Ethnobotanical use among freshman engineering students

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Abstract

For more than two years, the ethnobotanicals were considered legal substances in Romania, easily found in “weedshops” - special shops in the university campus, in school areas, or even online. An important number of victims, teenagers, college or university students, arrived in emergency units with clear signs of drug intoxication. The use of ethnobotanicals was declared intentional and for entertainment, in clubs, parties or school events. The survey identifies a rate of ethnobotanical use of 16.36\% in the university campus; it also studies the reasons of consumption and the students’ beliefs and awareness of ethnobotanicals’ effects among freshman engineering students.

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1. Problem Statement

In 2009, Romania held the 4th place in the top of the countries with the most ethnobotanical shops, after Great Britain, Germany and the Netherlands, according to the European Observatory for Monitorisation of Drugs and Addictions (EMCDDA, 2010). According to another study from the same year, “The barometer of teenagers” regarding the attitudes and lifestyle at the level of high school students in the 12th grade, developed by the Foundation of Political Sciences within the National School of Political and Administrative Studies, Sociology Chair, (study at national level, omnibus type, during the 15th of October – 5th of November 2009) published on the ANA website, the illegal drug consumption is identified, in the case of 12th grade students, for the entire duration of their lives, at 10.7\%. Of these, 16.8\% are male and 6.8\% female.

The North-Eastern region of Romania is distinguished by its consumption, registering 19.9\%; the following one being the South-Eastern region, with a declared consumption of 15.1\%. The results of this article indicate the fact that, in the case of 12th grade students, Bucharest is no longer the main city in Romania for drug consumption, the region București-Ilfov being the third, according to the registered percentage of 13.7\%. As in previous years, the main drug for which care services (with and without hospitalisation) were solicited was heroin. Hypnotics and sedatives were on the second place, as well as cannabis, in 2008, in centres of assisted care of the Health Ministry; whereas in 2009, the treatment requests were made for other substances, especially ethnobotanicals.

The decrease in shop numbers and their transfer to the virtual space are due to the complex actions of the local and national authorities, namely to the closing down of these commercial units, the main official point being the Government law passed in April 2010. In the virtual space, the most frequent searches concerning the promotional and
selling websites for ethnobotanicals have been located in Iași, Cluj and București counties (Botescu, 2011). The study was aimed at the student population of Iași country, one of the main university centres of Romania.

2. Purpose of Study

The aim of the survey is to identify the rate of ethnobotanical use in the university campus, the reason of consumption and the students’ beliefs and good knowledge of ethnobotanicals’ effects among freshman engineering students.

3. Research Methods

From February to April 2011, 269 freshman students from 9 faculties within a technical university, voluntarily and anonymously answered a questionnaire about ethnobotanicals. The items with multiple-choice or open answers refer to the following issues: consumption and motivation, private or public places where they usually use “legal drugs”, friends’ or colleagues’ consumption habits, different methods of procuring the drugs and proper information about the effects of the ethnobotanical use, in combination with alcohol or not. The data have been analyzed using the SPSS 17.0 program for Windows, using frequency and descriptive data field analysis, their cross-analysis, benchmarking averages (ANOVA, T-test) and nonparametric tests (chi-square test).

4. Findings

269 freshman students within a technical university of Iași agreed to answer a questionnaire about ethnobotanicals. These students answered questions regarding the quality of information on ethnobotanical substances, their consumption, the user’s motivation, details about addictive drugs and substances and about their ways of consumption, places frequented by consumers, ways of obtaining ethnobotanicals, their own opinions about associating these with alcohol or about the banning of consumption. This University brings together graduates from the entire South-Eastern and North-Eastern region of the country and also a smaller percentage of students from other Romanian regions, due to the fact that degrees in certain fields of research may only be obtained here or in the Republic of Moldova. Consequently, the relevance of the study derives from its approach of a population segment considered vulnerable to substance abuse. The research presents 269 students from 34 cities in Romania and the Republic of Moldova (Adjud, Bacău, Bălțătura, Botoșani, Bucharest, Fălticeni, Galați, Gura Humorului, Hărău, Huși, Iași, Moinești, Oanești, Orhei, Piața Neamț, Plăiești, Râșca, Roman, Suceava, Târgu Frumos, Târgu Neamț, Toplița, Tulcea, Vaslui, Vatra Dornei.), belonging to 13 Romanian counties (Bacău, Botoșani, Constanța, Galați, Hairghita, Iași, Maramureș, Neamț, Prahova, Suceava, Tulcea, Vaslui, Vrancea) and 3 Moldavian districts (Chișinău, Fălești, Orhei). Students native to the Republic of Moldova represent 1.2% of the lot.

Gender distribution shows that 55,02% (N=148) are male and 44,98% (N=121) are female. The average age of the whole lot of subjects is 20,26 years old, with actual ages ranging from 18 to 43 years old. However, most of these students are the average freshman age: that is, 94.5% are between 19 and 21 years old (17.8% are 19 years old, 63.9% are 20 years old and 12.6% are 21 years old).

These students are engineering freshmen, belonging to 9 different faculties, with the following percentages: Faculty of Automatic Control and Computer Engineering (36.43%), Faculty of Chemical Engineering and Environmental Protection (7.81%), Faculty of Civil Engineering and Building Services (24.16%), Faculty of Machine Manufacturing and Industrial Management (5.25), Faculty of Electronics, Telecommunications and Information Technology (5.2%), Faculty of Hydrotechnical Engineering, Geodesy and Environmental Engineering (9.29%), Faculty of Mechanical Engineering (2.97%), Faculty of Textiles&Leather Engineering and Industrial Management (0.74%), Faculty of Architecture (8.18%).

4.1. General knowledge about ethnobotanicals, their effects and motivation for consumption

The answers to questionnaire items showed that most students had found out about substances with psychoactive effects during their last high school years (26.39% during the 11th grade and 25.67% during the 12th grade) or their freshman year at university (20.08%). The percentages are proportional with the emergence and development of an ethnobotanical substance market in Romania, taking into account the fact that, in the last 3 years, the abuse of so-called “legal substances” has been one of the main concerns of drug specialists. Students mention several sources of their information on these substances: high school tutoring classes, mass media (the critical cases presented on
television channels) and friends (at private parties, at school or in clubs). At pre-university levels, in 2009, one national project and 67 local projects on this topic were implemented, mostly in partnership with the Ministry for Education, Research, Youth and Sports (MECTS). The persistent interventions of health care policy representatives, who emphasized the outbreak in the number of ethnobotanical consumers in need of urgent medical treatment, determined the Government to pass two new emergency ordinances, in order to prohibit the selling of ethnobotanical substances. The effect of the first ordinance was that the prohibited substances were promptly replaced with similar ones, followed by a second ordinance: OU 6/2010, April 2010. In addition, critical cases of consumers who had to be taken into the emergency room were strongly publicized. This brought to the fore two aspects of the use of ethnobotanicals in Romania: these are legal substances, with critical effects on the human body.

Up to 85.13% of the students consider ethnobotanicals to be drugs, 14.13% say that these are not drugs, and 0.74% declare that they do not know about these.

In what concerns the addiction to these substances, 82.90% of students claim that ethnobotanicals are addictive, 16.73% claim that these are not addictive, and 0.37% declare that they do not know about this. A very low percentage of students declare themselves unaware or uninformed about ethnobotanicals, which means that a majority of students have already formed an opinion about them (although this may not be sustained by accurate data on the consumption of these substances). The research shows that, out of the 44 consumers, 31 claim that ethnobotanicals are addictive, while 13 claim that the use of these substances does not result in addictive behaviour.

The items were focused on the students’ information about the effects of the use of these substances on the human body. The participants were able to identify one or several effects of the use of ethnobotanicals. 84.01% of the subjects consider that ethnobotanicals cause euphoria, 71.75% hallucinations, 58.74% tachycardia, 46.10 nausea, 34.57% a comatose condition, and 27.14% believe that they may cause cerebral lesions. 67.29% of the subjects declare that they have acquaintances who use ethnobotanicals, and 50.93% have seen people using ethnobotanicals. The research shows the fact that half of the students are directly exposed to the use of new substances with psycho-active effects.

In what concerns the identification of other addictive substances, which may be considered drugs, the students mention: tobacco (34.90%), cocaine (29.37%), heroin (28.62%), alcohol (21.19%), marijuana (15.24%), coffee (10.41%), hashish (5.95%), cannabis (5.95%), ecstasy (4.83%), various pills which may be bought in drugstores (7.81%).

The students’ opinions regarding the motivation for consumption revealed the following data: curiosity (36.4%), rebelliousness (14.5%), peer influence (29%), pleasure (33.5%), addiction (12.3%) and weakness (29.4%). Consumers declared that the main reasons are curiosity and peer influence, and nonconsumers sustained that students are looking for ethnobotanicals because of their personal problems and the need for pleasure. There is no significant difference between males and females regarding the reasons for consumption.

Table 1. The distribution of participants according to their answer to the question: “Where have you seen someone using ethnobotanicals?”

<table>
<thead>
<tr>
<th>Location</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have never seen someone using ethnobotanicals</td>
<td>48.33%</td>
</tr>
<tr>
<td>At parties and in clubs</td>
<td>13.38%</td>
</tr>
<tr>
<td>In public areas (on the street, in parks)</td>
<td>10.78%</td>
</tr>
<tr>
<td>In private areas (apartments)</td>
<td>5.95%</td>
</tr>
<tr>
<td>Everywhere</td>
<td>10.78%</td>
</tr>
<tr>
<td>In school and high school yards</td>
<td>1.49%</td>
</tr>
</tbody>
</table>

4.2. The prohibition of ethnobotanical consumption

13.01% of all students surveyed consider that the consumption should not be prohibited, but the distribution of answers in accordance with the subject’s own experience with these substances is not to be overlooked.

Table 2. The distribution of participants according to their answer to the question: “Do you think that ethnobotanicals should be prohibited?”

<table>
<thead>
<tr>
<th>Consumption of ethnobotanicals</th>
<th>for prohibition</th>
<th>against prohibition</th>
</tr>
</thead>
<tbody>
<tr>
<td>nonconsumers</td>
<td>75.09%</td>
<td>7.81%</td>
</tr>
<tr>
<td>one consumption</td>
<td>7.06%</td>
<td>2.60%</td>
</tr>
<tr>
<td>several consumptions</td>
<td>3.72%</td>
<td>2.60%</td>
</tr>
</tbody>
</table>
The reasons why subjects believe that these substances should be prohibited are various. One major aspect is underlined by consumers who declare that these substances should be prohibited because not everyone is aware of the proper ways of consuming them. Nonconsumers who claim that ethnobotanicals should not be banned explain their choice by saying that a prohibition would lead to the emergence of the desire to break the interdiction; therefore, people should be allowed to decide for themselves if they want to consume certain substances or not. Of the 55,02% male participants, 45,72% are in favour of the prohibition and 9,25% are against the prohibition of ethnobotanical consumption. The female percentage of the research (44,98%) is divided into 40,01% in favour of the prohibition of consumption and 3,78% against the prohibition of these substances.

4.3. Ethnobotanicals and alcohol

87,36% of participants are aware that combining drugs with alcohol makes the former more dangerous. 9,67% consider that these become less dangerous when mixed with alcohol, and 2,97% claim that the blend between ethnobotanicals and alcohol does not produce additional effects. 35 of the 44 subjects who declared that they had consumed ethnobotanicals at least once also believed that mixing these with alcohol was dangerous (that is, 79,54% of those who had experienced this).

4.4. Ways of obtaining ethnobotanicals

The research reflects the fact that ethnobotanicals may be obtained by various means. All the participants identify specialized shops (weedshops, spiceshops, dreamshops) as the main way of obtaining such substances. Other types of shops are also mentioned (agriculture shops, pet shops, or even student campus food shops), along with the Internet (by online order, delivered by express courier services), dealers (in discos, sometimes even from the employees), campus coffee shops (by means of a password), friends and colleagues – less commonly. The distribution of participants according to their answer to the question “Where can ethnobotanicals purchased?” is: shops (74,35%), dealers (26,62%), internet (13,01%), friends (4,46%), campus coffeshops (3,72%) and collegues (1,86%).

4.5. The consumption of ethnobotanicals in the university field

Statistics on the consumption of new substances are incomplete and difficult to carry on. The difficulties are related to the great speed at which these substances are introduced on the market and subsequently declared illegal and banned, to the hurdle of identifying the various types of substances, to the increase in consumer numbers among the young population, who has not previously experienced any other types of drugs, and to their association with high-risk drugs. A very limited number of recent studies offers data on the prevalence of the consumption of “legal drugs”. A study carried out in Poland in 2008, among 18-year-old high school students, revealed that 3.5% of these had used “legal drugs” at least once (EMCCDA, 2009). In Romania, in 2010, the number of illegal drug consumers is as high as 10,7% of the population (Gallup, 2011; EMCCDA&ANA, 2010).

Table 3. The rate of ethnobotanicals’ consumption

<table>
<thead>
<tr>
<th>Rate of consumption</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonconsumers</td>
<td>41,64% (112)</td>
<td>42,01% (N=113)</td>
<td>83,75% (N=225)</td>
</tr>
<tr>
<td>One consumption</td>
<td>7,81% (N=21)</td>
<td>2,23% (N=6)</td>
<td>10,04% (N=27)</td>
</tr>
<tr>
<td>Several consumptions</td>
<td>5,58% (N=15)</td>
<td>0,74% (N=2)</td>
<td>6,32% (N=17)</td>
</tr>
</tbody>
</table>

Although an overwhelming percentage of university students consider ethnobotanicals to be dangerous substances (96,65%), the research output reveals that a number of 44 students, representing 16,36% of the freshmen, have consumed ethnobotanicals at least once: 10,04% have declared that they have consumed such substances only once (of whom 7,81% are males and 2,23% are females), and 6,32% have claimed that they have consumed these several times (5,58% males, 0,74% females). None of the students admits to being addicted to such substances. More than one third of the subjects saw consumers on the university campus (15,61% in student apartments, 15,61% in clubs or discos on the campus and 2,23% in the faculty).
5. Discussion

The research offers a percentage close to the data obtained by various Romanian studies on the consumption of new substances with psycho-active effects. In the university campus, a 16.36% consumption has been identified – similar to the percentage obtained by other studies on the young population. Young males seem to be more attracted to this pastime than young females, a 13.49% consumption having been identified in males, in contrast with the 2.97% female consumers.

The information sources are formal (school education, taking part in prevention programmes or information projects) and informal (friends, one’s own experiences, mass media information). On the one hand, 51.67% of the participants in the research have seen people consuming substances with psycho-active effects (of whom 16.26% have experimented the sensations caused by these); on the other hand, 83.64% of the participants have declared that they have never used ethnobotanicals. Therefore, we conclude that over one third of university students are exposed to the risk of experimenting the consumption of ethnobotanical substances. This consumption is recreational. Four main factors which motivate it may be identified: the desire to experiment the sensations produced by the use of such substances, weakness, rebelliousness and peer influence. Life inside the university campus obviously reunites and reinforces these four factors. However, as shown by the research output, drug consumption reaches its lowest percentage at the level of schools (at pre-university level). University students’ answers show that they have seen 1.49% of people using ethnobotanicals in pre-university environments, whereas 2.23% of people have been seen using them in university environments. These data lead to the question whether an educational environment policy (be it constraint or a penalty reflecting on the educational process – for instance, on its continuation) could prove be a more efficient way of reducing drug consumption than the enforcement of prohibitive laws, which have tended to increase rather than discourage consumption in the past (MacCoun, Reuter, Schelling, 1996).

The reasons why students consume ethnobotanicals are various: those who have used them at least once claim to have had external motivation, such as their peers and curiosity regarding a new experience, whereas the participants who have declared that they have never used this type of psycho-active substances associate their consumption with internal causes (weakness and pleasure).

6. Conclusions

The research determines that 16.36% of freshman students consumed ethnobotanicals at least once and 6.32%, repeatedly. More men than women experienced the effects of ethnobotanical consumption. None of the consumers declared that (s)he was addicted to it. The students’ opinion regarding the motivation revealed the following data: curiosity (36.4%), rebelliousness (14.5%), peer influence (29%), pleasure (33.5%), addiction (12.3%) and personal problems (29.4%). 13.01% of the surveyed students consider that the consumption should not be prohibited. 87.36% of them know that the combination with alcohol makes drugs more dangerous. More than one third of the subjects saw consumers on the university campus (student apartments, clubs or discos on the campus or in the faculty). Two conclusions are essential to this study: 1. a considerable number of freshman students experienced ethnobotanicals in their past; 2. no matter if (s)he is a consumer or not, the student is nonetheless exposed to ethnobotanical consumption on university campus. The social aspects are very important in stimulating or diminishing the consumption rate. Because of the very small percentages of psycho-active substance consumers identified within schools, high schools or universities, the implementation of educational policies by means of projects must be taken into consideration at both pre-university and university level.

References