
Poster

Patient Reported Value and Usability of a Digital Health Intervention for Asthma

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Abstract

Background: Digital health tools are increasingly recognized as effective in improving asthma clinical outcomes such as control and adherence; however, few studies have evaluated patient perspectives on the usability and value of these tools in supporting asthma self-management. Patient perceptions of digital health tools, including usability and satisfaction, will determine the success of these digital health interventions and the durability of their effects.

Objective: We aimed to assess patients' usability feedback and satisfaction with an asthma digital health platform after 12 months of use.

Methods: We administered surveys to participants of a randomized controlled clinical study designed to measure the clinical effectiveness of the Propeller Health Asthma Platform. The electronic surveys evaluated patients' feedback on the usability of the sensor and the perceived value of the platform and information provided after 12 months of use. The clinical study had enrolled patients (N=495) in parallel arms from specialty and primary care clinics. Intervention group patients (n=250) used electronic inhaler sensors to track the date, time and geographic location of medication use. Patients received access to a digital health platform including smartphone and Web-based applications that provided information about their asthma medication use trends, real-time asthma control, guidelines-based education, and personalized support for 12 months. Physicians could monitor the status of their patients and receive notifications about short-acting beta agonist (SABA) overuse. Survey results reported here represent adult participants from the intervention group who completed the exit survey at 12 months.

Results: Respondents (n=89) reported being very satisfied (79%) or somewhat satisfied (20%) with the inhaler sensor, stating that the sensor was "small," "unobtrusive," and "easy to use" and carry. A total of 90% of respondents found the information they received via the platform useful, with 93% expressing satisfaction with the information. In open-ended responses, participants cited valuing how the platform increased awareness about their asthma control status and medication use, provided "relevant" and "timely" information, and identified potential environmental triggers that exacerbated their symptoms, with 65% of respondents identifying 1-7 new triggers as result of the information. Respondents described improved communication with their doctors: 46% of the respondents had talked with their doctor about the information they received, and 22% stated that their doctor recommended or changed a specific aspect of their asthma management as a result of the information. Over 50% of respondents said that they felt their asthma was more controlled as a result of the information they received, which is supported by the clinical results demonstrating 63% of uncontrolled patients achieved control during the program.

Conclusions: Patients reported positive usability of a digital health platform for asthma self-management, citing that it was easy to use and fit into their lives unobtrusively. Almost all patients perceived value from the digital health platform in contributing

to their self-management, finding value in increasing self-awareness, identifying asthma triggers, offering actionable information, and improving communication with their doctors.

ClinicalTrial: Clinicaltrials.gov NCT01509183; https://clinicaltrials.gov/ct2/show/NCT01509183 (Archived by WebCite at http://www.webcitation.org/6nIIEejW7).

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KEYWORDS

asthma; digital health; usability

This poster was presented at the Connected Health Symposium 2016, October 20-21, Boston, MA, United States. The poster is displayed as an image in Figure 1 and as a higher resolution image in Multimedia Appendix 1.

Figure 1. Poster.

PATIENT REPORTED VALUE AND USABILITY OF A DIGITAL HEALTH INTERVENTION FOR ASTHMA

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BACKGROUND
 Digital health tools have demonstrated impacts on improving asthma clinical outcomes, but few studies have evaluated patient perspectives on their usability and value in supporting asthma self-management.

OBJECTIVES
 We aimed to assess patients' usability feedback and satisfaction with an asthma sensor-enabled, digital health platform after 12 months of use.

METHODS
 Participants were enrolled in a randomized clinical study assessing the clinical effectiveness of a digital health platform in a real world setting. Participants used electronic inhaler sensors to track the date, time and location of medication use and received access to smartphone and web-based applications that provided information about their asthma medication use trends, real-time asthma control, guidelines-based education, and personalized support. Surveys were administered electronically to evaluate participants' feedback on the usability of the sensor and the perceived value of the platform and information after 12 months of use. Qualitative survey responses were coded by two authors (KH, MB) using a structured thematic analysis approach.

RESULTS

- 89 intervention group participants completed the survey; average age of respondents was 46 and median age was 49
- Participants used a mix of devices to transmit data (23% Android, 27% iPhone, and 50% hubs)
- 99% of the respondents reported satisfaction with the inhaler device (79% very satisfied, 20% somewhat satisfied) (Figure 2, Table 1)
- 93% of the respondents reported satisfaction with the reports and the information they received (80% very satisfied, 33% somewhat satisfied) (Figure 3, Table 2)
- 90% of the respondents reported that the reports were useful for learning more about their asthma (45% very useful, 45% somewhat useful) (Figure 4, Table 2)
- 60% of respondents identified 1-7 new triggers as a result of participating in the study. Weather, allergy related and exercise were the most commonly identified triggers, documented across 79% of respondents who identified new triggers
- 72% of the respondents reported being interested in continuing to use the digital health tool beyond the study

CONCLUSIONS
 Patients reported high satisfaction and positive usability of the digital health tool after 12 months of use. Patients provided positive feedback about the size, ease of use, and convenience as well as the utility of the information offered by the platform for identifying and increasing awareness about triggers, providing timely feedback, enhancing communication with doctors, and supporting self-management.

Table 1. Selected excerpts from open-ended responses about participants' experience with the inhaler device:

Patients' experience with the inhaler device		
Size	Unobtrusive	Doesn't draw attention
"Small and compact"	"Doesn't obstruct anything"	"That it was not noticeable"
"Small and convenient"	"Doesn't get in the way"	"Doesn't draw attention"
"Easy to use"	By inhalation	
"It is easy to use"	"Doesn't obstruct anything"	
"It was easy to operate"	"Easy to attach to my inhaler"	
"Easy to understand"	Portable	Functioned well
"It was convenient"	"Easy to take with you"	"Reported good"
"It was hard to hear"	"Easy to carry"	"Reported that it worked when I used"
"It would be more useful if necessary"	"It was small and portable"	

Table 2. Selected excerpts from open-ended responses about participants' experience with the reports and information:

Patients' experience with the reports and information			
Substantive with Content	Informative	Comprehensible	Format (visual)
"This was informative and helpful"	"This was informative"	"Easy to read and understand"	"Clear and concise"
"This was helpful"	"This was helpful"	"Easy to read and understand"	"Clear and concise"
"This was helpful"	"This was helpful"	"Easy to read and understand"	"Clear and concise"
Increased Awareness	Triggers	Asthma control	Medication use
"This was helpful"	"This was helpful"	"This was helpful"	"This was helpful"
"This was helpful"	"This was helpful"	"This was helpful"	"This was helpful"
Increased Accountability	Timing and location of medication		
"This was helpful"	"This was helpful"		
"This was helpful"	"This was helpful"		

Figure 2. Satisfaction with the inhaler device

Very satisfied	79%
Somewhat satisfied	20%
Not at all satisfied	1%

Figure 3. Satisfaction with the reports

Very satisfied	80%
Somewhat satisfied	33%
Not at all satisfied	7%

Figure 4. Perceived usefulness of the reports

Very useful	45%
Somewhat useful	45%
Not at all useful	10%

Multimedia Appendix 1

Poster.

[PNG File, 667KB - iproc_v2i1e36_app1.png]

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