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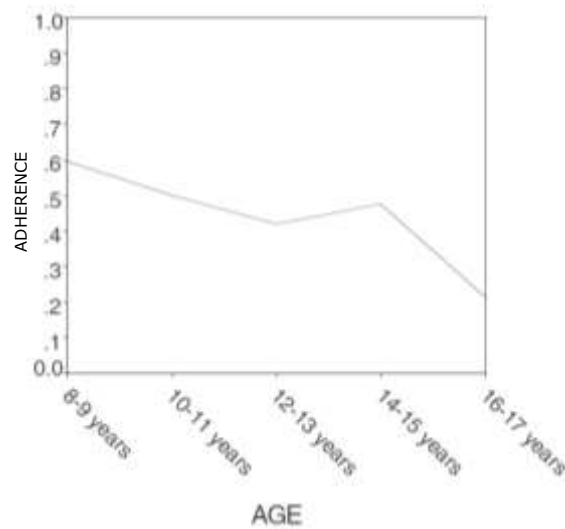


Implementation of mHealth in the pharmacy
Lessons learned from the ADAPT study

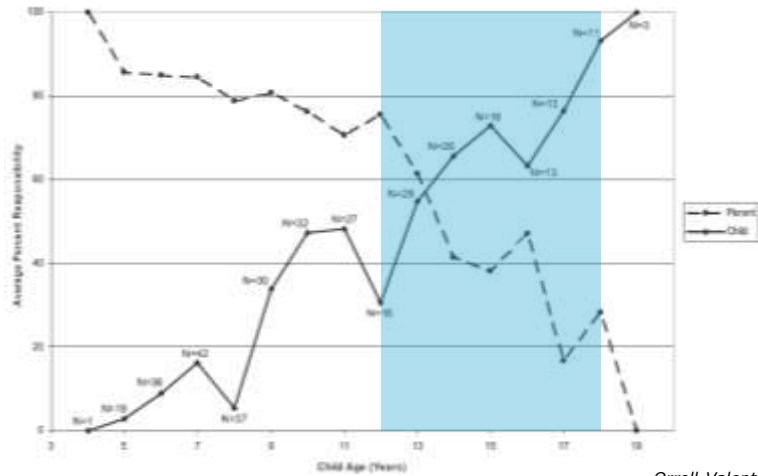
Dr. Ellen Koster
ESCP Symposium 2019 Ljubljana



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McQuaid et al. 2003



Questionnaire study
182 adolescents

Adherence often less than 50%

Forgetting
Low needs
Limited knowledge

Interviews
170 pharmacy staff members

Pharmacy staff have limited contact with this patient group

Focus groups
21 adolescents

Smartphone app suggested as solution for support



ADAPT study

Adolescent ADherence Patient Tool

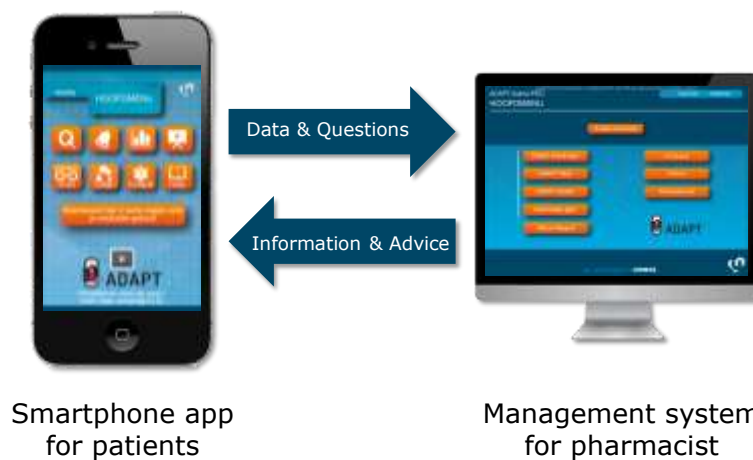
Aim

To develop and test the ADAPT intervention in supporting self-management and adherence in adolescent asthma patients

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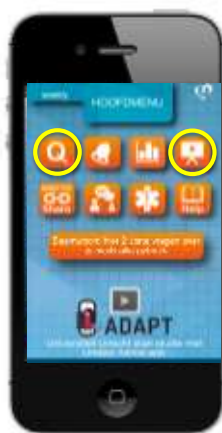


Mobile health (mHealth) intervention

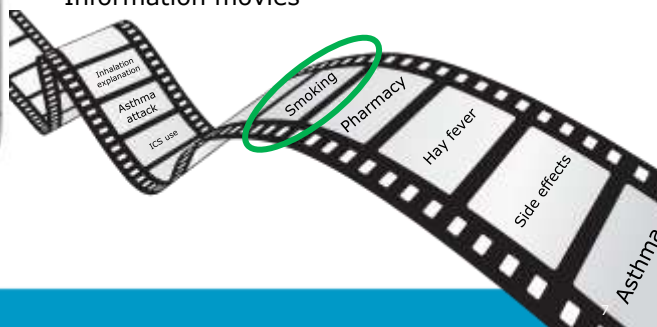


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App features



- Questionnaire to monitor symptoms
- Medication reminder
- Chat with other participants
- Chat with pharmacist
- Adherence questions
- Information movies

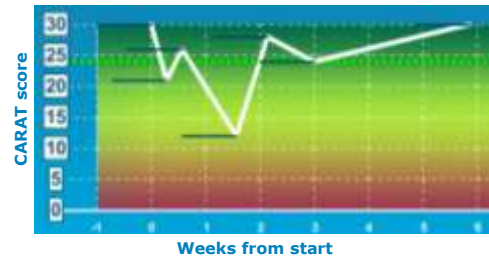


Pharmacy management system



- Monitor symptoms, adherence and activity
- Contact the patient through e-Consult or send movies

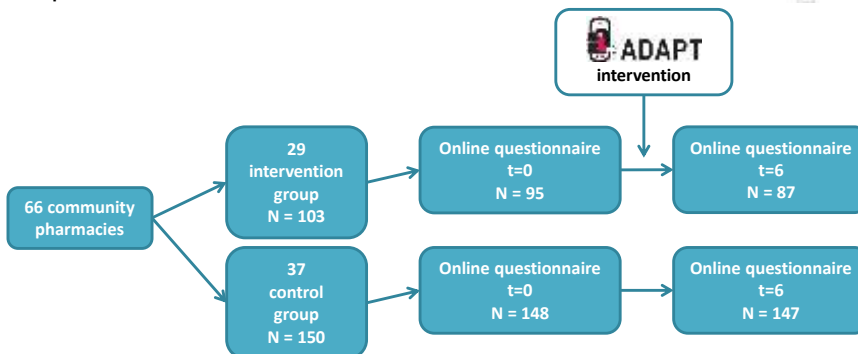
Questionnaire to monitor symptoms



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Study design

Cluster randomized control trial in community pharmacies of the UPPER network



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Effect of a mHealth intervention on adherence in adolescents with asthma: A randomized controlled trial



Richelle C. Kosse^a, Marcel L. Bouvy^a, Tjalling W. de Vries^b, Ellen S. Koster^{b,*}

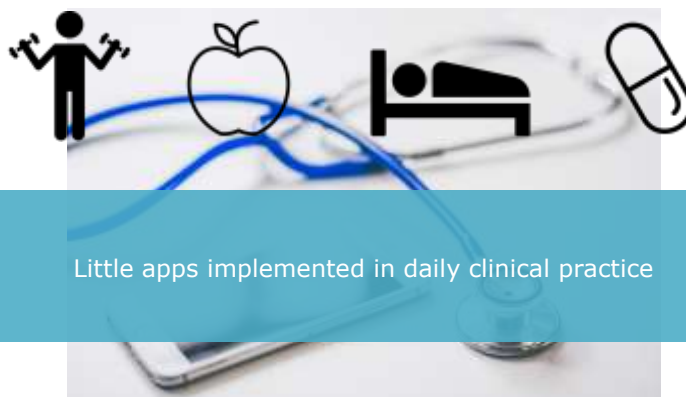
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Conclusions: The ADAPT intervention increases medication adherence in adolescents with asthma having poor adherence rates at baseline. Healthcare providers should consider a tailored mHealth approach to improve the asthma treatment.

Mobile Health (mHealth)

"The use of mobile and wireless devices to improve health outcomes, healthcare services and health research"



Little apps implemented in daily clinical practice



What did we study?

- **Effect of the ADAPT intervention on adherence**
 - Patient questionnaires

- **Use & effective engagement of the app by patients**
 - App log data & patient questionnaires
- **Use of mHealth in the pharmacy**
 - Questionnaires & interviews pharmacists
- **Potential normalization of mHealth**
 - Applying a theory-based framework



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App use



n=86 used the app in total 1,975 times

1. CARAT questionnaire (n=85)
2. Adherence questions (n=72)
3. Movies (n=44)
4. Chat with pharmacist (n=38)
5. Chat with participants (n=18)



4.2 ± 2.1 months



22.5 ± 22.0 times

Kosse *et al.* JMIR Mhealth Uhealth. 2019

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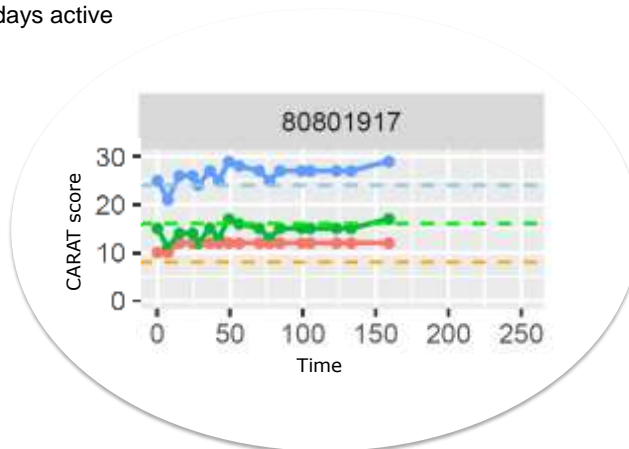
CARAT questionnaires



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Example app data

- 17 times questionnaire
- 160 days active



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Per person use of **three app elements**



Women used app more frequent ($p = 0.01$) and for a longer period of time ($p = 0.03$)

No effect of total app use on adherence



Use of the **pharmacist chat function** had a positive effect on adherence ($p = 0.01$)

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User evaluation

Evaluation study with 82 adolescents and 23 pharmacists



Adolescents

- 78% would recommend ADAPT to others ($n=64$)
- Symptom monitor and reminder most appreciated
- 28% experienced problems ($n=23$)



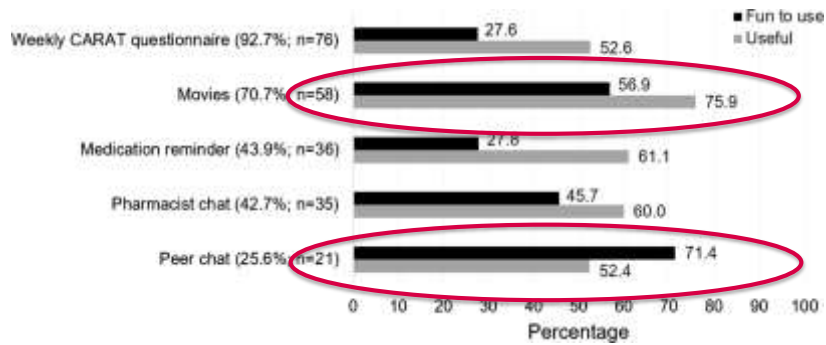
Pharmacists

- For 91% using ADAPT was not time consuming ($n=21$)
- Symptom monitor and patient chat most appreciated
- 30% experienced technical problems ($n=7$)

Kosse *et al.* Int J Clin Pharm. 2019

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Patient experience



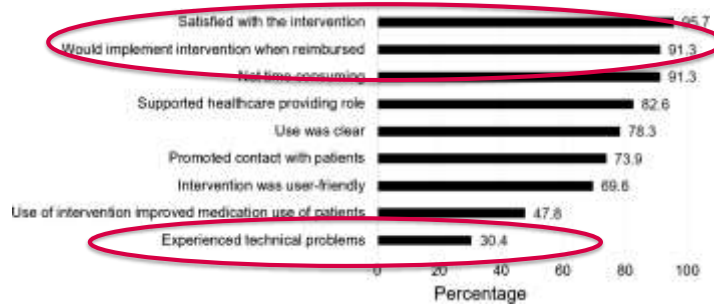
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Patient opinion about the app



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Pharmacist opinion about the intervention



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Implementation study

To study the normalization potential of a mHealth intervention for adolescents with asthma in the community pharmacy

- Normalization Process Theory (NPT)
- Sociological approach retrospectively
- 4 constructs

Normalization

- To become part of routine practice
- "disappear from view" or "taken for granted"
- Not a value judgement



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Normalisation – 3 phases



Implementation: bringing into action
- Actual use of the intervention



Embedding: incorporation in daily work
- In the organisation: community pharmacy



Integration: integration in practice
- Intervention is reproduced and sustained



Implementation does not mean embedding and integration

May et al. 2009 and 2016

Four const

Coherence
Sense-making

Does it makes sense?

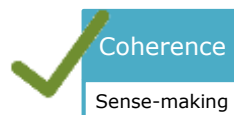


Construct	Component	Explanation
Coherence <i>(Sense-making)</i>	Internalisation	Understanding the value, benefits, and importance
	Individual specification	Understanding specific technical tasks and responsibilities
	Differentiation	Understanding the interconnections
	Contextual specification	Working together with others to build a shared understanding of the same objective, and expected benefits
Cognitive participation <i>(Effort)</i>	Initiation	No participants share responsibilities forward
	Investment	Organizing or reorganizing of participants and others to collectively contribute
	Legitimation	Ensuring that other participants believe it is right for them to be involved, and can make a useful contribution
Collective action <i>(Commitment)</i>	Activities	Following the actions and procedures needed to sustain using of health and (day) routine
	Interactional workability	Impact on interactions, particularly the interactions between healthcare professionals and patients (consultations)
	Relational integration	Impact on relations between groups of professionals
	Self-reliance workability	Fits between non-implementation and existing skill set
Reflective evaluation <i>(Appraisal)</i>	Contextual integration	Fits with overall organisational context: goals, needs, leadership, and resources
	Systematisation	Determining how effective and useful it is for participants and for others
	Communal appraisal	Working together in formal collaborations or in informal groups to evaluate the work
	Individual appraisal	Working experimentally as individuals to appraise its effects on them and the contexts in which they are in
	Reclassification	Adapting to evidence, procedures or modify the intervention itself

Active monitoring
Appraisal

worth it?





- **Differentiation:** Intervention was unique
- **Internalization:** Importance and benefits were clear
- **Individual specification:** Use and responsibilities were clear
- **Communal specification:** Problem of non-adherence and aim intervention was clear

*"The pharmacy is the right place for mHealth interventions like ADAPT, because medication adherence and medication counselling belong to pharmacists."
Male pharmacist, age 50 years*



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- **Initiation:** Researchers drove implementation forward
- **Enrolment:** Re-organize themselves to participate
- **Legitimation:** Pharmacy right place for mHealth (96%)
- **Activation:** Defined actions and procedures to stay involved (newsletter, decision tree)

*"Use of the ADAPT intervention cost very little time, approximately 5-10 minutes per week"
Male pharmacist, age 40 years*



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- **Interactional workability:** Facilitated contact with patients (75%)
- **Relational integration:** Supported healthcare providing role (83%)
- **Skill set workability:** Training was useful and use was clear (78%)
- **Contextual integration:** Fit with overall organizational context: contributed to integrated care
→ Integration of computer program

*"I used the chat quite often.
The patient completed the questionnaire to monitor symptoms which was nice, and sometimes I needed to contact the patient based on the symptom score."
Male pharmacist, age 31 years*



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- **Systematization:** Improved adherence in poor adherent patients
Pharmacist chat most effective
- **Communal and individual specification:** 96% was satisfied
- **Reconfiguration:** Redefine procedures, intervention, reimbursement

*"I really liked participating in the ADAPT study and the training at the start was also very nice."
Female pharmacists, age 29 years*



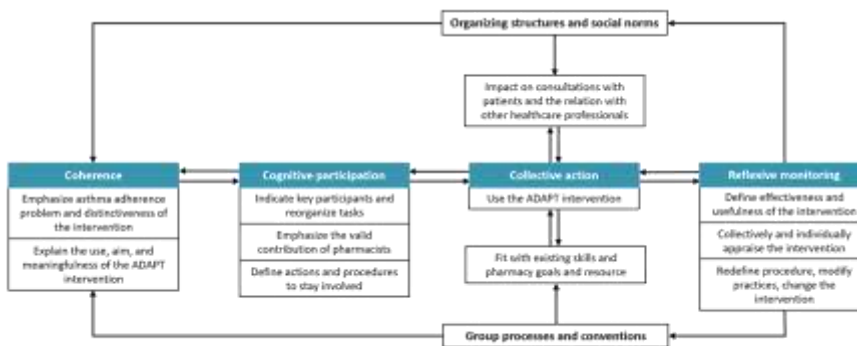
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Changes at different levels are needed:

- Work flow
- Pharmacist skills
- Appointing a key person
- Reimbursement
- Support of professional bodies



Complex and continuous process



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summary



The ADAPT intervention increases adherence in adolescents with asthma having poor adherence



Different patients use different elements



Symptom monitor and healthcare provider chat are recommended for mHealth intervention



To implement mHealth it is important to routinely use it in clinical practice

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Considerations for use of mHealth

- Training of users is essential
- Short reaction time
- Solve technical problems
- Attractive design
- Privacy aspects
- Reimbursement



- Communication tool
- Not a solution for every patient
- Personalised approach



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Take-home messages



**mHealth useful
for support in
medication use**

**Tailor to
patient needs
&
Select suitable
patients**

**Local context &
conditions for
implementation**

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ZonMw



KNMP



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Studie opzet

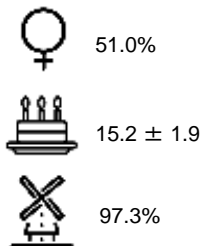


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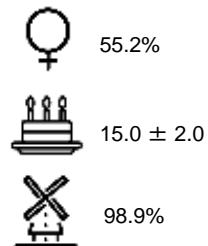
Control

N=147



Intervention

N=87



+ Lifestyle, environment, medication use, physician visits

No difference between groups ($p > 0.05$)