

A Hero's Journey:

Literature review findings

Research Goals

To understand the problem space and identify features/potential solutions that will allow us to create an app that empowers users with diagnosed psychological conditions to take charge of their wellness.

Research Objectives

1. Understand the challenges faced by people struggling to take their psychotropic medication(s)
2. Find out the role technology plays in helping individuals as they try to address these challenges

Key Findings:

1. Medication:
 - a. Types of nonadherence: a study conducted in 2013¹, identified two main types of nonadherence:
 - i. Intentional (using rational thought process - weighing out pros and cons, or patients' beliefs surrounding their illness)
 - ii. Unintentional non-adherence involves forgetting to take medication or not knowing how to implement a complicated medication regime.
 - b. What were/are some of the biggest challenges patients face when taking medication?
 - i. Multiple studies and meta-analyses have concluded that nonadherence to medication involves a variety of factors that are complex, multi-dimensional, and patient-specific.
 1. **Patient's beliefs/perceptions:** this includes the patient's personal perceptions and notions of their illness and medication regime, as well as the stigma associated with these perceptions²
 2. **Provider-centered approach:** Medical providers do not find the time to appropriately educate their patients on their diagnosis and a regimented/restrictive approach that devises a medical plan that

¹ Hugtenburg, Jacqueline G et al. "Definitions, variants, and causes of nonadherence with medication: a challenge for tailored interventions." *Patient preference and adherence* vol. 7 675-82. 10 Jul. 2013, doi:10.2147/PPA.S29549

² Semahegn, Agumasie, et al. "Psychotropic Medication Non-Adherence and Associated Factors among Adult Patients with Major Psychiatric Disorders: A Protocol for a Systematic Review." *Systematic Reviews*, vol. 7, no. 1, 2018. Crossref, <https://doi.org/10.1186/s13643-018-0676-y>.

does not involve patient-provider collaboration leading to patients feeling confused and apprehensive about taking medication

3. **One-size fits all approach:** the above approach leads to medical practitioners suggesting generic and ineffective adherence methods to their patients instead of using motivational interviewing to find out the patients' underlying beliefs and barriers and customizing a treatment protocol and approach for the patients
4. **Adapting to a new/complex routine:** complex medication routines can overwhelm patients - a study showed that 72% of patients with once-daily regimens adhered to medications and this percentage decreased significantly when they had 2+ daily regimens³
5. **Information/education:** patient's lack of information surrounding their illness and medication regime negatively affects their adherence⁴

c. What are some common aids used by patients to sustain their habit of adhering to medication?

- i. The use of technological interventions has become increasingly popular to help patients with chronic illnesses adhere to their pharmacological intervention plan. SMSs⁵ have been the most studied and commonly used to do the following:
 1. **Reminders:** Automated and audiovisual reminders are commonly used but incorrectly so. They are used as a method to tackle adherence without determining the type of nonadherence faced by a patient
 2. **Supportive messages:** Personalized supportive messages were seen to have maximum impact on motivating patients to take their medication compared to generalized motivational/automated messages
 3. **Self-Monitoring:** Patients being able to report their adherence and view their adherence data has been found to empower patients by

³ Hugtenburg, Jacqueline G et al. "Definitions, variants, and causes of nonadherence with medication: a challenge for tailored interventions." *Patient preference and adherence* vol. 7 675-82. 10 Jul. 2013, doi:10.2147/PPA.S29549

⁴ Semahegn, A., Torpey, K., Manu, A. et al. Psychotropic medication non-adherence and its associated factors among patients with major psychiatric disorders: a systematic review and meta-analysis. *Syst Rev* 9, 17 (2020). <https://doi.org/10.1186/s13643-020-1274-3>

⁵ Berrouguet, Sofian, et al. "Fundamentals for Future Mobile-Health (mHealth): A Systematic Review of Mobile Phone and Web-Based Text Messaging in Mental Health." *Journal of Medical Internet Research*, vol. 18, no. 6, 2016, p. e135. Crossref, <https://doi.org/10.2196/jmir.5066>

giving them a sense of accountability thereby motivating them to adhere to medication⁶

- ii. **Community support:** not very common but in a systematic review conducted in 2020⁷, weak family functioning/support and lack of advice were seen to affect or exacerbate psychotropic nonadherence and can negatively impact a patient's relationship with their therapist and/or medical practitioner
- iii. **Automated/electronic pillboxes from pharmacies:** Commonly used and widely studied to be effective at reminding people to take once-daily medication. Not as effective in promoting adherence to medication in complex medicinal regimes

Conclusion

Looking at this data, it is very clear that one of the biggest problem plaguing the psychiatric community is the issue of medicine nonadherence. It can be a multifaceted and complex issue with no linear or singular solution. There is no common widely adopted regimen currently on the market (even those using technological aids) that provides *a personalized solution* or adherence regimen that addresses the individuals underlying reasons for nonadherence.

In summary, there is a clear need for an integrated solution that incorporates the following:

1. **People:** Existing and creating new social supports for the patient
2. **Process:** Utilizing a variety of aids such as reminders, audiovisual cues, educational resources, etc.
3. **Technology:** a mobile app that is always available on hand to keep the patient accountable, empowered, and on track

⁶ Zullig, Leah L., et al. "Ingredients of Successful Interventions to Improve Medication Adherence." *JAMA*, vol. 310, no. 24, 2013, p. 2611. *Crossref*, <https://doi.org/10.1001/jama.2013.282818>

⁷ Semahegn, A., Torpey, K., Manu, A. et al. Psychotropic medication non-adherence and its associated factors among patients with major psychiatric disorders: a systematic review and meta-analysis. *Syst Rev* 9, 17 (2020). <https://doi.org/10.1186/s13643-020-1274-3>