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Original Research Article

Trends in substance use and associated risk factors among adolescents in Belize

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ABSTRACT

Background: Adolescents are at a crucial stage of development, making them more likely to engage in risk-taking behaviors, including substance use. This study aimed to describe the trends and patterns of substance use and risk factors among adolescents who accessed treatment and rehabilitation outreach services between 2017 and 2024.
Methods: This exploratory study utilized both qualitative and quantitative methods.
Results: During the reporting period, adolescents aged 10-19 years represented 45% (1,055 out of 2,365) of reported substance use cases. Marijuana and alcohol were the most frequently used substances among both genders, while cocaine and tobacco use were significantly lower, particularly among girls. The highest usage rates were observed among adolescents aged 15-19, with a notable gender disparity: 82% of reported cases were males, compared to 18% females. The risk factors were categorized using a socio-ecological approach into four themes: (1) individual factors: emotional stress; (2) interpersonal factors: household environment and peer pressure; (3) community factors: accessibility, affordability, lack of structured activities and recreational alternatives, and the influence of social media; and (4) policy factors: regulation and enforcement of the sale and distribution of substances.
Conclusion: This study highlights adolescent substance use as a critical public health concern in Belize. The findings highlight the importance of moving beyond generalized prevention frameworks and adopting context-specific strategies that actively engage adolescents and address their developmental and psychosocial needs. Integrating efforts from various sectors through a multisectoral approach is crucial to effectively address substance use problems among adolescents.

Keywords: Trends, Substance use, Adolescents, Risk factors, Gender disparity

INTRODUCTION

Adolescents are at a crucial stage of development, making them more likely to engage in risk-taking behaviors, including substance use.[1] Substance use is a growing public health issue that has significant short, medium, and long-term consequences for individuals, such as psychological and physical health problems, poorer academic performance, increased violence and injuries, accidents, and negative impacts on cognitive, emotional, and social development, potentially leading to substance use disorders.[2] Beyond individual harm, adolescent substance use also has broader societal impacts,

contributing to increased rates of violence and delinquent behavior, disruptions to family functioning, and long-term economic burdens due to healthcare, legal, and social service cost.[3]

Adolescents may use substances for various reasons, including sharing social experiences, feeling part of a group, relieving stress, seeking new experiences, and take risks.[4] Adolescent substance use patterns vary widely, but commonly involve alcohol, cannabis, and tobacco products, often used together. Although less frequent, other illicit drugs and prescription medications are also used. These patterns can range from occasional experimentation to regular use and multi-substance dependence, each carrying different levels of risk.[5] These global patterns are also reflected in Belize, where adolescents are increasingly exposed to substances such as alcohol, tobacco, marijuana, and illicit drugs at a young age.[6,7]

The National Drug Abuse Control Council (NDACC) was established in 1988 and officially recognized by the Misuse of Drugs Act of 1990 as a government organization under the Ministry of Health and Wellness to combat substance use in the country. The NDACC-MOHW operates under six main components: public education, school drug education, community empowerment, research and information, and treatment and rehabilitation outreach services.[8]

The NDACC- MOHW treatment and rehabilitation unit accepts clients from the Belize court system, schools from all levels, mental health unit, social services network, and self-referrals or referrals by family members. The unit offers screening, assessment, short-term interventions, and referrals for additional services such as mental health care, rehabilitation, or support groups, depending on the needs of the clients.[8]

This study aimed to describe the trends and patterns of substance use and gender differences among adolescents who accessed NDACC–MOHW treatment and rehabilitation outreach services between 2017 and 2024. It also explored the risk factors associated with substance use among adolescents.

This research is part of a comprehensive situational analysis to understand the scope, prevalence, and underlying drivers of adolescent substance use and to identify gaps in current interventions in Belize.

METHODS

Study population and setting

Belize, with a population of about 400,000, is divided into four administrative regions and six health districts. The study was conducted in both urban and rural areas of three randomly selected districts; Belize, Corozal, and Toledo.

Study design

This exploratory study utilized both qualitative and quantitative methods to examine adolescent substance use and its associated factors.

Sampling method

A purposive sampling method was used to select the participants for the study.

This was employed to select participants with in-depth knowledge and direct experience relevant to adolescent substance use and NDACC services, including those involved with service provision and those accessing services.

Data collection and analysis

The quantitative data was collected using a standardized data extraction form created for this study. This form captured relevant information from the Belize National Drug Abuse and Control Council- Ministry of Health and Wellness (NDACC-MOHW) database, focusing on adolescent clients (aged 10-19years) who accessed treatment and rehabilitation outreach services between 2017 and 2024. The data included the annual number of adolescents served types of substances used and were disaggregated by sex and district. Univariate analysis was performed on the quantitative data, with findings presented using frequency (n) and percentage (%) distribution tables and graphs.

The qualitative data was gathered using an interview guide with structured, open-ended questions and guided prompts. This guide was developed based on existing literature to identify risk factors associated with substance use among adolescents. Key informant interviews (KIIs) were conducted with service providers, including healthcare professionals, social workers, school counselors, and program managers.

In addition, six focus group discussions (FGDs) were held with adolescents and parents/caregivers (two per district in Belize, Toledo, and Corozal), covering both rural and urban areas.

All discussions took place in designated, noise-free community spaces to ensure privacy and confidentiality. Written informed consent was obtained from all participants after explaining the study's purpose and procedures.

FGDs and KIIs were conducted in February 2025, each lasting approximately 60 minutes. Interviews were audio-recorded to ensure accurate capture of participants' responses, transcribed verbatim, and checked against the audiotapes. Data was analyzed using thematic analysis, with results organized into themes using a socio-ecological approach.

RESULTS

The results were organized into two sections, quantitative data analysis, which examines the trends and types of substance use, as well as gender differences among adolescents during the study period, and qualitative data analysis, which investigates the risk factors associated with substance use among adolescents.

Analysis of substance use among adolescents compared to other age groups

Figure 1 shows the age distribution of 2,365 reported cases of substance use at the NDACC outreach clinics between 2017 and 2024 across various age groups, from 5-9 years to 60 years and older. The youngest individual was 8 years old, and the oldest was 67 years old. Substance use significantly increased during adolescence, peaking in the 15-19 age group, and then declined in early adulthood.

Adolescents aged 10-19 years made up 1,055 cases (45% of the total). The 15-19 age group had the highest percentage of reported cases, with 852 cases (36%), followed by the 25-29 age group at 12%. Males consistently reported more cases than females, with the largest gender disparity seen among adolescents aged 10-19, where males account for 82% of reported cases, while females made up 18%.

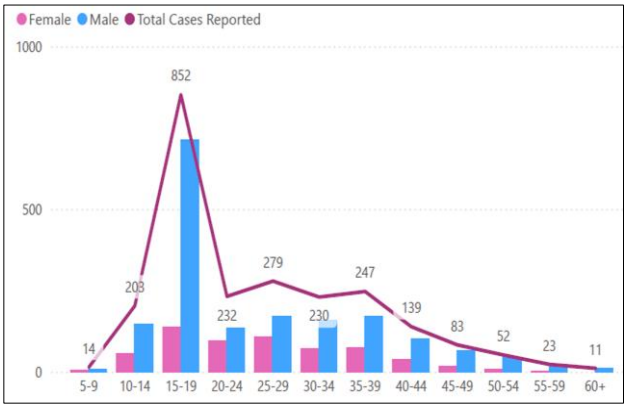

Figure 1: Total cases reported by age group and gender, 2017-2024.

Trends in substance use among adolescents

Figure 2 shows the trend in substance use among adolescents between 2017-2024. Among adolescents aged 10-19, substance use among boys peaked in 2018 and 2019, with 241 and 177 cases reported respectively. During the COVID-19 pandemic, there was a significant decline in utilization of NDACC outreach services, with 21 cases in 2020, 39 in 2021, and 34 in 2022. However, post-pandemic, there has been a rebound, with 117 cases in 2023 and 72 in 2024.

Similarly, substance use among adolescent girls aged 10-19 peaked in 2017 and 2019, with 37 and 54 cases reported respectively. During the pandemic, there was a decline, with 11 cases in 2020, 21 in 2021, and 2 in 2022. Post-pandemic, there has also been a rebound, with 26 cases in 2023 and 23 in 2024.

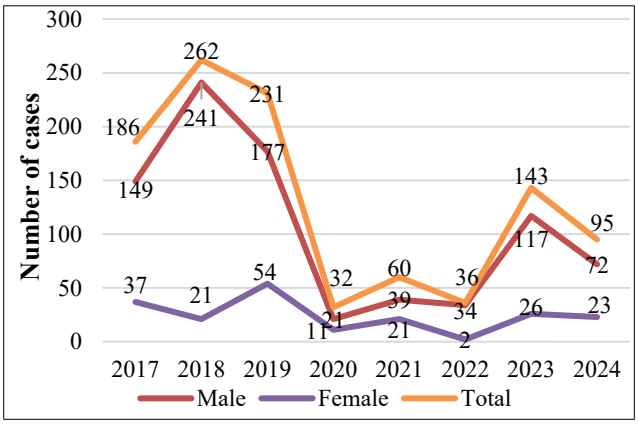

Figure 2: Trends in substance use among adolescents by gender 2017-2024.

Pattern of substance use among adolescents

Figure 3 shows the pattern of substance use among adolescents within the study period. Marijuana was the most frequently reported used substance, followed by alcohol while other substances are reported much less frequently. In 2017, out of 186 total cases, marijuana accounted for 123 cases (66%), alcohol for 53 cases (28%), and tobacco for 8 cases (4%) while in 2018, there were 262 total cases, with marijuana accounting for 213 cases (81%), alcohol for 34 cases (13%), heroin for 6 cases (2%), and crack cocaine for 5 cases (2%). Between 2020 and 2022 during COVID 19 pandemic, there was a significant decline in the number of reported cases is due to limited access to services, however marijuana remained the most reported substance with 25 cases (78%) in 2020, 31 cases (52%) in 2021, and 19 cases (53%) in 2022. Alcohol followed with 7 cases (22%) in 2020, 26 cases (43%) in 2021, and 15 cases (42%) in 2022.

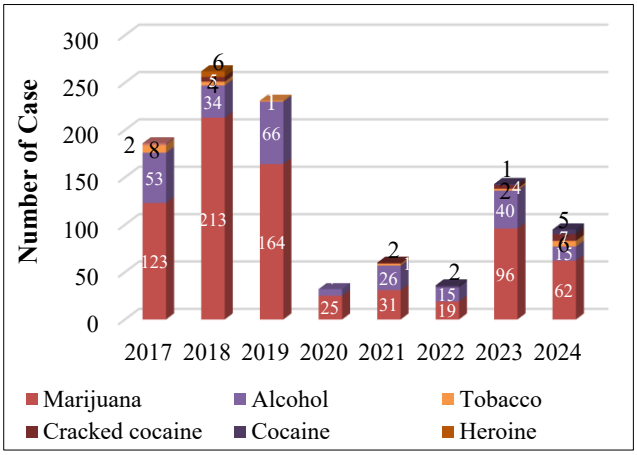

Figure 3: Pattern of substance use among adolescents 2017-2024.

During the post pandemic period, 2023-2024, marijuana continued to be the most reported substance used with 96 cases (67%) in 2023 and 62 cases (65%) in 2024. Alcohol use was reported in 40 cases (28%) in 2023 and 15 cases (16%) in 2024. In 2024, cocaine and crack cocaine use (12 cases, 12%) were reported more frequently than tobacco use (5 cases, 6%).

Trend in pattern of substance use among adolescents by gender between 2017- 2024

Figure 4 shows the trend in the pattern of substance use among adolescents by gender. Marijuana use peaked between the ages of 15 and 19, with majority of users being males, while female usage remains relatively low. Alcohol use began earlier, between ages 10 and 14, and was more evenly distributed between genders, though males still report higher usage. Among adolescents aged 10 to 19, substance use peaked for boys in 2018–2019 and for girls in 2017 and 2019. There was a decline during the COVID-19 pandemic, likely due to disruptions in reporting and access, but usage rebounded post-pandemic.

Alcohol and marijuana were the most used substances among both genders, while cocaine and tobacco use were significantly lower, especially among girls. Notably, cocaine use became prominent among boys in 2024.

Figures 5 shows the distribution of different substances used by adolescents by districts during the study period, 2017-2024.

Substance use among adolescents was most prevalent in the Belize district, which accounts for 358 cases (34%) out of a total of 1,045 cases. This was followed by the Toledo district with 20% and the Cayo district with 16%. The Corozal district had the lowest prevalence, with 81 cases (7.8%).

Marijuana was the most used substance among adolescents in the Belize district, with 297 cases (40%) out of a total of 733 cases of marijuana use among adolescents. The Cayo district follows with 118 cases (16%).

Alcohol was the most used substance among adolescents in the Toledo district, with 92 cases (36%) out of a total of 256 cases of alcohol use among adolescents. The Cayo district follows with 48 cases (19%).

Risk factors associated with substance use among adolescents

The risk factors for substance use among adolescents are categorized using a socio-ecological approach into four themes: individual, interpersonal, community and policy factors derived from the focus group discussion and key informant interviews.

Individual factors

Emotional distress resulting from academic stress, family tension, and economic hardship as an individual-level factor that increases the risk of substance use among adolescents.

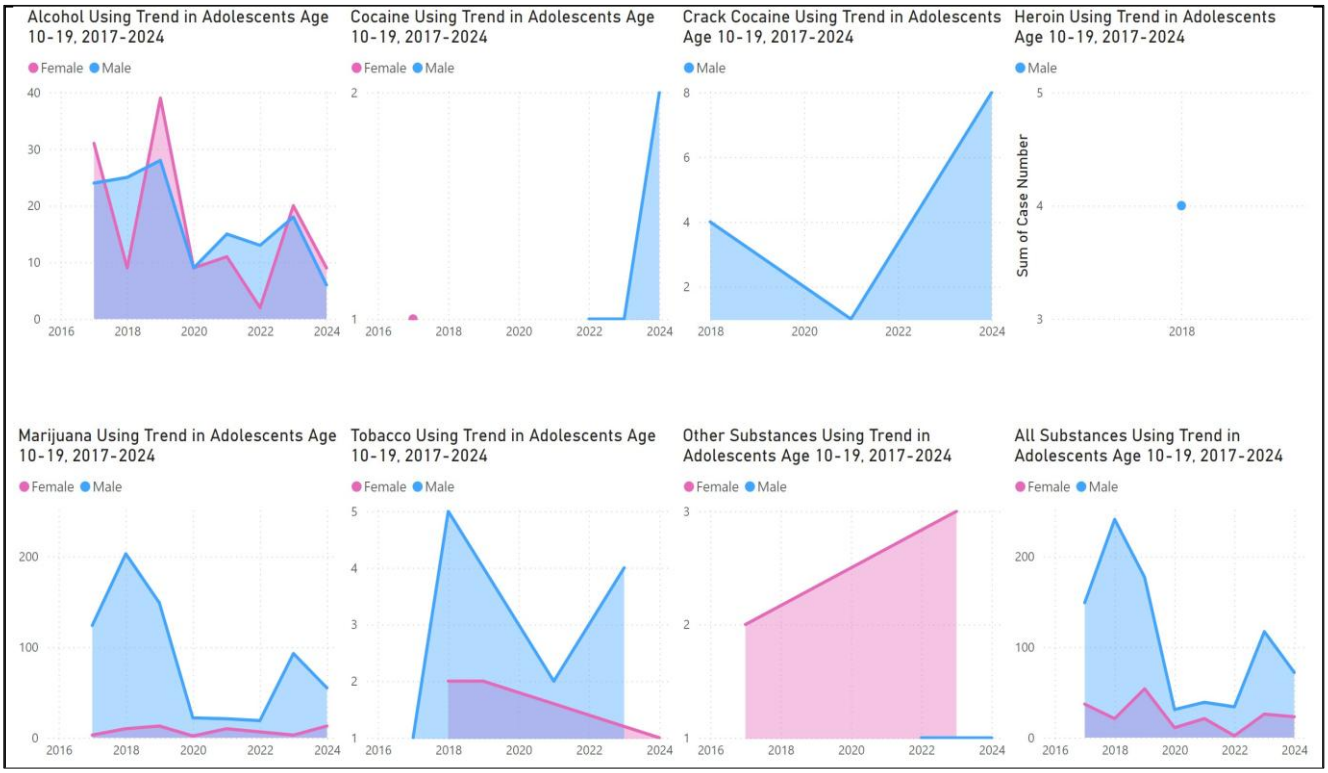

Figure 4: Trend in substance use among adolescents by gender.

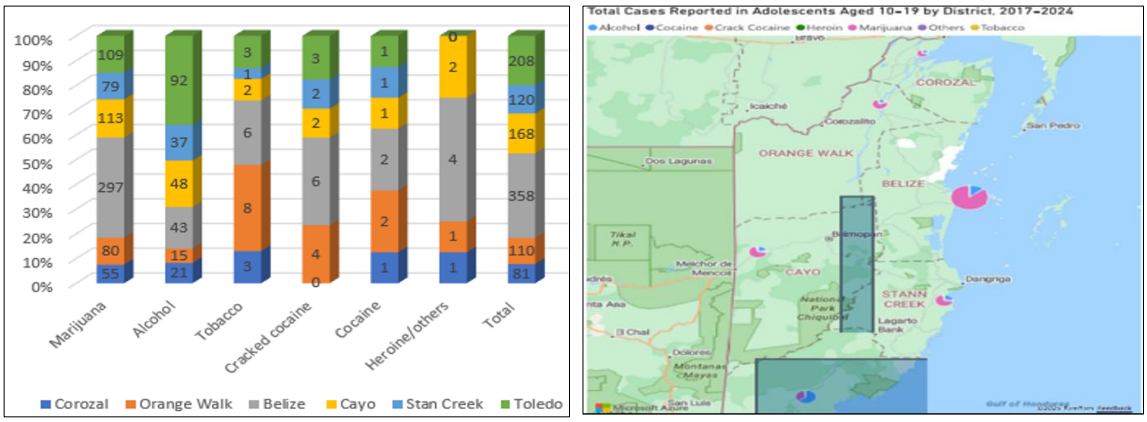

Figure 5: Reported cases of substance use among adolescents by districts, 2017-2024.

"*My son is very anxious because of family stress. He doesn't want to upset anyone, so he bottles it up, and now he smokes and drinks*" -FGD parent.

Financial hardships at home was also cited as a risk factor leading some adolescents to turn to substances for temporary relief or, in extreme cases, to selling drugs or vapes for income.

"*Some kids are not just using but selling. It's a way to make quick money, and they see it as normal*" -FGD parent.

Young people experiencing anxiety, depression, and emotional isolation, but lacking access to professional support or healthy coping strategies, often turn to substance use for temporary relief and as an escape from their trauma and stress.

"*Weed makes you feel fun. Alcohol helps relieve stress. We feel more productive on substances*" -FGD adolescent.

Interpersonal factors

This category includes influences such as household environment and peer pressure, which significantly shape adolescents' attitudes and behaviors toward substance use.

Household environment, the household environment was reported to influence adolescent attitudes toward substance use. Early exposure at home, especially in households where drinking, smoking, and marijuana use are normalized, can lead adolescents to experiment with substances, often with parental or adult family members' permission and encouragement.

"*Some parents drink and smoke around their children, making it seem normal*" -FGD parent.

"*Sometimes parents or other adults at home give their children a taste of alcohol when drinking*" -FGD parent.

A lack of parental awareness and support was identified as a major risk factor. Family dynamics strongly impact adolescent substance use, yet many parents are unaware of their children's struggles or fail to address warning signs. There is often a disconnect between adolescent experiences and parental perceptions.

Poor communication about substance used by parents, due to fear, stigma, or a misplaced trust that their children are immune to such behaviors, was reported to be a major risk factor.

"*I never thought my child was using drugs. We don't talk about those things at home*" -FGD parent.

"*Many parents do not understand what mental health issues are. They assume their child is just 'antisocial' rather than recognizing signs of depression or anxiety, which their children are using drugs to manage*" -KII participant.

Peer factor, peer influence was reported as one of the important external drivers of substance use among adolescents. Within schools and social circles, drug use is often seen as a way to gain acceptance and peer approval increase social status or assert independence. Many students feel compelled to experiment to belong and avoid exclusion by their friends.

"*Peer pressure is a leading cause of substance use, and since their friends are more relatable and trusting than their family, many students are more prone to be influenced by their friends and engage in substance use*" -FGD adolescent.

"*Students who sell or use substances gain popularity, making peer pressure a strong influence*" -FGD adolescent.

Community factors

These factors also include accessibility, affordability, lack of structured activities and recreational alternatives and the influence of social media.

Accessibility

Accessibility was identified as an important driver of adolescent substance use by the respondents. Teenagers often obtain substances directly from peers or family members or purchase them from local vendors who rarely enforce age restrictions.

"*Substances are very easy to get and buy cheap, especially alcohol*" -FGD adolescent.

It was reported that adolescents actively engage in the sale and distribution of these substances among peers, further increasing accessibility within school environments and local communities.

"*Lots of students are using drugs in my school, and some are even selling it, it is like that in all schools*" -FGD adolescent.

"*Yes, students use and sell drugs in school—vapes, cigarettes, weed*" -FGD adolescent.

Cross-border purchases are common among communities that share borders with neighboring countries where some drugs are readily available.

"*Teenagers can easily access vapes and cigarettes, particularly by crossing the border into Guatemala, where identify verification are not required for purchase*" -FGD adolescent.

Affordability

Availability of cheap substances in schools and communities was identified as another factor promoting substance use among adolescents.

A particularly concerning trend is the increasing popularity of the locally produced rum 'Badman,' which is sold for as little as $2-3 BZD per bottle. This highly concentrated and addictive liquor is packaged in colorful mini bottles that resemble fruit juice, making it especially appealing and easy to conceal among adolescents.

"*We're seeing more teens using crack but also drinking 'Badman' or 'Revel'. These strong drinks are very cheap and cause significant damage to body organs*" -KII participant.

"*Most of the drugs being sold by students in schools are very cheap, and students contribute together to buy them*"- FGD adolescent.

Social media

Social media was highlighted to have contribute to adolescents' perceptions of substance use. Platforms like TikTok and Facebook often expose teenagers to drug and alcohol consumption, portraying these behaviors as part of a desirable lifestyle.

"*Sometimes when I see people on Facebook drinking or smoking with excitement and fun, I feel like joining them to have fun too*" -FGD adolescents.

"*If celebrities are using substances on social media, it makes it seem acceptable*" -KII participant.

Parents expressed growing concerns about excessive screen time, which exposes children to various online content, including drugs, that are hard to monitor. Many parents find it challenging to set limits on device use, as children often react aggressively when restrictions are imposed, making discipline increasingly difficult.

"*Children nowadays are always on their phones and devices, especially after school or weekends. They use them for schoolwork, but also for gaming and social media. They are exposed to various messages and videos that promote bad behavior and substance use, and they become addicted. When you take the phone away, they get aggressive.*" -FGD parent.

Lack of structured activities and recreational alternatives

The lack of structured activities and recreational alternatives was identified as risk factors for substance use among adolescents. Many adolescents reported having no access to sports programs, after-school activities, or community engagement initiatives, leaving them with idle time and few healthy outlets for stress and socialization. Without these structured programs, adolescents often turn to substance use for entertainment or emotional relief.

"*We need after-school extracurricular activities for adolescents to develop hobbies so they don't get involved in risky behaviors and drug use, and a safe place for them to hang out*" -KII participant.

"*Expanding community-based recreational options could provide healthier coping mechanisms and reduce adolescent substance use*" -KII participant.

Policy factors

The government has established laws to regulate the sale and distribution of alcohol and tobacco to minors and has strengthened border controls to combat illicit drug trafficking. However, in 2017, the government decriminalized the possession and use of up to 10 grams of marijuana on private premises. In 2021, an amendment to the Misuse of Drugs Act established licensing, registration, and operational requirements for the cultivation, processing, distribution, and delivery of cannabis products for adult use.

Although marijuana use is restricted to individuals aged 18 and above, many adolescents younger than the legal age

are reported to use the substance. Weak enforcement of existing regulations has been identified as a significant risk factor contributing to the increasing availability and use of substances among adolescents.

"*Yes, there are laws in place to regulate drugs, especially for adolescents, but enforcement is lacking*" -KII participant.

"*Despite these laws and policies, students still bring and sell drugs in schools. Some are caught and disciplined, but many continue unchecked*" -KII participant.

"*The issue is not with the laws and regulations themselves but with their implementation and enforcement. Increased awareness and sensitization about these regulations, particularly among vendors who sell to adolescents, may be necessary*" -KII participant.

DISCUSSION

This study examined the patterns of substance use and associated risk factors among adolescents in Belize. Unlike most previous studies in Belize, which were cross-sectional surveys among students, this research focused on adolescents who accessed treatment and rehabilitation outreach services. The findings revealed that marijuana and alcohol are the most used substances among adolescents, followed by other substances like tobacco, cocaine, and heroin, which are reported far less frequently. This aligns with previous studies among secondary school students in Belize, which also identified alcohol and marijuana as the most prevalent substances.[6,7,9] However, while earlier studies found alcohol use to be more common than marijuana, this study observed the opposite trend. Similar patterns are seen in other regions, such as Latin America and Caribbean and Africa, where alcohol and marijuana are the most used substances among adolescents. While some studies report marijuana as the most common substance, most indicate that alcohol is more prevalent.[9-11] Studies in Belize have consistently shown an increase in marijuana use among high school students.[6,9] Marijuana is the most widely used illicit drug among Caribbean students, and its use is embedded in some Caribbean cultures.[12] Treatment admissions for marijuana users in Latin American and Caribbean countries have doubled in recent years.[13]

Similar to our study, other research on adolescents seeking treatment found marijuana use to be more prevalent than alcohol.[10,13,14] This may be because alcohol consumption is often seen as more socially acceptable and less serious compared to drug addiction, leading fewer people to seek services for alcohol addiction.[14-16]

The 2024 World Drug Report highlighted concerns about cannabis use among adolescents, particularly with the rise of vaping. The report found that the prevalence of cannabis used among adolescents aged 15 and 16 in the past year is higher than that of adults globally (5.5% compared to 4.4%).[13] The 2020 European School Survey Project on Alcohol and Other Drugs (ESPAD) showed a decline in smoking and drinking among 15-16-year-old students in Europe, but an increase in cannabis use, with a weighted average of 17.3%.[17]

Similar to our study, tobacco consumption levels are lower than those for alcohol and marijuana among adolescents in the Americas.[18]

Substance use and gender

In this study, substance use was found to be more prevalent among male than female adolescents. Males account for the majority of marijuana cases, while female usage remained relatively low. However, alcohol use is more evenly distributed by gender, though males still report higher number of cases.

Similarly, studies in the Latin America and Caribbean and the Americas have found significantly higher substance use rates, including alcohol, marijuana, cocaine, and tobacco, among males compared to females.[18-20]

Regarding alcohol, gender differences at the secondary school level are practically non-existent, with both sexes reporting almost equal levels of past-month alcohol consumption.[27,28] This closing gender gap in alcohol consumption is reported to reflect changing social norms, which are also starting to be seen in other substance use patterns across countries.[18-20]

Additionally, studies have noted a reversal in gender prevalence for certain substances like non-medical use of controlled prescription drugs, tranquilizers, and inhalants. The prevalence of tranquilizer use is higher among females than males in almost all countries studied, although tranquilizer use was not reported in our study.[18-20]

Similar to our findings, previous studies on the use of cocaine and its derivatives in the Americas and Latin America and the Caribbean reported higher rates of cocaine use among male students.[18,20]

Risk factors associated with substance use among adolescents

This study identified several interrelated risk factors contributing to adolescent substance use in Belize, consistent with findings from both national and international research.

Emotional distress due to academic stress, family tension, and economic hardship were found to increase the risk of substance use among adolescents. A previous study in Belize among secondary school students found that 42.9% of students reported smoking marijuana to help cope with emotional difficulties.[6]

Similarly, another study reported a positive association between psychological distress and substance use among adolescents who use substances as coping mechanism to internalize their emotional or psychological problems.[21]

The household environment was reported to play a crucial role in shaping adolescent attitudes toward substance use. Many teenagers grow up in households where drinking, smoking, and marijuana use are normalized, with family members openly consuming substances. Similar studies have reported that parental influence on adolescent substance use occurs both directly, through offering or making substances available, and indirectly, through permissive attitudes toward substance use, especially among parents or family members who use substances themselves.[22,23]

Poor communication and a disconnect between parents and their children about substance use were also identified as contributing risk factors. Adolescents who reported weak parent–child communication had significantly higher odds of using substances.[24]

A multi-country across 15 Latin American and Caribbean countries similarly found that engaged parenting was associated with significantly lower rates of problem behaviors in adolescents, including substance use.[25]

In the study, peer influence was highlighted as one of the strongest external drivers of adolescent substance use. Within schools and social circles, drug use is often viewed as a way to gain acceptance, increase social status, or assert independence. Similarly, a previous study in Belize among school-aged adolescents reported peer influence as a risk factor for marijuana use, with 46.6% of respondents indicating that they would be admired by friends if they smoked marijuana.[6]

Peer influence is regarded as one of the strongest determinants of juvenile delinquency and adolescent substance use. It is estimated that 21% of teens who used an illicit drug at least once did so because of peer pressure or influence.[26]

Similar to our study, a meta-analysis demonstrated that peer influence significantly impacts adolescents' substance use behaviors. Adolescents tend to adjust their substance use to align with their peers' perceived or actual use.[27]

Accessibility and affordability remain major drivers of adolescent substance use in Belize. Teenagers often obtain substances directly from peers or family members or purchase them from local vendors who rarely enforce age restrictions. Cross-border purchases are common in Belize, particularly among communities near neighboring countries. Some substances are relatively inexpensive, and locally produced alcohol is gaining popularity.

Similar to our findings, where adolescents reported easy access to various substances from local shops or vendors, previous studies in Belize have also reported easy access to substances among students. One of the studies indicated that about 15% of students had easy access to marijuana, while another study raised concerns about prescription drug misuse, particularly since many drugs are still available over the counter and accessibility to secondary school students is not monitored.[6,9]

A study conducted among adolescents in 26 Latin American and Caribbean countries reported that easy access to alcohol from local shops was associated with a nearly threefold increased risk of at least monthly heavy drinking compared to obtaining alcohol from home.[28] Additionally, a study in Argentina, Chile, and Uruguay found that adolescents who perceived high availability of drugs in their neighborhoods were more likely to increase their marijuana use over time.[29] Social media was highlighted in the study to influence adolescent perceptions of substance use. Platforms such as TikTok and Facebook often present drug and alcohol consumption as fun, aspirational, or socially acceptable.

Similarly, various studies have reported the negative influence of social media on attitudes, behaviors, and risk perceptions relating to substance use, particularly among adolescents who are the primary users of social media.[30,31] A previous study in Belize found that about 27% of respondents who initiated drug use early reported that messages received through social media influenced their perception of drugs.[6] A study in Korea found that recreational internet use was positively associated with youth substance use, and the use of the internet for chatting and games among 15-year-olds was significantly associated with heavy drinking by age 20.[31] A systematic review also reported that exposure to online advertising was associated with increased e-cigarette use among adolescents in Latin America.[32]

In the study, excessive screen time by adolescents was identified by their parents as a growing concern, exposing adolescents to a wide range of content, including promotions and portrayals of substances use, that may increase the risk of substances experimentation. These concerns are supported by existing studies showing a strong relationship between excessive screen time and substance use among adolescents.[30,33]

A lack of structured activities and recreational alternatives was reported in the study to further exacerbate substance use among adolescents. Many adolescents mentioned having limited access to sports programs, after-school activities, or community engagement initiatives, leaving them with idle time and few healthy outlets for stress and socialization. Similarly, studies have shown a strong link between unhealthy routines (such as the absence of regular physical activity) and sedentary behavior with substance use in adolescents.[34-36]

However, the relationship between physical activity and substance use among adolescents is complex. Some studies

have found a positive association between physical activities and alcohol use, indicating that participation in team sports is strongly associated with alcohol use.[34,36] In contrast, participation in individual or endurance sports is linked to lower use of all substances, including alcohol.[35]

Although the government of Belize has enacted laws regulating the sale and distribution of alcohol and tobacco to minors and has strengthened border controls to curb illicit drug trafficking, weak monitoring and enforcement of these laws remains a major concern. Poor regulatory oversight was also highlighted in a systematic review on adolescent e-cigarette use in Latin America, which found that nearly one in five adolescents reported e-cigarette use, with enforcement gaps contributing to higher usage rates.[37]

In 2017, the Misuse of Drugs Act in Belize was amended to decriminalize the possession or use of small amounts of cannabis on private premises, meaning that possessing or using up to 10 grams of cannabis on private property is no longer considered a criminal offense.[38]

A previous study in Belize conducted in 2015 found that about 30% of students reported they would try marijuana if they were 18 years old and marijuana was legalized.[6] From these findings, it could be implied that the prevalence of marijuana use among adolescents in Belize might have increased since marijuana was decriminalized and legally available, even though no national wide study has been done following decriminalization.

Studies from countries like Canada, and Uruguay that have legalized marijuana have reported an increase in marijuana use among adolescents.[39,40]

Limitations and strength

The study's findings on substance use trends and patterns are based on data from adolescents who accessed services at the treatment and rehabilitation outreach center, which may not be representative of all adolescents in Belize. The identified risk factors are based on self-reports from respondents, potentially subject to recall and social desirability biases. Despite these limitations, this is the first study in Belize on substance use among adolescents accessing services and provides crucial policy and program implications for developing evidence-based interventions to reduce substance use among adolescents in Belize.

CONCLUSION

This study highlights adolescent substance use as a critical public health concern in Belize, with marijuana and alcohol being the most commonly used substances. The highest rates of usage were observed among adolescents aged 15-19, with a notable gender disparity showing higher prevalence among males. While a combination of individual, interpersonal, community, and policy-level factors collectively drive a growing trend in substance use among adolescents, context specific dynamics require tailored attention. These findings reinforce the importance of moving beyond generalized prevention frameworks towards context-specific strategies that actively engage adolescents and address their developmental and psychosocial needs. Integrating efforts from various sectors through a multisectoral approach is crucial to effectively address substance use problems among adolescents.

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REFERENCES

1. Das P, Das T, Roy TB. Social jeopardy of substance use among adolescents: a review to recognize the common risk and protective factors at the global level. Psychoactives. 2023;2(2):113-32.
2. Nath A, Choudhari SG, Dakhode SU, Rannaware A, Gaidhane AM. Substance abuse amongst adolescents: an issue of public health significance. Cureus. 2022;14(11):e31193.
3. Daley DC. Family and social aspects of substance use disorders and treatment. J Food Drug Anal. 2013;21(4):S73-6.
4. Gray KM, Squeglia LM. Research review: what have we learned about adolescent substance use? J Child Psychol Psychiatry. 2018;59(6):618-27.
5. Halladay J, Woock R, El-Khechen H, Munn C, MacKillop J, Amlung M, et al. Patterns of substance use among adolescents: a systematic review. Drug Alcohol Depend. 2020;216:108222.
6. Husaini DC, Mann R. Adolescents' perception of harms, benefits and intention to use marijuana within the context of regulatory changes in Belize. Texto Contexto Enferm. 2019;28:e202.
7. Inter-American Drug Abuse Control Commission. A report on students' drug use in 13 Caribbean countries: Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago. Washington, D.C.: OAS. 2016. Available at: http://www.cicad.oas.org/oid/pubs/FINAL%20SCHOOL%20SURVEY%20REPORT%202016.pdf. Accessed on 25 July 2025.
8. Ministry of Health and Wellness, Belize. National Drug Abuse Control Council. Available at: https://www.ncfc.org.bz/test/national-drug-abuse-control-council-ndacc-ministry-of-health. Accessed on 16 April 2025.
9. Briceño-Perriott J, Olivera F, Vellos E. Prevalence and pattern of drug use among third year high school students in Belize City. Belize: Ministry of Health. 2014. Available at: http://health.gov.bz/www/attachments/article/821/Drug%20Use%20in%20Belize%20City.pdf. Accessed on 16 April 2025.

10. Nxumalo VW, Nel YM. Substance use patterns in an adolescent psychiatric unit in Johannesburg, South Africa. South Afr J Psychiatr. 2024;30:2198.
11. Engelgardt P, Krzyżanowski M, Borkowska-Sztachańska M. Lifetime use of illicit substances among adolescents and young people hospitalized in psychiatric hospital. Sci Rep. 2023;13(1):1866.
12. Inter-American Drug Abuse Control Commission. A report on students' drug use in 13 Caribbean countries: Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago. Washington, D.C.: OAS. 2016. Available at: http://www.cicad.oas.org/oid/pubs/FINAL%20SCHOOL%20SURVEY%202016.pdf. Accessed on 12 April 2025
13. United Nations Office on Drugs and Crime. World drug report 2014. Trends Organ Crime. New York: UNODC. 2014.
14. Ow N, Marchand K, Liu G, Mallia E, Mathias S, Sutherland J, et al. Patterns of service utilization among youth with substance use service need: a cohort study. Subst Abuse Treat Prev Policy. 2023;18(1):62.
15. Cunningham JA, Breslin FC. Only one in three people with alcohol abuse or dependence ever seek treatment. Addict Behav. 2004;29(1):221-3.
16. Tucker JA, Chandler SD, Witkiewitz K. Epidemiology of recovery from alcohol use disorder. Alcohol Res. 2020;40(3):02.
17. European School Survey Project on Alcohol and Other Drugs (ESPAD). New ESPAD results: teenage drinking and smoking down, but concerns over risky cannabis use and new addictive behaviours. 2020. Available at: https://www.euda.europa.eu/news/2020/9/highlights-espad-2019_en. Accessed on 12 April 2025.
18. Hynes M, Clarke P, Araneda-Ferrer JC, Ahumada G. Report on drug use in the Americas 2019. Washington, D.C.: OAS/CICAD. 2019.
19. United Nations Office on Drugs and Crime. Synthetic drugs and new psychoactive substances in Latin America and the Caribbean 2021. Vienna: UNODC. 2021.
20. Inter-American Drug Abuse Control Commission, Organization of American States. Women who use psychoactive substances in Latin America and the Caribbean: current challenges. Washington, D.C.: OAS. 2025.
21. Meier MH, Beardslee J, Pardini D. Associations between recent and cumulative cannabis use and internalizing problems in boys from adolescence to young adulthood. J Abnorm Child Psychol. 2020;48(6):771-82.
22. Bouchard M, Gallupe O, Dawson K, Anamali M. No place like home? Availability, opportunity, and substance use in adolescence. J Youth Stud. 2018;21(6):747-64.
23. Yap MB, Cheong TW, Zaravinos-Tsakos F, Lubman DI, Jorm AF. Modifiable parenting factors associated with adolescent alcohol misuse: a systematic review and meta-analysis of longitudinal studies. Addiction. 2017;112(7):1142-62.
24. Carver H, Elliott L, Kennedy C, Hanley J. Parent–child connectedness and communication in relation to alcohol, tobacco and drug use in adolescence: an integrative review of the literature. Drugs Educ Prev Policy. 2016;24(2):119-33.
25. Ruprah IJ, Sierra R, Sutton H. Sex, violence, and drugs among Latin American and Caribbean adolescents: do engaged parents make a difference? Child Youth Serv Rev. 2017;73:47-56.
26. Berman A. The role of peer pressure in substance abuse among teens. Atlanta: The Berman Center. 2023. Available at: https://bermancenteratl.com/role-of-peer-pressure-in-substance-abuse-among-teens. Accessed on 15 April 2025.
27. Watts LL, Hamza EA, Bedewy DA. A meta-analysis study on peer influence and adolescent substance use. Curr Psychol. 2024;43:3866-81.
28. Probst C, Monteiro M, Smith B, Caixeta R, Merey A, Rehm J. Alcohol policy relevant indicators and alcohol use among adolescents in Latin America and the Caribbean. J Stud Alcohol Drugs. 2018;79(1):49-57.
29. Schleimer JP, Rivera-Aguirre AE, Castillo-Carniglia A, Laqueur HS, Rudolph KE, Suárez H, et al. Investigating how perceived risk and availability of marijuana relate to marijuana use among adolescents in Argentina, Chile, and Uruguay over time. Drug Alcohol Depend. 2019;201:115-26.
30. Rutherford BN, Lim CCW, Johnson B, Cheng B, Chung J, Huang S, et al. #TurntTrending: a systematic review of substance use portrayals on social media platforms. Addiction. 2023;118(2):206-17.
31. Lee C, Lee SJ. Prevalence and predictors of smartphone addiction proneness among Korean adolescents. Child Youth Serv Rev. 2017;77:10-7.
32. Izquierdo-Condoy JS, Sosa KR, Salazar-Santoliva C, Restrepo N, Olaya-Villareal G, Castillo-Concha JS, et al. E-cigarette use among adolescents in Latin America: a systematic review of prevalence and associated factors. Prev Med Rep. 2025;49:102952.
33. Doggett A, Qian W, Godin K, De Groh M, Leatherdale ST. Examining the association between exposure to various screen time sedentary behaviours and cannabis use among youth in the COMPASS study. SSM Popul Health. 2019;9:100487.
34. Holligan SD, Battista K, Groh M, Jiang Y, Leatherdale ST. Age at first alcohol use predicts current alcohol use, binge drinking and mixing of alcohol with energy drinks among Ontario grade 12 students in the COMPASS study. Health Promot Chronic Dis Prev Can. 2019;39(11):323-32.
35. Brellenthin AG, Lee DC. Physical activity and the development of substance use disorders: current

knowledge and future directions. Prog Prev Med (N Y). 2018;3(3):e0018.
36. Boyes R, O'Sullivan DE, Linden B, McIsaac M, Pickett W. Gender-specific associations between involvement in team sport culture and Canadian adolescents' substance-use behavior. SSM Popul Health. 2017;3:663-73.
37. Izquierdo-Condoy JS, Sosa KR, Salazar-Santoliva C, Restrepo N, Olaya-Villareal G, Castillo-Concha JS, et al. E-cigarette use among adolescents in Latin America: a systematic review of prevalence and associated factors. Prev Med Rep. 2024;49:102952.
38. The San Pedro Sun. GOB passes law to decriminalize 10 grams of marijuana. 2017. Available at: https://www.sanpedrosun.com/community-and-society/2017/11/09/gob-passes-law-decriminalize-10-grams-marijuana. Accessed on 25 April 2025.
39. Sandhu HS, Anderson LN, Busse JW. Characteristics of Canadians likely to try or increase cannabis use following legalization for nonmedical purposes: a cross-sectional study. CMAJ Open. 2019;7(2):E399-404.
40. Queirolo R, Rossel C, Alvarez E, Repetto L. Why Uruguay legalized marijuana? The open window of public insecurity. Addiction. 2019;114(7):1313-21.

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