

Consultation-Liaison Psychiatry 2022

Title: Improved Mental Health Outcomes Through Phased Implementation of Technology-Enabled Behavioral Health Integration in Patients with Co-Occurring Pain and Depression

Objective: Treatment of depression in medical settings is critical to manage the reciprocal and reinforcing relationship between psychiatric and medical illness. Technology and population-focused models of care are critical to improving access to behavioral health care in the medical setting. This study focuses on a comparison between digital-only behavioral health interventions compared to technology-augmented collaborative care (CoCM) in patients receiving outpatient treatment in a pain treatment program. A technology-enabled behavioral health integration (tBHI) solution was implemented within a subspecialty pain setting in two phases: 1) A technology-only mobile health (mHealth) platform assessing patients for depression and providing artificial intelligence (AI) guided activities and interventions. 2) Integration of mHealth technology with psychiatric collaborative care (CoCM) clinical services.

Methods: Phase 1 of tBHI occurred over a 2-year period with patients completing the Patient Health Questionnaire-9 (PHQ-9) monthly within the mHealth platform. Year three expanded upon the mHealth platform with the addition of a Behavioral Health Care Manager and Psychiatric Consultant. 2808 patients were assessed for depression using the mHealth platform, and 1134 patients with an index score ≥ 10 on the PHQ-9 were included in the analysis. Response (a 50% decrease from the index score) and remission (subsequent PHQ-9 score of < 5) were measured within a 4–8-month window of an initial PHQ-9 score of ≥ 10 .

Results: Phase 1 implementation (2714 patients) of tBHI saw 80% assessment compliance from registered users within 30 days. The two-year rate of ongoing assessment compliance stabilized at 35%. Phase 2 expansion into technology-augmented CoCM (94 patients) saw a 10% increase in ongoing assessment compliance ($P < 0.002$) compared to Phase 1. For patients in Phase 1, the average time to response was 22 weeks. PHQ-9 scores in this group decreased from an average of 13.6 (SD. + / - 3.6) to 4.4 (SD. + / - 2.6). Phase 2 expansion decreased this time to 15 weeks within the CoCM program ($p < 0.001$) with 72% (+/-3.5% at 95%CI) reaching response. PHQ-9 scores in this group decreased from an average of 14.5 (SD + / - 3.9) to 3.7 (SD + / - 2.8). In Phase 1, the average time to remission was 24 weeks, and 74% of patients achieved remission. PHQ 9 scores decreased to an average score of 1.9 (SD. + / - 1.5) In Phase 2, the average time to remission was 17 weeks ($p < 0.001$), and 77% of patients achieved remission. PHQ 9 scores decreased to an average score of 2.3 (SD. + / - 1.6).

Impression/Conclusion: Providing patients with co-occurring pain and depression solely with digital interventions through an mHealth platform resulted in the vast majority of patients achieving both a response and remission within 22 - 24 weeks. Technology-enabled COCM decreased the response and remission times in the vast majority of patients to 15 - 17 weeks. With limited mental health resources nationally, leveraging technology as a digital only option can improve access to care and outcomes for patients with depression and pain. When technology-enabled CoCM is provided, time to response and remission can be shortened.

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