Assessing the impact of substance use treatment for preventing criminal justice system contact 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 social, cultural, 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]. **We analyzed Chile as a case study and examined the impact of SUT on the prevention of contact with the criminal justice system (CJS) in the middle (3 years) and long term (5 years).**

Methods

- **Design**: a population-based record-linkage retrospective cohort design.
- **Participants**: patients enrolled in publicly funded SUT programs in Chile, 2010-2019.
- **Exposure:** Treatment completion, Late (>= 3months of treatment) & Early dropout (<3 months); **Outcome:** contact with the CJS (offenses ending with a condemnatory sentence and offenses that ended with imprisonment after baseline treatment outcome)

Analysis plan

- We calculated cumulative incidence rates and incidence rate ratios(IRR)
- We used Royston-Parmar survival models and adjust for the effects of other factors, and predicted standardized survival probabilities and restricted mean survival times (RMST)[4].
- We imputed missing data under MAR assumption[5].
- We calculated e-values of the strength of confounding needed to take away the associations between treatment outcome and contact with CJS
- Codes are available at https://fondecytacc.github.io/nDP/index_prop_grant22_23.html.

Covariates are listed below:

- 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 (dependence status) (ICD-10)
- Percentage of poverty of the municipality of residence
- Birth year
- Physical comorbidity
- 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 (substance-related)
- Psychiatric comorbidity (ICD-10)
- Urban/rural municipality of residence
- Initial substance
- Cohabitation status
- Admission Age

Preliminary Results

Of the 109,756(patients= 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).

- **Condemnatory sentence**. 22,287(31%).
- **Imprisonment**. 5,144(7%).

- **Early dropout vs. Treatment completion**: Patients completing treatment took longer to an offense leading to condemnatory sentence (IRR= 2.18 95% CI 2.09,2.27; aHR[adjusted hazard ratio]: 1.74 95%CI 1.66, 1.83) condemnatory sentence and imprisonment (IRR= 2.90 95% CI 2.64,3.18; aHR= 1.99 95%CI 1.79, 2.22).
- **Late dropout vs. Treatment completion**: Patients completing treatment took longer to condemnatory sentence (IRR= 1.73 95% CI 1.67,1.80; aHR=1.58 95%CI 1.52, 1.65) and to imprisonment (IRR= 1.93 95% CI 1.77,2.10; aHR=1.65 95%CI 1.51, 1.81).
- **Late vs. Early dropout**: Patients completing treatment took longer to condemnatory sentence (IRR= 1.26 95% CI 1.22,1.30) and imprisonment (IRR= 1.50 95% CI 1.41,1.61).

E-values

- **Condemnatory Sentence**: E-value of at least 2.19 for Early and 2.01 for Late dropout vs. treatment completion at baseline (*t=0*).
- **Imprisonment**: E-value of at least 2.99 for Early and 2.38 for Late dropout vs. treatment completion at baseline (*t=0*).

The following figure depicts the predicted differences in survival probabilities and RMTLs for committing an offense that results in a condemnatory sentence and imprisonment.

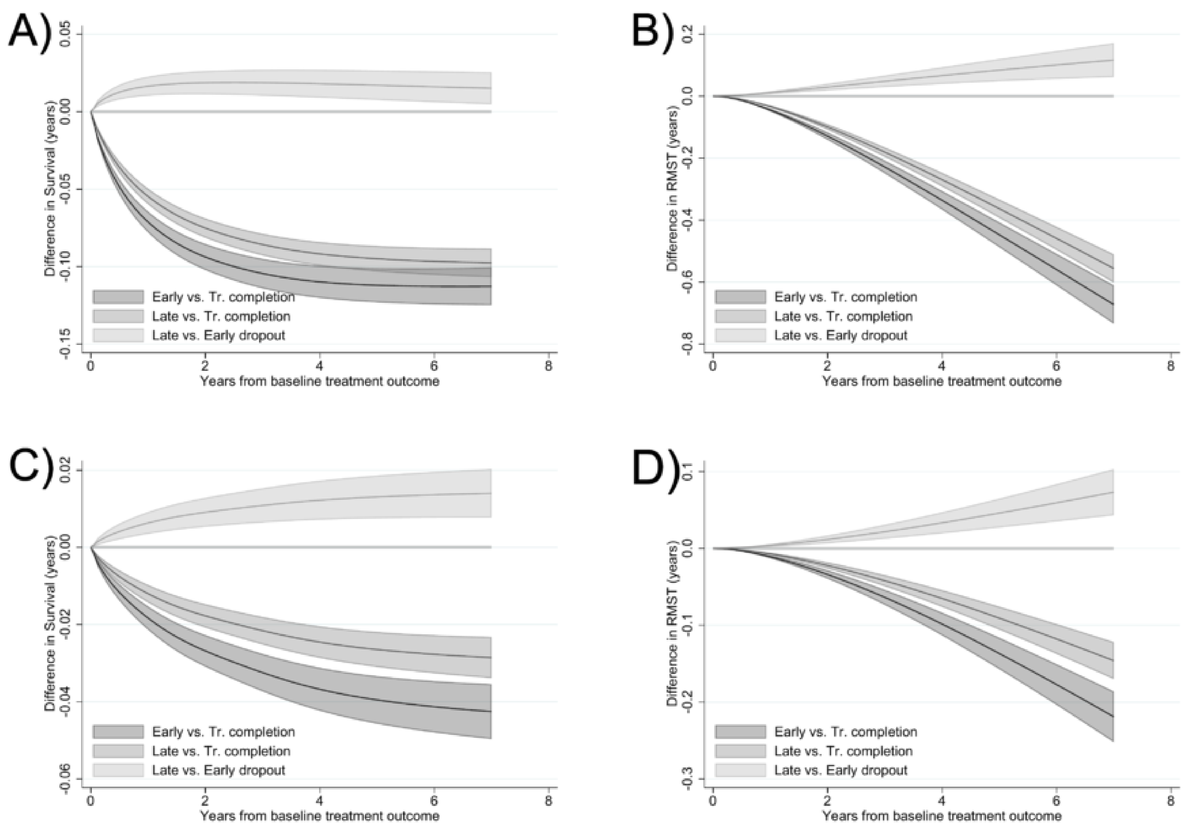

Figure 1: Differences in survival probabilities(left) and RMSTs(right) for time-to-condemnatory sentence(up) & imprisonment(bottom)

Discussion

- SUT can be effective in preventing contact with the criminal justice system (CJS) in Chile.
- More research is needed to understand the effects of SUT on contact with the CJS.
- Completing SUT can help to reduce the harms of substance use disorders and criminality.

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