

Introduction

Chronic kidney disease (CKD) is defined as a continual abnormality in kidney function for more than three months. CKD affects between 8% and 16% of the population worldwide and is often underrecognized by patients and clinicians.¹

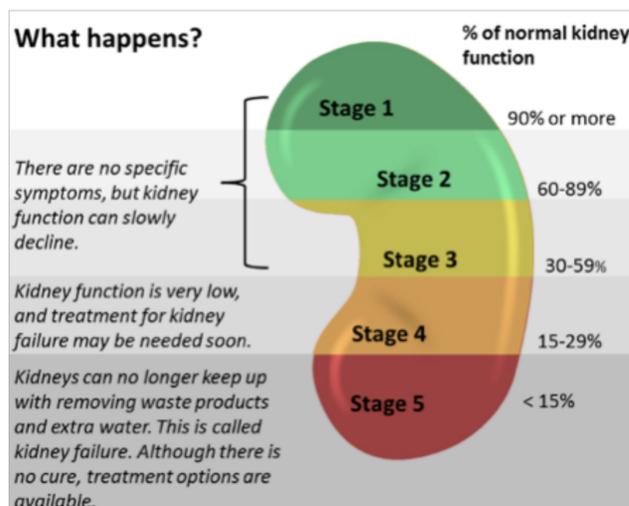
Two common cause of CKD are diabetes and hypertension. Because of the increase in prevalence of both of these conditions in adults in the United States, this could mean an increase in prevalence in chronic kidney disease as well.

CKD Diagnostic Criteria

To be diagnosed with CKD, one must present with at least one of the following:

- Glomerular filtration rate (GFR) less than 60 mL/min/1.73 m²
- Albuminuria
- Abnormalities in urine sediment
- Histology or imaging suggestive of kidney damage
- Renal tubular disorders
- History of kidney transplantation¹

Stages of CKD



Because there are very little symptoms shows in the first three stages of CKD, diagnosis may go unnoticed by the clinician and patient until the disease progresses further. This is why screening and regular check-ups are important for an early diagnosis and begin a preventative intervention program.

Goals of CKD Nutrition Therapies

The overall goal of medical nutrition therapy for patients with chronic kidney disease is to match the amount of kidney function remaining with the medical nutrition therapy or treatment provided. This is to ensure the kidneys do not get overworked and to help prevent progression of the disease. Regular testing should be conducted to determine the function of the kidneys and to determine if the intervention or treatment should be re-evaluated.

Goals of CKD nutrition therapy, set by both the patient and the clinician, may include:

- Controlling high blood pressure (120/80 mmHg)
- Reducing sodium levels (135-145 mEq/L)
- Controlling diabetes and blood sugar levels
- Adopting a more active lifestyle

Nutrition Education Strategies for CKD

Patients do not always comply with nutrition recommendations that are provided clinicians and dietitians. This is why each intervention or treatment strategy should be individualized to every patient to accommodate different readiness levels and requirements of the patient.

Highest adherence has been observed when both diet and education efforts are individualized to each patient and adapted over time to changing lifestyle and CKD variables.³ By prioritizing one or two goals at a time, patients will not feel as overwhelmed and have more success rather than trying to accomplish all of the goals at one time. The evidence has shown the importance and benefits of tailored interventions and close monitoring of patients with CKD.

Use of Mobile Apps in Providing Medical Nutrition Therapy

Many health related mobile applications, like MyFitness Pal, Fitness Buddy, and Fooducate, have been created for consumers to use to track daily calories, discover new exercises, and scan foods to see the nutritional value. Several mobile apps have also been specifically created for people who have been diagnosed with CKD.

A systematic review was conducted to test the effectiveness of 13 different mobile applications that were created for people with CKD, based on certain criteria by using the Mobile App Rating Scale (MARS). The results showed that 11 out of the 12 reviewed apps met the minimum score of 3.0 in MARS rating.⁴ The study also identified two weaknesses that showed the apps did not provide any interactive features, such as providing motivational feedback or allowing family members or caregivers or dietitians, the ability to interact or participate within the mobile app.

These shortcomings could be of great advantage to these mobile applications and the ability to monitor the patient if improved upon. It could also allow the patient's dietitian to provide feedback in a more timely manner and also allow the dietitian to see the progression of the progress being made towards the goals and determine if a different intervention is needed.

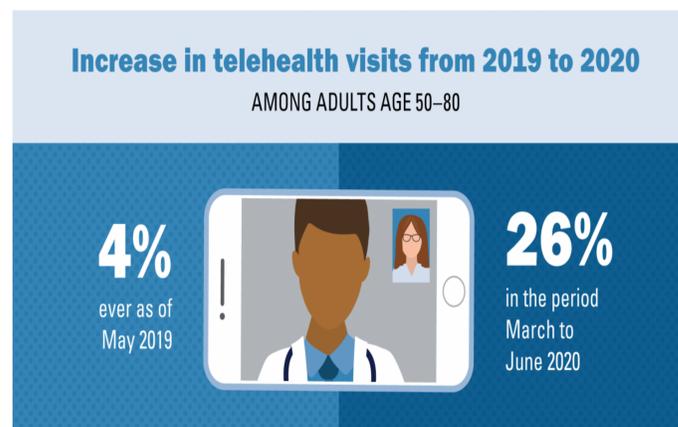
Strategies to Increase Adherence to Dietary Recommendations

It can be very challenging to get patients to abide by the dietary recommendations provided by the dietitian.

- A study conducted a talking control exercise in 50 random patients undergoing hemodialysis over 12 weeks. These patients had the opportunity to interact with the health care members from different disciplines for 5-10 minutes each week where they discussed anything other than the treatment process, such as the weather or family. The study showed that at the end of the 12 weeks, 82% of the patients had met or exceeded mean target laboratory goals compared with the 66% pre-exercise.³ This strategy, although not widely used, could be a great asset in preventing the progression of chronic kidney disease and improving laboratory values by allowing patients to feel like they are valued and not just another patient.

Knowing what a typical day in a patient's life looks like can be beneficial when making dietary recommendations and increase adherence to the dietary recommendations. For most patients, they do not have time to sit down and have three meals a day; many people snack throughout the day due to his or her schedule or preferences.

Use of Telehealth to Provide Nutrition Education



Another study that conducted semi-structured interviews with patients that had been diagnosed with CKD, explored the use of telehealth to aid in the management of CKD. The study was conducted in adults with stage 3 to 4 chronic kidney disease aged 28 to 78 years, who completed a 12-week telehealth-delivered dietary intervention.

The study found that the patients thought telehealth was more convenient and they felt supported and empowered to navigate recommendations and prioritize dietary behavior changes.⁵ Because of the increased feeling of support and empowerment, patients are more likely to adhere to the recommendations provided.

Conclusion

The research showed the importance of providing a tailored and individualized intervention program for patients with CKD to help prevent progression of the disease. The research also showed that there are many ways to deliver medical nutritional therapy and nutrition education to patients with chronic kidney disease, such as mobile apps, telehealth, and through talking control exercises. The research articles cited had small test groups, so more research needs to be conducted on a larger test groups in order to determine the effectiveness of these different methods to deliver nutrition education to patients with chronic kidney disease. Even though there were some limitations in the research discussed, these limitations, if improved upon, could provide great advantages and benefits to the self-management of chronic kidney disease and preventing the progression of chronic kidney disease.

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