Addictive Behaviors 36 (2011) 1038–1044

Contents lists available at ScienceDirect

Addictive Behaviors

# Using the health belief model to predict injecting drug users' intentions to employ harm reduction strategies

Erin E. Bonar *, Harold Rosenberg

*Dept. of Psychology, Bowling Green State University, Bowling Green, OH 43403, United States*

ARTICLE INFO

*Keywords:*
Harm reduction
Injecting drug use
Overdose
Infections

ABSTRACT

We examined whether perceived susceptibility to and severity of two injection-related health conditions (i.e., non-fatal overdose and bacterial infections), and perceived benefits of, barriers to, self-efficacy to, social acceptance of, and recent use of two harm-reduction behaviors (i.e., injecting test shots and pre-injection skin cleaning), predicted injecting drug users' near-term intentions to engage in these two strategies. Recent past use of these two behaviors consistently and positively predicted near-term intentions in each of four drug-use situations (i.e., in withdrawal, *not* in withdrawal, alone, and with others). Perceived susceptibility to non-fatal overdose predicted intentions to do test shots, but only when participants imagined *not* being in withdrawal or injecting when alone. Perceived self-efficacy to clean one's skin predicted intentions to engage in this behavior, but only when participants imagined injecting while *not* in withdrawal. Participants' ratings of how often other injectors in their social network engage in pre-injection skin cleaning was also a significant positive predictor of intentions to clean one's skin, but only when they imagined being in withdrawal. Finally, length of time attending the needle exchange program was negatively associated with intention to engage in skin cleaning when *not* in withdrawal.

Published by Elsevier Ltd.

## 1. Introduction

Repeated injection of illicit drugs increases the risk of health problems such as overdose, infection from blood-borne diseases, collapsed veins, and skin abscesses (Dolan et al., 2004; Phillips & Rosenberg, 2008). Although non-injecting routes of drug administration are safer, many substance abusers will continue to inject drugs but could reduce their risk for injection-related health problems by employing harm reduction strategies. For example, when a drug's potency is unknown, the injecting drug user (IDU) may inject a small dose (i.e., a test shot) before using the entire amount desired. This strategy reduces the likelihood of overdose from injecting drugs of unknown potency. As another example, IDUs may be encouraged to clean their skin at the intended injection site with rubbing alcohol or soap and water prior to injecting. This reduces the chances of bacteria on the skin entering the blood stream. Unfortunately, such strategies are used only occasionally if at all. For example, among a sample of 99 IDUs, Phillips and Rosenberg (2008) found that 64% of the sample reported never or infrequently doing a test shot and 40% reported never or infrequently cleaning their skin.

Many environmental, social, and psychological factors may explain why some IDUs engage in these methods of harm reduction and others do not. Applying the Health Belief Model (HBM; Janz & Becker, 1984; Rosenstock, 1966; Strecher, Champion, & Rosenstock, 1997) to injection practices suggests that psychological factors such as beliefs about the severity of and one's susceptibility to negative health consequences of injecting, one's view of the barriers and benefits of engaging in protective strategies to avoid those consequences, and one's self-efficacy to engage in harm reduction strategies may predict the implementation of such health-preserving behaviors.

For example, Falck, Siegal, Wang, and Carlson (1995) investigated whether HBM-related beliefs regarding HIV/AIDS and safer injection practices were related to IDUs' use of safer injection practices (e.g., always using new injection equipment; never sharing injection equipment). Falck et al. (1995) found that reporting higher self-efficacy to avoid sharing injection supplies (and being African American) was associated with safer injection practices, but perceived susceptibility and frequency of injection were negatively associated with such practices. Jamner, Corby, and Wolitski (1996) found that social norms (assessed by asking about the IDU's perception that those close to him/her would want him/her to engage in bleach cleaning), self-efficacy to clean one's injecting equipment, perceived risk of sharing dirty needles (analogous to "perceived severity"), exposure to bleach cleaning information, and attitudes toward bleach cleaning (i.e., evaluation of bleach cleaning as good/bad and pleasant/unpleasant) positively predicted intention to engage in bleach cleaning "from now on" when sharing injecting supplies. In addition to health beliefs, one's recent past use of harm reduction strategies is also associated with near-term intentions to employ such behaviors (Gagnon & Godin, 2009).

* Corresponding author. Tel.: +1 419 372 7255.
*E-mail address:* erin.bonar@gmail.com (E.E. Bonar).

0306-4603/$ – see front matter. Published by Elsevier Ltd.
doi:10.1016/j.addbeh.2011.06.010

Although not designed to evaluate the predictive utility of the HBM per se, other investigations have demonstrated relationships between HBM-related constructs and use of harm reduction strategies. For example, Cox et al. (2008) found that IDUs who perceived more benefits of using sterile equipment were less likely to share injecting equipment and those who perceived it to be more difficult to obtain sterile syringes (i.e., perceived barrier) were more likely to share equipment. Another study found that self-efficacy predicted IDUs' intentions to always use new syringes (Gagnon & Godin, 2009). Similarly, a series of investigations conducted by the Drug Users Intervention Trial (DUIT) Study Team also demonstrated that lower self-efficacy to avoid sharing injecting equipment was related to the frequency with which they shared paraphernalia (Thiede et al., 2007) and that lower perceived likelihood (i.e., susceptibility) of contracting blood-borne diseases predicted both receptive syringe sharing (Bailey et al., 2007) and distributive syringe sharing (Golub et al., 2007). In addition, use of harm reduction behaviors is associated with perceived acceptance and use of such strategies by other injectors in one's social network (Andía, Deren, Robles, Kang, & Colón, 2008; Gyarmathy et al., 2009; Hawkins, Latkin, Mandel, & Oziemkowska, 1999; Shaw, Shah, Jolly, & Wylie, 2007; Zapka, Stoddard, & McCusker, 1993).

Previous research also suggests that factors specific to the drug-use context (e.g., being in withdrawal or with others) or location may also influence whether one engages in harm reduction behaviors. For example, qualitative work has identified that being in a state of withdrawal is related to lowered willingness and reduced ability to inject safely (Mateu-Gelabert, Sandoval, Meylakhs, Wendel, & Friedman, 2010). Furthermore, Cox et al. (2008) found that injecting in public rather than by oneself was related to syringe sharing. Bailey et al. (2007) also reported that injecting in cars or shooting galleries (compared to injecting at home) was related to more frequent receptive syringe sharing. Injecting in shooting galleries has also been associated with sharing both syringes (Golub et al., 2007) and other paraphernalia (Thiede et al., 2007).

Given the potential health benefits of using harm reduction strategies, and the value of conducting additional research evaluating the predictive value of psychological factors, we designed this study to explore whether HBM-related constructs predicted IDUs' intentions to engage in two harm reduction behaviors not previously included in this type of research. Specifically, we designed this study to evaluate whether HBM variables were associated with intentions to engage in test shots to prevent non-fatal overdose and to employ pre-injection skin cleaning to prevent bacterial infections, over and above recent past use of such strategies. We also explored whether IDUs' perceptions of the use of these two behaviors by other injectors (i.e., social norms) was associated with their intentions to use the two behaviors. Furthermore, the duration of contact with a needle exchange program may influence one's knowledge of and inclination to engage in harm reduction practices. Therefore, we tested the association of all these variables with intention to employ these specific strategies in each of four drug-use situations (i.e., in withdrawal, *not* in withdrawal, alone, and with others).

## 2. Method

### 2.1. Participants and procedure

Following approval by our institutional review board and the data collection sites, 91 participants were recruited from three needle exchange programs (NEPs) located in Northeastern Ohio (NEO; $n=74$), Western Michigan (WMI; $n=9$), and Southeastern Michigan (SEM; $n=8$) between October 2009 and June 2010. To be eligible for the study, participants had to be enrolled in the needle exchange program, be at least 18 years old, speak English clearly, and to report having injected drugs at least weekly during the previous 3 months. No potential participants failed to meet these criteria. Approximately three-quarters of the sample was male (similarly to the proportions of males attending each of the three NEPs), and approximately one-half of the sample was Caucasian (similarly to the proportion of Caucasians attending the NEO site, but a smaller proportion than those who attended the WMI and SEM sites). The majority of participants (88%) reported that heroin was the substance they used most often and, of those participants, all but one administered this drug by injecting (the other snorted). The first author or a data collection assistant read the consent document, questionnaire items, and response options to participants while they held copies of these materials and either pointed to or spoke their answers. Participants who completed the study received a $10 gift card to a grocery store as compensation. Table 1 provides additional information about participants' drug history and background characteristics.

### 2.2. Measures

#### 2.2.1. Harm reduction health beliefs questionnaire (HR-HBQ)

We developed the HR-HBQ to assess respondents' health beliefs. One section of the HR-HBQ focused on respondents' beliefs about bacterial infections and cleaning one's skin with alcohol wipes or soap and water to prevent such infections and the other section focused on respondents' beliefs about non-fatal overdose and injecting test shots to prevent this outcome. We developed the questions on the HR-HBQ by modifying items used in several previously published studies of the HBM (Champion, 1999; Champion et al., 2008; Kim, Horan, Gendler, & Patel, 1991; Sullivan et al., 2008).

Each HR-HBQ section included three questions designed to assess perceived susceptibility (e.g., "How high are the chances that you will have a non-fatal overdose from injecting street drugs over the next 3 months?"), three questions designed to assess perceived severity (e.g., "If, in the next 3 months, you experienced a non-fatal overdose from injecting street drugs, how big of an impact would it have on your life?"), three questions designed to assess perceived benefits (e.g., "If I did a test shot each time I inject street drugs, it would lower my chances of a non-fatal overdose."), three questions designed to assess perceived barriers (e.g., "It would be too much trouble to do a test shot when I inject street drugs."), three questions designed to assess self-efficacy (e.g., "I am confident that I can inject a test shot whenever I am about to inject street drugs."), and three questions designed to assess social norms (e.g., "Other injectors I know would think I'm weak if I do a test shot before injecting an entire 'hit' of street drugs."). A copy of the HR-HBQ is available from the corresponding author.

Participants rated their responses to these items on a 5-point scale with answer choices that varied depending on the content of each question. Questions were divided into two blocks with the perceived severity and perceived susceptibility questions always appearing first and the perceived benefits, barriers, self-efficacy, and social norms items appearing second. Questions within each block were presented in random orders across participants. Readability statistics calculated using Microsoft Word 2007 indicated that the HR-HBQ had a Flesch Reading Ease score of 74.0 and a Flesch-Kincaid Grade Level of 8.1.

#### 2.2.2. Screening measure

We asked participants: 1) whether they injected only street drugs, both street drugs and pharmaceutical drugs, or only pharmaceutical drugs, and 2) whether they currently had any injection-related bacterial infections. The one participant who injected only pharmaceutical drugs was not eligible to complete the Overdose-Test Shots sub-section of the HR-HBQ and thus 90 participants completed these questions. The six participants who reported currently having a bacterial infection from injecting were not eligible to complete the Bacterial Infection-Skin Cleaning sub-section and thus 85 participants completed these questions.