

mHealth in asthma – friend or foe?

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Summary:

mHealth systems are promising tools for supporting asthma self-management and a user-centred design may improve compliance. We have determined the opinions of people with asthma and healthcare professionals (HCPs) on the use and functionality of mHealth self-management systems, initially by recruiting to focus groups. After framework analysis of the transcripts the resultant questionnaire was sent out to 186 people with asthma (91 uncontrolled) and 63 HCPs. Patients most frequently responded that they would like a mHealth system that allows them to monitor their asthma over time (72%) and that can collect data to present to their healthcare teams (70%). A system to alert patients to deteriorating asthma control (86%) and advising them when to seek medical attention (87%) were most frequently selected by HCPs. Patients were less likely than HCPs to believe that measuring medication adherence, inhaler technique and respiratory symptoms could help them achieve better asthma control. Furthermore, patients with uncontrolled asthma were more likely to believe that alerts to adverse environmental conditions, and low/high temperature and humidity, would be helpful in managing their asthma. In summary, this study provides insights from the perspective of patients and HCPs with regards to the use of mHealth systems for asthma self-management, which should be considered during the development of new mHealth systems.

Main body:

mHealth has the potential to revolutionize the self-management of long-term medical conditions such as asthma. However, the utility and efficacy of mHealth for asthma self-management has not been shown. A user-centred design is integral for mHealth to meet end-user expectations and may improve health outcomes.

The myAirCoach project (<http://www.myaircoach.eu/myaircoach/>) aims to design and develop mHealth solutions for people living with asthma as well as healthcare professionals, in order to help them to gain better understanding and control of the disease. Such solutions would need to be tailored to individual needs, as it is well recognised that triggers and other risk factors for poor asthma control differ between individuals.

The first phase of myAirCoach comprised a study in which we sought to obtain the perspectives and expectations of prospective end-users of myAirCoach – people with asthma and healthcare professionals who treat the disease on the use of mHealth for asthma self-management.

We used a sequential exploratory mixed methods design. Initially focus groups (two involving individuals with asthma, and one involving healthcare professionals) were held. The analysis of this information then informed the development of questionnaires, which were widely disseminated to individuals with asthma and healthcare professionals. We identified differences in response frequency between patients with asthma and healthcare professionals and between patients with controlled and uncontrolled asthma. Participants included individuals with a doctor's diagnosis of asthma from primary and secondary care in Manchester (UK), London (UK) and Leiden (the Netherlands), and healthcare professionals involved in the treatment of patients with asthma in the North West of England. The main outcome categories related to i) perceived uses; ii) useful measurements; and iii) barriers, of mHealth for asthma self-management

Focus group participants (18 asthma patients and five healthcare professionals) identified 12 potential uses of mHealth. Questionnaire results showed that asthmatics (n = 186) most frequently requested an mHealth system to monitor asthma over time (72%) and to collect data to present to healthcare teams (70%). In contrast, a system alerting patients to deteriorating asthma control (86%) and advising them when to seek medical attention (87%) was most frequently selected by healthcare professionals (n = 63). Individuals with asthma were less likely than healthcare professionals (P<0.001) to believe that assessing medication adherence and inhaler technique could help them achieve better asthma control.

In conclusion, our data provide strong support for mHealth for asthma self-management, but highlight fundamental differences between the perspectives of patients and healthcare professionals. Both end-users perspectives should be carefully considered for the successful integration of mHealth for asthma self-management.