



Full length article

Changes in supervised drug-injecting practices following a community-based educational intervention: A longitudinal analysis



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ABSTRACT

Background: People who inject drugs face several health issues because of unsafe injecting practices. We aimed to evaluate changes in supervised drug-injecting practices following the implementation of a face-to-face educational intervention.

Methods: The national study ANRS-AERLI was conducted in 17 harm reduction (HR) facilities in France between 2011 and 2013. Eight offered the intervention and nine did not. We conducted a pre-post analysis focusing on injecting practices data, collected in the 8 HR facilities providing the intervention. The intervention consisted of providing face-to-face educational sessions including direct observation of injecting practices, counseling about safer injecting, and shared discussion. Injecting practices were collected following a checklist and classified as safe or unsafe. To assess changes in injecting practices, practices were compared before (at baseline) and after at least one educational session.

Findings: Mixed logistic models showed that the 78 participants included were more likely to improve in the following drug-use steps: setting up a clean preparation area (Adjusted Odds Ratio (AOR) = 3.4, 95% Confidence Interval (95% CI) = 1.6–7.6), hand washing (AOR = 7.2, 95% CI = 3.1–16.4), skin cleaning (AOR = 5.6, 95% CI = 2.5–12.1), choice of safe injection site (AOR = 6.5, 95% CI = 1.5–28.8) and post-injection bleeding management (AOR = 12.8, 95% CI = 5.5–29.9). Furthermore, participants were less likely to lick their needles before injecting (AOR = 8.1, 95% CI = 1.5–43.4) and to perform booting/flushing (AOR = 2.5, 95% CI = 1.2–5.3).

Conclusions: The AERLI intervention seems to be effective in increasing safe drug-injecting practices.

1. Introduction

People who inject drugs (PWID) are vulnerable to an array of health issues. Alongside the risk of overdoses and blood-borne viral infections such as HIV and Hepatitis C virus (HCV), PWID are subject to bacterial and fungal infections. These infections include skin and soft tissue infections (SSTI) (e.g. abscesses or cellulitis) that can occur at injection sites (Ebright and Pieper, 2002; Gordon and Lowy, 2005). One study reviewing abscess prevalence in PWID during the previous month showed it ranged from 6% to 32%, while lifetime abscess prevalence reached 68% (Larney et al., 2017). While SSTI is often self-treated by PWID (Roose et al., 2009), they represent a significant cause of

hospitalization and emergency room admission among this population. Other severe infections related to drug injection have been reported among PWID including endocarditis (Frontera and Gradon, 2000), bone and joint infections (Kak and Chandrasekar, 2002) and septicemia, which all result from blood dissemination of pathogens or SSTI-related complications (Contoreggi et al., 1998). Moreover, there is some evidence that chronic SSTI may cause AA amyloidosis, a life-threatening condition leading to kidney failure (Mendoza et al., 2013; Harris et al., 2018). In addition to infections, drug injection may lead to vascular injuries including vein collapse and thrombosis (Morrison et al., 1997; Woodburn and Murie, 1996), and to cardiovascular and pulmonary complications, especially through the injection of non-soluble particles

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of drugs intended for oral use (Lamb and Roberts, 1972; Moss and Munt, 2003).

SSTI in PWID are associated with unhygienic practices, specifically the failure to wash one's hands and to clean the skin around the area before injection (Binswanger et al., 2000; Dwyer et al., 2009; Murphy et al., 2001; Smith et al., 2015; Vlahov et al., 1992). They are also associated with licking needles prior to injection (Binswanger et al., 2000; Dahlman et al., 2017). These results are consistent with studies showing that skin and mouth flora microorganisms are the main pathogens involved in SSTI among PWID (Bergstein et al., 1995; Summanen et al., 1995). Needle licking is relatively frequent, with some studies showing that 30% of PWID do so (Binswanger et al., 2000; Deutscher and Perlman, 2008). Injecting techniques are also associated with potential harms. While arms are considered the safest injecting site, injecting in the femoral or jugular veins dramatically increases the risk of SSTI and vascular injuries (Dwyer et al., 2009; Hope et al., 2008, 2010). Furthermore, subcutaneous and intramuscular injections have been associated with an increased risk of SSTI (Binswanger et al., 2000; Fink et al., 2013; Murphy et al., 2001; Phillips and Stein, 2010). The practice of "booting" or "flushing", which consists in pulling back the plunger and reinjecting the blood repeatedly, may lead to SSTI and vascular damage, and also contribute to the spread of blood-borne viruses (Mcelrath, 2006; Murphy et al., 2001). In addition, the unfiltered product may result in the injection of non-soluble particles (Roux et al., 2011). Moreover, some PWID saves the product particulate retained in the filter for reuse or sharing, thereby increasing the risk of SSTI, cotton fever and HCV infection (Hagan et al., 2001).

Current harm reduction (HR) strategies such as needle and syringe programs (NSP), opioid substitution treatments (OST) and supervised injecting facilities (SIF) have demonstrated their effectiveness on various social and health outcomes (Kerr et al., 2006; Pierce et al., 2016; Vlahov and Junge, 1998). However, there are conflicting findings regarding these strategies' impact on non-viral injecting-related injuries and unsafe injecting practices (Binswanger et al., 2000; Fink et al., 2013; Lloyd-Smith et al., 2008). Educational interventions focusing on behavioral injecting practices may be effective in modifying these practices, and consequently in reducing injection-related harms. Of the few such interventions implemented to date, none has included supervision of injection or a focus on all injection steps (Colon et al., 2009; Mateu-Gelabert et al., 2014; Phillips et al., 2012; Steele et al., 2017). An individually-tailored educational intervention for safer injection (AERLI), provided by peer educators, nurses, and trained social workers, was designed in France in 2011. The originality of this intervention is that it provides training on various injecting practices to reduce blood-borne transmitted diseases (e.g. HIV, HCV) and also on practices focused on reducing others infections and vascular injuries. AERLI was evaluated in 2015 (the ANRS-AERLI study), with results showing a significant reduction in unsafe HIV/HCV transmission practices (including sharing of injecting equipment and being injected by someone else) and local complications at injection sites (Roux et al., 2016a), as well as an increase in HCV testing uptake (Roux et al., 2016b). In the present study, which addresses secondary outcomes of the ANRS-AERLI study, we aimed to describe other unsafe practices, including unsafe injecting techniques and unhygienic practices, and to evaluate the changes in these practices induced by this educational intervention.

2. Methods

2.1. Study design

We conducted a pre-post analysis using data from the ANRS-AERLI study. The ANRS-AERLI study was a national, clustered, multi-site, community-based intervention study conducted in 17 low-threshold drug users HR centers in France between 2011 and 2013. HR centers were divided into two groups: 8 HR centers implementing the

intervention (intervention group) and 9 not providing the intervention (control group). In this study, we included only participants from the intervention group, accounting for a total of 144 participants. All participants were adults (aged 18 years or over), active injectors (at least one injection during the previous week) and provided written informed consent. The recruitment process consisted of enrolling PWID who spontaneously asked for help or information related to drug injection and who could be reached by phone for an interview. Each participant received a small monetary incentive for each completed computer-assisted telephone interview (CATI) questionnaire (at enrolment, M6 and M12). The study was approved by the National scientific research ethics committee in Paris. Further details of the ANRS-AERLI study are described elsewhere (Roux et al., 2016a).

2.2. Description of the community-based intervention

The AERLI intervention consisted of providing training and education about HIV and HCV transmission risk reduction and safer injection. The specific topics covered were identification and prevention of injecting risk practices (including equipment sharing and reuse), hygiene practices and injection technique. The intervention also focused on HIV and HCV testing and care and other injection-related complications. This intervention was based on "self-determination theory" (Ryan and Deci, 2000) which considers three psychological needs: autonomy, competence, and relatedness. When satisfied, these needs improve the motivation and well-being. It ran from 2011 to 2013. It involved participant-centered face-to-face educational sessions, which took place in a dedicated room in the 8 HR centers providing the intervention. Participants of the intervention group had to receive at least one educational session over the first 6-months of the 1-year intervention period. Before the intervention, trained NGO staff or peer counselors in the 8 HR centers screened participants for inclusion, collected a brief history of their drug use, defined objectives for the educational session and collected their written informed consent. The staff, including healthcare professionals (e.g., doctors, nurses, and psychologists), social workers and peers, then performed the intervention in three phases. The average duration of the intervention was 1 h. The first phase consisted of indirect observation of the participant self-injecting. In the second phase, trainers used a comprehensive checklist to ensure the identification of unsafe practices as the participant prepared and injected their drug. Counseling about safer injecting was then provided to the participants. The third phase of the intervention involved shared discussion between the participants and the trainers based on the difficulties identified during the session.

2.3. Study population and visits

As observation data on injecting practices were exclusively collected for the intervention group, only this group was included in the present sub-study. The ANRS-AERLI study recruited 144 participants in the intervention group. Of these, 31 participants did not receive any educational session during the study period and were excluded from analyses. A further 35 had missing data and were also excluded. The present analysis was therefore performed on a sample of 78 participants.

2.4. Data collection

Two methods of data collection were used in this study. CATI was used to collect the following data at enrolment, M6 and M12: socio-demographic information (gender, age, education level, employment status, housing situation), history of drug use (age at first drug injection, type of drugs injected), and drug and alcohol consumption using the Opiate Treatment Index (OTI) (Darke et al., 1992) and the AUDIT-C questionnaire (Bradley et al., 2007), respectively. Second, data regarding injecting practices were collected only in the intervention group by the intervention trainers during each session using a

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