



## Trends and Determinants of Adolescent Substance Abuse in Five Southern States of India: A Mixed-Method Analysis

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**Abstract:** This study investigates adolescent substance abuse across five southern states of India—Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, and Telangana—using a mixed-methods approach. Drawing from quantitative surveys and qualitative interviews with 500 adolescents aged 12–18 years, the research explores prevalence, patterns, determinants, and psychosocial consequences of substance use. Tobacco and alcohol emerge as the predominant substances, with initiation often occurring as early as 9 to 12 years. Gender disparities, educational status, family and peer influences, accessibility, and harm awareness are analyzed. The findings underscore the necessity for region-specific, multifaceted prevention and intervention strategies integrating school-based programs, family and community involvement, and adolescent-friendly counseling.

**Keywords:** Adolescents, Substance Abuse, Tobacco, Alcohol, Southern India, School-based Prevention, Psychosocial Competence, Mixed Methods.

### Introduction

Adolescent substance abuse represents a growing public health challenge in India, which has over 253 million individuals in the 10–19 age group. Adolescence is a transitional life stage marked by heightened susceptibility to experimentation with psychoactive substances due to biological, social, and psychological changes. Early initiation of tobacco, alcohol, and other substances increases risks of dependency, poor scholastic performance, and long-term health consequences.

Although global and national studies highlight the centrality of peer influence, family environment, accessibility, and media exposure as risk factors, India continues to lack sufficiently detailed, region-specific studies that link these

determinants to adolescent vulnerabilities. This study aims to bridge the research gap by examining the prevalence, correlates, and consequences of substance misuse among adolescents across five southern Indian states, and to propose actionable strategies for prevention and intervention.

### Methodology

A mixed-methods design was employed, integrating quantitative surveys and qualitative interviews to comprehensively explore adolescent substance abuse. The sample consisted of 500 adolescents aged 12 to 18 years, enrolled in grades 6 through 10, selected from both urban and rural settings across two districts per each of the five southern Indian states. This sample included diverse educational statuses: school-going, school dropouts, and never-enrolled adolescents.



Data collection utilized structured interview schedules to gather detailed demographic information, patterns and prevalence of substance use, psychosocial competence, awareness of harms, and underlying motivations for substance use. To incorporate community perspectives, focus group discussions were conducted with key stakeholders including parents, teachers, and community leaders.

For data analysis, descriptive statistics outlined demographic and usage patterns; inferential methods such as chi-square tests and independent samples t-tests examined group differences and

associations; Pearson correlation assessed relationships among variables; and multiple regression modeling identified significant predictors of substance use behaviors. This mixed-methods approach provided robust, multifaceted insights into the prevalence, determinants, and psychosocial factors influencing adolescent substance use in southern India.

**Results**

Prevalence and patterns of adolescent substance abuse reveals significant findings on the early onset and regional variations in substance use across five southern Indian states

**Table 1: Descriptive Statistics of Key Variables**

Variable	Mean	Standard Deviation	Minimum
Age	15.44	1.71	11
Days Used (Past 30d)	1.84	1.1	1
Age at First Use	3.16	1.13	1

**Table 2: Demographic Distribution of Participants by Gender**

Gender	Frequency (n)	Percentage (%)
Male	474	94.8
Female	26	5.2

**Table 3: Frequency of Substance Use Categories**

Category	Number of Participants (n)	Percentage (%)
Tobacco	287	57.4
Alcohol	134	26.8
Cannabis	13	2.6
Inhalants	9	1.8
Prescription drugs	15	3
Others	42	8.4



### Age of Initiation

The study documents that initiation into substance use commonly occurs between the ages of 9 to 12 years, with early exposure most frequently reported for tobacco and alcohol use. This early onset represents a critical period for intervention due to the heightened vulnerability of adolescents during this developmental stage.

### State Variations in Substance Use Patterns

- Andhra Pradesh: Adolescents exhibit the highest prevalence of alcohol use at 50% alongside an early age of initiation near 9–12 years. Substance use also spans across different educational statuses, with school dropouts showing increased vulnerability, especially to prescription drug misuse. Counseling participation rates were relatively higher in this region, indicating some receptiveness to intervention.
- Karnataka: The findings highlight a high prevalence of tobacco use at 70%, making tobacco the dominant substance in the state. Prescription drug misuse is also more pronounced compared to other states. Despite having the oldest average participant age, Karnataka shows the earliest initiation age and the highest habitual use and overuse rates, alongside a significant school dropout rate (25%), underscoring entrenched consumption behaviors and increased risks among marginalized youth.
- Kerala: Adolescents in Kerala had the youngest mean age and a later average age of first substance use, indicating delayed initiation compared to other states. However,

Kerala reports the highest prevalence of inhalant use at 7% alongside moderate rates of tobacco and alcohol use. Harm awareness is also higher, and school retention rates are the strongest, suggesting a protective educational environment. Despite this, inhalant and prescription drug misuse remain areas of concern.

- Tamil Nadu: The state shows an overwhelming predominance of tobacco use at 73% among adolescents, with lower rates of alcohol and minimal other substance use. This pattern is coupled with significant engagement in school-based awareness programs and counseling attendance, reflecting the positive influence of school interventions in this region.
- Telangana: Adolescents reported substantial alcohol use at 33% and tobacco use at 60%. Cannabis use is virtually absent. Counseling attendance is notably low despite a high level of harm awareness and risk discussions, highlighting important gaps between knowledge and treatment engagement. Most substance use is concentrated among school-going adolescents, pointing to schools as a crucial setting for preventive efforts.

These regional differences emphasize the importance of tailored preventive strategies that address local substance use profiles, age of initiation, and access to treatment. The data underscore early initiation as a common thread, while variations in dominant substances and intervention engagement call for customized responses sensitive to state-specific social, cultural, and educational



contexts.

### **Determinants and Correlates**

The determinants and correlates of adolescent substance abuse in the study revealed clear gender, educational, psychosocial, and institutional patterns influencing substance use behaviours among youth in the five southern Indian states.

### **Gender Differences**

Boys were found to be significantly more prone to both initiation and overuse of substances compared to girls. The data showed higher prevalence and intensity of use among males across all types of substances. This gender disparity aligns with cultural norms and social expectations that may encourage risk-taking behaviors among boys, making them a primary target group for tailored preventive interventions.

### **Educational Status**

Educational engagement emerged as a critical factor. Adolescents who were dropouts or never-enrolled exhibited greater misuse of prescription drugs and inhalants, substances often associated with higher health risks. This subgroup's vulnerability is exacerbated by weaker social support systems and reduced supervision, highlighting the importance of promoting school retention as a protective factor against risky substance use.

### **Psychosocial Predictors**

Among psychosocial influences, peer pressure, curiosity, and stress relief were identified as primary motivators for substance use initiation. These factors reflect both social dynamics and individual coping mechanisms common in adolescence. The regression analysis reinforced these findings, demonstrating that gender, harm awareness, impulsivity (specifically, difficulties in impulse control), and the absence of structured school-based awareness programs significantly predicted greater substance overuse levels (model  $R^2$

= 0.167).

### **School Retention and Institutional Influence**

Higher school retention rates correlated with reduced substance misuse, a trend especially pronounced in Kerala where the majority of adolescents remained engaged in education. This retention supports structured environments and access to awareness programs that serve as buffers against early initiation and habitual use. Conversely, dropout populations showed elevated risk, underscoring the protective role of sustained educational participation.

### **Harm Awareness Ambiguity**

Interestingly, harm awareness did not straightforwardly correlate with reduced substance use. On the contrary, adolescents with higher levels of awareness often represented heavier substance users who had experienced related negative consequences firsthand. This suggests that awareness alone may be insufficient to deter use without complementary behavioral and social interventions addressing underlying motivations and facilitating healthier alternatives.

In summary, boys, educational disengagement, psychosocial pressures, and lack of school-based interventions emerge as key determinants of adolescent substance abuse, while harm awareness exhibits a complex relationship with usage behaviors. These insights emphasize the need for gender-sensitive, school-focused prevention and intervention strategies that incorporate psychosocial support and skill-building to mitigate adolescent substance misuse effectively.

### **Discussion**

The study's findings reveal significant regional disparities in adolescent substance use patterns across the five southern states of India, underscoring the urgent need for context-specific preventive



frameworks tailored to each state's unique challenges.

In Andhra Pradesh and Karnataka, data show early initiation of substance use alongside notably high rates of tobacco and prescription drug misuse, particularly among vulnerable groups such as school dropouts. These trends highlight the critical importance of community-driven and family-centered interventions that address underlying social and environmental factors. Engaging families, strengthening parental monitoring, and mobilizing community resources can create protective environments to delay initiation and reduce harmful use.

Kerala presents a distinct profile with emerging concerns over inhalant use, signaling a shift beyond traditional substances like tobacco and alcohol. This calls for expanded prevention efforts targeting less visible but increasingly common substances, alongside reinforcement of educational retention which remains comparatively high. Harnessing the state's strong school engagement and incorporating comprehensive awareness programs can mitigate the growing inhalant-related risks.

In Tamil Nadu, sustained participation in school-based counseling and relatively stable school retention rates demonstrate positive protective influences against substance misuse. These findings validate continued investment in school counseling services and retention-focused policies as core strategies. However, ongoing efforts are needed to maintain and enhance the appeal and accessibility of these programs, addressing both prevention and early intervention.

Conversely, Telangana's data reveal a concerning underutilization of school counseling despite adequate awareness of substance-related harms among adolescents. This gap highlights the

necessity to strengthen adolescent-friendly mental health services, enhance outreach, and reduce barriers to counseling uptake. Tailored efforts to integrate counseling within schools and communities can increase engagement and support for at-risk youth.

Across all regions, pervasive social and structural drivers—including peer pressure, familial history of substance use, lack of supervision, and easy access to substances near schools—emerge as consistent facilitators of adolescent substance involvement. These factors emphasize the need for multifaceted prevention approaches addressing behavioral, social, and environmental dimensions.

Importantly, the study identifies school-based prevention programs as effective protective mechanisms, correlating with reduced substance overuse among participants. Yet, the relatively low utilization of counseling services, particularly in some states, suggests that awareness alone is insufficient to drive engagement with support systems. This gap underscores the critical role of ensuring that prevention efforts are complemented by accessible, culturally sensitive treatment options tailored to adolescents' needs.

In conclusion, the findings advocate for regionally adapted, holistic strategies integrating family and community participation, school-based interventions, and strengthened counseling services. Such tailored frameworks can address the complex interplay of social determinants and behavioral drivers, advance effective prevention and reducing the burden of adolescent substance abuse in southern India.

### **Recommendations**

#### **Policy and Prevention**

- Develop gender- and culture-sensitive life skills curricula within



schools that incorporate effective training in decision-making, stress management, and refusal skills. Tailoring content to reflect the socio-cultural diversity of adolescent populations improves engagement and relevance.

- Strengthen enforcement of regulations restricting the sale and accessibility of alcohol, tobacco, and other substances in and around school premises. Coordinated efforts among education authorities, law enforcement, and community stakeholders are critical to limit youth exposure.
- Mobilize community-based coalitions composed of parents, educators, healthcare providers, and youth to conduct sustained awareness campaigns. Such grassroots initiatives foster community ownership, reinforce positive social norms, and create supportive environments for prevention.

### **Treatment and Support**

- Enhance youth-friendly, confidential, and non-stigmatizing counseling services by establishing accessible centers staffed with trained facilitators skilled in adolescent engagement. Emphasizing trust and cultural competence encourages help-seeking behaviors.
- Equip teachers and healthcare workers with training to identify early warning signs of substance use and related psychosocial issues. Prompt detection facilitates timely referral and intervention, increasing chances of successful recovery.

### **Peer and Digital Interventions**

- Leverage peer educators and digital media platforms to disseminate credible, relatable prevention messaging tailored for young audiences. Utilizing social media, apps, and online forums extends reach and taps into adolescents' digital engagement habits.
- Involve adolescents actively in the design and implementation of awareness campaigns. Their participation ensures messaging resonates authentically, enhances campaign credibility, and empowers youth as agents of change within their communities.

### **Research and Monitoring**

- Establish district-level monitoring units dedicated to adolescent substance use surveillance. Continuous, localized data collection supports timely identification of emerging trends and informs targeted policy responses.
- Initiate longitudinal studies focused on the impacts of digital media exposure and evolving synthetic substances. Understanding these dynamic influences is crucial to developing adaptive prevention and intervention strategies that address contemporary risks effectively.

### **Conclusion**

The investigation highlights that adolescent substance abuse in southern India is influenced by a complex interplay of individual traits, family dynamics, peer pressures, and broader social factors. Tobacco and alcohol use remain predominant, while rising trends in prescription drug misuse and inhalant use warrant focused attention in specific regions. Key determinants such as gender,



educational engagement, and family environment significantly shape vulnerability to substance use.

Findings emphasize that mere awareness of substance-related harms is insufficient to prevent use and overuse. Effective prevention and rehabilitation efforts require a comprehensive, multifaceted approach, integrating school-based education programs, psychosocial skill development, accessible and youth-friendly counseling services, and sustained community involvement. Tailoring interventions to the unique cultural and demographic contexts of each state is critical to effectively address regional variations and enhance youth wellbeing.

In sum, this study underscores the urgent need for coordinated, evidence-based strategies that address the complex drivers of adolescent substance abuse and support resilient, healthy development across diverse settings in southern India.

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