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Evaluating Evidence-Based Mobile Health Apps: An Interactive Thought Exercise

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Objectives

- **Objective 1:** The participant will list the strengths and weaknesses of the current mHealth evaluation tools.

- **Objective 2:** The participant will identify the necessary evidence-based elements of future mHealth evaluation tools.

Current State of mHealth

- Health and wellness mobile (mHealth) apps are rapidly changing the healthcare process:
  - potential to positively impact healthcare management and outcomes
  - 86% expressed an interest in using mHealth to manage chronic health conditions and to learn about their health (Ramirez et al., 2016)

- Estimate between 40,000 and 60,000 mHealth apps in the U.S. (Silow-Carroll & Smith, 2013)

Potential Evaluation Tools

- Mobile App Rating Scale (MARS) (Stoyanov et al., 2015)

- Heuristic Evaluation of a Mobile Consumer Health Application (Monkman & Kushniruk, 2013)

- The Practice Guide To Evaluating App Usability (mHIMSS, 2012)

- Suitability of Assessment Materials (Doak, Doak, & Root, 1996)

- Designing Health Literate Mobile Apps (Broderick et al., 2014)

Methods: Selecting the Apps

- Identified categories of mHealth apps:
  - breastfeeding, smoking cessation, and asthma
- Eligibility criteria to be included in the evaluation:
  - free for the patient to download (e.g., no "in-app" purchases or maintenance fees)
  - targeted to clients, rather than providers
  - available for download and within the top 10–25 search results in both iTunes and Google Play app stores
  - a native mobile app (not web-based or hybrid)

AsthmaMD

Kick the Habit: Quit Smoking

(*LatchME*. 2015; *Kick the habit: Quit smoking*. 2016; *AsthmaMD*. 2016)

Methods: Assessment of Apps

- Each reviewer assessed each of the 3 selected apps with each of the evaluation tools
  - All tools included paper forms
  - Each reviewer noted strengths and weaknesses of each tool
- Reviewers results were compared

Results: Strengths

- Suitability of Materials
  - Literacy demand and cultural appropriateness

- Mobile App Rating Scale
  - Online training video, comprehensive technical evaluation, assessed for evidence-based practice

- Heuristic guideline
  - Practical aspects of app functionality, simplified rating scale

- mHIMSS checklist
  - Evolving capabilities of mHealth apps, assessed clinical documentation tools, ability of app to utilize client data

Results: Weakness

- Suitability of Materials
  - Not for mobile apps

- Mobile App Rating Scale
  - 7-pages long, time consuming, requires the calculation of each categorical mean, inconsistent scores between reviewers

- Heuristic guideline
  - Limited focus, designed for developers

- mHIMSS checklist
  - Designed for developers, subjective in nature

Observations

- Limited inclusion of evidence-based elements
  - Two-way SMS as positively influencing health behaviors and patient outcomes (Free, Phillips, Galli, et al., 2013; Free, Phillips, Watson, et al., 2013,Orr & King, 2015, Poorman, Gazmararian, Parker, Yang, & Elon, 2015)

- Lack of interoperability between the app and other systems

- No tools provided guidance as to how the results should be interpreted

- Lack of tools for healthcare providers

Future of mHealth Evaluation Tools

- Incorporate the evidence from the 12 years of mHealth studies

- Utilize health behavior change technologies to develop apps

- Healthcare provider focused tools
  - 90% of patients reported they would use a mHealth app if recommended by physician (Digitas Health, 2013)

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