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Extended Abstract

Effectiveness of Prison-based Drug Treatment Programs: A Systematic Review of Meta-analyses

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Abstract

Objectives: Drawing upon existing meta-analytic reviews, this paper aims to systematically review the state of research on the effects of prison-based drug treatment programs on drug use and recidivism after imprisonment. Method: A systematic search was carried out through the Cochrane Library, the Campbell Collaboration Library of Systematic Reviews and Google scholar. Results: Based on the eligibility criteria set forth, three meta-analytic studies on the effects of prison-based drug treatment programs on drug use and recidivism were retrieved. All three meta-analyses consistently point to the positive effects of therapeutic communities both on drug use and recidivism. Findings regarding the positive effects of other incarceration-based drug treatment programs (e.g., counselling, narcotic maintenance programs, etc.) are less clear. Limitations as well as implications of the findings for research, policy and practice in Turkey are discussed.

Keywords

Drug treatment programs • Prisons • Recidivism • Drug relapse • Systematic review

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Drug abuse poses a serious threat to the health and well-being of communities all around the world. According to the 2015 World Drug Report prepared by the United Nations Office on Drugs and Crime (UNODC, 2015), about 27 million people worldwide between the ages of 15 and 64 experience a variety of drug problems such as addiction. Drug use is closely related to criminal behavior. Although the nature of the relationship between drug use and criminal behavior is still unclear, empirical research findings suggest a strong association between the two, and that drug users are disproportionately involved in criminal behavior (Bennett, Holloway, & Farrington, 2008; Casey & Day, 2014; Killias & Ribeaud, 1999; White, 1990; Whitehead & Lab, 2013). Studies that have been carried out in North America, Australia and many European countries also show that drug use and abuse is quite prevalent within prisons, and that the rates are rather larger than those observed within the general population (Dolan, Khoei, Brentari, & Stevens, 2007; European Monitoring Centre for Drugs and Drug Addiction [ECMDA], 2012a, 2012b; Fazel, Bains, & Doll, 2006; Makkai & Payne, 2003). While for some prisoners, drug use inside the prison is just continuation of previous habits, others begin to use illicit substances for the first time in prison (Dolan et al., 2007; Stöver, Weilandt, Zurhold, Hartwig, & Thane, 2008).

Drug use within prison carries significant risks and poses a serious public health threat (Dolan et al., 2007). According to the Joint United Nations Program on HIV/AIDS, in comparison to the general population, prisoners are one of the four sub-groups with high prevalence of HIV (United Nations Programme on HIV/AIDS, 2006). Additionally, the prison environment also acts as an important risk factor for HIV infection (Rhodes, Singer, Bourgois, Friedman, & Searthdee, 2005; UNODC, n.d.). In particular, sharing syringes and unprotected sex within prisons are seen as important factors that increase the risk of transmitting various diseases such as HIV into the general community after being released from prison (ECMDA, 2012a; United Nations Programme on HIV/AIDS, 2006). Another problem associated with the prison environment relates to the risk of overdose deaths, especially amongst opiate addicts, after being released from prison. Since the tolerance level against opiates decreases while in prison due to the decreased level of drug use, these people will be at higher risk for overdose once they go back to their prior levels after being released from prison (Dolan et al., 2007; EMCDDA, 2012a; Singleton, Pendry, Taylor, Farrell, & Marsden, 2003). Finally, findings from systematic review studies suggest that drug use is also an important dynamic risk factor for recidivism, and that prisoners who are not treated while in prison tend to be more likely to re-offend once released (Dowden & Brown, 2002). Therefore, drug use is an important risk factor that prison-based treatment programs must target. From this perspective, serving time in prison offers an important opportunity for intervention.

Recently, there have been many important developments in drug treatment all around the world, especially within the last 30 years, and many countries developed

national policies to fight against the drug problem (Stevens, Hallam, & Trace, 2006). However, due to a number of reasons (e.g., lack of recognition that drug addiction is a chronic disease, negative attitudes towards drug users and the opinion that this group does not deserve treatment, bias against various treatment methods such as methadone maintenance within prisons, lack of adequate resources and expertise within prison staff), prisoners have limited access to the drug treatment programs that are already available within the community (Dolan et al., 2007; UNODC, n.d.). Comparative analyses of prison treatment programs in various countries indicate that detoxification is the most common practice within prisons and that the use of other various treatments is highly limited (EMCDDA, 2012a). For example, the methadone maintenance which is being increasingly used in the treatment of opiate addiction within prisons in many countries such as Australia, Canada, and Puerto Rico, and in European prisons since the mid-1990s, the implementation of this treatment program is still quite limited in scope and content (Dolan et al., 2007). The same applies to other treatment options such as harm reduction programs and therapeutic communities. The situation is even worse within the prisons in most developing countries. Nevertheless, an assessment of extant research findings on the effectiveness of prison-based drug treatment programs on recidivism and drug use has significant implications for developing evidence-based policy and practice with drug users in prisons (Carter & Hall, 2007; Farrington & Welsh, 2001). Drawing upon existing meta-analytic reviews, therefore, this study aims to systematically review the state of research on the effects of prison-based treatment programs on drug use and recidivism after imprisonment.

Method

To be included in this review, the systematic reviews as well as the original evaluation studies reviewed by these systematic reviews must fulfill the following criteria: (a) The interventions should be performed on inmates with drug abuse problems while in prison and should especially target drug addiction. (b) There must be measurement on outcomes such as recidivism and/or drug use after being released from prison. (c) When examining the effectiveness of the prison-based drug treatment programs, the differences between various types of treatment should be addressed. (d) Statistical tools must be used to combine the data derived from the systematic review (i.e., meta-analysis). (e) The original evaluation studies must have the following method characteristics: there must be at least one control or comparison group; the control group should be exposed to either no intervention or minimal treatment, and the control group must not include dropouts (people who had previously participated in the treatment program but later left it). Some systematic reviews which did not meet one or more of these criteria could not be included in this study (e.g., Adams, Leukefeld, & Peden, 2008; Bright & Martire, 2013; Egli, Pina, Skovbo Christensen, Aebi, & Killias, 2009; Ferri, Davoli, & Perucci, 2011;

Fiestas & Ponce, 2012; Hedrich et al., 2011; Holloway, Bennett, & Farrington, 2005, 2008; Koehler, Humphreys, Akoensi, Sanchez de Ribera, & Lösel, 2014; Larney, 2010; Mazerolle, Soole, & Rombouts, 2007; McMurran, 2006; Minozzi et al., 2011; Mitchell, Wilson, Eggers, & MacKenzie, 2012; Perry, 2006; Perry, Darwin, et al., 2009; Perry et al., 2013; Perry et al., 2015a, 2015b; Perry, Newman, et al., 2009; Tripodi, Bledsoe, Kim, & Bender, 2011; Smedslund et al., 2011; Smith, Gates, & Foxcroft, 2006; Stallwitz & Stöver, 2007).

Data Bases Scanned for Accessing Studies

The search for this review has been carried out in a four-step process. First, the titles, abstracts, and keywords of all systematic reviews located in Cochrane Library as of June 29, 2015 were extensively searched using the string: (drug OR substance) AND (offender OR prison OR jail OR incarceration OR incarcerated OR recidivism). A total of 397 studies were obtained and examined individually in terms of the eligibility criteria described above. In the second stage, using the individual words *drug* and *substance*, the titles and keywords of the entire assembly of studies published between 2004 and 2015 within the Crime and Justice Section of the Campbell Collaboration's systematic review library were searched, again up to June 29, 2015. A total of five studies were obtained as a result of this search. In the third stage, a total of 3,000 sources were scanned on Google Scholar using three different searches for the words *drug*, *systematic review*, *substance*, *treatment*, *prison*, *incarceration*, *recidivism*, and *correction*.² In the final stage, the reference lists within the 3,402 systematic review studies that had been obtained in the first three stages and that fit the criteria which had been initially designated were searched. In light of the updates constantly being made to the same systematic review, priority was given in this study to the most recent version (e.g., Aos, Miller, & Drake, 2006; Aos, Phipps, Barnoski, & Lieb, 2001; MacKenzie, Mitchell, & Wilson, 2011; Mitchell, MacKenzie, & Wilson, 2006; Mitchell, Wilson, & MacKenzie, 2006, 2007, 2012). As a result, a total of three meta-analyses were determined to be eligible for this review.

Results

As a result of the systematic search that was performed, three meta-analytic studies which examined the effectiveness of prison-based drug treatment programs on inmates' recidivism and drug use after being released from prison were identified (Aos et al., 2006; Mitchell, Wilson, & MacKenzie, 2012; Pearson & Lipton, 1999). The characteristics of these meta-analyses, such as the number of evaluation studies reviewed, the types of treatment programs evaluated, design features of the evaluation studies included, the years covered, the scope of the countries and languages, whether

² Only the first 1,000 sources are shown for each search on Google Scholar.

or not the included studies were published and the age characteristics of the study population, are shown in Table 1. The main findings of the three meta-analyses on the effectiveness of the drug treatment programs are summarized in Table 2.

Pearson and Lipton (1999) meta-analyzed the findings obtained from of 20 evaluation studies that were carried out between 1968 and 1996 on the effectiveness of prison-based drug treatment programs on recidivism. Of all the programs that were evaluated (therapeutic communities, group counseling, and boot camps), only the therapeutic communities were found to be effective in reducing recidivism ($r = .133, p = .025, n = 7$). Neither the boot-camps ($r = .05, p = .163, n = 6$) nor the group counseling ($r = .04, p = .054, n = 7$) displayed any significant effect on recidivism.

Aos et al. (2006)³ examined the findings from 30 evaluations that were carried out between 1970 and 2005 on the effectiveness of prison-based drug treatment programs on recidivism. The results of the meta-analysis showed that each of the four approaches used in the treatment of drug addiction in prisons (i.e., therapeutic communities in prison, $n = 7$; therapeutic communities in prison with community aftercare, $n = 6$; cognitive behavioral drug treatment, $n = 8$; drug treatment in jail, $n = 9$) was effective on recidivism. While therapeutic communities in prison without supplementary treatment after release caused a 5.3% decrease in the average recidivism rate when compared to the control group, therapeutic communities in prison lead to a 6.9% decrease in recidivism once it is combined with community aftercare. Further, findings also indicated that while cognitive behavioral therapy within prison was associated with a 6.8% decrease in recidivism, general drug treatment in jails caused a 6% decrease in general recidivism. However, as already mentioned by the authors, no information was available on the content of the treatment program in this last group.

Finally, Mitchell, Wilson, and MacKenzie (2012)⁴ systematically compiled the findings of 74 evaluation studies that examined the effectiveness of prison-based drug programs on recidivism and drug relapse after release from prison between 1980 and 2011. The results of meta-analysis showed that overall in-prison drug treatment programs had significantly reduced recidivism (17% decrease, Odds Ratio [OR] = 1.34; 95% Confidence interval [CI] [1.21, 1.47]. When analyzed according to the type of program, therapeutic communities (OR = 1.40*; 95% CI [1.14, 1.71]; $n = 35$) and counseling programs (OR = 1.53*; 95% CI [1.20, 1.94]; $n = 26$) significantly reduced recidivism; however, neither boot-camps (OR = 1.10; 95% CI [0.48, 2.50]; $n = 2$) nor narcotics maintenance programs (OR=1.09; 95% CI [0.71, 1.67]; $n=5$) had a significant impact on recidivism when compared to the control groups. When considering the impact of prison-based drug treatment programs on drug-use after release from prison,

3 This study is an updated version of the Aos et al. (2001) study.

4 This study is an updated version of the Mitchell et al. (2006) study.

only 22 studies in total examined the drug treatment programs on drug relapse. The meta-analyses indicated that in-prison drug treatment programs reduced drug use after release by 15% on average ($OR=1.28$; 95% CI [0.94, 1.75]; $n=26$). When considering the differences in the types of programs, the narcotics maintenance programs ($OR=2.10$; 95% CI [1.03, 4.27]; $n=5$) and therapeutic communities ($OR=1.33$; 95% CI [0.92, 1.93]; $n=13$) were associated with a decrease in drug use whereas the counseling programs ($OR=0.77$; 95% CI [0.35, 1.70]; $n=3$) and boot-camps ($OR=0.56$; 95% CI [0.16, 2.01]; $n=1$) did not have any significant impact on drug use.

Conclusion and Evaluation

Drug-use is more prevalent in prisons than in the general public. Drug use in prison not only poses a serious public health threat, but it also constitutes a significant risk for recidivism. In this regard, an important opportunity is offered in terms of intervening in prisoners' cycle of drug use and crime while they are actually in prison. When compared with the drug treatment programs that are implemented within the community, the scope and content of the drug treatment programs applied within prisons are quite limited. Meta-analytic studies that systematically search and compile findings of outcome evaluations on the impact of these programs have significant implications for evidence-based decision-making. In light of the criteria that have been set forth in the method section, this study summarizes all empirical research findings from extant meta-analytic studies on the effectiveness of various prison-based drug treatment programs on drug use and recidivism.

Overall, three meta-analytic studies met the inclusion criteria. A review of these studies suggest that there are more evaluation studies on the effectiveness of prison-based drug treatment programs on recidivism than on drug use after release. Second, there was no evidence that boot-camps were effective in reducing either recidivism or drug relapse after release. These findings coincide with the results of other meta-analyses that evaluate the effectiveness of similar programs within the criminal justice system which do not focus on the problem of drug use (Wilson & MacKenzie, 2006). This finding is very often attributed to the fact that no valid theoretical model lies behind this approach (Akers & Sellers, 2009).

Third, while this study suggests that counseling programs in prisons do not have a significant effect on inmates' drug use after release from prison, the findings on the impact of these programs on recidivism are less clear. The conflicting findings regarding the effects of counseling programs on recidivism might be due to a number of reasons. First, while Pearson and Lipton (1999) found that group counseling had not caused any significant effect on recidivism, they concluded that there was significant variation in the group counseling programs and that not much detail had

been provided on the programs' content. Meanwhile, while Aos et al. (2006) revealed that prison-based counseling programs reduced recidivism by 6.8%, the study focused on cognitive-behavioral drug treatment programs only. Finally, Mitchell, Wilson, and MacKenzie (2012) showed that despite the positive effects on subsequent criminal behavior, prison-based counseling programs did not have a significant effect on drug relapse, and that the sign of the effect was in the opposite direction. Yet, it should be noted that the counseling programs examined in this study included a wide variety of elements that were largely based on the group therapy, as well as individual counseling programs. Additionally, Mitchell Wilson, Eggers, et al. (2012) also examined the relationship between the method quality of the evaluation studies and the effect sizes. They found that 73% of studies included in their meta-analysis had a weak method quality and that although counseling programs significantly reduced recidivism, the effect size decreased as the method quality increased. Therefore, they concluded that the findings related to the success revealed by the counseling programs in general came from studies with weak quality.

Fourth, only one meta-analysis synthesized the research findings on the effectiveness of narcotics maintenance programs and this study revealed that these programs had a significant impact on drug use but not on recidivism (Mitchell, Wilson, & MacKenzie, 2012). This finding at first seems to contradict the findings of other systematic reviews which point to a positive effect of pharmacological intervention programs administered outside the prisons (Egli et al., 2009; Perry et al., 2013; Perry et al., 2015). The context within which the intervention takes place can significantly affect the results (Mitchell, Wilson, & MacKenzie, 2012). Yet it should also be noted that the meta-analyses included in this review differ significantly from other studies in terms of the inclusions criteria and especially the characteristics of the control group. Additionally, the meta-analytic study performed by Egli et al. (2009) examined whether or not different types of programs were more effective than one another, rather than assessing the effectiveness of pharmacological intervention programs in general. However, in Mitchell, Wilson, and MacKenzie's (2012) study, differences in the narcotics maintenance programs applied in prisons could not be examined in terms of the type of substance used in the treatment.

Fifth, this study reveals the most consistent findings in relation to the effectiveness of therapeutic communities. All meta-analytic studies that had evaluated the effectiveness of therapeutic communities indicated that these programs consistently decreased recidivism and that the positive effects might be even larger if supplemented with additional treatment after being released from prison. The only meta-analytic study that evaluated the effectiveness of therapeutic communities on drug relapse also indicated positive results (Mitchell, Wilson, & MacKenzie, 2012). One important factor that increases the reliability of the findings laid out on the effectiveness of

therapeutic communities is that evaluation studies that were carried out with better quality methods had larger effect size. These findings coincide with the results of prior reviews on the effectiveness of therapeutic communities (Holloway et al., 2005, 2008; Perry, Newman, et al., 2009).

These findings might have significant implications for prison policies. The declared international guidelines stress the principle of equivalence and suggest bringing the prison-based treatment programs in line with those provided within the community and ensuring an adequate variety of programs to appropriately meet the needs of those who are inside the prison system and then support them with after-release treatments (Dolan et al., 2007; EMCDDA; 2012a; UN, 1998; UNODC, n.d.). Various political, legal, social, cultural, and economic factors can limit the variety of treatment programs that are implemented within prisons. Yet prisoners display significant differences in terms of their substance use history; as such, treatment programs should be individualized and tailored to the needs of the inmates (UNODC, n.d.). To achieve this, the risk and needs of drug users in prisons should be identified first and then they should be provided with a wide range of treatment programs to address their needs. The provision of treatment programs within the community to supplement the prison-based treatment is also important (Bullock, 2003; Dolan et al., 2007). An international survey on prison-based substance abuse treatment programs in 27 EU countries showed that cognitive behavioral and non-behavioral programs are preferred over pharmacological treatment and therapeutic communities (Hamilton, Koehler, & Lösel, 2015). Despite the high prevalence of drug use within prisons, inmates constitute a disadvantaged group with limited access to a wide range of quality treatment programs (Stöver & Michels, 2010). Also, despite the research findings which show that after-care services are quite significant for inmates (Aos et al., 2006; Pelissier, Jones, & Cadigan, 2007), this type of support is rarely provided (Stöver, Casselman, & Hennebel, 2006).

Drug use within prisons is also a major problem in Turkey. Unfortunately, no official data exist in Turkey on the prevalence of substance use and abuse within the penal institutions. When compared with the EU countries, the range of drug treatment programs applied in Turkey is much more limited. Yet recently important developments took place to diversify and extend drug-use and addiction services both within the prisons and the community in general. For example, by the end of 2009, treatments mainly intended to reduce the intense symptoms of withdrawal (Evren, 2015). The combination of buprenorphine and naloxone was approved by the Ministry of Health for the first time in April 2010 for treating opiate dependence (T.C. Sağlık Bakanlığı İlaç ve Eczacılık Genel Müdürlüğü [Turkey's Ministry of Health, General Directorate of Pharmaceuticals and Pharmacy], 2009). Further, other significant projects are currently in place such as the Rehabilitation Project of Mental Health and Addiction Services in Penal Institutions, which was developed to train health care staff

within the penal institutions in Turkey, and the Individualized Rehabilitation Project (Bireyselleştirilmiş İyileştirme [BİSİS]), which in accordance with the principles of risk, need, and sensitivity, aim to provide inmates with individualized treatment based on their risk status and needs (T.C. Başbakanlık [Turkish Prime Ministry], 2015). A variety of individual and group-oriented intervention programs (such as anger management programs; cigarette, alcohol, and drug addiction programs [SAMBA]; think first program; and the special surveillance and management program) are currently available for prisoners with drug-use and addiction problems. However, high-quality evaluation studies are very limited in Turkey. Although research findings on the effectiveness of various programs applied in other countries are informative for policy makers and practitioners in Turkey, one cannot assume that any treatment program will have similar effects regardless of the differences in the socio-cultural, economic, and administrative context. Therefore, high-quality scientific studies are urgently needed to evaluate the effectiveness of current practices in Turkey to guide future prison policies.

Table 1

The Main Features of the Meta-Analytic Studies Included

Year (Author)	Number of evaluation studies	Type of Prison- Based Treatment Program	Evaluation study's design	Years covered	Scope of written language and country	Population covered by the evaluation program	Publication requirements
1999 (Pearson & Lipton)	n = 20	Therapeutic communities (n = 7) Boot-camps (n = 6) Group counseling (n = 7)	Experimental and/or quasi- experimental	1968- 1996	No restrictions	Youths and adults	None
2006 (Aos, Miller, & Drake)	n = 30	Therapeutic communities without community aftercare (n = 7) Therapeutic communities with community aftercare (n = 6) Cognitive-behavioral drug treatment (n = 8) Drug treatment in jail (n = 9)	Experimental and/or quasi- experimental	1970- 2005	USA and English- speaking countries (language must be English)	Adults only	None
2012 (Mitchell, Wilson, & MacKenzie)	n = 74	Therapeutic communities (n = 35) Boot-camps (n = 2) Narcotics maintenance program (n = 6) Counseling programs (n = 26)	Experimental and/or quasi- experimental	1980- 2011	(unspeci- fied)	Youths and adults	None

Table 2
Meta-Analyses Included in the Systematic Review

Year (Author)	Number of studies (n)	Prison-based treatment programs	Outcome variable	Effect size	Findings
1999 (Pearson & Lipton)	20	Therapeutic communities (n = 7) Boot-camps (n = 6) Group Counseling (n = 7)	Recidivism	Pearson correlation coefficient (<i>r</i>)	Therapeutic communities ($r = 0.133$, $p = 0.025$, $n = 7$) Boot-camps ($r = 0.05$, $p = 0.163$, $n = 6$) Group counseling ($r = 0.04$, $p = 0.054$, $n = 7$)
2006 (Aos, Miller, & Drake)	30	Therapeutic communities (n=7) Therapeutic communities with aftercare (n=6) Cognitive-behavioral drug treatment (n=8) Drug treatment in jail (n=9)	Recidivism	M_d : mean difference of effect size	Therapeutic communities with community aftercare (6.9% decrease, $n = 6$) Therapeutic communities (5.3% decrease, $n = 7$) Cognitive behavioral drug treatment (6.8% decrease, $n = 8$) Drug treatment in jail (6% decrease, $n = 9$)
2012 (Mitchell, Wilson, & MacKenzie)	75	Therapeutic communities (n = 35) Boot-camp (n = 2) Narcotic maintenance programs (n = 6) Counseling programs (n = 26)	Recidivism Drug-use after prison-release	Odds ratio (OR)	Recidivism: OR = 1.34; 95% CI [1.21, 1.47]; $n = 74$; 17% decrease Therapeutic communities: OR = 1.40, 95% CI [1.14, 1.71], $n = 35$ Boot-camps: OR = 1.10, 95% CI [0.48, 2.50], $n = 2$ Narcotic maintenance programs: OR = 1.09, 95% CI [0.71, 1.67], $n = 5$ Counseling: OR = 1.53, 95% CI [1.20, 1.94], $n = 26$ Drug Relapse: OR = 1.28; 95% CI [0.94, 1.75]; $n = 22$; 15% decrease Therapeutic communities: OR=1.33, 95% CI [0.92, 1.93], $n = 13$ Boot-camps: OR = 0.56, 95% CI [0.16, 2.01], $n = 1$ Narcotic maintenance program: OR = 2.10, 95% CI [1.03, 4.27], $n = 5$ Counseling: OR = 0.77, 95% CI [0.35, 1.70], $n = 3$

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* Yıldız işaretli kaynaklar sistematik derlemeye dâhil edilen meta-analiz çalışmalarıdır. / References marked with an asterisk indicate studies included in the meta-analysis.

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