

ENGINEERING

A Review of Mobile Apps for Chronic Kidney Disease Patients

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Mobile health (mHealth) apps have the potential to revolutionize how patients self-manage diseases. A mobile resource that provides relevant information regarding nutritional options and physician recommendations would be immensely beneficial in helping patients, particularly with chronic kidney disease (CKD), prevent medical complications and slow their disease progression.

Given how powerful a tool mHealth apps could be for CKD patients, two app platforms (Apple and Google Play Stores) were searched to evaluate the quality of on-the-market apps. Using search terms such as “CKD,” “kidney nutrition,” and “diet CKD,” this study found 3,204 apps. Omission criteria mentioned in the figure 1 were then applied, leaving 14 apps.

These apps were then evaluated based on their features to determine benefits and shortcomings, overall evaluating their quality. These features included the ability of the app to track nutritional intake, adhere to the latest nutritional guidelines, offer recipes, store clinician-accessible data, and provide CKD stage-specific recommendations in dietary intake.

While several existing apps met some of the criteria to be considered useful, it was concluded that an ideal app does not currently exist. Furthermore, notable shortcomings to aid in the definition of an ideal mobile health app for CKD patients were established.

Search Terms	iOS	Android
CKD	104	249
Kidney nutrition	10	254
Diet CKD	218	250
Diet Kidney	2	250
Nutrition tracker CKD	25	249
CKD Nutrition	15	249
Chronic renal failure	202	236
Chronic kidney disease	215	206
Dialysis	58	158
Dialysis diet	6	248
Total Search Results	855	2349

Excluded apps if:
 - Not CKD related (650 apps | 1546 apps)
 - Not in English (32 apps | 294 apps)
 - Not patient-facing (38 apps | 45 apps)
 - Last updated prior to 2010 (0 apps | 0 apps)
 - Calculator based (22 apps | 167 apps)

iOS	Android
112	297

Remove repeated apps

iOS only	Android only	iOS and Android
4	3	7

Flow diagram identifying CKD dietary apps of interest.

Research advisor Allon Friedman writes: “I was impressed at how the project team tackled this important research question. I expect they learned a lot about what a research project entails and how to publish their findings. The results of their effort will have important implications for people with kidney disease around the world.”