

Research Article

Promoting healthier outcomes of cannabis use through considering risk factors for use and evaluating behaviour change programs: a literature review

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ABSTRACT

As recreational cannabis use is soon to be legalized for individuals aged eighteen or older in Ontario, important new health communication implications are introduced [1]. We therefore aim to answer the question: ‘how can we effectively communicate the safe use of cannabis to young adults ages 18-25?’ While there is an abundance of information on safe use guidelines of cannabis for young adults, there is a lack of information describing how a health practitioner can communicate this information effectively [2–10]. As healthcare practitioners are a significant source of health information to many youths, this places important considerations on how to help youth have safe outcomes associated with drug use [9, 11]. This article hopes to help address this issue. In the context of this work, ‘healthcare practitioner’ is defined under its definition of the Canada Health Act: “a person lawfully entitled under the law of a province to provide health services in the place in which the services are provided by that person”

[12]. This includes, but is not limited to: licensed doctors of medicine or osteopathy, nurses, nurse practitioners, midwives, dentists, chiropractors, or clinical psychologists [12, 13]. While this work does apply to all healthcare practitioners, there is a focus on the general practitioner, as that is where significant interactions between a youth and healthcare practitioners occur [11, 14]. Significant precautions have taken place to ensure the accuracy of the content provided. Only articles from reputable high-quality peer-reviewed journals with established readership and qualified authors affiliated to academic institutions are considered. Meta-analyses from various fields, other review articles, primary surveys, and evaluations from previous campaigns are discussed.

Keywords: cannabis, marijuana, addiction, drug use, young adults, health communication, prevention, harm reduction, cultural competency.

Introduction

Cannabis use and addiction associated with it may represent the largest use of illicit drug use in the developed world [1,2]. Its addictive properties have been related to neurobiological receptors in the cannabinoid system as well as other neurotransmitters and neurochemical systems [3]. As the use of cannabis is very prevalent and has important health effects, it is important to consider how to help people who use cannabis can have better outcomes [2-4].

Many countries have begun the process of legalizing recreational cannabis use [5,6]. As the drug may become much more accessible to many young people, it is important to consider why people choose to use the drug in the first place and what can be done to help them have better outcomes associated with drug use. Starting July 1st, 2018, it is expected that recreational

cannabis use will become legal for all Canadians ages 18 or older [5]. The drug is already legal for recreational use in other regions of the world including Portugal and some parts of the United States of America [6,7].

Some of the important health effects of cannabis-related to neuroscience and neurobiology include decreased decision making and problem-solving capacity, increased episodes of psychosis or another negative mental health status, and even modified compositions of grey matter in the brain [1,2,4,7-9]. While many of the effects of cannabis relate to neuroscience, many of the risk factors for experiencing negative effects of cannabis and addiction in youth can also be meaningfully understood with contribution from other fields [10-17]. Through acknowledging the various factors that contribute to drug use, and working towards reducing them, we can help individuals have better health and social outcomes [16].

Can we predict who will have worse outcomes of cannabis through interdisciplinary theory?

A literature review shows that many of the factors relating to cannabis use go beyond what can be merely understood through the use of receptors, biological principles, and aspects of neuroscience. A major factor was the general finding that a student's risk of using drugs was strongly related to coping with preexisting underlying factors, which may be related to self-efficacy, finding meaning, deviance, and acceptance [10-17]. Considering these factors help a health practitioner be able to better connect with youth during counseling [14, 16, 18].

In their interviews, questionnaires, and neurocognitive skill-tests of fifty-two young adults who use cannabis, Gonzalez et al find that the risk of experiencing negative health effects from cannabis is significantly related to a user's preexisting decision-making capacity and not their preexisting level of episodic memory [10]. Spriggs and Hides, in their surveys evaluating four-hundred ninety-nine cannabis users ages 18-25, find that specific preexisting personality characteristics and feelings of hopelessness significantly increase the risk of experiencing negative psychoactive effects of using cannabis [4]. A review from Lisdahl et al. describe methods that can help prevent the use of cannabis in the first place, citing opportunities such as education campaigns, policy interventions, and modified distribution channels to help reduce use associated with more negative health outcomes [7].

The articles discuss that there are things that can be done to help reduce the use of cannabis in the first place outside of the scope of molecular biology or sciences which can be associated with neuroscience addiction principles (for example, see [19, 20]). For example, if we consider that preexisting decision-making capacity is associated with poorer use outcomes and that specific personality characteristics generally lead to worse outcomes of the drug use, we can work towards helping to reduce these personality characteristics through education campaigns. This has been commonly applied in other areas of addictive drug use in young adults such as that of prescription stimulants commonly used for studying purposes [14, 16, 21-24]. While prescription stimulants can be far more physically addicting than cannabis and have vastly different physiological effects when consumed, they are both consumed readily by young adults and can have similar effects on the user related to experiencing addiction [1, 2, 16, 25]. Therefore studies on motivations for drug use of young adults of prescription stimulant use and what we can learn from it in regards to improving cannabis use will be discussed in the next section.

While this line of thinking above relates to social science theory, it is not to say that the use of neurobiology and neuroscience work discussing addiction is not important. For example, Tamm et al find that users of cannabis who are also diagnosed with attention deficit hyperactivity disorder (ADHD) tend to have worse outcomes relating to verbal memory, cognitive interference, processing speed, working memory, decision-making, and response inhibition than those who do use cannabis without an ADHD diagnosis or who do not use cannabis at all [26]. However, using cannabis after the age of sixteen did

not lead to worse outcomes, these outcomes were deemed to be independent and associated with the ADHD condition [26]. It was described that these symptoms of increasing negative effects associated with ADHD were only prevalent if the drug was frequently used before the age of sixteen, which indicates that some sort of biological or developmental function may be the cause [26].

The idea that the use of a psychoactive drug such as cannabis can negatively increase the onset of mental health issues, especially among some high-risk populations, is prevalent in the literature regarding a number of mental health conditions and drugs [3, 14, 16, 26, 27]. Hall et al describe that recreational use of marijuana can be harmful to young adults even in small quantities [3]. Regular recreational use has been associated with significantly increased risk of car accidents, leaving school early, and cognitive impairment as well as psychosis in adulthood [3]. Increase in risk of cardiovascular disease, respiratory cancers, and use of other harmful drugs are also reported [3].

This is further emphasized in an article by Volkow *et al.* which suggests that marijuana use is more dangerous in young adults than may seem [21]. The authors describe adverse effects from increased risk of oral cancers, the significant likelihood of addiction, and varying negative effects of cognitive functioning of this drug in young adults [7]. Use of cannabis can even be harmful in small quantities, as any amount of smoke or second-hand fumes are harmful, and even if the drug is not smoked, the psychological effects of the ingested drug pose risk [7].

Considering these potential negative health implications of using cannabis recreationally, it is therefore important regardless of the risk factors for negative outcomes from using cannabis, whether they be from a biological or sociological origin, to try help people who use cannabis have healthier outcomes of drug use. This can be done through considering campaigns that have hoped to reduce drug use or reduce the harms associated with it. More on this topic will now be discussed in the next section.

How can we promote healthier outcomes of cannabis use?

In their interesting survey of 484 college students, Maahs et al from the University of Minnesota Duluth applies theories from criminology to find that a risk factor for student to rebel from authority [12]. The authors discourage authoritative figures from outright banning drugs as they find the most significant motivation for students using them can be general deviance [12]. This relates to findings from Richards et al which suggesting that things which restrict a young adults perception of freedom decrease compliance [28]. The authors compare and contrast health communication campaigns related to marijuana use, vaccination, and some illicit drugs to find that youth 'don't like being told what to do' [28]. They discuss how a threat about doing a particular action, such as being allowed to do something or told that something will cause a problem, causes a young adult to react emotionally if they feel like they are having their freedom limited [28]. This emotional reaction can lead the young adult to retaliate by directly doing what the message tells them not to [28].

Applying these concepts would discourage practitioners from using threats to help encourage young adults what to do regarding their drug use, or even speaking to them in a way that is perceived to be like an order [12,28]. It would be important to promote a sense of freedom, autonomy, and control to encourage drug use compliance that can lead to better outcomes [12, 28]. These two concepts just represent a small number of the many things that one can do to promote compliance with a particular guideline relating to healthier drug use [29, 30]. Another thing that promotes compliance with a specific drug use behavior is promoting conversation [30].

An interesting meta-analysis of 28 studies, collectively representing 138,898 participants, shows that while the effect can be small, most mass-media health communications campaigns do have a net-positive effect in behavior change to promote more optimal health outcomes related to the behavioral issue [30]. The authors Jeong and Bae, of the University of North Carolina and the University of Pennsylvania, respectively, find that health communication campaigns that encourage discussion among a particular health issue can assist in positive behavior change to aid people who are considering a potentially negative behavior have better outcomes [30]. Therefore a healthcare practitioner can utilize the principle of encouraging conversation, such as through asking engaging questions, to help increase compliance with a healthier cannabis use plan [30]. Finally, the authors recommend more research and evaluation of the efficacy of health communication campaigns be completed to provide a stronger knowledge-base for more effective future health-related campaigns [30].

While Jeong and Bae find that health campaigns can be very successful at encouraging behavior change such as through one that promotes safe drug use compliance, Kam and Lee find that some of these campaigns might do the opposite [29, 30]. In their survey of 2,7419 youth, Kam and Lee from the University of Illinois, Department of Communication, shows that media campaigns related to reducing drug use can actually indirectly increase drug consumption [29]. They show from their survey of university students that discussing drug use in media campaigns, even if negatively, indirectly encourages youth to discuss drugs more amongst themselves, and then direct their attention to both anti and pro-drug websites [29]. The content students learn from anti-drug websites may increase their probability of engaging in drug use more than if they have never had the topic of drugs brought up in the media campaign [29].

This poses important implications as to whether it is worth it or not to run media campaigns related to potentially harmful drugs. It is important to consider sources for more information in whatever work is used to encourage youth to direct their attention to most appropriate online sources for drugs and prevent them from reading negative content that may indirectly increase their use of drugs in a harmful way, as the authors found was the case for smoking cigarettes [29]. Therefore if a health practitioner is to promote conversation in their dialogue to try and increase compliance to a safer drug use plan, they should strive to do so in a way that does not lead youth to visit content sites that

encourage worse behavior outcomes [29]. Alternatively, there can be efforts that help to reduce the number of content sources with incorrect information on the drugs or information that promotes increasing their use, as to help students who search for more information when they discuss the drugs come across better content sources [29]. While the authors study focused on cigarettes, it is relevant to use of cannabis as both sources are available for the same age group, are used in similar ways, and can be sold in similar places.

The importance of cultural sensitivity

Regardless of the other tools used to promote compliance with a healthier cannabis use strategy, it is important to use principles of cultural sensitivity for the improved success of psychological behavior change strategies [31]. Examining literature identifies factors such as improved treatment compliance, increased pleasure in the decision making process, and improved overall satisfaction with the healthcare practitioner when cultural sensitivity is utilized [31–35]. Sue et al define competency as “as an ability to perform a task or the quality of being adequately prepared or qualified” [31]. One of the ways they describe cultural competence is the ability to acknowledge traits of other cultures and show empathy in practice [31]. The authors discuss that this is beneficial in mental health care, although there is much controversy in literature as to the specific definitions and scope of this term [31].

Betancourt et al write that cultural competency are important to help reduce racial and ethnic disparities in health and health care [32]. The authors describe in their literature review that principles of cultural competence could be applied at many levels, from organizational, to structural, and clinical, to improve health outcomes and promote equality and that this is becoming increasingly important as demographics change through the beginning of the 21st century in North America [32]. The idea of reducing disparities through promoting principles of cultural competence is further emphasized in Michalopoulou et al’s study published in the Journal of the National Medical Association discussing minority populations in the United States [33]. The authors discuss that a patient’s perception of their clinician’s level of cultural competency was related to improvements in work or school, managing life problems, and promoted increased levels of trust and respect with the clinician [33]. Therefore a clinician who utilizes principles of cultural competence in their practice may help a patient better comply with their recommendations of safer cannabis use [33].

Huey Jr. et al looked at ten meta-analyses on the role of cultural tailoring of psychological interventions to find in all cases they are beneficial [34]. Other findings include that older participants might benefit more than those who are younger, treatments delivered to ethnically homogenous groups might be more effective than those who are ethnically mixed, and that some cultures may benefit more than others [34]. Another study by Paez *et al.* finds that a physician’s cultural competence is significantly related to a patients satisfaction with their clinician [35]. Patients of physicians who were more willing to learn

about other cultures were more likely to seek and share more information with their physician and perceived their physicians as more facilitative [35]. It is therefore important for a physician to practice cultural competency to help improve outcomes of their patient's care [31–35]. If a physician makes recommendations on safe cannabis use, their patient may be more likely to comply with them if principles of cultural competence are used [35–40].

Conclusion

As cannabis is widely used among young adults and soon to be legalized in Canada, important health communication opportunities arise. Cannabis has potential negative health effects for young adults. Their physicians are an important potential source that can help them learn about safer ways to use the drug. There are things that can be done to improve the treatment compliance young adults have with their physicians. Some of these factors include not telling young adults directly what to do, promoting conversation and towards positive sources of information about the drugs, utilizing cultural competence in practice, and considering factors that may increase the risk of using cannabis. When cultural competence and other factors that improve treatment compliance and patient experiences are utilized, young adults can have better outcomes of cannabis use.

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