<u>Abstract</u>

Adherence to Smoking Cessation Medications Among Clickotine® Users

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Abstract

Background: Tobacco smoking is the leading cause of preventable death in the US, with the economic burden attributable to smoking exceeding $300 billion annually. Although smoking cessation medications are effective in clinical trials, their real-world effectiveness is sub-optimal. Poor adherence to smoking cessation medications is associated with failed quit attempts. Technology has been used to promote medication adherence in other conditions. Clickotine is a science-based mobile application for smoking cessation, designed to assist smokers according to the US Public Health Service Clinical Practice Guidelines. Clickotine has been tested in a single arm trial and shows promise as a smoking cessation aid. One core component of the Clickotine program aims to educate smokers about smoking cessation medications including nicotine replacement therapy, varenicline, and bupropion and to facilitate access and adherence to these medications through targeted Clickotine missions and personalized messages. Clickotine missions direct the user to do something specific related to their quit journey. Missions related to smoking cessation medications included "read here to learn about NRT options and efficacy"; "set a reminder to take your meds"; or "make a plan to order your refill." Personalized messages provide encouragement and reminders and included information relevant to the user or their quit journey.

Objective: To measure use of smoking cessation medications among Clickotine users and measure medication adherence at baseline and 8-weeks in a single-arm trial of Clickotine for smoking cessation.

Methods: U.S. residents between 18-65 years of age who owned an iPhone and smoked 5 or more cigarettes daily were recruited via online advertising from May to July 2016. Respondents were pre-screened for eligibility by telephone and directed to a web portal to complete informed consent, confirm eligibility, and download the Clickotine app. Participants completed study assessments via the web portal at baseline and after 8-weeks (primary outcome). The proportion of participants using a smoking cessation medication was measured at baseline and at the 8-week outcome. To assess adherence to smoking cessation medications, the Morisky Medication Adherence Scale- 4 item version (MMAS-4) was compared at baseline and study outcome. MMAS-4 yields scores of 0-4 with greater scores indicating decreased adherence.

Results: 416 participants downloaded the app and constituted the intention-to-treat (ITT) sample in the Clickotine trial. Of these, 31 (7.5%) reported using a smoking cessation medication at baseline. At 8 weeks, 68 participants (16.3%) reported using a smoking cessation medication. Increases were observed for all medications (e.g., medications (varenicline or bupropion): 183%; NRT: 93%) and subcategories (e.g., varenicline: 233%; nicotine gum: 200%). MMAS-4 score at baseline (mean = 2.35; SD= 1.43) was significantly greater than the MMAS-4 score observed at study outcome (mean = 1.28; SD= 1.31), t(87)= 3.30, P=.001, and Chi-square analysis of distribution of MMAS-4 scores indicated a shift toward greater adherence from study baseline to outcome (2(4)= 10.56, P=.032).

Conclusions: Access and adherence to smoking cessation medications increased during an 8-week, single-arm clinical trial of Clickotine.

KEYWORDS