

Effect of nutrition counseling on renal labs among Mexican American patients with CKD Stages 3-4 over 6 months: a randomized trial.

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Abstract

Background: Incidence of Chronic Kidney Disease (CKD) is growing annually in the United States. Research is needed to evaluate if nutrition counseling can delay CKD from advancing to End Stage Renal Disease (ESRD).

Objectives: To evaluate the effect of nutrition counseling on renal labs among Mexican American patients with CKD Stages 3-4 at 0, 1, 3, and 6 months.

Participant Characteristics: Mexican American adult patients diagnosed with CKD in stages 3-4 without history of type II diabetes or nutrition education for CKD in the El Paso/Las Cruces area.

Procedures: This is a quantitative quasi-experiment using purposive sampling to recruited participants. Medical providers in Las Cruces, NM and El Paso, TX will provide information about enrollment. Participants will be randomized into intervention or control group with patients in each stage equally distributed between groups. The intervention group will receive nutrition counseling at 0, 1, 3, and 6 months from a registered dietitian based on the American Association of Nutrition and Dietetics. Blood samples analyzing creatinine, blood urea nitrogen and glomerular filtration rate will be collected from both groups at 0, 1, 3, and 6 months.

Statistical Analysis: Paired Student t-test will be used to compare categorical and mean values. Differences are considered statistically significant at $p < 0.05$.

Findings: Expected findings can help highlight the impact nutrition counseling has on renal labs for patients with CKD stages 3 and 4.

Implications: CKD patients will receive nutrition counseling early which could improve renal labs and delay the progression to ESRD.

Background

According to the National Kidney Foundation, 30 million Americans have Chronic Kidney Disease (CKD) and many may not know they have this disease.¹ This number is up 3% from last year, according to the National Kidney Foundation.¹ The Center for Disease Control & Prevention(CDC) explains that there are 300 individuals new to dialysis every hour.² These numbers are increasing per year and both the National Kidney Foundation (NKF) and the CDC recommend meeting with a Dietitian to preserve or improve kidney function and reduce or delay the incidence for End Stage Renal Disease (ESRD).²

There are several areas that may be further investigated to reduce these alarming statistics:

- Understanding the role medical providers have in reducing these numbers,
- Understanding the effect nutrition counseling has in CKD stages 3 and 4
- Obtaining data on how nutrition counseling affects renal labs
- Providing medical providers information that is useful in the referral process such as information concerning the differences in nutrition needs for a patient with kidney disease.

Table 1: Nutrient needs for CKD Stages 3-4 vs Average American Intake

Nutrient	CKD Stages 3-4	Average American Intake
Protein gm/kg	.6-.8	Females are with in limits Males are .8- 1.0gm/kg
Potassium mg/day	4700	1755 mg/d
Fluid	Usually unlimited	Intake 72-83% of fluid needs
Sodium mg/day	<2400	3000 mg for females 4500 mg for males
Phosphorus mg/day	800-1000 mg/day	Males 1469-1754 mg/d Females 1120-1276 mg/d

Objectives

Primary:

- To provide evidence based data on the impact nutrition counseling has in renal labs in stages 3 and 4 of Chronic Kidney Disease.
- To provide evidence based results on the long-term effect nutrition counseling has on renal laboratory results by observing the laboratory results at 1 month, 3 months and 6 months.

Secondary:

- To provide information that is helpful to medical providers in understanding the effect nutrition has on renal function and when they should be referring nutrition intervention for their patients in stages 3-4 of Chronic Renal Failure.

Methods

Participants

Participants: Mexican American patients 18 years and older in the El Paso, Texas and the Las Cruces, New Mexico area.

Sample Size: N = 30, 15 per group (power-95%, alpha = 0.05)

Recruitment:

1. Volunteers will be invited from pamphlets that are left in the medical provider offices.
2. Pamphlets will be in English and Spanish for individuals that only speak Spanish.

Figure 1: Inclusion and Exclusion Criteria for the Participants

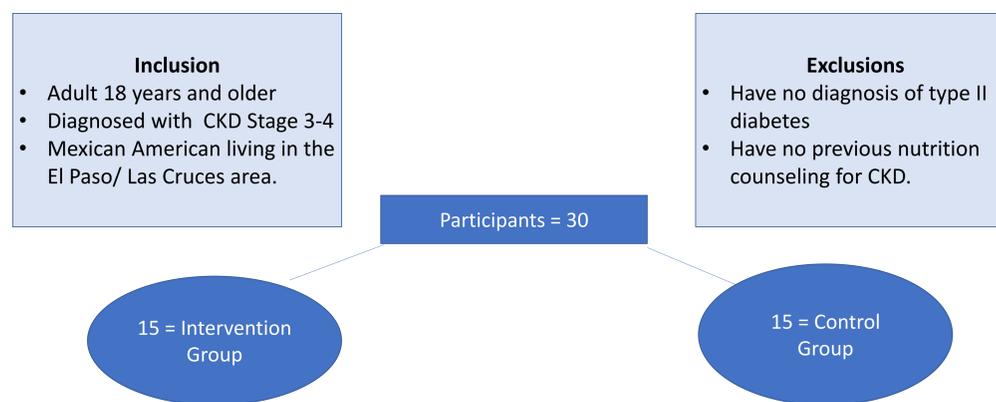


Table 2: Criteria for Stages 3 and 4 of CKD

Stages of Chronic Kidney Disease	
Stage	Glomerular Filtration Rate (GFR)
Stage 3	30-59 mL/min/1.73m
Stage 4	15-29 mL/min/1.73m

Data Collection

Participants will fill out a simple demographic survey and a consent form to acknowledge participation in the research and to blood draws.

1. All participants' information will be de-identified
2. Demographic information will be collected at baseline
3. Participants will be given nutrition counseling in the beginning of the study for the first 2 weeks of the research. The participants will receive nutrition counseling in English or Spanish for 1 hour per week for 2 we.
4. Nutrition information will be provided by a nutrition professional specialized in Chronic Renal Failure and use the nutrition guidelines from the American Association of Dietetics and Nutrition.
5. The participants will receive the same nutrition professional during the initial education and the follow-up sessions to reduce error.
6. Lab results will be obtained before nutrition counseling begins, at 0, 1, 3 and 6 months at the same laboratory to reduce error.

Table 3: Renal Lab Tests

Lab Test	Normal Value
GFR	≥ 90 mL/min/1.73m
Creatinine	0.5-1.1 mg/dL Males .6-1.2 mg/dL Females
Blood Urea Nitrogen (BUN)	10-20mg/dL

Data Analysis

1. Examine participant characteristics at baseline; groups compared using chi square and t-tests as appropriate.
2. Using paired t-tests to look at pre-post changes in data within groups for renal lab outcomes.
3. A Pearson product-moment correlation will be used to measure the strength and direction of the relationship between nutrition counseling and the individual lab results.
4. A linear regression will be used to predict the value of the renal lab results and measure the size of the effect nutrition counseling has on lab results.

Results

- Results from this research can help highlight the impact nutrition counseling has on renal labs for patients with CKD stages 3 and 4.
- Data obtained will present that nutrition counseling does effect the renal laboratory results in patients with Chronic Kidney Disease in stages 3 and 4.
- Results will show that stage 3 will have more significant improvements on all renal labs due to early intervention.

Conclusions

Results from this research will hopefully contribute evidence based data that will impact public health by:

- Improving quality of life for patients with CKD
- Increase medical cost savings by preventing dialysis
- Identify at what stage of CKD nutrition intervention is more effective to delay the progression to End Stage Renal Disease.

References

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