

Abstract

Simple to Use: Reflections From a Mobile Sleep Study Pilot

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Abstract

Background: Difficulty falling asleep and staying asleep are common problems that affect over 30 million Americans. Additionally, we know that military personnel and Veterans often have insomnia problems post deployment. Home sleep monitors can be used to diagnose sleep disorders and determine if the sleep issue cause is a physical issue, such as obstructive sleep apnea. Some non-physiological causes may be improved by focusing on behavioral change, which can be assisted by mobile health (mHealth) technologies. In addition, mHealth apps are an increasingly popular method to deliver behavioral change interventions for a variety of conditions, with the cognitive behavioral therapy for Insomnia Coach app (CBT-i Coach) being particularly popular (it has been downloaded over 80,000 times in 86 countries).

Objective: In this pilot trial we assessed the usability and feasibility of mobile health information technologies (HITs) designed to reduce sleep problems in post-9/11 Veterans with chronic insomnia. We used the CBT-i Coach mobile app (based on cognitive behavioral therapy for insomnia) and supplemented it with usage instructions to enhance self-management. Participants also used a home-based sleep monitor (WatchPAT) to obtain objective sleep data to assess possible sleep apnea and to provide subjects with objective data to motivate behavioral change.

Methods: Thirty-eight post-9/11 Veterans met criteria for insomnia on the Insomnia Severity Index (ISI). We assessed feasibility and usability of the HITs over a 6-week intervention with a pre-post design. The WatchPAT was used to screen for sleep apnea, and those with moderate to severe apnea were withdrawn from the trial and referred for further assessment. Participants were given a self-management guide which detailed when to use different elements of the CBT-i Coach app, including guidance to complete a sleep diary each morning. Assessments were completed at the beginning, middle, and end of the 6-week intervention.

Results: Of the 38 enrolled, 18 participants were withdrawn for moderate or severe sleep apnea as measured by the WatchPAT, and 9 withdrew for personal reasons. Post-intervention qualitative interviews revealed that many participants found both the CBT-i Coach app and WatchPAT easy to use. Participants also liked tracking their daily sleep and seeing graphical results of their sleep changes over time, with only 2 of the final 11 participants completing CBT-I Coach sleep diaries less than 85% of the time. Exploratory analyses on the 11 completers also revealed significant but modest differences between baseline ISI scores ($M=16.63$, $SD = 5.55$) and post-intervention follow-up ($M=12.82$, $SD = 3.74$; $t(10) = 4.14$, $P < .01$).

Conclusions: We found good usability of the combined CBT-i Coach app and WatchPAT sleep intervention and determined that feasibility was reasonable, with more than half of those not excluded due to apnea completing all assessments. The pilot demonstrated reasonable feasibility and usability of the mobile HIT tools which could provide an accessible adjunct or alternative to in-person cognitive behavioral therapy for insomnia to improve the health and wellbeing of busy individuals.

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usability testing; Veterans health; sleep

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