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Cannabis use, perceived problems and the contemplation of reducing or quitting: a cross-sectional survey for vocational students

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Cannabis use, perceived problems and the contemplation of reducing or quitting: a cross-sectional survey for vocational students

Objective: To assess problematic cannabis use, perceived cannabis-related problems and contemplation of reducing or quitting the use among vocational students and associations between perceived problems and contemplation of reducing or quitting cannabis use. Methods: A cross-sectional survey among Finnish vocational school students (N=1,855) using the Cannabis Use Disorder Identification Test-Revised. Results: Of those who reported cannabis use (n=375), 20.5% (n=77) reported problematic use. The most perceived problems were memory or concentration problems (n=151, 39.1%), devoting a great deal of time to use (n=144, 37.4%), and failing to do what was normally expected (n=106, 27.5%). One third (35.4%, n=136) had contemplated reducing or quitting the use, especially among those who reported an inability to stop using (Adjusted odds ratio (AOR): 5.57; CI95: 2.48-13.16). Conclusions: The perceived problems related to cannabis-use are such that may affect to academic success, employment and general life management. It is imperative to screen and implement low-threshold cannabis interventions in student health care. A third of students who used cannabis had contemplated quitting or reducing use, which provides an opportunity for brief supporting interventions.

Keywords: cannabis, vocational school, students, cross-sectional, survey

Subject classification codes: Cannabis, Students, Marijuana

Introduction

Adolescence is a significant developmental stage in life, which includes critical life choices related to education and health, such as substance use (Brown et al., 2008). Education level is known to have a strong connection with substance use. Lower education levels generally correlate with more hazardous drinking and heavier cannabis use than higher education levels (Teixidó-Compañó et al., 2018). When looking particularly at secondary school students, substance use is more common among vocational students than high school students (Bannink et al., 2015), and it is often

reported health risk factors among vocational students (Atorkey et al., 2021). Previous research has focused on examining general substance use (Bannink et al., 2015; Ruokolainen & Mäki, 2015) or polysubstance use (Tomczyk et al., 2016) among vocational students. Less is known about the use of individual substances, in terms of problematic use and the contemplation of quitting or reducing use. This study aims to fill this knowledge gap by focusing on the most used illegal substance, cannabis.

Cannabis use among young people has increased in the last decade (European Monitoring Centre for Drugs and Drug Addiction [EMCDDA], 2021a) and attitudes towards cannabis have become more accepting (Levy et al., 2021; The United Nations Office on Drugs and Crime [UNODC], 2021). Cannabis use at a young age has been associated with a wide range of harms, such as an increased risk of mental disorders (Volkow et al., 2014; Mustonen et al., 2021), and school dropout (Suerken et al., 2016). Frequent cannabis use also exposes young people to the risk of developing problematic use (Scholes-Baloget al., 2013; Terry-McElrath et al., 2017; Arterberry et al., 2019). Problematic cannabis use refers to a pattern of use that leads to adverse social or health problems, both at the individual and community level (Beck & Legleye, 2008). The prevalence of problematic cannabis use among students ranges between 7–20% (Mader et al., 2019; Chabrol et al., 2020).

Perceived cannabis-related problems among students have been examined by various self-report surveys and structured interviews (Kilmer et al., 2007; Caldeira et al., 2008; Scholes-Balog et al., 2013; Pearson et al., 2017; Terry-McElrath et al., 2022). Most of the perceived problems are relating to cognition (Caldeira et al., 2008), impaired school and work performance (Caldeira et al., 2008; Terry-McElrath et al., 2022), physically dangerous situations (Caldeira et al., 2008), symptoms of mood disorders (Scholes-Balog et al., 2013), and cannabis dependence (Caldeira et al., 2008).

While cannabis-related problems among young people have been widely studied, less research has been conducted on the associations between cannabis-related problems and the contemplation of reducing or quitting cannabis use.

In most countries, vocational education is administered at the upper secondary education level. The upper secondary education level is typically the most recent level of secondary education, and the average age of students is 22 years old. (Organisation for Economic Co-operation and Development [OECD], 2021.) In Finland, the average age is 30, but more than half of the students are aged 16-24 (Ministry of Education and Culture, Finland, 2021). Reaching students at the secondary education level provides an excellent opportunity to study cannabis use and related problems in this age group, as cannabis use is most often initiated during adolescence and peaks during early adulthood (EMCDDA, 2021a).

Purpose

This study aimed to assess problematic cannabis use, perceived cannabis-related problems and contemplation of reducing or quitting cannabis use among vocational students and associations between perceived problems and contemplation of reducing or quitting cannabis use.

Methods

Data collection

A cross-sectional anonymous survey was conducted in eight vocational schools in eight Finnish cities in 2020-2021. Purposive sampling was used based on geographical location and community size to obtain a comprehensive sample of Finnish vocational students. Three schools were in the North of the country, two in the South, two in the East, and one in the West. The study involved three bigger cities (population over

100,000) and five small cities (less than 100,000) (Association of Finnish Municipalities, Finland, 2022).

Participants were students of different grade levels in vocational school. Inclusion criteria were: 1) aged 17–29 years old, 2) competent to provide informed consent, and 3) sufficient Finnish language skills. The target population comprised 20,567 vocational students. A total of 2,229 students participated. Of those, 374 were considered ineligible: they did not meet the age criterion (n=98); the survey was unanswered when returned (n=269); or only the background questions had been answered (n=7). A total of 1,855 participants (9.02% of the target population) were included in the analyses.

The students were informed about the study by email and recruited by the school's contact person. The data were collected in two different ways: a paper survey conducted in person and electronic survey due to the COVID-19-pandemic. The paper survey was administered in one school during school lessons where researchers attended lessons and provided students with an information sheet, a survey, and an envelope for returning the completed survey to the researcher. For the remaining seven schools, data were collected via an electronic survey using REDCap electronic data capture tool. The schools distributed a link to the information sheet and the survey to students' e-mail addresses. Students were given one month to respond to the survey, and they received a reminder message after one week.

Measures

Information on age, gender and city of school was collected. The Cannabis Use Disorder Identification Test-Revised (CUDIT-R) was used to screen for problematic use, cannabis-related problems and for contemplation of reducing or quitting cannabis use during the last six months (Adamson et al., 2010). The eight-item CUDIT-R

contains questions about consumption frequency, usual duration of being intoxicated and how often one has perceived problems related to use, dependence, and psychological features. The total score ranges from 0 to 32. The cut-off value for problematic cannabis use is 12 points. (Adamson et al., 2010). We used the Finnish version of the instrument, translated by The Finnish Institute for Health and Welfare. The internal consistency of CUDIT-R in this study was 0.887 (n=375).

Statistical analysis

Analyses were performed using the R version 4.0.2. Descriptive statistics were calculated for the sample and CUDIT-R items. For age, a dichotomous variable was formulated using the categories “17” and “18 or older” to examine the differences between minors and adults. The dichotomization is based on the legal age of adulthood in Finland, which is considered to begin at 18 (Guardianship Service Act, 1999). Pearson’s chi-squared test was used to explore the associations between gender, age, city of schools and problematic cannabis use. Fisher’s exact test was used for pairwise comparisons. The CUDIT-R item 1 was used to calculate the frequency of cannabis use. Respondents who had answered “yes” to the use of cannabis but had chosen the option ”never” for the frequency of use (n=13) were treated as “no use”. A sensitivity analysis was performed showing that the change did not alter the results of the statistical tests. A Kruskal-Wallis test was used to explore the associations between item 1 and sociodemographic factors. Dunn’s test was used for pairwise comparisons if statistical significance was found. All p-values were adjusted with Bonferroni correction. The level of statistical significance at a 95% confidence interval for all tests was set at $p<0.05$.

Two logistic regression models were performed to explore the association between the contemplation of reducing or quitting cannabis use (item 8) and the other

items in the CUDIT-R. Model 1 only included CUDIT-R items; model 2 was adjusted using gender, age, and size of the city. The response options in the CUDIT-R items were dichotomized to infrequent users and those who use more frequently. In item 1, “2–4 times a month”, “2–3 times a week” and “4 or more times a week” were combined to “at least 2 times per month”. In item 2 “1 or 2 hours”, “3 or 4 hours”, “5 or 6 hours” and “7 or more hours” were combined into “one hour or more”. For items 3–7, “less than monthly”, “monthly”, “weekly” and “daily or almost daily” were combined into “at least sometimes”. Contemplation of reducing or quitting use, the options "never" and “yes, but not in the past 6 months” were combined into “no”.

Results

Participants characteristics are described in Table 1. Of the 1,855 participants, 375 (20.2) reported using cannabis during the past six months and of those 20.5% (n=77) had problematic cannabis use. Cannabis was used mainly in monthly or less 8.5% (n=158) and four or more times a week 4.5% (n=83) (Table 2). Males (n=190, 10.3%) used cannabis more often than females (n=168, 9.0%), and older students (n=285, 15.5%) more than 17-year-olds (n=87, 4.7%).

Table 1. about here

Table 2. about here

The prevalence of perceived problems according to CUDIT-R

Of those who reported cannabis use during the past six months (n=375, 20.2%) nearly all reported being intoxicated for over an hour in a typical session (n=359, 93.5%). The most perceived cannabis-related problems were memory or concentration problems (n=151, 39.1%), devoting a great deal of time to cannabis use (n=144, 37.4%), and

failing to do what was normally expected (n=106, 27.5%). Using cannabis in physically hazardous situations (22.0%, n=85) was the problem least often perceived.

Associations between contemplation of reducing or quitting cannabis use and CUDIT-R items

Of those who reported cannabis use (n=375, 20.2%), third contemplated reducing or quitting use (35.4%, n=136) during the last six months . Contemplating reducing or quitting use was significantly associated with the inability to stop use once started (Adjusted Odds Ratio (AOR): 5.57, CI95: 2.48-13.16, p<0.001) (Table 3).

Table 3. about here

Discussion

In this study population of vocational students, one-fifth reported using cannabis and of those, one in five reported problematic cannabis use. Third of those using cannabis contemplated reducing or quitting cannabis use. This was associated with inability to stop using cannabis.

Vocational students' problematic cannabis use is in line with a previous study (Chabrol et al., 2020) that examined college students with the same instrument. On the other hand, in a study by Mader et al. (2019), only 7% of university students reported problematic cannabis use. It is interesting to note that reported problematic cannabis use was at the same level in our study and studies by Chabrol et al. (20.2% and 22.0%), but it was twice as much in Mader's et al. (2019) study, even though the prevalence of cannabis use was 10% more in both previous studies than it was in ours. The differences with previous research literature could be explained by the fact that higher education levels, such as university, correlate with less heavier cannabis use than lower education

level, such as vocational schools (Teixidó-Compañó et al., 2018). Differences could be found also in the culture of cannabis use and the reasons for use. Mader et al. (2019) found that medical use of cannabis was associated with problematic use. Earlier studies (Chabrol et al., 2017) have also found that health motives are positively and uniquely related to problematic use. Although in this study we did not examine the motives for use or their associations to problematic use, we know from previous Finnish studies that almost 80% of Finns who used cannabis did so mainly for recreational purposes (Hakkarainen & Karjalainen, 2017).

Memory and concentration problems and devoting a great deal of time cannabis use were the most frequently perceived problems related to the cannabis use. These kinds of problems can be detrimental to learning and can further reduce educational attainment (Macleod et al., 2004; Silins et al., 2014). Problems with memory and concentration can also have an impact on students' motivation to study (Pacheco-Colón et al., 2019). A young person's education may be interrupted, which can increase the probability of them being excluded from society (Hilli et al., 2017). This, in turn, can increase the occurrence of other problems in different areas of life, such as unemployment, poor housing and health problems (March et al., 2005), and lead to significant costs for society (Hilli et al., 2017). Moreover, Tartaglia et al. (2017) suggest that young adults use cannabis to cope with unsatisfactory life conditions. Getting support and help in finding healthy alternative coping methods may be an important way to break this cycle.

A third of the students who used cannabis reported contemplating reducing or quitting the use during the last six months . This aligns with a study of cannabis-using high school students (Fernández-Artamendi et al., 2013). Our results linking contemplation of reducing or quitting with the inability to stop use may be due in part to

affected individuals recognizing this problem more often as harmful to themselves, and thus being more strongly motivated to quit (Fernández-Artamendi et al., 2013). To support reduction or quitting, it is important to understand what barriers or contributing factors these students may be facing in accessing treatment, as few young people seek treatment for cannabis use (Caldeira et al., 2009; Parmar & Sarkar, 2017), even if they perceive use as potentially leading to severe health or social problems (Järvinen & Ravn, 2015).

These findings highlight the importance of early recognition of problematic cannabis use in providing appropriate and timely care. Student health care is a valuable resource for identifying and providing care for cannabis use among youth (Parmar & Sarkar, 2017; Rönkä & Markkula, 2020). In schools, easy to implement brief interventions (Parmar & Sarkar, 2017) have been found to reduce cannabis-related problems and increase the likelihood of cannabis abstinence among non-treatment seeking young adults (Halladay et al., 2019). However, research on brief interventions for cannabis use is scarce, and evidence of its effect is still unclear (EMCDDA, 2021b). Valid and simple-to-administer screening instruments and interventions for problematic cannabis use can be important tools for schools (Rönkä & Markkula, 2020). Access to reliable screening instruments for young people may assist them in self-identifying problems in their own use. In addition to receiving the screening outcome, it would be important that they would be able to get advice on managing cannabis-related problems and information on appropriate services. As cannabis use is still illegal in many countries (EMCDDA, 2021a), young people would benefit from feeling safe talking confidentially about cannabis use and having better access to anonymous and lower-level support services.

When assessing the results of our study, several limitations should be considered. First, although we were able to reach a relatively large number of students from Finnish vocational schools nationwide, the attrition rate was significant. This may be due to the voluntary participation and electronic data collection. It is also possible that we did not reach those individuals whose cannabis use is highly problematic. For this reason, the prevalence of problematic cannabis use may have been underestimated. Our population reflected the average population of vocational schools in Finland regarding age and gender. Second, self-report surveys are at risk of over and under estimation, due to the social desirability of the answers. However, responses from youth regarding their substance use have been found to be valid and reliable (Winters et al., 1990). Third, the used instrument had not been validated in Finland. However, it had been found to be reliable and valid in several other countries (Cronbach's alpha: 0.73–0.91) (Adamson et al., 2010; Loflin et al. 2018; Schultz et al., 2019). Fourth, we asked about a limited number of problems related to cannabis use, which may not give a complete picture of all the potential problems. The CUDIT-R may not cover all aspects related to cannabis-related problems that could be captured by other similar instruments. Lastly, the age was dichotomized into two groups varying significantly in size. However, age was also considered as a continuous variable and did not affect the results. Thus, we ended up with this dichotomization of minors and adults.

Conclusion

The most perceived cannabis-related problems are centrally important to the academic success of vocational students, their employment, and their general life management. A culture that allows and promotes open discussion about both the harms and benefits of cannabis should be built and made possible in school environments. It is also imperative to screen for problematic cannabis use and implement low-threshold cannabis

interventions in student health care. A third of students who used cannabis had contemplated quitting or reducing their use, which means there is opportunity for brief interventions to support this.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Ethical conduct of research

Ethical principles for medical research involving human subjects (Finnish Advisory Board on Research Integrity, 2012; WMA Declaration of Helsinki, 2013) were followed, and the anonymity and the rights of the participants were respected. The participants gave their informed consent by completing the survey. Ethical approval was granted by the Ethics Committee for Human Sciences at University of Turku (22/2020) and study permission was requested from each school.

Data availability statement

The data is not publicly available due to privacy and ethical restrictions. The aggregated data that support the findings of this study are available from the corresponding author, [JL], upon reasonable request.

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Table 1. The background characteristics of the students (n=1,855)

Characteristics	**n (%)**
Gender	
Females	970 (52.3)
Males	817 (44.0)
Non-binary people	68 (3.7)
City by size	
Big cities	1,301 (70.1)
Small cities	554 (29.9)
City by geographical location	
West	101 (5.4)
South	782 (42.2)
North	658 (35.5)
East	314 (16.9)
Cannabis use in the past six months	
No	1480 (79.8)
Yes	375 (20.2)
Total Cudit-R score	7.74 (7.18)
Age mean (SD)	20.0 (3.4)

Table 2. Frequency of cannabis use during the past six months and associated demographic factors (n=1,855)

	No use[1]	**Monthly or less**	**2–4 times a month**	**2–3 times a week**	**4 or more times a week**	
	n (%)	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**p**
Total[2]	1480 (79.8)	158 (8.5)	73 (4.0)	59 (3.2)	82 (4.5)	
Gender						< 0.001
Female	805 (43.4)	84 (4.6)	39 (2.1)	16 (0.9)	26 (1.4)	
Male	624 (33.6)	70 (3.8)	31 (1.7)	41 (2.2)	48 (2.6)	
Non-binary people	51 (2.8)	4 (0.2)	3 (0.2)	2 (0.1)	8 (0.4)	
Age						< 0.001
17	470 (25.3)	48 (2.6)	17 (0.9)	14 (0.8)	8 (0.4)	
18 or older	1010 (54.5)	110 (5.9)	56 (3.1)	45 (2.5)	74 (4.0)	
City by size						0.081
Big cities	1031 (55.6)	113 (6.1)	57 (3.1)	45 (2.4)	55 (3.0)	
Small cities	449 (24.2)	45 (2.4)	16 (0.9)	14 (0.8)	27 (1.5)	
City by geographical location						0.731
West	84 (4.5)	10 (0.6)	4 (0.2)	0 (0.0)	2 (0.1)	
South	603 (32.5)	72 (3.9)	35 (1.9)	31 (1.7)	41 (2.1)	
North	547 (29.5)	50 (2.7)	23 (1.3)	17 (0.9)	19 (1.1)	
East	246 (13.3)	26 (1.4)	11 (0.6)	11 (0.6)	20 (1.1)	

[1]Those who answered that they had not used cannabis in the past six months and those who answered ‘never’ (n=13) for cannabis use frequency; [2]Missing values: Three participants answered ‘yes’ to using cannabis in the past 6 months but did not specify how frequently.

Table 3. Adjusted model of associations between CUDIT-R items and contemplating to reduce or quit cannabis use among cannabis-using vocational students (n=386)

Abbreviated CUDIT-R items	**Reference category**	**AOR[1]* (95%-CI) p**
Frequency	at least 2 times per month vs. monthly or less	1.05 (0.57-1.92) 0.876
Being intoxicated	one hour or more vs. <1h	1.06 (0.37-3.56) 0.919
Inability to stop use once started	sometimes vs. never	5.57 (2.48-13.16) <0.001
Failing to do what was normally expected	sometimes vs. never	1.64 (0.79-3.33) 0.176
Devoting a great deal of time to cannabis use	sometimes vs. never	1.74 (0.92-3.26) 0.084
Having memory or concentration problems	sometimes vs. never	1.44 (0.76-2.68) 0.261
Using in physically hazardous situations	sometimes vs. never	0.81 (0.34-1.87) 0.635
Covariates		
Female	Male	0.90 (0.53-1.55) 0.716
Female	Non-binary gender	0.93 (0.20-3.45) 0.922
Age	-	0.96 (0.89-1.04) 0.377
Small cities	Big cities	1.16 (0.64-2.18) 0.627

[1] Each CUDIT-R item was adjusted for sex, age, and urbanicity; *AOR = adjusted odds ratio

Supplementary Table 1. Distribution of CUDIT-R items

Item	Never	Monthly or less	2-4 times a month	2-3 times a week	4+ times a week	Mean (SD)
Frequency (n=386)	3.4% (13)	40.9% (158)	18.9% (73)	15.3% (59)	21.5% (83)	3.11 (1.25)
	Less than 1 h	**1-2 h**	**3-4 h**	**5-6 h**	**7 h or more**	
Being intoxicated (n=384)	6.5% (25)	31.5% (121)	39.6% (152)	12.2% (47)	10.2% (39)	2.88 (1.05)
	Never	**Less than monthly**	**Monthly**	**Weekly**	**Daily or almost daily**	
Inability to stop use once started (n=385)	77.1% (297)	10.1% (39)	3.6% (14)	2.9% (11)	6.2% (24)	1.51 (1.12)
Failing to do what was normally expected (n=386)	72.5% (280)	13.7% (53)	4.4% (17)	4.7% (18)	4.7% (18)	1.55 (1.09)

Item	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	Mean (SD)
Devoting a great deal of time to cannabis use (n=385)	62.6% (241)	17.7% (68)	6.0% (23)	7.8% (30)	6.0% (23)	1.77 (1.22)
Having memory or concentration problems (n=386)	60.9% (235)	19.7% (76)	7.5% (29)	6.2% (24)	5.7% (22)	1.76 (1.18)
Using in physically hazardous situations (n=386)	78.0% (301)	9.3% (36)	4.1% (16)	2.3% (9)	6.2% (24)	1.49 (1.11)
	No	Yes, but not in the past 6 month	Yes, during the past 6 month			
Contemplating to reduce or quit cannabis use (n=384)	51.0% (196)	13.5% (52)	35.4% (136)			1.84 (0.92)