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Effectiveness of Community Treatment on Reducing Recidivism Rate for Child Molesters: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

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Running title: Meta-analysis of community treatment effects

Abstract

Background: Sexual abuse is a frequent and violent crime and many children were innocent victims. Even many years after the assault, the victims may still suffer from depression or post-traumatic stress disorder. Appropriate rehabilitation efforts should therefore equip offenders with the knowledge, skills, opportunities, and resources necessary to satisfy their life values in ways that do not harm others.

Purpose: The aim of this study was to compare the reoffending rate between treatment and non-treatment and then explore whether child sexual reoffending could be decreased effectively by community treatment or not.

Methods: We conducted a systematic review and meta-analysis of relevant randomized controlled trials (RCTs) on community treatment to reduce recidivism rate for child molesters. We searched PubMed, Medline, CINAHL, and Web of science from inception to 30th April, 2017 without language limitations for relevant RCTs. The search terms included child sex offenders, child molester, community treatment, recidivism, and recidivism rate.

Result: There were two randomized controlled trials included in qualitative synthesis and one eligible study was divided into two subgroups. These studies were further conducted meta-analysis with 594 participants (260 in the treatment group and 334 in the control group). Subjects who received community treatment had significant lower sexual recidivism rate than the control group. (OR=0.45, 95% CI=0.27-0.74, p-value=0.002).

Conclusion: There is scanty low-quality evidence suggesting community interventions are effective in preventing child sexual recidivism. Further large-scale high-quality randomized controlled trials with long-term follow up are warranted for confirming this finding.

Keywords: child molester, community treatment, recidivism, randomized controlled trial, meta analysis

Introduction

Previous evidence-based studies indicated that around 42% child molesters were reconvicted of sexual or violent crimes during the 15-30 years and 10% were first convicted for sexual or violent crimes between 10 and 31 years after release [1,2]. Being a victim of child sexual abuse has been related to various psychological (such as depression, somatization, and post-traumatic stress disorder (PTSD)), social behavioral (such as sexualized behaviors which may lead to HIV infection or nonplanning pregnancy, substance abuse, and bulimia nervosa) and physical problems (such as chronic related diseases and neurobiological effects combined with other negative child experiences) [3-6]. The preventions of child sexual abuse have been considered as an important public health issue because which will induce much negative influences.

It is considered a commonly held belief that the needs for sexual offenders to undergo necessary and compulsory physical and psychological treatments and counseling educations [6]. The timeframe for the related compulsory treatments have changed from before to after prison release. Post-prison release treatments are look forward to not only improve treatment effectiveness but also actually help sexual offenders reintegrate into society and connect with community treatments without suspending the course of treatment, thereby decreasing the possibility of recidivism [7]. It is required to undergo compulsory treatments regardless of whether the assessment is before or after the completion of a sexual offender's sentence an offender identified as at risk of sexual offense recidivism.

For the child sexual offenders, academic researches indicated that community-based programs had somewhat better outcomes than prison-based programs in reducing recidivism [8,9]. However, the intervention efficacy might be confounded by higher risk offenders tending to receive prison-based treatments. Thus, whether community-based programs are associated with recidivism prevention or reduction is an important criminal question warranting investigation. The aim of this study was to compare the reoffending rate between treatment and non-treatment and then explore whether child sexual reoffending could be decreased effectively by community-based treatment or not.

Materials and Methods

Literature Search and Search Strategy

We searched PubMed, Medline, CINAHL, and Web of science from inception to 30th April, 2017 without language limitations for relevant RCTs. The search terms included child sex offenders, child molester, community treatment, recidivism, and recidivism rate.

Study Selection

Studies were included if they met the following inclusion criteria: 1. The study-design was randomized controlled trial. 2. the subjects were human. 3. the experiment group received community treatment and the control group received usual care only. 4. reduction rate of sexual offense recidivism were reported in the article. The title or abstract of all publications which were similar to the outcome were reviewed to evaluate whether to include them. The full texts were checked carefully if there was any potentially related information.

Data Extraction

The following data were extracted from included eligible studies through a data-extraction form: first author, year of publication, country of publication, study period, assigned group, randomly assigned participants, types of participant, type of treatment intervention, intervention time and methods used for assessing the sexual recidivism rate. In addition, we used the Cochrane Collaboration tool to assess the risk of bias of the included trials, and evaluated the following 7 domains associated with bias of intervention: random sequence generation, allocation concealment, blinding of participant and personnel, blinding of outcome assessment, incomplete outcome data (Attrition bias, it refers to systematic differences between groups in withdrawals from a study lead to incomplete outcome data. Exclusions refer to situations in which some subjects are omitted from reports of analyses, despite outcome data being available to the trial lists.), selective reporting, and other biases (bias due to problems not covered elsewhere) [10].

Statistical Analysis

The Review Manager 5.3 (The Nordic Cochrane Centre, The Cochrane Collaboration, 2014) was used for meta-analysis. We presented the percentage (%) and odds ratio (OR) with 95% confidence interval (CI)

for categorical data. Heterogeneity in meta-analysis refers to the variation in study outcomes between studies. In this study, we used the $\chi 2$ and I2 inconsistency statistics. The I^2 statistic describes the percentage of variation across studies that is due to heterogeneity rather than chance [11]. A P-value of less than 0.10 indicated significant heterogeneity. The I2 values of 0% to 24.9%, 25% to 49.9%, 50% to 74%, and 75% to 100% were considered as none, low, moderate, and high heterogeneity. A 95% CI for I^2 is constructed using the iterative noncentral chi-squared distribution method [12]. In addition, we used the fixed-effect model when the I2 was less than 75%, and would have used the random-effects model when the I2 was 75% or more.

Results

Literature Search and Studies Characteristics

Figure 1 showed the search process and the final selection of relevant trials by the preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines [13]. We obtained 97 records from the PubMed, Medline, CINAHL, and Web of science and further removed 46 duplicated studies and excluded 36 records that did not meet our inclusion criteria. Eventually, two randomized control trials (Lambie et al and Butler et al) with 598 participants were included in this systematic review and meta-analysis [8,14].

The characteristics of the included trials are summarized in **Table 1**. These trials were published from inception to 30th April, 2016. The sample size were 386 and 212, with a total of 598 participants (334 participants in the control group and 264 participants in the community-based treatment group). All two trials were not double-blinded and had a low risk of performance bias. As to attrition bias, the two had a high risk of bias. As for other bias, two trials did not know whether have that other potential bias. There were no explanations about the potential bias for the selected studies. All the included trials of risk were assessed by the Cochrane Collaboration's tool for assessing the risk of bias appraisal **(Figure 2)**. In all trials, the participants of experiment group accepted community-based treatment, but the follow-up time of one selected study was only four years to estimate the recidivism rate.

The Effects on Reducing the Child Sexual Reoffending

We pooled the data from the included trials using the fixed-effect model because of no heterogeneity (Chi-square value =0.43, P=0.81, I^2=0%) **(Figure 3)**. The pooled OR was 0.45 (95% CI, [0.27, 0.74]). And the test for overall effect obtained P=0.002. There was significant difference in community-based treatment-reducing recidivism effect between community-based treatment group and control group.

Discussion

The Implications of Child Sexual Assault Recidivism

To the best of our knowledge, few systematic review and meta-analysis were conducted to examine associations between community-based treatment and reducing recidivism effect between psoriasis and suicide. Ordinary meta-analyses on the efficacy of interventions obtain relative higher quality evidence from randomized controlled trials only [15]. However, randomized controlled trials often are not the best source of evidence on harm as the study duration is often too short to detect long-term or rare adverse outcomes [15,16]. Although our study results did support the hypothesis that offenders with community treatment of post-prison released had an decreased risk of child sexual reoffending, only evidence from two randomized controlled trials indicating community interventions are effective in reducing child sexual recidivism.

For most sexual offenders, appropriate treatment programs to reintegrate them into the community after incarceration is widely accepted [17]. In terms of child sexual reoffending prevention, in addition to the efforts should be directed toward the criminal, the strengthen links with social control mechanisms and focus on the impact of the external community environment on opportunities for sexual crime is also essential. Based on the perspective of situational crime prevention, empirical evidence increasingly showed that sexual offenses against victims are significantly mediated by opportunities and other environmental factors [18]. For sexual offenders already released from prison, connection with their prison therapists and community therapists should be strengthened, careful and coherent community monitoring should be maintained, regular long-term tracking should be established, community security and maintenance measurements should be strengthened, and chances of victimization should also be severed [6,19].

The approaches of systematic reviews and meta-analysis aim to collate and synthesise all studies that meet prespecified eligibility criteria using methods that attempt to minimize potential bias [20]. Regardless of the extent of heterogeneity across studies, we still believe that all these studies are attempting to measure the same effect, even though with varying success. The varying success in estimating this is then a consequence of systematic and random error [21]. In this study, the meta-analysis included two randomized controlled trials that compared the outcomes which community treatments and control groups. About the quality of two trails, we evaluate the risk of bias by the Cochrane Collaboration's tool (Figure 2), there are many questions about how to allocate the participants and application of blind. Nevertheless, two trials are still important evidences in the area of reducing recidivism effects. In the statistical analysis, we found that there were significant differences in recidivism reduction between the community treatment and control groups. In addition, based on the previous results, there is few published literature that provides a sound rationale for the use of community treatment as a intervention for reducing child sexual recidivism. The finding in this study may be confounded by retention in the program of offenders who are less successful at acquiring the required skills, and these sub-population may remain at higher risk.

From the methodological viewpoint, there were still several limitations in this meta-analysis. The major one was the amount of trials which could be search were too insufficient, the statistical power could be lower due to smaller sample sizes. Another bias in this study is the controversy surrounding random-effects models, that is, the assumption of normally distributed random effects violates the basic principle of randomization in statistical inference [22]. The hypothetical common variance of these so-called random effects would serve only as a nuisance variable if there were no random effects. The end result of the application of this nuisance variable to meta-analytic weights would then be to markedly increase estimator variance and equalize the weights through penalizing the larger studies [23]. A further limitation is that the study lacked one more equivalent treatment control group to estimate the superior effectiveness of treatments. Therefore, it is not clear whether the positive effects were due to the community treatment, other compulsory treatment, or both.

Conclusion

In conclusion, although the available best evidence does support an association between community-based treatment and reducing recidivism effect. However, there is scanty low-quality evidence suggesting community interventions are effective in preventing child sexual recidivism. Further large-scale high-quality randomized controlled trials with long-term follow up are warranted for confirming this finding.

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Conflicts of Interest

The authors certify that, within the past 5 years and in the foreseeable future, all affiliations or financial involvement with any organization or entity with a financial interest in, or financial conflict with, the subject matter or materials discussed in this manuscript are fully disclosed (eg, employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, and royalties).

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Table 1 *Characteristics of included randomized control trials*

Table 1 Characteristics of included randomized control trials

Author	Publication year	country	Assigned groups	Treatment Control	Participants	Gender of victim			Type of intervention	Treatment duration	Scale	Follow-up Time
					Age(M)	Female (%)	Male (%)	Both (%)				
Ian Lambie	2012	New Zealand	Treatment	172	40.74	74%	32%		Court-mandated	Auckland: 18month-2 years Wellington: 52weeks Christchurch: 52weeks	Survival analysis	4 years
			Assessment only	28	38.89							
			Probation Control	186	42.82							
Louise Butler.	2012	Australia	Treatment	92	39.50	89.13	4.35	6.52	In prison	14 years	Intraclass Correlation Coefficients(ICCs), Cox regression	12.65 years
			Control	120	39.65	92.5	5.00	2.50				9.38 years

Figure 1 *PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram*

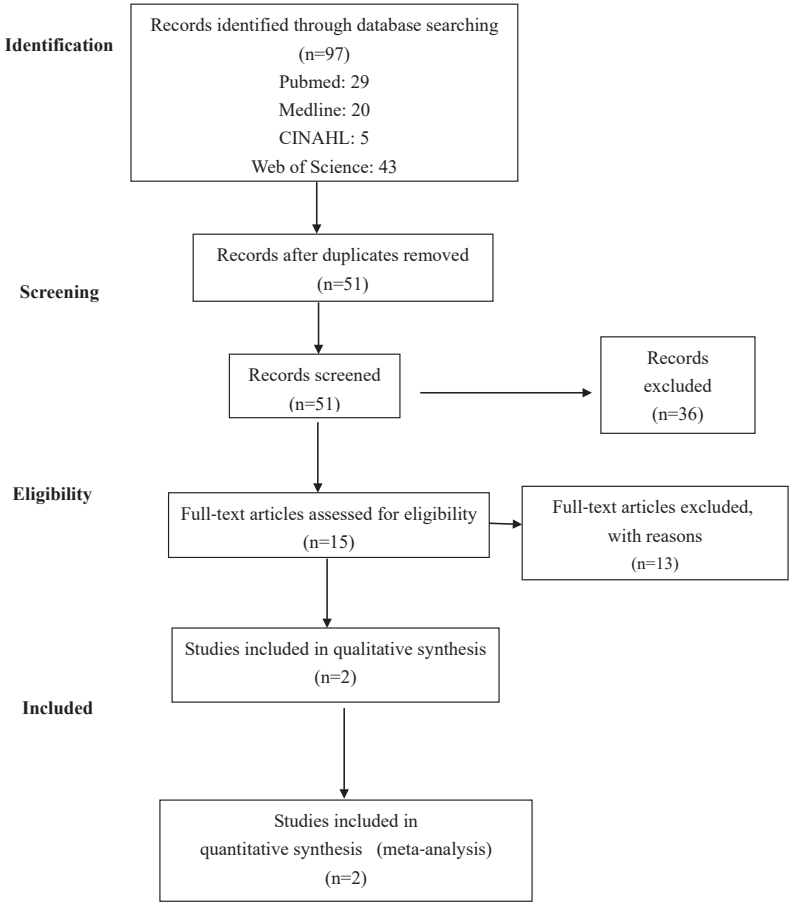

Figure 2 *Risk of bias summary: authors' judgments about each risk of bias item for each included study*

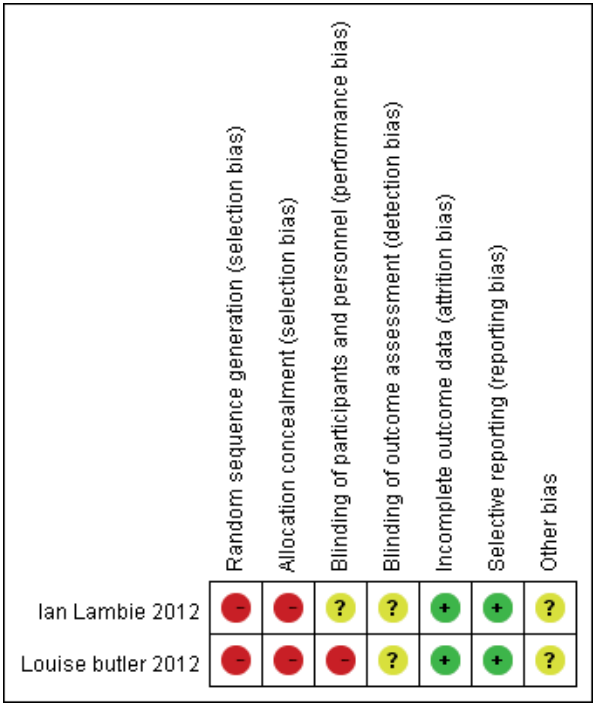

Figure 3 *Meta-analysis based on the difference of recidivism rate between community treatment and control group*

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