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Motivational Interviewing support for a behavioral health internet intervention for drivers with type 1 diabetes☆

Karen S. Ingersoll *, Thomas Banton, Eugenia Gorlin, Karen Vajda, Harsimran Singh, Ninoska Peterson, Linda Gonder-Frederick, Daniel J. Cox

University of Virginia School of Medicine, Department of Psychiatry and Neurobehavioral Sciences, United States

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ABSTRACT

While Internet interventions can improve health behaviors, their impact is limited by program adherence. Supporting program adherence through telephone counseling may be useful, but there have been few direct tests of the impact of support. We describe a Telephone Motivational Interviewing (MI) intervention targeting adherence to an Internet intervention for drivers with Type 1 Diabetes, DD.com, and compare completion of intervention benchmarks by those randomized to *DD.com plus MI* vs. *DD.com only*. The goal of the pre-intervention MI session was to increase the participant's motivation to complete the Internet intervention and all its assignments, while the goal of the post-treatment MI session was to plan for maintaining changes made during the intervention. Sessions were semi-structured and partially scripted to maximize consistency. MI Fidelity was coded using a standard coding system, the MITI. We examined the effects of MI support vs. no support on number of days from enrollment to program benchmarks. Results show that MI sessions were provided with good fidelity. Users who received MI support completed some program benchmarks such as Core 4 ($t_{176\ df} = -2.25$; $p < .03$) and 11 of 12 monthly driving diaries significantly sooner, but support did not significantly affect time to intervention completion ($t_{177\ df} = -1.69$; $p < .10$) or rates of completion. These data suggest that there is little benefit to therapist guidance for Internet interventions including automated email prompts and other automated minimal supports, but that a booster MI session may enhance collection of follow-up data.

1. Introduction

Internet interventions are increasingly used to improve health behaviors to manage chronic illness, but their efficacy is limited by patient adherence to the program. Many participants never complete a health-behavior focused Internet intervention, limiting the potential impact (Blankers et al., 2009; Christensen et al., 2009,2009; Ritterband et al., 2008). Characteristics of Internet interventions that seem to foster more program adherence include highly relevant content, tailored interactivity, and personalization of feedback and user assignments (Ritterband et al., 2009). A systematic review of the technology features of web-based programs in health revealed that the presence of specific technology strategies, including primary task support, dialog support, more frequent intended usage, and more frequent contact with a counselor and more frequent reminders explain more than half of the variance in adherence to the program (Kelders et al., 2012). However, even with such features, users may require additional strategies to increase their motivation to engage in, and fully utilize, Internet interventions.

Some developers of Internet interventions assert that therapist support such as weekly email or telephone calls providing guidance might be required to improve patient outcomes via better usage and completion of the Internet intervention, while unguided self-help interventions are appropriate as population-level preventive interventions (Andersson et al., 2011). In contrast to this view, meta-analyses have found that some unguided Internet interventions are efficacious, even in the areas of mental health (Christensen et al., 2009) and alcohol problems (Riper et al., 2014). However, there have been just a few direct tests of the impact of therapist support or guidance on program use, completion, or provision of follow-up data. In an Internet intervention for social anxiety, researchers found that the impact of therapist guided vs. unguided interventions varied by a set of patient characteristics and that some patients benefitted from Internet interventions without therapist support (Nordgreen et al., 2012). Currently, investigators are

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* Corresponding author at: 310 Old Ivy Way, Charlottesville, VA 22903, USA.

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comparing a therapist guided vs. unguided mobile and Internet combination Cognitive Behavioral Therapy (CBT) intervention for social anxiety and panic disorder; this trial is ongoing and results are not yet available (Lindner et al., 2013). Unfortunately, we could not find any tests of therapist support to enhance program adherence in the area of diabetes. Therefore, it is unknown whether the emerging information about unguided mental health interventions applies to diabetes interventions.

When therapist support is provided, it is often based on CBT, but in general, focuses on the behavioral target, such as depression. When targeting program completion however, there is a need to increase motivation to use programs and persist until completion. In these cases, it may be appropriate to use the counseling style of Motivational Interviewing (MI). MI facilitates behavior change for many health behaviors beyond its foundation in treating drinking problems, including alcohol and drug use, medication adherence, uptake of exercise, and others when delivered as 1–4 sessions of 15 min or more (Hettema et al., 2005; Lundahl et al., 2010; Rubak et al., 2005). MI sessions include processes of Engaging, Focusing, Evoking, and Planning, culminating in behavior change that is freely chosen by the patient (Miller and Rollnick, 2012). MI has a large evidence base, and several meta-analyses have shown that it has a small to moderate effect size, similar to other psychotherapies (Burke et al., 2003; Heckman et al., 2010; Hettema et al., 2005; Hettema and Hendricks, 2010; Lundahl et al., 2010; Rubak et al., 2005; Smedslund et al., 2011; Vasilaki et al., 2006). MI has been tested in a number of studies as a prelude to enhance adherence to a primary intervention, and has been found to improve session attendance and outcomes (Carroll et al., 2006; Coyne and Correnti, 2014; Martino, 2011; Miller and Rollnick, 2012).

MI is promising when delivered over the telephone for 1–2 sessions (Aharonovich et al., 2012; Bennett et al., 2008; Cook et al., 2009; Farrell-Carnahan et al., 2013; Walker et al., 2007). Telephone delivery is important in Internet-delivered interventions, because participants from wide geographic areas may enroll, making face to face sessions impractical if not impossible. We hypothesized that MI might improve usage of an Internet program, and could lead to improved completion of the program, or of follow-up assessments.

The purposes of this paper are 1) to describe a Telephone Motivational Interviewing (MI) therapist support intervention targeting completion of an Internet intervention for drivers with Type 1 Diabetes, *DD.com*, and 2) to compare program utilization by those randomized to Internet intervention plus MI vs. those randomized to the Internet intervention alone.

2. Methods

2.1. Internet intervention

DiabetesDriving.com (*DD.com*) is an interactive Internet intervention program for high risk drivers with Type 1 diabetes mellitus (T1DM) targeting behaviors related to the risk of future collisions. Specifically, *DD.com* guides users to improve the prevention, detection, and treatment of hypoglycemia while driving. *DD.com* can be completed in 5 weeks, and has automated prompting to complete various tasks sent by email to users. The initial two Cores explain how to use the program (Core 0) and how to use a driver's toolkit that was mailed to participants (Core 1). The subsequent Cores (Cores 2–5) are content-based and are metered out at a rate of one per week. All cores took approximately 30 min to complete, and were organized in a similar manner: Participants reviewed the previous week's homework; then interacted with new Core content, including reviewing videos and case reports and completing checklists and questionnaires. Participants then completed a "self-test" on new content, which was a multiple choice quiz that provided feedback on the correct answer following answering each item. Each Core concluded with users identifying activities they wanted to complete. Beginning after Core 2, users completed daily progress notes to monitor new behaviors introduced in the Cores. The program tracked when users started and completed each Core, along with their utilization and completion of interactive elements. Specific contents of each Core, and required tasks associated with each Core are shown in Table 1. A U.S. randomized clinical trial tested *DD.com* alone compared to *DD.com* plus 2 MI sessions, and to treatment as usual, and found that the intervention reduced driving mishaps significantly (Cox et al., 2014). In this report, we focus only on the two conditions receiving *DD.com*.

Table 1
DD.com core contents.

Core 0 Introduction
How to Use the Internet Intervention

Core 1 Tool kit
Orientation to study tool kit for car
Tool kit included:
- BG meter and strips
- rapid acting glucose tablets
- cheese crackers (long acting carbohydrates) for sustained BG elevation
- pre-drive checklists help anticipate, prevent, and treat extreme BG
- key chain and stickers to encourage drivers to consider their BG level before and during driving
- diabetes identification stickers to put on car in case they are found incapacitated

Self-test and closing

Core 2 Driving risks
Review of general and diabetes-specific driving risk factors
Develop a plan to reduce risk of future driving mishaps
Learn what to expect in upcoming Cores
Preliminary driving contract

Core 3 Preventing hypoglycemia
Anticipating and preventing extreme BG while driving
Review of tool kit
Daily progress notes
Learn to anticipate low BG
Learn to prevent hypoglycemia during a drive
Revised driving contract
Daily automated e-mails asking them to record findings from their diary

Core 4 Detecting and treating hypoglycemia while driving
Improving detection and management of extreme BG while driving
Using tool kit
Using driving diaries
Review Core 3 driving contract
Learn to detect hypoglycemia
Learn to manage hypoglycemia for immediate and long term benefits
Revise contract to detect and manage hypoglycemia while driving
Completion of personally relevant diaries after each drive
Daily e-mail reminders to upload driving data

Core 5 Review, reflect, and relapse prevention
Review and summarize progress
Maintaining safe long-term driving habits.
Anticipating barriers and designing solutions for barriers

2.2. Procedures

The study was approved by the University of Virginia Institutional Review Board for Health Sciences Research. Individuals came to the *DiabetesDriving.com* website and read about the study, described as a trial of an Internet intervention designed to reduce driving mishaps among those with T1DM, versus usual care, or versus the Internet intervention plus 2 telephone counseling sessions. Interested individuals signed an online consent form agreeing to provide screening information over the Internet, and completed a screening questionnaire between March 2012 and June, 2013. We contacted those who met the inclusion criteria and scheduled a telephone appointment, during which we reviewed their inclusion/exclusion criteria and provided further details about the study. After this telephone interview, interested eligible participants signed a second consent form to participate in the