Poly-substance use, treatment completion, and contact with the justice system: a multistate analysis of treatments for substance use disorders between 2010-2019 in Chile

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Background

Research has shown that reducing SUDs through effective treatment leads to a reduction in criminal activity[1]. However, most evidence comes from developed countries, and results from the Latin American context are largely unknown[2]. The structural, economic, epidemiological context and substance use treatment (SUT) policy response are different in this region, making the question about SUT effectiveness through locally based data relevant[3].

Objectives

We analyze Chile as a case study and examine the impact of SUT on the prevention of contact with the criminal justice system (CJS) in the short (3 and 6 months), middle (1 year), and long term (3 years). **Hypothesis:** Patients who complete treatment have lower probabilities of being in contact with CJS compared to patients who do not complete, although this effect may decrease as observation time passes.

Methods

This research relies on a population-based record-linkage retrospective cohort design. We used a deterministic linkage process (using encryption of the Chilean Unique National ID) to merge electronic records of individuals in publicly funded Chilean SUT programs with the Prosecutor's Office data at the national level between 2010 and 2019. This research is approved by the Griffith University Human Research Ethics Committee (GUHREC) (GU Ref No: 2022/919).

We described the cumulative incidence rate and incidence rate ratio (IRR) of contact with the CJS (offenses that ended with a condemnatory sentence and of offenses that ended with imprisonment after baseline treatment outcome), and its variation by baseline treatment outcome: Treatment completion, Late (>= 3months) & Early Discharge (within the first 3 months of treatment). We calculated the association between Baseline treatment outcome and Contact with CJS through Royston-Parmar models while adjusting for several covariates and obtained standardized survival curves and restricted mean survival times (RMST) through the `stpm2` command in Stata[4]. Missing data was imputed using multiple imputation with regression trees from `missRanger` R package[5]. Secondary analyses included e-values of the strength of confounding needed to take away the associations between treatment outcome and contact with CJS. Codes are available at bit.ly/40cMATs. Covariates are listed below:

- Treatment non-completion (Early)
- Treatment setting
- Substance use onset age
- Primary substance at admission
- Occupational status
- Number of children (binary)
- Macrozone
- Number of previous offenses (acquisitive)
- Number of previous offenses (other)
- Substance use severity
- Percentage of poverty of the municipality of residence
- Treatment admission year
- Physical comorbidity
- Treatment non-completion (Late)
- Sex
- Educational attainment
- Primary substance at admission usage frequency
- Poly-substance use
- Tenure status of households
- Number of previous offenses (violent)
- Number of previous offenses (SUD)
- Psychiatric comorbidity
- Urban/rural municipality of residence
- Substance use onset
- Cohabitation status
- Age

Preliminary Results

Of the 109,756(p= 85,048) SENDA records of admissions, 70,863(83%) were eligible to be matched with the Prossecutor's Office database (discarded ongoing treatments or treatments that ended in referrals). 22,287(31%) had at least an offense that ended with a condemnatory sentence after baseline treatment. Those that had at least an offense that ended with imprisonment were 5,144(7%).

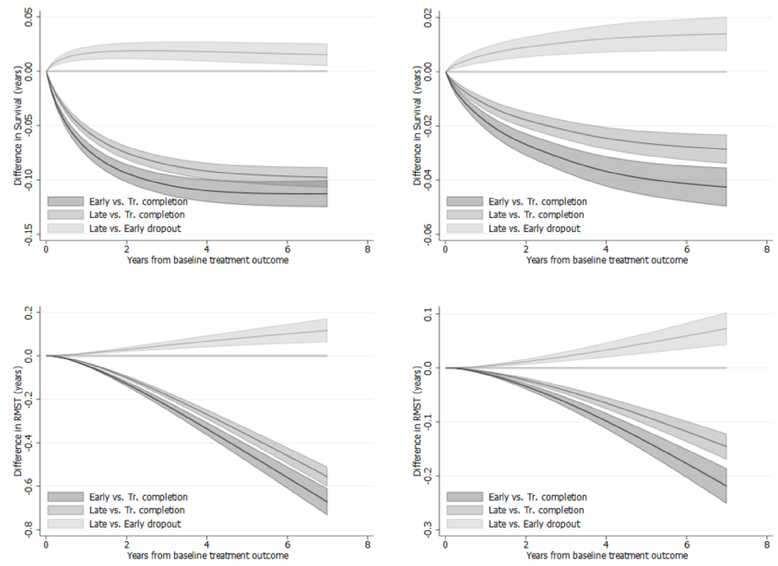
Table 1: Offending with Condemnatory Sentence

Time	Complete Tr.	Late Disch.	Early Disch.	Comp. vs Late	Comp. vs Early	Early vs Late
Probs.						
3_mths	96.9 (96.7,97.1)	94.7 (94.5,94.9)	93.8 (93.5,94.1)	-2.2 (-2.5,-1.9)	-3.1 (-3.4,-2.7)	.9 (.5,1.2)
6_mths	94.3 (94,94.6)	90.6 (90.4,90.9)	89.3 (88.9,89.8)	-3.6 (-4,-3.3)	-4.9 (-5.4,-4.4)	1.3 (.8,1.8)
1_yr	90 (89.6,90.4)	84.4 (84.1,84.8)	82.8 (82.3,83.3)	-5.5 (-6,-5)	-7.2 (-7.9,-6.5)	1.7 (1,2.3)
3_yrs	79.4 (78.8,80)	70.9 (70.4,71.3)	69 (68.3,69.7)	-8.6 (-9.3,-7.9)	-10.4 (-11.4,-9.5)	1.9 (1,2.7)
5_yrs	73.4 (72.7,74.2)	63.9 (63.4,64.5)	62.2 (61.4,63.1)	-9.5 (-10.3,-8.7)	-11.2 (-12.3,-10.1)	1.7 (.8,2.7)
RMST						
3_mths	.251 (.25,.251)	.247 (.247,.248)	.246 (.246,.247)	-.002 (-.002,-.002)	-.003 (-.003,-.002)	.001 (.001,.001)
6_mths	.494 (.493,.495)	.483 (.482,.484)	.479 (.478,.48)	-.011 (-.012,-.01)	-.015 (-.017,-.013)	.004 (.003,.006)
1_yr	.962 (.959,.965)	.928 (.925,.93)	.916 (.912,.92)	-.034 (-.038,-.031)	-.046 (-.051,-.041)	.012 (.007,.016)
3_yrs	2.622 (2.61,2.635)	2.442 (2.433,2.452)	2.394 (2.379,2.41)	-.18 (-.195,-.164)	-.228 (-.248,-.207)	.048 (.029,.067)
5_yrs	4.172 (4.148,4.197)	3.807 (3.788,3.825)	3.722 (3.692,3.752)	-.366 (-.395,-.336)	-.45 (-.491,-.41)	.085 (.049,.121)

Table 2: Offending with imprisonment

Time	Complete Tr.	Late Disch.	Early Disch.	Comp. vs Late	Comp. vs Early	Early vs Late
Probs.						
3_mths	99.5 (99.5,99.6)	99.1 (99,99.2)	98.8 (98.7,98.9)	-.5 (-.6,-.4)	-.7 (-.9,-.6)	.3 (.1,.4)
6_mths	99.1 (99,99.3)	98.4 (98.3,98.5)	98 (97.8,98.1)	-.8 (-.9,-.6)	-1.2 (-1.4,-1)	.4 (.2,.6)
1_yr	98.4 (98.3,98.6)	97.2 (97.1,97.4)	96.6 (96.3,96.8)	-1.2 (-1.4,-1)	-1.9 (-2.2,-1.5)	.6 (.4,.9)
3_yrs	96.4 (96.1,96.7)	94.3 (94,94.5)	93.2 (92.8,93.6)	-2.2 (-2.5,-1.8)	-3.2 (-3.7,-2.8)	1.1 (.6,1.5)
5_yrs	94.9 (94.5,95.3)	92.3 (92,92.6)	91 (90.5,91.4)	-2.6 (-3.1,-2.2)	-4 (-4.6,-3.3)	1.3 (.8,1.9)
RMST						
3_mths	.254 (.254,.254)	.253 (.253,.253)	.253 (.253,.253)	-.001 (-.001,0)	-.001 (-.001,-.001)	0 (0,.001)
6_mths	.507 (.506,.507)	.505 (.504,.505)	.503 (.503,.504)	-.002 (-.003,-.002)	-.003 (-.004,-.003)	.001 (.001,.002)
1_yr	1.01 (1.008,1.011)	1.002 (1.001,1.003)	.998 (.997,1)	-.007 (-.009,-.006)	-.011 (-.013,-.009)	.004 (.002,.006)
3_yrs	2.931 (2.925,2.936)	2.889 (2.884,2.893)	2.867 (2.86,2.875)	-.042 (-.049,-.035)	-.063 (-.073,-.054)	.022 (.013,.031)
5_yrs	4.878 (4.865,4.89)	4.786 (4.777,4.796)	4.74 (4.724,4.755)	-.091 (-.107,-.076)	-.138 (-.158,-.117)	.046 (.027,.065)

- Compared to those receiving almost no treatment (early drop-out), those completing SUT took longer to contact the criminal justice system (IRR [Incidence rate ratio]= 2.18 95% CI 2.09,2.27; aHR[adjusted hazard ratio]: 1.74 95%CI 1.66, 1.83) and to commit an offence leading to imprisonment 2.90 (95% CI 2.64,3.18; aHR= 1.99 95%CI 1.79, 2.22).
- Compared to receiving some treatment (late drop-out), those completing SUT took longer (IRR= 1.73 95% CI 1.67,1.80; aHR=1.58 95%CI 1.52, 1.65) to contact the criminal justice system and to imprisonment (IRR= 1.93 95% CI 1.77,2.10; aHR=1.65 95%CI 1.51, 1.81).
- However, the difference was lower when we compared those who received some treatment with those with less SUT for some period (late drop-out) regarding the time to contact the criminal justice system (IRR= 1.26 95% CI 1.22,1.30) and imprisonment (IRR= 1.50 95% CI 1.41,1.61). Differences between Early vs Late did not overlap the null in Tables 1 & 2.



- **Condemnatory Sentence**: E-value of at least 2.19 for Early and 2.01 for Late discharge vs. treatment completion.
- **Imprisonment**: E-value of at least 2.36 for Early and 1.99 for Late discharge vs. treatment completion.

Discussion

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References

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