Examining Sex, Age, and Frequency of Stimulant Use as Predictors of Psychotic Spectrum Disorder in Severe Concurrent Disorder Patients using Stimulants

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Introduction

Background

- Psychotic spectrum disorder (PSS) is a severe mental disorder worldwide, with variability in prevalence and severity across sex, age, and frequency of drug use[1]
- Lifetime prevalence of PSS among people who use stimulants (PWUS) reaches 43%, over 10 times that of the general population[2]
- While a greater proportion of PWUS with PSS are males, females have shown to be more vulnerable to potential adverse effects, including psychosis[3-6]
- Research is needed to better understand the relationships between demographic factors and psychosis risk in a stimulant-use context

Aim & Hypothesis

- Aim: To investigate the relationship between sex, age, and frequency of stimulant use with PSS among PWUS
- Hypothesis: That there is a significant sex difference amongst PWUS in the prevalence of PSS and self-reported psychotic symptoms, after accounting for age and frequency of stimulant use

Methods

Participants and Procedure

- Inpatients at an integrated tertiary care facility for severe concurrent mental disorders in Burnaby, BC (*N* = 167)
- Eligible participants completed a battery of questionnaires, including demographics, Maudsley Addiction Profile (MAP), and Symptom Checklist-90-Revised (SCL-90-R). Medical chart data was also collected

Measures

- MAP: includes an assessment of substance use (type, dosage, frequency), including past 30-day stimulant use
- SCL-90-R Psychoticism Subscale: subjective reports of severity of psychotic symptoms, ranging from 0-4.
- Medical chart records: used to obtain baseline mental health diagnoses, such as any psychotic disorders

Statistical Analysis

- A binary logistic regression was computed to analyze sex, age, frequency of stimulant use, as predictors of psychotic spectrum disorder
- A multiple linear regression was computed to analyze sex, age, frequency of stimulant use, as a predictors of SCL-90-R Psychoticism scores

Results

Table 1. Descriptive Statistics

	Total N(%) or *M±SD*	PSS N(%) or *M±SD*	Non-PSS N(%) or *M±SD*
Total	167 (100)	121 (73.5)	46 (27.5)
Sex			
Male	106 (63.5)	77 (72.7)	29 (27.4)
Female	61 (36.5)	44 (72.3)	17 (27.7)
Age (Years)	35.7 ± 9.8	35.1 ± 9.2	37.6 ± 10.9
Past 30-Day Stimulant Use (Days)	25.9 ± 23.0	25.3 ± 23.6	26.7 ± 20.9
SCL-90-R Psychoticism Score	0.8 ± 0.8	0.8 ± 0.8	0.9 ± 0.9
Ethnicity			
White	87 (52.1)	63 (72.4)	24 (27.6)
Indigenous	32 (19.2)	26 (81.3)	6 (18.7)
Missing	26 (15.6)	18 (69.2)	8 (30.8)
Asian	6 (3.6)	4 (66.7)	2 (33.3)
Mixed	5 (3.0)	3 (60.0)	2 (40.0)
Latine	4 (2.4)	2 (50.0)	2 (50.0)
African	3 (1.8)	2 (66.7)	1 (33.3)
Other	4 (2.4)	4 (100.0)	0 (0.0)

Table 2. Binary Logistic Regression Model Fit Summary

χ^2 (df)	p-value
6.18 (3)	0.10

Table 3. Results of Binary Logistic Regression Predicting PSS Based on Sex, Age, and Days of Stimulant Use in the Past 30 Days

Predictor	β (SE)	OR (95% CI)	p-value
Sex	0.06 (0.39)	1.07 (0.31-1.83)	0.870
Age	-0.27 (0.02)	0.97 (0.93-1.01)	0.154
Days of Stimulant Use	**-0.16 (0.01)**	**0.98 (0.96-1.00)**	**0.045***

Note. β = Log-Odds Coefficient, SE = Standard Error, OR = Odds Ratio
*$p < .05$

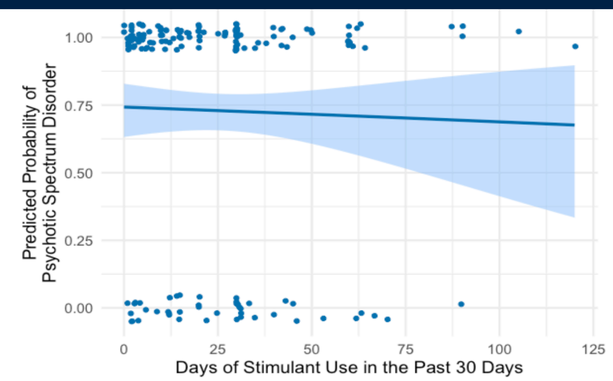

Figure 1. *Predicted probability of psychotic spectrum disorder based on the number of days of stimulant use in the past 30 days. The model is adjusted for sex and age. The solid line represents the logistic regression best-fit curve, and the shaded region represents the 95% confidence interval.*

Table 4. Multiple Linear Regression Model Fit Summary

Adjusted R^2	F (df)	p-value
0.01	1.40 (151)	0.25

Table 5. Results of Multiple Linear Regression Predicting Self-Reported PSS Symptom Severity Based on Sex, Age, and Days of Stimulant Use in the Past 30 Days

Predictor	β (95% CI)	t-value	p-value
Sex	-0.04 (-0.61-0.53)	-0.452	0.652
Age	-0.05 (-0.05)	-0.620	0.536
Days of Stimulant Use	0.16 (0.16)	1.962	0.052

Note. β = Estimated Slope Coefficient

Discussion and Conclusion

- Both binary logistic and multiple linear regression models were not significant, indicating other factors may be more relevant in predicting prevalence and self-reported severity of PSS in our sample
- Sex, age, and frequency of stimulant use not being significant predictors is consistent with some literature[7], but inconsistent with most literature that found sex differences in self-reported symptoms of PSS in PWUS, and associations between PSS prevalence and frequency of stimulant use [2,3,6]
- While our models were non-significant, there may be some evidence for negative association between frequency of stimulant use and PSS diagnosis, inconsistent with some literature that found frequency of stimulant use to increase probability and severity of PSS[5]
- Females often use stimulants less frequently due to higher vulnerability to its negative effects.[3-6,8] Self-titrating may explain why females in our study reported relatively lower PSS symptom severity, resulting in no significant sex difference
- Our findings suggest that demographics and frequency of stimulant use alone may not predict PSS in PWUS, reinforcing the uniqueness and complexity of severe concurrent disorder patients

Limitations

- Cannot establish causality due to cross-sectional design
- Poor regression model fits indicates our variables have limited predictive power, and results are inconclusive

Future Directions

- Explore the association between frequency of use and PSS diagnosis in this population
- Examine other predictors and features of PSS beyond diagnosis and self-reported symptoms, e.g. stimulant dosage and age of onset may need to be considered as found in prior studies

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