The home dialysis app for peritoneal dialysis
An evaluation of outcomes and patient experience

W. Jorritsma [1, *], **C.W.H. de Fijter** [2], **H.J.M. Rutten** [2], **D. Zuijderduijn** [2], **A. Vermeulen** [2]

[1] Department of Quality and Improvement OLVG, Amsterdam, the Netherlands, [2] Department of Nephrology, OLVG, Amsterdam, the Netherlands

* w.jorritsma@olvg.nl

Introduction

In 2022 the OLVG hospital implemented an app that supports patients with their home dialysis treatment (Fig. 1). In this study we aimed to evaluate the effects of this app on the number of hospital admission days, ER visits and consultations, patient-reported outcomes, patient activation and user satisfaction.

Methods

All peritoneal dialysis patients in 2022-2023 (n = 86) were informed about the app by a nephrologist and could choose whether or not to use it. A confounder-controlled analysis was performed to compare outcomes between the app users and non-users.

The following outcomes were measured: number of hospital admission days, number of hospital admissions, number of emergency room (ER) visits, number of consultations, physical wellbeing (SF-12 PCS), mental wellbeing (SF-12 MCS), number of symptoms (DSI symptom presence), severity of symptoms (DSI symptom severity rating), patient activation (PAM-13). Patients in the app group were also asked to rate the following three items on a scale of 1 to 5 stars: How do you experience this form of support in general? I feel safer because of remote care. I need fewer hospital visits due to remote care via this app. Renal nurses participated in a structured interview.

Results

The app led to a 90% decrease in hospital admission days, 95% CI [51, 98], and a 62% decrease in hospital admissions, 95% CI [21, 83] (Table 1). There was no clear effect on the number of ER visits, consultations, and patient-reported outcomes (Table 2). Fig. 2 shows patients' subjective ratings of the app.
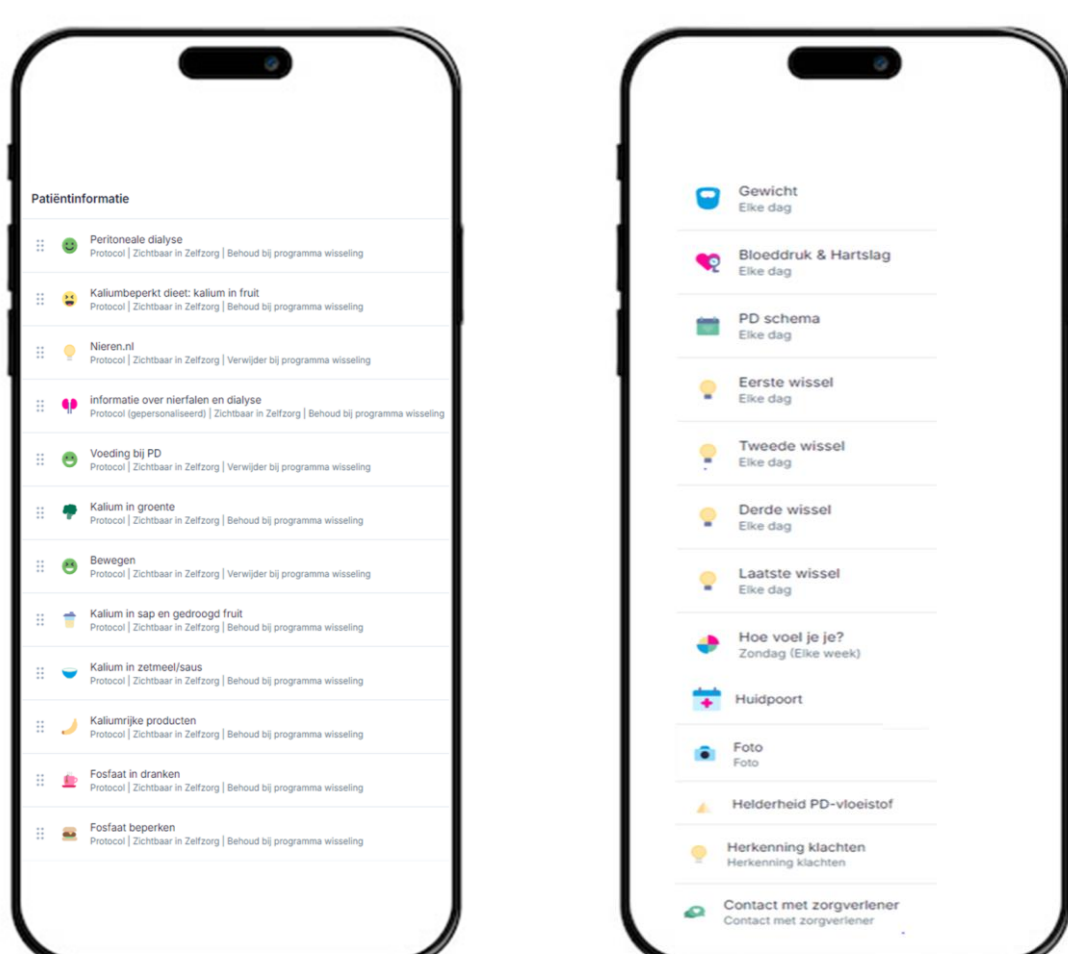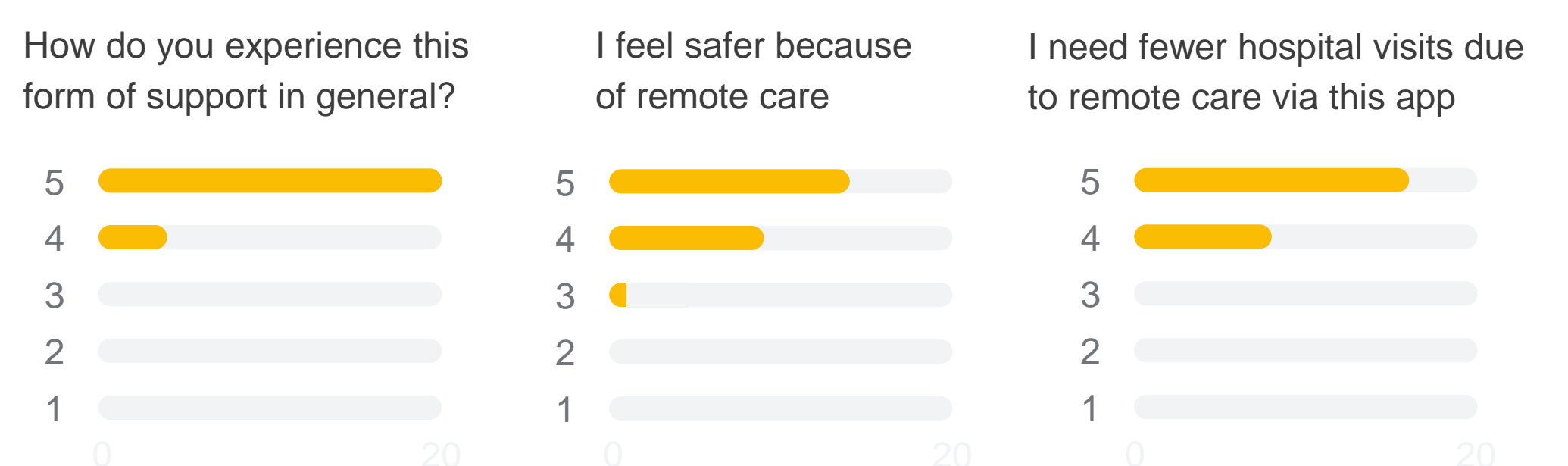
Figure 1. Screenshots of the app.

Table 1. Number of events and events per person year for the app and control group, and effect estimates of the app.

Outcome	Events		Events per person year		Effect estimate
	App	Control	App	Control	IRR [95% CI]
Hospital admission days	175	512	5.3	9.7	0.10 [0.02, 0.49]
Hospital admissions	24	67	0.7	1.3	0.38 [0.17, 0.79]
ER visits	33	80	1	1.5	0.93 [0.41, 2.02]
Consultations	474	614	14.3	11.6	1 [0.8, 1.24]

Table 2. Baseline and follow-up PROMs for the app and control group, and effect estimates of the app.

Outcome	Baseline (mean [95% CI])		Follow-up (mean [95% CI])		Effect estimate [95% CI]
	App	Control	App	Control	
SF-12 PCS	39 [34, 44]	36 [32, 40]	43 [39, 47]	37 [33, 42]	4 [-1, 10]
SF-12 MCS	46 [40, 51]	41 [37, 46]	45 [39, 50]	43 [38, 47]	1 [-4, 6]
DSI symptoms	12 [9, 15]	14 [11, 17]	11 [7, 14]	14 [11, 17]	-3 [-7, 1]
DSI severity	21 [13, 29]	27 [18, 36]	19 [9, 28]	26 [18, 34]	-5 [-14, 3]
PAM	3.2 [3, 3.3]	2.9 [2.7, 3.2]	3.2 [3.1, 3.4]	2.9 [2.6, 3.3]	0.1 [-0.3, 0.4]

Figure 2. Patients' subjective star ratings of the app.

How do you experience this form of support in general?

I feel safer because of remote care

I need fewer hospital visits due to remote care via this app

Conclusions

The home dialysis app could successfully be implemented, maintaining and even increasing interaction between the patient and the PD team time-efficiently. The app reduced the number of hospital admission days for PD patients by 90% and the number of hospital admissions by 62%. We did not find any clear effects on ER visits, consultations, and patient-reported outcomes, but it was rated positively by patients. The nurses experienced an improvement in quality of patient-focused care and job satisfaction. With the feature of safe sharing of photos the need for interim hospital visits for a quick look was reduced, thereby lowering the CO_2 footprint. We embedded the app in our clinical practice as a form of value-based health care.

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