

Article

Substance Use among International College Students in The Netherlands: An Exploratory Study

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Abstract: International students form a large subgroup of university college students in The Netherlands. Because little is known about substance use in this group, we investigated substance use and the perceptions thereof in a sample of 515 international students in a Dutch university city using an online survey. Results showed high prevalence rates of substance use, especially for cannabis and nitrous oxide balloons. Risk perceptions and attitudes mirrored prevalence (the most commonly used substances were perceived as the least harmful) and for each substance. Attitudes toward a particular substance were also indicative of recent use of that substance. Further, international students highly overestimated the prevalence of cannabis and ecstasy use in the Dutch adult population. The level of estimation of ecstasy use was also an indicator of recent ecstasy use. Regarding substance use and perceptions thereof, we found no clear subgroups among international students. As international students also appeared more reluctant to speak about substance use with (university) professionals than with friends and fellow students, these findings underline a unique opportunity for social networks of students to provide information about substance use, including associated norms, especially to new international students.

Keywords: international students; alcohol; substance use; norms; attitudes



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1. Substance Use among International Students in a University City in The Netherlands: Prevalence of Use and Perceptions

College student life is a distinctive formative period between adolescence and adulthood and has traditionally been linked to the use of alcohol and illicit substances [1–3]. Several factors that contribute to experimentation with and increasing use of substances are specific to the student population: distance from parental control and responsibility, the attempt to fit into newfound cultures, fraternity or sorority membership, and peer pressure [4–6]. Also, perceived positive social norms about substance use and a low perception of harm play a significant role in the decision to engage in substance use on college campuses, especially during the first year of college [7–9]. However, findings indicate that such experimentation and increased use of alcohol and other substances is associated with heightened risk of acute health incidents and substance use disorders [10–12].

Corresponding with the link between substance use and college life, substance use among Dutch college students in The Netherlands is high when compared to use by the adult population. For instance, in 2021, respectively, 8.0% and 3.1% of the adult population (18–64 years) used cannabis and ecstasy [13], whereas for Dutch students these numbers were 33.5% and 13.2%, respectively [14]. Likewise, between 2016 and 2021, Dutch college students consistently used more illicit substances than non-students of the same age group, and that illicit substance use was perceived as a relatively normal activity within their college student culture [15].

International students form a rapidly growing subgroup of (university) college students in The Netherlands. The Netherlands ranks among the most popular countries in Europe for study abroad, and its diverse community of international students is facilitated by several international student organisations (e.g., ESN, AEGEE). In the college year 2021–2022, in The Netherlands, around one in seven students in higher education was an international, and around one quarter of first-year students in higher education were internationals [16]. Because during their stay in a foreign country international students generally tend to be fixated on having a good time and on trying to fit into their new-found culture, instead of focusing on academic goals [17,18], it seems plausible that their substance use is substantial, and worth investigating. Especially because international students in The Netherlands face extra challenges compared to Dutch students (e.g., greater distance to their trusted social environment), resulting in an increased risk of problematic substance use [19].

However, as very little is known about the actual prevalence and perception of substance use among these students, we decided to investigate this subject among international students in the Dutch university city of Groningen, focusing as well on their accompanying social norms and perception of harm. Furthermore, we explored which factors are related to recent substance use among international students.

2. Method

2.1. Participants

With its two universities, the University of Groningen (RUG) and the University of Applied Sciences Groningen (Hanze), Groningen hosts one of the largest international student communities in The Netherlands: in 2022, of 67,714 enrolled college students, 12,195 were internationals [20]. In September 2020 ($N = 305$) and September 2021 ($N = 210$), a total of 515 international college students, then residing in Groningen, participated in our survey study. The samples from both years had highly similar distributions in terms of gender (32.2% vs. 31.0% male; 67.2% vs. 68.1% female; 0.3% vs. 1.0% other) and age ($M = 21.0$ years, $SD = 2.72$ years vs. $M = 20.5$ years, $SD = 2.46$ years). This gender distribution resembled that of the entire 2020 population of international students in The Netherlands (55% female) [21]. Also, the mean age of international students in the two samples was found to be similar to the mean age of Dutch students in Groningen in 2020 (22.3 years) [15] (more comparable data of international students in The Netherlands are lacking). Furthermore, the distribution of academic disciplines (humanities: 25.2% vs. 22.4%; scientific disciplines: 27.5% vs. 27.6%; social sciences: 47.2% vs. 50.0%) was highly similar between the two samples. In both samples, the largest groups were German students (20.0% vs. 16.7%), followed by Spanish students (5.9% vs. 11.0%), and then Italian students (5.9% vs. 10.0%). Because of the high similarity between the samples of 2020 and 2021, we decided to pool the data into one sample. In total, 85.4% of all participants in our sample were of European nationality, displaying an overrepresentation of European students compared to the proportion of European students in the total international student population in The Netherlands (49.7%) [21].

2.2. Materials

The survey contained questions about age, gender (*male, female, other*), and nationality. Nationality was recoded into Northern-, Western-, Southern-, and Eastern-European countries, using the United Nations 'Standard Country or Area Codes for Statistical Use' [22]. Additionally, a combined category "Asia", "North-America", and "Miscellaneous" was used.

Study characteristics were assessed with questions about students' academic disciplines and study status ("starting to study in Groningen", "already studying in Groningen"). Academic discipline was recoded into humanities, concerned with the products of human behaviour (e.g., history, languages, and arts); scientific disciplines, concerned with non-

human aspects of the world (e.g., natural and technical sciences); and social sciences, concerning human behaviour (e.g., health studies, psychology, and economics).

We assessed the frequency of substance use for the seven most popular substances in The Netherlands: alcohol, cannabis, nitrous oxide balloons, ecstasy/MDMA (from now on referred to as ecstasy), cocaine, amphetamine, and ketamine. The frequency of substance use was addressed by inquiring about the previous year's prevalence [23,24].

We used Likert-scales to measure risk perception of the use of the seven above-mentioned substances, and general attitudes towards these substances. We assessed risk perception with the question "To what extent do you think there is a risk of health problems after using ... [e.g., cannabis]"? Students could answer on a 4-point scale ranging from 1 (*no risk*) to 4 (*great risk*). We measured general attitudes towards the substances with the question "What is your general attitude towards ... [e.g., cannabis]"? Students could answer on a 5-point scale ranging from 1 (*very negative*) via 3 (*neutral*) to 5 (*very positive*). We also calculated the average risk perception and attitudes towards all 'powders' (ketamine, cocaine and amphetamine).

To measure social norms concerning substance use, we measured both descriptive social norms (perceived prevalence of use) and openness to talk about substance use. We measured perceived prevalence of substance use by asking students to estimate the prevalence of use of ecstasy and cannabis among the adult population in The Netherlands in percentages: "What percentage of adults (18+) living in The Netherlands have used... [e.g., cannabis] in the last 12 months"? We measured openness to talk about (problematic) drug use by asking students, "Who are you likely to talk to when you feel your alcohol- or substance use is getting out of hand"? Students had six categories (multiple answers allowed) to choose from: *friends*, *parents/caretakers*, *other family*, *addiction care*, *student counsellor*, and *general practitioner*. The first three options were later categorized as being part of the social network, the last three as being part of the professional network [5].

2.3. Procedure

The largest overarching organization for international students in Groningen is the Erasmus Student Network (ESN). ESN Groningen has a European focus, and supports and facilitates studying in Groningen for a period between 2 and 12 months per cycle of studies. We placed a promotional text and link in the monthly digital ESN Groningen newsletters of September 2020 and 2021, inviting international students associated with the ESN Groningen to participate in an online survey named 'International Students Drugs Survey'. A total of 586 students completed the questionnaire; of these, 31 students with a Dutch nationality and 20 former students were excluded from the analyses. Anonymity and confidentiality were assured. To promote response, we offered the option of participation in a lottery with chances of winning a bicycle. The study employed no interventions or codes of conduct, did not address intrusive issues, and guaranteed confidentiality and anonymity of respondents. Therefore, according to the Dutch law for medical-scientific research [25], sign off by a medical-ethical board was not required.

For this exploratory study, Pearson moment correlation coefficients were presented to assess the relationship between attitudes and risk perception. We used independent sample *t*-tests, paired sample *t*-tests, and chi-square tests to assess group differences. Last, logistic regression analyses were used to explore the degree to which attitudes, risk perceptions, social norms, student characteristics, and demographic characteristics are related to recent substance use.

3. Results

3.1. Prevalence

With regard to the prevalence of recent substance use among international students in Groningen (see Table 1), a clear hierarchy of popularity was visible. More than nine out of ten (93.4%) students had consumed alcohol in the last year. More than half (56.2%) of the students had used cannabis in the last month. Around one out of three (30.5%) reported

having recently used nitrous oxide balloons. One out of nine (11.3%) indicated having used ecstasy. Also, several students reported having used cocaine (7.2%), amphetamine (5.6%), and ketamine (4.3%).

Table 1. Prevalence of recent substance use (%).

Substance	Previous Year Use (Recent Use)
Alcohol	93.4
Cannabis	56.2
Nitrous oxide	30.5
Ecstasy	11.3
Cocaine	7.2
Amphetamine	5.6
Ketamine	4.3

With respect to the nationality of the students, we found differences in their recent use of cocaine and ecstasy. Cocaine was recently used more by Northern European students than by Eastern European students, $X^2(1, N = 191) = 8.80, p = 0.003$ and Southern European students, $X^2(1, N = 190) = 0.07, p = 0.008$. Ecstasy was used more by Northern European students than by Southern European students, $X^2(1, N = 190) = 4.64, p = 0.031$. However, because of our small group sizes, we could make no meaningful comparisons with the other geographical regions of Asia, North America, and miscellaneous.

In addition, with respect to students' academic disciplines, we found no differences in recent use of substances between those following courses in the humanities, scientific disciplines, and social sciences, X^2 's (2, $N = 515$) $< 2.22, p$'s > 0.330 . Furthermore, we found no gender differences in recent substance use, except for cocaine use; male students had more often used cocaine recently (11.6%) than had female students (5.9%), $X^2(1, N = 512) = 6.84, p = 0.009$.

3.2. Risk Perception and General Attitude

International students deemed all substances to involve a certain degree of risk. More specifically (see Table 2), they believed the use of 'powders' (composite variable of ketamine, amphetamine, and cocaine) to be associated with moderate to high risk ($M = 3.63$). t -tests showed that they considered the use of 'powders' more dangerous than all other substances, t 's (514) $> 9.30, p$'s < 0.001 . They also considered ecstasy use to entail a high to moderate risk ($M = 3.31$) and regarded it as riskier than using nitrous oxide balloons ($M = 2.84$), cannabis ($M = 2.31$), and alcohol ($M = 2.84$), t 's (514) $> 11.91, p$'s < 0.001 . Of the latter three substances, they considered cannabis less risky than alcohol and nitrous oxide balloons, t 's (514) $> 13.20, p$'s < 0.001 .

Table 2. Risk perception and general attitude.

Substance	Risk Perception Regarding Use of Substance		General (Positive) Attitude towards Using Substance		Pearson's r
	M	SD	M	SD	
Alcohol	2.84	0.72	3.37	0.84	−0.214 ***
Cannabis	2.31	0.77	3.24	0.96	−0.599 ***
Nitrous oxide	2.84	0.88	2.45	1.03	−0.616 ***
Ecstasy	3.31	0.75	2.24	1.05	−0.615 ***
Cocaine	3.66	0.59	1.72	0.83	−0.551 ***
Amphetamine	3.65	0.55	1.73	0.84	−0.518 ***
Ketamine	3.58	0.62	1.72	0.85	−0.574 ***

*** $p < 0.001$.

With regard to students' general attitude towards the substances, a comparable pattern emerged (see Table 2). Their attitude towards 'powders' (composite variable of ketamine,

speed, and cocaine) was very negative to negative ($M = 1.72$); in fact, t -tests showed that their attitude towards ‘powders’ was more negative than towards all other substances, t 's (514) > 13.77 , p 's < 0.001 . Their attitudes towards ecstasy ($M = 2.24$) and nitrous oxide balloons ($M = 2.45$) were negative to neutral. t -tests showed that the attitude towards ecstasy was less negative than towards powders, but less positive than towards the other substances, t 's (514) > 16.75 , p 's < 0.001 . The general attitudes towards both cannabis and alcohol were neutral to positive, with alcohol regarded as the most positive of all substances, t 's (514) > 2.74 , p 's < 0.003 . Notably, regarding every substance, students who had ever used a particular substance displayed consistently more positive general attitudes and fewer risk perceptions than students who had never used that substance: all t 's (513) > 6.33 , all p 's < 0.001 (except for the risk perception of alcohol; t (513) = 1.67, $p = 0.048$).

For all substances except alcohol, we found a moderate to strong correlation between risk perception and general attitude, whereby lower risk perception was related to a more positive attitude, r 's (513) < -0.518 ; p 's < 0.001 . For alcohol we found a weak correlation, r (513) = -0.21 , $p < 0.001$.

3.3. Perceived Social Norms

Concerning perceived prevalence of cannabis use, students estimated that around half (51.2%) of the adult population in The Netherlands had smoked at least one joint in the last twelve months. This was a substantial overestimation, since the actual last year adult prevalence of cannabis use in 2021 was 8.0%. With respect to ecstasy use, students estimated that one in five (21.0%) of the adult population had used ecstasy in the last twelve months. This was also an overestimation, since the actual last year adult prevalence of ecstasy use in 2021 was 5.4% [13].

Regarding openness to potentially talk about problematic substance use with people in their social network, about nine out of ten (87%) students said that they would talk to friends, one out of three (37.9%) stated that they would talk to their parents, and one out of eight (12.2%) said that they would talk to other family. Concerning their professional networks, about one out of three (34.4%) students indicated being inclined to talk to addiction care, and about one out of six students indicated that they were likely to talk to a student counsellor (15.9%) and/or a general practitioner (16.3%).

When comparing students who indicated willingness to talk to professionals with students not willing to talk to members of the professional network, we found no differences for risk perception, t 's (513) < 3.20 , p 's > 0.070 , and general attitudes, t 's (513) < 3.38 , p 's > 0.070 . In addition, whether or not students had ever used a certain substance did not impact their indicated likeliness to talk to the professional network about substance use, $X^2(1, N = 515) < 1.87$, p 's > 0.172 .

3.4. Logistic Regression Analyses

The results of the logistic regression analyses are presented in Table 3. Three noteworthy findings were apparent. First, individuals with more positive attitudes towards a given substance were more likely to have used that substance recently. This pattern was consistent across substances (e.g., $b = 1.80$, odds ratio [OR] = 6.05, $p < 0.001$ for recent alcohol use). Although risk perceptions were not related to recent substance use in this particular model, additional analyses (not shown) indicated that when attitudes towards substances were removed from the model, risk perceptions were related to recent substance use for all substances (all p -values < 0.001) except alcohol ($p = 0.15$). This suggests that attitudes and risk perceptions were interrelated in their association with substance use. Second, international students with higher estimates of the prevalence of ecstasy use in the Dutch adult population were more likely to have used ecstasy recently ($b = 0.03$, OR = 1.03, $p < 0.05$). Third, international students who had recently arrived to study in Groningen were less likely to report recent use of cannabis, nitrous oxide and cocaine than students who had already studied in Groningen (e.g., $b = -1.31$, OR = 0.27, $p < 0.01$ for cocaine use). Other findings were consistent with the bivariate tests presented earlier.

Table 3. Logistic regression analysis with recent substance use as the dependent variable.

	Alcohol		Cannabis		Nitrous Oxide		Ecstasy		Cocaine		Amphetamine	
	<i>b</i>	SE	<i>b</i>	SE	<i>b</i>	SE	<i>b</i>	SE	<i>b</i>	SE	<i>b</i>	SE
Attitude toward substance ^a	1.80 ***	0.31	1.42 ***	0.17	1.49 ***	0.18	2.18 ***	0.29	1.89 ***	0.33	1.64 ***	0.32
Perceived health risk of substance ^a	−0.02	0.29	0.19	0.18	0.04	0.17	−0.38	0.28	−0.13	0.34	0.26	0.39
Descriptive norm cannabis	−0.01	0.01	0.00	0.01	0.00	0.01	−0.02	0.01	0.01	0.01	0.00	0.01
Descriptive norm ecstasy	0.00	0.01	0.00	0.01	0.00	0.01	0.03 *	0.01	0.03	0.02	0.00	0.02
Talk with social network	0.09	0.83	0.32	0.47	0.54	0.55	1.20	0.98	0.53	0.90	0.48	1.20
Talk with professional network	0.12	0.43	−0.03	0.23	−0.04	0.25	−0.21	0.38	0.06	0.45	−0.83	0.51
Female	0.22	0.45	−0.20	0.25	−0.23	0.26	−0.13	0.40 **	−1.27	0.48	−0.15	0.49
Age	0.20 *	0.09	−0.01	0.04	−0.04	0.05	0.06	0.08	0.13	0.08	0.06	0.09
Study (ref. = alpha)												
Beta	0.95	0.60	0.16	0.31	0.10	0.34	−0.47	0.52	−0.65	0.59	−0.72	0.65
Gamma	0.40	0.49	0.32	0.26	−0.09	0.30	−0.31	0.45	−0.93	0.54	−0.52	0.56
Nationality (ref. = Northern Europe)												
Western Europe	−0.56	0.81	−0.60	0.36	0.04	0.39	−0.10	0.54	0.02	0.58	0.02	0.70
Southern Europe	−0.66	0.79	−0.43	0.37	−0.17	0.40	−0.37	0.63	−0.91	0.71	0.75	0.79
Eastern Europe	0.15	0.82	−0.01	0.38	−0.02	0.40	0.40	0.55	−1.43 *	0.69	0.27	0.72
Asia	−2.08 *	0.97	−1.10	0.60	0.22	0.61	−1.67	1.18	−2.39 *	1.07	−0.54	1.22
North America	−0.69	1.26	−0.46	0.69	−1.19	0.95	0.62	0.98	(empty) ^b		1.77	1.17
Other	−2.16 *	0.89	−0.70	0.54	0.23	0.56	0.07	0.81	−0.24	0.83	−0.21	1.28
Recently started studying in Groningen	−0.16	0.43	−0.74 *	0.23	−1.40 ***	0.26	−0.76	0.40	−1.31 **	0.49	−0.26	0.47

Note. *N* = 515 for all models, except for cocaine use (*N* = 500). Recent ketamine use was not included in the analyses due to empty cells for multiple variables. ^a Attitude and perceived health risk correspond to the substance measured in the dependent variable. ^b No estimation available due to empty cell size. * *p* < 0.05. ** *p* < 0.01 *** *p* < 0.001.

4. Conclusions and Discussion

4.1. Substance Use among International College Students in The Netherlands

In this article, we examined the prevalence and perception of substance use among international students in The Netherlands. With respect to the recent use of substances, we found clear differences between substances. Alcohol stood out as the substance used by nearly all students in the previous year. Cannabis was the second most-used substance, with approximately half of all students having used cannabis in the last year. About one out of three students had used nitrous oxide balloons and about one out of nine students had used ecstasy. Cocaine, amphetamine, and ketamine were the least used substances, but with high prevalence rates nonetheless: about one out of twenty students had used either of these substances. Small differences were found between the regional origin of international students and their differences in substance use: Northern European students had more often used cocaine and ecstasy compared to other European regions. We found no gender differences, except for cocaine consumption: recent use by males was twice as high as recent use by females. Different academic disciplines appeared unrelated to different patterns of substance use.

Several factors were found to be related to international students' substance use. Attitudes toward a particular substance were consistently related to recent use of that substance (more positive towards more frequently used substances). In addition, attitudes and risk perceptions were found to be strongly intertwined. The least-used substances (the 'powders'—ketamine, amphetamine, and cocaine) were associated with moderate to high risk, and considered more dangerous than all other substances. Ecstasy was perceived as slightly less risky. Frequently used substances—alcohol, nitrous oxide balloons, and cannabis—were perceived to be slightly to moderately risky, whereby the latter was notably perceived to involve the lowest risk of all substances, even lower than that of alcohol. International students highly overestimated the prevalence rates of cannabis and ecstasy use in the adult population of The Netherlands; they estimated that about half of the adult population had recently used cannabis, and that about one in five adults had recently used ecstasy. These perceived descriptive norms were also related to international students' own substance use, but for recent ecstasy use only.

4.2. International College Students in Dutch Context

In comparison to Dutch university students, the general prevalence of substance use among internationals was of a similar magnitude, except for recent use of cannabis and nitrous oxide balloons. Among international students, the previous year prevalence rates of these substances were clearly higher than the known rates for Dutch students (about one out of three Dutch students for cannabis and one out of eleven students for nitrous oxide balloons [14]). The high prevalence of use of nitrous oxide balloons can be explained by easy access, as well as their explicit link to parties and going out. Until the beginning of 2023, nitrous oxide had a legal status in The Netherlands, and it saw a surge of use among partying young adults during the COVID-19 pandemic in 2020 and 2021 [13,23]. However, since 1 January 2023, nitrous oxide has been placed on list II of the Opium Act, fully prohibiting production, trade, possession, and recreational use of nitrous oxide balloons. This could well mean that the prevalence of nitrous oxide use will see a decline, similar to that of party drug 4-FA that was prohibited in 2017, resulting since then in a decline in prevalence and health incidents [26].

In The Netherlands, most international students encounter a drug policy that differs from that in their own countries; here the purchase of cannabis is openly tolerated in so-called coffee shops. This unique status of cannabis and its ease of access could play a role in the high prevalence and overestimation of its use; the drug policy of The Netherlands may have given the students the incorrect impression that (daily) use of cannabis is generally approved in Dutch society, and led them wrongly to assume that cannabis is fully legal in The Netherlands, is used more often than elsewhere in Europe, and is safe to use.

With respect to illegal substances, in most other European countries and the United States the most popular illegal substance among young adults is cocaine [9,24]. However, as with Dutch students (among whom ecstasy use in particular has become normalized [15]), ecstasy was the most used illegal substance among international students. It appears that, in general, The Netherlands has a stereotypical image of a liberal nation and a ‘drugs paradise’ [27,28]. The finding that recently arrived international students were less likely to report recent use of cannabis, nitrous oxide, and cocaine compared to international students who were already studying in The Netherlands fits this image, and is consistent with Aresi et al.’s [17] observation that college student life abroad in The Netherlands is linked with increased substance use.

Regarding an openness to talk about problematic substance use, students clearly made a distinction between their social and professional networks. The vast majority indicated being inclined to talk to friends, but only a third of students were inclined to consult addiction care. Even fewer students indicated a willingness to talk to a student counsellor or general practitioner. This corresponds with findings among Dutch university students: students will talk fairly openly about their substance use with their peers, but be more secretive about it outside of their peer group and also distinguish between types of substances [15]. As such, a bounded normalisation of illegal substance use appears to exist among both Dutch and international college students in The Netherlands [29,30].

4.3. Suggestions for Interventions and Future Research

Overall, our study clearly indicates that alcohol and other substance use among international students in The Netherlands is substantial, linked to their stay in The Netherlands, and partly related to attitudes, risk perceptions, and social descriptive norms associated with substance use. Furthermore, there are no clear subgroups within the international student community with regard to substance use, and international students are reluctant to communicate about (problems with) substances with (university) professionals.

These findings highlight the importance of the social (student) networks for communication about substance use and the associated risks. International student organizations can play an important role in providing a starting point for primary prevention, especially because these organizations usually organize introduction weeks for international students at the beginning of each semester and are run by other students. In line with the social norms theory, much can be gained by correcting the huge overestimation of substance use and its acceptance in society [31,32]. Thus, international student organizations could integrate accurate information about actual Dutch norms and general information about substance use and associated risks in their introduction programs, making them accessible for all international students, regardless of their academic discipline of choice.

Also, more harm-reduction focussed interventions for managing and preventing substance-related health incidents among international students in The Netherlands could be developed and administered upon request. These could include practical information concerning specific substances and their associated risks, screening one’s own use, handling peer pressure, giving help (e.g., when worrying about someone’s substance use) and receiving help (e.g., where to test substances, how to receive anonymous help from addiction care) because besides being reluctant to talk to professionals, international students experience the Dutch care system as complex, and encounter obstacles in finding professional (substance-use related) health care and information when needed [33,34]. Such an intervention could be (partly) delivered through a digital platform linked to the student organization to circumvent the limited capacity of student health services for delivering face-to-face interventions [35].

For our research, we used a non-random convenience sample in which we recruited participants through an online newsletter of a European-oriented international student organization that focuses primarily on European students. As such, our sample may not be typical of the larger population of international students in The Netherlands. In order to obtain a more balanced view of international students in The Netherlands, future research

could focus on ways to include underrepresented subgroups of international students, like Asian students and also international students who are not specifically linked to an overarching organization. Moreover, future research could provide a more fine-grained picture of the prevalence of substance use by also looking into the quantity of use on single occasions (e.g., binge drinking) and the simultaneous use of multiple substances. Both of these are factors linked to health incidents and substance-use disorders [24,36]. Also, the relationship between norms, attitudes, risk perceptions, and substance use among international students in The Netherlands can be further examined. For instance, it would be interesting to focus on perceived peer group norms, since these norms are known to be strongly linked to personal substance use [37–39]. Similarly different types of risk perceptions can be explored as different types of risk perceptions have varying associations with health behaviour [40].

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