

Perspectives of Developers of Digital Mental Health Technology on Ethical Issues related to Access, Bias and Disparities

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Introduction, Background, and Methods

Introduction and Background

- Smartphone apps and other digital technologies, such as wearables and predictive algorithms, for addressing mental health have proliferated in recent years.
- Digital mental health technology has significant potential to improve delivery of cost-effective treatment for mental health care.
- The goal of improving access to mental health care has been emphasized as a major reason to support large-scale investments of resources into development of digital mental health technologies.
- The benefit of providing widescale access to mental health care has at times served as a way to downplay some of the ethical challenges in this area, such as accountability, transparency, and privacy.

Background

- In order to address the mental health crisis expected from the pandemic and provide mental health care in a socially distanced manner, there has been a major, accelerated move towards adoption and implementation of digital tools for mental health care. [1-3]
- Psychiatry and therapy sessions are being conducted via video-conferencing platforms and digital tools for diagnosis, monitoring and treatment, such as mental health apps, are increasing in use. [4]
- Regulatory standards have been relaxed to fast-track the leap to digital mental health care [5], giving renewed urgency to ethical issues presented by digital mental health tools, such as lack of evidence of efficacy, privacy and data protection, bias and fairness, transparency, and accountability. [6,7]

Background Cont'd.

- According to the WHO an estimated up to **55%** of people with mental health issues in the U.S. do not receive *needed* help
- Barriers to access disproportionately impact low-income and rural communities- Black Americans, Latinx and Asian Americans are *significantly* less likely to receive MH treatment
- Digital mental health tools take proper training and oversight to use effectively, and insufficient resources for adequate training of professionals serving low-income demographics will likely mean that quality mental healthcare will still not be accessible even with a push to expand use of digital tools.

Methods

- Design: qualitative study utilizing semi-structured interviews
- Selection Process and Criteria:
- Recruited developers and clinicians who work in digital mental healthcare via LinkedIn and email
- N: 40 people involved in development of digital mental health tools, including computer scientists, clinicians, and entrepreneurs
- Analysis: In the Dedoose platform, interviews were coded and analyzed for primary themes- bias, disparities, access, privacy, safety, regulation, etc.
- This presentation focuses on issues related to the use of digital technology to provide *fair* access to mental health care.

Results and Discussion

“[...] discovering research that people do obviously receive different care levels in communities of different socioeconomic standings and race”

“Underrepresented groups have the highest mental health problems but don't have access to therapy”

Disparities



Summary of Disparities Results

❖ Disparities in Data

- Racial disparities in data used to develop AI algorithms
- User research data--lack of inclusion of minorities in digital health product studies

❖ Racial Disparities

- “[Racial minorities] are the groups who experience the highest rates of mental health challenges, so we really need to be making sure that our product meets the needs of those groups and go beyond sort of, you know, getting the expertise on staff to address those issues and [towards improving] the usability testing that we do”

❖ Economic Disparities

- Low-income and unemployed demographics tend to have more depression and anxiety than their middle- and high-income counterparts
- Are services affordable for the low-income and unemployed patients who most need them?



“We need to consider ethics of diversity of our solution: not just does solution work but who is being represented, is our content diversified and representative. That’s not an ethical question that everyone might come up with – that’s what makes it important, this balancing diversity of thinking and work culture”

Diversity



Summary of Diversity Results

❖ Race

- “The issues that we address may not translate in a different culture or context, or even different ethnic groups”
- “We know that doctors talk differently with different races [...] and I think those kind of things are true for mental health also”

❖ Sexual Orientation and Gender

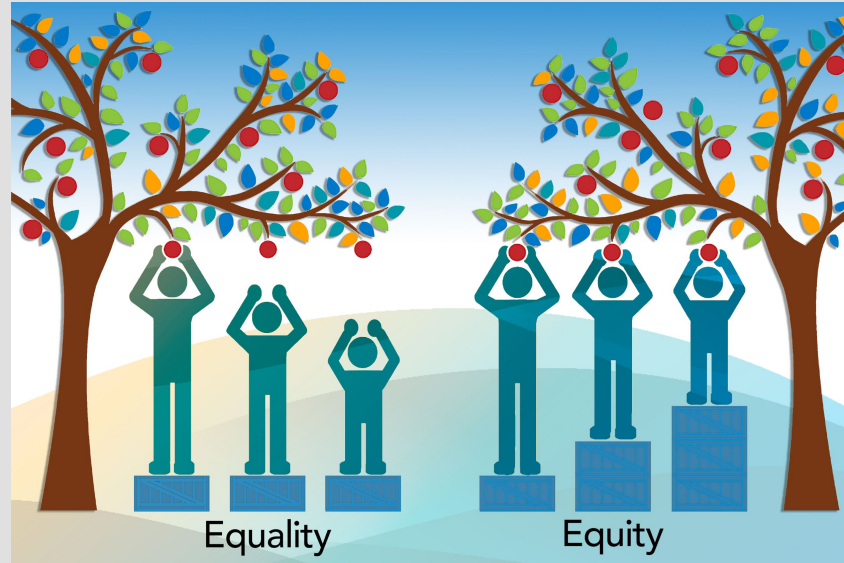
- “For now our intention is to hire consultants who are from different racial/ethnic backgrounds and who work specifically in that domain research on groups... you know, from minority groups, to just increase diversity and not just limit it to racial/ethnic diversity, but, you know, LGBTQ...”
- “None of your user stories are male”
- “70-80% of our users are female”

❖ Age

- “Some older adults don’t have sufficient mobile device proficiency”

“We want as many people as possible to have access to mental healthcare...but at the same time to make sure that you’re never compromising on quality of care.”

Access



Source: <https://www.nwhu.on.ca/ourservices/Pages/Equity-vs-Equality.aspx>

Summary of Access Results



➤ Missions:

- Alleviate the marked contrast between supply and demand for mental healthcare
- Deliver a therapist's office through a smartphone, bridging the healthcare gap

➤ Notable Statements:

- “Most people regardless of socioeconomic status have some type of cell phone...It's really only the most destitute portions of the population that wouldn't have” access.
- “The cost of care goes down, the price goes down for the customer, so I think that in this distributed scale model it's ethical”
- **“We want as many people as possible to have access to mental healthcare and not limit it for a few privileged people, but at the same time to make sure that you're not ever compromising on quality of care and that business needs...are not in contradiction with actual medical or clinical[ly] positive outcomes”**

Discussion

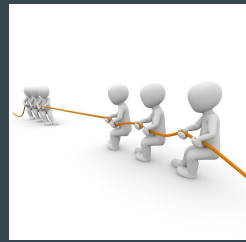
Disparities and Diversity

- ❖ Insufficient resources for adequate training of mental health professionals serving low-income demographics means that quality mental healthcare (or any mental healthcare at all) is not accessible to racial and socioeconomic minorities [8]
- ❖ Non-white populations are underrepresented in the data used to develop digital mental health algorithms and tools [9]
- ❖ With recent calls for racial justice, there has been more discussion about how to address issues of bias- DMH companies may turn to more diverse therapists pools, recruiting diverse groups, and including underrepresented groups among developer and startup teams.
- ❖ Ensuring that digital mental health tools do not reflect and reinforce disparities [10]
 - Diverse and representative datasets
 - Clinicians and developers reflect racial and socioeconomic diversity of patients
 - Tailor treatment to patients' racial, linguistic, ethnic, and cultural backgrounds

Access

- Most digital mental health (DMH) developers appear *driven* to improve access, which is consistent with popular applications:
 - “We envision a world in which all people have the tools to overcome depression and anxiety.”
 - “We believe technology has a crucial role to play in breaking down barriers to access for thousands of people without compromising on quality.”
- When used in the DMH context, “access” typically refers to the ubiquity of smartphones and other technologies, but the interviews frequently noted other barriers to access- cost, availability of therapists, care is that sensitive to the needs of different populations.

Conclusion



- **Consumer-Clinical Gradient-** Achieving a balance between \$\$\$, Accessibility and Efficacy & Sensitivity
 - Improved Efficacy and Sensitivity drives up cost, which decreases Accessibility
 - The chronic issue of profit-driven health still impacts the extent to which digital mental health is concerned with the recruitment of a diverse population
 - DMH services may strive to provide access to low income, racial and gender minorities, yet the creation of such service is costly- this may inhibit their original intent as some families cannot spend over \$100 dollars/month on mental health care
 - This relationship is consistent with the advent of technology- has the capacity to improve the lives of many, but its advanced nature and high price paradoxically limits its accessibility

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