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Public Health and Ethical Considerations for Youths as States Move toward Decriminalizing and Legalizing Marijuana Use for Adults: A Need for Health Impact Assessments

Michael T. Compton MD MPH
Columbia University College of Physicians and Surgeons,
Department of Psychiatry,
New York, NY, USA

Marc W. Manseau MD MPH
New York University School of Medicine,
Department of Psychiatry,
New York, NY, USA

Ruth S. Shim MD MPH
University of California, Davis,
Department of Psychiatry and Behavioral Sciences,
Sacramento, CA, USA

Lynn Todman PhD
Lakeland Health,
Population Health/Community Health and Wellness,
St. Joseph, MI, USA

Abstract

Accumulating research documents a number of adverse outcomes of marijuana use in adolescence. At the same time that this body of research is maturing, there exists a parallel acceleration toward decriminalization and legalization of marijuana use for adults. Yet, the individuals, groups, and organizations leading these two research and policy-related developments have apparently had little interaction. Policy change seems to be outpacing thoughtful and comprehensive public health and ethical considerations. We advocate for health impact assessments, and specifically mental health impact assessments, of proposed policy changes moving forward. This area represents an example of how biomedical and health sciences researchers, legislators and other policy makers, advocates on both sides of debates and controversies, and public health professionals can collaborate to

understand the mental health impact of diverse policy proposals, and in doing so can improve policies for the health of everyone.

Key Words: Cannabis; Health impact assessment; Legalization; Marijuana; Medical marijuana; Recreational marijuana

Introduction

Many states in the United States (U.S.) have changed policies, or are proposing to change policies, related to the use of marijuana for medical and/or recreational purposes. Clearly, there are advantages to doing so, particularly for certain population groups. Disadvantages also undoubtedly exist, with those disadvantages likely to resonate with and to affect some more than others. Although decriminalization and legalization universally pertain to adults, there are untoward effects for children and adolescents. Even though new laws exclude minors from use of the drug, such laws still carry the potential to influence youths. These poorly understood impacts warrant thoughtful, balanced, and objective consideration, informed by science and research spanning neuroscience to the social sciences. We see a need for health impact assessments, and mental health impact assessments in particular, of proposed policy changes so that all predictable impacts, positive and negative, can be articulated in advance of votes.

Some of the known adverse effects of marijuana use in adolescence

Mounting evidence indicates that marijuana use in adolescence increases risk for poorer academic outcomes, such as lower educational attainment as measured by both years of education and high school drop-out (Macleod et al., 2004). This risk is not only limited to middle and high school; effects are also seen for higher education. Even when accounting for demographics and other factors, marijuana use adversely affects college academic outcomes (specifically, grade point average and time to graduation), both directly and indirectly through poorer class attendance (Arria et al., 2015). Such effects in secondary and higher education could be related to the drug's impact on attention and other cognitive functions, motivation, detrimental peer associations and attitudes toward school, or preexisting differences between youths who do and do not initiate drug use.

Marijuana use in adolescence is also linked to the later development of a diagnosable cannabis use disorder and the initiation of other drug use (George & Vaccarino, 2015).

Epidemiologic studies have also established a robust association between marijuana use and schizophrenia, and the association appears to be stronger among adolescents and those with more frequent use (Andreasson et al., 1987; Zammit et al., 2002; Manrique-Garcia et al., 2012). Specifically, there appears to be an approximately 4-fold increase in risk among the heaviest users and a 2-fold increase in average marijuana users, in comparison to nonusers (Marconi et al., 2016). Given the number and size of studies on the association between marijuana use and schizophrenia, there is increasing confidence that marijuana use is a component cause (i.e., one of multiple factors that contribute to the development of the disorder when combined with other causes). As such, it is neither a sufficient cause (it is unlikely to cause schizophrenia in the absence of other contributing factors such as genetic vulnerability), nor a necessary cause (as many individuals with schizophrenia do not have a history of premorbid marijuana use) (Ramsay Wan & Compton, 2016). Because marijuana is widely used, however, the impact on the number of cases of schizophrenia overall is likely not negligible, and some researchers now attribute 8–15% of schizophrenia cases in some countries to marijuana use (Di Forti et al. 2012).

In addition to increasing risk for schizophrenia and related psychotic disorders as a component cause or independent risk factor, premorbid/adolescent marijuana use has also been associated with an earlier age at onset among those who develop schizophrenia. Marijuana use often precedes psychotic symptoms by several years; a 6–8 year gap between average age of first marijuana use and onset of psychosis has been found in a number of studies. Furthermore, a clear dose-response relationship between marijuana exposure and earlier onset—independent of other drug use and apparent even when controlling for sex and family history of psychosis—has been demonstrated by multiple studies (Ramsay Wan & Broussard, 2017). A meta-analysis suggested that the age at onset of psychosis may be approximately 2.7 years earlier among those who had used marijuana (Large et al., 2011). Because the age at onset of a psychotic disorder is a key prognostic indicator, such a hastening of onset represents a potentially substantial driver of life-long poorer clinical and psychosocial outcomes.

The accelerated move toward decriminalization and legalization

Since the 1961 United Nations' Single Convention on Narcotic Drugs (United Nations, 1962), the cultivation, sale, and use of marijuana has been illegal in most countries. Within the U.S., suppressing marijuana production and distribution has been a top priority for the Drug Enforcement Administration's (DEA) efforts in the "War on Drugs" since the 1970s (U.S. Drug Enforcement Administration, 2017). However, recently, there have been major shifts in the legal landscape around marijuana. Over the past few decades, many countries and a number of U.S. states have increasingly moved to decriminalize (reduce or remove criminal penalties) or even legalize (remove criminal penalties and establish a system for taxation and regulation of production and distribution) recreational marijuana, and/or approve and regulate its legal use for medical purposes (Williams, 2016). As of the beginning of 2017, at least 40 countries and eight U.S. states as well as the District of Columbia (covering over 20% of the U.S. population) have removed some amount of legal penalties for recreational marijuana use. Some 29 U.S. states and the District of Columbia have allowed some form of medical marijuana use (Carnevale et al., 2017). However, marijuana remains classified as a schedule I substance (meaning it is deemed to have a high potential for abuse and no currently accepted medical treatment use) by the Food and Drug Administration (FDA) and the DEA. In 2013, the U.S. Department of Justice under the Obama Administration decided not to pursue legal action against physicians "prescribing" medical marijuana in accordance with state law, a decision that could be reversed under a subsequent administration. The recent and rapid evolution of legalization and regulation may have been at least partially driven by changing public opinions toward marijuana use. Indeed, there is evidence that within the U.S., attitudes are increasingly favoring arguments about the potential societal benefits of marijuana legalization over messages about public health risks (McGinty et al., 2017).

There is growing concern that increasing efforts to legalize marijuana could lead to increased marijuana use, thereby putting a larger portion of the population at risk of the negative consequences of marijuana use. There are several mechanisms by which this could occur (Hall & Lynskey, 2016). First, people may perceive lower legal and/or medical risk of marijuana use. Second, marijuana may be more readily available, or perceived to be so. Third, marijuana use may be perceived to be more socially acceptable and less risky. Fourth, commercial providers are increasingly able to market marijuana-based products (e.g., edibles), thereby potentially increasing

the drug's broad appeal. While many countries have put restrictions on such marketing, this approach is likely to be difficult in the U.S. due to stringent protections on free speech for both commercial entities and individuals. Finally, marijuana will likely cost less in places with fewer legal restrictions on its distribution and use, due to its availability outside of illicit drug markets and easier and less costly mass production. There is, in fact, evidence that marijuana prices have dropped significantly in U.S. states that have adopted any variant of marijuana legalization (Swanson & Gamio, 2015), and that marijuana is quite price-elastic, suggesting that lower prices could lead to increased use (Williams, 2016).

Evidence as to whether legal changes to marijuana regulation is actually leading to increased use is highly preliminary and currently mixed. The ability to draw conclusions is further complicated by the fact that specific regulations and social contexts differ substantially between localities (Hall & Lynskey, 2016). There is evidence that state-level medical marijuana laws have led to perceptions of increased availability, and in turn to higher use, of marijuana among adults in the U.S. (Martins et al., 2016). Specifically, states with medical marijuana laws have witnessed increased use among adults who already use marijuana, but not in initiation of use among previous non-users (Wen et al., 2015). Medical marijuana laws have also been associated with increases in treatment-seeking for cannabis use disorders (Chu, 2014), and some studies have found an increase in marijuana-related fatal motor vehicle accidents in states with more permissive marijuana policies (Masten & Geunzburger, 2014; Salomonsen-Sautel et al., 2014). However, other studies have found decreased alcohol-related motor vehicle fatalities (Anderson et al., 2013) and lower opioid overdose death rates in states with legalized marijuana (Bachhuber et al., 2014).

Some analyses have shown that states with medical marijuana laws have higher marijuana use among youths than states without such laws. However, when controlling for confounding factors—particularly youth marijuana use rates before medical marijuana laws were passed—the differences tend to disappear (Hasin et al., 2015; Wen et al., 2015). This suggests that perceptions and attitudes within the population may have been driving increased legalization efforts rather than the reverse. In fact, while marijuana legalization may not yet be driving increased use among youth, there is evidence that perceptions of risk have decreased and intentions to use in the future have increased among young people in states with fewer marijuana-related restrictions (Dirisu et al., 2016). Ultimately, while still speculative, it seems likely that increasing legalization efforts are both

influencing and affected by public perceptions, creating political, social, and economic dynamics that support removing restrictions to marijuana access while also increasing use (and cannabis use disorder) rates.

Policy change outpacing public health and ethical considerations

When considering the rapid policy changes that have occurred related to marijuana legalization and medical use, multiple public health and ethical dilemmas emerge. Given the health risks associated with marijuana use in certain populations, increasing access to marijuana may be harmful to vulnerable or high-risk groups, including adolescents and young adults, and those at risk of a psychotic disorder. However, decriminalizing marijuana possession and use has the potential to improve racial/ethnic inequities within the criminal justice system. Current policy and legislation regarding the availability of and access to marijuana has not always sufficiently considered these conflicting ethical considerations. When considering the risks of marijuana use in adolescents and young adults, the impact of public policies and social norms must be considered, as they interact with each other in complex ways.

With the major possible health-related disadvantages of marijuana legalization discussed above notwithstanding, some potential social advantages warrant further discussion. Regarding the decriminalization of marijuana and effects within the criminal justice system, the ethical considerations are complex. Previous research has demonstrated that strict enforcement of illegal drug policies does not appear to be clearly associated with decreases in illicit drug use (American Civil Liberties Union, 2013). Furthermore, there are substantial inequities among population groups related to the impact of this enforcement. The overwhelming majority of arrests are for possession of marijuana, rather than the sale or distribution of the drug. Possession arrests are also far more likely to occur in adolescents and young adults than in other age groups. And although rates of marijuana use are not distinctly different among racial/ethnic groups (specifically between whites and African Americans), African Americans are more likely to be arrested for marijuana possession than whites, and these criminal justice disparities are increasing over time. The highly unequal rates of incarceration among certain sectors of the population has long-standing impacts on social and public health outcomes, and is thus an important issue of social justice.

One must be aware of falling into patterns of false dichotomies (e.g., marijuana use should be completely illegal due to the medical risks vs. marijuana use should be completely legal because of the criminal justice issues); there is great nuance regarding the implications of increased access to and legality of marijuana.

A call for Health Impact Assessments and Mental Health Impact Assessments

As legislative and policy reforms are considered, it would be prudent to rigorously evaluate the potential public health implications of the decriminalization and legalization of marijuana use. One way to do this is through the execution of a formal Health Impact Assessment (HIA). A HIA is defined as "a combination of procedures, methods, and tools that systematically judges the potential, and sometimes unintended, effects of a policy, plan, or project on the health of a population and the distribution of those effects within the population" (National Academy of Sciences, 2011). Relying on a wide range of primary and secondary data sources, HIAs enable a prospective assessment of the potential public health implications of a proposed piece of legislation, policy, program, project, or plan. HIAs also produce information on how best to mitigate potentially negative health impacts, thus allowing better design of policy initiatives.

HIAs can be used to assess, in particular, the mental health implications of a proposal. Mental Health Impact Assessments (MHIAs) have been conducted on proposals such as an amendment to Chicago's vacant buildings ordinance (Todman et al., 2012) and revision to federal guidance on the use of arrest records in employment decisions (Todman et al., 2013). In both instances, data was used to objectively determine what health determinants (i.e. social and environmental factors that shape mental health) would be impacted by the proposal; how those determinants would be impacted (including the direction, size, and severity); and the eventual impacts on population mental health (i.e. direction, size, severity, and distribution). Those MHIA findings were used to advise policy makers (the Chicago City Council and the U.S. Equal Employment Opportunity Commission) on the mental health impacts likely to be incurred as a result of the proposals.

A MHIA conducted on the decriminalization and/or legalization of marijuana use might consider impacts such a lower cost of and easier access to marijuana leading to its increased use by

adolescents and persons at risk for psychosis, who have heightened vulnerability to its ill effects. Decriminalization and legalization might also reduce over-policing in communities of color and the associated higher incarceration rates, which, in turn could yield positive mental health impacts in these communities. There are many other considerations that a MHIA might consider (e.g. possible increases in DUIs, possible improvements in quality control and thus safety of the product) and that should be used to inform legislation and policy. Importantly, a MHIA would also produce recommendations for mitigating any adverse mental health impacts associated with whatever decisions are ultimately made.

Conclusion

Marijuana use in adolescence has been consistently linked to a number of adverse outcomes, including but not limited to poorer academic performance and lower educational attainment, increased risk for addictive disorders, increased risk for schizophrenia and related psychotic disorders, and an earlier age at onset among those who develop such disorders. Despite the research documenting these effects, states are moving toward decriminalization and legalization, support for which can be made in ethical, social justice, and potentially even medical domains. For example, decriminalizing possession could begin to reverse the unjust over-representation of racial and ethnic minorities in the criminal justice system, and some with refractory illnesses could gain relief from marijuana or marijuana-based products, which might otherwise be restricted or unavailable. Weighing the advantages and disadvantages of policies directed toward adults—and their potential impacts on youths—requires collaboration among biomedical and health sciences researchers, legislators and other policy makers, advocates on both sides of debates and controversies, and public health professionals, through the formalized process of HIA and MHIA. Undergoing this type of rigorous, science-informed process in regards to future marijuana legalization initiatives could lead to better informed voters, more nuanced discourse among policymakers, and policies that more effectively balance the disadvantages and advantages of marijuana reform, including specific plans to mitigate public health harms.

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