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STATEGIES FOR REDUCING SUBSTANCE ABUSE AMONG STREET CHILDREN: A SYSTEMATIC REVIEW

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Abstract

Substance abuse is a significant issue among adolescents and street children globally, influenced by factors like gender, age, and social networks. Despite extensive studies on substance abuse in schools, limited research exists on street children. This review aims to evaluate strategies for reducing substance abuse among street children, focusing on interventions that impact their physical, mental, and social well-being. Method this systematic review refers to the PRISMA 2020 guidelines and is available in PROSPERO. Literature searches were conducted in four international databases (Scopus, Web of Science, PubMed, and ProQuest), yielding 8,774 records. After duplicate removal and screening, most records were excluded due to being out of scope, not meeting the publication-year window (2016–2025), or lacking accessible full text; full-text exclusions were primarily driven by ineligible populations and insufficient intervention reporting. Ultimately, eight studies met the eligibility criteria and were included in the synthesis. The assessment of the quality of the study used the JBI critical assessment tool and used a narrative approach. Results this review examined eight studies assessing the effectiveness of interventions targeting substance abuse among vulnerable adolescents. Most of the studies employed experimental designs and focused on homeless or street-involved youth aged 10 to 19, who exhibited significant psychosocial vulnerabilities. Patterns of substance use commonly included excessive alcohol and cannabis consumption, as well as inhalant use. Interventions involving motivational interviewing (MI), psychological reinforcement, and strength-based approaches were found to be effective in reducing risky behaviors and enhancing readiness for change. Discussion motivational interviewing (MI) has shown notable effectiveness, particularly when delivered face-to-face and over short durations. This approach enhances intrinsic motivation and reduces substance use, even among adolescents experiencing trauma and severe psychosocial challenges. Inhalant abuse remains an underexplored area, despite its common occurrence among street-involved youth in low- and middle-income countries. Effective intervention requires the involvement of families and communities, as well as a non-judgmental, empathetic approach during implementation. Conclusion combining motivational interviewing with community-based psychosocial support has proven effective in addressing substance use among high-risk adolescents. To ensure long-term impact and sustainability, such interventions must be designed holistically and adapted to fit local cultural contexts and structural realities.

Keywords: *Adolescent , Strategy, Street Children, Substance Abuse, Substance Abuse Strategies*

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INTRODUCTION

Substance abuse remains a serious issue related to adolescents and street children. This phenomenon is observed globally, ranging from middle-lower-income countries to middle-upper-income countries, where individuals often fall into addiction (Acharya *et al.*, 2022; Jaguga *et al.*, 2022). Substance abuse among street children is influenced by various factors, including gender, age, duration of homelessness, and social relationships such as peer influence. Research shows that males are more likely to use alcohol, marijuana, cocaine, and inhalants compared to females, all of which can induce hallucinations in users (Ayenew, Kabeta and Woldemichael, 2020; Nebhinani, Singh and Mamta, 2022; Karaca *et al.*, 2024).

According to the World Health Organization (WHO), alcohol abuse alone results in 3.3 million deaths annually. Amphetamine-type stimulants (ATS), such as ecstasy and methamphetamine, now rank as the second most commonly abused drugs in Africa. Other substances used by children and adolescents surveyed in Sierra Leone include benzodiazepines like diazepam, chlorpromazine, and various inhalants, while 3.7% of them use injectable drugs (WHO, 2023). Previous studies have indicated that out of 312 street children, 30% engaged in substance abuse. This is not solely attributed to the children themselves but also influenced by family members or close friends they encountered on the streets (Ayenew, Kabeta and Woldemichael, 2020). Additionally, research from Nigeria reported substance abuse prevalence rates as follows: Tobacco 13.33%, Marijuana 5.72%, Cocaine 0.17%, Amphetamines 0.85%, Inhalants 0.34%, Sedatives 1.45%, Hallucinogens 0.34%, and Opioids 4.02% (Osadolor, 2022).

Street children are defined as any boy or girl who makes the streets their home and/or source of livelihood and does not receive adequate protection, supervision, or guidance from responsible adults (Ayenew, Kabeta and Woldemichael, 2020). The constant exposure to the streets and the lifestyle associated with it makes street children vulnerable to the use of psychoactive substances. Drug use among street children often begins with alcohol, tobacco, and inhalants, which are legal and easily accessible in most countries (Asante and Nefale, 2021). Substance abuse refers to the risky or harmful use of psychoactive substances. The main impact of this behavior on society is the health consequences experienced by its members. Additionally, substance abuse places a significant economic burden on individuals, families, and society (WHO, 2023).

Children's rights have become a major focus for developing countries, especially after the adoption of the UN Convention on the Rights of the Child in 1990. Street children in various major cities worldwide are now receiving significant attention to ensure they have a better life and a brighter future. Adolescents, particularly street children, constitute a relatively large but difficult-to-quantify population, as they often move from place to place (Sah *et al.*, 2020). Adolescents and street children with gaps in their well-being are at risk of substance abuse. Once involved in substance abuse, they may experience various effects such as dizziness, euphoria, and hallucinations, although these effects are temporary (Merritt and Snyder, 2019; Acharya, Shrestha and Paudel, 2022; WHO, 2023; Hanif, Kliewer and Cyrus, 2025). Additionally, street childrend's quality of life, as perceived by street-involved children within the cultural context and value systems of their environment, can be disrupted (Jannah *et al.*, 2023) and various health consequences and behavioral changes in adolescents and street children are strongly associated with substance abuse (Nebhinani, Singh and Mamta, 2022).

Although interventions to reduce substance abuse among adolescents have become a common issue, most of the previous research has primarily focused on school, college, and university students. Research on street children and their substance abuse habits remains limited. Therefore, it is important to understand what preventive interventions have been implemented for street children, the approaches used, and how effective they have been. Therefore, the aim of this review is to evaluate various strategies for reducing substance abuse among street children. Consequently, this review focuses on efforts that can influence the physical, mental, and social aspects of street children's lives, particularly those related to reducing dependence on illicit substances.

METHOD

The study employed a systematic review design. This study conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines for systematic reviews.

Strategy *Research*

The literature search was conducted on February, 2025. Search using 4 databases namely: Scopus, web of science, Pubmed, and Proquest. The database was searched from 2016 to 2025. Searches using medicalsubject headings include: ("substance abuse" OR "drug addiction" OR "Alcohol" OR "glue sniffing" OR "inhalant abuse") AND ("prevention" OR "intervention" OR "mitigation" OR "reduction") AND ("street children" OR "homeless youth" OR "disadvantaged children" OR "at-risk youth") AND ("strategies" OR "approaches" OR "programs" OR "methods"). The search process data is contained in attachment. The detailed search strategy is pre sented in Tabel 1.

Tabel 1. Search Strategy

Database	Search Strategy	Result
Scopus	("substance abuse" OR "drug addiction" OR "Alcohol" OR "glue sniffing" OR "inhalant abuse") AND ("prevention" OR "intervention" OR "mitigation" OR "reduction") AND ("street children" OR "homeless youth" OR "disadvantaged children" OR "at-risk youth") AND ("strategies" OR "approaches" OR "programs" OR "methods")	300 article
PubMed	("substance abuse" OR "drug addiction" OR "Alcohol" OR "glue sniffing" OR "inhalant abuse") AND ("prevention" OR "intervention" OR "mitigation" OR "reduction") AND ("street children" OR "homeless youth" OR "disadvantaged children" OR "at-risk youth") AND ("strategies" OR "approaches" OR "programs" OR "methods")	152 article
Web of Science	(((ALL=(("substance abuse" OR "drug addiction" OR "Alcohol" OR "glue sniffing" OR "inhalant abuse"))) AND ALL=(("prevention" OR "intervention" OR "mitigation" OR "reduction"))) AND ALL=(("street children" OR "homeless youth" OR "disadvantaged children" OR "at-risk youth"))) AND ALL=(("strategies" OR "approaches" OR "programs" OR "methods"))	164 article
ProQuest	("substance abuse" OR "drug addiction" OR "Alcohol" OR "glue sniffing" OR "inhalant abuse") AND ("prevention" OR "intervention" OR "mitigation" OR "reduction") AND ("street children" OR "homeless youth" OR "disadvantaged children" OR "at-risk youth") AND ("strategies" OR "approaches" OR "programs" OR "methods")	8158 article

Tabel 2: Inclusion and exclusion criteria

Criterion	Inclusion	Exclusion
Population	Adolescents aged 10–19 years with current or have a history of street involvement	Less than 10 or more than 19 years old; adolescents who have never experienced street living
Intervention	strategies for reduce substance abuse	do not discuss or evaluate strategies/ interventions to reduce substance abuse
Comparison	Street children who did not receive any intervention to reduce substance abuse.	No comparator
Outcome	Levels of substance abuse (alcohol, drugs, or inhalants)	Studies that do not place substance abuse as a dependent variable
Study design	randomized controlled trials, true experimental, or experimental designs	Qualitative studies, reviews, opinions, editorials, non-experimental designs, or inaccessible articles

Eligibility criteria Inclusion and exclusion

The PICOS framework (Population, Intervention/Issues of Interest, Comparison, Outcomes, and Study Design) was utilized to determine the eligibility of studies. Articles included in this review met the following inclusion criteria: quantitative studies that examine strategies implemented to reduce substance abuse among street-involved youth, using either a randomized controlled trial, true experimental, or experimental design; Involving children or adolescents living on the streets aged 10 to 19 years.; published between 2016 and 2025; investigating the strategies as independent variables and levels of substance abuse as dependent variables. The term "substance abuse" in this context includes the use of alcohol, drugs, or inhalants (Hanif, Kliewer and Cyrus, 2025). Studies were excluded if they were qualitative in nature, literature reviews, editorials, or opinion pieces; lacked full-text availability; involved adolescent populations who had never experienced street living; did not employ an experimental or randomized study design; or were otherwise inaccessible.

Study selection and data extraction

Table 3. Summary of study quality Table. Joanna-Briggs Institute critical appraisal for Quasi-Experimental Studies

Author	JBI Checklist for Quasi-Experimental Studies								
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
(Noh, 2018)	yes	yes	yes	yes	yes	No	yes	yes	yes
(Rew *et al.*, 2017)	yes	No	yes	yes	yes	yes	yes	yes	yes
(Passetti *et al.*, 2023)	yes	yes	yes	yes	yes	yes	No	yes	yes

Table 4. Summary of study quality Table. Joanna-Briggs Institute critical appraisal for randomized controlled trials Studies

Author	JBI Checklist for Randomized Controlled Trials Studies												
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13
(Tucker *et al.*, 2023)	yes	no	yes	Yes	Yes	yes	yes	yes	yes	yes	yes	yes	yes
(Ferguson, 2018)	yes	yes	yes	Yes	no	yes	yes	yes	yes	yes	yes	yes	yes

(Lakshmana, 2016)	yes	yes	yes	no	Yes	yes	yes	yes	yes	yes	yes	yes	yes
(Krabbenborg *et al.*, 2017)	yes	yes	yes	No	yes	yes	yes	yes	yes	yes	yes	yes	yes
(Joan S. Tucker *et al.*, 2017)	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	yes

The search was conducted independently by the authors across 4 databases. Authors initially screened the articles by reviewing the abstracts to select those deemed relevant to the PICOS research objectives. The complete manuscript of the articles meeting the criteria was then evaluated for feasibility using the inclusion and exclusion criteria. After all articles were downloaded, the authors checked for duplicates using Mendeley. Any differences found in each article were re-screened and analyzed independently by the authors. The authors independently extracted data following standard guidelines manually, including the article title, author's name, year of publication, location, type of research, purpose, research design, samples, variables, interventions used, comparison of interventions with their comparators, and the outcomes obtained along with the comparison results. The database search identified 8,774 records. After removing duplicates (n = 825) and excluding records outside the 2016–2025 publication window (n = 5,686), 2,236 records were screened by title and abstract. Of these, 1,778 records were excluded because they were out of scope (n = 981) or the full text was not accessible (n = 797). Full texts were sought for retrieval for 452 reports; 417 reports could not be retrieved, leaving 35 full-text articles assessed for eligibility. At the full-text stage, 27 articles were excluded due to ineligible population (n = 15) or insufficient reporting of the intervention (n = 12). Consequently, eight studies were included in the final review.

Quality risk assessment study to assess risk bias

The authors independently conducted a critical assessment of 8 selected articles. The Joanna Briggs Institute (JBI) was used as a critical assessment tool applied according to the design type of each article. A critical assessment was carried out to examine the level of confidence and potential risk of bias in the studies included in this systematic review. The assessment instruments developed by the Joanna Briggs Institute (JBI) are widely recognized in the field of evidence synthesis for their comprehensive approach and evaluate the risk of bias based on the design, implementation, and analysis of the research. The JBI tool is designed for various study designs, including randomized controlled trials, true experimental, or experimental designs, and is considered appropriate for systematically reviewing the strategies used to reduce substance abuse among street children.

Data synthensis

In this study, a narrative synthesis approach was used (Hinchcliff *et al.*, 2012). We synthesized findings using a structured narrative synthesis approach. Studies were first grouped by intervention modality and delivery context (e.g., individual vs. group-based programs; community/shelter-linked vs. clinic-based delivery) and then organized by outcome domain (substance use frequency/quantity, substance-related consequences, readiness/motivation, and psychosocial outcomes). For each study, we extracted the direction and magnitude of effects where available (e.g., reported effect sizes, adjusted mean differences, risk/odds ratios, or p-values) and summarized results using a transparent "direction-of-effect" framework across outcomes. Meta-analysis was not undertaken because the included studies varied substantially in study design (including randomized, cluster-randomized, and quasi-experimental designs), intervention components, outcome definitions, and follow-up periods, limiting clinical and methodological comparability. Any disagreements during synthesis were resolved through discussion among reviewers.

Reporting

The authors conducted a systematic review by referring to the criteria of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) to enhance transparency and quality in the process and conclusions of the article review. A comprehensive search method was applied to identify relevant research on strategies used to reduce substance abuse among street children. Inclusion and exclusion criteria were applied in the selection process. Quality assessment was carried out, and the findings were summarized using a narrative synthesis approach. Findings were summarized using a structured narrative synthesis. A meta-analysis was not performed due to substantial heterogeneity in study designs, intervention components, and outcome measures, which precluded meaningful statistical pooling. As shown in Figure 1, the substantial reduction from the initial yield to the final included studies reflects the review's restrictive eligibility criteria and pragmatic access constraints. Major attrition occurred during the publication-year filtering and title/abstract screening, where many records were excluded for being out of scope or lacking accessible full text. Additional exclusions at full-text assessment were largely attributable to mismatches with the target population (street-involved adolescents) and insufficient intervention reporting, resulting in eight eligible intervention studies for synthesis.

RESULT AND DISCUSSION

Study Characteristics

The eight studies included in this review were conducted across various contexts and countries, such as the United States, South Korea, the Netherlands, and India. Most of the studies employed either randomized controlled trials (Joan S. Tucker *et al.*, 2017; Ferguson, 2018; Tucker *et al.*, 2023) or cluster-randomized designs (Krabbenborg *et al.*, 2017; Passetti *et al.*, 2023), while the rest used quasi-experimental or quasi-experimental pre-post research design (Lakshmana, 2016; Rew *et al.*, 2017; Noh, 2018). The study durations ranged from 4 weeks to 12 months, and sample sizes varied between 32 to 276 participants. Settings for the interventions included drop-in centers, youth shelters, group homes, and transitional housing, targeting adolescents and young adults with histories of homelessness, street involvement, or psychological vulnerability. Most studies aimed to evaluate interventions targeting both substance abuse and co-occurring behavioral or mental health risks such as sexual risk behavior, anxiety, or low self-efficacy.

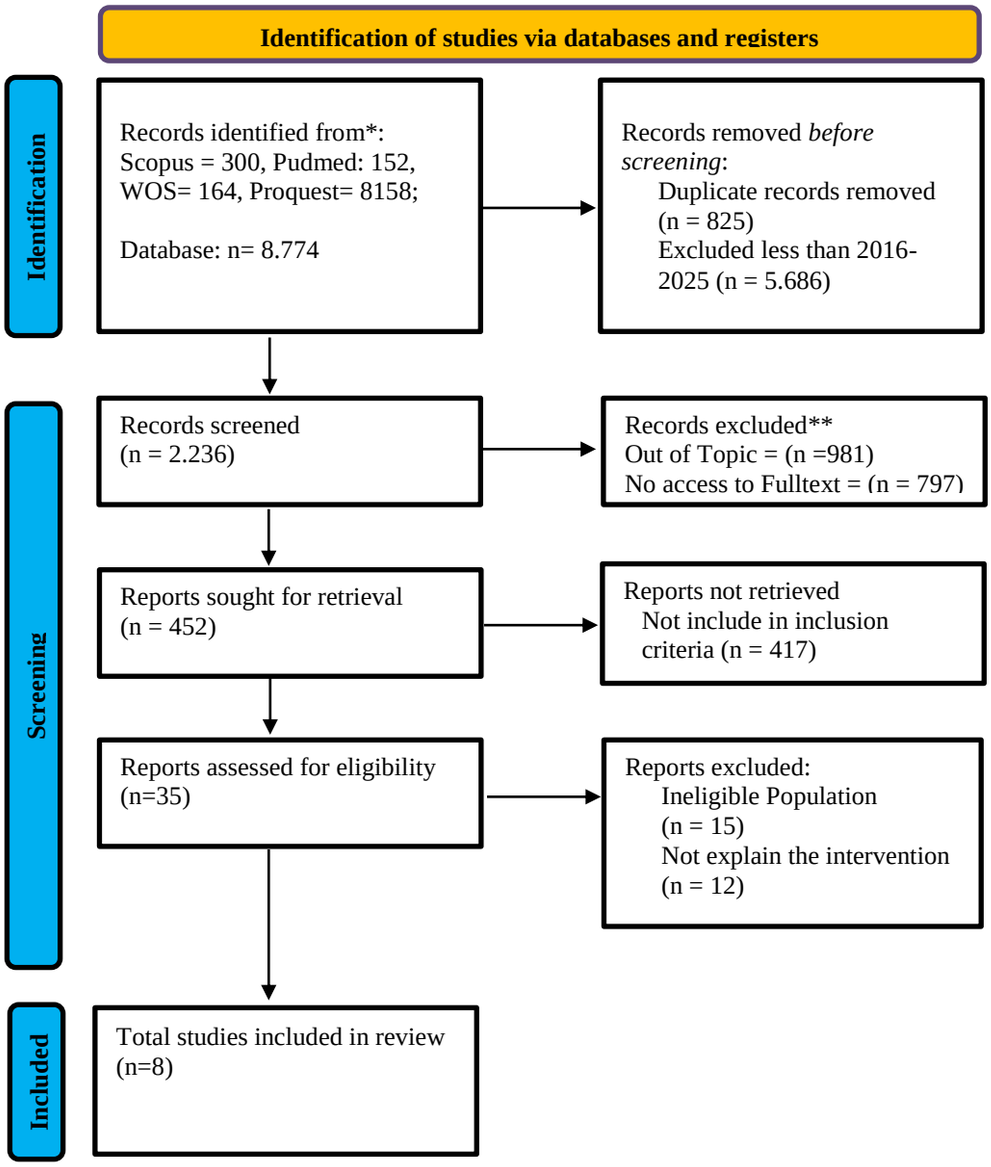

Figure 1. PRISMA Flow Diagram. Adaptation of Haddaway, N. R., Page, M. J., Pritchard, C. C., & McGuinness, L. A. (2022). PRISMA2020: An R package and Shiny app for producing PRISMA 2020-compliant flow diagrams, with interactivity for optimised digital transparency and Open Synthesis Campbell Systematic Reviews, 18, e1230. https://doi.org/10.1002/cl2.1230

Table 5. Description of the included studies

Author	Location	Study Population	Design	Intervention Method	Instrument
(Rew *et al.*, 2017)	Austin, Texas, USA	80 homeless females	Quasi-eksperimental	Street-based intervention enhancing hope, resilience, self-efficacy, and social connectedness	Hope Scale, CD-RISC, Alcohol Refusal SE, Social Connectedness Scale

(Lakshmana, 2016)	India	60 street-involved adolescents with substance use issues, male and female	Randomized Controlled Trial	Combination of Motivational Interviewing (MI) and Cognitive Behavioral Therapy (CBT)	Readiness to Change Questionnaire, Adolescent Relapse Coping Questionnaire
(Ferguson, 2018)	USA (California)	72 homeless youth with diagnosed mental illness	Randomized Controlled Trial (RCT)	Social Enterprise Intervention (SEI) vs. Individual Placement and Support (IPS)	Psychosocial sclae
(Passetti *et al.*, 2023)	USA (Illinois)	148 homeless adolescents and transition-age youth (TAY)	Cluster analysis + Randomized Controlled Trial (RCT)	Multidisciplinary wrap-around program	Self-report, administrative outcome data
(Noh, 2018)	South Korea	32 runaway girls (16 intervention, 16 control)	Quasi-eksperimental	Resilience enhancement program based on psychosocial protective factors	Resilience scale, Anxiety and Depression Scales, AUDIT
(Joan S. Tucker *et al.*, 2017)	Los Angeles, USA	200 homeless youth	Pilot Cluster Randomized Controlled Trial (RCT)	AWARE for 4 group-based sessions using Motivational Interviewing	Self-report surveys, B-YAACQ, Condom Use Self-Efficacy Scale
(Tucker *et al.*, 2023)	Los Angeles County, USA	276 homeless youth	Cluster Randomized Controlled Trial	AWARE for 4 group-based Motivational Interviewing sessions	B-YAACQ, GAIN-SS, Condom Use Self-Efficacy Scale, motivational rulers
(Krabbenborg *et al.*, 2017)	Netherlands	251 homeless youth in 10 shelters	Cluster Randomized Controlled Trial	Strengths-based intervention (Houvast)	Self-report, interview

To facilitate interpretation of effectiveness across heterogeneous designs and settings, the eight included studies can be organized into four intervention families: (1) motivational interviewing (MI)-based approaches delivered as brief group or individual sessions to reduce alcohol/other drug use and related risk behaviors; (2) psychological strengthening interventions (e.g., psychological capital and resilience enhancement) designed to improve coping resources, self-efficacy, and emotional regulation; (3) strengths-based service models implemented at the shelter or program level to enhance engagement and broader functioning; and (4) structural or vocational supports integrated with clinical services, primarily targeting psychosocial and housing-related outcomes with substance use treated as a comorbidity. This categorization provides an analytic lens for explaining why certain strategies were more likely to succeed or show mixed results in street-involved youth.

Across the included studies, participants consistently presented with overlapping vulnerabilities (housing instability, trauma exposure, disrupted schooling, and co-occurring mental health symptoms). These layered risks are not merely background characteristics; they shape intervention feasibility, engagement, and the likelihood that short-term behavioral gains are maintained over time. Accordingly, the interpretation of "effectiveness" in this review must account for both clinical mechanisms and real-world implementation constraints in street-involved populations.

Characteristics of respondent

The respondents across the studies were predominantly adolescents and young adults aged between 13 to 19 years, with several studies focusing specifically on homeless or runaway youth (Joan S. Tucker *et al.*, 2017; Rew *et al.*, 2017; Ferguson, 2018; Tucker *et al.*, 2023). Gender distribution varied, though many studies included both male and female participants, with a few emphasizing vulnerable subgroups such as homeless girls (Noh, 2018). Participants typically exhibited multiple vulnerabilities, including unstable housing, family disconnection, low educational attainment, trauma exposure, untreated mental illness, and prior substance use. Notably, most samples had a racially and ethnically diverse composition, especially in studies conducted in the U.S., where African American, Hispanic, multiracial, and White youth were represented (Joan S. Tucker *et al.*, 2017; Tucker *et al.*, 2023). These high-risk backgrounds contributed to elevated rates of alcohol use, illicit drug use, and engagement in unsafe sexual practices prior to the interventions.

Patterns of Substance Abuse Violations

Across the eight studies reviewed, participants exhibited a wide range of substance

abuse behaviors, including early initiation, binge drinking, polysubstance use, and inhalant misuse. Alcohol and cannabis were the most commonly reported substances (Joan S. Tucker *et al.*, 2017; Ferguson, 2018; Tucker *et al.*, 2023)., while glue and solvent inhalation were noted in the Indian context (Lakshmana, 2016). Violations included underage use, substance use in prohibited public or institutional spaces, and risky behaviors associated with intoxication such as unprotected sex, aggression, and self-harm (Krabbenborg *et al.*, 2017; Rew *et al.*, 2017; Noh, 2018). These patterns were often compounded by trauma exposure, homelessness, and poor access to mental health care, suggesting that substance misuse among street-involved youth is deeply interwoven with broader psychosocial vulnerabilities (Passetti *et al.*, 2023).

Strategies for reducing substances abuses

The interventions reviewed employed a range of strategies, with *motivational interviewing (MI)* emerging as a dominant approach across multiple studies. The AWARE program, a four-session group-based MI intervention, was tested in two separate trials (Joan S. Tucker *et al.*, 2017; Tucker *et al.*, 2023), demonstrating significant improvements in alcohol use reduction, enhanced use of protective drinking strategies, and reduced condomless sex. Similarly, Lakshmana (2016) implemented a combined MI and cognitive behavioral therapy (CBT) intervention in India, resulting in notable improvements in participants' readiness to change and relapse prevention abilities.

Other innovative approaches included the *Houvast model*, a strengths-based care method evaluated through a cluster-RCT in the Netherlands, which showed improved perceived quality of life and reduced psychological distress among homeless youth (Krabbenborg *et al.*, 2017). Rew (2017) developed an intervention to enhance psychological capital—targeting hope, resilience, and self-efficacy—which led to reduced risk behavior and increased goal orientation in homeless female youths. Likewise, Noh (2018) implemented a resilience enhancement program that significantly reduced anxiety levels and alcohol misuse in female runaway youth in Korea.

Furthermore, Ferguson (2018) investigated the impact of integrated employment and mental health services, revealing that vocational engagement significantly improved non-vocational outcomes, including reductions in substance use. In another cluster-RCT, Passetti (2023) explored service responsiveness through individualized support, identifying critical behavioral predictors that moderated intervention effectiveness.

Discussion

The strategies employed in the reviewed studies, including motivational interviewing (MI) (Lakshmana, 2016; Joan S Tucker *et al.*, 2017; Tucker *et al.*, 2023), psychological empowerment (Rew *et al.*, 2017) and strength-based approaches (Krabbenborg *et al.*, 2017) have shown effectiveness in reducing risk behaviors and enhancing readiness for behavioral change. Across the included studies, interventions tended to show more promising outcomes when they aligned with three conditions that are particularly salient for street-involved youth: (i) a non-judgmental, autonomy-supportive approach that reduces resistance and increases readiness; (ii) concrete skills or psychological resources (e.g., coping, self-regulation, refusal self-efficacy) that translate motivation into behavior; and (iii) delivery models that match the realities of unstable living conditions, such as brief sessions embedded in drop-in or shelter services and linkages to ongoing supports.

First, MI-based interventions appeared well-suited to low-threshold service settings because they directly target ambivalence and strengthen intrinsic motivation without requiring long-term attendance. The AWARE group-based MI trials illustrate this fit: participants reported improvements in alcohol-related outcomes (e.g., reductions in alcohol use and negative drinking consequences, and increased use of protective strategies), while changes in other drug use were more variable over time, suggesting that brief MI may produce clearer gains for alcohol-related behaviors than for broader polysubstance patterns without additional supports or booster contact (Tucker et al., 2017; Tucker et al., 2023). In the Indian RCT combining MI with cognitive-behavioral components, the addition of coping and relapse-prevention skill elements was accompanied by movement from precontemplation to contemplation/action stages and reductions in inhalant use indicators (e.g., fewer days and lower intensity of inhalant use), supporting the notion that motivation enhancement may be strengthened when paired with structured skills training in high-risk contexts (Lakshmana, 2016). Second, psychological strengthening interventions (psychological capital and resilience enhancement) may exert effects through intermediate mechanisms—improving hope, resilience, and self-efficacy—thereby reducing reliance on substances as a coping strategy. For example, the psychological capital intervention reported improvements in hope, resilience, refusal self-efficacy, and social connectedness alongside reductions in substance-related outcomes (Rew et al., 2017). Similarly, a resilience enhancement program focusing on protective factors (self-esteem, self-regulation, relational and problem-solving skills, and goal-setting) showed beneficial effects on anxiety and problem drinking at follow-up among female

runaway youth in shelters (Noh, 2018). Collectively, these findings suggest that interventions addressing emotional regulation and coping resources may be particularly relevant where substance use is intertwined with trauma and distress.

Third, null or mixed findings highlight the importance of implementation and service context. In the cluster-RCT evaluating Houvast, no significant differences emerged between the strengths-based intervention and care-as-usual across measured outcomes, with authors noting that homeless young adults may benefit from service provision in general and that effectiveness may depend on achieving sufficient model fidelity (Krabbenborg et al., 2017). This pattern underscores that when usual services are substantial—or when fidelity is suboptimal—incremental effects of a new model can be difficult to detect, even if participants improve overall. Finally, the wrap-around service study demonstrates that "average" effectiveness can mask meaningful heterogeneity. Passetti et al. (2023) identified distinct response clusters over six months of multidisciplinary care: while two clusters improved across risk behaviors or life functioning domains, one cluster deteriorated and exhibited greater opioid/stimulant involvement. This suggests that a subset of youth may require more intensive, targeted treatment pathways beyond standard wrap-around services (Passetti et al., 2023). Similarly, employment-oriented interventions primarily improved nonvocational outcomes (e.g., self-esteem and housing stability) with substance use treated as a comorbidity rather than the central target, implying that structural supports can strengthen broader functioning but may not be sufficient as a standalone strategy for substance reduction (Ferguson, 2018).

Abohamza (2020) emphasized that MI, when delivered face-to-face, tends to yield greater short-term impact (within three months) compared to remote or media-based delivery, particularly in fostering intrinsic motivation and reducing substance use among vulnerable adolescents. Furthermore, MI has been associated with notable psychological reinforcement and exhibits moderate yet significant outcomes in curbing illicit drug use in adolescents (Li *et al.*, 2016). Delivering motivational interviewing in a contextual and holistic educational format to street-involved children can strengthen their perceived benefits, enhance self-efficacy, and provide the support they need to take more positive actions (Widiharti and Eka Sari, 2022).

These findings suggest that person-centered, empowering approaches are more beneficial than punitive or directive interventions. Regarding participant characteristics, most respondents were homeless or runaway youth, groups highly susceptible to mental health issues, trauma, school dropout, and addictive behaviors. According to Birch (2023) street-involved youth often suffer both physical and psychological distress due to cumulative traumatic experiences. Milburn *et al.*, (2019) further noted that psychological adaptation to street environments may be necessary to prevent severe mental health deterioration. Therefore, sustainable behavioral change must be supported by more than educational interventions; it also requires psychosocial support, family reintegration, and community-based efforts. The substance use violations identified in these studies include excessive consumption of alcohol and cannabis (Joan S. Tucker *et al.*, 2017; Ferguson, 2018; Tucker *et al.*, 2023), substance use in public or institutional settings, and inhalant abuse (e.g., glue, thinner) among street youth (Lakshmana, 2016; Acharya, Shrestha and Paudel, 2022). Although inhalant use is infrequently reported, previous research has shown that such substances are commonly abused by street children due to their low cost and easy accessibility (Merritt and Snyder, 2019; Vázquez, Berríos and Suarez, 2020; Acharya, Shrestha and Paudel, 2022). Inhalant abuse remains a largely overlooked issue, often hidden and underreported in conventional surveys, warranting further research and policy attention. The present review provides valuable direction for community nursing practice and youth health policymaking. Interventions such as MI and psychological strengthening have demonstrated their utility and could be expanded within outreach programs targeting at-risk adolescents (Li *et al.*, 2016; Abohamza and Moustafa, 2020). As such, training for frontline health providers, particularly community nurses and outreach workers, is crucial to enable delivery of empathetic, non-stigmatizing, and empowering interventions. Given that most included studies were conducted in high-income countries, it is essential to adapt and develop culturally appropriate interventions in resource-limited settings. Community-based approaches involving families, schools, and local leaders can further enhance program sustainability and impact. Finally, greater emphasis should be placed on addressing inhalant abuse, which continues to be underrecognized in both research and practice, despite its prevalence among vulnerable youth in low- and middle-income countries. With the recommendations provided, we also hope that the nursing profession can play a significant role in contributing to change in addressing the issues faced by street children, particularly through advocacy in governmental policy within each respective country. Agyepong (2023) noted that the role of nurses, particularly those in community-based settings, should be strengthened not only as frontline implementers but also as contributors in health policy development. Empowering nurses to engage in policy formulation, especially those policies targeting

vulnerable adolescents such as street children, is crucial to ensuring interventions are both context-specific and sustainable (Rachmawati *et al.*, 2025). This aligns with the evidence that nurses possess practical insights into the psychosocial realities of marginalized youth and can act as strategic advocates in shaping inclusive, preventive policies.

LIMITATIONS

This review has several limitations. Most studies were conducted in high-income countries, limiting generalizability to low-resource settings. Reliance on self-reported data may introduce bias and underreporting. Inhalant use, though relevant, was often underexplored. Intervention types and outcomes were heterogeneous, preventing direct comparison. Lastly, the lack of long-term follow-up in many studies limits understanding of sustained effects.

CONCLUSION

This systematic review highlights that interventions based on motivational interviewing (MI), psychological empowerment, and strength-based approaches are effective in reducing substance use behaviors and enhancing readiness for behavioral change among adolescents living in vulnerable conditions, such as street-involved and homeless youth. MI demonstrates significant impact, particularly when delivered face-to-face and over the short term, by strengthening adolescents' intrinsic motivation and sense of self-control. Moreover, substance use violations,including excessive consumption of alcohol and cannabis, as well as inhalant use (e.g., glue and paint thinner), remain prevalent among street youth, yet are often underreported and rarely prioritized in intervention programs. The social and psychological vulnerabilities of these adolescents underscore the critical need for interventions that go beyond education alone. A comprehensive and context-sensitive approach is required—one that includes psychosocial support, family reintegration, and active community involvement. Accordingly, prevention and treatment strategies for adolescent substance abuse must be holistically designed, delivered by empathetically trained health professionals, and tailored to the cultural and structural challenges faced by high-risk youth populations.

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Table 6. Outcome of the extracted data

No	Author	Location	Study Population	Intervention Method	Intervention Duration	Results	Respondent Characteristics	Patterns of Substance Abuse	Key Findings	Significance Value	Intervention Strategy/Method
1	(Rew *et al.*, 2017)	Austin, Texas, USA	80 homeless females	Street-based intervention enhancing hope, resilience, self-efficacy, and social connectedness	4 sessions over 1 month	Significant improvements in hope, resilience, social connectedness, reduced substance use, and increased safe sex self-efficacy	Homeless females, ethnically diverse	Use of alcohol and drugs as coping; high risk of unsafe sexual behavior	Intervention improved psychological capital and healthy behavioral outcomes	$p < 0.05$	Brief, street-based psychological capital enhancement intervention
2	(Lakshmana, 2016)	India	60 street-involved adolescents with substance use issues, male and female	Combination of Motivational Interviewing (MI) and Cognitive Behavioral Therapy (CBT)	4 months	Significant improvements in readiness to change and relapse prevention coping skills	Street adolescents, age not specified, in India	High prevalence of alcohol, tobacco, and inhalants; majority in pre-contemplation stage	Improved readiness for behavioral change and relapse prevention	$p < 0.001$	Combined MI and CBT
3	(Ferguson, 2018)	California, USA	72 homeless youth with diagnosed mental illness	Social Enterprise Intervention (SEI) vs. Individual Placement and Support (IPS)	20 months	Improved self-esteem, psychological conditions, and housing stability in both groups	Homeless youth with mental illness	Substance use as comorbidity, not primary outcome	Employment interventions positively affected non-vocational outcomes	$p < 0.05$	Integrated job training and clinical support
4	(Passetti *et al.*, 2023)	Illinois, USA	148 homeless adolescents and transition-age youth (TAY)	Multidisciplinary wrap-around program	6 months	Three response clusters identified; one worsened with increased opioid/stimulant use	Homeless adolescents and TAY with substance use and/or mental health disorders	High opioid/stimulant use in service-resistant group	Individual variation in intervention response; high-risk groups need tailored strategies	Not numerically specified	Peer-based, cross-sector wrap-around care
5	(Noh, 2018)	South Korea	32 runaway girls (16 intervention, 16 control)	Resilience enhancement program based on psychosocial protective factors	Not explicitly stated	Significant improvements in resilience, reduced anxiety and problem drinking	Runaway adolescent girls in youth shelters	High levels of problem drinking before intervention	Improved psychosocial capacity and reduced risky behaviors	$p < 0.05$	Five-domain protective factor-based resilience program
6	(Joan S. Tucker *et al.*,	Los Angeles,	200 homeless	AWARE for 4 group-based	4 sessions over 4 weeks	Reduced alcohol use and unprotected sex	Majority male, ethnically	Alcohol, marijuana, other	AWARE reduced	$p < 0.05$	Group-based Motivational

	2017)	USA	youth	sessions using Motivational Interviewing		in intervention group	diverse, mostly heterosexual	drugs; casual unprotected sex	substance use and improved condom use self-efficacy		Interviewing
7	(Tucker *et al.*, 2023)	Los Angeles County, USA	276 homeless youth	AWARE for 4 group-based Motivational Interviewing sessions	4 sessions in drop-in setting	Reduced alcohol use and casual unprotected sex; temporary effect on drug use	Majority male, non-white, heterosexual	High alcohol use; moderate non-marijuana drug use; high sexual risk	12-month effect in reducing alcohol use and sexual risk	$p < 0.05$	Brief group-based Motivational Interviewing
8	(Krabbenborg *et al.*, 2017)	Netherlands	251 homeless youth in 10 shelters	Strengths-based intervention (Houvast)	Not specified	Improved quality of life, resilience, competence; higher completion in intervention group	Homeless youth in Dutch shelters	Common comorbidity, not primary outcome	Houvast improved quality of life and psychosocial outcomes	$p < 0.05$	Strengths-based approach (Houvast)