

Treating Children Ages 7–12 in India for Drug Problems: Randomized Clinical Trial Outcomes

Keywords: Cannabis; India; Opioids; Solvents; Street Children; Substance Use Treatment; Child; Randomized Controlled Trial

Abstract

Background: India has the world's largest child population, and children living in street circumstances there report among the highest childhood substance use rates globally. Culturally appropriate, rigorously tested treatments for children with substance use problems remain scarce. This parallel-group, two-arm randomized controlled trial tested whether CHILD (Child Intervention for Living Drug-free), a structured curriculum combining one-to-one, attachment-based motivational-interviewing counseling with developmentally sequenced group life-skills modules, added to Usual Care, improved substance use and psychosocial outcomes compared with Usual Care alone among children in residential substance use treatment in New Delhi, India.

Methods: 344 children aged 7–12 entering residential treatment at the Society for Promotion of Youth and Masses (SPYM) in New Delhi were randomized to Usual Care + CHILD (n=183; 28 girls, 155 boys) or Usual Care alone (n=161; 13 girls, 148 boys). Usual Care was a child-modified therapeutic-community program with medical treatment, group psychoeducation, counseling, and aftercare. CHILD added individual motivational-interviewing counseling and eight repeating, developmentally sequenced life-skills modules. Outcomes of substance use, trauma, anxiety, adjustment, distress, and quality of life were tracked through 12 months, with urine drug screens (UDS) objectively confirming substance use at 12 months.

Results: The two arms were well balanced at baseline. Children in both groups showed improvement from baseline to treatment completion across substance use and psychosocial measures. Where the arms diverged, CHILD was associated with more consistent maintenance of these gains through the 12-month follow-up, particularly in quality-of-life domains related to mental health, friendships, and home life. This pattern was corroborated by urine drug screening at 12 months: children in the CHILD arm showed significantly lower positivity rates than Usual Care across opiates (3.0% vs. 15.6%), amphetamine (0.0% vs. 12.7%), methamphetamine (0.0% vs. 7.9%), and any substance (16.7% vs. 36.9%; all $p < .05$).

Conclusion: In this first randomized trial of a substance use treatment for children aged 7–12 in India, self-report, clinician-rated, and toxicology data converged to show that residential treatment benefits children, and that adding CHILD further strengthens outcomes. These findings support continued evaluation and scale-up of the intervention. The marked reduction in use of opiates, amphetamine, and methamphetamine is particularly meaningful given the serious toxic effects these substances have on children's developing brains and bodies.

Abbreviations

CHILD: CHILd Intervention for Living Drug-free; SPYM: Society for Promotion of Youth and Masses; CARRE: Comprehensive Assessment of Risk, Resilience, and Experience; CRIES: Children's Revised Impact of Events Scale; SCARED: Screen for Child Anxiety Related Emotional Disorders; SDQ: Strengths and Difficulties



Journal of Addiction & Prevention

Jones HE^{1,2*}, Middlesteadt-Ellerson R¹, Browne T³, Naqati BA⁴, Kumar M⁴, Agarwal A⁵ and Kumar R⁴

¹Department of Obstetrics and Gynecology, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

²Departments of Psychiatry and Behavioral Sciences and Obstetrics and Gynecology, School of Medicine, Johns Hopkins University, Baltimore, MD, USA

³Colombo Plan Secretariat, Colombo, Sri Lanka

⁴Society for Promotion of Youth and Masses (SPYM), New Delhi, India

⁵National Drug Dependence Treatment Centre, All India Institute of Medical Sciences (AIIMS), New Delhi, India

*Address for Correspondence

Hendree E. Jones, Department of Obstetrics and Gynecology, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA.
E-mail Id: hendree_jones@med.unc.edu

Submission: 17 August, 2026

Accepted: 12 September, 2026

Published: 14 September, 2026

Copyright: © 2026 Jones HE, et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Questionnaire; SRQ-20: Self-Reporting Questionnaire-20; QOL: Child Addiction Treatment Quality of Life Scale; GLiMM: Generalized Linear Mixed Model

Introduction

India is home to the largest child population in the world, approximately 440 million children, including 243 million adolescents, 54% of whom are 10-14 years of age [1]. India's large child population reflects, in part, historical rates of population growth; the country's National Family Planning Program, developed in response to concerns about overpopulation, has been credited with substantially accelerating the decline in fertility through expanded access to temporary and permanent contraceptive methods and a subsequent shift toward a reproductive and child health approach, and since then both fertility and mortality in India have declined significantly [2-4]. Estimates of the number of children living in street circumstances in India vary widely by methodology, ranging from several hundred thousand to historical projections as high as 18 million nationally, with a 2011 census-based enumeration identifying approximately 51,000 street children in Delhi alone, most between 7 and 14 years of age [1,5]. A 2024 community-based epidemiological study using respondent-driven sampling in nine districts of Delhi found that 49% of 766 street children ages 7-18 had used a substance in the past year, consistent with the 40-70% range reported across smaller regional surveys, with substance use associated with being male, lack of family psychosocial support, income from illegal activity, family and peer substance use, and lack of basic amenities

[6]. An earlier cross-sectional analysis of 302 children (284 boys, 18 girls) ages 7–12 entering treatment at the same New Delhi treatment and rehabilitation center, an earlier subset of the cohort reported in the present trial, similarly found that solvents, cannabis, and opioids were the predominant substances at treatment entry. This study also examined whether sex and age group predicted children's substance use history and current use, a comparison that had previously been largely lacking in the literature on treatment-seeking children in India [7]. Substance use in this population commonly begins between 5 and 7 years of age [6,8]. Tobacco, alcohol, and inhalants are the substances most commonly reported among children in street circumstances generally, while among children specifically seeking substance use treatment in Delhi, solvents, opioids, and cannabis predominate [6,8]. Given overpopulation and poverty, India is a setting of substantial risk for substance use, and children living in street circumstances are highly vulnerable as they navigate daily survival [6].

Despite this scale of need, evidence-based treatment options for children with substance use problems remain scarce in India and globally. A 2022 narrative review of substance use disorders in children and adolescents concluded that evidence for management of these disorders in children is scarce worldwide, that children in street circumstances are among the most severely affected populations, and that age-appropriate psychosocial treatment, rather than approaches developed for and validated in adults, is needed to close this gap [8]. To date, there is a lack of interventions that have been rigorously evaluated for use with children.

CHILD (Child Intervention for Living Drug-free) (formerly known as the Child Addiction Treatment (CAT) protocol) was first developed for opioid-using boys and girls in Afghanistan [9]. CHILD is grounded in social-cognitive and social learning theory, biosocial/emotion-regulation theory, and attachment theory, and delivers one-to-one, attachment-based motivational interviewing together with group-based life-skills modules (the “Suitcase for Life”) covering artistic expression, communication, stress management, drug-harm education, nutrition and health, personal safety, citizenship, and future-oriented goal setting. In a study of 783 children ages 4–18 who received CHILD in outpatient or residential treatment in Afghanistan, significant improvement was observed from treatment entry to completion across behavioral, trauma, and psychiatric symptom measures [9]. Revisions to CAT/CHILD that yielded the current CHILD protocols were informed by qualitative findings from staff and beneficiaries and by a convened panel of experts from Afghanistan, Australia, Brazil, India, Pakistan, Paraguay, and the United States. For this study, CHILD was further tailored to the Indian context (language, images, and activities) in collaboration with the Society for Promotion of Youth and Masses (SPYM), a New Delhi-based non-profit organization that has provided substance use treatment services to children since 2010. While the present trial was still enrolling participants, a companion qualitative study

conducted separate focus groups with children, parents/caregivers, and treatment staff at the same two SPYM centers to identify barriers to and benefits of the CHILD curriculum; children valued interactive, expressive program content and skill-building activities, while parents and staff emphasized, respectively, concerns about sustained recovery and family/community support, and a need for simpler, more visual materials [10]. These themes directly informed ongoing refinement of the curriculum for future work.

Reduction of child substance use in India is urgently needed, and this study was undertaken to provide the first randomized evaluation of a treatment for children ages 7–12 with substance use problems in a residential treatment setting. The purpose of the present study was to examine the extent to which CHILD, delivered in addition to Usual Care, improved substance use and psychosocial outcomes relative to Usual Care alone among children entering residential substance use treatment in New Delhi, India. Outcomes examined included substance use and clinician-rated need for services (assessed using the Comprehensive Assessment of Risk, Resilience, and Experience [CARRE]), post-traumatic stress symptoms (Child Revised Impact of Events Scale, CRIES-8), anxiety symptoms (Screen for Child Anxiety Related Emotional Disorders, SCARED), behavioral and emotional adjustment (Strengths and Difficulties Questionnaire, SDQ), general psychological distress (Self-Reporting Questionnaire, SRQ-20), and quality of life (Child Addiction Treatment Quality of Life Scale, CAT-QOL).

Materials and Methods

Ethics approval

The study was approved by Institutional Review Boards in both India and the United States. Written informed consent was obtained from a parent or legal guardian of each child, and verbal assent was obtained from the participating child. Children and families who declined participation continued to receive all usual SPYM and other local services without penalty.

Study design

This was a parallel-group, two-arm randomized controlled trial in which children ages 7–12 years entering SPYM residential substance use treatment in New Delhi were randomized to receive either (1) the CHILD intervention protocol in addition to Usual Care, or (2) Usual Care alone. Randomization used a stratified block design with random block sizes (blocks of 2, 4, or 6), stratified by sex (boy/girl), age group (7–9 vs. 10–12 years), and primary substance used (cannabis, opioids, or solvents), and allocated participants in an overall 3:1 boy:girl ratio consistent with the sex distribution of children entering treatment for substance use in this age group in Delhi. Allocation was concealed using opaque, sequentially numbered envelopes prepared independently of study staff; the SPYM Research Assistant opened the designated envelope only after the baseline assessment was completed and then informed the

family of the assigned condition. Neither the site investigators nor participants knew a child's assignment before the baseline assessment was finished. Outcome and mediator measures were administered at baseline, during treatment, at treatment completion, and at 1-, 6-, and 12-month post-treatment follow-up.

Setting

The study was conducted at SPYM's Centre for Children in Need of Care and Protection in New Delhi, which has provided treatment and rehabilitation services to children living in street circumstances who use substances since 2010. The treatment facility for boys (Delhi Gate) is a 50-bed unit, and the facility for girls (Purda Bagh) is a 20-bed unit; both employ a multi-disciplinary treatment model and are recognized by the Government of Delhi as specialist treatment settings for substance-using children.

Participants

Most children are referred by the Child Welfare Committee of the Government of Delhi, which is responsible for children without family support or supervision. Other sources of referrals were from parents or caregivers bringing their children to treatment. Boys and girls entering SPYM residential treatment were invited to participate. Inclusion criteria were: age 7–12 years; entering SPYM residential treatment for substance use; reported substance use (other than tobacco alone) at least once weekly during the 3 months prior to admission; and availability of parent/guardian informed consent and child assent. Children were excluded if they were outside the eligible age range, refused residential treatment, were unwilling to participate or provide consent, or were unable to summarize in their own words what participation in the study involved.

Screening, recruitment, and data protection

Screening was completed by trained SPYM intake staff for all children entering the Delhi Gate and Purda Bagh centers, using a standardized paper screening form together with a verbal discussion with the child and, when available, parents or guardians. Eligible children were assigned a unique, de-identified participant ID; the master list linking participant ID to identifying information was maintained only as a hard-copy document in double-locked files at the SPYM administrative office and was never entered into the study database. All other study data were entered into the University of North Carolina's REDCap data management system on a password-protected, encrypted server with built-in range and consistency checks. Data entered by Indian study staff were reviewed by University of North Carolina project staff on an ongoing basis, with data queries returned weekly and after data collection was completed. All data were reviewed and approved by the statistician prior to analysis.

Interventions

CHILD + Usual Care. CHILD is a culturally adapted psychosocial intervention that combines individual, attachment-based

motivational-interviewing counseling with group-delivered life-skills modules, provided 5 days per week for approximately 1 hour per group session for the duration of the child's residential stay. The eight life-skills modules ("Suitcase for Life") that include: Artistic Expression, Communicating and Relating, Dealing with Stress, Understanding Harms of Drugs, Keeping the Mind and Body Healthy, Personal Safety, Being a Good Citizen, and Dreaming about the Future. These topics incorporate mindfulness, dialectical-behavior-therapy-informed emotion-regulation skills, relapse-prevention and drug-refusal skills, motivational-interviewing techniques, art therapy, and structured story-telling, and are sequenced developmentally with age-appropriate delivery for younger versus older children. Session content, words, images, and activities were adapted to the Indian context in collaboration with SPYM staff.

Usual Care. SPYM's usual care follows a multi-disciplinary, child-modified therapeutic-community model with a 12-step foundation, in which children live in a substance-free, structured residential environment (approximately 90 days) that includes daily peer-run "Child Parliament" meetings, group education classes 5 days per week organized by developmental/age level, discussion sessions on topics such as self-esteem and drug refusal, elements of the 12 Steps of Narcotics Anonymous, sports and leisure time, and a structured daily schedule of meals and sleep appropriate to children's developmental needs. All children receive medical assessment and treatment from physicians and nursing staff trained in adolescent substance use care (through intensive advocacy efforts, an arrangement was secured by SPYM, to provide comprehensive medical assessment, including initial detoxification support, for all the children, with referral to government hospitals assuring intensive medical and / or psychiatric stabilization), individual and group counseling from trained counselors supported by peer counselors who are children in sustained recovery, and a 10-module life-skills curriculum addressing functional literacy, self-esteem, harms of drug use, refusal skills, healthy relationships, and vocational and future planning. Older children additionally receive basic first-aid training and vocational exposure (e.g., computer literacy, cooking, basic electrical and plumbing skills). All children, whether they complete treatment or not, receive 12 weeks of community-based aftercare from outreach para-professional staff. Drug use is not, itself, a discharge criterion in either study arm; children may be discharged for voluntary withdrawal or for violence that threatens the safety of the community.

Measures

Because of low literacy among this population, all measures were administered by trained SPYM clinical staff via structured interview rather than self-administration, in the language chosen by the child. Measures were selected to be developmentally appropriate, with an overlapping but not identical battery for younger and older children.

Screening Form. A 16-item, 3-point (0 = None, 1 = Some, 2 = A lot) screening instrument covering behavioral/emotional/social

problems, psychological distress, trauma exposure, physical health, and substance use; a score above 0 on any domain prompted referral for outpatient assessment.

CHILD Comprehensive Assessment of Risk, Resilience, and Experience (CHILD CARRE). A validated structured interviewer-administered assessment of lifetime and past-30-day substance use (alcohol, cannabis, inhalants/solvents, sedatives, cocaine, stimulants, hallucinogens, and opioids), age at first use, and 7 clinician severity ratings (0–9) of need for services in the domains of medical treatment, school help, economic support, substance use/drug treatment, legal help, family/social counseling, and psychiatric help [11,12].

Strengths and Difficulties Questionnaire (SDQ). An internationally validated 25-item, 5-subscale (Emotional Symptoms, Conduct Problems, Hyperactivity, Peer Problems, Prosocial) measure of behavioral, emotional, and social functioning over the prior 6 months, each item scored 0–2; a total difficulties score sums the four problem subscales, omitting the Prosocial subscale [13,14].

Child Revised Impact of Events Scale (CRIES-8). An 8-item, 4-point (0 = Not at all to 3 = Often) screening measure of post-traumatic stress symptoms [15].

Screen for Child Anxiety Related Emotional Disorders (SCARED). A 41-item, 3-point (0–2) measure covering symptoms over the prior 3 months, with 5 subscales (13-item Panic Disorder, 9-item Generalized Anxiety, 8-item Separation Anxiety, 7-item Social Anxiety, 4-item School Avoidance) and a total score [16].

Self-Reporting Questionnaire (SRQ-20). A 20-item, World Health Organization-developed yes/no (0/1) screen for psychiatric disturbance, referencing symptoms over the prior 30 days, validated for use in low- and middle-income settings [17].

Child Addiction Treatment Quality of Life Scale (CAT-QOL). A 20-item, 5-point (1 = Never or Almost Never to 5 = Always or Almost Always) measure of quality of life over the prior 3 months, with 4 subscales (6-item Physical Health, 5-item Mental Health, 5-item Friends, 4-item Home) and a total score (9).

Statistical methods

Analyses followed an intent-to-treat approach and were conducted within the generalized linear mixed model (GLiMM) framework, which reduces to the linear mixed model (LMM) for normally distributed criteria and to the generalized linear model (GLM/GLiM) for criteria measured on a single occasion, and which accommodates missing data without requiring complete cases, an important feature given the multiple post-treatment follow-up assessments [18]. All hypothesis tests were Wald tests of the unique variance associated with each effect, adjusted for all other effects in the model.

Baseline comparability of the two treatment arms on

demographic, background, lifetime substance use, and CARRE severity-rating variables was tested with a model containing a single fixed effect for Treatment Arm; dichotomous criteria were modeled as binomial, count variables (e.g., past-30-day days of use) as overdispersed Poisson, and continuous variables (e.g., age at first use, severity ratings) as normal. Because disproportionality in the number of girls and younger children, combined with imbalance across primary substance groups and differential loss to follow-up, produced degenerate solutions when Sex and Age Group were included as covariates in the outcome models, these two variables were examined only in separate baseline-comparison models (each with a single fixed effect for Sex or Age Group) and were not retained in the primary outcome analyses. This baseline comparison approach extends an earlier cross-sectional analysis of substance use patterns by sex and age group in a subset of this treatment-seeking cohort [7].

For the primary outcome analyses, treatment completion (dichotomous) was modeled with fixed effects for Treatment Arm, Primary Substance Used, and their interaction. All other criteria measured repeatedly across time were modeled with a repeated-measures LMM with fixed effects for Treatment Arm (CHILD vs. Usual Care), Primary Substance Used (Cannabis vs. Solvents vs. Opioids), assessment Time (Baseline, During Treatment, Treatment Completion, 1-, 6-, and 12-month follow-up), and their two- and three-way interactions, under a compound-symmetric heterogeneous covariance structure over time (compound symmetric for SCARED School Avoidance, which was necessary to permit model convergence). Because the During Treatment and Treatment Completion means for past-30-day substance use were at or near the floor (values of 0), models for these outcomes were restricted to the Baseline vs. 12-month follow-up comparison to achieve a stable solution.

Given that lower-order effects are not meaningfully interpretable in the presence of a higher-order effect involving the same terms, post hoc testing focused on the highest-order significant interaction for each outcome; when no interaction reached significance, testing focused on significant main effects. Significant interactions involving Time were followed by tests of simple main effects of Time within each level of the other factor(s), simple pairwise contrasts (Baseline vs. Treatment Completion; Treatment Completion vs. 12-month follow-up), and linear-trend contrasts comparing rate of change across conditions. All analyses were conducted using SAS (SAS Institute, Cary, NC) GLIMMIX and NLMIXED procedures.

As a supplementary, objective corroboration of the self- and clinician-reported CARRE substance use outcomes, urine drug screen (UDS) results collected at the 12-month follow-up visit were compared between treatment arms. The UDS panel tested for opiates, cannabis, amphetamine, methamphetamine, and alcohol (via breath test); solvents were excluded from this comparison because no reliable urine assay for inhalant use exists, consistent with why

solvent use was assessed only by self-report elsewhere in this trial. For each substance, and for a composite indicator of any substance-positive result, Treatment Arm groups were compared using Fisher’s exact test on the 2×2 table of positive/negative results among children with a valid (Done) UDS result at 12 months.

Results

Participants and dropouts

Children (N=1,503) and were screened from March of 2019 to August of 2022. Of those screened, 365 children screened for eligibility at the SPYM Delhi Gate and Purda Bagh centers, 344 children (41 girls, 303 boys) between the ages of 7 and 12 met eligibility criteria, consented/assented, and were randomized: 183 (28 girls, 155 boys) to CHILD + Usual Care and 161 (13 girls, 148 boys) to Usual Care alone (Figure 1). The final 12 month follow-ups were completed by October 2023.

Baseline demographic and background comparability

Table 1 shows that the two treatment arms were well balanced at baseline. Consistent with the a priori 3:1 randomization target, the CHILD arm enrolled a somewhat higher proportion of girls than the Usual Care arm (68% vs. 32% of all girls enrolled, $\chi^2(1) = 4.45$, $p = .045$), and the arms did not differ significantly on age group, primary substance (53% solvents, 36% cannabis, 11% opioids overall), housing stability, income-generating activity, weapon-carrying, fighting, tobacco/alcohol/cannabis/inhalant/opioid use, years at current address, grade completed in school, or age at first use of any

substance. Of the 7 CHILD CARRE clinician severity ratings, only need for legal help differed by arm (higher, on average, in CHILD; $p = .04$), and few children overall were rated as needing legal or psychiatric help. In addition to the variables in Table 1, at baseline 3 children tested positive for HIV, 5 for hepatitis B, 1 for hepatitis C, and 5 for tuberculosis. Treatment was provided to all children with identified illnesses.

Sample characteristics and sex/age-group differences at baseline

As a whole, the sample was characterized by extremely high lifetime use of inhalants (75%) and cannabis (81%), and comparatively lower lifetime use of opioids (19%). Past-30-day use was high for both solvents and cannabis. Mean age at first use across substances clustered around 9-10 years (only 25 children in the sample were younger than 10 at enrollment). With the exception of legal and psychiatric help, clinician ratings of need for services were generally high, most notably for substance use treatment and family/social counseling.

Boys, relative to girls, showed a consistent (though not always statistically significant) pattern of greater lifetime substance use, earlier age at first use, higher past-30-day use, and greater rated need for services other than legal and psychiatric help. Adjustment-measure differences between boys and girls were fewer and less consistent (e.g., girls had fewer peer problems than boys on the SDQ, on average, but higher SCARED social anxiety scores). Differences between the 7-9 and 10-12 year age groups were infrequent, apart from differences in age at first use that are an artifact of the age-based grouping itself;

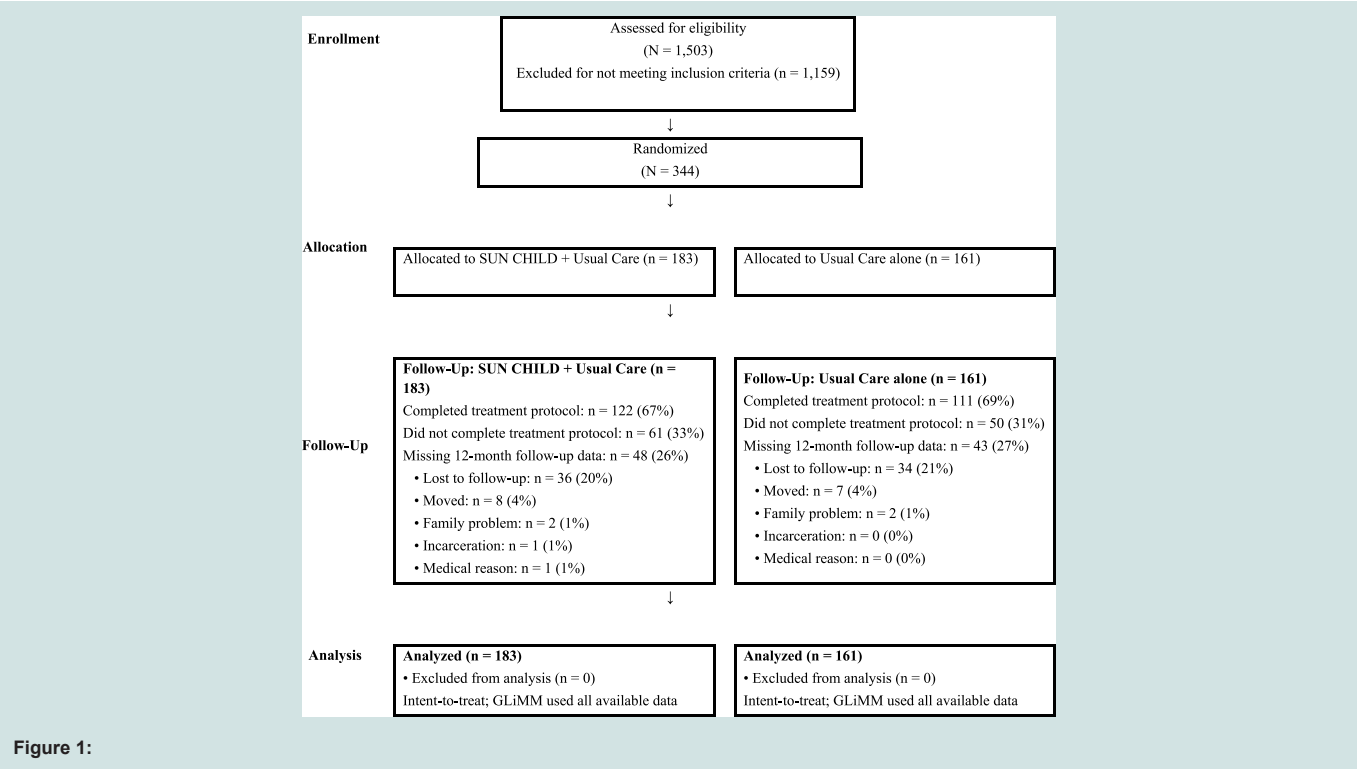


Table 1: Baseline Demographic and Background Characteristics for the Total Sample and Tests of Difference between the CHILD and Usual Care Treatment Arms (N = 344).

Variable	Total (N=344)	CHILD (n=183)	Usual Care (n=161)	Test statistic	p
Sex				$\chi^2(1) = 4.45$	.045
Girl	41 (12%)	28 (68%)	13 (32%)		
Boy	303 (88%)	155 (51%)	148 (49%)		
Age group				$\chi^2(1) = 2.4$	.14
7-9 years	25 (7%)	17 (68%)	8 (32%)		
10-12 years	319 (93%)	166 (52%)	153 (48%)		
Primary substance				$\chi^2(2) = 0.2$	.90
Solvents	183 (53%)	99 (54%)	84 (46%)		
Cannabis	123 (36%)	65 (53%)	58 (47%)		
Opioids	38 (11%)	19 (50%)	19 (50%)		
Has a permanent place to live				$\chi^2(1) = 0.6$	.45
Yes	161 (47%)	82 (51%)	79 (49%)		
No	183 (53%)	101 (55%)	82 (45%)		
Has made money (e.g., work, begging, illegal activity)				$\chi^2(1) = 0.2$	.80
Yes	327 (95%)	173 (53%)	154 (47%)		
No	17 (5%)	10 (59%)	7 (41%)		
Carried a weapon, past 30 days				$\chi^2(1) = 0.0$	1.0
Yes	32 (9%)	17 (53%)	15 (47%)		
No	312 (91%)	166 (53%)	146 (47%)		
In a physical fight, past 30 days				$\chi^2(1) = 0.02$	.91
Yes	181 (53%)	97 (54%)	84 (46%)		
No	163 (47%)	86 (53%)	77 (47%)		
Ever smoked a cigarette				$\chi^2(1) = 2.39$	.99
Yes	331 (99%)	176 (53%)	155 (47%)		
No	5 (1%)	1 (20%)	4 (80%)		
Ever used oral tobacco				$\chi^2(1) = 1.5$	.22
Yes	245 (73%)	134 (55%)	111 (45%)		
No	91 (27%)	43 (47%)	48 (53%)		
Ever used alcohol				$\chi^2(1) = 0.3$	.65
Yes	219 (64%)	114 (52%)	105 (48%)		
No	124 (36%)	68 (55%)	46 (45%)		
Ever used cannabis				$\chi^2(1) = 0.1$	.80
Yes	278 (81%)	147 (80%)*	131 (81%)*		
No	66 (18%)	36 (20%)	30 (19%)		
Ever used inhalants				$\chi^2(1) = 0.01$	.84
Yes	259 (75%)	137 (75%) *	122 (76%)*		
No	85 (25%)	46 (25%)	39 (24%)		
Ever used opioids				$\chi^2(1) = 3.8$	.051
Yes	64 (19%)	27 (15%) *	37 (23%) *		
No	280 (81%)	156 (85%)	124 (77%)		
	M (SD)	M (SD)	M (SD)		
Years lived at present address (n=340)	5.5 (3.8)	5.8 (3.8)	5.2 (3.7)	$t(338) = 1.5$	.13

Last grade completed in school	3.4 (2.2)	3.3 (2.1)	3.6 (2.2)	t (342) =1.1	.27
Age at first cigarette (n=331)	9.4 (1.4)	9.3 (1.4)	9.5 (1.3)	t (329) =1.1	.26
Age at first oral tobacco use (n=245)	9.4 (1.4)	9.3 (1.4)	9.4 (1.3)	t (243) =.8	.44
Age at first alcohol use (n=219)	9.9 (1.3)	9.8 (1.3)	10.0 (1.2)	T (217) =1.5	.13
Age at first cannabis use (n=278)	9.6 (1.4)	9.4 (1.4)	9.7 (1.3)	t (276) =1.13	.08
Age at first inhalant use (n=259)	9.6 (1.4)	9.4 (1.5)	9.8 (1.3)	t (257) =2.09	.04
Age at first opioid use (n=64)	10.2 (1.1)	10.3 (1.1)	10.1 (1.2)	T (62) =-.7	.49
Number of substances used, lifetime	2.4 (.9)	2.5 (.9)	2.4 (.9)	t (342) =1.1	.26
Number of substances used, past 30 days	2.4 (.9)	2.5 (.9)	2.4 (.9)	t (342) =1.2	.22
CARRE severity ratings (0–9)					
Need for medical treatment	6.5 (2.2)	6.4 (2.2)	6.5 (2.2)	t (342) =.7	.50
Need for school help	7.7 (1.0)	7.6 (1.1)	7.7 (.9)	t (342) =1.0	.34
Need for economic support	6.9 (1.4)	6.9 (1.5)	6.9 (1.4)	t (342) =.1	.89
Need for substance use treatment	7.9 (.9)	7.8 (1.0)	8.0 (.8)	t (342) =2.0	.049
Need for legal help	0.3 (1.4)	0.5 (1.7)	0.2 (1.1)	t (342) =-2.0	.04
Need for family/social counseling	8.0 (.6)	8.0 (.7)	7.9 (.6)	t (342) =-.4	.68
Need for psychiatric help (n=343)	0.2 (1.1)	0.3 (1.3)	0.1 (.7)	t (341) =-1.4	.17

Notes: CHILD CARRE = Comprehensive Assessment of Risk, Resilience, and Experience. For categorical variables, the Total column shows n (% of total N); the CHILD and Usual Care columns show n (% of that row's category total). Six children reported lifetime hypnotic use; no child reported lifetime use of sedatives, cocaine, stimulants, or hallucinogens. χ^2 tests are exact likelihood-ratio tests of independence. *Cannabis, inhalant, and opioid use percentages for CHILD/Usual Care columns reflect the percentage of that treatment arm reporting use.

one substantive exception was solvent use, for which the 7-9 year-old group had a higher probability of lifetime use, a younger age at first use, and higher past-30-day use than the 10-12 year-old group. This overall pattern of modest but consistent sex differences, alongside largely comparable substance use histories across the two age groups, is consistent with findings from an earlier cross-sectional analysis of a subset of this treatment-seeking cohort [7].

Outcome analyses

Table 2 presents the inferential test statistics and p values for all main effects and interactions except the non-significant Treatment Arm $\times$ Primary Substance interaction (not significant for any outcome). Consistent with convention, results are organized from main effects to first-order interactions to the second-order (three-way) interaction, with lower-order effects discussed only when they are not subsumed within a higher-order, significant effect for that outcome.

Time main effect. Eleven outcomes showed a significant, interpretable Time main effect not qualified by a higher-order interaction: 3 CARRE past-30-day use outcomes (alcohol, opioids, number of substances used), 3 CARRE need-for-service ratings (school, economic, legal help), and 5 SCARED outcomes (all subscales and the total score). Past-30-day alcohol use, opioid use, and number of substances used all declined significantly across the study for the sample as a whole, though the absolute means were close to a floor of zero throughout. Need for school help and need for economic support both showed an early decline from Baseline through Treatment Completion followed by a partial rebound at 6- and 12-month follow-

up; need for legal help was low throughout but higher at Baseline and during treatment than at later time points. SCARED subscale and total scores rose slightly from Baseline to During Treatment and then declined through 12-month follow-up (with the exception of the School Avoidance subscale, for which Baseline and During Treatment did not differ from Treatment Completion).

Primary Substance $\times$ Time interaction. Ten outcomes showed a significant Primary Substance $\times$ Time interaction: CARRE need for alcohol/drug treatment and need for family/social counseling, all 6 SDQ subscale/total scores, the SRQ total score, and QOL Physical Health. Across these outcomes the general pattern was a decline in means through Treatment Completion followed by partial rebound by 12-month follow-up, but the magnitude and timing of change differed by primary substance: children whose primary substance was solvents showed the most consistent significant improvement from Baseline to Treatment Completion. The cannabis group also showed a robust rebound from Treatment Completion to 12-month follow-up. The opioid group changed the least across the trial, such that by 12-month follow-up the three substance groups had largely converged.

Treatment Arm $\times$ Time interaction. For all outcomes with a significant Treatment Arm $\times$ Time interaction not subsumed by the three-way interaction, post hoc simple-effect tests were significant, with the exceptions that SDQ Prosocial, SDQ total score, and QOL Physical Health did not differ significantly by arm at baseline, the Time simple effect was not significant for SDQ Prosocial or QOL Physical Health, and the 12-month arm comparison was not significant for

Table 2: Inferential Test Statistics (χ^2 , p) for Treatment Arm, Primary Substance, and Time Main Effects and Their Interactions (N = 344).

Outcome	Treatment Arm	Primary Substance	Time	Arm × Substance	Substance × Time	Arm × Time	Arm × Substance × Time
CARRE							
Need for medical treatment	0.3 (.57)	14.6 (<.001)	702.4 (<.001)	0.8 (.68)	8.4 (.59)	5.9 (.31)	20.6 (.02)
Importance of going to school	5.0 (.03)	4.5 (.10)	257.2 (<.001)	0.4 (.80)	21.8 (.02)	7.3 (.20)	5.6 (.85)
Need for school help	0.9 (.33)	1.1 (.57)	913.3 (<.001)	0.1 (.94)	10.6 (.39)	8.2 (.15)	6.1 (.80)
Need for economic support	0.2 (.66)	5.6 (.06)	701.7 (<.001)	0.1 (.95)	17.3 (.06)	5.9 (.31)	11.2 (.34)
Need for alcohol/drug treatment	0.0 (.92)	16.8 (<.001)	1228.4 (<.001)	1.9 (.38)	34.7 (<.001)	3.9 (.56)	9.1 (.52)
Need for legal help	0.4 (.51)	7.3 (.03)	16.4 (.005)	1.6 (.45)	17.5 (.06)	5.5 (.36)	13.0 (.22)
Need for family/social counseling	0.1 (.83)	2.6 (.27)	1253.1 (<.001)	1.0 (.60)	18.4 (.047)	1.5 (.91)	1.2 (.25)
Need for psychiatric treatment	2.2 (.14)	1.1 (.57)	9.9 (.08)	1.9 (.39)	4.7 (.91)	4.4 (.50)	5.7 (.84)
CRIES							
Total score	5.2 (.02)	14.1 (<.001)	45.1 (<.001)	2.9 (.24)	28.6 (.002)	6.0 (.31)	12.7 (.24)
SCARED							
Panic Disorder	3.9 (.048)	2.5 (.20)	50.8 (<.001)	4.2 (.12)	24.0 (.008)	15.8 (.008)	19.2 (.04)
School Avoidance	0.0 (.97)	3.3 (.19)	134.2 (<.001)	1.1 (.60)	10.4 (.41)	3.6 (.61)	4.9 (.89)
Social Anxiety	0.2 (.66)	1.0 (.61)	209.4 (<.001)	0.1 (.95)	4.5 (.92)	6.0 (.30)	9.7 (.47)
Separation Anxiety	0.1 (.82)	17.4 (<.001)	378.4 (<.001)	0.5 (.77)	19.8 (.03)	1.7 (.89)	3.1 (.97)
Generalized Anxiety	2.8 (.09)	1.7 (.42)	430.8 (<.001)	3.5 (.17)	12.2 (.27)	3.0 (.69)	4.1 (.94)
Total score	1.2 (.27)	5.1 (.08)	424.3 (<.001)	0.9 (.65)	13.4 (.20)	3.8 (.58)	5.3 (.87)
SDQ							
Emotional Problems	0.1 (.71)	18.5 (<.001)	435.4 (<.001)	3.1 (.21)	38.3 (<.001)	27.0 (<.001)	11.9 (.29)
Conduct Problems	0.2 (.63)	10.3 (.006)	534.1 (<.001)	3.9 (.15)	24.9 (.006)	13.2 (.03)	10.5 (.40)
Hyperactivity	0.4 (.54)	8.3 (.02)	417.9 (<.001)	4.5 (.10)	30.6 (<.001)	18.1 (.003)	13.4 (.20)
Peer Problems	2.6 (.11)	12.2 (.003)	367.4 (<.001)	2.0 (.37)	27.7 (.003)	13.8 (.02)	13.4 (.20)
Prosocial	0.8 (.36)	3.3 (.19)	453.2 (<.001)	1.8 (.40)	28.4 (.002)	12.0 (.04)	14.7 (.15)
Total score	0.1 (.78)	14.9 (.006)	755.5 (<.001)	4.1 (.13)	35.9 (<.001)	18.7 (.003)	12.7 (.24)
SRQ							
Total score	0.0 (.94)	19.2 (<.001)	798.0 (<.001)	3.5 (.17)	33.9 (.002)	10.6 (.06)	11.2 (.34)
QOL							
Physical Health	0.8 (.37)	29.0 (<.001)	266.4 (<.001)	0.8 (.65)	18.6 (.046)	15.2 (.01)	18.1 (.054)
Mental Health	0.1 (.71)	21.7 (<.001)	522.9 (<.001)	4.9 (.08)	24.9 (.006)	11.1 (.049)	21.4 (.02)
Friends	0.1 (.78)	11.3 (.004)	116.6 (<.001)	5.9 (.051)	25.2 (.005)	13.6 (.02)	19.3 (.04)
Home	0.1 (.83)	9.1 (.01)	174.4 (<.001)	0.8 (.67)	18.2 (.053)	12.9 (.03)	18.4 (.048)
Total score	0.01 (.79)	26.9 (<.001)	518.2 (<.001)	3.2 (.20)	33.1 (<.001)	17.3 (.004)	22.4 (.02)

Notes: Values are Wald χ^2 (p). CARRE = Comprehensive Assessment of Risk, Resilience, and Experience; CRIES = Children's Revised Impact of Events Scale; SCARED = Screen for Child Anxiety Related Emotional Disorders; SDQ = Strengths and Difficulties Questionnaire; SRQ = Self-Reporting Questionnaire; QOL = Child Addiction Treatment Quality of Life Scale. df = 1 (Treatment Arm), 2 (Primary Substance), 5 (Time), 2 (Arm × Substance), 10 (Substance × Time), 2 (Arm × Time), 10 (Arm × Substance × Time). All tests assumed a compound symmetric heterogeneous covariance structure over time, except SCARED School Avoidance (compound symmetric, required for model convergence).

SDQ Emotional Problems or QOL Physical Health.

Treatment Arm × Primary Substance × Time interaction. Six outcomes showed a significant three-way interaction: CARRE need for medical treatment, SCARED Panic Disorder, and the QOL Mental Health, Friends, Home, and total scores (Table 3). Time simple effects

within each of the six Treatment Arm × Primary Substance cells were significant except for CHILD × Opioids (p = .09). Baseline differences between arms were significant for need for medical treatment and QOL Mental Health and total score; by 12-month follow-up, arm differences were significant for QOL Mental Health, Friends, Home, and total score. Pairwise contrasts of Baseline vs. Treatment

Table 3: Least Squares Means (SE) for the Treatment Arm × Primary Substance × Time Interaction, Outcomes with a Significant Three-Way Interaction (N = 344).

Outcome	Arm	Primary Substance	Baseline	During Treatment	Treatment Completion	1-mo Follow-up	6-mo Follow-up	12-mo Follow-up
Need for Medical Treatment	CHILD	Solvents	6.0 (.24)	4.3 (.22)	2.9 (.23)	1.5 (.30)	4.1 (.42)	4.5 (.52)
		Cannabis	7.3 (.54)	5.3 (.55)	4.2 (.57)	4.5 (.68)	3.4 (.86)	7.5 (.93)
		Opioids	6.7 (.29)	4.9 (.28)	3.5 (.29)	2.0 (.36)	3.4 (.45)	4.2 (.56)
	Usual Care	Solvents	6.1 (.26)	4.8 (.25)	3.4 (.25)	2.1 (.30)	2.3 (.40)	4.5 (.46)
		Cannabis	7.7 (.54)	6.1 (.51)	4.4 (.51)	2.7 (.65)	6.2 (.86)	6.5 (.86)
		Opioids	6.8 (.31)	5.1 (.29)	3.4 (.30)	2.0 (.37)	4.7 (.48)	4.8 (.50)
SCARED Panic Disorder	CHILD	Solvents	2.5 (.32)	2.7 (.32)	1.5 (.31)	0.8 (.24)	1.0 (.32)	1.0 (.26)
		Cannabis	3.7 (.73)	2.9 (.80)	1.0 (.79)	3.1 (.57)	1.8 (.76)	1.9 (.58)
		Opioids	3.3 (.39)	2.7 (.41)	1.7 (.39)	0.6 (.31)	0.9 (.39)	0.8 (.33)
	Usual Care	Solvents	2.8 (.35)	2.6 (.36)	1.7 (.34)	0.7 (.27)	0.6 (.34)	1.4 (.29)
		Cannabis	1.8 (.73)	1.7 (.74)	0.5 (.70)	0.8 (.56)	2.8 (.71)	1.1 (.62)
		Opioids	2.2 (.42)	1.9 (.43)	0.9 (.41)	0.4 (.32)	1.6 (.42)	1.6 (.35)
QOL Mental Health	CHILD	Solvents	14.4 (.37)	11.7 (.41)	10.0 (.34)	8.8 (.44)	10.6 (.50)	10.4 (.46)
		Cannabis	16.1 (.85)	13.1 (1.01)	11.0 (.87)	12.8 (1.03)	11.9 (1.16)	14.4 (1.02)
		Opioids	15.5 (.46)	12.3 (.51)	10.6 (.43)	8.7 (.56)	10.1 (.60)	10.2 (.57)
	Usual Care	Solvents	14.0 (.40)	11.4 (.45)	10.0 (.37)	9.1 (.48)	10.2 (.53)	10.8 (.51)
		Cannabis	16.3 (.85)	11.9 (.93)	9.2 (.77)	9.0 (1.00)	13.3 (1.10)	13.8 (1.08)
		Opioids	15.1 (.49)	12.8 (.54)	9.8 (.45)	8.6 (.57)	12.0 (.65)	13.6 (.62)
QOL Friends	CHILD	Solvents	13.9 (.39)	12.5 (.35)	12.0 (.34)	11.1 (.40)	12.0 (.46)	12.0 (.40)
		Cannabis	13.7 (.90)	13.2 (.88)	10.9 (.86)	14.3 (.93)	13.2 (1.07)	14.6 (.89)
		Opioids	14.6 (.48)	12.8 (.45)	11.8 (.43)	10.8 (.51)	11.5 (.55)	11.6 (.49)
	Usual Care	Solvents	13.4 (.43)	12.4 (.39)	11.6 (.37)	10.8 (.44)	11.5 (.48)	12.1 (.44)
		Cannabis	15.3 (.90)	12.1 (.81)	11.2 (.77)	10.4 (.91)	14.6 (1.01)	14.9 (.94)
		Opioids	14.3 (.51)	13.5 (.47)	11.6 (.45)	10.8 (.52)	13.1 (.59)	14.1 (.53)
QOL Home	CHILD	Solvents	7.9 (.23)	6.8 (.23)	6.5 (.22)	5.8 (.25)	6.4 (.27)	6.2 (.25)
		Cannabis	7.8 (.52)	7.0 (.56)	6.2 (.56)	7.4 (.58)	7.4 (.64)	8.4 (.56)
		Opioids	8.2 (.28)	7.2 (.29)	6.6 (.28)	5.8 (.32)	6.2 (.33)	6.5 (.31)
	Usual Care	Solvents	8.2 (.25)	6.8 (.25)	6.4 (.24)	5.8 (.27)	6.3 (.29)	6.6 (.28)
		Cannabis	8.9 (.52)	6.8 (.52)	6.1 (.49)	5.6 (.57)	7.5 (.60)	7.8 (.59)
		Opioids	8.1 (.30)	6.8 (.30)	5.7 (.29)	5.4 (.33)	7.3 (.35)	7.6 (.34)
QOL Total Score	CHILD	Solvents	50.4 (1.23)	43.5 (1.19)	39.1 (1.00)	35.5 (1.40)	40.2 (1.58)	40.2 (1.43)
		Cannabis	54.7 (2.80)	47.5 (2.96)	41.4 (2.55)	48.3 (3.29)	44.4 (3.69)	53.8 (3.18)
		Opioids	53.7 (1.52)	45.6 (1.50)	40.4 (1.27)	34.9 (1.80)	38.5 (1.90)	40.3 (1.77)
	Usual Care	Solvents	49.7 (1.33)	43.5 (1.32)	39.5 (1.09)	34.7 (1.54)	39.0 (1.67)	41.6 (1.58)
		Cannabis	58.7 (2.80)	45.9 (2.72)	37.8 (2.28)	35.9 (3.21)	50.6 (3.49)	53.1 (3.35)
		Opioids	53.7 (1.60)	45.5 (1.57)	38.8 (1.33)	34.3 (1.83)	45.6 (2.05)	49.9 (1.92)

Notes: M (SE), least squares means and standard errors. SCARED = Screen for Child Anxiety Related Emotional Disorders. QOL = Child Addiction Treatment Quality of Life Scale. SDQ total score excludes the Prosocial subscale.

Completion within each arm were significant for the great majority of the substance-by-arm cells (12/12 for Solvents, 11/12 for Opioids, 9/12 for Cannabis), indicating that improvement from baseline to treatment completion was broad across arms and substance groups; contrasts of Treatment Completion vs. 12-month follow-up

were more variable, generally non-significant for need for medical treatment and QOL Physical Health regardless of arm or substance, but significant for the opioid group in the CHILD arm across the remaining four outcomes.

Twelve-month urine drug screen (UDS) results

Among children with a valid result, UDS positivity at 12 months was consistently lower in the CHILD arm than the Usual Care arm across every substance tested. Opiate (3.0% vs. 15.6%, Fisher's $p = .016$), amphetamine (0.0% vs. 12.7%, $p = .003$), and methamphetamine (0.0% vs. 7.9%, $p = .026$) were each significantly lower in the CHILD arm, cannabis showed a similar but non-significant pattern (12.1% vs. 23.1%, $p = .113$), and alcohol did not differ between arms (2.4% vs. 2.2%, $p = 1.00$). A composite indicator of any substance-positive UDS result at 12 months was positive for 16.7% of the CHILD arm compared with 36.9% of the Usual Care arm ($p = .011$). Solvents could not be evaluated in this comparison because a valid urine solvent assay was not available. The marked reduction in use of opiates, amphetamine, and methamphetamine is particularly meaningful given the serious toxic effects these substances have on children's developing brains and bodies.

Discussion

This study provides the first randomized evaluation of a structured intervention for children ages 7–12 with substance use problems entering residential treatment. Across a sample of 344 children, a sample characterized by very high rates of lifetime inhalant and cannabis use, first use often before age 10, and substantial unmet need for medical, educational, and family/social support at treatment entry, substance use, post-traumatic stress, anxiety, and quality-of-life outcomes improved from baseline through treatment completion in both study arms, consistent with the intensive, multi-disciplinary residential milieu shared by CHILD and Usual Care. Improvement in several outcomes was not fully sustained through 12-month follow-up, with partial rebound most evident for children whose primary substance was cannabis or solvents.

Where CHILD + Usual Care and Usual Care alone diverged, the pattern favored CHILD: for outcomes with significant Treatment Arm $\times$ Time or three-way interactions, the CHILD arm more consistently reached comparable or better levels of functioning at 12-month follow-up, most clearly for quality of life in the mental health, friends, and home domains, and for clinician-rated need for medical treatment. These findings are broadly consistent with prior evidence from the original CAT/CHILD intervention model in Afghanistan, where significant improvement was likewise observed across trauma, behavioral, and psychiatric symptom domains from treatment entry to completion [9], and suggest that a developmentally tailored, culturally adapted life-skills and motivational-counseling intervention can add measurable benefit to an already resource-intensive residential program for children with substance use problems. The present findings also converge with a 2024 community-based study of children in street circumstances in Delhi, which found that lack of family psychosocial support, family and peer substance use, and lack of basic amenities were independently associated with substance use in this population [6]. These are consistent with the

risk domains that CHILD directly targets through its family/social-counseling content, communication and relationship-building modules, and personal-safety curriculum, offering one explanation for why its incremental benefit was concentrated in the family/home and psychosocial quality-of-life domains.

The 12-month urine drug screen findings provide an important, objective corroboration of this self- and clinician-reported pattern. Unlike the CARRE past-30-day use items, which are subject to recall and social-desirability bias, UDS results are a biological, non-self-report measure of recent use, and they told the same story: children in the CHILD arm were significantly less likely than children in the Usual Care arm to test positive for opiates, amphetamine, or methamphetamine at 12 months, and were less than half as likely to test positive for any substance (16.7% vs. 36.9%). That this objective measure aligned with the subjective quality-of-life and need-for-services findings, rather than diverging from them, as self-report and biological measures sometimes do, strengthens confidence that CHILD's benefit at 12 months reflects a real difference in children's post-treatment functioning rather than an artifact of differential reporting between arms. The absence of a group difference in cannabis (though numerically favoring CHILD) and alcohol positivity, set against the clear opiate and stimulant findings, suggests CHILD's protective effect at 12 months may be strongest for the substances associated with the greatest medical severity in this cohort, though the modest cell sizes for any single substance warrant caution in over-interpreting which specific substances differ.

The finding that children whose primary substance was opioids changed the least during treatment, and showed the fewest significant 12-month gains regardless of study arm, is notable given the very limited pharmacotherapy options for pre-adolescent children with opioid use and warrants dedicated attention in future intervention refinement, including closer integration of medical and psychosocial care for this subgroup. The convergence of substance groups by 12-month follow-up for outcomes with a Primary Substance $\times$ Time interaction likewise suggests that early differences in severity across substance groups narrow over the course of treatment and follow-up, but that continued support after discharge may be needed to sustain early gains, particularly for children using cannabis and solvents. This quantitative pattern of partial rebound after treatment completion is consistent with a companion qualitative study conducted with children, parents/caregivers, and staff at the same two SPYM centers, in which parents, despite reporting clear behavioral improvements after treatment, voiced ongoing concern about their child's return to substance use, peer influence after discharge, and a lack of community, educational, and vocational support once children returned home, and staff independently called for simplified, more visual curriculum materials to strengthen engagement [10]. Together, the quantitative rebound observed here and these qualitative caregiver and staff perspectives point in the same direction: sustaining CHILD's gains

likely requires strengthening aftercare, family-level support, and community reintegration components beyond the residential treatment episode itself.

Several limitations should be considered when interpreting these findings. Girls and children ages 7–9 were a small minority of the enrolled sample (12% and 7%, respectively), reflecting the sex and age distribution of children entering treatment for substance use in Delhi during the recruitment period; the resulting statistical imbalance, compounded by imbalance across primary substance groups and differential attrition at follow-up, made it infeasible to retain Sex and Age Group in the primary outcome models, so this study cannot speak to whether CHILD's benefit differs by sex or age. All measures were interviewer-administered because of low literacy in this population, which reduces the risk of comprehension-related missing data but introduces the possibility of social-desirability or interviewer effects, particularly for sensitive items such as substance use and sexual history. The study was conducted at a single organization (SPYM) in New Delhi, and although SPYM operates the only two dedicated residential substance use treatment centers of their kind for children in the city, findings may not generalize to other regions of India or to children in outpatient or non-residential settings. Consistent with the ethical rationale described in the study protocol, no no-treatment or usual-services-only-outside-residential-care comparison arm was feasible, so this trial cannot determine how much of the overall improvement seen in both arms reflects the residential milieu itself as opposed to either active treatment component. Finally, some outcomes, particularly those reflecting a floor effect in past-30-day substance use during and immediately after residential treatment, required a restricted (Baseline vs. 12-month) statistical comparison, limiting the ability to characterize the trajectory of change during treatment for those measures.

Clinical significance and implications for the United States

Beyond its findings in the Indian context, this trial has direct clinical relevance to the United States, where structured treatment for children with substance use problems is similarly scarce. Substance use in the U.S. also begins well before adulthood: national surveillance of adolescents assessed for substance use disorder treatment shows that use is frequently driven by stress, mood regulation, and peer context rather than adult-pattern dependence, motivations closely paralleling the trauma- and peer-driven use patterns described among children in street circumstances in this trial and underscoring the relevance of an emotion-regulation- and life-skills-based model like CHILD to younger U.S. populations [19]. Nationally, only 19.3% of people who needed substance use treatment in 2024 received it, and among adolescents 12–17 with a past-year substance use disorder, the great majority did not receive treatment and did not perceive a need for it, pointing to gaps in both access and engagement that a developmentally tailored, non-confrontational intervention may help address [20]. Access is particularly constrained for the youngest and

highest-severity patients: a national “secret shopper” survey of U.S. residential addiction treatment facilities serving adolescents found that only about half had an immediately available bed, average wait times approached a month among facilities with waitlists, and average daily costs exceeded \$850, with many facilities requiring payment up front. These barriers are the ones that fall hardest on the low-resource, unstably housed families for whom a scalable, non-pharmacological, group-based model would offer the greatest benefit [21].

Several features of CHILD map onto documented needs in U.S. child and adolescent treatment settings. First, CHILD was designed for younger children (7–12 years) than most existing U.S. adolescent-focused programs and interventions, addressing a developmental range for which few structured, manualized psychosocial protocols exist; this is directly relevant given that most U.S. adults with SUD report an onset of substance use in adolescence or earlier, making early, developmentally appropriate intervention a plausible upstream prevention target [20]. Second, CHILD's trauma-informed, attachment-based, and non-confrontational approach is consistent with SAMHSA's emphasis on trauma-informed care for youth experiencing homelessness, housing instability, or out-of-home placement, populations in the United States (runaway and homeless youth, youth in foster care or juvenile-legal system custody) that share important structural and clinical parallels with street-connected children in Delhi, including high rates of trauma exposure, family disruption, and limited access to family-based treatment engagement. Third, because CHILD is delivered as a structured, trainable group curriculum layered onto an existing residential milieu rather than requiring specialized medical staff or medication, it may offer a lower-cost, more scalable model for U.S. residential and group-home settings serving justice-involved, foster-care, or homeless/runaway youth with substance use problems, where the workforce and reimbursement barriers to delivering individual evidence-based psychotherapy are substantial. Adaptation and pilot testing of CHILD (or its core life-skills components) for U.S. settings serving pre-adolescent and early-adolescent children with substance use problems, including juvenile-legal system diversion programs, residential treatment for justice-involved youth, and shelter- or foster-care-based behavioral health programs. As such CHILD implementation represents a concrete next step suggested by these findings, with the caveat that direct transportability would need to be evaluated given differences in substance use patterns, legal status of substances, family structures, and health system context between the two settings.

Notwithstanding these limitations, this trial demonstrates that a randomized evaluation of psychosocial treatment is feasible in this vulnerable, historically under-studied population, and provides preliminary evidence that a culturally adapted, developmentally tailored intervention such as CHILD can improve outcomes for children in residential substance use treatment in India above and

beyond an already comprehensive usual care model. Given the scale of child substance use in India and the near-total absence of evaluated treatment options for this age group, a gap mirrored, for younger children, in the United States, replication in additional sites, extension to outpatient and community-based settings, and continued follow-up beyond 12 months are important next steps.

Acknowledgements

The authors thank Kevin E. O'Grady for statistical and editorial support and Brian Morales for knowledge consultation and partnership guidance. The authors also thank the SPYM staff and medical consultants for their hard work on this project. We also thank the children and families who gave their time and generously shared their experiences and knowledge with us.

Funding

Financial support for this project was provided by the National Institute on Drug Abuse (NIDA) R01 042822, The Bureau of International Narcotic and Law Enforcement Affairs (INL), US Dept of State, through Cooperative Agreement #GLO K42 with the Colombo Plan until a stop work order concluded funding on 1/28/25. The funding agencies had no involvement in study design, data collection, analysis, interpretation, or manuscript preparation. No contractual constraints on publishing have been imposed by NIDA or INL. The authors alone are responsible for the content and writing of this article. No honorarium, grant, or other form of payment was given to any author or any other individual to produce the manuscript.

References

1. UNICEF India (2021) Study of Children in Street Situations in India. United Nations Children's Fund, New Delhi.
2. Pathak KB, Feeney G, Luther NY (1998) Accelerating India's fertility decline: the role of temporary contraceptive methods. *Natl Fam Health Surv Bull* (9): 1-4.
3. Measham AR, Heaver RA (1996) India's Family Welfare Program: Moving to a Reproductive and Child Health Approach. World Bank, Washington, DC.
4. Jargin S, Robertson S (2025) Medical, social and environmental aspects of overpopulation. *J Environ Stud* 11: 7.
5. Bhaskaran R, Mehta B (2011) *Surviving the Streets: A Census of Street Children in Delhi*. Save the Children and Institute for Human Development, New Delhi.
6. Dhawan A, Mishra AK, Chatterjee B, Bhatia G, Ambekar A, et al. (2024) Characteristics associated with substance use and non-use among street children in Delhi, India: a community-based cross-sectional epidemiological study. *Indian J Psychol Med* 46: 46-54.
7. Carroll S, Jones HE, Middlesteadt-Ellerson R, Browne T, Morales B, et al. (2023) Patterns of substance use among children ages 7-12 entering treatment for drug problems in India. *J Addict Addictv Disord* 10: 146.
8. Nebhinani N, Singh P, Mamta (2022) substance use disorders in children and adolescents. *J Indian Assoc Child Adolesc Ment Health* 18: 128-136.
9. Momand AS, Mattfeld E, Morales B, Ul Haq M, Browne T, O'Grady KE, Jones HE (2017) Implementation and evaluation of an intervention for children in Afghanistan at risk for substance use or actively using psychoactive substances. *Int J Pediatr* 2017: 2382951.
10. Jones HE, Middlesteadt-Ellerson R, Carroll S, Micklewright S, Naqati BA, et al. (2025) Implementation of the Child Intervention for Living Drug-free (CHILD): a qualitative study of children, parents and treatment staff in New Delhi. *Med Res Arch* 13. DOI:
11. Jones HE, Momand AS, Browne T, DeLisle A, Morales B, et al. (2023) Psychometric properties of the CHILD CARRE measure: a pilot study for the CHILD Intervention for Living Drug-free Comprehensive Assessment of Risk, Resilience, and Experience. *Child Health Res* 10: 1.
12. Jones HE, Momand AS, Morales B, Browne T, Poliansky N, et al. (2020) The CHILD Intervention for Living Drug-Free Comprehensive Assessment of Risk, Resilience, and Experience (CHILD CARRE) measure: initial findings. *J Child Adol Subst Abuse* 28: 411-425.
13. Goodman R (2001) Psychometric properties of the strengths and difficulties questionnaire. *J Am Acad Child Adolesc Psychiatry* 40: 1337-1345.
14. Goodman A, Goodman R (2009) Strengths and difficulties questionnaire as a dimensional measure of child mental health. *J Am Acad Child Adolesc Psychiatry* 48: 400-403.
15. Perrin S, Meiser-Stedman R, Smith P (2005) The Children's Revised Impact of Event Scale (CRIES): validity as a screening instrument for PTSD. *Behav Cogn Psychother* 33: 487-498.
16. Monga S, Birmaher B, Chiappetta L, Brent D, Kaufman J, et al. (2000) Screen for Child Anxiety-Related Emotional Disorders (SCARED): convergent and divergent validity. *Depress Anxiety* 12: 85-91.
17. Harding TW, de Arango MV, Baltazar J, Climent CE, Ibrahim HH, et al. (1980) Mental disorders in primary health care: a study of their frequency and diagnosis in four developing countries. *Psychol Med* 10: 231-241.
18. Kirk R (2013) *Experimental Design: Procedures for the Behavioral Sciences*. (4thedn), Sage, Thousand Oaks, CA.
19. Connolly S, Govoni TD, Jiang X, Terranella A, Guy GP, et al. (2024) Characteristics of alcohol, marijuana, and other drug use among persons aged 13-18 years being assessed for substance use disorder treatment - United States, 2014-2022. *MMWR Morb Mortal Wkly Rep* 73: 93-98.
20. Substance Abuse and Mental Health Services Administration (2025) Key Substance Use and Mental Health Indicators in the United States: Results from the 2024 National Survey on Drug Use and Health. SAMHSA, Rockville, MD.
21. King CA, Beetham T, Smith N, Englander H, Button D, et al. (2024) Adolescent residential addiction treatment in the US: uneven access, waitlists, and high costs. *Health Aff (Millwood)* 43: 64-71.