

Is vulnerability associated to substance use? A study among youth in Switzerland

Corentin VAN RUYMBEKE¹

Yara BARRENSE-DIAS¹

Joan-Carles SURIS¹

Research Group on Adolescent Health, Department of Epidemiology and Health systems, Center for Primary Care and Public Health-*Unisanté*, University of Lausanne

Route de la Corniche 10, 1010 Lausanne / Switzerland

Corresponding author: Prof. JC Suris
GRSA / DESS / *Unisanté*
Route de la corniche 10
1010 Lausanne, Suisse
E-mail: joan-carles.suris@unisante.ch
Téléphone: +4121 3147375

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Abstract

Adolescence is a period of exploration and experimentation that includes risk behaviours such as substance use. Adolescents living in a situation of vulnerability could be more prone to use substances. In this cross-sectional study, we aim to evaluate the association between level of vulnerability and substance use considering explanatory factors. Data were obtained from the first wave of the GenerationFree project (www.generationfree.ch), a longitudinal study based on data collected yearly between 2014 and 2019 on youth aged 15-24 years in high- and professional schools. The sample included 5179 participants. We designated 4 risk behaviors: current tobacco smoking, alcohol misuse, cannabis use and other illegal drug use. We defined vulnerability based on 3 criteria: relationship with parents, school performance and socioeconomic status (SES) of their family. According to this definition, participants were divided into three groups: No vulnerability, Moderate vulnerability and High vulnerability. Each substance was compared by vulnerability level and controlled with explicative factors such as age, gender, perceived health, emotional wellbeing, academic track, nationality, living with parents, residence, family structure, money earned, and perceived own financial situation. Results show that all substances but alcohol misuse are associated to vulnerability at the bivariate level. All the explicative factors were also significant with the exceptions of academic track and amount of money earned per month. In the multinomial regression, for the Moderate and High vulnerability groups, cannabis use was the only behaviour that remained significant. In conclusion, this study shows the association between level of vulnerability and substance use, especially cannabis use. Our results also reveal the complexity around vulnerability and how the interaction with social aspects influence it. **Youths presenting familiar, educational or financial problems need to be especially screened for substance use by health providers.**

Key words: Vulnerability; Substance use; Adolescents; Young adults

1. Introduction

Adolescence is a period of exploration and experimentation that includes risk behaviours such as substance use. As shown in the 2018 Swiss Health behaviour in School-aged Children study (1), around 17% of 13-year-olds have already smoked tobacco, 1% are current smokers and 2% drink alcohol weekly. These rates are more important at age 15 with 7% of current tobacco smokers and 7% of weekly drinkers. For cannabis use, results indicate that 12% of 14-year-olds and 22% of 15-year-olds have used cannabis at least once. Among 15-year-olds, 4.1% are frequent users (more than 6 days per month). Additionally, people who consume one substance tend to try another one. For example, at age 15, 20 % of boys and 15% of girls reveal having used cannabis, drunk alcohol and smoked cigarette at least once in their life (1). However, even though most teenagers just experiment a few times, some of them will continue, which may later cause acute or chronic health problems, even though complications may appear some years after adopting these behaviours (2). Therefore, it is important to prevent these unhealthy habits before they become a routine.

Several factors can influence drug use, such as the social surrounding and environment of youths (3). The term “vulnerable” is often used to designate youths who are more likely to be exposed to risks. The concept of vulnerability could be described as a greater exposition to these risks than expected for a reference group of the same age. However, the literature is not clear about how to define vulnerability. For example, a review indicates that there are several factors determining and influencing vulnerability, such as family, school, peers, society, personal characteristics, material aspects, emotional aspects, and social aspects (4). Other studies select only a major association to define it. In this sense, the study by Skinner et al. defines it as “not having certain of the basic rights fulfilled” (5). On the other hand, some studies have used specific aspects for vulnerability, such as neighbourhoods (6) or connectedness with family, school, peers, and community (7)(8).

The aim of this study is to assess the association between level of vulnerability and substance use taking into account explanatory factors.

2. Methods

Data were obtained from the GenerationFRee project (www.generationfree.ch), a longitudinal study based on data collected yearly between 2014 and 2019. The overall aim was to assess the lifestyles of adolescents and young adults in the canton of Fribourg, Switzerland. For this research, we focused on the first wave, with participants being aged between 15 and 24 years (mean 18.3). This wave included students and apprentices in post compulsory education in the Canton of Fribourg. In Switzerland, after mandatory school, about one third of pupils go into high-school (students) and two-thirds into professional schools (apprentices). We invited all pupils from the six vocational and five

high schools in the canton to participate. Data were collected during computer science classes, where pupils were invited to answer an online survey under the supervision of a teacher.

From a total sample of 10'646 individuals (as provided by schools), 5834 answered the questionnaire (54.8%). Among them, 200 (3.4%) did not want to participate, 244 (4.2%) did not complete the questionnaire properly and 211 (3.6%) were not in the age range of interest and were excluded. The final sample comprised 5179 participants (88.8%). Since the non-respondents were not a random sample of the whole population of students contacted to participate in the study, data were weighted according to known characteristics of the population under study (language [French or German], age, gender, and academic track [Student/Apprentice]). The Ethics Committee of the canton of Vaud approved the study protocol.

2.1 *Dependent variable*

We defined vulnerability based on 3 criteria: relationship with parents (8), school performance (8), and socioeconomic status (SES) of their family (9–11).

The relationship with their mother and father was measured separately with the following question: *On a scale from 1 [very poor] to 10 [excellent], indicate the quality of the relationship with your mother/father.* We coded it 0 when the rate was >5 for both parents and 1 when it was <6 for at least one of them.

Self-reported school performance was assessed with the following question: *Do you think that you are a ...* with three possible answers: “above average student”, “average student”, and “below average student”. We coded it 0 when it was “average or above” and as 1 when it was “below average”.

To assess SES we used a question from the European School Survey Project on Alcohol and other Drugs (ESPAD) (12): *Compared to the financial situation of other families in Switzerland, would you say that your family is....* We dichotomized the seven possible answers (ranging from very below to very above average) into “average or higher” (coded 0) and “below average” (coded 1).

We finally added the three variables and divided the sample into three groups: No vulnerability (all variables equal to zero), Moderate vulnerability (one variable equal to 1) and High vulnerability (two or more variables equal to 1).

2.2 *Independent variable*

We included 4 behaviours based on substance use: current tobacco smoking (yes/no), alcohol misuse (one or more drunkenness during the last 30 days), cannabis use (last 30 days), and use of other illegal drugs (also during the last 30 days).

2.3 Explicative factors

We controlled for potential explicative factors referred in the literature (4,13–16) such as age, gender, perceived health status (good/poor), academic track (student/apprentice), family structure (parents together/other), living with their parents (yes/no), nationality (Swiss-born /other), residence (urban/rural), self-reported own financial situation (enough or more than enough/not enough money), amount of money earned per month, and emotional wellbeing. To measure emotional wellbeing, we used the World Health Organization-Five Well-Being Index (WHO-5), with a score ≤ 13 being considered as poor emotional wellbeing(17).

2.4 Statistical analysis

We analysed the data with STATA 14.2 (StataCorp, College Station, Texas). We used Chi-square tests and ANOVAs to compare categorical and continuous variables between the three groups. The results are expressed as point prevalence and means. A multinomial logistic regression with No vulnerability as the reference category was performed for all substances controlling for significant explicative factors Results are expressed as relative risk ratios (RRR) with 95% confidence intervals.

3. Results

Overall, 3671 (70.9%) youths were not vulnerable, 1200 (23.2%) moderately vulnerable and 308 (5.9%) highly vulnerable.

At the bivariate level, all substances but alcohol misuse, were significant and increased with the degree of vulnerability. All the explicative factors were also significant with the exceptions of academic track and income per month (Table 1).

In the multinomial regression, compared to the No vulnerability group, cannabis use was the only significant substance (RRR: 1.59) for the Moderate vulnerability group. Overall, participants in this group were more likely to be females (RRR: 1.30), not living with their parents (RRR: 1.44), not being Swiss-born (RRR: 1.43), living in a city (RRR: 1.27) and perceiving their own financial situation as not having enough money (RRR: 2.07). Youths in the Moderate vulnerability group were also more likely to report poor emotional wellbeing (RRR: 2.02), perceived poor health (RRR: 2.34), and not having both parents living together (RRR: 2.68) (Table 2).

Regarding the High vulnerability group, cannabis use was also the only significant substance (RRR: 2.05). Overall, they were more likely to live in a city (RRR: 1.63), and to consider not having enough money (RRR: 4.46). They were also more likely to report poor emotional wellbeing (RRR: 3.22) and poor perceived health (RRR: 4.92). The probability to live in a family without both parents was 6 times higher (RRR: 6.27) (Table 2).

4. Discussion

The current study investigates the association between vulnerability and substance use, using a definition of vulnerability based on the relationship with parents, school grades and SES. With this definition, we found that 23 % of youths were moderately and 6% highly vulnerable. These results correlate with the prevalence of vulnerable youth in the world (18). Our findings show that even in developed countries, vulnerable youths represent a sizeable part of the population.

We also found that, with the exception of alcohol misuse, moderate and high vulnerability groups are more likely to use substances, and that the prevalence increases with the degree of vulnerability. However, when controlling for other variables, only cannabis use remains significant. This finding differs from another Swiss study among 15 year-olds (19) that found that vulnerability was associated to all risk behaviors (including substance use) when controlling for confounding variables. A possible explanation might be that, as our population is older, vulnerability only differentiates youths further in their substance use path, i.e., those using illegal substances such as cannabis.

The differences observed between the bivariate and the multivariate analyses show the complexity of the association between vulnerability and substance use. Our results show a strong connection between vulnerability and self-reported physical and mental health as reported in the literature (20,21). This reveals the importance to explore the social environment of youths when they consult a physician, especially since those in poor health are more likely to consult (22).

Vulnerable youths are also more likely to report not having enough money compared to their peers, even though the three groups earn approximately the same amount per month. Our hypothesis is that vulnerable youths' families, as per our definition in a low socioeconomic status, may ask their child to help them financially, thus having less money to spend on their own. Moreover, the way parents use their own money could influence the youth's vision of their own income.

Family structure also shows a high association with vulnerability. Youth who do not live with both parents, have 6 times more chances to be highly vulnerable, although the fact that we consider the relation with their parents in our definition of vulnerability most probably plays a role. Literature also shows a high association between vulnerability and single parenthood (23). The correlation between family structure and vulnerability could be explained through the link with socio-economic status, as single-parent families usually have a lower income and the literature shows this association as an important explanation of vulnerability (24).

Finally, we found an association between moderate vulnerability and other explicative factors such as being a migrant, female gender, or living outside the family home. These results confirm previous studies (14,19,25). However, it is worth noting that these factors are only associated to a moderate

degree of vulnerability. Our hypothesis is these are characteristics that may lead to some degree of vulnerability, but that when vulnerability is high, they disappear because then it can affect anyone.

This study has some limitations that need to be mentioned. First, as the study was cross-sectional, causality could not be implied. Second, we had a relatively low response rate (55%) for a school-based sample. Nevertheless, even with it, we had a large sample of almost six thousand participants. Finally, our sample did not include youths (about 10% in Switzerland) outside the education system that might be the most vulnerable, as research shows that they are more at risk to use substances (26). In this sense, our results may underestimate the reality.

5. Conclusion

This study shows the association between level of vulnerability and substance use, especially cannabis use. Our results also reveal the complexity around vulnerability and how the interaction with social aspects influence it. Our results indicate that youths presenting familiar, educational or financial problems need to be especially screened for substance use by health providers. In the other sense, health providers should screen their patients who are using substances about their level of vulnerability.

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Table 1. Bivariate analysis comparing the three groups

	Degree of vulnerability			<i>p</i> -value
	None (N=3671)	Moderate (N=1200)	High (N=308)	
Tobacco smoking	34.5%	44.0%	48.5%	<0.001
Alcohol misuse	41.3%	41.7%	43.7%	0.77
Cannabis use	15.7%	26.2%	34.1%	<0.001
Illegal drugs use	2.2%	4.7%	5.9%	<0.001
Mean age (years±SD)	18.22±0.03	18.36±0.06	18.71±0.13	<0.001
Gender (female)	45.3%	51.6%	51.5%	0.0011
Academic track (apprenticeship)	59.1%	58.2%	56.7%	0.7264
Swiss-born (no)	10.2%	15.6%	17.9%	<0.001
Live with parents (no)	6.2%	12.0%	16.4%	<0.001
Residence (urban)	32.4%	41.0%	49.3%	<0.001
Family structure (parents not together)	22.6%	45.7%	66.7%	<0.001
Income per month (mean±SD)*	638±13.0	699±45.0	690±59.6	0.1361
Perceived own financial situation (not enough)	12.0%	26.4%	47.4%	<0.001
Perceived health (poor)	2.1%	7.7%	17.6%	<0.001
Emotional wellbeing (poor)	14.7%	31.0%	46.9%	<0.001

*Expressed in Swiss Francs (1 Swiss Franc~1 US Dollar)

Table 2. Multivariate analysis by degree of vulnerability using No vulnerability as the reference category

	Degree of vulnerability			
	Moderate (RRR; 95% CI)*	P	High (RRR; 95% CI)	P
Tobacco smoking	1.08 [0.91:1.28]	0.39	0.90 [0.65:1.24]	0.53
Cannabis use	1.59 [1.29:1.95]	<0.001	2.05 [1.45:2.92]	<0.001
Illegal drugs use	1.14 [0.71:1.84]	0.59	0.97 [0.45:2.07]	0.93
Age	0.96 [0.92:1.01]	0.12	1.00 [0.91:1.08]	0.91
Gender (female)	1.30 [1.12:1.52]	0.001	1.31 [0.97:1.77]	0.08
Live with parents (no)	1.44 [1.08:1.91]	0.013	1.40 [0.87:2.26]	0.161
Residence (urban)	1.27 [1.08:1.49]	0.004	1.63 [1.23:2.17]	0.001
Family structure (parents not together)	2.68 [2.28:3.14]	<0.001	6.27 [4.63:8.50]	<0.001
Swiss-born (no)	1.43 [1.14:1.79]	0.002	1.45 [0.95:2.22]	0.09
Perceived own financial situation (not enough)	2.07 [1.69:2.55]	<0.001	4.46 [3.26:6.11]	<0.001
Perceived health (poor)	2.34 [1.62:3.39]	<0.001	4.92 [3.07:7.89]	<0.001
Emotional wellbeing (poor)	2.02 [1.68:2.42]	<0.001	3.22 [2.37:4.38]	<0.001

*RRR= Relative Risk Ratio; 95% CI= 95% Confidence Interval