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Investigating the associations of age of initiation and other psychosocial factors of singular alcohol, tobacco and marijuana usage on polysubstance use: analysis of a population-based survey in Jamaica

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ABSTRACT

Objectives This study aimed to examine concurrent polysubstance use of alcohol, tobacco and marijuana and determine correlations with access to marijuana, friend and familial drug use habits, risk perception and the age of initiation associated with the singular use of these substances.

Design A secondary data analysis.

Setting Used the Jamaica National Drug Prevalence Survey 2016 dataset.

Participants Involved the entire dataset comprising 4623 randomly selected respondents between 12 and 65 years old.

Outcome measures Primary outcome: concurrent polysubstance use recorded as using two or more of alcohol, tobacco and marijuana. Predictor variables include risk perception and age of initiation of singular alcohol, tobacco and marijuana use, ease of marijuana access and family and friend alcohol and illegal drug use.

Results Approximately 58%–66% of respondents commenced singular alcohol, tobacco or marijuana use under 17. Participants commencing marijuana use at 11 years and under and between 12 and 17 were 3.346 and 4.560 times more likely to report past month concurrent polysubstance use (p=0.030 and p<0.001). Respondents who did not believe that smoking tobacco sometimes (p=0.049), and smoking marijuana sometimes and often was harmful, had increased odds of concurrent polysubstance use (p=0.047 and p<0.001, respectively). Respondents who indicated access to marijuana as easy were significantly more likely to report past month concurrent polysubstance use compared with those who reported access as difficult (p=0.002). Participants who indicated that friends or family members get drunk and take illegal drugs were associated with 1.722 and 1.864 increased odds of reporting past month concurrent polysubstance use (p=0.004 and p=0.017, respectively).

Conclusions Decreased perceived risk, childhood and adolescent age of initiation and easy access to marijuana were significantly associated with polysubstance use among Jamaicans. The influence of friends and family members' drug and alcohol use behaviours on individuals developing polysubstance use habits further endorses the need for interventions.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The use of the entire dataset population augmented the strength of the analysis.
⇒ Using logistic regression did allow several variables to be assessed in eliciting appropriate risk and protective factors.
⇒ Substance use information was self-reported, which can be affected by recall bias.
⇒ This study could not establish causality due to the nature of the cross-sectional data.
⇒ The household survey contained respondents from households and, as such, excluded a percentage of the population who were homeless, in prisons and healthcare institutions.

INTRODUCTION

The latest World Drug Report indicated that almost 285 million people used drugs in 2020,[1] revealing an additional 100 million global drug consumers since the turn of the century.[2] Indeed, escalating drug use is a major concern in Jamaica,[3] the largest English-speaking island in the Caribbean Sea. By mere location, the island lies in the path of a multibillion dollar illicit drug trade,[4] through which maritime and air shipments can access major drug corridors en route to destinations in the North and across the Atlantic Ocean.[5–7] Consequently, the increasing consumption among Jamaicans is likely attributable to the overflow of drugs in transit along the many routes drug traffickers ply their trade.[8]

Alcohol, tobacco and marijuana are the three most commonly used substances in Jamaica.[9 10] Although the lion's share of drug use research have focused on the use of single substances, it is essential to note that many individuals use more than one substance.[11 12] This is referred to as polysubstance use, as defined by the WHO,[13] and can either involve the use of two or more substances on a single occasion (simultaneous), or within a given period (concurrent) spanning days or months.[14] Using alcohol, tobacco or marijuana increases the likelihood of co-use of either one or both remaining substances.[15] Moreover, research highlights that concurrent use of these substances is associated with using them more frequently and in larger amounts.[16 17]

A previous study in Jamaica has examined the sociodemographic factors associated with concurrent polysubstance use (CPU) and reported increased odds among males, individuals between the ages of 18–34, and persons living in rural communities.[18] However, there is a paucity of research, both regionally and globally, regarding how psychosocial factors associated with singular drug use affect polysubstance use, that speaks to the interaction between individuals and their environment and its impact on overall health.[19] This study, therefore, aimed to investigate the influence of selected psychosocial factors such as the ease of marijuana access, alcohol and substance use among friends and family, risk perception and the age of initiation of alcohol, tobacco and marijuana use on CPU.

Risk perception is considered a modifiable risk factor[20] that may impact an individual's choice to use drugs. Younger individuals tend to underestimate the potential harm of drug use compared with their older counterparts, whose risk perception is more likely to change due to age-related health issues or becoming more mature.[21 22] Some studies report that adolescents and young adults who perceive a greater risk of marijuana use are less likely to report using the drug.[23 24] However, other studies suggest that individuals may perceive this drug as less harmful because of its medicinal potential.[25 26] One study highlighted that both young and older individuals perceived alcohol as being associated with less harm, but differed in their perception of tobacco, with the older population considering it to be more harmful.[27] Notwithstanding, most research examining risk perception is substance-specific and not geared towards polysubstance use, an area of concern that this research seeks to address. Indeed, widespread polysubstance prevalence affecting the Jamaican population[18] suggests a generally positive attitude towards risk-taking exists.

Previous studies have demonstrated the association between starting drugs at a young age and subsequent increased use and development of drug addiction.[28 29] In particular, engaging in alcohol, tobacco or marijuana at an early age is related to the early onset of using either one or the other remaining drugs.[30–32] A possible explanation for this association is that specific individuals possess a behavioural or personality susceptibility to engage in problematic behaviour,[33] such as polysubstance use. An alternative theory, the 'gateway hypothesis',[34] suggests that an adolescent's early encounter with one class of drugs predisposes and predicts the use of other illicit drugs in later life.[35 36] However, recent research suggests that the onset of drug use could occur later in life,[37] thus limiting the predictability of early age of initiation as a risk factor for subsequent drug use.[38] Factors accounting for this unique occurrence may include ease of access, cultural appropriation, family drug use, peer pressure and mental ill health.[37 39–41] Although a small sample-sized study, recent research reported that individuals who started using alcohol, tobacco and marijuana later in life engaged in alcohol and marijuana co-use more frequently compared with those individuals with an earlier age of onset.[42] Notwithstanding, analyses using nationally representative data are minimal, a knowledge gap this study seeks to fill.

It is suggested that the likelihood of initiation is enhanced by the frequency and availability of substance use in its community.[41 43] Moreover, extant literature shows that the perceived ease of access to drugs can further elevate the risk of using drugs,[44–46] especially if access is from within an individual's social environment and circle of friends.[47 48] Furthermore, prior research has identified exposure to drug use by family and friends as being strongly associated with polysubstance use among adolescents and young adults.[49–51] In Jamaica, the most recent national survey indicated that 40%–60% of adolescents and 60%–80% of adults found marijuana easy to access.[9] This finding is foreseeable, given Jamaica's recent decriminalisation of marijuana which allows for possession of small quantities (two ounces) for personal use and therapeutic treatment through the establishment of a legal medical marijuana industry.[52] Additionally, Jamaica has a rich cultural history of cultivating marijuana for medicinal and religious purposes.[53 54] However, while the impact of easier access to marijuana on single-drug dependence has been studied,[55] literature regarding its influence on polysubstance use is largely absent.

No doubt, polysubstance use poses a significant global challenge associated with greater physical and psychiatric maladies, and a mortality rate that escalates threefold versus single substance use.[56 57] To date, no studies in the Caribbean have used nationally representative data to assess the ease of marijuana access, friend and family substance use, risk perception and the age of initiation of singular drug usage on polysubstance use. Identifying their influence can allow for constructed interventions to reduce the impact of risk factors and enhance the efficacy of protective factors in preventing or reducing polysubstance habits.

OBJECTIVES

This study aimed to examine CPU in a nationally representative sample of the Jamaican population and to investigate if there is an association with: (1) the risk perception of alcohol, tobacco and marijuana use; (2)

the age of initiation of alcohol, tobacco and marijuana use; (3) the ease of access to marijuana and (4) having friends or family who get drunk and take illegal drugs.

METHODS
Study design, participants and data source
This research was a secondary data analysis of the population-based National Drug Prevalence Survey 2016 conducted between April and July 2016. It used the entire dataset population and extracted variables relevant to drug/polysubstance use patterns and risk perception, age of initiation, ease of access and friend and family drug use from the primary data set for analysis. There was no compensation in this secondary analysis or direct or indirect contact with any respondents.

The original study used a structured, regional questionnaire for the data collection on drug use that was developed in collaboration with the Organisation of American States/Inter-American Drug Abuse Control Commission. The sample was nationally representative and comprised 4623 participants. The survey employed a stratified multistage sampling design in which the primary sampling units were the Enumeration Areas (EAs). Jamaica consists of 14 parishes and 22 EAs per parish. In each EA, systematic random sampling was used to procure sixteen households. Thereafter, one participant between the ages of 12 and 65 years from each household was randomly selected as the respondent for the survey. Poststratification weights were applied to ensure that the weighted sample distribution matched the population distribution of sex and age categories.[9]

Measures
Lifetime, past year and past month use was determined using the target variables related to substance use over the lifetime, in the past 12 months and past 30 days for alcohol, tobacco and marijuana. 'Yes' responses were coded as one and 'no' were coded as zero. Lifetime, past year and past month CPU was defined as using two or more of alcohol, tobacco and marijuana over the lifetime, in the past 12 months and past 30 days, respectively, measures described previously in the literature.[58 59] Statistical computations were performed to score concurrent polysubstance, where respondents could only have a score of 0–3. For analytical purposes, 2–3 substances over the past 30 days were considered past month CPU and used as the dependent variable.

Risk perception was assessed by asking participants, 'In your opinion, please indicate the risk level of (a) drinking alcohol sometimes, (b) drinking alcohol often, (c) smoking cigarettes (tobacco) sometimes, (d) smoking cigarettes (tobacco) often, (e) smoking marijuana sometimes and (f) smoking marijuana often'. Participants indicated their risk level along a Likert scale continuum: (1) no risk, (2) low risk, (3) moderate risk, (4) high risk and (5) I don't know the risk. For the univariate and bivariate analyses, response options were recategorised whereby 1=no risk to low risk, 2=moderate to high risk and 3=don't know the risk. For the multivariate analysis, response options were recategorised to examine respondents who had indicated some level of perceived risk. Furthermore, the option 'don't know the risk' was excluded as an underrepresented category with insufficient frequencies that may introduce variability and bias in the interpretation of the results.[60]

Regarding the age of initiation of alcohol, tobacco and marijuana, participants were asked to indicate their age in years to the following question for each substance: 'How old were you when you tried for the first time?' For this analysis, respondents were arranged into four age groups: 11 years and under, 12–17 years, 18–25 years and 26 years and older to demonstrate distinct phases of childhood, adolescence and adulthood as established elsewhere.[61]

For ease of access to marijuana, participants were asked, 'How easy would it be to have access to the following drug—marijuana?' Response options were 1=easy; 2=difficult; 3=could not have access to; 4=don't know. Missing responses were treated as missing variables.

For friend and family alcohol and illegal drug use, participants were asked, 'Do you have friends or family members who get drunk?' and 'Do you have friends or family members who take illegal drugs such as marijuana and cocaine?' Response options were 0=no and 1=yes.

Statistical analyses
Statistical analysis was performed on the data by using SPSS V.23. Descriptive statistics included computing frequencies and percentages for categorical variables. Bivariate analysis examining the association between past month CPU and select psychosocial variables was done using Pearson's χ^2 test. In the multivariate analysis, logistic regression was used whereby past month CPU was the dependent variable. Factors identified as statistically significant in the bivariate analysis were included to control for their potential confounding effect. Multicollinearity between the study variables was diagnosed using variance inflation factor (VIF) (with multicollinearity being defined as VIF>2.5) and Hosmer-Lemeshow statistic was used to test for model fitness. ORs and 95% CIs were recorded. A p<0.05 was considered statistically significant. The data were presented in the form of tables and text.

Patient and public involvement
Patients or members of the public were not involved in any aspect of this research, including conceptualisation, design, analysis, interpretation of results and reporting.

RESULTS
The study comprised 4623 respondents, most identified as female (n=2535, 54.8%) and 45.2% as males (n=2088). Respondents' age range was between 12 and 65 years, with a mean age of 36.18 (SD±14.815). The prevalence of substances used in the past month was 54.3% (alcohol), 38% (tobacco) and 53.9% (marijuana). The earliest

Table 1 Distribution of age of initiation, risk perception, friends/family drug use and acessibility to marijuana (n=4623), 2016

Psychosocial factors	Responses (f, %)		
Age of initiation	Alcohol	Tobacco	Marijuana
11 years and under	266 (07.7)	132 (11.1)	92 (07.3)
12–17 years	1714 (49.9)	651 (54.6)	707 (55.9)
18–25 years	1284 (37.4)	343 (28.8)	396 (31.3)
26 years and older	171 (05.0)	66 (05.5)	69 (05.5)
Risk perception	No risk to low risk	Moderate to high risk	Don't know the risk
Drinking alcohol sometimes	1823 (39.4)	2743 (59.3)	57 (01.2)
Drinking alcohol often	193 (04.2)	4384 (94.8)	46 (01.0)
Smoking tobacco sometimes	581 (12.6)	4001 (86.5)	41 (00.9)
Smoking tobacco often	112 (02.4)	4469 (96.7)	42 (00.9)
Smoking marijuana sometimes	1512 (32.7)	3033 (65.6)	78 (01.7)
Smoking marijuana often	668 (14.4)	3893 (84.2)	62 (01.3)
Friends/family who get drunk			
Yes	2665 (57.6)		
No	1958 (42.4)		
Friends/family who take illegal drugs			
Yes	2998 (64.8)		
No	1625 (35.2)		
Accessibility to marijuana			
Easy	3341 (72.3)		
Difficult	567 (12.3)		
Could not have access to	439 (09.5)		
Don't know	276 (06.0)		

mean age of initiation for alcohol, tobacco and marijuana use was for tobacco at 16.73 (SD±5.498), followed by marijuana at 16.78 (SD±5.039) and alcohol at 17.23 (SD±5.132). Lifetime CPU was reported by 907 (19.6%) respondents. Among those who reported lifetime use, 623 (68.7%) and 561 (61.9%) respondents reported CPU in the past year and past month, respectively.

Table 1 shows most respondents reported commencing substance use between 12 and 17 years of age and moderate to high risk perception as it related to the use of alcohol, tobacco and marijuana. Concerning friends and family drug use, most respondents had friends or family who get drunk (57.6%) and take illegal drugs such as marijuana and cocaine (64.8%). Regarding access to marijuana, the majority of respondents, 3341 (72.3%), reported that accessing marijuana was 'easy'.

Table 2 shows a bivariate analysis of select psychosocial factors and past month CPU. Pearson's χ^2 analysis revealed statistically significant associations between the age of initiation of alcohol, tobacco and marijuana and past month CPU (p<0.001, p=0.049 and p<0.001, respectively). Statistically significant associations were found between past month CPU and risk perception of smoking tobacco sometimes, smoking marijuana sometimes and smoking marijuana often (p=0.007, p<0.001 and p<0.001, respectively). Friends and family who get drunk and take

illegal drugs were significantly associated with a higher prevalence of past month CPU (p<0.001 and p<0.001) among respondents. Additionally, respondents who stated that marijuana was easy to access were significantly associated with a greater prevalence of past month CPU (p<0.001).

Logistic regression analysis was performed on the psychosocial factors found to be significantly associated with past month CPU in the χ^2 analysis, to identify which were predictive of risk or protective factors (table 3). The model was statistically significant and predicted the dependent variable better than the intercept-only model alone (χ^2 (17)=147.664, p<0.001). There was no multicollinearity found among the independent variables used in the analysis. The Hosmer-Lemeshow test shows the p value at 0.775 (p>0.05) which shows the model fits the data.

Multivariate analysis indicated that participants commencing marijuana use at 11 years and under and between 12 and 17 were 3.346 and 4.560 times more likely to report past month CPU than participants initiating marijuana use 26 years and older (p=0.030 and p<0.001). The logistic regression model indicated that respondents with no risk to low risk perception of smoking marijuana sometimes and often were 1.477 and 2.892 times more likely to report past month CPU than those who indicated

Table 2 χ^2 analysis of psychosocial factors and past month CPU (n=907), 2016

Psychosocial factors	Past month CPU		χ^2	P value
	No (346/907)	Yes (561/907)		
Age of initiation: alcohol			18.968	<0.001‡
11 years and under	44 (12.9%)	73 (13.1%)		
12–17 years	182 (53.4%)	367 (65.9%)		
18–25 years	105 (30.8%)	109 (19.6%)		
26 years and older	10 (02.9%)	8 (01.4%)		
Age of initiation: tobacco			7.855	0.049*
11 years and under	28 (09.4%)	65 (12.6%)		
12–17 years	157 (52.7%)	298 (58.0%)		
18–25 years	99 (33.2%)	126 (24.5%)		
26 years and older	14 (04.7%)	25 (04.9%)		
Age of initiation: marijuana			41.648	<0.001‡
11 years and under	25 (07.7%)	46 (08.5%)		
12–17 years	146 (44.8%)	351 (64.9%)		
18–25 years	131 (40.2%)	128 (23.7%)		
26 years and older	24 (07.4%)	16 (03.0%)		
Risk perception: drinking alcohol sometimes			3.233	0.199
No risk to low risk	146 (35.2%)	269 (64.8%)		
Moderate to high risk	195 (40.5%)	287 (59.5%)		
Don't know the risk	5 (50.0%)	5 (50.0%)		
Risk perception: drinking alcohol often			0.174	0.917
No risk to low risk	23 (39.0%)	36 (61.0%)		
Moderate to high risk	319 (38.0%)	520 (62.0%)		
Don't know the risk	4 (44.4%)	5 (55.6%)		
Risk perception: smoking tobacco sometimes			10.021	0.007†
No risk to low risk	46 (27.5%)	121 (72.5%)		
Moderate to high risk	296 (40.7%)	432 (59.3%)		
Don't know the risk	4 (33.3%)	8 (66.7%)		
Risk perception: smoking tobacco often			2.525	0.283
No risk to low risk	13 (27.7%)	34 (72.3%)		
Moderate to high risk	328 (38.6%)	521 (61.4%)		
Don't know the risk	5 (45.5%)	6 (54.5%)		
Risk perception: smoking marijuana sometimes			38.061	<0.001‡
No risk to low risk	138 (29.2%)	335 (70.8%)		
Moderate to high risk	207 (48.6%)	219 (51.4%)		
Don't know the risk	1 (12.5%)	7 (87.5%)		
Risk perception: smoking marijuana often			47.295	<0.001‡
No risk to low risk	58 (21.4%)	213 (78.6%)		
Moderate to high risk	287 (45.5%)	344 (54.5%)		
Don't know the risk	1 (20.0%)	4 (80.0%)		
Friends/family who get drunk			11.097	<0.001‡
Yes	226 (34.8%)	424 (65.2%)		
No	120 (46.7%)	137 (53.3%)		
Friends/family who take illegal drugs			19.144	<0.001‡
Yes	285 (35.6%)	516 (64.4%)		

Table 2 Continued

Psychosocial factors	Past month CPU		χ^2	P value
	No (346/907)	Yes (561/907)		
No	61 (57.5%)	45 (42.5%)		
Accessibility to marijuana			27.562	<0.001‡
Easy	308 (89.0%)	545 (97.1%)		
Difficult	25 (07.2%)	9 (01.6%)		
Could not have access to	8 (02.3%)	2 (00.4%)		
Don't know	5 (01.4%)	5 (00.9%)		

*Significant at the p<0.05.
†Significant at the p<0.01 level.
‡Significant at the p<0.001 level.
CPU, concurrent polysubstance use.

Table 3 Regression model of psychosocial factors associated with past month CPU (n=907), 2016

Psychosocial factors	OR	95% CI		P value
		Lower	Upper	
Accessibility to marijuana (easy)	Reference			
Accessibility to marijuana (difficult)	0.251	0.103	0.615	0.002†
Accessibility to marijuana (could not have access to)	0.515	0.077	3.468	0.496
Accessibility to marijuana (don't know)	1.005	0.215	4.695	0.995
Risk perception of smoking tobacco sometimes (moderate to high)	Reference			
Risk perception of smoking tobacco sometimes (no risk to low risk)	1.629	1.001	2.649	0.049*
Risk perception of smoking marijuana sometimes (moderate to high)	Reference			
Risk perception of smoking marijuana sometimes (no risk to low risk)	1.477	1.006	2.168	0.047*
Risk perception of smoking marijuana often (moderate to high)	Reference			
Risk perception of smoking marijuana often (no risk to low risk)	2.892	1.785	4.685	<0.001‡
Age of initiation for alcohol: 11 years and under	1.458	0.395	5.388	0.572
Age of initiation for alcohol: 12–17 years	1.952	0.573	6.644	0.285
Age of initiation for alcohol: 18–25 years	1.087	0.315	3.755	0.894
Age of initiation for alcohol: 26 years and older	Reference			
Age of initiation for tobacco: 11 years and under	0.501	0.173	1.455	0.204
Age of initiation for tobacco: 12–17 years	0.447	0.179	1.115	0.084
Age of initiation for tobacco: 18–25 years	0.717	0.285	1.799	0.478
Age of initiation for tobacco: 26 years and older	Reference			
Age of initiation for marijuana: 11 years and under	3.346	1.125	9.949	0.030*
Age of initiation for marijuana: 12–17 years	4.560	1.879	11.067	<0.001‡
Age of initiation for marijuana: 18–25 years	1.611	0.673	3.859	0.285
Age of initiation for marijuana: 26 years and older	Reference			
Friends/family who get drunk (no)	Reference			
Friends/family who get drunk (yes)	1.722	1.192	2.487	0.004†
Friends/family who take illegal drugs (no)	Reference			
Friends/family who take illegal drugs (yes)	1.864	1.117	3.111	0.017*

*Significant at the p<0.05.
†Significant at the p<0.01 level.
‡Significant at the p<0.001 level.
CPU, concurrent polysubstance use.

moderate to high risk perception of smoking marijuana (p=0.047 and p<0.001, respectively). Similarly, respondents who indicated no risk to low risk perception of smoking tobacco sometimes were associated with a 1.629 increased odds of reporting past month CPU compared with those who indicated moderate to high risk perception (p=0.049). The model reported no statistically significant associations between the age of initiation of alcohol or tobacco and polysubstance use (p>0.05). The model also highlighted that those respondents who indicated marijuana access as being difficult were 74.9% less likely to report past month CPU than those who reported easy access to marijuana (p=0.002). Alternately, the result can also be interpreted that the odds of past month CPU is 3.984 times higher among those who reported access to marijuana as easy than those who reported access as being difficult (p=0.002). In addition, those participants who indicated that friends or family members get drunk and take illegal drugs were associated with a 1.722 and 1.864 increased odds of reporting past month CPU than those who reported that friends or family members did not get drunk and take illegal drugs (p=0.004 and p=0.017, respectively).

DISCUSSION

This research suggests that the vast majority (95%) of individuals who used alcohol, tobacco or marijuana at least once, had done so before reaching the age of 25, predominantly in adolescence (49.9%, 54.6% and 55.9%, respectively) and childhood (7.7%, 11.1% and 7.3%, respectively). Using any of these substances during these critical phases of development is associated with behavioural problems,[62] depression,[63] suicide,[64] psychosis[65] and dependence,[66] emphasising a burgeoning public health issue among Jamaican youth. This study is unique, however, in that it is the first in the Caribbean to reveal the impact of risk perception, the age of initiation, ease of access and friend or family indulgence of the singular use of alcohol, tobacco and marijuana on polysubstance use.

This study alludes to participants commencing marijuana use in childhood and adolescence as a risk factor for developing polysubstance use while simultaneously indicating no statistically significant associations with the age of initiation of alcohol or tobacco (p>0.05). The finding presented is in concordance with prior research that highlights the early age of marijuana use as being associated with alcohol and tobacco polysubstance use.[38 67] However, this finding also finds variance with existing literature that suggests alcohol and tobacco use typically precedes the first use of marijuana.[68] According to the gateway hypothesis, using marijuana customarily follows alcohol or tobacco use, whereas the common liability model explains drug use through the interplay of other factors, such as accessibility, sociocultural acceptance, genetic predisposition and psychological variables, irrespective of which substance is used first.[69] Indeed,

within the Jamaican context, the preference for marijuana use is likely the result of strong sociocultural and religious validation, recent legislation that decriminalises its use,[52 54 70] and legitimate taxation initiatives and mitigation measures that have sought to curb alcohol and tobacco use.[71 72] Accordingly, these findings highlight the need for preventative interventions targeting the younger populace that are geared towards delaying the onset of marijuana use. Providing a brief and non-compulsory intervention within the school setting may prove helpful, especially in cases where students are unsure about substance use. This approach allows students to voluntarily be taught drug refusal skills[73] and learn about the harms associated with marijuana use.[74] Such targeted strategies are needed at the policy level because recent decriminalisation in Jamaica has been linked to an increased likelihood of first-time marijuana use among young individuals.[70]

As expected, Jamaica's rapidly evolving legal landscape caters to greater access and exposure to marijuana compared with previous years. Extant research has acknowledged the ease of access to marijuana as a driving cause of substance abuse.[43 75] In this study, respondents who indicated marijuana access as easy were more likely to report past month CPU. This finding is noteworthy, as previous research has focused on the ease of access to marijuana as an antecedent to marijuana dependence,[55 76] rather than polysubstance use. Moreover, the decriminalisation of marijuana in Jamaica has led to the establishment of a medical marijuana industry, resulting in the subsequent formation of numerous marijuana dispensaries throughout the island.[52 77] Undoubtedly, this development has made access to marijuana even easier.

Recent research have shown that changes in policies regarding marijuana use, have led to diminishing perceptions of the drug's risks and harms.[78–81] Respondents in this study who believed that smoking marijuana was not harmful were more likely to report past month CPU. This observation is significant given that most research in Jamaica would have examined risk perception and its influence on single drug use and dependence.[82 83] In 2015, decriminalisation permitted the possession of up to two ounces of marijuana,[52 84] an amendment that is likely to have encouraged its use as being socially acceptable and 'normalised' in line with the use of other legal drugs.[85 86] As a result, repeated exposure to substance-using friends and family members can directly influence an individual's drug-seeking behaviour.[87 88] In the present analysis, respondents who reported that friends or family members used illegal drugs like marijuana and became inebriated, were significantly more likely to report past month CPU. The study findings are in line with earlier research that has emphasised the impact of friends' and family members' drug use habits on the young individual's likelihood of developing polysubstance use.[50 87] To reduce health risks, individual harm reduction strategies such as using small amounts of marijuana or consuming alcohol slowly have been found to be effective.[89 90] Additionally,

evidence-based interventions consisting of family-focused treatment and individual therapy have also found favourable results in reducing marijuana use.[91]

Notwithstanding, this study's cumulative findings have implications for future drug treatment and prevention interventions in recognising the impact of polysubstance use. In Jamaica, the National Council on Drug Abuse collaborates with the Ministry of Health and Wellness and various public and non-governmental organisation partners to establish and execute prevention activities. Acute drug treatment services are available in both public and private hospitals, as well as residential rehabilitation programmes.[3] A local drug treatment court was established in Jamaica in the early 2000s to redirect criminal drug offenders towards treatment, rehabilitation and social reintegration.[92] However, programmes in the area of recovery support still require improvement.[93] Additionally, the available services are limited in number and located mainly in metropolitan areas, which makes access to care a challenge.[94] Moreover, regulatory measures and quality control protocols must be strengthened to accredit prevention programmes and treatment services, which will enable continuous evaluation and monitoring of the services.[93]

A further call to include polysubstance use in the mainstream of interventional efforts is paramount, especially concerning marijuana policy. Evidentiary support exists for harm reduction strategies including co-housing addiction treatment services with supervised drug consumption sites[95] and drug checking services,[96 97] especially with regard to tetrahydrocannabinol potency levels, and using the perspectives of personal lived experiences in guiding the further development of policy and legislation in addressing the drug's use.[98 99]

Further studies examining polysubstance use pursuant to decriminalisation may prove insightful as findings are likely to have changed and evolved since the initial survey in 2016. The COVID-19 pandemic has greatly affected the quality of life in many countries, leading to changing drug use patterns.[100–102] Future household surveys and research can examine how COVID-19-related issues have affected both single-substance and polysubstance use patterns and provide insights into substance use profiles in a postpandemic era.

Given the paucity of research in the global context, this research examines the effects of the age of initiation and other psychosocial factors of singular drug use on polysubstance use within a nationally representative sample, thereby providing valuable insight towards policy implications on a national scale. The random selection of survey respondents in the initial study and the use of a large population sample for the current study were significant strengths, as the limited research done in Jamaica investigating polysubstance use has examined small and specific samples[103 104] that produced findings that were unlikely to be generalised to a larger population. The strength of the secondary analysis conducted was enhanced by the use of logistic regression for the multivariate analysis.

The study had certain limitations, which need to be taken into consideration. First, it employed a cross-sectional design, which allowed only for associations to be determined, not causal relationships. Second, the household survey contained respondents from households and, as such, excluded a percentage of the population, who were homeless, those in prisons and healthcare institutions. Third, the frequencies of illicit drugs other than marijuana were minimal and so were not considered as part of the polysubstance combinations. Lastly, substance use was self-reported which can be influenced by recall bias. Notwithstanding, the secondary analysis generated a measure of CPU, providing the underpinning catalyst for future research endeavours.

CONCLUSION

This study suggests polysubstance use among Jamaicans is significantly associated with childhood and adolescent initiation and easy accessibility to marijuana. The study also sheds light on how Jamaicans perceive the risks and harms associated with marijuana use. In addressing this issue, policy perspectives must involve harm reduction strategies and not be restricted to mere preventative measures to guard against escalated habits. This is especially important given the current legal and sociocultural contexts of marijuana use pervasive within the Jamaican population. Furthermore, the study highlights the strong influence of friends' and family members' drug use on individuals adopting polysubstance use habits. Policy-makers should, therefore, consider using a social-ecological model to better understand drug-using behaviour in crafting legislation and implementing potential intervention strategies.

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