Swiss-Meds: An app Fostering Medication Adherence of Swiss Patient

Frederic EHRLER, Liliane GSCHWIND, Philippe MEYER, and Katherine BLONDON
University Hospitals of Geneva
Switzerland
Chronic conditions and medications

• Chronic conditions induce the intake of medications on the long run

• Complexes medications plan are often needed in case of comorbidities
50% of medication plans fail during the first year
The causes of medication non-adherence

Don’t Understand Need for Medication

Personal Beliefs Against Taking Medication

Don’t Understand How to Take the Medication

Can’t Afford Medication

Forget to Take Medication
Consequences

MEDICATION NON-ADHERENCE RESULTS

20% Hospital and Long-Term Care Facility Admissions related to non-adherence

125,000 Deaths Per Year attributed to non-adherence

80% Higher Rate of Additional Heart Attacks for heart attack survivors

$2,000 per person Additional Costs to the US healthcare system
Difficulty of implementing health behavior changes

- Implementing health behavior changes such as a new medication routine is a difficult process
Promises of mHealth for supporting medication adherence
Not many High-Quality Apps

- Flexible scheduling: 56.3%
- Medication tracking history: 54.8%
- Snooze option: 34.9%
- Visual aids: 32.4%
- Customizable alert sounds: 29.8%
- Multiple users support: 29.0%
- Data exporting/sharing: 26.5%
- Multilingual: 26.1%
- Refill reminders: 19.5%
- Reminders with no connectivity: 15.8%
- Data privacy - Password protection: 13.2%
- Data security: 11.0%
- Adherence statistics and charts: 10.7%
- Medication database: 10.7%
- Notification for other people: 5.9%
- Time zones support: 5.5%
- Adherence rewards: 1.8%
We are still at the start of the trend
Method

1. Identification of core functionalities
   • Based on adherence and non-adherence factors from the MAR-Scale

2. Application development
   • User-centric design involving specialists and end-users

3. Evaluation
   • Expert evaluation
   • On-site evaluation by endusers by uMars Scale
User centric design
uMARS evaluation

- **User Version of the Mobile Application Rating Scale**
- This scale includes 20 questions in 5 domains:
  - engagement
  - functionality (interaction)
  - aesthetics
  - information
  - some subjective items (recommendation)
# Functionalities identified to support each domain

<table>
<thead>
<tr>
<th>Domain</th>
<th>App functionalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management issues</td>
<td>Barcode scanning, medication images</td>
</tr>
<tr>
<td>Multiple medication</td>
<td>Global view on medication plan</td>
</tr>
<tr>
<td>Belief issue with medication</td>
<td>Information about medication adapted for patients</td>
</tr>
<tr>
<td>Availability issues</td>
<td>Reminders, also for refills</td>
</tr>
<tr>
<td>Forgetfulness and inconvenience issue</td>
<td>Timely notifications as reminders</td>
</tr>
</tbody>
</table>
Find any Swiss drug

Setup easily your medication

Access adapted information

Set reminders

Historic

scan → Adjust → Inform → Set → Follow
Reducing management issues

- Each medication has an associated image (from the database or taken by the user) to help ensure that the proper identification of the medication.
- particularly useful when multiple medications are administered at the same schedule.
Fighting against forgetfulness

• Reminder can be set to be recalled about the medication intake
Fighting against misunderstanding

- Educational materials for all the coronary heart disease-related medications, as well as for commonly used medications (ex: ibuprofen).
- This information is adapted to the users’ health literacy level, and tested with the users.
Expert evaluation

• Good quality regarding security and privacy
• Necessity to be able to erase personal data when desired.
• Good expertise of the authors (cardiologist, pharmacist).
• More details about the references and sources of funding.
• No clear educational intervention is integrated in the app.
• Adaptation to the time zone.
• Capability to resize font is lacking
Complexity of recruitment

• Recruitment the hospital pharmacy
• 62% of the visitors of the pharmacy did not have a chronic condition
• 10% lack of interest
• 9% already having a solution.
• In total, 3% of the approached patients were included in the study.
• Selected participants were
  • 50% male and 50% female
  • Aged from 20 to 59 years
  • 50% of them had only one treatment
uMARS evaluation

- After 15 days of usage

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Average</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engagement</td>
<td>3.05</td>
<td>1.1</td>
</tr>
<tr>
<td>Functionality</td>
<td>3.75</td>
<td>0.9</td>
</tr>
<tr>
<td>Aesthetic</td>
<td>3.66</td>
<td>0.9</td>
</tr>
<tr>
<td>Information</td>
<td>3.56</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>3.46</td>
<td>1</td>
</tr>
</tbody>
</table>
Evaluation

- In general, the variance was pretty high (up to 1.79).
- Two participants rated the mainly positively (more than 4 in the uMARS score), and two more negatively.
- Customization was judged negatively.
- None user clearly expressed their willingness to pay.
- App performance was judged negatively by two participants, who also judged the app most negatively overall.
- On the positive side, app interaction as well as aesthetics was judged positively by all participants.
- Another positive side of the application was the quality of the information provided in the app
Future works
Contact us

• [www.swiss-meds.ch](http://www.swiss-meds.ch)

• Frederic.Ehrlar@hcuge.ch
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