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My inhaler tutor: The impact of new individualized video in improving asthma patient's inhaler technique and asthma control

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Introduction & Aim: Asthma is a chronic condition affecting millions of people around the world. Inhaled medications are effective therapies for asthma management and patients can get the maximum benefit of their inhalers when performing the correct inhaler technique. Smartphones have helped people in many ways, but their value in teaching and assessing people on correct inhaler use has not been evaluated previously. The purpose of this study to evaluate the effect of individualized video using smartphones in improving asthma patient's inhaler technique.

Methodology: 198 asthma patients were recruited then allocated to active or control groups. Their inhaler technique for Turbuhaler (TH) or the pressurized Metered-Dose Inhalers (pMDI) were assessed, using predefined published checklists. Patients in active group were asked to perform their inhaler use while videotaping their own videos, which were replayed showing them what incorrect steps they had done. Control group's inhaler technique was assessed using physical demonstration only. All patients were re-evaluated following intervention according to their group. Over three months, all patients were reassessed. Baseline and follow-up respiratory symptoms were measured by reliever use (puffs/day), Asthma Control Test ACT, in addition to Forced Expiratory Volume in first second (FEV1).

Findings: For all patients, Correct Inhaler Technique (reported as percentage correct steps) was improved after the intervention: TH (63% Active vs. 23% Control, $p=0.001$) pMDI (69% active vs. 43% control, $p=0.01$). Reliever use (puffs/day) decreased (as improvement): TH (2.3 puffs/day Active; 6.5 puffs/day control, $p=0.001$), pMDI (2.6 puffs/day active, while 9.2 puffs/day control, $p=0.005$). Subjects' asthma control test scores improved by decreasing proportion of patients at severe stage for TH and pMDI active groups.

Conclusion & Significance: This intervention reveals that the individualized video as a smartphone's application used in this dynamic study significantly improved inhaler technique, reliever use, ACT, and FEV1 for asthma patients, resulting in durable efficacy for improving inhaler use by patients, consequently improving patient's asthma clinical outcomes.

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