Abstract

Dialysis patients, because of their kidney problems, are only allowed to consume approximately one liter of fluid and two grams of sodium each day. If they exceed this limit they run the risk of hypertension, pulmonary edema, and even death. Therefore, it is critical they monitor their intake of food and fluids. Currently, many patients try to do this by remembering or writing down in a food diary their daily fluid and sodium consumption. However, 80% of patients are unable to restrict their fluid intake. We have designed an interactive application that runs on a mobile device (a PDA) that provides various kinds of interactive information and feedback to help patients monitor their fluid and dietary intake. The rationale is to allow the patients to carry the PDA around with them in their everyday life and to use it as a cognitive aid whenever they want to eat, drink, or find out more about a particular food item. By using a PDA for this application, our aim is to reduce the stigma attached to having to record food and fluid intake. This can be reduced through the use of electronic devices such as a PDA that are readily available and usable for this purpose and can be used similar to the way people use cell phones in their everyday lives.

The dietary monitoring application was developed using a user-centered approach. First, we assessed the users’ needs and decided which device to use (the PDA). Next, we asked dialysis patients to try out a number of usability tasks using the PDA device including using an attached scanner. We compared how healthy novice PDA users and chronically ill novice PDA users could complete conventional PDA-based tasks (e.g., pressing buttons, viewing icons, voice recording) and non-conventional tasks (i.e., scanning barcodes). We found no major differences in task performance between the two groups. Currently, we are developing the interactive software to connect to databases of foodstuffs and fluids for our application. The goal is to enable patients to scan or select food and fluid items they have eaten/drunk or are contemplating and to get feedback on how this will affect their daily allowance. The graphical user interface is being designed to display food items, nutritional and fluid intake levels, and other relevant information.

Our aim is to enable all patients to easily record dietary information and to obtain immediate feedback on their fluid and sodium intake. Another aim is to improve their awareness of the consequences of exceeding their dietary and fluid intake. In this paper, we present the design stages we are following to create the user interface for the dialysis PDA application.

1 The amount of fluid and sodium consumption allowed varies among patients.