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The impact of medically supervised injection centres on drug-related harms: A meta-analysis

Tom May*, Trevor Bennett, Katy Holloway

Centre for Criminology, University of South Wales, Pontypridd, CF37 1DL, United Kingdom

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ABSTRACT

Background: Medically Supervised Injection Centres (MSICs) are legally-sanctioned facilities where users can consume pre-obtained drugs under medical supervision. Although there is a substantial body of research exploring their effectiveness, there have been few attempts to quantify outcomes across studies. In order to determine the impact of the body of research as a whole, outcomes from studies were synthesised using meta-analysis.

Methods: Literature sources were identified through searches in four bibliographic databases. Inclusion in the final review was dependent on the study meeting certain eligibility criteria, including a minimum of pre-test, post-test, control group designs. Data were extracted and pooled in a meta-analysis using both fixed and random effects methods.

Results: Eight studies met the inclusion criteria. Overall, MSICs had a significant, but small, positive effect on outcomes based on the fixed effect analysis and no effect based on random effect analysis. The results of the independent outcome analyses showed that MSICs had a significant favourable result in relation to drug-related crime and a significant unfavourable result in relation to problematic heroin use or injection. MSICs were found to have no effect on overdose mortality or syringe/equipment sharing.

Conclusion: Whilst the effectiveness of the early versions of MSICs remains uncertain, this should not rule out continuing to test and develop MSICs in locations where public injecting and other drug-related harms are a major problem. It is important, however, that evaluation research publishes replicable data to enable future meta-analyses and to expand the body of knowledge in the field.

Introduction

There is a substantial body of research on the effectiveness of Medically Supervised Injection Centres (MSICs). Studies have been conducted in Australia (Donnelly & Snowball, 2006; MSIC Evaluation Committee, 2003; NCHECR, 2007; Salmon, van Beek, Amin, Kaldor, & Maher, 2010), Canada (Milloy et al., 2009; Wood, Tyndall, Montaner, & Kerr, 2006; Wood, Tyndall, Stoltz, Small, Lloyd-Smith et al., 2005; Wood, Tyndall, Zhang, Montaner, & Kerr, 2007), Denmark (Kinnard, Howe, Kerr, Hass, & Marshall, 2014; Toth, Tegner, Lauridsen, & Kappel, 2016) and Spain (Bravo et al., 2009; Romaguera et al., 2017). However, there have been few attempts to conduct a quantitative analysis of these studies to determine the impact of the body of research as a whole.

Background

MSICs, also known as Drug Consumption Rooms (DCRs), Supervised Injection Facilities (SIFs) and Safe Injection Sites (SISs), are legally-sanctioned facilities in which users can consume pre-obtained drugs under medical supervision (Potier, Laprevote, Dubois-Arber, Cottencin, & Rolland, 2014). They are often located in areas experiencing problems with public drug consumption and tend to attract marginalised, drug-using populations, such as the homeless, those living in insecure accommodation and those regularly using drugs under unhygienic conditions (EMCDDA, 2016; Hedrich, 2004).

To date, MSICs operate in 10 countries for the following purposes (de Vel-Palumbo, Matthew-Simmons, Shanahan, & Ritter, 2013; EMCDDA, 2016; Hedrich, 2004; Potier et al., 2014). First, to reduce drug-related mortality and morbidity by providing medical supervision and care during drug consumption. This includes the administration of the opioid antagonist naloxone in the event of an overdose. Second, to improve the health of users by providing hygienic injecting materials, offering education on health and safe drug use, referring clients to relevant care and treatment and screening clients for viral infections.

* Corresponding author.
E-mail address: tom.may@southwales.ac.uk (T. May).

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Third, to reduce nuisance associated with public injecting in the local area, such as drug-related crime and discarded drug-use paraphernalia. Fourth, to attract drug-using populations who are marginalised and might not otherwise have access to traditional medical and social support.

Access to MSICs is usually restricted to those who register with the facility and typically excludes users who are under 18, pregnant or using intravenously for the first time (Potier et al., 2014; Schäffer, Stöver, Schatz, & Weichert, 2014). Typically, drugs must be obtained prior to entry and cannot be shared or split within the facility (Small, Shoveller et al., 2011), although some facilities, such as in Sydney, do permit the sharing or splitting of drugs providing clients arrive at the MSIC together (van Beek, 2003). Assisted injections (i.e. injections administered by another individual) are not permitted (Hedrich, 2004), although staff can provide guidance with venous access and injecting techniques (Small, Shoveller et al., 2011).

Previous reviews and meta-analyses

To date, there has been two systematic reviews of the primary literature (McNeil & Small, 2014; Potier et al., 2014) and one review of reviews (MacArthur et al., 2014) on the effectiveness of MSICs in achieving their aims. There has also been one meta-analysis on the impact of MSICs on syringe sharing (Milloy & Wood, 2009).

McNeil and Small (2014) conducted a qualitative review of 'Safer Environment Interventions', covering syringe exchanges, peer-based harm-reduction interventions and MSICs. They identified 11 studies focusing on MSICs (10 in Canada and one in Australia) and concluded that these facilities enabled safe-injecting practices and mediated access to agencies and resources. These facilities also provided a safe space for injecting that minimised violence and stigma on the street.

Potier et al. (2014) conducted a systematic review of the findings of 75 studies covering various outcomes, including: the impact of MSICs on overdose-induced mortality and morbidity, injecting behaviour, drug-related harms, access to addiction treatment programmes, public nuisance and drug-related crime. The review concluded that MSICs were generally effective and provided numerous benefits to people who injected drugs, such as: safer injection conditions, hygienic injecting equipment, overdose management, education in injection techniques and blood-transmissible infection prevention and improved connections with addiction and social services.

MacArthur et al. (2014) conducted a review of reviews of interventions that sought to prevent HIV transmission, Hepatitis C (HCV) transmission and Injecting Risk Behaviours (IRB) (including the borrowing, lending or re-use of syringes and/or ancillary injecting equipment; and injecting frequency) in people who inject drugs. They found seven reviews that assessed the effectiveness of MSICs in relation to HIV, HCV and IRB prevention. They concluded that there was insufficient evidence to support or discount the effectiveness of MSICs in relation to HIV and HCV transmission. However, they suggested that there was 'tentative' evidence to support the view that MSICs might reduce IRB.

Finally, the meta-analysis conducted by Milloy and Wood (2009) found that overall there was evidence of a 69 per cent reduction in syringe sharing among MSIC users compared with non-users. This was based on four outcomes from three studies (Bravo et al., 2009; Kerr, Tyndall, Li, Montaner, & Wood, 2005; Wood, Tyndall, Stoltz, Small, Lloyd-Smith et al., 2005). The authors concluded that MSICs were an effective harm-reduction measure in preventing syringe sharing.

The above reviews synthesise multiple outcomes from MSICs. The findings provide mixed results, with both literature reviews suggesting some positive outcomes and the review of reviews concluding that the evidence was 'tentative'. The meta-analysis provided some positive results in relation to syringe sharing only. Overall, the existing reviews have been helpful in identifying some of the outcomes of MSICs, but do not provide a sufficiently clear conclusion on whether MSICs as a whole work.

Aims

The aim of the paper is to investigate whether MSICs are effective in achieving their objectives. In particular, we will conduct a meta-analysis of currently available studies to determine whether MSICs performed better than their controls. This will be done in relation to eight outcome measures commonly associated with the aims of MSICs: (1) shared syringes; (2) shared injecting equipment; (3) injecting-related problems; (4) public injecting; (5) continued heroin injecting; (6) ambulance attendances at opioid-related events; (7) overdose mortality rates; and (8) drug-related crime rates.

Methods

Search method

Literature sources were identified through searches in four bibliographic databases: PubMed, Science Direct, Web of Science and ASSIA. These databases were known to include studies on drug-related harm as well as systematic reviews of the literature. A Boolean search was conducted to identify relevant literature. To reduce selection bias, a range of concepts was used to produce the following search algorithm: ti(supervis* OR safe OR drug* OR medical*) AND ti(inject* OR shoot* OR consumption) AND ti(facilit* OR room* OR galler* OR centre* OR center* OR site* OR service* OR space*).[1]

Results from 1990 up to 4th April 2017 were downloaded and saved in Endnote referencing software. The items were then screened and duplicates were removed. The abstracts of the remaining articles were then read and discussed by two members of the research team (T.M., K.H.) to determine their relevance to the aims of the review. Studies that clearly did not meet the inclusion criteria were removed. In any cases of dispute regarding the relevance of a study to the aims of the review, all three authors discussed the article until a consensus to include or exclude the study was reached.

To ensure all relevant literature was identified, scans of grey literature were also conducted. This involved searching Google and Google Scholar for relevant publications using the key words that informed the original search algorithm. On those occasions when the studies failed to record the number of cases involved in the results (n = 6), emails were sent to the authors to request further information or access to the original dataset. Two authors replied and provided the requested data. In addition, one of these authors provided data for a further study. Data were unable to be obtained for four studies.

Criteria for inclusion

Studies were included in the current review if they met certain eligibility criteria. The criteria for inclusion were based on four key topics: type-of-study, type-of-method, type-of-measures and type-of-sample (Bennett, Holloway, & Farrington, 2008). For inclusion, the study must have focused on MSICs, either alone or as part of broader harm-reduction strategies (type-of-study), have a robust research design based on a Randomised Control Trial (RCT) or quasi-experimental design (type-of-method), explore at least one measure or 'outcome' related to the aims of the MSIC (type-of measure) and be based on MSIC clients or areas (type-of-sample).

Attrition of studies

The initial search of databases yielded a total of 1867 studies: ASSIA (139), PubMed (545), Science Direct (227) and Web of Science (956). Following the removal of duplicates (809), a total of 1058 unique

[1] The search method was based on a modified version of the search algorithm used in Potier et al. (2014).