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## PERCEPTION OF HARM AND BENEFITS OF CANNABIS USE AMONG ADOLESCENTS FROM LATIN AMERICA AND CARIBE

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## ABSTRACT

**Objective:** to investigate the perception of harms and benefits associated with cannabis use among adolescents and how regulatory changes might affect their intention to use marijuana.

**Method:** this multi-centric cross-sectional survey study. participants included 2717 students aged 15–17 from 10 cities in Belize, Brazil, Chile, Colombia, Dominican Republic, Jamaica, Mexico, St. Kitts and Nevis, and Trinidad and Tobago.

**Results:** an average lifetime prevalence of cannabis use of 30.6% (25.8% past year, 15.8% past 30 days). Most participants reported that their closest friends use cannabis (60%); many (55%) stated that they would not use marijuana, even if it were legally available.

**Conclusion:** statistics revealed that a strong perception of benefits, a low perception of risk, and friends' use of cannabis were associated with individual use as well as intention to use within a hypothetical context of regulatory change.

**DESCRIPTORS:** Adolescent behavior. Cannabis. Risk factors. Government Regulation.

## PERCEPCIÓN DE DAÑOS Y BENEFICIOS DEL USO DE CANNABIS ENTRE ADOLESCENTES DE AMÉRICA LATINA Y CARIBE

### RESUMEN

**Objetivo:** investigar la percepción de daños y beneficios asociados al uso de marihuana en adolescentes y cómo los cambios regulatorios pueden afectar la intención de uso.

**Método:** estudio multicéntrico, cuantitativo y transversal tipo encuesta. los participantes fueron 2,717 estudiantes entre 15 y 17 años de 10 ciudades de Belice, Brasil, Chile, Colombia, República Dominicana, Jamaica, México, San Cristóbal y Nieves, y Trinidad y Tobago.

**Resultados:** prevalencia de alguna vez en la vida de 30.6% (25.8% último año, 15.8% últimos 30 días). Los adolescentes refieren que amigos cercanos consumen marihuana (60%). Los participantes (55%) declaran que no usarían marihuana, incluso si estuviera disponible legalmente.

**Conclusión:** las estadísticas revelan que la alta percepción de los beneficios, baja percepción de daño y amigos que consumen marihuana, está asociado con el consumo y la intención de uso en el contexto hipotético de cambios regulatorios.

**DESCRIPTORES:** Conducta del adolescente. Cannabis. Factores de riesgo. Regulación gubernamental.

## PERCEPÇÃO DE DANOS E BENEFÍCIOS DO USO DE CANNABIS ENTRE ADOLESCENTES DA AMÉRICA LATINA E CARIBE

### RESUMO

**Objetivo:** investigar a percepção de danos e benefícios associados ao uso de maconha entre os adolescentes e como as mudanças regulatórias podem afetar a intenção de usar maconha.

**Método:** estudo multicêntrico de corte transversal. Os participantes foram 2.717 alunos com idades entre 15 e 17 anos de 10 cidades em Belize, Brasil, Chile, Colômbia, República Dominicana, Jamaica, México, São Cristóvão e Nevis e Trinidad e Tobago.

**Resultados:** prevalência de uso de maconha na vida de 30,6% (25,8% no ano passado, 15,8% nos últimos 30 dias). Os participantes relataram que os amigos mais próximos usam maconha (60%); e metade (55%) afirmou que não usariam maconha, mesmo se ela estivesse legalmente disponível.

**Conclusão:** as estatísticas revelaram que percepção elevada de benefícios, percepção de baixo risco e uso de maconha por parte de amigos estavam associados ao uso individual, bem como à intenção de usar a maconha em um contexto hipotético de mudanças regulatórias.

**DESCRIPTORES:** Comportamento do adolescente. Cannabis. Fatores de risco. Regulamentação governamental.

## INTRODUCTION

Regulatory changes on cannabis use in several countries have proved to be an ongoing struggle for global health policies. It is possible that such changes may have considerable effects on adolescents' perception of harm regarding cannabis use.<sup>1</sup> In most Latin American and Caribbean countries, the prevalence of cannabis use among secondary school students is increasing.<sup>2</sup> Some evidence suggests that decreased risk perception and increased availability explain the trend of increasing cannabis consumption among adolescents.<sup>3-4</sup> Studies have reported that when the perception of risk declines, the use of cannabis increases and *vice versa*.<sup>5-6</sup> Adolescents who perceived cannabis use as involving less risk were twice as likely to use marijuana.<sup>7</sup>

The 2014 World Drug Report stated that declining risk perception and increased availability may lead to increases in adolescent use of marijuana. It also stated that among adolescents and young adults, more permissive cannabis regulations correlate with a decrease in the perceived risk of use, and that lowered risk perception has been found to predict increase in use. Additionally, it reported that although the general public may perceive cannabis to be the least harmful illicit drug, the proportion of total treatment admissions for cannabis increased in several countries from 2003–2012.<sup>4</sup>

The 2013 U.S. survey Monitoring the Future<sup>6</sup> reported that perceptions of the risks associated with cannabis use have shifted so that fewer adolescents believe that drugs are harmful. Such a change may predict increased future use of a drug. The survey found that only 41.7% of eighth-graders see occasional cannabis use as harmful, while 66.9% see regular use as harmful. This was the lowest level documented in this age group since 1991, when the study began tracking risk perception among eighth-graders. Perceived risk associated with cannabis use continued to decline sharply in all three grades surveyed. The 2013 survey also found that disapproval of cannabis use had declined somewhat, which may lead to future increases in cannabis use. Perceived availability has remained relatively stable. Cannabis use among twelfth-graders was found to be more prevalent than smoking cigarettes (21.4% *versus* 19.2% past month).

Another study reported that perceived risk was higher among nonusers of cannabis than among those who reported cannabis use.<sup>8</sup> Among cannabis users, risk perception was not influenced by the frequency of cannabis use, nor was it influenced by the actual experience of a drug-related consequence. Among abstainers, perceived risk and the potential consequences of cannabis use may serve a protective role against the initiation of cannabis use. For those who use marijuana, intervention efforts utilizing motivation enhancement approaches could explore the discrepancy between perceived risks and actual experienced consequences.<sup>8</sup>

The average age of first cannabis use ranges from 12-15 years in different countries, and has an inverse relationship with the perception of related harms among adolescents.<sup>6</sup> Several studies have found that the most common onset of drug use occurs during the passage from childhood to adolescence, either as experimentation, occasional use, abuse, or misuse.<sup>9-10</sup>

Onset of cannabis use among adolescents is of particular concern due to the increased risk of harm to this age group.<sup>4</sup> Some of these concerns include the use of other drugs and drug dependency,<sup>11-12</sup> a risk of heavy dependency,<sup>13</sup> lung and respiratory problems,<sup>14-15</sup> memory and attention impairments,<sup>12,15-21</sup> a decrease in cognitive capacity related to the process of learning, such as attention, concentration, ranking, visual-spatial integration, immediate retention, and visual memory,<sup>21-22</sup> psychosocial development problems and mental health problems,<sup>23-24</sup> poorer cognitive performance associated with early initiation and persistent use between the early teenage years and adulthood,<sup>4,23-25</sup> and an increase in car accidents associated with acute cannabis use.<sup>26-30</sup>

The evidence about potential harms of cannabis use is not conclusive and inconsistencies appear among studies. The relationship between cannabis use by adolescents and psychosocial harm

is likely to be multifaceted, which might explain such inconsistencies. For example, one study suggested that long-term mental deficits may be reversible and remain subtle rather than disabling once a person abstains from use.<sup>31–32</sup> Moreover, the actual mechanisms underlying the effects of cannabis on the cardiovascular and cerebrovascular systems are complex and not fully understood.<sup>12</sup> Furthermore, it is difficult to establish a linear causality between cannabis and mental health because factors other than cannabis use might be associated with the risk of mental illness.<sup>12</sup> Despite some contentious discussions regarding its harm, cannabis use in adolescence appears to have several effects, both short-term and long-term, on different aspects of life, and could affect development and life in adulthood.

Other studies have focused on the medical benefits of cannabis use. Cannabis has been used for a wide spectrum of medical purposes to treat symptoms and illnesses, including chronic pain,<sup>12,33–35</sup> nausea,<sup>36–37</sup> epilepsy,<sup>38–39</sup> and individuals with AIDS<sup>40</sup> and patients with cancer.<sup>41–42</sup> These positive effects of cannabis use are relevant in the context of debates regarding the establishment of new regulations to legalize medical and recreational uses, but it is still important to consider how cannabis affects adolescent health.

Overall, it is important to assess how adolescents perceive the adverse effects and/or benefits of cannabis use, as well as their intention to use marijuana, within the context of global discussions on regulatory changes. This paper presents the results of a multi-centric and multi-national research study by the CICAD/CAMH Capacity Building Program<sup>43</sup>, which explored these issues in Belize, Brazil, Chile, Colombia, Dominican Republic, Jamaica, Mexico, St. Kitts and Nevis, and Trinidad and Tobago.

The goal of this study was to investigate how adolescents' perceptions of harm and benefits are related to cannabis use, and how regulatory changes might be affecting intentions about cannabis use in these countries.

## METHOD

This study was a multi-centric, quantitative cross-sectional survey conducted in Belize, Brazil, Chile, Colombia, Dominican Republic, Jamaica, Mexico, St. Kitts and Nevis, and Trinidad and Tobago. The general objective was to explore the association between perceptions of harms and benefits and cannabis use among students aged 15–17 years. Specific objectives were: a) to describe prevalence by total sample, gender, and site, proportion of friends that use marijuana, general perception of harms, attitudes about cannabis legalization, and use and intention to use; b) to investigate any association between friends' use of cannabis and cannabis use; c) to explore attitudes about regulatory changes and intention to use; and d) to explore associations between harms, benefits, friends' drug use, and intention to use.

The extent and context to which cannabis is legalized, de-penalized, or decriminalized are important issues in Latin America and the Caribbean (Table 1). Most of the countries included in this study prohibit the recreational and medicinal use, sale, and production of marijuana. Some are now beginning to explore changes to the regulatory process, while others have already explored and passed de-penalization or decriminalization laws. To date, none of the nine countries have legalized marijuana.<sup>3</sup>

Participants were 2717 public secondary school students (57% female and 43% male), aged 15–17 years ( $M=15.92$   $SD=0.77$ ), from 10 cities within the nine countries (Table 2). Due to differences in class streaming and grade levels across the nine countries, sample selection was based on age rather than grade.

Legalization and/or decriminalization of cannabis have implications that are difficult to predict, so countries will only discover the effects after some time of monitoring, evaluation, and assessment of these regulatory changes. To date, no studies have explored the effects of legislative changes on individuals and society, especially on adolescents. To address this research gap, this study investigated the perception of harms and benefits associated with cannabis use among adolescents within four Caribbean and five Latin American countries.

**Table 1** – Current (2016) cannabis regulations in participating Caribbean and Latin America countries.

Country	Regulation of Marijuana	Notes
<b>Belize</b>	Decriminalized	One can possess up to 10 grams of marijuana for personal, recreational or medical use.
<b>Brazil</b>	De-penalized	For unauthorized possession, individuals must complete a safety measure such as drug abuse education or community service. Sale and production are illegal.
<b>Chile</b>	Decriminalized	Consumption or possession in public places is sanctioned. A judge decides minimum quantity for possession.
<b>Colombia</b>	Decriminalized	No more than 20 grams for personal use.
<b>Dominican Republic</b>	Illegal	Some discussion about decriminalization.
<b>Jamaica</b>	Decriminalized	Quantities not exceeding 2 ounces (56.6 grams) or cultivation of five or fewer plants for personal use became decriminalized in 2015. <sup>44</sup>
<b>Mexico</b>	Decriminalized	When quantities do not exceed 5 grams sanctions are not applied.
<b>St. Kitts &amp; Nevis</b>	Illegal	Current and ongoing discussion about decriminalization.
<b>Trinidad &amp; Tobago</b>	Illegal	Current and ongoing discussion about decriminalization

Adapted from Inter-American Drug Abuse Control Commission.<sup>3</sup>

**Table 2** – Sample distribution by site and age, 2015. (N=2717)

City and Country	Total		Mean Age
	Students	Percentage	
Belize City - Belize	273	10.0	16.0
Brasilia - Brazil	268	9.9	15.9
Viña del Mar - Chile	268	9.9	15.9
Concepcion - Chile	268	9.9	16.0
Bogota - Colombia	268	9.9	15.9
Santo Domingo - Dominican Republic	268	9.9	15.9
Manchester - Jamaica	300	11.0	15.9
Mexicali - Mexico	268	9.9	16.1
Basseterre - St. Kitts & Nevis	268	9.9	15.7
Saint Joseph - Trinidad & Tobago	268	9.9	15.7

A sample size of 268 in each city will have a medium effect size at a  $\alpha=0.05$  level.<sup>45</sup>

The questionnaire used to collect data was an amalgam of scales taken from three instruments: (a) Inter-American Drug Use Data System (SIDUC) Secondary Students School Survey;<sup>2</sup> (b) Monitoring the Future (MTF);<sup>6</sup> and (c) the Benthin Risk Perception Measure<sup>46</sup>. The questionnaire included 23 items that explored demographic variables (sex, age, and grade – 3 items), cannabis use and age at onset (3 items), friends' use of cannabis (4 items), perception of harms (11 items), perception of medical and recreational cannabis use (1 item), and intention to use cannabis in the future (1 item).

Cannabis use was measured using items from the Inter-American Drug Use Data System Secondary School Student Survey – SIDUC.<sup>2</sup> Lifetime cannabis use was assessed using a binary



response (yes, no). Measures of past 12 months and past 30 days use were assessed using six response categories (ranging from no use to use every day), but were reduced to binary for analysis purposes (use or non-use). Students were asked how old they were when they used cannabis for the first time.

Friends' use of cannabis was investigated by asking respondents how many of their closest friends use marijuana. Response choices were: none, some, about half of my friends, all of my friends, and don't know. Three items from Monitoring the Future<sup>6</sup> explored a general perception of harm related to using cannabis once or twice, occasionally, and regularly. Responses were provided on a five-point scale (no risk, slight risk, moderate risk, great risk, don't know).

Some items from the Benthin Risk Perception Measure<sup>46</sup> were used to explore perception of harm. This measure uses a seven-point scale to assess the perceived risks and benefits of various behaviours. It has been used widely in studies exploring perception of risk, harms, and benefits, most of which have reported Cronbach alphas over 0.70.<sup>47–49</sup> A Spanish version is available and has been previously used in Latin America.<sup>50</sup> This study used a slightly modified version with 11 questions: 8 items from the original scale and 3 additional items. Risk of harm items from the original scale assessed knowledge, fear, personal risk, risk to peers, peer influence, and avoidability. Perception of benefit items from the original scale included benefits versus risk as well as admiration (social), with new items added for emotion ("In your opinion, to what extent can smoking cannabis help persons in your age group to cope with their emotional difficulties?"), health ("In your opinion, to what extent can smoking cannabis improve physical wellbeing among persons in your age group?"), and academic performance ("In your opinion, to what extent does smoking cannabis improve academic performance?"). An overall average of risk and benefits was calculated, where higher scores reflected greater risk.<sup>51</sup> The frequency of each response option was also calculated. A moderate internal consistency for the total scale (Cronbach's  $\alpha=.73$ ) and the benefits subscale (Cronbach's  $\alpha=.74$ ) was found. A lower internal consistency was obtained for the harm subscale (Cronbach's  $\alpha=.54$ ).

Opinion about medical use *versus* recreational use of cannabis was examined using a question with a five-point scale (cannabis should not be used at all, be used for medical purposes, be used for recreational purposes, be used for medical and recreational purposes, don't know). Finally, participants were asked about their intentions to use cannabis within the context of regulatory changes. The question asked: "If you were 18 years of age and cannabis was legal, which of the following would you most likely do?" This question was based on a similar question from the Monitoring the Future survey<sup>6</sup>. The six-category response options were: not use it even if it were legally available, try it, use it about as often as do now, use it more often, and use it less often.

Data gathering was divided into two phases: pretesting and administration of the instrument. In the first phase, the instrument was translated into two languages (Spanish and Portuguese). Researchers at each site performed a pre-test with secondary school populations similar to those required for this study. Administration of the instrument started with collection of informed consent from all subjects. Participation was voluntary, and confidentiality was maintained at all times. The questionnaire was administered using paper and pencil in a classroom/room at the selected school.

Data were analyzed using descriptive and inferential statistics. Descriptive statistics were used to describe demographic data and address research questions on prevalence, and inferential analyses were used to explore relationships.

A researcher in each city obtained approval for the study from the relevant ethics authorities at the National Drug Council, local department of education and the school board, and from the ethical committees at each affiliated institution. Next, active consent was obtained from parents and students.

## RESULTS

The results revealed an average overall lifetime prevalence of cannabis use of 30.6% (male=35%, female=28%), 25.8% for past year (male=29%, female=23%), and 15.8% for the past 30 days (male=19%, female=13%). Prevalence was significantly higher among males than females (life time  $X^2_{(1)}=16.49$ ,  $p<0.001$ ; past year  $X^2_{(1)}=11.34$ ,  $p<0.001$ ; and past month  $X^2_{(1)}=14.93$ ,  $p<0.001$ ). The average overall age of onset was 12 years (SD=4.37). Table 3 lists the prevalence of use by site.

Overall, 40% of all participants reported that none of their closest friends use cannabis or do not know, while 60% stated that at least some of their closest friends use it (43.2% some of their friends, 12% about half of their friends, 5% all of their friends). An association was observed between past year prevalence and friends' use of cannabis ( $X^2_{(1)}=260.72$ ,  $p<0.001$ ). A vast majority (96%) of participants that used cannabis during the past 12 months had at least some friends that use marijuana.

With regard to risk perception, the majority (73%) stated that there is no or a slight risk of using cannabis once or twice, while 50% felt that occasional use involved moderate or high risk; most felt that regular use involved either moderate (23%) or high risk (50%).

A logistic regression was performed to analyze the association between lifetime, past year, and past month prevalence of cannabis use and the perception of harms and benefits, evaluated with the Benthin measure. A high score represented a low perception of harm and a strong perception of benefits. Friends' use of cannabis was also included in the model. Interactions between harms, benefits, and gender were evaluated, and a binary logistic regression was conducted for each category of prevalence. The results revealed that perceptions of harms and benefits, and having friends that use marijuana, were significantly associated with lifetime ( $R^2=.22$  Nagelkerke;  $X^2_{(2)}=616.75$ ,  $p<0.001$ ), past year ( $R^2=.33$  Nagelkerke;  $X^2_{(2)}=588.63$ ,  $p<0.001$ ), and past month prevalence ( $R^2=.28$  Nagelkerke;  $X^2_{(2)}=414.63$ ,  $p<0.001$ ). None of the models revealed a significant interaction with gender.

These results demonstrated significant associations between cannabis use and three variables: a lower perception of harms, a stronger perception of benefits, and having friends that use cannabis (Table 4). As shown in Table 3, having at least one friend that uses cannabis was more strongly associated with cannabis use than the perception of harms and benefits. Therefore, friends' use of drugs is a powerful predictor of cannabis use in this sample.

Attitudes about cannabis legalization and the intention to use at 18 years (the age of majority in the 10 sites is 18 years old) in a hypothetical context of legalization were also explored. The results revealed that attitudes about medical and recreational use of cannabis were generally favourable. On average, 42% of participants (45% female, 39% male) felt that cannabis should be used only for medical purposes and 28% (26% female, 31% male) felt that cannabis should be use for medical and recreational purposes. In contrast, 19% of participants (21% female, 17% male) felt that cannabis should not be used at all, even if it were legal. Only 3% (2% female, 4% male) felt that it should be used only for recreational purposes, and 8% (6% female, 9% male) were not sure.

To explore intention to use cannabis in a hypothetical context of regulatory changes, participants were asked what they would do if they were 18 years of age and cannabis was legal. As shown in Table 5, 55,1% of participants stated that they would not use marijuana, even if it were legally available; 20,6% said they would try it, and 15,7% said they would continue using it.

The associations between harms, benefits, friends' use of marijuana, and intention to use in a hypothetical context of regulatory changes were explored using a logistic regression analysis. The results revealed significant associations with intention to use ( $R^2=.37$  Nagelkerke;  $X^2_{(2)}=668.55$ ,  $p<0.001$ ). A strong perception of benefits, a low perception of risk, and having friends that use cannabis were all associated with intention to use in a hypothetical context of regulatory changes ( $p<0.001$ ). Additionally, friends' use of drugs had a stronger effect than perceived harms and benefits.



**Table 3** – Cannabis use prevalence by site, 2015. (n=2717)

Site	Percentage		
	Lifetime	Past Year	Past Month
Belize City - Belize	41.4	39.2	24.9
Brasilia - Brazil	23.5	19.0	9.7
Viña del Mar - Chile	52.2	47.8	32.8
Concepcion - Chile	46.1	38.8	24.6
Bogota - Colombia	31.3	22.6	10.8
Santo Domingo - Dominican Republic	5.6	4.9	3.4
Manchester - Jamaica	29.3	21.9	11.5
Mexicali - Mexico	13.8	9.0	3.0
Basseterre - St. Kitts & Nevis	30.7	26.1	17.3
Saint Joseph - Trinidad & Tobago	32.6	28.5	20.2

**Table 4** – Association between perception of harms, benefits, and friends' use of cannabis and cannabis use, 2015. (N=2717)

Perception	Lifetime prevalence	Past year prevalence	Past month prevalence
	OR	OR	OR
Low perception of harm	1.61*	1.62†	1.66†
Strong perception of benefits	1.58*	1.75†	1.81*
Friends use of marijuana	9.35†	8.53†	8.93†

\* $p < 0.01$ ; † $p < 0.001$

**Table 5** – Intention to use cannabis in a hypothetical context of regulatory changes, 2015. (n=2717)

If you were 18 years of age and cannabis was legal, which of the following would you most likely do?	Percentage		
	Total	Male	Female
Not use it, even if it were legally available	55.1	51.6	57.7
Try it	20.6	21.01	20.3
Use it about as often as I do now	8.3	10.5	6.6
Use it more often than I do now	6.5	7.5	5.8
Use it less than I do now	1.9	2.0	1.8
Don't know	7.6	7.3	7.8

## DISCUSSION

The ten sites are located in nine countries that are at different stages in terms of regulatory changes with regard to cannabis use.<sup>3</sup> Interestingly, a comparison of the prevalence of cannabis use at each study site by regulation status revealed no relationship between the prevalence of reported use and regulation status. In other words, the fact that cannabis use is illegal is not linearly and directly related to a low prevalence of use. However, it is difficult to draw definitive conclusions in this regard, because of possible influences of many variables, such as socio-political, legal, and historical factors in each nation, which were not addressed in this study.

Consistent with the literature review, the results of this study revealed that prevalence rates of adolescent cannabis use are significantly higher among males than females, and that average age of onset was 12 years, consistent with the range of 12-15 years reported in previous research.<sup>6</sup> The overall prevalence rate (M=30.6%) was relatively high, but rates varied greatly by study site, from 5.6% lifetime use in Santo Domingo to 52.2% lifetime use in Viña del Mar.

The results also revealed that the majority of participants (73%) felt there is no risk in using cannabis once or twice. Nonusers perceived the risk to be higher than users did, so perceived risk appears to prevent nonusers from trying the drug.

The influence of friends that use drugs was a more powerful predictor than any other variable, so having friends who use drugs is an important risk factor for cannabis use during adolescence. This finding is consistent with previous research indicating that an adolescent's peer network serves as a strong risk factor for both initiation (from ages 11-15) and progression to regular use of marijuana.<sup>49-52</sup> This finding is of tremendous relevance and must be taken into account when developing prevention policies. Peers can promote negative attitudes, but also positive attitudes about health and healthy behaviours; in other words, peer influence can also be a protective factor.<sup>53</sup>

The generally favourable attitudes among participants about medical and recreational were not surprising. Previous research has found that adolescents perceive cannabis as the illicit drug causing the least harm,<sup>1</sup> which is consistent with general trends in the Western world toward increased tolerance of cannabis use and less prohibition.

Interestingly, even if participants viewed cannabis use favourably, this does not mean that they intended to use it if it were legally available. The majority (55%) reported no intention to use, while the results were less clear among those who are already using marijuana. Some said they would continue using it, some would use it more, and some would use it less. Only 21% of the sample reported that they would try cannabis if it were legal, which means that regulatory changes would probably lead to a slight increase in cannabis experimentation among youth in Latin America and the Caribbean. Given that the mean lifetime use was 30.5%, intention to use in the future is not particularly high. However, intention to use cannabis was assessed in a hypothetical context, so these results should be interpreted with caution.

One limitation of the study is that the findings cannot be generalized to the participating countries because of the convenience sample selection. Moreover, the cross-sectional design means that causality cannot be inferred from the results. Another weakness of the research is related to the complex nature of drug use among adolescents, which involves many risk factors within various domains that we did not address: our focus was only on the perceived harms and benefits of cannabis use. We assessed intended cannabis use within a hypothetical context of regulatory changes, so the results might not accurately predict future behaviour. Finally, the non-uniformity in regulatory frameworks across the participating countries may have influenced the analysis when the data were merged and compared among the sites. Nevertheless, the findings can inform current public policy debates and will be useful for educational purposes.

Non-prohibitionist approaches to cannabis regulation have emerged only recently, so the potential adverse effects and benefits of various aspects of legal regulation are not known.<sup>47</sup> This study tried to address the considerable knowledge gap about how regulatory changes might affect adolescent behaviour. Very few studies have explored how legislative changes regarding cannabis use might affect individuals and society, and to the best of our knowledge, no previous study has explored this topic among adolescents.

## CONCLUSION

This study explored associations between perceived harms and benefits and cannabis use among students aged 15–17 years in ten study sites within Latin America and the Caribbean. The results revealed considerable heterogeneity in the prevalence of cannabis use among the sites, and a high prevalence of cannabis use in the total sample. The prevalence of cannabis use was significantly higher among males than females. The majority of participants perceived no risk in occasional use of marijuana, and half of the sample considered regular use to involve a high level of risk.

Half of the participants also said they would not use marijuana, even if it were legally available. Many students who had favourable attitudes about cannabis use reported no intention to use it if it were legally available, but 21% said they would use it in the future, if it were legally available. Significant associations were found between harms, benefits, friends' drug use, and intention to use.

In conclusion, the high prevalence rates suggest the need to implement interventions aimed at preventing cannabis use among adolescents. It is not realistic to prevent drug experimentation, but perhaps initiation can be delayed.

Finally, the unprecedented shifts in regulatory policies regarding drug use provide opportunities to discuss and address the harms and limitations of strict prohibition policies. More research is needed to critically examine regulatory frameworks and how they affect health, especially among vulnerable populations such as children and adolescents.

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## NOTES

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### ETHICS COMMITTEE IN RESEARCH

The research protocol was approved by the Research Ethics Board (REB) 088/2014 at the Centre for Addiction and Mental Health (CAMH).

### CONFLICT OF INTEREST

There is no conflict of interest.

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