

Do Swiss adolescents perceive the negative effects of their illegal substance use?

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Summary

This study explores adolescents' perceptions of adverse consequences linked to their illegal psychoactive substance (IPS) use, as they are often thought to minimise them. From a Swiss nationally representative sample of 8740 adolescents aged 16 to 20 pursuing post-mandatory education, 2515 participants reported IPS use in the past month on a self-administered anonymous questionnaire. The percentages of participants reporting problems in four areas (individual, school, relationships and sexual) were assessed, depending on the type of IPS consumption over the last 30 days: occasional cannabis users: ≤ 2 times; regular cannabis users: ≥ 3 times; and poly-consumers: cannabis plus at least one other substance used. The percentages varied significantly across these three groups with 26.9% of occasional users, 53.8% of regular users, and 73.3% of poly-consumers reporting at least one problem. Compared to occasional cannabis users, poly-consumers were more likely to report problems in all four categories [relative risk ratio (RRR): 3.38 to 5.44], while regular cannabis users often reported only school and relationship problems [RRR: 2.43 to 3.23]. Thus, many adolescents seem to perceive the negative effects of their IPS use, with heavier consumption being associated with increasing problems. Physicians should feel confident questioning adolescents on the adverse consequences of their IPS consumption, as they are likely to be responsive on this issue.

Key words: adolescent; substance abuse; cannabis; survey; health promotion

Introduction

Rates of illegal psychoactive substance (IPS) use among adolescents living in Western countries rose in the 1980s and 1990s and, although having slightly declined recently,

have remained significant ever since [1–4]. The wide range of products, their availability and, most importantly, the young age at which they have are consumed contribute to making IPS use a youth public health issue [2, 3, 5]. This is particularly the case in Switzerland, as it has one of the highest cannabis consumption rates in Europe among 15 year-old adolescents [6]. Furthermore, the prevalence of lifetime use of LSD, ecstasy and cocaine also increased in this country between 1993 and 2002, especially among male apprentices [3].

Several avenues have been explored over the years to tackle IPS use related-problems among adolescents. Primary prevention, especially in schools, has proven to be effective to some extent [7–9]. In the clinical setting, interventions using motivational interviewing have also been shown to be moderately successful [10], as well as systemic approaches involving parents [11]. However, the identification of young individuals who might benefit the most from these interventions is likely to be prevented by health professionals' beliefs regarding adolescents. In fact, as adolescents are often thought to deny the occurrence of adverse consequences from their IPS consumption, many physicians prefer not to address this important issue with them, feeling that their counselling will be ineffective [12]. Actually, few studies have attempted to assess to what extent adolescents perceive the negative effects of their IPS use [13, 14]. If the tendency of adolescents to deny the effects of IPS use is not confirmed, then doctors, psychologists, social workers and other health professionals may modify their approach and may be more inclined to explore such consequences with their adolescent patients. Moreover, on a collective level, prevention messages based on information that comes from adolescents themselves, therefore more trustworthy to them, may be more effective than one based on the opinions of adults only [15].

The present study was thus designed to explore, in a large nationally representative sample, adolescents' perceptions of problems linked to their use of IPS. Specifically, our first objective was to determine which type of problems adolescents were most inclined to mention, according to their consumption profile. We also wanted to verify to what extent those problems may be cumulative. Our hypothesis was that Swiss adolescents consuming the most and using

several substances would admit more problems than those consuming less.

Method

Data were drawn from the 2002 Swiss Multicenter Adolescent Survey on Health (SMASH02) database: a nationally representative survey including 8740 adolescents in post-mandatory school aged 16 to 20 years, both students and apprentices. Only 16 individuals refused to participate and very few invalid questionnaires (<20) were discarded. In Switzerland, school is mandatory up to the age of 16 years. Afterwards, about 30% of adolescents go to high school ("students": these are usually the best pupils who will obtain a university education afterwards), about 60% go to vocational school ("apprentices": they have 1 or 2 days of class per week and spend the rest of the time working in a company related to their field of study), and 10% do not continue at school or delay their education. Therefore, the basic population, from which the sample was derived, forms around 90% of the Swiss population of this age. The study was approved by the Ethics Committee of the University of Lausanne School of Medicine. An anonymous self-administered questionnaire which reviewed a number of health issues and behaviours was completed by adolescents in their classrooms (available at: www.umsa.ch). Less than 10 adolescents refused to take part in the survey. The rate of non-response varied between 1% and 6% depending on the question. After checking the database for incorrect answers, missing data on essential variables and for a percentage of non-responses larger than 20%, and taking into account the design of the survey, all analyses were based on a final weighted sample of 7429 subjects (4044 boys and 3385 girls). A thorough description of the questionnaire and sampling method has been published elsewhere [16]. All analyses were based on a final weighted sample of 7249 subjects (3906 boys and 3305 girls).

Besides the use of tobacco and alcohol (variables not being of primary interest in this paper), subjects were asked about their lifetime and last month use of cannabis as well as other IPS [16]. Three exclusive groups were created in order to differentiate recent consumption profiles: 1) the occasional cannabis users (further referred to as occasional users; $n = 850$) including all those who had consumed cannabis once or twice in the past 30 days but no other IPS; 2) the regular cannabis users (further referred to as regular users; $n = 1227$) were those who reported use of cannabis 3 times or more in the past 30 days but no other IPS; and 3) the poly-consumers ($n = 438$) including adolescents who had used cannabis plus at least one other IPS (inhalant, medication to get high, ecstasy, thai, speed, LSD, mushrooms, GHB, heroine, non-prescribed tranquiliser, methadone or other) over the past 30 days. This classification had already been used by our group and other groups [17]. Adolescents not reporting cannabis use in the past 30 days were not included in the analysis.

An eleven-item questionnaire pertained to the perceived consequences of substance use [16]. Its construction was based on several adverse consequences of substance use as reported in the literature [14, 18–21]. If subjects had repor-

ted any use of substances, they were asked whether they had ever experienced (yes/no) a problem from their consumption in the following four areas: 1) school (deterioration in grades); 2) individual (injuries, damage to belongings, lost of assets); 3) relationship with others (parents, friends, teachers, colleagues or being involved in fights); 4) sexual (unwanted sex and/or unprotected sex).

We expected that several variables could potentially affect perception of substance-related problems besides the level of consumption itself. We thus included socio-demographic variables in the analyses, such as age, gender, place of residence (rural vs. urban), academic track (student vs. apprentice), family structure (parents together vs. other), participation in weekly extracurricular sports activities (none vs. once a week or more), socio-economical status (SES) and depression. As family income was not assessed in the questionnaire, we used parents' education as a proxy measure of SES. The level of education of both parents was thus combined in two categories: low (both parents with a low level of education, defined as mandatory schooling or less) and high (at least one parent with higher education). The presence of depression was assessed on 8 items using the Depressive Tendencies Scale [19] (Cronbach's alpha: 0.89 in the present study), ranging from 1 (not depressed at all) to 4 (very depressed).

In bivariate analyses, using Chi-square tests and ANOVA (significance set at $p < 0.05$), we first compared subjects in the 3 consumption groups on their socio-demographic characteristics, as well as on the report of their problems related to their substance use. Then, multinomial logistic regressions were performed for each category of problem, with occasional users being considered as the reference group. Even if our dependent variable was ordinal, the decision of using multinomial regressions instead of ordinal regressions was taken after a Brant test [22] which clearly rejected the usual proportionality assumption ($p < 0.001$). Statistically significant socio-demographic characteristics at the bivariate level, as well as hazardous drinking (having been drunk at least once in the past 30 days: yes vs. no) were used as covariates in the multivariate analysis. Results are expressed in relative risk ratios (RRR) with 95% confidence interval [95% CI]. Analyses were conducted using STATA 11.0 (StataCorp, College Station, Texas, USA) which allowed computation of coefficient estimates and variances, taking into account the sampling clustering procedure of the study.

Results

The analyses were conducted on a sample of 2515 subjects (34.7% of the total sample) having reported IPS use in the month preceding the survey. Table 1 displays the characteristics of these adolescents according to their consumption profile. The more substances adolescents consumed, the more likely they were to be older, male, depressed, and the less likely they were to have parents living together, to be students and practice sports outside mandatory school curriculum.

Among the IPS users, 44.5% of the girls and 50.1% of the boys reported to have experienced at least one adverse consequence from their consumption. Table 2 provides the per-

centages of subjects reporting problems in the four considered areas, classified by their consumption profile. The percentages were highest for poly-consumers whatever the considered area. Among them, more than half reported relationship problems, while nearly one third reported individual and school-related problems. Among regular users, the most frequent adverse consequences were school and relationship problems. With much lower proportions (from 10.7% to 13.5%), occasional users had nearly equal frequencies of school, individual and relationship problems. Sexual problems were the least perceived problems, regardless of the consumption profile.

Table 3 presents the number of perceived reported consequences of IPS use within the three consumption groups. It shows that the heavier the consumption, the greater number of reported problems with 26.9% of occasional users, 53.8% of regular users and 73.3% of poly-consumers reporting at least one type of consumption-related problem. In the multivariate analyses (table 4), compared to occasional users, poly-consumers were 3 to 5 times more likely to report problems in all categories. In contrast, regular

consumers perceived problems more frequently only in the school and relationship categories.

Discussion

This study shows that, at least within the frame of an anonymous survey, a significant number of adolescents using IPS perceive the potential negative effects of their consumption on their school results, their health and well-being, their relationships with others and their sexuality. While there is an abundant amount of literature describing the objective, measurable and negative consequences of substance use among adolescents [18, 19, 23–25], very little is known on what adolescents themselves perceive as the potential negative effects of their consumption. The only two studies on adolescents which we are aware of that investigated similar matters are the ones by Kilmer et al. [14] and Caldeira et al. [13]. In the first study, Kilmer reported on the anticipated effects of marijuana use, as expressed by 725 college students. It was actually found that the highest level of perceived anticipated problems were among those who did not use marijuana. Caldeira

Table 1: Characteristics of participants according to IPS consumption profile.

	Occasional users n = 850	Regular users n = 1227	Poly-consumers n = 438	p value
Characteristics	% [95% CI]	% [95% CI]	% [95% CI]	
Age (mean)	17.8 [17.7–17.9]	17.9 [17.8–18.0]	18.1 [17.9–18.3]	0.005
Gender (male)	53.0 [47.7–58.2]	69.4 [66.4–72.3]	73.0 [65.5–79.4]	<0.001
Place of residence (urban)	44.3 [39.2–49.4]	48.5 [45.1–51.9]	50.4 [42.6–58.2]	0.304
Family structure (together)	76.8 [73.1–80.2]	70.9 [67.8–73.9]	65.6 [58.1–72.4]	0.008
Academic track (student)	30.7 [26.8–34.9]	27.4 [24.8–30.2]	11.9 [9.1–15.5]	<0.001
Sports practice (none)	22.1 [18.8–25.7]	26.8 [23.9–29.9]	33.7 [27.2–40.8]	0.005
SES (low)	8.4 [6.6–10.7]	8.3 [6.6–10.3]	7.4 [4.3–12.6]	0.876
Depressive tendencies ^a (mean)	1.71 [1.65–1.77]	1.79 [1.74–1.83]	1.97 [1.86–2.07]	<0.001

^a Depressive tendencies scale ranging from 1 (not depressed at all) and 4 (very depressed)

Table 2: Bivariate analysis of substance-related problems according to IPS consumption profile.

	Occasional users	Regular users	Poly-consumers	p value
Problems encountered	% [95% CI]	% [95% CI]	% [95% CI]	
School problems	10.7 [8.7–13.2]	31.0 [28.0–34.1]	34.4 [27.8–41.7]	<0.001
Individual problems	11.0 [5.3–21.5]	23.4 [20.8–26.3]	37.6 [30.5–45.3]	<0.001
Relationship problems	13.5 [11.2–16.3]	30.2 [27.4–33.3]	53.9 [46.2–61.4]	<0.001
Sexual problems	2.9 [2.0–4.3]	5.8 [4.4–7.5]	22.2 [16.3–29.5]	<0.001

Table 3: Bivariate analysis of the number of substance-related problems according to IPS consumption profile.

	Occasional users	Regular users	Poly-consumers	p value
Number of problems	% [95% CI]	% [95% CI]	% [95% CI]	
0	73.1 [65.7–79.4]	46.2 [42.9–49.6]	26.7 [21.4–32.8]	<0.001
1	18.2 [12.0–26.8]	26.3 [23.6–29.3]	28.2 [20.6–37.3]	<0.001
2	6.8 [5.2–8.9]	19.6 [17.0–22.4]	19.9 [14.8–26.2]	<0.001
3	1.3 [0.7–2.3]	6.7 [5.4–8.3]	20.6 [14.8–27.9]	<0.001
4	0.6 [0.3–1.4]	1.2 [0.7–2.0]	4.6 [2.9–7.3]	<0.001

Table 4: Multivariate analysis^a of substance-related problems according to IPS consumption profile.

	Regular users	Poly-consumers
Problems encountered	RRR [95% CI]	RRR [95% CI]
School problems	3.22 [2.41–4.32]	3.97 [2.53–6.22]
Individual problems	1.94 [0.81–4.65]	3.38 [1.34–8.49]
Relationship problems	2.43 [1.82–3.23]	5.44 [3.51–8.43]
Sexual problems	1.46 [0.84–2.54]	4.50 [2.41–8.40]

^a Controlled for age, gender, academic track, family structure, SES, sports practice, depressive tendencies, and hazardous drinking, with occasional users as the reference category

provided figures related to actual negative consequences of substance use, as reported by adolescents in a sample of 1253 US adolescents. Among 474 “at-risk” cannabis users (≥ 5 times in the past year), concentration problems (40.1%), driving while high/drunken (18.6%) and missing class (13.9%) were among the most prevalent problems encountered. Facing situations implying a risk for physical injury was also frequent (24.3%). Although the classification used by this author was not the same as in the current study, the data found by Caldeira were not that different. The percentages of adolescents admitting substance related problems were fairly high, even for regular consumers who were not poly-consumers.

Yet, our research also identified another piece of information: there seemed to be a dose-dependent relationship between IPS use and perceived problems. Indeed, 25% of poly-consumers reported three or more problems while only 8% of regular and 2% of occasional consumers did so. Another interesting point was the distribution of the reported problems in the three consumption groups. In comparison with occasional users, regular users had a two to threefold increase in the risk of facing relationship and school problems, but the increase in sexual difficulties and individual problems were insignificant. On the contrary, the relative risks among poly-consumers was not only higher in the first three domains (and fairly similar), but it also increased abruptly in the area of sexuality. As reported in the literature [26, 27], this study shows that adolescents do recognise that regular cannabis use affects their school performances. Less expected was the fact that poly-consumers seem at risk to encounter sexually-related problems. This is probably linked not only to the use of cannabis, but also to the potential negative effect of other substances with either an inhibiting or dis-inhibiting sexual effect. Finally, the 34.7% of the total SMASH sample having reported IPS use in the month preceding the survey may seem fairly high, but it is known from other surveys among younger adolescents [6] that Switzerland has a noticeable higher rate of cannabis/substance users than most other European countries.

A strength of the present study was the fact that it was based on a large, nationally representative sample of adolescents. The presence of a dose-dependent correlation between IPS consumption and reported problems adds to the validity of the answers. Also, while a cross-sectional survey does not normally allow for assessing the direction of any relationship, in this study, as the question specifically focused on the perceived negative consequences, it can be inferred that there is a causal relationship between IPS use and the reported problems. The results should however be viewed in the context of its limitations. The sample did not include so-called drop-out adolescents, having left the school and without any structured professional project. We do not know whether these adolescents, who have been shown to consume substances in a higher frequency and quantity than those who are involved in a training institution [28], would have displayed higher or lower percentages of negative consequences from their consumption. We have to recognise that the group of regular consumers is somehow heterogeneous, including subjects who have used cannabis a few times (once or twice a week) as well as

those who may consume up to several joints per day. Also, while the patterns of substance use were derived from a question assessing substance use over the past 30 days, the questions pertaining to the potential consequences of substance use did not specify any time period and we acknowledge the fact that some subjects may have over or underestimated the effects of their consumption. Thus, there might be a discrepancy between consumption profiles and reported consequences. Even though anonymity was respected, some subjects may have felt reluctant to report both their use of substances as well as its consequences. Finally, the results are derived from a survey performed in 2002, however while the percentages of various types of IPS users may have changed over time, we have no reason to believe that the complications linked with regular/problematic use of cannabis have profoundly changed since that time.

On an individual level, the current results should encourage health professionals caring for adolescents to explore with them not only their pattern of cannabis/other IPS use, but also their perception of its adverse consequences. This may represent one part of a brief motivational intervention such as those previously suggested by several authors [29–31]. Moreover, some authors have shown that adolescents have a propensity to reject information coming from official sources [32], especially information which contradicts their beliefs or those built on their friends’ everyday experiences [33, 34]. Thus, on a more collective level, professionals in charge of prevention interventions could use these data to convince young people that the negative effects of the use of IPS is not the result of the imagination of adults but a reality as testified by the account of our subjects themselves. This may add to the effectiveness of school or community preventative interventions [8, 35], particularly in Switzerland where young people tend to consider cannabis as a natural substance, much less harmful than tobacco [34, 36].

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