

UC Office of the President

Recent Work

Title

FEASIBILITY, ACCEPTABILITY, AND PRELIMINARY EFFICACY OF AN AUTOMATED CONVERSATIONAL AGENT FOR REDUCING SUBSTANCE MISUSE

Permalink

<https://escholarship.org/uc/item/7sh1g2dn>

Authors

Prochaska, Judith J

Vogel, Erin A

Chieng, Amy

et al.

Publication Date

2021

Peer reviewed

Feasibility, Acceptability, and Preliminary Efficacy of an Automated Conversational Agent for Reducing Problematic Substance Use

Judith J. Prochaska, PhD, MPH¹, Erin A. Vogel, PhD¹, Amy Chieng, BA¹,
Matthew Kendra, PhD², Michael Baiocchi, PhD³, Sarah Pajarito, MA⁴, Athena
Robinson, PhD⁴

¹Stanford Prevention Research Center, Department of Medicine, Stanford University

²Department of Psychiatry & Behavioral Sciences, School of Medicine, Stanford University

³Department of Epidemiology & Population Health, School of Medicine, Stanford University

⁴Woebot Health

Background: Misuse of substances is common, can be serious and costly to society, and often goes untreated due to barriers accessing care. Digital health programs offer greater public health reach. Woebot is a mental health digital solution informed by Cognitive Behavior Therapy and built upon an AI-driven platform to deliver tailored content to users. In a prior 2-week RCT, Woebot alleviated depressive symptoms. **Aims:** We adapted Woebot for the treatment of substance use disorders (W-SUDs), adding elements from Dialectical Behavior Therapy and Motivational Interviewing. In a single-group pre/post design, we report on feasibility, acceptability, and preliminary efficacy of W-SUDs. **Sample:** Adults (18-65) residing in the US who screened positive on the CAGE-AID without major health contraindications were enrolled March 27-May 6, 2020. Enrollment, double our recruitment goal, was N=104 (age $M \pm SD = 36.5 \pm 10$; 76% female; 78% non-Hispanic white; 73% employed; 67% with alcohol as the primary problematic substance, 21% cannabis and 36% poly-substance; 73% reporting a lifetime mental illness). Nearly all (98%) were sheltering-in-place with the COVID-19 pandemic. **Intervention:** W-SUDs is an 8-week program with mood and craving tracking, psychoeducational stories, and psychotherapeutic skills. Participants' use of W-SUDs averaged 16 ± 14 days, 16 ± 15 check-ins, and 561 ± 505 sent messages; 94% of psychoeducational stories were rated positively. **Results:** Post-treatment survey completion was 52% (n=54); better among older adults and those with higher pre AUDIT-C, DAST-10, and substance use occasions. From pre to post, in paired-samples tests, there were significant ($ps < .05$) declines in AUDIT-C (7.6 ± 2.1 to 5.6 ± 3.5) and DAST-10 (5.4 ± 1.5 to 3.2 ± 2.6) scores; substance use occasions (30 ± 14 to 21 ± 18); and PHQ-8 Depression (10.7 ± 5.4 to 9.0 ± 5.4) and GAD-7 Anxiety (10.4 ± 5.7 to 8.0 ± 5.5); and increases on all 8 confidence scales. At post, 86% rated W-SUDs as beneficial; 75% rated the interaction as good/excellent quality; 75% would recommend W-SUDs to a friend; and 58% felt W-SUDs met most-to-all of their needs. The 1 serious adverse event (hospitalization)

was deemed study unrelated. **Discussion:** W-SUDs was feasible to deliver, engaging, and acceptable, with significant improvements in substance use, confidence, and mood. Study attrition was high. With encouraging findings, future research will evaluate W-SUDs in an RCT with a more diverse sample and greater study retention strategies.

Funding: NIDA SBIR R44D048712

CT.gov: NCT04096001

Character count: 2497 < 2500 characters max