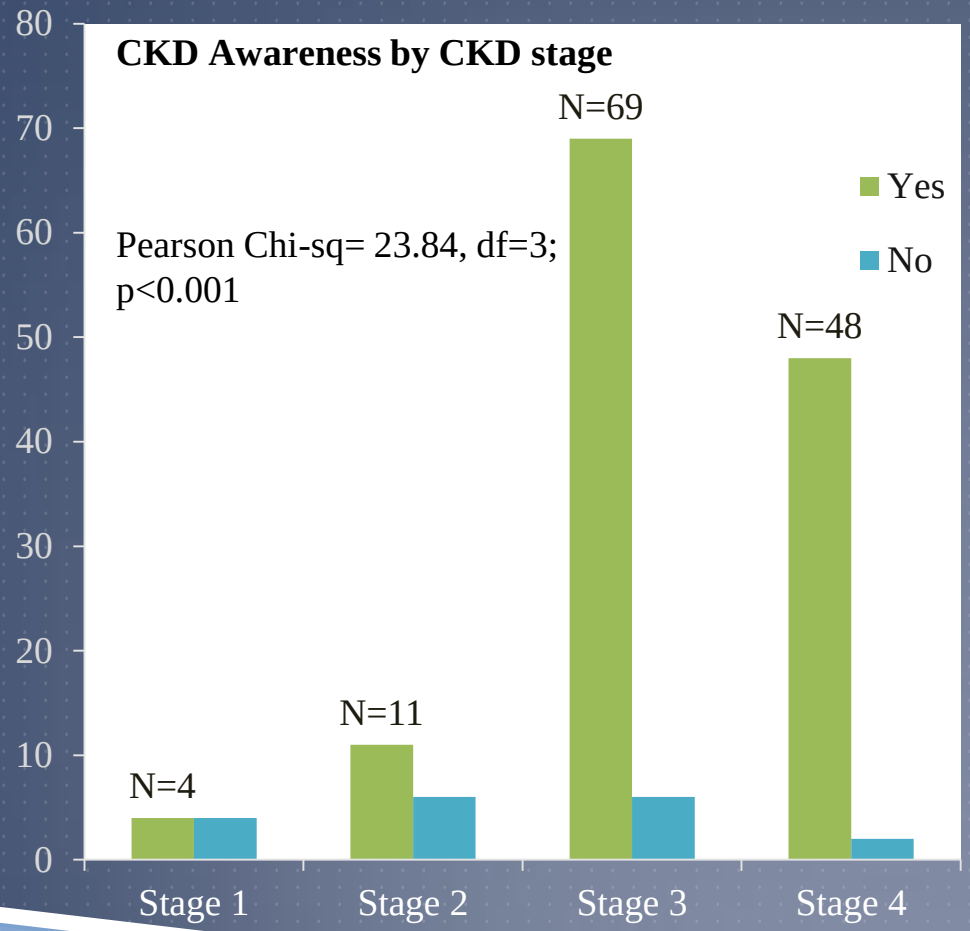
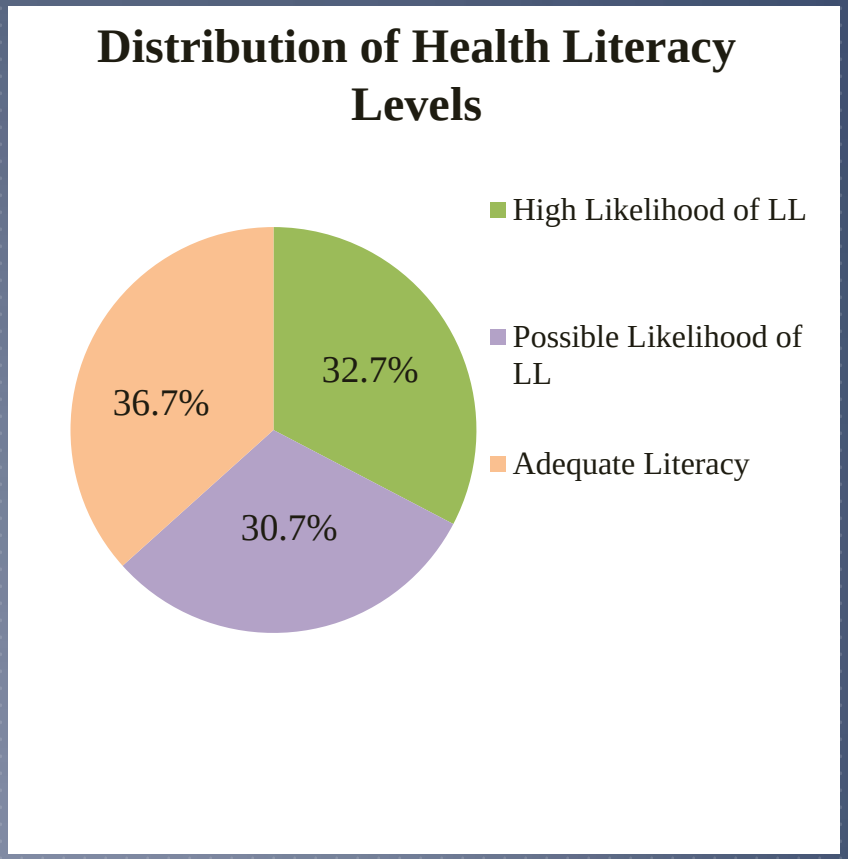




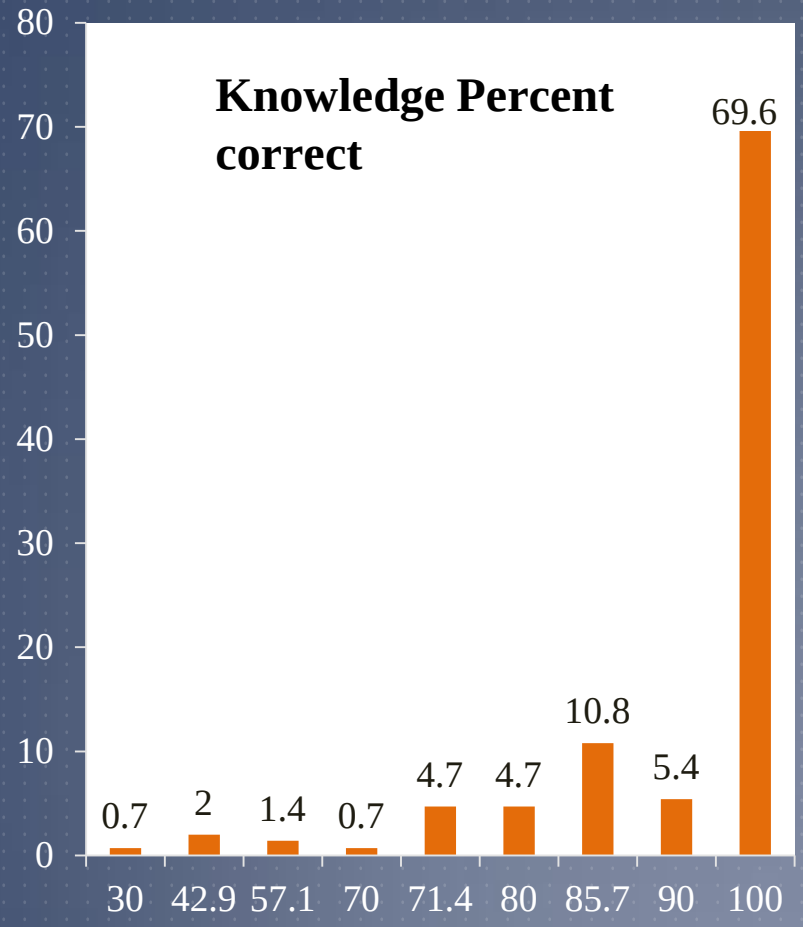
Do you have or have you been told that you have:

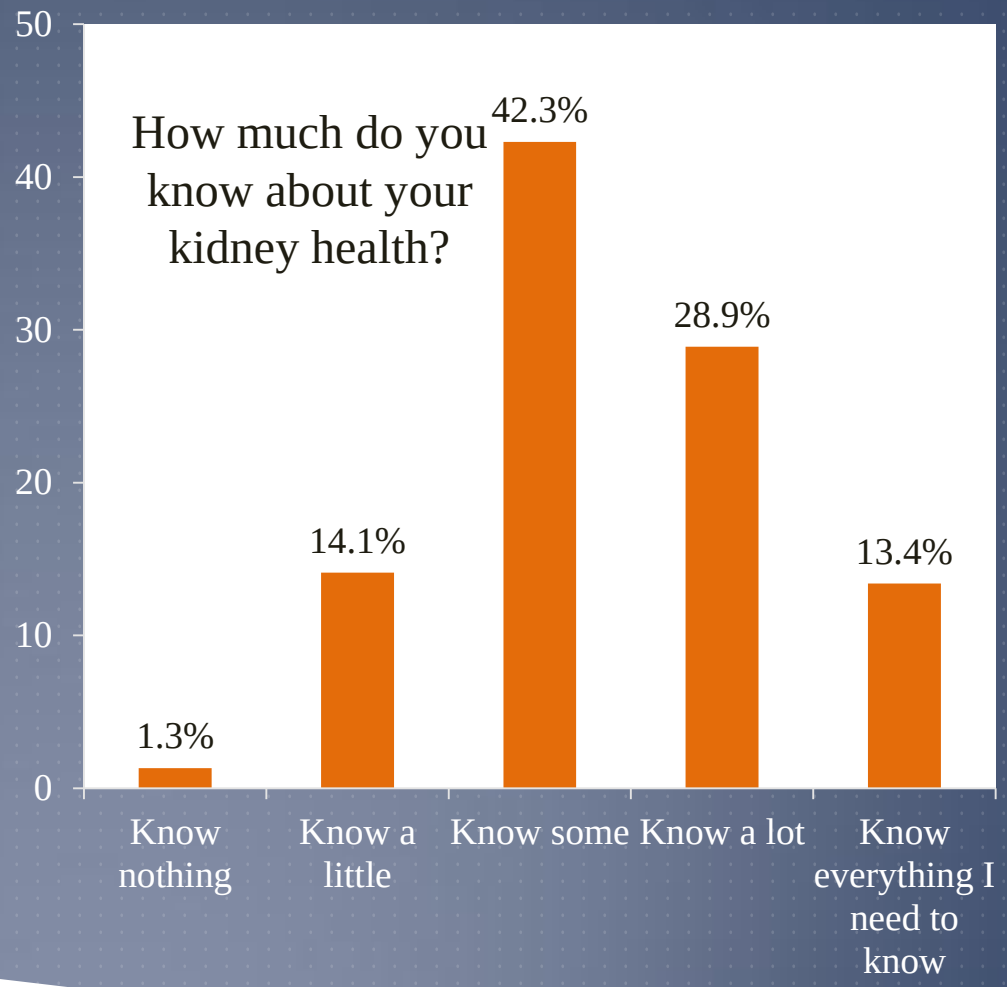
CKD AWARENESS AND HEALTH LITERACY



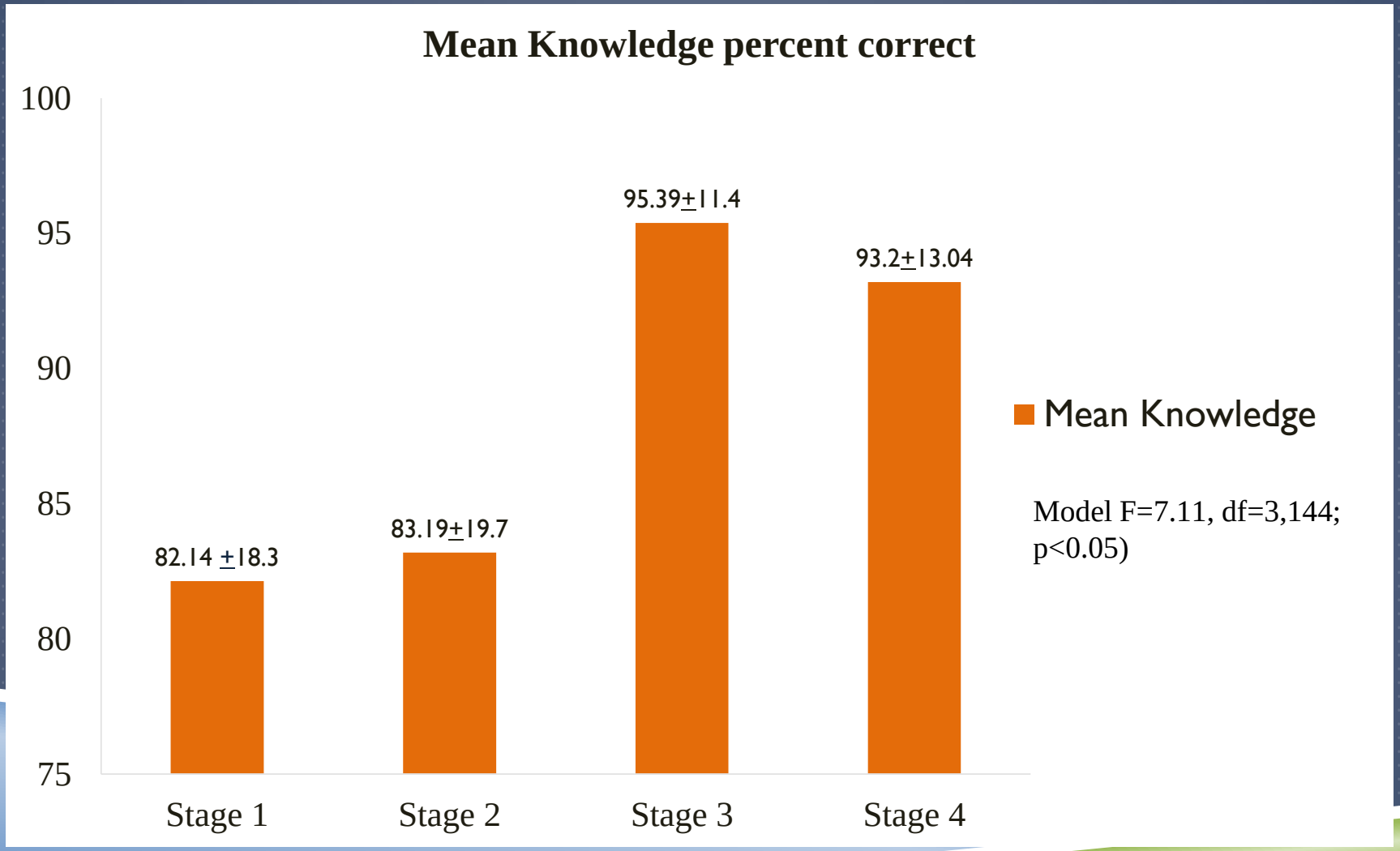


KNOWLEDGE OF CKD SELF-MANAGEMENT BEHAVIORS

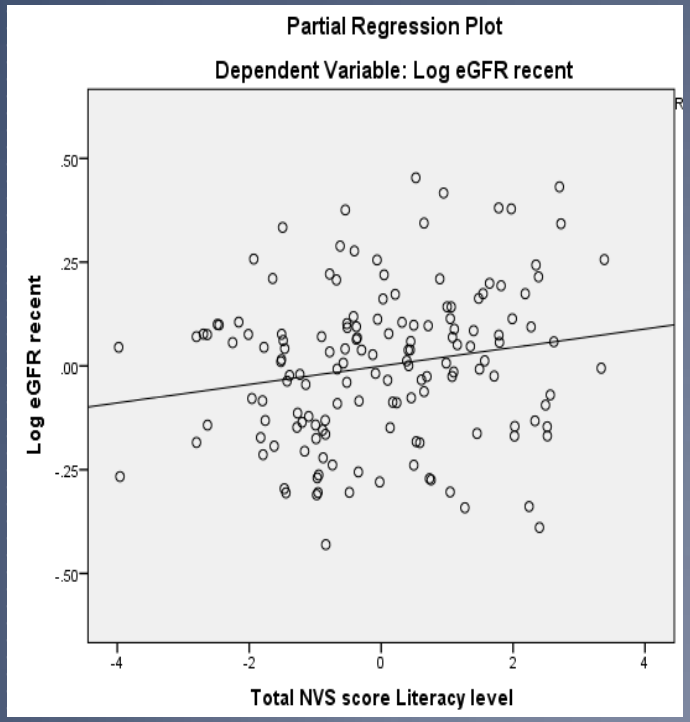




CKD SELF-MANAGEMENT BEHAVIORS KNOWLEDGE BY CKD STAGE

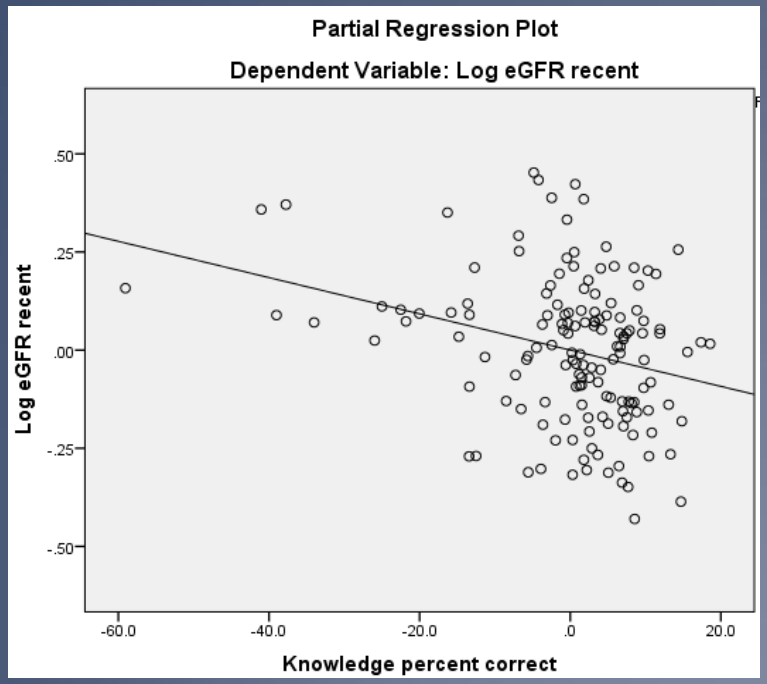


RELATIONSHIP BETWEEN HEALTH LITERACY AND EGFR



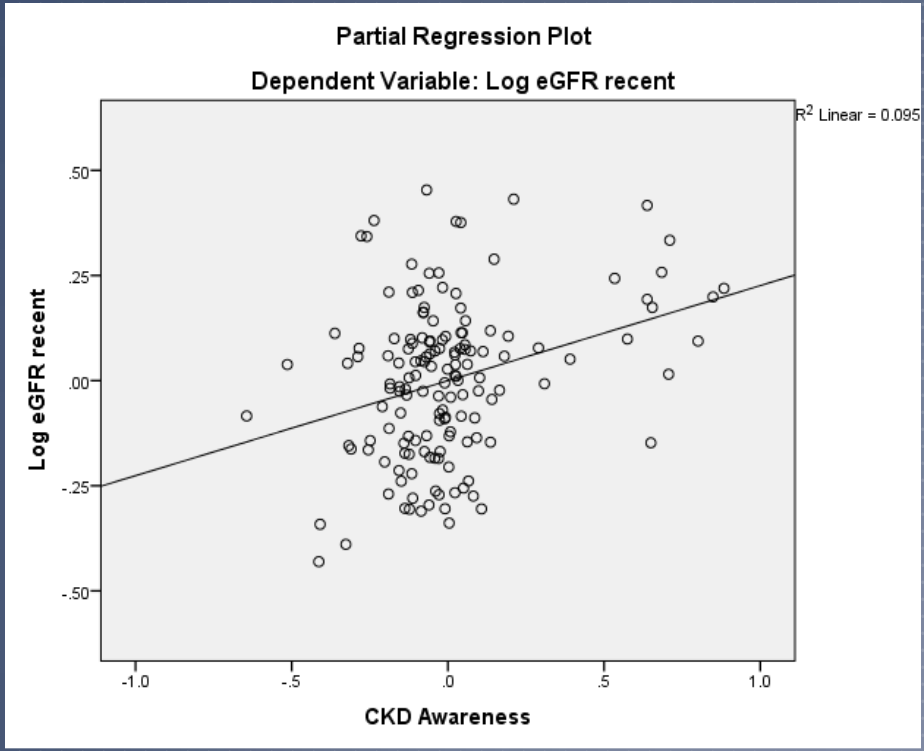
- Model F (21,128)=2.39, p=0.002.
- R square=0.282, R=0.531
  Health Literacy significantly related to log eGFR after controlling for demographics.
  beta = 0.210, t=2.12; p=0.035
- For each unit increase in NVS score, the eGFR increased by 23%.

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.

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