

Improving Mental Health with Digital Technology

Mental Illness in America

An estimated ~10 million (1 in 25) American adults live with SMI*

There are approximately:

2.4

million

people living with
Schizophrenia

16

million

people living with
major depression

\$ 193.2
billion

in costs to the US in lost
earnings due to SMI

6.1

million

people living with
bipolar disorder

42

million

people living with
anxiety disorders

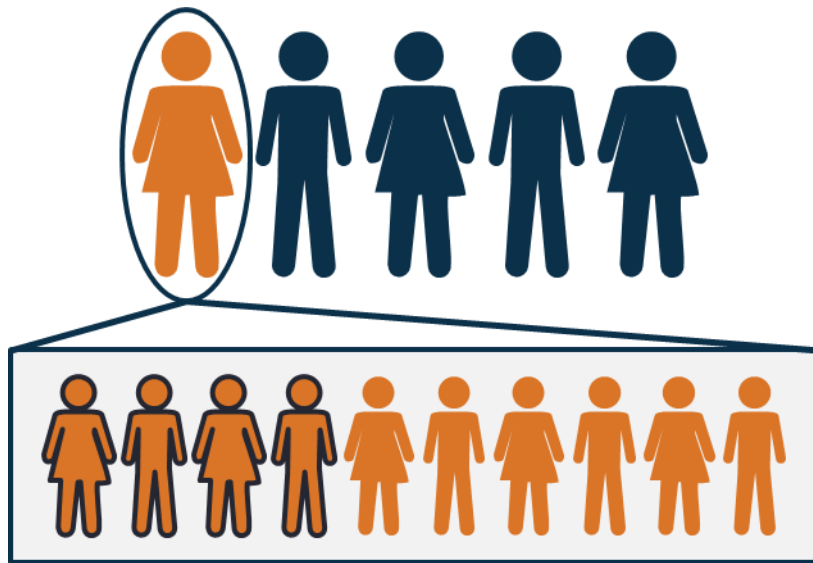
*Based on data from the 2016 National Survey on Drug Use and Health (NSDUH) performed by the Substance Abuse and Mental Health Services Administration (SAMHSA). SMI, severe mental illness, US, United States.

NAMI. Mental Health Facts in America. Available at: <https://www.nami.org/NAMI/media/NAMI-Media/Infographics/GeneralMHFacts.pdf>. Accessed October 2, 2018.

Mental Healthcare Access in America

In 2016...

1 in 5 American adults were living with mental illness*



Only ~40% of patients with mental illness received treatment in the past year*

On average, the US has 1 mental health provider† for every 536 individuals²



*Based on data from the 2016 National Survey on Drug Use and Health (NSDUH) performed by the Substance Abuse and Mental Health Services Administration (SAMHSA).

†The term "mental health provider" includes psychiatrists, psychologists, licensed clinical social workers, counselors, marriage and family therapists, and advanced practice nurses specializing in mental health care.

1. NAMI. Mental Health Facts in America. Available at: <https://www.nami.org/NAMI/media/NAMI-Media/Infographics/GeneralMHFacts.pdf>. Accessed September 30, 2018.

2. Mental Health America. The State of Mental Health in America. 2018. Available at: <http://www.mentalhealthamerica.net/issues/state-mental-health-America>. Accessed September 30, 2018.

There Are Many Barriers to Access to Optimal Mental Health Care in the United States



SHORTAGE OF MENTAL HEALTH PROFESSIONALS¹



TRANSPORTATION DIFFICULTIES²



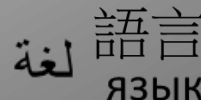
COST OF THERAPY²



TIME CONSTRAINTS²



CONCERNS ABOUT WHAT OTHERS WOULD THINK²



**LIMITED ENGLISH
relatable PROFICIENCY³**

1. Thomas KC, et al. *Psychiatr Serv.* 2009;60:1323-1328.

2. Mohr DC, et al. *Ann Behav Med.* 2006;32:254-258.

3. Bauer AM, et al. *Med Care.* 2010;48:1097-1104.

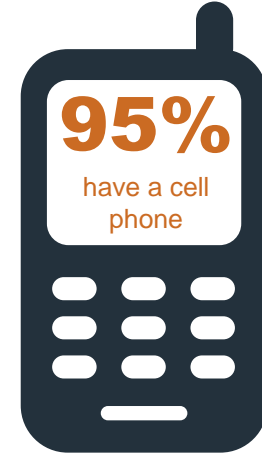
Technology Use in the United States

The January 2018 Core Trends Survey from the Pew Research Center surveyed 2,002 adults aged 18 or older nationwide with access to a landline or cell phone

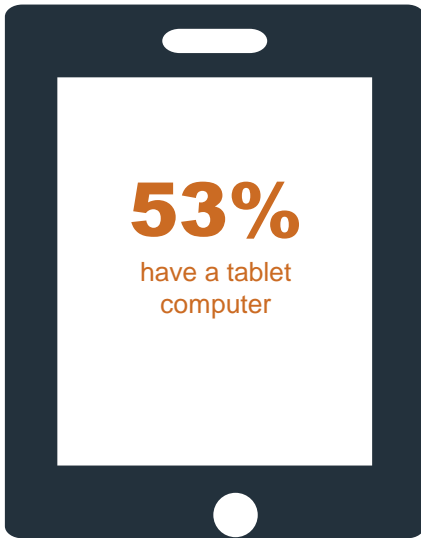
89%
currently use
the internet



95%
have a cell
phone



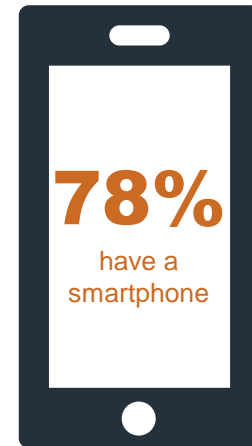
53%
have a tablet
computer



73%
have a desktop or
laptop computer



78%
have a
smartphone

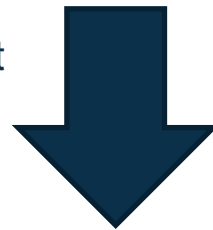


1. Pew Research Center. January 2018 Core Trends Survey Topline Results. Available at: <http://www.pewinternet.org/dataset/jan-3-10-2018-core-trends-survey/>. Accessed August 30, 2018.
2. Pew Research Center. Tech Adoption Climbs Among Older Adults. May 2017. <http://www.pewinternet.org/2017/05/17/tech-adoption-climbs-among-older-adults/>. Accessed August 30, 2018.

Telemedicine and Telepsychiatry

Telemedicine: process of providing health care from a distance through technology, often using videoconferencing¹

Subset



Telepsychiatry: process of psychiatric care through electronic communication between psychiatrists and patients²

The APA has declared telepsychiatry* to have become a core tool of daily clinical practice³

*In the form of live interactive videoconferencing.³

APA, American Psychiatric Association.

1. American Psychiatric Association. What is Telepsychiatry? <https://www.psychiatry.org/patients-families/what-is-telepsychiatry>. Accessed October 2018.
2. Lauckner C, Whitten P. *J Behav Health Serv Res*. 2016;43(2):305-18.
3. Epstein Becker Green. 50-State Survey of Telemental/Telebehavioral Health (2017 Appendix). 2016. <https://www.ebglaw.com/content/uploads/2017/10/EPSTEIN-BECKER-GREEN-2017-APPENDIX-50-STATE-TELEMENTAL-HEALTH-SURVEY.pdf> Accessed August 2018

The Flexibility of Telepsychiatry: Potential Recipients

Telepsychiatry services can be used for the treatment of:¹



Children



Adults



Elderly

Additionally, telepsychiatry may be especially useful for patients with special considerations, such as:

Individuals in correctional facilities¹

Military personnel¹

Members of minority and ethnic populations¹

Patients with child or elder care responsibilities²

Patients who cannot take time off of work²

Patients who have limited mobility/travel ability³

1. Chakrabarti S. *World J Psychiatry*. 2015;5(3):286-304.

2. Chiron Health. Advantages of Telemedicine for Patients. Available at <https://chironhealth.com/definitive-guide-to-telemedicine/telemedicine-info-patients/advantages-telemedicine-patients/>. Accessed October 2018.

3. Modern Medicine Network. Physicians practice: Peter Antall. 5 Reasons to Practice Telehealth. Available at: <http://www.physicianspractice.com/health-it/5-reasons-practice-telehealth>. Accessed October 2018.

The Flexibility of Telepsychiatry: Potential Points of Delivery

Possible settings for delivery of telepsychiatry:



Emergency services¹



Hospitals^{1,2}



Community settings¹



Extended care and assisted living^{1,3}



Correctional facilities¹



Schools
(e.g. K-12, universities,
special needs)³



Patient homes¹

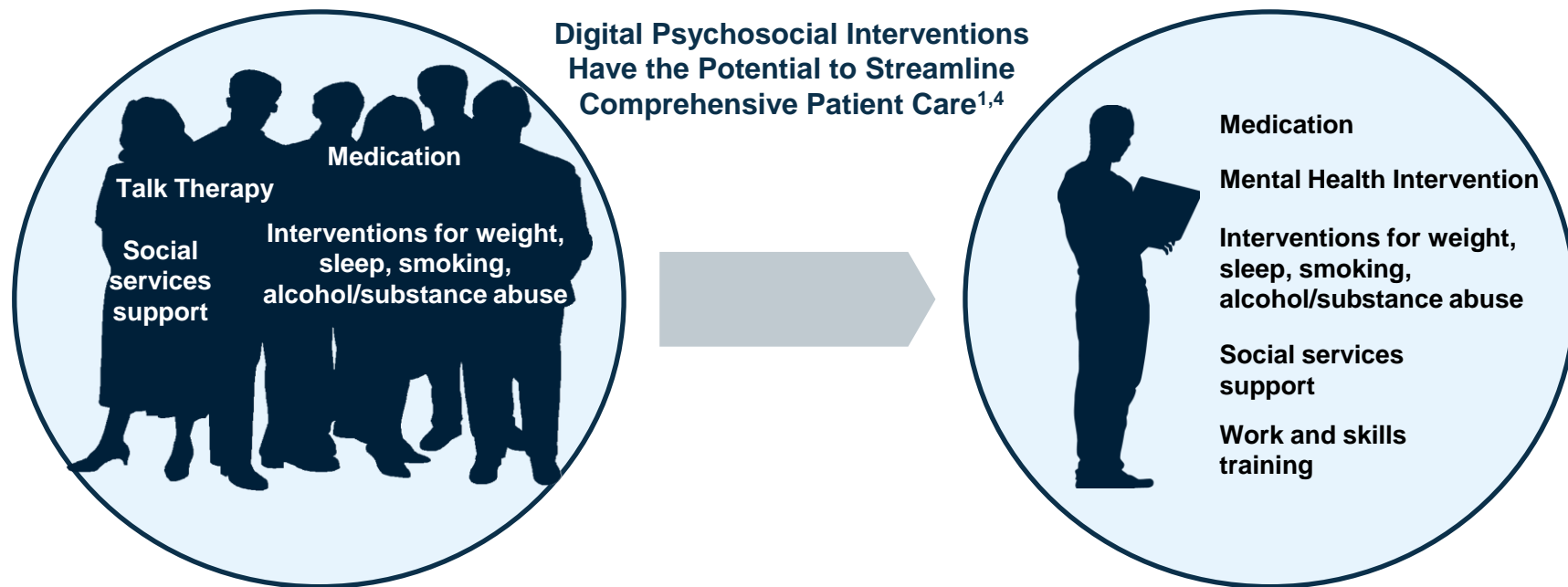


Primary care³

1. Chakrabarti S. *World J Psychiatry*. 2015;5(3):286-304.
2. American Psychiatric Association. What is Telepsychiatry? <https://www.psychiatry.org/patients-families/what-is-telepsychiatry>. Accessed October 2018.
3. Saeed SA, et al. *N C Med J*. 2011;72(3):219-22.

Digital Technology May Help Streamline the Delivery of Various Interventions

- Several mental health interventions can be delivered in digital formats^{1,2}
- Digital technology-based tools allow clinicians to offer a range of mental health interventions^{1,3}
 - Address barriers to face-to-face interventions and expand access to treatment¹



1. American Psychological Association. <http://www.apa.org/practice/guidelines/telepsychology.aspx>. Accessed September 30, 2015.
2. Depp CA, et al. *J Nerv Ment Dis.* 2010;198:715-721.

3. Renton T, et al. *J Med Internet Res.* 2014;16:e209.
4. Institute of Medicine. *Improving the Quality of Health Care for Mental and Substance-Use Conditions.* The National Academies Press; 2006.

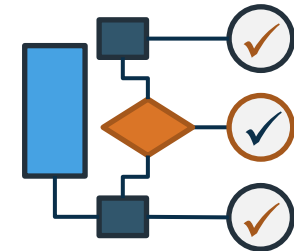
Digital Technology May Provide New Tools for the Assessment and Management of Mental Health



mHealth sensors¹



Digital interventions and assessments²



Clinical decision support systems³



Mobile apps for mental health⁴



Medication adherence technology^{5,6}



Telepsychology and telepsychiatry^{7,8}

mHealth, mobile health.

1. Ben Zeev D et al. *Psychiatr Rehabil J*. 2015;38(3):218-226.
2. Firth J et al. *J Psychiatr Research*. 2016;80:3-4.
3. Davis S et al. *J Am Med Informatics Assn*. 2017;24(4):857-866.
4. Donker T et al. *J Med Internet Res*. 2013;15(11):e247.
5. Mistry N et al. *J Am Med Inform Assoc*. 2015;22(e1):e177-93.

6. Granholm E et al. *Schizophrenia Bull*. 2012;38(3):414-25.
7. Joint Task Force for the Development of Telepsychology Guidelines for Psychologists. *American Psychologist*. 2013;68(9):791-800.
8. American Psychiatric Association and American Telemedicine Associations. *Best Practices in Videoconferencing-Based Telemental Health*. 2018.

Examples of Mobile Mental Health Digital Technologies in Action

Popular features of mental health apps include:



Medication reminders¹



Tools for managing stress, anxiety, or sleep problems¹



Cognitive remediation¹



Skills training and habit tracking¹



Illness management and supported care¹



Symptom tracking²

- Active (self-reported)
- Passive (sensor based)



Health education¹



Delivery of therapeutic interventions*³

*Such as cognitive behavioral therapy and/or behavioral activation.

1. NIMH. Technology and the Future of Mental Health Treatment. <https://www.nimh.nih.gov/health/topics/technology-and-the-future-of-mental-health-treatment/index.shtml>. Accessed September 14, 2018.
2. Ben-Zeev et al. *Psychiatr Rehabil J*. 2017;40(3):266-275.
3. Huguot et al. *PLOS One*. 2016;11(5):e0154248.

The APA's 5-Step App Evaluation Model

STEP 1

Gather background information

STEP 2

Evaluate risk, privacy, & security

STEP 3

Consider evidence of benefit

STEP 4

Gauge ease of use

STEP 5

Assess interoperability (when applicable)

APA, American Psychiatric Association.

American Psychiatric Association. App Evaluation Model. <https://www.psychiatry.org/psychiatrists/practice/mental-health-apps/app-evaluation-model>. Accessed May 9, 2019.

Pros and Cons of Mental Health Apps

Pros

- User identity can remain anonymous
- All users are getting the same treatment program
- Convenience with 24-hour service and support
- Provides service to more people at a lower cost than traditional care

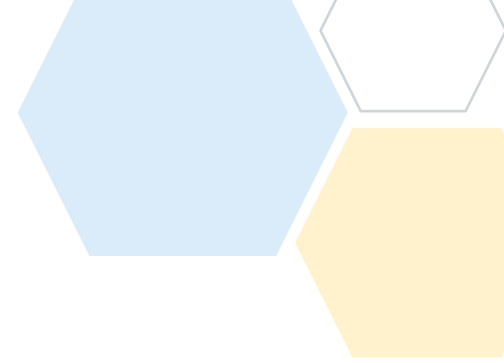
Cons

- No national guidelines or standards to prove effectiveness of technology and apps
- No real understanding if apps are effective for all people in all mental health conditions
- Privacy and regulatory concerns

Considerations when selecting an app:

- Ask a trusted health care provider for a recommendation
- Engagement capabilities
- Ease of use design
- Direct evidence with research to support the creditability of the app
- Beware of misleading logos

1. National Institute of Mental Health. Technology and the Future of Mental Health Treatment. Available at: <https://www.nimh.nih.gov/health/topics/technology-and-the-future-of-mental-health-treatment/index.shtml>. Accessed August 26, 2019.



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