The Necessity of Using Mixed Methods for Assessment of mHealth Interventions: Application in the "Full Flow of Data-sharing" Project

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Background and aims

Research typically assesses "what" a clinical intervention impacts, e.g. change in HbA1c. However, the current mobile health (mHealth) movement not only advocates for but also allows for better understanding of "how" and "why" changes occur during the "black box" that represents health interventions. We propose a mixed method approach for such interventions, based on experience gained from our previous studies [1-3], with a new set of measures.

Methods

A) Positive and negative qualities were identified from previous studies that evaluated an mHealth self-management smartphone application (the Diabetes Diary app) for Type 2 Diabetes patients.

B) Both improvements and supplementary perspectives (see Figure 1), measures and methods were identified through courses, lectures and literature searches in Pubmed and Google Scholar.

Results

A) Review of previous studies revealed: 1) too few measures of app-impact; 2) that users recorded data inconsistently; 3) the need for secure and efficient infrastructure for mHealth data-capture and 4) the potential benefit of analyzing app usage-logs.

B) We expect the following measures will improve mHealth intervention evaluation: questionnaires reflecting health competence, behaviour change, motivation, as well as usage-logs and registered-data within the apps (see Figures 1 and 2).

Conclusion

mHealth intervention assessment should not be limited to clinical measures.

Measures that reflect patients' engagement, e.g. usage logs, health competence, self-management and health beliefs should be added to better understand why and how self-management and health status are affected by mHealth interventions.

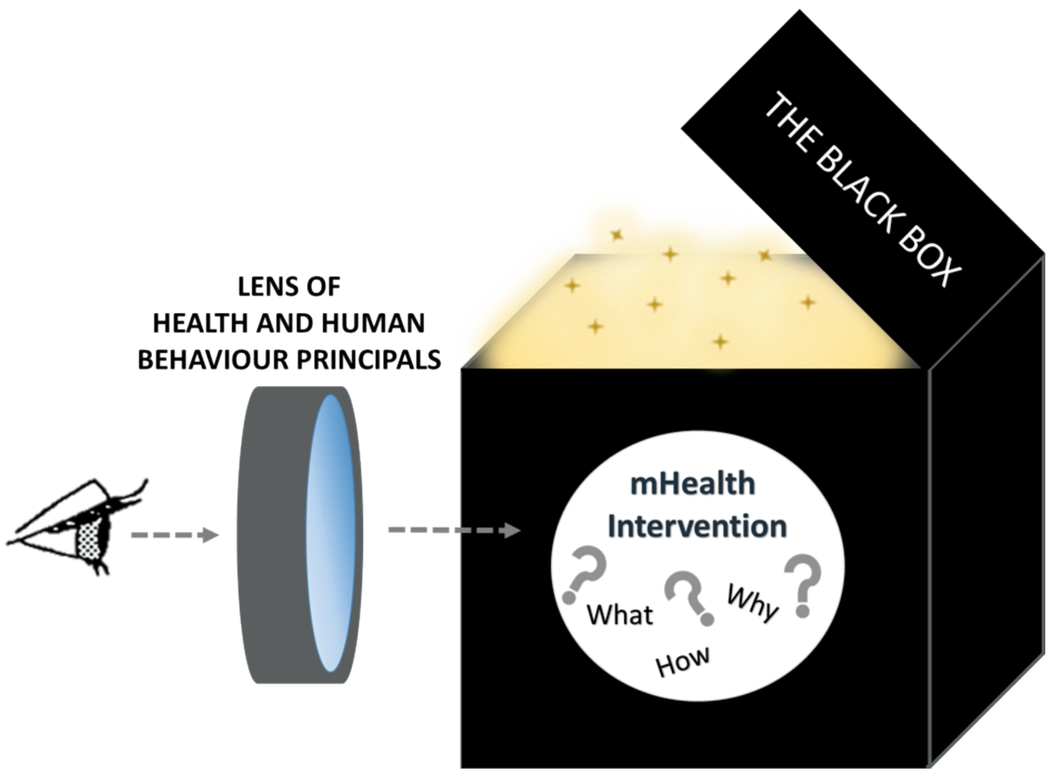

Figure 1. Illustrating "The Black Box" of clinical research intervention studies. By opening the black box we can understand what is happening during the course of the intervention.

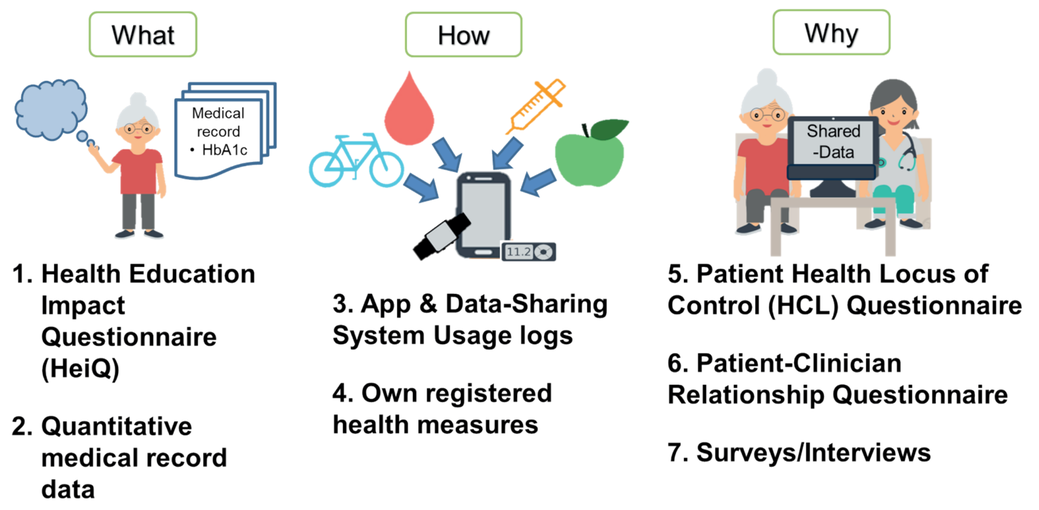

Figure 2. Illustration that the chosen measures (1-7) better explain what, why and how an mHealth data-sharing intervention impacts diabetes self-management and treatment.

Updates on this work will be presented during E-poster Discussion **SESSION 1 (Station 2)**.

Also visit poster **ATTD-0179** to learn about our experience with co-design.

References

1. Holmen, H. and A. Torbjornsen, A Mobile Health Intervention for Self-Management and Lifestyle Change for Persons With Type 2 Diabetes, Part 2: One-Year Results From the Norwegian Randomized Controlled Trial RENEWING HEALTH. 2(4): p. e57.
2. Bradway, M., et al., System for enabling clinicians to relate to a mobile health app: preliminary results of the norwegian trial in the eu fi-star project. Diabetes Technology & Therapeutics, 2016. 18(S1).
3. Årsand, E., et al., The need for updated evaluation approaches for ehealth and mhealth interventions – a dynamic concept for more efficient trials, in Diabetes Technology & Therapeutics. 2017. p. A-88-A-88.