Development and testing of an ADolescent Adherence Patient Tool (ADAPT): self-reported app use

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Background
Non-adherence is a major problem and leads to uncontrolled disease, severely affecting quality of life in adolescents. To date, evidence-based interventions to improve medication intake behavior in this age group are lacking. We developed a mobile health (mHealth) intervention; the ADolescent Adherence Patient Tool (ADAPT). The intervention is developed based on a focus group study with asthmatic adolescents.¹ The Common Sense Model is the guiding theoretical model.²

Objective
To develop and evaluate a mHealth intervention to improve medication intake behavior in adolescents with asthma.

Methods
The ADAPT intervention consists of a smartphone application (app) for patients combined with a computer management system for healthcare providers; targeting several aspects of non-adherent behavior (Figure 1). The intervention is studied in a 6-months clustered randomized controlled trial in community pharmacies. Community pharmacies were divided in a control group (usual care) and intervention group (use ADAPT intervention). Adolescent asthma patients (age 12-18) with (daily) use of inhaled corticosteroids were invited to participate. Patients fill out an online questionnaire at baseline (t=0) and at the end of follow-up (t=6).

Figure 1. The interactive ADAPT intervention

First results
The ADAPT study population consists of 253 adolescents, 17 participants withdraw from participation, resulting in 236 adolescents (148 control group and 88 intervention group). Both groups completed the baseline questionnaire, they are comparable (p>0.05) based on age. Medication Adherence Report Scale (MARS), Pediatric Asthma Quality of Life Questionnaire (PAQLQ), and Control of Allergic Rhinitis and Asthma Test (CARAT) (Table 1). Currently, 82% of the adolescents completed the study.

Conclusion
The control and intervention group are comparable at baseline. Most adolescents used the intervention and are positive about the self-management app. However, self-reported medication intake is not changed.

Table 1. Characteristics of the study population per group

<table>
<thead>
<tr>
<th></th>
<th>Control (n=148)</th>
<th>Intervention (n=88)</th>
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<tbody>
<tr>
<td>Gender, female</td>
<td>51.4 (76)</td>
<td>55.7 (49)</td>
</tr>
<tr>
<td>Age, mean (sd)</td>
<td>15.2 (1.9)</td>
<td>15.0 (2.0)</td>
</tr>
<tr>
<td>Asthma diagnose</td>
<td>93.2 (138)</td>
<td>94.3 (83)</td>
</tr>
<tr>
<td>Asthma medication use &gt;6 years</td>
<td>70.9 (105)</td>
<td>61.4 (54)</td>
</tr>
<tr>
<td>Adherent (MARS ≥41)</td>
<td>44.6 (66)</td>
<td>37.5 (33)</td>
</tr>
<tr>
<td>CARAT controlled (CARAT &gt;24)</td>
<td>27.0 (40)</td>
<td>15.9 (14)</td>
</tr>
<tr>
<td>Allergic rhinitis controlled (&gt;8)</td>
<td>38.5 (57)</td>
<td>39.8 (35)</td>
</tr>
<tr>
<td>Asthma controlled (≥16)</td>
<td>27.0 (40)</td>
<td>13.6 (12)</td>
</tr>
<tr>
<td>PAQLQ, mean (sd)</td>
<td>5.96 (0.58)</td>
<td>5.79 (0.68)</td>
</tr>
</tbody>
</table>

For how long did you use the app?

n=57

Useful
Attractive

How often did you use the app?

n=55

Every day
Once a week
Few times a month
Once a month
Other

Future implications
Further analysis will reveal if a mHealth intervention is effective in improving medication intake behavior. Asthma is used as a model, but insights from this project will also be valuable for adolescents with other chronic disorders.

References