Effect On Asthma Control Using A Novel Digital Self-Management System: A Physician Blinded Randomised Controlled Cross-Over Pilot Trial

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Background: AsthmaTuner is a novel self-management system that consists of a patient app, a cloud based storage solution and a healthcare interface. Patients use a Bluetooth spirometer (MIR SmartOne) to measure FEV₁, 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, Figure 1.

Aims: We aimed to evaluate the effect of AsthmaTuner on Asthma Control Test (ACT).

Methods: This cross-over pilot study evaluated 40 school children with uncontrolled asthma (ACT <20 points), randomised to start 8 weeks with AsthmaTuner or conventional management (paper personalized treatment plan), and with 2 weeks wash-out period between the periods, Figure 2. The effect of AsthmaTuner on ACT was evaluated with paired t-tests.

Results: AsthmaTuner and conventional management resulted in significantly improved ACT between visit one and two (overall mean scores 3.7 vs 2.4, p-values <0.003), Figure 3. In addition, AsthmaTuner improved the ACT between visit three and four (mean score 0.8 vs. -0.2). No significant difference was found in effectiveness between AsthmaTuner and conventional management (ACT 2.1 vs. 1.2, p=0.29).

Conclusions: This pilot study indicates that AsthmaTuner improves asthma control. The findings support the use of digital self-management solutions for asthma.