

How can mHealth be used to improve the health and functioning of people with disabilities?

The question and the problem

The rapid rise in mobile phone use and functionality in recent years has opened new possibilities for increasing access to health information and services for people with disabilities. mHealth is defined by the World Health Organization as “medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants, and other wireless devices”. It is a component of eHealth, which more broadly applies electronic and communications technology to health service provision. Although there is a rapidly growing literature on mHealth in low- and middle-income countries (LMICs), the evidence for its effectiveness remains mixed, especially for people with disabilities, who may face additional barriers to accessing technology and the internet.

Recommendations

- **Recommendation #1:** Design mHealth products and strategies in partnership with people with disabilities and their families.
- **Recommendation #2:** Adapt mainstream health apps to be accessible and appropriate for people with disabilities.
- **Recommendation #3:** Address the digital divide, enabling people with disabilities to access technology equitably.
- **Recommendation #4:** Use mHealth tools as part of multi-component strategies, and pay attention to integrating them well within health systems and communities.
- **Recommendation #5:** Implement measures for data security, safety, and quality of interventions

“To improve health and reduce health inequalities, rigorous evaluation of eHealth is necessary to generate evidence and promote the appropriate integration and use of technologies.”

World Health Organization Bellagio eHealth Evaluation Group, 2011

Challenges

Challenge #1: People with disabilities may not have access to mobile devices and adequate internet

- Although the majority of people living in LMICs now have access to mobile phones and the internet, certain groups may be consistently left behind, including people with disabilities. There is a risk that the growth in mHealth interventions will deepen health inequalities if this “digital divide” is not addressed.

Challenge #2: Existing technology and applications are not accessible to people with disabilities

- Various functional impairments may interfere with the use of mobile phones and other devices, including difficulties with manual dexterity, vision, hearing, and cognition. Mainstream health apps and websites may not be accessible for people with disabilities, even those aimed at managing conditions for which people with disabilities are at increased risk.

Challenge #3: Data security, privacy and confidentiality are major concerns

- There are insufficient standards and protocols in place to ensure informed consent and data security. mHealth products may thus expose users to risks of privacy and confidentiality breaches, especially in environments with low levels of information security regulation. People living with mental illness, cognitive impairment and substance misuse may be especially vulnerable to these risks.

Challenge #4: User attrition is high for many mHealth applications

- Adherence to mHealth interventions is a major challenge to their effectiveness.

Challenge #5: Existing evidence for mHealth interventions in LMICs is limited and mixed

- Existing mHealth research is mostly made up of small pilot and feasibility studies. Importantly, people with disabilities and their caregivers are not usually included in studies of mainstream novel or pre-existing mHealth interventions.
- While some studies show clear benefits from mHealth interventions, others show little or none, and it is unclear what factors contribute to effectiveness. There thus is a lack of rigorous research to understand “what works” in context, and insufficient cost-benefit studies to inform disability-inclusive investments in mHealth.
- There is also a need for additional research to investigate and document effective cross-cultural adaptations of mHealth approaches.

How did we find answers?

We conducted a review of reviews, examining systematic, narrative, and other types of review evidence on the topic of mHealth for people with disabilities living in LMICs. Papers dealing with eHealth more generally were excluded if their focus was on telehealth (i.e. the direct provision of services by healthcare workers via videoconferencing or other remote communication technology, such as tele-rehabilitation or tele-mental health). Fifteen peer-reviewed articles were included in this evidence review, of which 11 focused either on LMICs or global health. Findings from HIC contexts were included, but only where transferability to LMICs was judged to be realistic and feasible. In practice, this meant excluding any interventions relying on access to specialised technology, consistently reliable broadband internet connection or intensive input from health professionals.

Evidence-informed recommendations and actions

Key Recommendations	Actions
Design mHealth products and strategies in partnership with people with disabilities and their families	Work with target users (including people with disabilities) at multiple stages of product development. Consider the needs of different age groups in product design. Match mHealth design to user lifestyle, habits, preferred modes of engagement, and access to technology/literacy.
Adapt mainstream health apps to be accessible and appropriate for people with disabilities	Include people with disabilities in all product development and testing. Ensure mHealth products are compatible with accessibility features (e.g. text-to-speech and closed captioning). Ensure that pre-existing mHealth services already integrated into service provision (e.g. emergency call centres/telephonic test results) are adapted to meet the needs of people with disabilities. Design for universal accessibility and consider the full range of impairments (e.g. enable activity trackers to capture physical activity of wheelchair users).
Address the digital divide, enabling people with disabilities to access technology equitably	Promote affordable internet access and expand coverage in rural and remote areas. Design mHealth strategies for the technology most accessible and appropriate to marginalised groups. Devise financing mechanisms to promote access to technology for marginalised groups (e.g. health insurance coverage of devices or subsidised internet access). Provide training and support for users with low literacy.
Use mHealth tools as part of multi-component strategies, and integrate them well within existing systems	Avoid standalone interventions, as these are usually unsuccessful. Include active and relational engagement with mHealth using text messaging or telephonic follow-up. Train users and include caregivers, who may be key in ensuring people with disabilities can access mHealth. Train health service providers to support users and to integrate mHealth into routine care. Integrate mHealth products that cover multiple life activities or health conditions, and ensure interoperability. Use social media to strengthen social bonds and give voice to the marginalised.
Implement measures for data security, safety and quality of interventions	Establish or strengthen protocols and standards for data protection, privacy, confidentiality, and proper informed consent, especially for those who may need additional support in this area. Follow norms and standards for interoperability and promote the collection of standardised and anonymised data across products. Align mHealth content with evidence and clinical guidelines. Consider an accreditation system to protect users from inappropriate or harmful products.

Policy priorities

Ministries for communications and technology should strategise to ensure internet access for people with disabilities. Investments in technological infrastructure should be informed by evidence of effectiveness and contextual appropriateness. Health authorities should consider extending insurance coverage to include proven mHealth interventions. Standards and protocols for data security and confidentiality must be implemented.

Conclusion

Not enough is known about what approaches to and combinations of mHealth interventions work, for whom, and where. Further research is required to test effectiveness and key principles for cross-cultural adaptation in LMICs especially. It is vital that people with disabilities and their families are included in every stage of mHealth design, research and implementation which concerns them, particularly because the digital divide for people with disabilities remains a serious concern. mHealth interventions hold considerable promise, but are not a standalone solution to improving equity in healthcare access.

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GAPS & RESEARCH NEEDS

Studies of mainstream mHealth interventions should always include people with disabilities as participants. Rigorous study designs are needed to determine effectiveness over longer-term use and in real-life settings. Research should focus on identifying the elements of mHealth interventions that contribute to success. The private sector and civil society seem to play an important role in promoting inclusive societies and leveraging mHealth; more research in this area is needed to document these learnings. Negative effects of engagement with mHealth for vulnerable groups should also be investigated. Cost-benefit studies are urgently needed to inform sensible investment.

Peer Review: This brief has been peer reviewed by Dr Arne Henning Eide, Chief Scientist, Department of Health Research, SINTEF Digital and Professor Nicola Ann Plastow, Associate Professor, Division of Occupational Therapy, Health and Rehabilitation Sciences, Stellenbosch University.

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