

The effect of community-based drug rehabilitation programs on recidivism in Malta

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Abstract

Background: The argument for financing therapeutic community-based drug rehabilitation programs for inmates is compelling. Numerous studies have established the positive effect of such treatment on reducing recidivism, especially treatment based on the therapeutic community model. **Methods:** This quasi-experimental retrospective cohort study examined the impact of therapeutic community-based drug rehabilitation programs on recidivism amongst drug inmates released from the national prison of Malta between 2005 and 2008 (i.e. “the reference period”). An experimental group consisting in all drug inmates who participated in at least one program during the time spent in prison for a conviction that ended during the reference period was compared to two comparison groups of inmates who did not attend such a program or who had attended in the past. Chi-square tests and ANOVA were employed in the analysis.

Results: There was no statistically significant difference ($p < 0.05$) between the three groups with regard to sex, age on admission and occupation but there was a highly significant difference with regard to the number of previous convictions, prison-based opioid substitution treatment (given to all inmates convicted for heroin-related offences) and prison-based psychiatric treatment. On fitting a generalized linear model with a logit link function to control for opioid substitution treatment and the number of previous convictions it emerged that the difference between groups was not significant and thus the null hypothesis was not rejected.

Conclusion: Participation of inmates in therapeutic community-based drug rehabilitation programs did not in itself emerge as a significant predictor of recidivism. In this regard, possible limitations that may have contributed to the lack of significant results were discussed. Inmates who were not administered any opioid substitution treatment (i.e. corresponding to all those who were incarcerated for drug offences other than heroin) were 74% less likely to reoffend compared to those who were given methadone or tramadol. Moreover, the likelihood of recidivism was 1.7 times greater for each additional prior incarceration ($p < 0.001$).

Keywords

therapeutic community-based rehabilitation, inmates, recidivism, incarcerations, opioid substitution treatment.

Abbreviations

p: Probability value, CI: confidence interval, sig: significance, CCF: Corradino Correctional Facility

Background

Malta has often been described as “the Jewel of the Mediterranean” and a heaven for locals and tourists alike. However, beneath its impressive exterior and in sharp contrast with its idyllic lifestyle lies a serious social phenomenon: drug abuse. Prevalence of drug use amongst adults reaches 14% amongst those aged 18-24 years.¹ Besides the well-known harmful effects on one’s health and welfare, substance misuse has serious repercussions on society such as the strain on public finances spent on medical interventions, loss of production, social benefits, court proceedings, etc.

Even during these challenging times of financial crisis, the argument for financing therapeutic community-based drug rehabilitation programs for inmates is compelling because research has shown that these have a positive effect on reducing recidivism.²⁻⁵ The main goals of treatment in a therapeutic community-based program center around a radical change in the person’s lifestyle including moderation, self-

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restraint, abstinence, removal of anti-social behaviour and fostering of pro-social values and conduct.⁶

Corradino Correctional Facility (CCF) is the only correctional institution in Malta and houses all people who have been remanded in custody or convicted by the local courts. Inmates (on drug-related offences) who satisfy a number of criteria and pass an assessment by the Prison Substance Abuse Assessment Board are given permission to attend a drug rehabilitation program for the rest of their custodial sentence which must not exceed two years. There are three such programs currently in operation in Malta: the “New Hope” program operated by the Caritas Malta Foundation (part funded by the Government), the prison-based Substance Abuse Therapeutic Unit and the “Santa Marija” program operated by Agenzija Sedqa. These programs differ in regime and intervention approach but are all based on the therapeutic community model. The residential phase corresponds to the period of the remaining prison sentence. Participation is voluntary but subject to strict rules. Notwithstanding the potentially crucial benefits to inmates and society at large and the significant expenditure incurred, the use and impact of these programmes is not monitored in an extensive or systematic manner and no study has ever been undertaken which examines their efficacy in preventing recidivism.

The main purpose of this study was to determine the efficacy, or otherwise, of the three local drug rehabilitation programs in reducing recidivism amongst drug inmates at CCF. It also sought to identify predictors and risk factors for reoffending with implications for future risk management.

Recidivism in this study was defined as any offence (i.e. not necessarily drug-related offences) committed after release from CCF during the reference period for which the offender had been given a conviction by the Maltese Courts necessitating a custodial sentence and re-entry into prison. Convictions resulting in a conditional discharge, probation or suspended sentences were not taken into consideration.

Literature Review

The literature (consisting of studies conducted almost exclusively in the US which is unsurprising given that therapeutic communities originated there)

contains concrete evidence pointing towards the effectiveness of therapeutic community-based drug rehabilitation programs on reducing recidivism amongst inmates with a history of drug abuse and drug-related convictions.²⁻⁵ However a common point of criticism is that studies that demonstrate such effectiveness are methodologically weak. Moreover, the benefits of such treatment in reducing drug relapse are still unclear at best.

In a meta-analytic study conducted in 2007, the authors examined the effectiveness of five types of prison-based drug treatment programs including those based on the therapeutic-community model in reducing recidivism and drug use.² It was found that in six out of seven evaluations, inmates who attended therapeutic-community based programs recidivated less than those who did not. The overall mean-weighted effect size was 0.133 ($p=0.025$). This finding was consistent despite changes in any methodological variations or changes in sample sizes or the specific features of the programmes. The authors also analysed ten studies that explored the relationship between residential therapeutic-community based programmes and recidivism and found that these generated a mean odds ratio of 1.30 (95% CI 1.10–1.76) for recidivism outcomes thus proving the effectiveness of such programs in that regard. Interestingly, the association between participation in the programmes and lower rates of recidivism remained strong irrespective of factors such as age, gender, type of offence and coercion-based participation. There were however mixed results with regard to the effect of therapeutic-community based programmes on drug relapse. Two out of four studies analysed in the study found that inmates who participated in prison therapeutic-community based programmes had lower rates of drug relapse when compared to those that did not, while the other two evaluations found the exact opposite. The overall mean odds ratio of these four studies was 1.02 (95% CI 0.48 – 2.15) thus indicating no difference. The authors emphasise the fact that most of the evaluations analysed in their study were methodologically weak. In fact, 20% of such evaluations were classified as weak quasi-experiments, 43% as standard quasi-experiments, 30% as rigorous quasi-experiments and 7% as experimental designs. According to the authors, there is therefore a possibility that being methodologically weak, the available research overestimates the effects of therapeutic community-

based prison programmes on recidivism and there may be alternative explanations for reductions in recidivism other than those due to the positive effects of the programmes.

In another study, the author analysed the outcomes after release from prison over a period spanning five years post-release for 2,809 inmates who had participated in therapeutic community-based substance misuse treatment programs or control groups in a number of correctional facilities in Pennsylvania, US between January and November 2000.³ It was found that participation in a therapeutic community-based program had a strongly significant effect on reducing recidivism over a five year post-release period ($p < 0.05$) and that this was independent of community aftercare. The impact on re-arrest rates was slightly significant ($p < 0.09$) while that on drug relapse was negligible ($p > .10$). The author also found that with regard to two of the three analysed outcomes (i.e. recidivism and drug relapse), the severity of previous offences had no impact on recidivism and that employment after release from prison was the strongest predictor variable amongst all the outcomes.

The literature review makes a strong case for the existence of other predictor variables that have a significant effect on reducing recidivism. The likelihood of recidivism was found to be almost one and a half times more for each additional prior incarceration ($p = 0.002$).⁷ Post-release employment³, stable housing⁸, and the number of prior arrests^{9,3,5}, were reported to be significant to strong predictor variables of the outcome of recidivism. Inmates with co-existing disorders⁸, and those whose drug problem was more severe or whose drug of choice was heroin,¹⁰ are also more likely to recidivate. It is also reported that it is significantly less likely for female inmates who undertake prison-based treatment to recidivate than male inmates and the latter were reconvicted significantly sooner than their female counterparts.⁸⁻⁹ It has also been reported that retention is a significant predictor of long-term success and that the effects of participation in therapeutic community-based programs on recidivism are most consistent for treatment completers rather than for dropouts.¹¹

Methodology

This was a quasi-experimental retrospective cohort study that compared recidivism outcomes for

three groups of drug inmates. Recidivism was defined as any offence committed between release from CCF (limited to release during the reference period) until December 2012, for which the offender had been convicted by the Maltese Courts and given an effective custodial sentence. Existing data consisting of electronic files maintained and kept at CCF was gathered from three groups of inmates having a history of substance abuse all of whom were released from CCF during the reference period.

The total sample size consisted of 361 inmates who were serving custodial sentences for drug-related offences. Group 1 consisted of all inmates who did not participate in any therapeutic community-based drug rehabilitation program during the time spent in prison for a conviction that ended during the reference period but who had participated in any such program in the past ($n = 27$). Group 2 consisted of all inmates who never participated in any such program ($n = 229$). Group 3 consisted of all inmates who participated in at least one of such programs during the time spent in prison for a conviction that ended during the reference period ($n = 105$).

The covariate predictors of sex, age on admission, age at first conviction, occupation, prison-based psychiatric treatment, prison-based opioid substitution treatment and the number of prior incarcerations were included in the analysis since these could possibly be predictive of the outcome under study as evidenced in the literature review. Other factors found to predict recidivism in the literature review such as social support, educational level, participation in aftercare and duration of post-release period from prison were not available for inclusion in the analysis.

Prison-based opioid substitution treatment is the replacement of heroin under medical supervision with a longer acting but less euphoric opioid such as methadone or tramadol. For the purpose of this study, all inmates who were incarcerated for heroin-related offences were administered opioid substitution treatment, while the rest (i.e. incarcerated for other drug-related offences) were not administered such treatment.

Statistical analysis

PASW Statistics version 18.0.0 was used for data analysis. Pearson chi-square tests, Fisher's Exact Test and a Generalised Linear Model with a

logit link function were used to compare categorical variables (including sex, occupation, prison-based opioid substitution treatment, prison-based psychiatric treatment and the number of previous convictions) between groups, ascertain any possible relationship between recidivism and such variables and ultimately test the null hypothesis that offenders with substance-use disorder who participate in a therapeutic community-based drug rehabilitation program are not less likely to reoffend than offenders who do not participate in such programs. An alpha level of 0.05 for all statistical tests was used.

Table 1 presents a summary of the descriptive data for the study participants on a number of variables such as, gender, age on admission, age at first conviction, occupation, previous convictions, prison-based opioid

substitution treatment and prison-based psychiatric treatment. Group 2 had the largest number of no previous convictions. In fact, 5.1% of group 1, 72.2% of group 2 and 22.8% of group 3 had no previous convictions. In Group 1, 74% were on methadone, 7% on tramadol only and only 18% were not administered any opioid-substitution treatment. In Group 2, 52% were on methadone, 11% were on tramadol only and 37% were on no opioid-substitution treatment. No opioid substitution treatment was most common in Group 2. In Group 3, 74% were on methadone, 10% were on tramadol only and 16% were on no opioid-substitution treatment. Inmates in Group 2 were the least likely to be on psychiatric treatment. In Groups 1 and 3, 89% were on psychiatric treatment, whilst in Group 2 this was 69%.

Table 1: Summary of descriptive data in relation to sex, age on admission, age at first conviction, occupation, number of previous convictions, prison-based opioid substitution treatment and prison-based psychiatric treatment.

Variable		Group 1 (n = 27)	Group 2 (n = 229)	Group 3 (n = 105)	Total (N = 361)
Sex	# Males (%)	27 (100)	213 (93)	98 (93)	338 (94)
	# Females (%)	0 (0)	16 (7)	7 (7)	23 (6)
Age on admission	Mean (SD)	29.85 (5.88)	29.5 (9.15)	28.21 (7.4)	29.15 (8.47)
Age at 1 st conviction	Mean (SD)	25.11 (5.15)	27.31 (7.96)	24.46 (5.85)	26.31 (7.33)
Occupation	# Unemployed (%)	26 (96)	177 (77)	82 (78)	285 (79)
	# Employed (%)	1 (4)	52 (33)	23 (22)	76 (21)
Previous convictions ^a	# 0 (%)	12 (44)	171 (75)	54 (51)	237 (66)
	# 1 (%)	3 (11)	18 (8)	22 (21)	43 (12)
	# 2 (%)	7 (26)	16 (7)	9 (9)	32 (9)
	# 3 (%)	5 (19)	24 (10)	20 (19)	49 (13)
Drug treatment ^b	# No opioid substitution treatment (%)	5 (19)	84 (37)	17 (16)	106 (29)
	# On tramadol only (%)	2 (7)	25 (11)	10 (10)	37 (10)
	# On methadone with or without tramadol (%)	20 (74)	120 (52)	78 (74)	218 (61)
Psych treatment ^c	# No psychiatric treatment (%)	3 (11)	70 (31)	11 (10)	84 (23)
	# On psychiatric treatment (%)	24 (89)	159 (69)	94 (90)	277 (77)

a. This categorical variable was coded as follows: 0 = no previous convictions, 1 = one previous conviction, 2 = two previous convictions and 3 = three or more previous convictions.

b. In-prison opioid substitution treatment

c. In-prison psychiatric treatment

Notes: Group 1 - inmates who attended a program in the past, Group 2 - inmates who never participated in a program, Group 3 - inmates who participated in a program during reference period

Results

There was no statistically significant difference between groups with regard to gender, $p=0.537$ (2-tailed), age on admission, $F(2, N=358)=9.38$, $p=0.392$ and occupation, $\chi^2(2, N=361)=5.31$, $p=0.070$. There was a highly significant difference between groups on a number of previous convictions $\chi^2(6, N=361)=32.51$, $p<0.001$, prison-based opioid substitution treatment $\chi^2(4, N=361)=18.44$, $p=0.001$, and prison-based psychiatric treatment $\chi^2(2, N=361)=18.69$, $p<0.001$. Collinearity was observed between opioid substitution treatment and psychiatric treatment. In fact, 89% of inmates who were administered opioid substitution treatment were also on psychiatric treatment, whilst only 46% of those who were not having opioid substitution treatment were on psychiatric treatment. It was thus decided that psychiatric

treatment should be eliminated from further statistical analysis.

A generalized linear model with a logit link function was thus used to compare the reoffence rate between groups when controlling for opioid substitution treatment and the number of previous convictions (Table 2). It emerged that the difference between groups was not significant when controlling for opioid substitution treatment and number of previous convictions and thus the null hypothesis was not rejected. It was found that those inmates who were not administered any opioid substitution treatment were 74% less likely to reoffend compared to those who were given methadone or tramadol. Interestingly, the number of previous convictions emerged as a significant predictor of recidivism. Results indicated that the likelihood of recidivism was 1.7 times greater for each additional prior incarceration ($p<0.001$).

Table 2: Parameter Estimates - Comparison of reoffence rate between groups when controlling for opioid substitution treatment and number of previous convictions.

Parameter	B	Std. Error	95% Wald CI		Hypothesis Test			Exp(B)	95% Wald CI for Exp(B)	
			Lower	Upper	Wald χ^2	df	Sig.		Lower	Upper
Group 1	.665	.4985	-.312	1.642	1.781	1	.182	1.945	.732	5.167
Group 2	-.088	.2638	-.605	.429	.112	1	.738	.915	.546	1.535
Group 3		.	.	.	.	.	.	1	.	.
PREV ^c	.571	.1177	.341	.802	23.561	1	.000	1.770	1.406	2.230
[REPL=0] ^d	-1.329	.2829	-1.883	-.774	22.061	1	.000	.265	.152	.461
[REPL=1] ^e	.159	.3773	-.581	.898	.177	1	.674	1.172	.559	2.455
[REPL=2] ^f	1 ^b	.	.	.	.	.	.	1	.	.

a. Set to zero because this parameter is redundant.

b. Fixed at the displayed value.

c. Number of previous convictions

d. No prison-based opioid substitution treatment

e. In-prison opioid substitution treatment - on tramadol only

f. In-prison opioid substitution treatment - on methadone treatment with or without tramadol

Notes: Group 1 - inmates who attended a program in the past, Group 2 - inmates who never participated in a program, Group 3 - inmates who participated in a program during reference period

Discussion

The null hypothesis in this study was not rejected when controlling for opioid substitution treatment and the number of previous convictions. Quite surprisingly recidivism was higher in the group that attended a program (55.2%) than in the

group who never participated in a program (44.8%). Thus participation in a drug rehabilitation program was not a significant predictor of recidivism for inmates at the CCF in this study. This result was not consistent with studies outlined in the literature review and it may well be the case

that the limitations of this study (particularly the study design and the small sample size) contributed significantly to influence statistical results leading to a failure in rejecting a null hypothesis that was false.

In keeping with findings from other studies that reported that inmates whose primary drug of choice was heroin were more likely to recidivate, it was found that those inmates who were not administered any opioid substitution treatment (i.e. consisting only of those inmates who were incarcerated for drug-related offences other than heroin) were 74% less likely to reoffend compared to those who were given methadone or tramadol.¹⁰ Also, the finding that the likelihood of recidivism was almost two times greater for each additional prior incarceration replicated the findings of earlier studies.¹²⁻¹⁴ However age on admission ($p=0.392$) was found not to be a significant predictor of recidivism despite the consistent finding reported in other studies that younger offenders were most likely to recidivate.^{3,8-10}

Limitations

The major limitations of this study are the study design, the small sample size and the use of recidivism as an outcome measure.

Being a quasi-experimental design, this work studied pre-established groups of participants rather than participants that have been randomly assigned to experimental conditions. In other words, participants are not randomly assigned to levels of the independent variable (i.e. recidivism). This type of design was appropriate and indeed made necessary because the author used existing archived data kept at CCF and thus it was neither possible nor feasible to randomly assign individuals to groups. The main problem with a quasi-experimental retrospective design (as against a true experimental design) is that there is a real risk that results could be due to one or more confounding variables. Quasi-experiments tend to have lower internal validity in comparison to true experiments and it may be difficult to interpret results as group equivalence is not assumed. In this study, the analysis included two comparison groups to help control for some of the variance. This notwithstanding, selection bias remains a real threat to the internal validity of this study. A number of covariate predictor variables that were available to include in the analysis some of whom were

identified in the literature review (including age on admission, number of prior incarcerations, prison-based psychiatric treatment, prison-based opioid substitution treatment and occupational status) were entered so as to adjust for possible differences between the groups on available variables. However other factors found to predict recidivism in the literature review such as social support, educational level, participation in aftercare and duration of post-release period from prison were not available for inclusion in the analysis. Also the retrospective design of the study meant that the author did not have control on the choice, accuracy or completeness of the data presented to her.

Another limitation of this study is the sample size as well as the disproportionate sizes between Group 1 and the other two groups. While the sample size in the present study (361 inmates) was deemed modest but adequate for the proposed study design, the possibility that larger samples might have led to significant differences in recidivism rates cannot be discounted. Indeed, studies identified in the literature review that reported significant treatment effects utilised larger samples ranging from 690,⁹ to 715,¹⁵ and 1,343 inmates.¹⁶

Furthermore, using recidivism as an outcome measure and as defined in this study has a number of possible limitations. For instance, inmates released during the reference period who reoffended and were convicted by Court but awarded non-custodial sentences were not considered recidivists. On the other hand, an inmate who was released during the reference period, did not reoffend but was convicted by Court and awarded a custodial sentence for a crime that was committed in the past was considered a recidivist. This means that recidivism rates at least within the scope of this study may be inaccurate and/or misleading since a decrease or increase in such rates might not necessarily reflect a genuine decrease or increase in reoffending but might reflect unrelated factors such as commission of less detectable offences, or more likely, delays in the processing and conviction of offenders for pending charges (unfortunately a common occurrence in the local justice system). Also, using recidivism in general as a performance indicator does not take into consideration the seriousness of the crime for which an inmate is re-incarcerated. Unfortunately, data concerning the types and nature of crimes for which inmates were re-incarcerated was not available for the purpose of this study.

Conclusion

The present study failed to replicate the findings of a large number of other studies that participation in drug rehabilitation programs based on the therapeutic community model is a significant predictor of recidivism. While the limitations of the study, especially the study design and modest sample size, are important considerations when evaluating its outcomes, a possibility that cannot be excluded is that the prison inmate programs offered to inmates at the Corradino Correctional Facility are not accomplishing their intended objectives and goals at least in terms of ensuring that clients do not return to prison. On the other hand, lack of supervision, support and community after care post-release from the programs might be defining factors that influence and possibly eliminate the possible benefits ensuing to inmates from participation.

Future research should ideally be conducted using a large sample (as well as proportionate groups) and a different design, perhaps incorporating a longitudinal perspective that includes face to face interviews with inmates and analyses of the influence on treatment outcomes of factors such as variations between the programs, the duration of such programs, inmates' characteristics, post-release psycho-social stressors and confounding variables such as social support, employment status and participation in aftercare.

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