

**PHYSICAL AND MENTAL HEALTH, SUBSTANCE ABUSE
AND PREVENTIVE BEHAVIOUR: DISPARITIES BETWEEN
CENTRAL/EASTERN *VERSUS* WESTERN EUROPEAN
FIRST-YEAR UNIVERSITY STUDENTS IN SOCIAL SCIENCES
(HEALTH BEHAVIOUR PATTERNS OF STUDENTS)**

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Abstract

Background: Students at many European universities are in poor health and have unhealthy lifestyles. This study assessed and compared physical and mental health, substance use and preventive behaviour among Polish and Romanian students versus students from France, a longer-standing member of the European Union. Methods: Four months after the beginning of the academic year, French (Metz), Polish (Katowice) and Romanian (Iasi) first-year students of human and social sciences volunteered to complete an online self-reported questionnaire in their native language. The data were analysed using the age and sex adjusted odds ratios (OR) computed with logistic models and analysis of variance controlling for age and sex. Results: 41.9% of French students, 79.2% of Polish students and 48.2% of Romanian students were aged 20 years or over, and 58%, 82% and 87% respectively were female. Compared with French students, Romanian and Polish students experienced more stress/psychological distress, received less social support, and smokers smoked more intensively (ORs about 2.3). Drunkenness, impaired physical health or morale and suicidal ideation were more frequent (ORs 1.5-1.8) while tobacco use was less frequent (0.34) among Polish than among French students. Being uneasy, wanting to cry, having financial problems, and impaired physical health or morale were more frequent (ORs 1.5-4.9) among Romanian than among French students, in contrast to drunkenness (0.43). Both not using a motorcycle/cycle helmet and drink driving were less frequent among Polish students (ORs 0.06 and 0.47, respectively). Romanian students less frequently used tranquillisers (0.07) but were more likely not to use a condom during sexual intercourse (2.06). Finally, French students more frequently reported feeling isolated or dissatisfied with their integration into university. Conclusion: Poor health, substance use

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and lack of support were common but the risks greatly differed between Polish, Romanian and French students. There is a need to help students solve their integration problems and material difficulties. Health promotion on campus should provide appropriate advice, particularly for individuals at risk that takes account of the socio-economic and cultural context.

Key words: Students, Europe, physical and mental health, stress, substance abuse, health promotion.

Rezumat

Context: Numeroși studenți ai universităților europene au o sănătate precară și un stil de viață nesănătos. Acest studiu evaluează și compară sănătatea fizică și mintală, consumul de substanțe și comportamentul preventiv al studenților polonezi și români cu cei din Franța, o țară membră a Uniunii Europene de mai mult timp. Metodă: Timp de patru luni de la începutul anului universitar, studenți francezi (Metz), polonezi (Katowice) și români (Iași), din anul întâi, de la specializările științe umane și sociale, s-au oferit să răspundă on-line la întrebările unui chestionar, formulate în limba lor maternă. Datele au fost analizate în funcție de vârsta și sex, fiind ajustate raporturile pe cote (OR) prin modele logistice și folosirea analizei controlului varianței pentru vârstă și sex. Rezultate : 41,9 % dintre studenții francezi, 79,2 % dintre cei polonezi și 48,2 % dintre studenții români au în jur de 20 de ani, iar 58 %, 82 % și respectiv 87% dintre respondenți au fost de sex feminin. Comparativ cu studenții francezi, studenții români și polonezi trăiesc o experiență de viață mai stresantă / stres psihologic, primesc mai puțin sprijin social, iar fumătorii consumă mai mult tutun (ORs aproximativ 2.3). Consumul de alcool, problemele de sănătate fizică și ideile suicidare au fost mai frecvente (ORs 1.5-1.8), în timp ce consumul de tutun a fost mai puțin frecvent (0,34) printre studenții polonezi decât printre studenții francezi. Neliniștea, tendința de a plânge, problemele financiare și probleme de sănătate fizică sau psihică au fost mai frecvente (ORs 1.5-4.9) printre studenții români decât printre studenții francezi, spre deosebire de consumul de alcool (0,43). Conducerea motocicletei /bicicletei fără cască de protecție și sub influența băuturilor alcoolice sunt mai puțin frecvente printre studenți polonezi (ORs 0,06 respectiv 0,47). Studenții români nu utilizează frecvent tranchilizante (0,07), dar frecvent nu folosesc prezervativul în timpul contactului sexual (2.06). Numeroși studenți francezi au raportat senzații de izolare sau stări de nemulțumire frecvente în privința integrării în universitate. Concluzie: Starea sănătății, consumul de substanțe și suportul în caz de risc diferențiază studenții francezi, polonezi și români. Este necesar ca ei să fie ajutați să-și rezolve problemele și dificultățile materiale de integrare. Acțiunile de promovare a sănătății în campusuri, recomandările, în special pentru persoanele în situație de risc, trebuie să țină seama de contextul socio-economic și cultural.

Cuvinte cheie: studenți, Europa, sănătate fizică și mentală, stres, abuz de substanțe, promovarea sănătății.

Background

The mental health of university students represents an important and growing public health concern [1, 2]. In Europe, more than 16 million students attend universities, with an annual growth rate of over 2% for 1998-2002 [3]. It is well

known that a student in good health is more likely to achieve his/her goals, complete training, and enter the world of work. Students today are expected to be competitive, leading to an increased pressure and much more stressful conditions [2, 4]. In order to create a European Higher Educational Area in 1999, the Bologna process initiated a series of reforms intended to achieve performance matching that of the best systems in the world. Specific changes were: introduction of the three-cycle system (bachelor /master /doctorate), quality assurance, and recognition of qualifications and periods of study. Every second year from then on, Ministers responsible for higher education in the 46 Bologna countries have met to measure progress and set priorities for action. Venues so far have been: Prague (2001), Berlin (2003), Bergen (2005), London (2007) and Leuven/Louvain-La-Neuve (2009) [5].

Young adulthood is an important period of development and adaptation to life, and the social and academic circumstances at university expose students to a number of socio-economic, environmental and psychological factors that may result in altered health status. It should be noted that young adulthood is the period which health indicators such as injury, homicide, and substance use, reach a peak, with levels higher even than those for adolescents [6, 7]. Suicide is a leading cause of death worldwide [8] and among young adults in Europe [7]. The lifetime prevalences of suicidal ideation and attempts are 9% and 3%, and 60% of transitions from ideation to attempt occur within the first year after suicidal ideation onset [8]. The environment of young adults favours the development of harmful health-related behaviours such as initiating tobacco use [9] and heavy drinking which is associated with living far from home, having a financially comfortable family and educated parents [10]. Young adults from 20 western countries reported a relationship between alcohol use and depression [11]. Financial worries, well known to have a negative impact on physical and mental health, [12-14] are common among students. The effects of stressful life events may also be indirect and can be produced by maladaptive, or absent, coping strategies [15], somatic disorders and violent behaviour [16].

Steptoe et al. investigated university students from 23 countries and found that awareness of specific health risks was poor and varied widely, with particularly low levels in developing countries [17]. Similarly, Peacey et al. and Steptoe et al. reported that, compared to their Western European counterparts, Eastern European students were more depressed, had less healthy lifestyles (less regular exercise, greater alcohol consumption, more dietary fat, less dietary fibre, more salt added to food, more failure to wear a seat-belt, and less use of sunscreen protection), adopted less preventive behaviour and were less likely to be aware of the relationship between lifestyle factors (smoking, exercise, fat and salt consumption) and cardiovascular disease risk; they also reported lower levels of social support and were more likely to believe that chance plays a greater role than it does in determining health [18, 19, 53]. Depression and low levels of satisfaction with life

are more common in Central/Eastern than Western European university students, and they are associated with low perceived control and mastery and with strong beliefs in the influence of chance [13]. Between 1990 and 2000, the prevalence of smoking increased and fruit consumption decreased [20]. Therefore, there is now an urgent need to enhance positive attitudes to healthier lifestyles [20] and, even more importantly, to identify health issues and unhealthy behaviours relevant to students in Europe, particularly the Central/Eastern countries. Ultimately, interventions should be designed and evaluated, and the most promising implemented on a large scale, particularly when the factors concerned are potentially modifiable.

The present study focused on three public institutions at which students were not given collective advice about health-related behaviour and health promotion, but did receive information concerning tobacco, alcohol and sexually transmitted diseases by means of public notices or leaflets. There was no activity to support students at each campus (e.g. counselling service, stress management). They could also receive personal advice during consultations at the university medical centre to monitor vaccinations, vision, and body weight or for contraceptive care. A list of general practitioners and specialists was provided when needed. They aimed at assessing physical and mental health, substance use and preventive behaviour among first-year students in France (an original member of the EU), Poland (entered in 2004), and Romania (entered in 2007). We compared Polish and Romanian students to French students (considered as the reference group) because previous studies have reported that mental health was poorer and health-related behaviours less frequent among Central/Eastern than among Western European university students.

Methods

Study population and sample. The population comprised 2011 first-year students from the departments of human and social sciences at three European universities, one in France (1131 students from Metz), one in Romania (644 students from Iasi) and one in Poland (236 students from Katowice).

Ethical aspects. Representatives of the steering committee of students and instructors validated the content of the questions asked. The study protocol was approved by the Ethical Research Committees of the universities concerned, and informed consent was obtained from respondents immediately before they completed the questionnaire.

Procedure. Four months after the beginning of the academic year, the study and its aims were presented to students and they were invited to participate by the research team (with the cooperation of representatives of students' associations) during a class period. Those who agreed were contacted via their personal university email address and asked to visit a website in order to complete an online

self-reported anonymous questionnaire in their native language. The questionnaire was translated and back-translated by professional experts. No cross-cultural validation was obtained.

Instruments. Socio-demographic variables of interest included age, sex, marital status (single/married or cohabiting), scholarship recipient (yes/no), employee (yes/no), and unsatisfactory financial situation (yes/no); data on the last three were not available for the Polish sample. Other areas covered were social support, physical and mental disorders, financial issues, access to health care, addictive behaviour and preventive behaviour (Table 2). Social support was assessed using two scales adapted from the 6-item *Social Support Questionnaire* (SSQ-6) [21, 22]. The first scale explored three support mechanisms (SSQ-3): material assistance, support during emotional upheaval, and any support that may be necessary. Each support scale was assessed in terms of the number of people who can be called upon (0 to 9). The second scale explored satisfaction with the support received, using a scale from 0 to 5.

Mental health status was assessed using two scales. The first was the 12-item General Health Questionnaire (GHQ-12), which measures depression, anxiety, social dysfunction and hypochondria [23, 24] and which has been applied to students [12, 25]. It is often used to screen patients with psychiatric and psychological issues; the higher the score, the greater the distress. Second, the 14-item Perceived Stress Scale (PSS-14) evaluates stress among people in stressful situations and has been applied to students [26, 27, 28]; the higher the score, the greater the feeling of life being unpredictable, uncontrollable and dominated by stress.

Statistical analysis. Polish and Romanian students were compared separately with French students considered as the reference group. Quantitative outcome variables (social support, mental health status) were compared using analysis of variance taking age and sex into account. For categorical variables (physical health, mental health, use of health services, addictive behaviour, and preventive behaviour), a multiple logistic regression model had been fitted including country, age and sex, in order to estimate the odds ratios (OR) and 95% confidence intervals adjusted for age and sex. In these analyses age was categorized in two groups: <20 years and 20 or over. All the analyses were performed with R Foundation software.

Results

In total 1 609 students participated (80%): 934 of them French, 480 Polish and 195 Romanian. The proportions aged 20 years or more were 41.9% of French students, 72.2% of Polish students and 48.2% of Romanian students, and 58%, 82% and 87% respectively were female.

Table 1 shows the socio-demographic characteristics of the subjects. The Polish students entered university one year later, which explains the differences in age.

The Romanian students were more likely to cohabit (15%), a smaller proportion received a grant (25%) and more were dissatisfied with their financial resources (39%).

Table 3 shows that the three groups had altered mental health, with some disparities between them. They had similar satisfaction with social support and perceived stress (although the difference was significant for the latter). French students had higher SSQ-3 scores and lower GHQ-12 scores than the other groups.

Table 4 reveals that the three groups reported a number of physical and mental problems, principally tiredness, being on edge, headache, difficulty falling asleep, chronic low back pain, lack of energy, stomach pain, being ‘snowed under’, isolated or uneasy, and wanting to cry-. However there were strong disparities in the risk patterns. Compared with French students, Romanian students suffered more from being uneasy (OR 4.91), wanting to cry (1.85), and not being in good general health (2.40) whereas Polish students suffered more from lack of energy (OR 1.81), tiredness (1.41) and being on edge (1.31). French students suffered more than the others from headache, chronic low back pain, stomach pain, being ‘snowed under’, isolated, and dissatisfied with integration into university. Suicidal ideation affected more Polish students than French students (OR 1.47). Alterations in morale or physical health since the beginning of the university year were common, but affected more Romanian and Polish students than French students (ORs between 1.5 and 1.8). Consultation with a doctor or other medical professional differed between the three groups, as did taking steps to cope with stress. The proportion of subjects who wished to consult a psychiatrist was higher among Romanian students than the other groups.

Table 5 illustrates that substance use was common, particularly use of tobacco, alcohol and marijuana, but there were marked differences between the three groups. Smoking more intensively since the beginning of the university year (smokers only) was more common among Romanian and Polish students than among French students (ORs 2.22 and 2.42, respectively) while smoking and heavy smoking were less common among Polish students. Use of tranquillisers and marijuana, and drunkenness, were more common among French students than Romanian respondents. Drunkenness, taking ‘uppers’ and using recreational drugs ‘to get high’ were more common among Polish than French students (ORs 1.58, 2.22 and 2.36, respectively). More Romanian than French students did not always use a condom during sexual intercourse (OR 2.06). Fewer Polish than French students did not always use a helmet when cycling or motorcycling (OR 0.06) (the law on helmet use is the same in all three countries). It may be noted that students with employment had a higher prevalence of tobacco smoking (50.0% vs. 29.6%, $p < 0.001$) and marijuana use (57.3% vs. 40.8%, $p < 0.001$) among French students only (employment status was unknown for Polish students).

Discussion

The present study shows that poor health, substance use and lack of support were common among first-year human and social sciences students at universities in France (an original member of the EU), Poland (entered in 2004), and Romania (entered in 2007). It demonstrates that more attention should be paid to the socio-economic and cultural context in each university. The decision to focus on first-year undergraduates (actually, those at the very beginning of academic life) was of paramount importance as it enabled us to identify some challenges and difficulties related to transition periods. Indeed, every year, many students leave university without a diploma [3]. The beginning of university life is an important time of change for young adults in terms of identity development driven by the interactions between individual bio-psychological characteristics and the demands of society [29-31] and of health-related behaviour [32, 33]. Young adulthood has great potential for personal growth, and for failure [29]. Individuals who receive proper encouragement and reinforcement through personal exploration will emerge from this stage with a strong sense of self and a feeling of independence and control. Those who remain unsure of their beliefs and desires will be insecure and confused about themselves and the future [29].

Some methodological issues warrant comment. First, our purpose was to identify signs of malaise that might not be reported spontaneously by the subject to a physician or be diagnosed as psychopathology, but that might be a manifestation of underlying mental disorder or presage mental problems [1, 10, 13] that could be properly diagnosed and treated. Second, because the surveys were all conducted among students of human and social sciences, the results cannot be generalized. Moreover, as this questionnaire examined only one faculty per country, differences between countries could be in fact differences between faculties. Third, every student received an email address at his or her university and could have been invited to participate in the study. The anonymous procedure involving volunteer students contacting an internet web page and completing a self-administered questionnaire might have led to bias in terms of participation and of responses to questions [34]. The questions used have been applied in other studies with male and female students [25, 27]. The participation rate was considered acceptable and the quality of the completed questionnaires was very good.

Comparisons between our results (SSQ, GHQ, PSS) and the literature. The figure for availability of a support network used in this study (SSQ-3) must be multiplied by two when comparing it to SSQ-6. The SSQ-3 score of French students in the present study did not differ ($p=0.89$) from that reported by another study in 348 French students (average score 21.6, SD 10.6) [21]. However, satisfaction with the support received was significantly ($p=0.004$) lower (average score 28.8, SD 4.8) [21]. It should be noted that one survey of students at two universities in London found that their mental health (measured with GHQ-12) was

lower than that of the general population [12]. Here, the French, Polish and Romanian students as a whole had similar ($p=0.89$) mental health (average GHQ-12 score 13.7, SD 5.4) to that reported by students in London (average score 13.5, SD 6.5) [12]. However, the score of perceived stress PSS-14 (average score 30.0, SD 4.7) was higher ($p<0.0001$) than that of American students (average score 23.2, SD 7.3) [26].

We found that physical/mental problems, lack of social support, and legal and illicit substance use were common among French, Polish and Romanian students four months into their first-year of human and social sciences. They suffered from a wide range of disorders, particularly potentially modifiable issues such as tiredness, being on edge, headache, difficulty falling asleep, chronic low back pain, lack of energy, stomach pain, being ‘snowed under’, being isolated or uneasy, and wanting to cry. A large proportion of students reported unfavourable changes in health and morale, and those who were smokers smoked more intensively than at the beginning of the university year. This study was original because it assessed a wide range of health-related outcomes including physical/mental disorders, social support, substance use, access to health care and preventive behaviours of students from three European universities. These findings may be useful to those developing interventions that have to be designed and implemented on a large scale.

French students were less likely than Romanian and Polish students to assess their physical health as less good than at the beginning of the university year, or to report nervousness, stress, psychological distress and suicidal ideation. The majority of all three groups found that their social networks were lacking the three types of support studied (material assistance, support in case of emotional upheaval, any support necessary), but this was more pronounced among Polish and Romanian students than among their French counterparts. The French students were more likely than the others to be dissatisfied with their integration into university, to feel isolated, to often be tired and to have difficulty falling asleep. They were also more likely to smoke, and to smoke heavily.

This study shows that patterns of substance use differed between the three groups. Since the beginning of the university year, half of the Romanian and Polish students and a third of the French students had increased their consumption of tobacco. Smoking marijuana was much more common among French students than among the other groups. The French students and, particularly, the Polish students were more likely than the Romanian students to have been drunk. The prevalences of tobacco, alcohol and illicit drug use, poor family environment and tiredness were higher than those reported elsewhere in French adolescents and young adults [6, 35]. University students may thus exhibit more unhealthy behaviour and poorer family environments than do adolescents. It may be noted that tobacco smoking and marijuana use were more common among French students with employment. This result was in agreement with the finding of one population-based study in north-eastern France which showed an increased risk of smoking associated with

high job demands at the beginning of the working life [38]. Our result underscores the need to pay attention to employed students.

The frequency of difficulties falling asleep among French students (18.7% in men and 47.9% in women) was also alarming as it was much higher than that of the general active population of the Lorraine region - of which Metz is the largest town (6.1%-10.1%) [36]. Similarly, the frequency of tiredness among French students (76.3%) was much higher than that of the general active Lorraine population (9.3% in men and 16.7% in women). It should be noted that the prevalence of suicidal ideation was very high compared to French adolescents (9.6%) and similar to adolescents in the United States (16.8%) [37].

The literature contains much more information on adolescents than on university students and young adults in general. As a working situation [35, 36, 38] university life increases the risk of starting smoking and smoking more intensively [9], of anxiety, violent behaviour and of psychosomatic disorders [9,16]. Alcohol intake also often increases, depending in part on the parents' socio-cultural level [11]. A study comparing first-year university students from Ostergotland in Sweden with their peers in employment with regard to health-related behaviour and working life found that smaller proportions of students smoked and used oral snuff, and they did not drink as frequently as their working counterparts. However, when they did drink they tended to consume more [39].

Our study found that the potential results were a range of financial, social and health problems. It was observed that 39% of Romanian students and about 15% of French and Polish students said that they “do not cope very well with the financial situation”. A study in London mentioned that students who considered leaving their studies for financial reasons had altered mental health, impaired social functioning, vitality and physical health, and smoked more intensively [12, 53].

It is important to help students develop a belief in self-efficacy that operates together with goals, outcome expectations, and perceived environmental impediments and facilitators to regulate motivation, health-related behaviour, and well-being [32, 33]. Encouraging belief in one's ability to exercise control is a common psychosocial pathway through which to influence health functioning. This core belief affects all the basic processes of personal change-whether people even consider changing their health habits, whether they can muster the motivation and perseverance needed to succeed should they do so, their ability to recover from setbacks and relapses, and how well they maintain the habit changes they have achieved [40]. The Health Action Process Approach argues for a distinction between (a) preintentional motivation processes that lead to a behavioural intention and (b) post-intentional volition processes that lead to actual health behaviour [32, 33]. In the motivation phase, one needs to believe in one's capability to perform a desired action in order to initiate that action. In the subsequent volition phase, after a person has developed an inclination toward adopting particular health behaviour, the "good intention" has to be transformed into detailed instructions on how to

perform the desired action. Self-efficacy influences the processes of planning, taking initiative, maintaining behaviour change, and managing relapses [41]. It is important to help students to keep motivation in protecting health in their context.

Psychological distress and depressive symptoms result from stress caused by life difficulties [42]. Depression, the stress of studies, interpersonal or family problems, financial issues, and social isolation are well known to increase the risk of suicide [43]. Suicidal ideation is also associated with tobacco, alcohol and cannabis use [37, 44]. In our study, 18.9% of Polish students and about 15% of French and Romanian students reported suicidal ideation. However, one third of Romanian students (who made more use of health services) had taken steps to deal with stress. A study in France found that people aged 15-24 were less likely than older age groups to seek healthcare for a mental health problem, even when their psychological status required it: among those who had had a depressive episode, only 26% had consulted a professional, compared with 48% of people aged 45-54 years [45]. The difficulties faced by students and the contributory stressors also include developmental issues. A number of factors may favour stress; a study in the UK found little evidence of a comprehensive plan to ameliorate student mental health. Services appeared to be underused, even those focused on students with suicidal thoughts. Students need more specialized and prolonged help both in the form of increased counselling facilities which include a Physical and Mental Health Service and also mentoring schemes [46].

Finally, French students reported less preventive behaviour (helmet use, not drink driving) than did the Polish and Romanian students, but Romanian students were least likely to use a condom during sexual relations. Note that the legislation for helmet use is the same in all three countries. One survey in the UK showed that college and university students had high levels of knowledge of sexual transmitted diseases (STDs), yet still behaved in a risky manner. There was no evidence to suggest a general trend in safer behaviour with greater knowledge [47]. A study in Germany showed a strong demand among students for group health-oriented programs; many students had high levels of interest in individual counselling aimed at stress management (24%), healthy nutrition (19%) and prevention of STDs (18%) [48].

Practical implications. The process of social sharing of emotions makes a valuable contribution to the implementation, maintenance and strengthening of socio-emotional connections, and constitutes an important tool of social integration [49]. Students have particular needs in this area, but in some situations they may tend to adopt just the opposite attitude. For a student to say that he/she feels isolated four months after the beginning of the university year would reflect an integration failure. Furthermore, a student who lacks strong emotional ties even before going to university is unlikely to be listened to, leading to further isolation. Thus, it is necessary to promote social sharing of emotional ties in order to help students construct/consolidate their social network, giving sense to their personal

goals, to their own lives, and connecting them to the group to which they wish to belong.

We have no information about the socio-ecological context and policy environment influencing health behaviour of Polish and Romanian students. Currently in France, the university medical services, in collaboration with the mutual health insurance companies covering students, have initiated health promotion measures intended to develop “peer education” with “student relay”. The targeted fields remain: consumption of substances, management of stress, road safety; but too many messages about prevention may lead to some not being perceived. The challenge today is to organise interventions focusing on the difficulties associated with everyday living and studying, adaptation of students, and reinforcement of their resources. Thus, a mobilisation of personal and social resources is required to reconcile the requirements of university work and a life often far from the family [49]. The key, of course, is to bring together good mental health care with sensible adaptations to the educational system without lowering the standard required of the students, to make it more likely that students' work progresses in spite of ongoing health difficulties.

The students were young adults experiencing a period of psychological vulnerability due to identity establishment. The university community and students' families should consider remedial measures. In certain European universities, people studying preventive medicine help other students by detecting and treating psychological, adaptation or relationship problems, and providing prophylaxis. Students may (free of charge) see a psychiatrist or a psychologist and receive appropriate care and individual counselling [48]. Prompt assistance can be expected to help students solve their family problems and deal with material difficulties. Our alarming findings suggest that there is a need for universities to establish centres where information on prevention is freely available, and students have an opportunity to discuss their difficulties in reconciling the requirements of university life and the adoption of a healthy lifestyle. Efforts are necessary to make university working environments more appropriate for student needs. Management of stress and better services for students who need mental health care may be of value.

Conclusion

The present investigation showed that impaired physical and mental health, substance abuse and poor preventive behaviour were common among first-year students in France, Poland, and Romania, but with marked disparities between the countries. Compared with French respondents, Romanian and Polish students experienced more stress/psychological distress, received less social support, and those who were smokers smoked more intensively. Drunkenness, alterations of physical health or morale and suicidal ideation were more frequent among Polish

than French students while tobacco use was less frequent. Being uneasy, wanting to cry, having financial problems and alterations of physical health/morale were more frequent among Romanian than among French students – in contrast to drunkenness. Fewer Polish students did not always use a motorcycle/cycle helmet, and they less often drove when drunk. Romanian students were less likely to take tranquillisers and less likely to use a condom during sexual intercourse. French students were more likely to report being isolated or dissatisfied with their integration into university.

These findings point to a need to help students solve their integration problems and material difficulties. Health promotion on campus should include provision of appropriate advice that takes socio-economic and cultural factors into account. It should focus on unhealthy lifestyles, poor physical and mental health, dissatisfaction with life, financial problems, suicidal ideation, stress coping and belief in the predominant role of chance, particularly among Polish and Romanian students. University physicians can help by monitoring students, especially those most at risk, and might consider establishing health discussion groups [50] perhaps with the cooperation of parents, friends, teachers, and university staff. Further investigations may be conducted to assess the associations between different health-related outcomes and various socioeconomic risk factors (principally to identify possible groups at risk), and how they differ between the three countries.

Table 1: *Socio-demographic characteristics of the students (mean (SD), range or %)*

		French student (n=934)	Romanian students (n=195)	Polish students (n=480)	Comparison between the three groups
Age (yr)	Mean (SD)	19.7 (2.5)	19.7 (1.2)	20.1 (1.1)	0.0027
	< 20	58.1	51.8	20.8	<0.0001
	≥ 20	41.9	48.2	79.2	
Sex	Male	42.0	19.5	20.4	<0.0001
	Female	58.0	80.5	79.6	
Marital status	Single	95.9	84.9	95.0	<0.0001
	Married or cohabiting	4.1	15.1	5.0	
Scholarship recipient ⁽¹⁾	No	55.0	74.7	-	<0.0001
	Yes	45.0	25.3	-	
Employed ⁽¹⁾	No	90.0	95.5	-	0.0276
	Yes	10.0	4.5	-	
Unsatisfactory financial situation	Yes	16.5	39.1	14.7	<0.0001
	No	83.5	60.9	85.3	

⁽¹⁾: data not available for the Polish university.

Table 2: *Questions covering physical/mental health, financial issues, use of health services, Addictive behaviour and preventive behaviour (response yes or no)*

Physical and mental health

My physical health is not as good as when I started university

My general health is bad

I often have a low back pain

I often have stomach pain

I often have headache

I am often tired

I often don't have much energy

When I leave family or friends I feel uneasy (headache, stomach ache, sickness...)

My morale is worse than at the beginning of the university year

I have thought about the possibility of taking my life

I feel isolated

I feel snowed under

I often have difficulty falling asleep

I often want to cry

I often feel on edge

I am not satisfied with my integration into university

Access to health cares

I often see a doctor

I would like to be able to see a psychiatrist in the health prevention service

In the last six months I have seen someone in the medical profession

In the last six months, I have taken steps to cope with stress

Consumption of psychotropic

I often take tranquillisers

I often take sleeping pills

I have taken a medicine to get high

Consumption of tobacco

I smoke

I smoke more than a pack a day (1)

I have increased the amount I smoke since the beginning of the university year (1)

Consumption of alcohol

I consume at least one glass of alcohol per week

I have sometimes or often been drunk

Consumption of illicit substances

I often take uppers

I have smoked pot or marijuana

Preventive behaviour

I always use a helmet when I am on a bike or motorcycle (2)

I sometimes drink and drive (2)

I do not always use a condom during sexual intercourse

(1) Among smokers.

(2) Among those who have a driving licence.

Table 3: Mental health status as measured by SSQ-3, PSS-14 and GHQ-12 Scales (means and 95% confidence intervals adjusted for age and sex)

Scales	French Students (n=934)	Romanian Students (n=195)	Polish Students (n=480)	p-value
Social network availability of social support (SSQ-3) (range 0-27)	10.0 [9.7-10.4]	7.8 [7.0-8.5]	7.8 [7.3-8.3]	<0.0001***
Satisfaction social support score (SATISFSS) (0-15)	11.7 [11.6-11.9]	11.5 [11.1-11.9]	11.6 [11.3-11.9]	0.4059
Perceived Stress Scale score (PSS-14) (0-56)	29.7 [29.4-30.0]	30.4 [29.7-31.1]	30.5 [30.0-31.0]	0.0152 *
General Health Questionnaire score (GHQ-12) (0-36)	12.7 [12.3-13.0]	13.5 [12.7-14.2]	14.9 [14.4-15.4]	<0.0001***

P-value: significance level: * p<0.05, *** p<0.001.

Interpretation

SSQ3: The higher the score, the greater the perceived availability of the social network
 SATISFSS: The higher the score, the greater the student's satisfaction with his or her support
 PSS-14: The higher the score, the stronger the student's perception that life is unforeseeable, unverifiable and dominated by stress
 GHQ-12: The higher the score, the greater the feeling of psychological distress

Table 4: *Physical, mental and material problems and use of health services among French, Polish, and Romanian students, and odds ratios adjusted for age and sex (OR) and 95% confidence intervals.*

	French students (n=934)			Romanian students (n=195)			Polish students (n=480)			<i>n</i> s
	n ⁽¹⁾	%		n	%		N	%		
			OR ⁽²⁾ [95% CI]			OR ⁽²⁾ [95% CI]			OR [95% CI]	
<i>Physical and mental problems</i>										
Tiredness	908	76.3	148	10.5	0.03 [0.01-0.04]	473	85.5	1.41 [1.01 - 1.96]		
Being on edge	915	44.3	188	42.3	0.82 [0.59 - 1.13]	474	55.8	1.31 [1.02 - 1.67]		
Headache	902	44.2	167	43.9	0.75 [0.53 - 1.06]	463	42.5	0.65 [0.51 - 0.85]		
Difficulty falling asleep	912	39.8	188	47.9	1.31 [0.95 - 1.81]	474	18.7	0.29 [0.22 - 0.39]		
Chronic low back pain	906	39.2	158	27.6	0.48 [0.33 - 0.70]	477	32.1	0.55 [0.42 - 0.71]		
Lack of energy	911	36.1	188	34.5	0.88 [0.63 - 1.22]	473	51.3	1.81 [1.41 - 2.32]		
Stomach pain	896	28.9	158	27.8	0.78 [0.53 - 1.15]	447	21.1	0.55 [0.41 - 0.73]		
Being 'snowed under'	914	27.6	188	22.7	0.76 [0.52 - 1.10]	471	22.6	0.74 [0.56 - 0.98]		
Being isolated	921	23.2	189	7.7	0.28 [0.16 - 0.48]	475	9.0	0.29 [0.20 - 0.42]		
Being uneasy	895	22.1	184	60.8	4.91 [3.49 - 6.92]	443	13.9	0.48 [0.34 - 0.67]		
Wanting to cry	909	21.3	187	38.3	1.85 [1.31 - 2.61]	473	29.4	1.13 [0.85 - 1.50]		
Altered morale since the beginning of the university year	891	19.9	183	29.6	1.58 [1.10 - 2.27]	460	26.8	1.46 [1.09 - 1.95]		
Dissatisfaction with integration into university	915	18.9	189	2.6	0.13 [0.05 - 0.31]	475	6.7	0.32 [0.21 - 0.48]		
Suicidal ideation	906	15.0	183	16.4	1.22 [0.79 - 1.90]	474	18.9	1.47 [1.07 - 2.04]		
Altered physical health since the beginning of the university year	888	12.7	182	19.7	1.55 [1.01 - 2.35]	460	22.0	1.79 [1.29 - 2.48]		
Not-good general health	919	4.3	184	8.9	2.40 [1.31 - 4.41]	474	3.8	0.79 [0.42 - 1.47]		
<i>Access to health care</i>										
Consultation with a doctor	921	20.8	183	29.6	1.28 [0.88 - 1.84]	474	7.1	0.23 [0.15 - 0.34]		
Wishing to consult a psychiatrist	828	14.6	186	23.4	1.84 [1.23 - 2.75]	467	4.5	0.26 [0.16 - 0.43]		
Consultation with a medical professional in the previous six months	901	11.4	186	19.3	1.47 [0.96 - 2.27]	474	10.9	0.70 [0.48 - 1.04]		
Taking steps to cope with stress during the previous six months	900	23.9	186	32.8	1.49 [1.05 - 2.10]	474	19.5	0.75 [0.56 - 1.01]		

Bold type: significant ORs
⁽¹⁾: number of responses. The items of physical and mental health disorders are ordered according to their percentage for French student
⁽²⁾: Odds Ratios versus French students using logistic regression models including age and sex.

Table 5: Consumption of psychotropic drugs, tobacco, alcohol and illicit substances, and preventive behaviour: %, odds ratios adjusted for age and sex ^a and 95% confidence intervals

	French students (n=934)		Romanian students (n=195)		OR [95% CI]	Polish students (n=480)		OR [95% C]
	n	%	n	%		n	%	
Consumption of psychotropic drugs								
Tranquilliser use	918	6.1	186	0.5	0.07 [0.01 - 0.53]	466	6.2	0.77 [0.46
Sleeping pill use	919	2.6	185	2.1	0.71 [0.24 - 2.10]	477	5.6	1.51 [0.82
Consumption of tobacco								
Smoking	919	31.6	186	27.6	0.83 [0.58 - 1.19]	471	14.8	0.34 [0.25
Heavy smoking (>1 pack a day) (1)	283	16.1	51	13.5	0.93 [0.39 - 2.23]	67	1.5	0.07 [0.01
Smoking more intensively since the beginning of the university year (1)	295	32.9	57	53.4	2.22 [1.24 - 3.99]	74	52.7	2.42 [1.40
Consumption of alcohol								
Alcohol use (at least one glass per week)	848	55.2	161	44.8	0.77 [0.54 - 1.09]	459	50.4	0.98 [0.76
Drunkenness	876	34.6	181	15.0	0.43 [0.28 - 0.66]	460	40.4	1.58 [1.21
Consumption of other substances								
Taking uppers	920	9.7	187	7.8	0.69 [0.38 - 1.24]	476	20.9	2.22 [1.58
Marijuana use	908	42.3	181	2.1	0.03 [0.01 - 0.09]	474	22.0	0.40 [0.31
Medicine use to get high	923	2.4	189	1.0	0.47 [0.11 - 2.02]	464	6.4	2.36 [1.27
Preventive behaviour								
Not using a helmet when cycling or motorcycling (2)	122	41.8	13	23.1	0.43 [0.11 - 1.72]	191	4.7	0.06 [0.03
Drinking and driving (sometimes) (2)	635	14.2	30	9.4	1.02 [0.28 - 3.66]	230	6.1	0.47 [0.25
Not always using a condom during sexual intercourse	753	40.1	103	62.3	2.06 [1.33 - 3.17]	275	48.9	1.06 [0.78

Bold type: significant ORs

n: number of responses

^a versus French students computed with logistic regression models

(1) Among smokers

(2) Among those who have a driving licence

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