

EXPERIENCE WITH MOBILE TECHNOLOGY AMONG PATIENTS WITH TUBERCULOSIS IN SAN DIEGO, CALIFORNIA AND TIJUANA, MEXICO

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ABSTRACT

Each year, nearly 9 million cases of tuberculosis (TB) occur worldwide, resulting in 1.4 million deaths. While curable, long treatment regimens (6–24 month) negatively impact adherence for many patients, resulting in ongoing illness, continued transmission, and development of drug-resistant TB. Directly observed therapy (DOT) is recommended for improving adherence. DOT consists of TB providers watching their patients ingest each medication dose. However, DOT is costly, labor intensive and impractical in remote or resource-poor settings. To reduce these barriers, we developed the “Video DOT” (VDOT) system, whereby patients use mobile phones to record and send daily videos of themselves taking medications, which are then viewed remotely by DOT workers. To gauge feasibility of this technology-based approach, we assessed prior experience with mobile phones and willingness to adopt mHealth interventions in a sample of TB patients in the US/Mexico border region.

VDOT was pilot-tested in a single-arm trial among TB patients in San Diego, CA (n = 43) and Tijuana, Mexico (n = 9). Participants were interviewed before and after using VDOT for an average of 5.5 months (range 1–11 months). Ages ranged from 18–86 years old, 50% of patients were male and 50% were Hispanic. Education ranged from 24% completed primary education or less to 57% completing at least some college. Prior to study enrollment, 94% of participants owned a cell phone (55% were smartphones), of which most reported experience sending photos (72%) or videos (57%) from a cell phone, and 64% reported sending text messages daily. Age was the only factor significantly associated (p-values < .05) with owning a cell phone, owning a smart phone, sending pictures and videos, and daily text messaging. Experience with technology was similar between San Diego and Tijuana participants. Compared to baseline ranking on a 10-point scale, participants felt more comfortable using cell phones (+.77, p = 0.008), phone cameras (+1.43, p = 0.006), phone video cameras (+1.68, p = 0.009), internet (+.68, p = 0.100), email (+.72, p = 0.226) and text messaging (+.29, p = 0.299) at follow-up.

Cell phone use was very common among a demographically-diverse sample of TB patients. Younger patients had the most experience with smartphones prior to study enrollment, making this demographic especially prepared to adopt mHealth interventions. The experience of using smartphones for VDOT also led to an increase in comfort using mobile phone functions in both low and high-resource settings. These findings suggest that smartphones provide a feasible platform for TB treatment monitoring applications.