

Good facility of use is obtained with the interactive application 'Preventing' that creates long-lasting patient support: A novel approach to improve treatment adherence in the post-transplant period

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Aims

Non-adherence to immunosuppressive drug intake is a frequent condition affecting renal transplant recipients, leading to premature transplanted organ loss. Measures adopted to prevent and correct non-adherence are not fully effective because they need to increase the personnel dedicated to patients' support, or because the methods are expensive and difficult to implement in the long run. A new model of medical application, characterised by an active participation of the users is presented here (www.preventingapp.com).

Methods

The active patient's role related to the app consisted in filling compliance and medical surveys, following-up the evolution of parameters (graphics appearing in dashboard are shown in Fig 1), easy contact with transplant staff, reminders etc. The clinical information is collected in the transplant center's back office, allowing the staff to be informed of patient evolution especially barriers to adherence. 'Preventing' app is installed in Apple and Google stores in English, Spanish and Portuguese. Only patients authorised by a transplant centre can access the app and own data with a password. Six stable kidney transplant recipients, after giving informed consent, were enrolled to study app usability in an 11-month period; all used iOS mobile phones. Patients' digital skills previous to the study were evaluated according to the GSMA Digital Literacy Journey that differentiates four stages (Table 1). To quantify patients' app 'Preventing' usability, data obtained of compliance and medical surveys fulfilled during the study were used, calculating the mean of six items (scale 0 to 5) (Table 2).

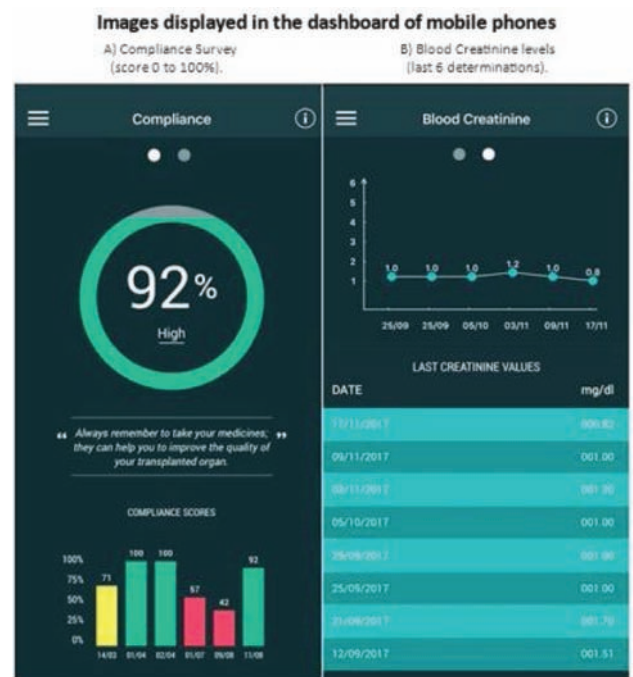


Fig 1. Image of the graphics appearing on the app dashboard.

Results

The skills previous to the study showed that only a half of patients were prepared to use the app correctly. As would be expected those patients with good digital skills also demonstrated good scores in the 'measured usability'. All patients described the experience as useful and enjoyable (data not shown).

Conclusion

This first preliminary experience with the app 'Preventing' showed that patients used it pleasantly and with an acceptable usability score when previous digital skills were appropriate. A study with

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Table 1. Data in six patients using app 'Preventing': demographics, renal transplant data and mobile phone digital skills

Patient	Age at the study	Gender	Profession / activity	Transplant duration (years)	Last creatinine level (mg/dL)	Previous to the study grade of digital skills*	Observation period (months)
1	67	M	Businessman	17	0.8	1	11
2	75	F	Artist	18	0.9	2	5**
3	27	M	Student	9	1.2	4	10
4	40	M	Employee	15	1.6	4	11
5	54	M	Engineer	4	1.3	4	10
6	43	M	Employee	21	1.3	3	11

*Grades 1 to 4, according to GSMA Digital Literacy Journey

**A period of involuntary disconnection to the app was excluded from analysis.

F = female; M = male.

Table 2. Usability: scale 0 to 5 of six items based on app 'Preventing' survey responses in six renal transplant recipients

Patient	Confirm medicine intake	Take medicine on time	Fill surveys asking for creatinine levels	Fill out medical survey	Fill out compliance survey	Medical and nurse appointments	Mean measured usability (0 to 5)
1	0	0	0	0	0	0	0
2	5	5	5	0	1	0	2.7
3	5	5	4	4	4	5	4.5
4	4	4	4	4	4	0	3.3
5	5	5	5	5	5	5	5
6	0	0	1	1	1	1	0.7

a greater number of patients is needed to establish if the app improves adherence to treatment in the setting of transplanted recipients. ■

Conflict of interest statement

Authors declare not having conflict of interest.