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Apps and aids for adherence

First results of a systematic review on eHealth for improving medication adherence

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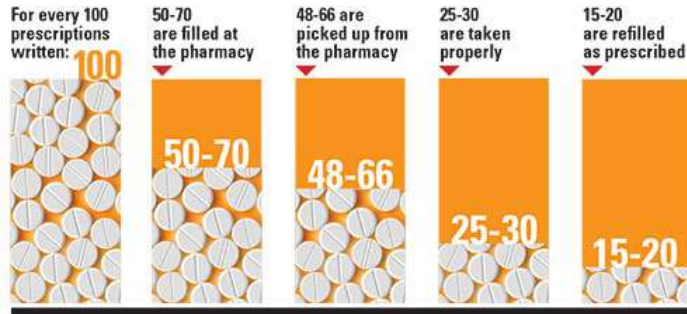
ESCP Ljubljana 23.10.2019

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Disclosure

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The president of the ESCP is my boss and responsible for paying my salary.

Otherwise I have no relevant conflicts of interest to disclose concerning this presentation.

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Adherence remains a problem

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For every 100 prescriptions written: **100**

50-70 are filled at the pharmacy: **50-70**

48-66 are picked up from the pharmacy: **48-66**

25-30 are taken properly: **25-30**

15-20 are refilled as prescribed: **15-20**

Source: National Association of Chain Drug Stores, Pharmacies: Improving Health, Reducing Costs, July 2010. Based on IMS health data.
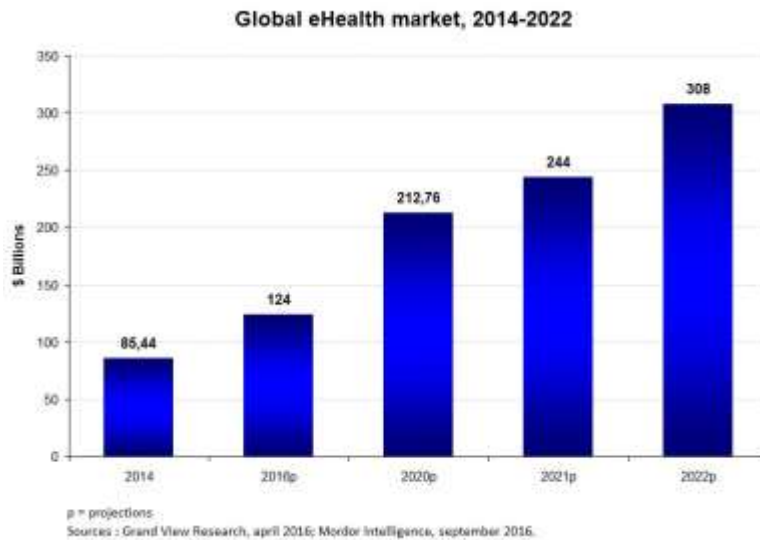
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Reasons of non-adherence

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COMPLEXITY

SIDE EFFECTS

BELIEFS

FORGETFULNESS

LOGISTICS

COSTS

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Meanwhile eHealth is on the rise

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Global eHealth market, 2014-2022

p = projections
Sources : Grand View Research, april 2016; Mordor Intelligence, september 2016.

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Can eHealth help tackle non-adherence?

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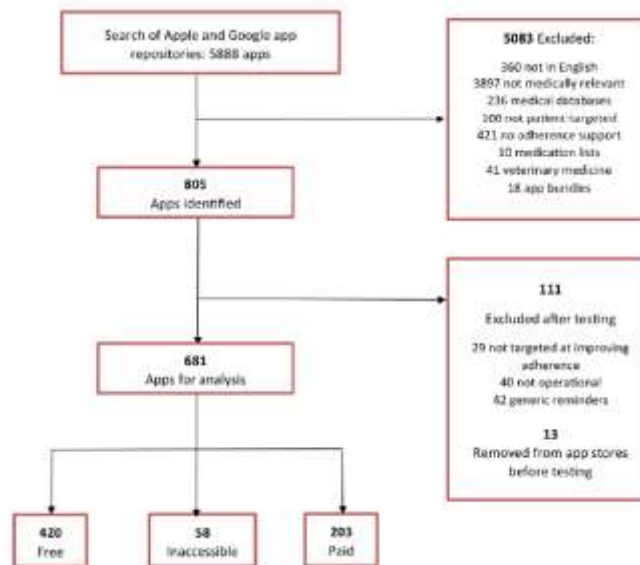eHealth = the use of information and communication technologies for health

- can provide ongoing support regardless of space and time

- allows for tailor-made and interactive solutions

- facilitates an increased access to healthcare

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Apps for medication adherence

Ahmed I, Ahmad NS, Ali S, et al. JMIR Mhealth Uhealth. 2018;6(3):e62.

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Systematic review on eHealth and adherence

Population
Adults with chronic medication

Intervention
eHealth interventions aimed at the patient and/or caregiver

Comparator
Usual care

Outcome
Medication adherence

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Systematic review on eHealth and adherence

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Search strategy
- 5 databases (PubMed, PsycINFO, EMBASE, Cochrane Library and Web of Science) from January 1st 2014 to July 4th 2019

Eligibility criteria
- PICO
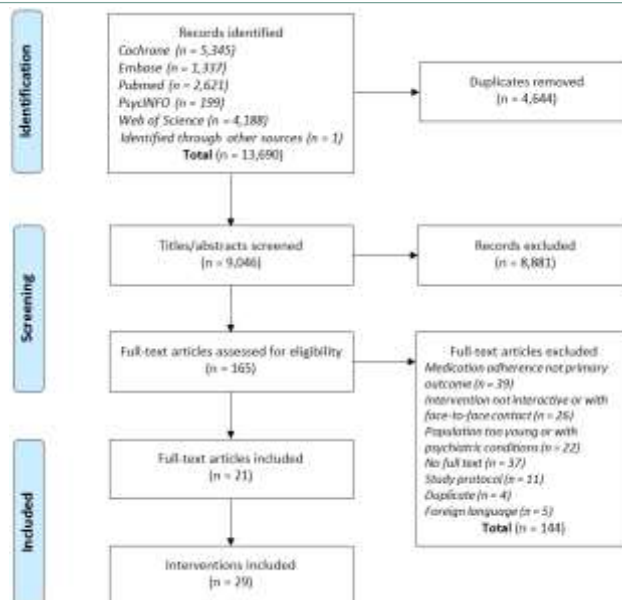- randomised controlled trials with at least 50 adult patients

Data analysis
- Data extraction
- Best-evidence synthesis
- Quality assessment

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Search results

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Results – study characteristics

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Study size
- 70 – 250: 14 studies
- 250 – 2.500: 5 studies
- 2.500 – 21.752: 3 studies

Medication
- cardiovascular or diabetes medication: 13 studies
- immunosuppresive medication: 3 studies
- osteoporosis medication: 2 studies
- all chronic medication: 1 study
- bisphosphonates, RAS-inhibitors or statins: 1 study
- anti-retroviral medication: 1 study
- calcipotriol/betamethasone foam: 1 study

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Results – study characteristics

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Follow-up
- 1 month: 3 studies
- 2 months: 2 studies
- 3 months: 6 studies
- 6 months: 7 studies
- 12 months: 4 studies

Type of adherence
- initiation of therapy: 2 studies
- implementation of therapy: 20 studies

Outcome measure
- monitoring device: 7 studies
- refill rates: 6 studies
- serum level: 1 study
- pick-up prescription: 2 studies
- self-reported questionnaire: 6 studies

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Results – intervention characteristics

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Channel
- monitoring device: 9 interventions
- SMS and/or interactive voice response (IVR): 5 interventions
- mobile application: 6 interventions
- call: 6 interventions
- e-training: 3 interventions

Examples
- Adherence monitoring with customised reminders plus provider notification.
- daily IVR call services and through SMS: daily prescription tailored medication reminders and once weekly life style modification messages
- 6 motivational interviewing phone calls conducted by specially trained pharmacy students
- three interactive web-based sessions hosted by a virtual nurse each 20 to 30 minutes long

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Risk of bias

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Are eHealth interventions on medication adherence effective?

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Method - effectiveness

Data analysis
- Level of evidence
    - strong: at least two high quality studies with consistent results
    - moderate: one high quality or two or more low quality studies with consistent results
    - limited: result of one lower quality study
    - conflicting: inconsistent results among two or more studies

- Consistent is defined as at least 75% of the studies should point in the same direction

- If there were two or more high quality studies the lower quality studies were disregarded

- Favours intervention if difference between intervention and control is statistically significant

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Results – effectiveness on channel

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Channel	Quality	Favours intervention	Level of evidence
monitoring device	9 HQ interventions	4 / 9	Conflicting evidence
	0 LQ interventions	-	
SMS and/or IVR	5 HQ interventions	4 / 5	Strong evidence for a positive effect
	0 LQ interventions	-	
mobile application	3 HQ interventions	3 / 3	Strong evidence for a positive effect
	3 LQ interventions	-	
call	4 HQ intervention	3 / 4	Strong evidence for a positive effect
	2 LQ interventions	-	
e-training	1 HQ intervention	0 / 1	Moderate evidence for no effect
	2 LQ interventions	0 / 2	

Abbreviations = HQ: high quality; LQ: lower quality

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Conclusion

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- Overall quality of the studies is high

- eHealth interventions on medication adherence are effective (if the intervention is channeled through:)

  - mobile application
  - SMS and/or IVR
  - call

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What makes eHealth interventions on medication adherence effective?

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Purpose of the intervention

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- Löwe et al. (2011): to create an overview of the purposes of an intervention to better understand and organise evidence on medicines use

- purposes indentified:
    - to inform and educate
    - to support behaviour change
    - to teach skills
    - to facilitate communication and/or decision making
    - to support
    - to minimise risk and harms
    - to improve health care quality

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Results – interventions
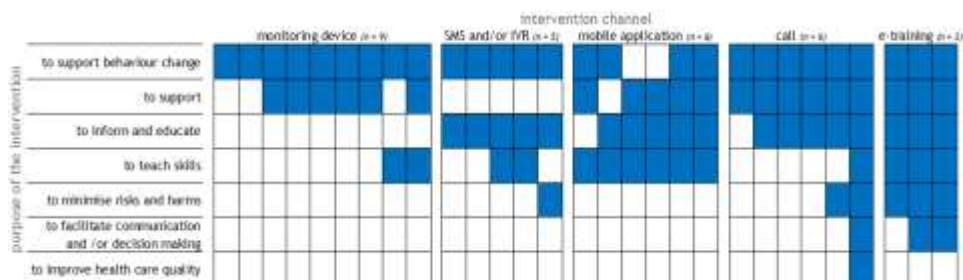
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Results – effectiveness on complexity

Complexity	Quality	Favours intervention	Level of evidence
≤ 2 purposes	11 HQ interventions	4 /11	Conflicting evidence
	0 LQ interventions		
3 – 4 purposes	9 HQ interventions	9 / 9	Strong evidence for a positive effect
	5 LQ interventions		
5 ≥ purposes	2 HQ interventions	1/ 2	Conflicting evidence
	2 LQ interventions		

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Conclusion

- eHealth interventions on medication adherence are effective if the intervention applies more than 2 purposes to address adherence behaviour

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Discussion

- What do we call effective?
    - 10 – 30% difference in adherence in current review

- Preliminary results
    - need to further test robustness of results
    - investigate effect of intervention 'dosage'
    - investigate the effect of degree of self-management
    - Investigate the duration of the effect
    - any other thoughts/suggestions?

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Take home message

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- Interventions on adherence are effective
  - ➤ Keep up the good work!

- More eHealth is coming
  - ➤ Better be prepared!

- Adherence is still a problem and we have effective interventions
  - ➤ Implementation is key!

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Disclosure

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I will be giving a workshop on 'implementing adherence interventions in practice' twice during this ESCP conference

Otherwise I have no relevant conflicts of interest to disclose concerning this presentation.

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