Clinical effect on uncontrolled asthma using a novel digital automated self-management solution: a physician-blinded randomised controlled crossover trial

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ABSTRACT

Introduction: AsthmaTuner is a novel self-management system consisting of a patient app, a cloud-based storage solution and a healthcare interface. Patients use Bluetooth spirometers to measure lung function (forced expiratory volume in 1 s) and can register symptoms. They then receive immediate feedback on asthma control and an image of the correct inhaler(s) to use and the dose. The aim of this pilot study was to evaluate the effect of AsthmaTuner on symptom control and adherence compared with conventional treatment.

Material and methods: This multicentre physician-blinded crossover trial randomised patients in two groups that started with 8 weeks of AsthmaTuner or conventional treatment using a personalised printed treatment plan, with 2 weeks of washout between the crossover treatments. Participants in a primary or paediatric care setting in Sweden with asthma diagnosis, uncontrolled symptoms and Asthma Control Test (ACT) score <20 points were included. Symptom control was analysed using t-tests for the difference between the group means of the sums of ACT scores at each treatment end-visit, with 95% confidence intervals. Medical Adherence Report Scale (MARS) scores captured differences in adherence (remembering to take asthma medication) between treatment periods.

Results: The study population consisted of 77 patients (60% females). The ACT score significantly improved with AsthmaTuner compared with conventional treatment (mean ACT difference 0.70, 95% CI 0.06–1.34; p=0.03). Adherence did not improve significantly in all participants, but did improve among those in primary care who used AsthmaTuner an average of once a week or more compared with conventional treatment (mean MARS difference 0.45, 95% CI 0.13–0.77; p=0.01).

Conclusions: AsthmaTuner improved symptom control in patients with uncontrolled asthma compared with conventional treatment.