

# Patient Experience with an Interactive Web-based Phosphorus Education Tool

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# Introduction

On-line education tools are becoming increasingly popular yet the level of patient participation and the utility of these tools is unclear. The 30-day Phosphorus Challenge, a web-based tool open to the general public, is designed to educate kidney patients, family members, caregivers, and health care teams through phosphorus-related emails, games, educational content (articles, recipes, handouts, videos) and community board-based social interaction.

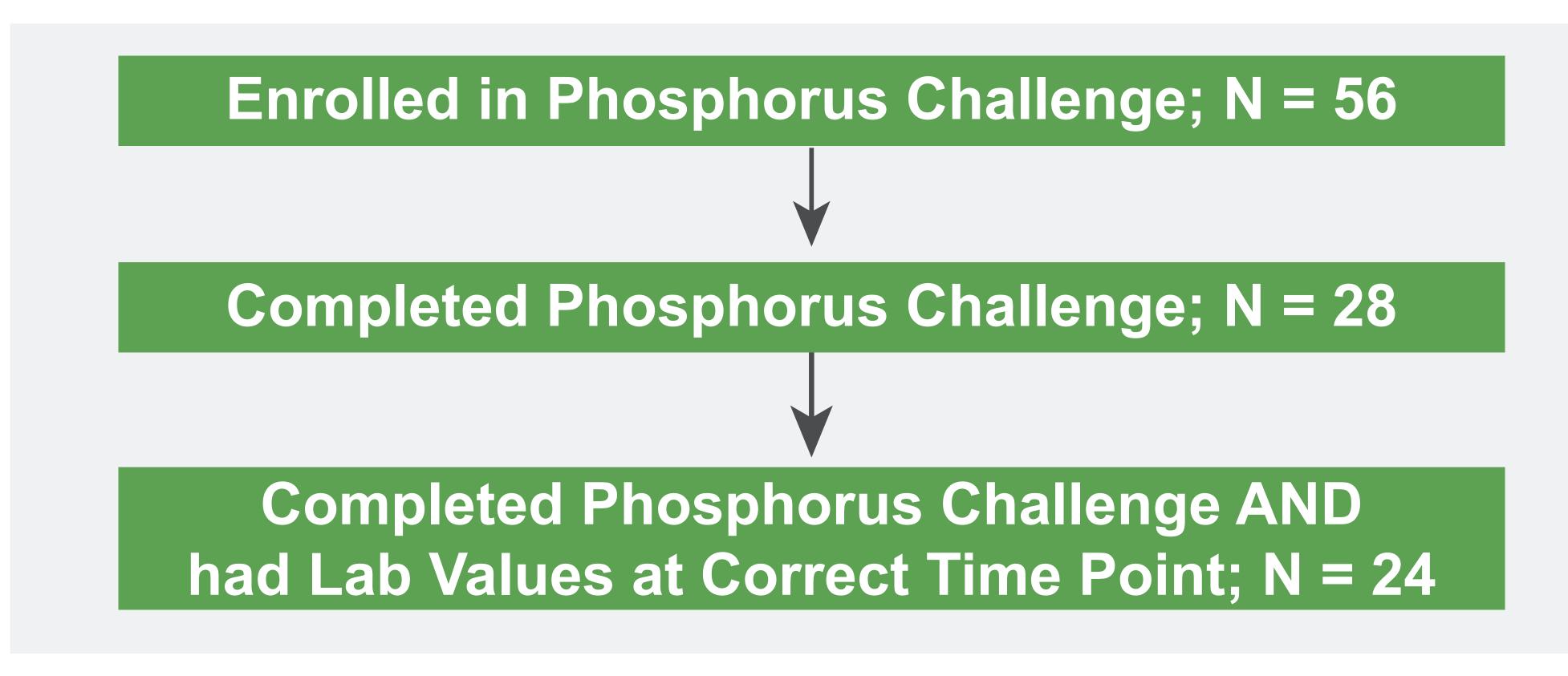
We evaluated the effectiveness of this interactive tool in increasing phosphorus knowledge and improving phosphorus control in dialysis patients.

# Methodology

- Forty-three dialysis patients from 22 dialysis centers geographically spread across the US, enrolled in the Phosphorus Challenge Evaluation.
- A total of 24 (56%) completed the pre- and post-tests and had phosphorus lab values available for each time point.
- Differences between the pre- and post-period in correctly answered questions and phosphorus levels were assessed by paired t-test.

## Results

Figure 1. Study Design



#### Phosphorus Challenge Components



- 12 interactive games to learn about phosphorus while earning points
- 7 polls and quizzes



 Education articles and downloadable handouts

Videos and low phosphorus recipes

- Why are you taking the DaVita Phosphorus Challenge?
- A community forum to post questions and interact with others

Figure 2. Phosphorus Challenge Games and Education Pages



Table 1. Pre- and Post-challenge Results for Test Questions and Phosphorus Levels, n = 24

	Mean Questions Answered Correctly	Phosphorus (mg/dL) Mean ± SD
Pre-challenge	4.2	5.93 ± 1.39
Post-challenge	5.0	5.73 ± 1.51
P-value		p = 0.44 (95% CI: -0.72. 0.32)

Figure 3. Change in Phosphorus Knowledge after Completion of the Phosphorus Challenge

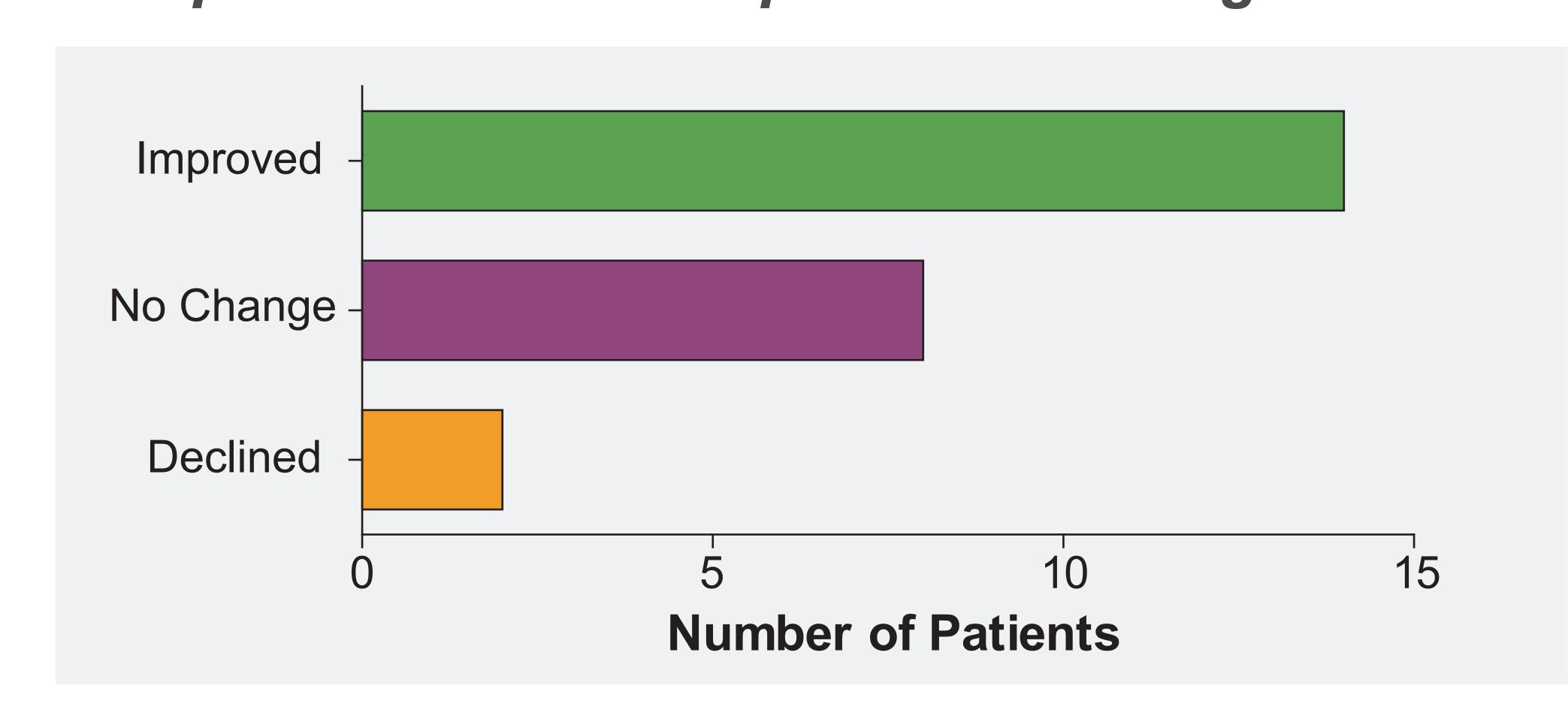
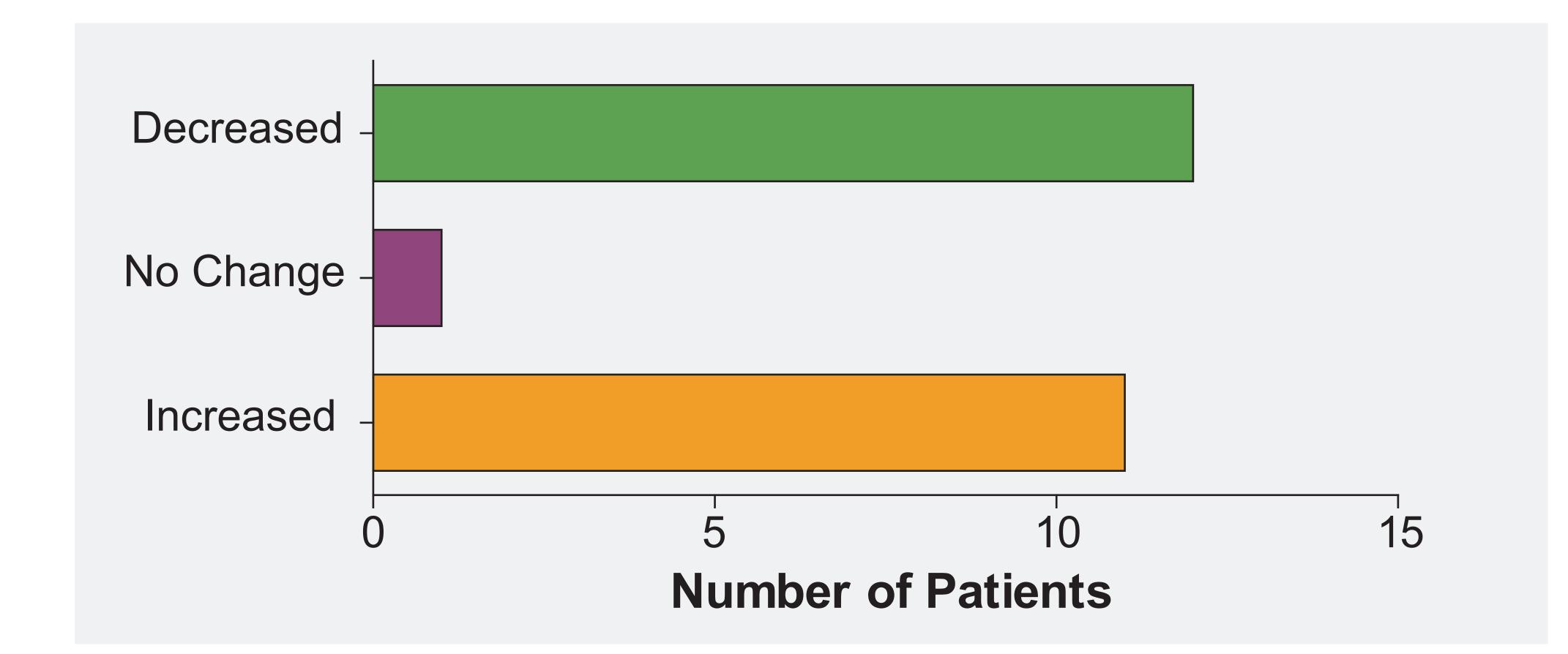


Figure 4. Change in Serum Phosphorus after Completion of the Phosphorus Challenge



- On a test of 6 knowledge questions, these 24 patients got an average of 0.8 more questions right after the intervention (Table 1 and Figure 3).
- The mean phosphorus level change of -0.20 was not statistically significant in a paired t-test (Figure 4).
- 12 patients experienced declines in phosphorus levels, while 11 experienced an increase, and 1 was unchanged. Four of the patients with an increase from the pre-challenge level still maintained phosphorus below 5.5 mg/dL.
- In the post survey, over 75% felt they learned something about phosphorus and greater than 90% felt more confident about making lower phosphorus food choices after taking the challenge.

### Conclusions

- The Phosphorus Challenge had a positive impact on phosphorus levels and knowledge for approximately half of those who completed it, indicating this may be a useful tool for phosphorus improvement in some kidney patients.
- It will be important to understand the characteristics of patients who did benefit from the Phosphorus Challenge and how this unique, interactive tool can be modified so that all participants elicit a benefit.

#### Acknowledgements

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