

Research Article

Patterns of Substance Use Among Children Ages 7-12 En- tering Treatment for Drug Prob- lems in India

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Abstract

Background: Although empirical studies have reported on substance use in children in India, comparisons of boys and girls and older and younger children seeking treatment for substance use are largely lacking. This study aimed to assess whether specific characteristics of children entering substance use disorder treatment in India had the power to predict their substance use history and current substance use activities in order to identify differences that could be helpful for guiding more tailored treatment approaches.

Methods: This was a single-sample cross-sectional study of N=302 children (284 boys and 18 girls) between 7-12 years of age entering

a treatment and rehabilitation center in New Delhi. All children were screened and assessed at treatment intake for issues with medical, school, economic, substance use, family/social, and psychiatric functioning. A generalized linear model was used for the inferential analysis of each criterion. Interpretation focused on the examination of the least squares means associated with significant effects and their standard errors. Our original intention was to include in the statistical model for each criterion three explanatory variables, representing Sex, Age (7-9 vs. 10-12), and Primary Substance Used (Cannabis vs. Solvents vs. Opioids).

Results: Due to the relatively small sample sizes of the cells created by the categorization and the restricted age range the statistical models failed to converge or yielded estimates with standard errors close to zero. Therefore, for each criterion, two different models were fit (Sex and Age, and then only Primary Substance Used). Bonferroni tests of simple mean differences using Sidak's adjustment were used for post hoc testing of significant main effects. Cannabis, solvents and alcohol were the primary substances used. Boys began using substances at a significantly younger age than girls. Male sex and use of opioids were strongly associated with an earlier onset of use of substances and a higher likelihood of polysubstance use. Older age was associated with greater likelihood of substance use. Of note, children in the Opioids group had higher interviewer severity ratings for medical concerns, economic support, and substance use treatment needs.

Conclusion: Findings suggest that among children entering treatment for drug problems in India, older age, male sex, and use of opioids are all strongly associated with a more significant substance use disorder. Future studies should examine the most effective ways to tailor treatment by sex and age.

Keywords: Age 7-12; Boys; Cannabis; Child; Girls; India; Solvents; Street children; Substance use treatment

Introduction

India has the largest child population in the world, standing at approximately 440 million. Of the 243 million adolescents, 54% are 10-14 years of age, with a 882: 1000 female-to-male ratio [1]. An estimated 18 million children live and work on the streets of India, with 51,000-100,000 in Delhi alone; 61-80% are below 15 years of age [2-5]. Of children living on the streets in India, 40-70% use substances, [4-13] use starts at 5-7 years of age, and 11-20% are girls. [4,5] Among children in street circumstances, tobacco (31.1%), alcohol (13.5%), and inhalants (11.3%) are most commonly reported [14]. Boys in street circumstances report tobacco (75%), alcohol (50%), solvents (50%), cannabis (25%), and opioids (3%), and girls report tobacco (73%), alcohol (52%), solvents (37%) and opioids (25%) [1]. Among children seeking substance use disorder treatment in India, the primary substances reported are solvents (45%), opioids (32%), and cannabis (15%) [1]. Given overpopulation and poverty India is a setting of substantial risk for substance use disorders among adults. Hence, Indian children living in street circumstances are highly vulnerable to substance use as they navigate daily survival [1,15,16]. Reduction in child substance use in India is urgently needed.

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The purpose of the present study was to assess whether specific characteristics of the participant children had the power to predict their substance use history and current substance use activities, as measured by the CHILD CARRE, [17,18] the Child Revised Impact of Events Scale (CRIES-8), [19] the Self-Report for Childhood Anxiety Related Emotional Disorders (SCARED), [20] the Strengths and Difficulties Questionnaire (SDQ), [21,22] and the Child Addiction Treatment Quality of Life Scale (CAT-QOL) [23].

Materials and Methods

Ethics approval

The CHILD project was approved by an Institutional Review Board in both India and in the USA.

Setting and participants

The treatment setting was the Social Promotion for the Youth and Masses' (SPYM) Center for Children in Need of Care and Protection in New Delhi which provides treatment services to children with substance use disorders between the ages of 7 and 18. Most children are referred to the center by the Child Welfare Committee of the Government of New Delhi which looks after the welfare and protection of children who have no family support or supervision. However, many children with substance use and related behaviors are brought by their caregivers. SPYM provides treatment and rehabilitation services to children living in street circumstances and who are identified as using substances. The treatment center for boys is a 50-bed facility and the treatment center for girls is a 20-bed facility. Both the centers employ a multi-disciplinary model of treatment.

Parents or legal guardians of the children were asked for permission to administer the measures to their children. All parents and legal guardians approached provided consent. All 302 children were then asked to assent to complete the set of interview measures and agreed to participate. Children were enrolled in the study between 2019 to 2022.

Measures

Self-report measures of psychological adjustment

Child Revised Impact of Events Scale (CRIES-8) [19]: The CRIES-8 is an 8-item screening tool measuring risk for child post-traumatic stress symptoms. It has 8 questions that ask the child to respond on a 4-point scale ["Not at all" (scored 0), "Rarely" (1), "Sometimes" (3), and "Often" (5)]. The CRIES yields subscale scores for Intrusion (I) and Avoidance (A), and a total score. I and A scores each range from 0 to 20, inclusive, while the total score is a sum of the scores on 8 questions, and ranges from 0 to 40, inclusive.

Self-Report for Childhood Anxiety Related Emotional Disorders (SCARED) [20]: The SCARED is a reliable and valid screening tool for determining anxiety disorders in children and adolescents. It has 41 items that ask the child to indicate feelings for the last 3 months. Item responses are "Not true" (scored 0), "Sometimes true" (1), or "Very true" (2). There are 5 subscales: a 13-item Panic Disorder (P) subscale (possible range of scores 0-26, inclusive), a 9-item Generalized Anxiety Disorder (GA) subscale (possible range of scores 0-18, inclusive), an 8-item Separation Anxiety Disorder (SeA) subscale (possible range of scores 0-16, inclusive), a 7-item Social Anxiety Disorder (SoA) subscale (possible range of scores 0-14, inclusive), and a 4-item Significant School Avoidance (SS) subscale (possible

range of scores 0-8, inclusive). The total score is a sum of the 41 item responses, with a possible range of 0 to 82, inclusive.

Child Strengths and Difficulties Questionnaire (SDQ) [21,22]: The SDQ is an internationally-validated 25-item questionnaire providing balanced coverage of behavioral, emotional, and social problems that asks the child about "your behavior over the past 6 months." Items are scored 0, 1 or 2 (with some items reverse-scored). The SDQ has 5 subscales of 5 items each (each with a possible range of scores of 0 to 10, inclusive): Emotional Symptoms (ES), Conduct Problems (CP), Hyperactivity (H), Peer Problems (PP) and Prosocial (P). There is a separate score for each scale. The total scale is ES + CP + H + PP subscale scores (omitting the Prosocial subscale).

Quality of Life (CAT-QOL) [23]: This measure was developed specifically for children living in Asian countries in low resource settings. It asks the respondent to indicate "In the past 3 months, how often have you experienced..." problem severity in 20 areas of functioning. Item responses are "Never or Almost Never" (scored 1), to "Always or Almost Always" (5). It has 4 subscales: a 6-item Physical Health (PH) subscale, with a possible score of 6 to 30, inclusive, a 5-item Mental Health (MH) subscale and a 5-item Friends (F) subscale, each with possible scores of 5 to 25, inclusive, and a 4-item Home (H) subscale, with a possible score of 4 to 20, inclusive. A total CAT-QOL score is the sum of the responses to the 20 items, with a possible range of 20 to 100, inclusive. Note that the CAT-QOL is scored such that higher scores indicate greater problems with quality of life.

The CHILD Intervention for Living Drug-free Comprehensive Assessment of Risk, Resilience and Experience (CHILD CARRE) [17,18]: The CHILD CARRE measure was developed for international use on the basis of input from substance use experts on several different continents. It is a semi-structured interview intended for use by trained personnel. It is designed for administration to children ages 7-12. The CHILD CARRE measure consists of 7 sections/domains: physical health status, school and support status, drug/alcohol use, legal status, family/social relationships, psychiatric status and typical day activities. The CHILD CARRE interviewers were trained on how to administer the CHILD CARRE measure to young children. Complete details about the CHILD CARRE measure can be found at Jones et al., 2023 [17].

Although the CARRE measure evaluates functioning in 7 domains, research to establish scoring principles and clinical cut-offs is ongoing. Thus, we do not report the results for each of the domains in this paper. Rather, in this paper we focus on the items that measure lifetime and recent substance use, and interviewer ratings of need for an intervention. Interviewers were asked to use a 10-point-scale (0-1= "No real problem, treatment not indicated," 2-3= "Slight problem, treatment probably not necessary," 4-5= "Moderate problem, some treatment indicated," 6-7= "Considerable problem, treatment necessary," 8-9= "Extreme problem, treatment absolutely necessary") to rate the need for an intervention in each of the 7 domains immediately following administration of the questions in the respective domain.

Results

Sample characteristics

Of the N=302, there were 284 boys and 18 girls diagnosed with a substance use disorder who were between 7-12 years old. 23 Children were between 7-9 years old, and 279 were between 10-12 years old.

	Total Sample		Sex			Age Group			Primary Substance		
			Mean (SE)			Mean (SE)			Mean (SE)		
		χ^2 (p)	Girls	Boys	χ^2 (p)	7-9	10-12	χ^2 (p)	Cannabis	Solvents	Opioids
Criterion Variable											
Lifetime Substance Use (0 = no, 1 = yes)											
	n (%)										
Alcohol	189 (64%)	29.1 (<0.001)	0.2 (0.06)	0.6 (0.03)	12.2 (<0.001)	0.3 (0.06)	0.5 (0.49)	13.4 (0.001)	0.7 (0.04) _{a,b}	0.6 (0.04) _a	0.8 (0.07) _b
Cannabis	236 (80%)	18.7 (<0.001)	0.3 (0.12)	0.8 (0.04)	0.5 (0.47)	0.5 (0.13)	0.6 (0.06)	9.9 (0.002)	†	0.7 (0.04)	0.9 (0.05)
Solvents	234 (80%)	5.9 (0.015)	0.8 (0.04)	0.9 (0.02)	27.5 (<0.001)	0.9 (0.02)	0.7 (0.02)	3.5 (0.62)	0.5 (0.05)	†	0.7 (0.09)
Opioids	51 (17%)	0.3 (0.600)	0.2 (0.03)	0.2 (0.10)	‡			2.4 (0.118)	0.1 (0.12)	0.1 (0.07)	†
	Mean (SD)										
Number Used (1-4, inclusive)	2.4 (0.9)	26.5 (<0.001)	1.4 (0.16)	2.3 (0.10)	2.9 (0.086)	1.7 (0.16)	1.9 (0.11)	40.7 (<0.001)	2.4 (0.08) _a	2.3 (0.06) _a	3.4 (0.18) _b
Age at First Use (in years)											
Alcohol	9.8 (1.3)	4.6 (.032)	9.8 (0.55)	8.6 (0.19)	43.8 (<0.001)	8.0 (0.45)	10.4 (0.26)	3.0 (0.221)	9.9 (0.15)	9.6 (0.13)	9.9 (0.26)
Cannabis	9.5 (1.6)	0.2 (.639)	8.7 (0.60)	8.5 (0.18)	51.2 (<0.001)	7.3 (0.45)	9.9 (0.29)	5.5 (0.65)	9.8 (0.16)	9.3 (0.15)	9.5 (0.30)
Solvents	9.6 (1.4)	2.1 (0.144)	9.0 (0.36)	8.5 (0.14)	93.2 (<0.001)	7.5 (0.29)	10.1 (0.18)	3.0 (0.227)	9.9 (0.20)	9.5 (0.11)	9.6 (0.32)
Opioids	10.1 (1.1)	4.5 (0.034)	11.2 (0.55)	10.0 (0.16)	‡			6.5 (0.038)	10.6 (0.31) _a	10.5 (0.33) _a	9.8 (0.20) _a
Youngest Age Used Any Substance	9.5 (1.4)	6.7 (0.01)	9.2 (0.30)	8.5 (0.13)	87.0 (<0.001)	7.6 (0.28)	10.1 (0.15)	4.3 (0.114)	9.8 (0.14)	9.4 (0.11)	9.4 (0.25)
Past-30-day Substance Use (Number of Days)											
Alcohol	4.6 (5.9)	11.3 (<0.001)	0.8 (0.53)	4.1 (0.67)	1.4 (0.239)	1.5 (0.68)	2.1 (0.73)	12.7 (0.002)	6.3 (0.69) _a	3.6 (0.40) _b	4.8 (1.1) _{a,b}
Cannabis	17.2 (12.4)	13.5 (<0.001)	6.8 (1.8)	15.4 (1.4)	3.7 (0.053)	8.7 (1.8)	12.1 (1.6)	140.6 (<0.001)	27.7 (1.5) _a	10.5 (0.68) _b	20.8 (2.3) _c
Solvents	20.7 (12.5)	9.1 (0.003)	14.5 (2.7)	24.2 (1.4)	7.2 (0.007)	22.1 (3.0)	16.0 (1.5)	183.1 (<0.001)	9.7 (0.81) _a	28.3 (1.0) _b	13.9 (1.7) _a
Opioids	4.0 (9.8)	0.01 (0.939)	3.8 (2.3)	4.0 (0.59)	‡			129.9 (<0.001)	2.4 (0.69) _a	0.7 (0.29) _a	27.5 (4.2) _b
Number Used (1-4, inclusive)	2.4 (0.9)	26.1 (<0.001)	1.4 (0.16)	2.4 (0.09)	2.8 (0.094)	1.7 (0.16)	2.0 (0.10)	41.6 (<0.001)	2.4 (0.08) _a	2.3 (0.06) _a	3.4 (0.18) _b

Table 1: Significance tests and parameter estimates for the sex, age group, and primary substance used effects for substance use history (N=302).

Notes: CHILD CARRE = CHILD Intervention for Living Drug-free Comprehensive Assessment of Risk, Resilience and Experience. SD = Standard Deviation. SE = Standard Error. χ^2 was the Wald test of the fixed effect for Gender, Age, and Primary Substance, respectively. Degrees of Freedom (df) for the Wald tests was 1 for Sex and Age, and 2 for Primary Substance, except in the case of lifetime use of cannabis, solvents, and opioids, for which it was 1. p is the two-tailed probability associated with the respective Wald test. Means for a significant Primary Substance effect with df=2 that do not share the same subscript are not significantly different based on post hoc pairwise comparisons of the means using the Sidak-adjusted Bonferroni approach. (Post hoc testing was only conducted when the omnibus test of the Primary Substance effect was significant.) For 1 criteria, all 3 pairwise comparisons were non-significant.

†It was not possible to conduct a test for the Primary Substance for lifetime use of cannabis, solvents, or opioids, because 100% of the given subsample had lifetime use of the respective substance.

‡No child younger than 10 had used opioids.

The mean age for the sample of 302 children was 11.3 years (SD 1.1) with 45% reporting being homeless, 18% reporting no grade of school ever completed, and of those who reported attending school (n=289), the children reported a mean of 4.1 (SD 1.7) years of schooling.

Substance use

Table 1 provides summarized data regarding substance use-related variables. Cannabis, solvents and alcohol were the primary

substances used, with opioids used less frequently. The majority of children in this sample reported using more than one substance, with a mean of 2.4 (SD 0.9) substances used per child per lifetime. As noted in table 1, no child younger than 10 years of age had used opioids, so inferential tests of the Age Group explanatory variable were not possible; and, for the criteria of lifetime cannabis, solvent, and opioid use, there was 100% lifetime use of the respective substance, so that group was omitted for the analysis of the respective substance

(For example, the Cannabis group was omitted from examination of lifetime cannabis use).

Lifetime Substance Use: The sample as a whole was marked by its extremely high lifetime use of inhalants and cannabis (80+%), high lifetime use of alcohol, and relatively low lifetime use of opioids. Boys had higher predicted probabilities of use for alcohol, cannabis (both $ps < 0.001$), and solvents, with no significant differences between boys and girls for lifetime opioid use. Boys had a higher lifetime mean number of substances used than did girls. Older children had a significantly higher predicted probability of use of alcohol and a significantly lower predicted probability of use of inhalants, with no significant differences between girls and boys emerging for cannabis. There were significant group differences for Primary Substance Use for alcohol and cannabis. Post-hoc testing revealed that the Opioids group had a higher predicted probability of lifetime use than did the Solvents group. There were no significant effects for the Primary Substance Used explanatory variable for the criteria of lifetime use of inhalants and opioids. The Opioids group was found to have a higher lifetime mean number of substances used than both the Cannabis and Solvents groups, which did not differ from each other.

Age at First Use: Boys had a significantly lower mean age of use of alcohol and opioids than Girls. Boys, on average, also showed a general pattern that they began use of any one or more of the four substances at an overall younger age than girls. There were also significant sex differences in lifetime use and past 30-day use of alcohol, cannabis and solvents, with more boys than girls reporting such use. Compared to younger children, older children were, on average, older when they began use of alcohol, cannabis, and opioids, and older when they began use of any one or more of these 3 substances (omitting opioids). The only significant finding for Primary Substance Used was for opioids, but post hoc testing did not reveal any significant pairwise comparisons among the means.

Past-30-day Substance Use. In the sample as a whole, on average, solvents were used on more than 67% and cannabis on more than 50% of the days in the past 30 days, while alcohol and opioids were used much less frequently, on about 15% of the past 30 days. Boys used alcohol, cannabis, and solvents, on average, significantly more frequently than did girls in the past 30 days, with no significant differences found for opioids. Mean number of substances used in the past 30 days was significantly higher for boys than for girls. The only significant finding for Age Group was for solvents, with the younger age group using on more days in the past 30 days than the older age group. The Primary Substance Used predictor was significant for all four substances and the number of substances used in the past 30 days (all $ps < 0.002$). Post hoc testing indicated that the mean number of days of alcohol use was lower in the Solvents group than in both the Cannabis and Opioids groups, which did not differ from each other. Mean number of days of cannabis use was significantly higher in the Cannabis group than in the Opioids group, and, in turn, higher in the Opioids group than in the Solvents group. The Solvents group had a higher mean number of days of solvents use than both the Cannabis and Opioids groups, which did not differ from each other. The mean number of days of opioid use was significantly higher in the Opioids group than in the Cannabis and Solvents groups, which were not significantly different from each other. This same pattern repeated for the number of different substances used in the past 30 days, with the mean number of substances used significantly higher in the Opioids group ($M=3.4$ out of a possible 4) than in the Cannabis and Solvents groups, which were not significantly different from each other.

Table 2 contains the results of the inferential analyses and least squares means and their standard errors for the measures of psychological functioning.

Child Revised Impact of Events Scale (CRIES-8) [19]: The Intrusion, Avoidance, and Total Score means were significantly higher for Girls than for Boys. Tests for Age and Primary Substance Use differences all failed to reach significance.

Self-Report for Childhood Anxiety Related Emotional Disorders (SCARED) [20]: On average, girls had higher social anxiety and lower school avoidance than did boys, while younger children had a lower mean panic disorder than did older children. Tests for Primary Substance Use all failed to reach significance.

Child Strengths and Difficulties Questionnaire (SDQ) [21,22]. On average, girls had fewer peer problems and a more prosocial attitude than did boys. Tests for Age differences all failed to reach significance. A significant Primary Substance Use effect occurred for the peer problems subscale. Post hoc testing revealed that the Cannabis group had a higher mean than the Solvents group, with the mean of the Opioids group falling between these two groups.

Quality of Life (CAT-QOL) [23]: On average, boys reported a better Home quality of life than did girls. Tests for Age differences all failed to reach significance. There were 3 significant findings for Primary Substance of Use: Physical Health, Mental Health, and Total Score. Post hoc testing indicated that the Physical Health, Mental Health, and Total Score mean for the Solvents group was significantly lower than the means for the Cannabis and Opioids groups, whose means did not significantly differ.

Interviewer Ratings of Need for an Intervention- CHILD CARRE [17,18]: Table 3 contains the results of the inferential analyses and least squares means and their standard errors for the interviewer ratings of need for an intervention. On average, Boys were rated as in higher need of an intervention for Medical Treatment, Substance Treatment, and Family/Social Counseling, and in lower need of Psychiatric Treatment than Girls. Younger Children were rated on average as in less need of Medical Treatment, Substance Treatment, and in more need of Legal help than older children. There were four significant findings for Primary Substance of Use: Medical Treatment, Economic Support, Substance Treatment, and Family/Social Counseling. Post hoc testing indicated that the Medical Treatment and Substance Treatment means for the Solvents Group were significantly lower than the respective means for the Cannabis and Opioids groups, whose means did not significantly differ; that the Economic Support mean for the Solvents Group was lower than the mean for the Opioids Group but not for the Cannabis Group; and, that the three simple mean comparisons were not significantly different for family Social Counseling.

Discussion

These findings suggest that among children entering treatment for drug problems in India, cannabis, solvents and alcohol were the primary substances used, with most children using more than one substance. Girls reported starting substance use later than boys. Boys reported greater lifetime use of alcohol, cannabis and solvents. Similar findings are identified in the United States, where adolescent boys are more likely than girls to report using methamphetamine, and more than twice as likely as girls to report binge drinking and use of heroin

	Total Sample		Sex			Age Group			Primary Substance		
			Mean (SE)			Mean (SE)			Mean (SE)		
		χ^2 (p)	Girls	Boys	χ^2 (p)	7-9	10-12	χ^2 (p)	Cannabis	Solvents	Opioids
Criterion Variable											
Child Revised Impact of Events Scale (CRIES-8)											
Intrusion	0.6 (2.5)	33.3 (<0.001)	3.5 (0.58)	0.3 (0.25)	0.4 (0.522)	1.8 (0.53)	2.1 (0.28)	1.5 (0.465)	0.8 (0.25)	0.5 (0.19)	1.0 (0.44)
Avoidance	0.7 (2.8)	11.2 (<0.001)	2.9 (0.68)	0.7 (0.30)	0.5 (0.480)	2.0 (0.63)	1.6 (0.33)	0.7 (0.713)	0.7 (0.28)	0.6 (0.21)	1.1 (0.50)
Total Score	1.3 (4.9)	22.1 (<0.001)	6.5 (1.19)	1.0 (0.52)	0.1 (0.923)	3.8 (1.1)	3.7 (0.99)	1.1 (0.573)	1.5 (0.50)	1.1 (0.38)	2.1 (0.90)
Self-Report for Childhood Anxiety Related Emotional Disorders (SCARED)											
Panic Disorder	3.5 (3.5)	0.7 (0.396)	3.5 (0.87)	4.2 (0.38)	4.7 (0.030)	4.7 (0.80)	3.1 (0.43)	0.8 (0.672)	3.3 (0.35)	3.7 (0.27)	3.3 (0.64)
Generalized Anxiety	3.9 (3.0)	1.3 (0.264)	4.4 (0.76)	3.6 (0.33)	0.8 (0.382)	3.7 (0.70)	4.3 (0.37)	0.4 (0.818)	4.0 (0.31)	3.8 (0.24)	4.0 (0.55)
Separation Anxiety	5.8 (3.5)	3.1 (0.078)	7.5 (0.87)	6.0 (0.38)	1.0 (0.325)	7.1 (0.80)	6.4 (0.43)	1.7 (0.429)	5.7 (0.35)	6.0 (0.27)	5.1 (0.64)
Social Anxiety	3.1 (2.9)	18.1 (<0.001)	5.9 (0.71)	3.0 (0.31)	0.0 (0.936)	4.4 (0.67)	4.5 (0.35)	0.0 (0.989)	3.1 (0.30)	3.2 (0.23)	3.2 (0.53)
School Avoidance	11.3 (2.5)	42.7 (0.001)	7.6 (0.59)	11.4 (0.26)	0.8 (0.368)	9.2 (0.54)	9.7 (0.29)	0.5 (0.777)	11.3 (0.26)	11.2 (0.20)	11.6 (0.46)
Total Score	27.7 (10.0)	0.1 (0.745)	29.9 (2.5)	28.2 (1.1)	0.4 (0.563)	29.2 (2.3)	27.9 (1.2)	0.2 (0.923)	27.4 (1.0)	27.9 (0.77)	27.3 (1.8)
Strengths & Difficulties Questionnaire (SDQ)											
Emotional Problems	4.5 (2.0)	0.1 (0.707)	4.1 (0.50)	4.3 (0.22)	0.7 (0.413)	4.1 (0.46)	4.4 (0.24)	4.1 (0.128)	4.7 (0.20)	4.3 (0.15)	4.8 (0.36)
Conduct Problems	5.7 (2.5)	3.15 (0.076)	4.5 (0.63)	5.6 (0.28)	0.3 (0.574)	4.9 (0.59)	5.2 (0.31)	2.6 (0.273)	6.0 (0.26)	5.5 (0.20)	5.8 (0.46)
Hyperactivity	5.9 (1.9)	0.0 (0.906)	6.0 (0.48)	6.1 (0.21)	1.6 (0.207)	6.3 (0.44)	5.8 (0.23)	3.94 (0.139)	6.2 (0.19)	5.7 (0.15)	5.6 (0.35)
Peer Problems	4.7 (1.8)	5.4 (0.020)	3.5 (0.45)	4.6 (0.19)	1.3 (0.259)	3.8 (0.42)	4.3 (0.22)	7.06 (0.029)	5.1 (0.18) _a	4.5 (0.14) _b	4.8 (0.33) _{a,b}
Prosocial	5.3 (2.3)	8.2 (0.004)	6.4 (0.57)	4.9 (0.24)	2.1 (0.152)	5.3 (0.52)	6.0 (0.28)	5.2 (0.072)	4.9 (0.23)	5.5 (0.18)	5.0 (0.42)
Total Score	20.7 (5.7)	2.9 (0.089)	18.3 (1.4)	20.6 (0.62)	0.2 (0.637)	19.2 (1.3)	19.7 (0.70)	7.9 (0.019)	22.0 (0.57) _a	20.0 (0.44) _b	21.0 (1.0) _{a,b}
Child Addiction Treatment Quality of Life Scale (CAT-QOL)											
Physical Health	15.1 (4.4)	3.5 (0.061)	12.8 (1.1)	14.8 (0.49)	1.4 (0.231)	13.2 (1.0)	14.4 (0.54)	18.8 (<0.001)	16.1 (0.44) _a	14.2 (0.33) _b	17.2 (0.80) _a
Mental Health	15.5 (3.0)	0.0 (0.849)	14.3 (0.76)	14.5 (0.33)	0.1 (0.830)	14.3 (0.76)	14.5 (0.33)	14.9 (<0.001)	14.9 (0.30) _a	14.0 (0.23) _b	16.1 (0.54) _a
Friends	13.7 (3.3)	0.9 (0.335)	14.3 (0.82)	13.5 (0.36)	0.2 (0.632)	13.7 (0.76)	14.1 (0.41)	5.9 (0.051)	14.2 (0.33)	13.3 (0.25)	14.4 (0.6)
Home	7.9 (1.9)	6.0 (0.014)	8.7 (0.48)	7.6 (0.21)	1.8 (0.176)	7.9 (0.44)	8.4 (0.24)	0.4 (0.837)	7.8 (0.20)	7.9 (0.15)	8.0 (0.36)
Total Score	51.3 (8.7)	0.0 (0.911)	50.1 (2.2)	50.4 (0.95)	1.4 (0.243)	49.2 (2.0)	51.4 (1.1)	20.1 (<0.001)	53.0 (0.85) _a	49.5 (0.65) _b	55.7 (1.5) _a

Table 2: Significance tests and parameter estimates for the sex, age group, and primary substance used effects for psychological functioning measures (N=302).

Notes: CHILD CARRE = CHILD Intervention for Living Drug-free Comprehensive Assessment of Risk, Resilience, and Experience. SD = Standard Deviation. SE = Standard Error. χ^2 was the Wald test of the fixed effect for Gender, Age, and Primary Substance, respectively. Degrees of Freedom (df) for the Wald tests was 1 for Sex and Age, and 2 for Primary Substance, except in the case of lifetime use of cannabis, solvents, and opioids, for which it was 1. p is the two-tailed probability associated with the respective Wald test. Means for a significant Primary Substance effect with df=2 that do not share the same subscript are not significantly different based on post hoc pairwise comparisons of the means using the Sidak-adjusted Bonferroni approach. (Post hoc testing was only conducted when the omnibus test of the Primary Substance effect was significant.)

	Total Sample		Sex			Age Group			Primary Substance		
			Mean (SE)			Mean (SE)			Mean (SE)		
		χ^2 (p)	Girls	Boys	χ^2 (p)	7-9	10-12	χ^2 (p)	Cannabis	Solvents	Opioids
Criterion Variable											
Medical	6.3 (2.2)	32.1 (<0.001)	3.1 (0.53)	6.0 (0.23)	6.5 (0.010)	3.9 (0.49)	5.1 (0.26)	17.5 (<0.001)	6.7 (0.22) _a	5.9 (0.19) _a	7.4 (0.40) _a
School Help	7.6 (1.0)	0.0 (0.945)	7.7 (0.26)	7.7 (0.11)	0.3 (0.575)	7.7 (0.24)	7.6 (0.13)	1.2 (0.549)	7.5 (0.11)	7.7 (0.08)	7.6 (0.19)
Economic Support	6.8 (1.4)	3.5 (0.062)	7.4 (0.35)	6.7 (0.15)	0.6 (0.441)	6.9 (0.33)	7.2 (0.17)	8.6 (0.013)	7.2 (0.14) _{a,b}	6.9 (0.11) _a	7.5 (0.25) _a
Substance Use	7.9 (0.9)	25.2 (<0.001)	6.6 (0.21)	7.6 (0.09)	18.6 (<0.001)	6.7 (0.20)	7.5 (0.10)	19.6 (<0.001)	8.0 (0.09) _a	7.7 (0.07) _a	8.4 (0.16) _a
Legal	0.3 (1.4)	1.3 (0.254)	1.0 (0.33)	0.6 (0.15)	5.7 (0.017)	1.1 (0.31)	0.5 (0.17)	0.8 (0.669)	0.3 (0.14)	0.4 (0.11)	0.2 (0.25)
Family/Social Counseling	7.9 (0.6)	6.9 (0.008)	7.5 (0.16)	8.0 (0.07)	0.0 (0.886)	7.7 (0.15)	7.8 (0.08)	6.1 (0.049)	8.0 (0.7) _a	7.9 (0.5) _a	8.0 (0.12) _a
Psychiatric	0.2 (1.1)	9.8 (0.002)	1.0 (0.28)	0.2 (0.12)	0.3 (0.577)	0.7 (0.26)	0.6 (0.14)	2.1 (0.344)	.3 (0.11)	0.2 (0.09)	.01 (0.209)

Table 3: Significance tests and parameter estimates for the sex, age group, and primary substance used effects for CHILD CARRE interviewer ratings (N=302).

Notes: CHILD CARRE = CHILD Intervention for Living Drug-free Comprehensive Assessment of Risk, Resilience, and Experience. Interviewer ratings used a Likert-type scale, ranging from (0-1="no treatment necessary" to 8-9 = "treatment needed to intervene in life-threatening situations". SD = Standard Deviation. SE = Standard Error. χ^2 was the Wald test of the fixed effect for Gender, Age, and Primary Substance, respectively. Degrees of Freedom (df) for the Wald tests was 1 for Sex and Age, and 2 for Primary Substance, except in the case of lifetime use of cannabis, solvents, and opioids, for which it was 1. p is the two-tailed probability associated with the respective Wald test. Means for a significant Primary Substance effect with df=2 that do not share the same subscript are not significantly different based on post hoc pairwise comparisons of the means using the Sidak-adjusted Bonferroni approach. (Post hoc testing was only conducted when the omnibus test of the Primary Substance effect was significant.) For 1 criteria, all 3 pairwise comparisons were non-significant.

[24]. Children in the present study who reported use of opioids also reported more overall substance use than others. Girls scored significantly higher on measures of intrusion and avoidance on the CRIES-8 than did boys. These results mirrored outcomes from other studies employing the CRIES-8 in various locations across the world [25-27].

In the present study, on average, girls had higher social anxiety and lower school avoidance than did boys, as measured by the SCARED. These findings comport with other studies completed in varied settings and locations across the world [28,29]. On average, girls had fewer peer problems and a more prosocial attitude than did boys, as measured on the SDQ. These results again matched findings from earlier studies [30,31]. Finally, the interviewer severity rating scores for physical health, mental health, and the Total Score mean for the Solvents group in the present study was significantly lower than the means for the Cannabis and Opioids groups. Judging from the interviewer severity ratings found in table 3, this sample of children is in need of help in many different areas, including medical concerns, school help, economic support, substance use and family/social counseling. Moreover, the older children in this sample were notable for their higher interviewer severity ratings related to medical and substance use treatment needs. Finally, children in the Opioids group had higher interviewer severity ratings for medical concerns, economic support, and substance use treatment needs. These data underscore the utility of the CHILD CARRE assessment for differentiating children's needs related to substance use and the related treatment plan for the individual child.

Looking across the results with children entering treatment with different substance use issues, children in the Cannabis and Opioid groups had more severe peer problems and worse quality of life

scores than did children in the Solvents group. Children in the Opioid group also reported using more cannabis than children in the Solvents group. While the children entering for Solvent use may look less severe on a number of measures, such results should not be taken to mean that solvent use is without harmful effects on the child's development. The harms of adolescent opioid use are well documented. Injection drug use places individuals at clear risk for overdose, as well as infection with HIV, Hepatitis C and other pathogens [32]. A significant number of children in India report use of opiates via injection [33]. Additional harms associated with opioid use include involvement in drug-related crimes (e.g., robbery and larceny) as well as sex work. A child's risk of death due to overdose, accidents, injuries and/or medical complications is substantially high [34].

Regarding risk factors for substance use in the current study, male sex and use of opioids appeared significantly associated with a younger age of onset for substance use, as well as with a higher rate of polysubstance use. Older age was associated with more significant substance use.

Conclusion

This study was conducted to examine the child-specific factors that might be associated with substance use in a sample of 302 boys and girls entering treatment for substance use in New Delhi, India. Older age, male sex and use of opioids were associated with more significant substance use. Effective interventions are sorely needed to reduce the number of children using substances in India.

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