

Значимыми стрессовыми факторами, которые упоминали студенты-египтяне, имеющие средний и тяжелый уровень депрессии, в ходе выполнения теста и последующего обсуждения полученных результатов, были оторванность от дома, родителей, невозможность соблюдения национальных традиций и обычаев, а также нерациональное и нерегулярное питание, нарушение сна, отсутствие активных физических нагрузок, занятий спортом, ограниченность круга общения, в основном иностранными студентами, как египтянами, так и выходцами из других стран, недостаточные навыки владения русским языком.

ВЫВОДЫ

1. Проведенное исследование выявило значительную распространенность умеренных и выраженных депрессивных расстройств (75,0 % выборки) у студентов-египтян 5-го курса лечебно-профилактического факультета Уральского государственного медицинского университета.

2. Объективными стрессовыми факторами формирования депрессивных расстройств является необходимость социокультурной адаптации к новой социальной среде, к общественным устоям и традициям страны обучения. Основным субъективным фактором является недостаточное владение русским языком, напряжение, связанное со сложностью освоения программ профессионального медицинского образования.

3. В связи с вышеуказанным, одной из приоритетных задач медицинского вуза, осуществляющего профессиональное обучение иностранных студентов, является разработка системы мониторинга по выявлению и профилактике в их среде проблем психического здоровья.

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ИСПОЛЬЗОВАНИЕ СТУДЕНТАМИ УСИЛИТЕЛЕЙ КОГНИТИВНЫХ ФУНКЦИЙ: ПОТЕНЦИАЛЬНЫЕ ОПАСНОСТИ И СПОСОБЫ ИХ МИНИМИЗАЦИИ

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Аннотация

Введение. В настоящее время среди студентов университетов все более популярными становятся препараты для усиления мозговой деятельности – усилители когнитивных функций, известные как «ноотропы» или «учебный

наркотик». Несмотря на преимущества от приема этих препаратов, имеющих временный характер, произвольное использование когнитивных усилителей может оказать весьма негативное влияние на здоровье. Здоровые студенты, не имеющие когнитивных нарушений и употребляющие такие препараты, как: амфетамин и модафинил, для повышения концентрации внимания, памяти, могут столкнуться с комплексом проблем. Статья предоставляет собой обзор популярных усилителей когнитивных функций и последствий их использования. **Цель исследования** - изучить степень распространенности препаратов для усиления мозговой деятельности среди студентов и влияние их на здоровье пользователей. **Материал и методы.** Исследование проведено с привлечением к анкетированию студентов екатеринбургских вузов. В помощь исследованию был создан онлайн-опрос. **Результаты.** В результате исследования выявлены наиболее популярные среди студентов препараты для усиления мозговой деятельности; проанализированы распространенные побочные эффекты; предложены способы минимизации нанесения ущерба для здоровья. **Выводы.** Учитывая причину, по которой их используют студенты вузов, необходимо информировать пользователей о возможных побочных эффектах приема препаратов и негативном их влиянии на здоровье.

Ключевые слова: ноотропы, когнитивные усилители, опасность, немедицинское использование наркотических средств, побочные эффекты.

STUDENTS' USE OF COGNITIVE ENHANCERS: POTENTIAL HAZARDS AND WAYS TO MINIMIZE THEM

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Abstract

Introduction. Currently, drugs to enhance brain activity – cognitive enhancers known as "nootropics" or "educational drug" are becoming increasingly popular among university students. Despite the temporary benefits of taking these drugs, the arbitrary use of cognitive enhancers can have a very negative impact on health. Healthy students who do not have cognitive impairments and use drugs such as amphetamine and modafinil to increase concentration and memory may face a complex of problems. In this article we provide an overview of popular cognitive enhancers and the consequences of their use. **The aim of this study.** To study the prevalence of drugs to enhance brain activity among students and their impact on the health of users. **Material and methods.** The study was conducted with the involvement of students of Yekaterinburg universities. We created an online survey to help the study. **Results.** As a result of the study, the most popular drugs for enhancing brain activity among students were identified; common side effects were analyzed; The methods of minimizing the damage to health are proposed. **Conclusion.** Given the reason why university students use them, it is necessary to inform users about the possible side effects of taking drugs and their negative impact on health. **Keywords:** nootropics, cognitive enhancers, danger, non-medical use of narcotic drugs, side effects.

INTRODUCTION

When we talk about cognitive enhancement we imagine different stimulants that are used to treat cognition deficits such as Alzheimers, ADHD (Attention deficit hyperactivity disorder) and schizophrenia, this was their original goal. Later nootropics became a tool for healthy people to improve their already fine cognitive abilities. Cognitive enhancement is defined as “the amplification or extension of core capacities of the mind through improvement or augmentation of internal or external information processing systems” [1]. There is a lot of ways to achieve improvement of your cognitive abilities. The harder but safer include maintaining a healthy lifestyle, regulating your sleep schedule and keeping a healthy diet. The easier but not so safe method includes taking different types of substances also known as cognitive enhancers (CEs). Taking cognitive enhancements is often aimed at improving memory or concentration. These factors are very important to any person, regardless of what they are doing. So it is not a surprise that CEs are more often consumed by people in good health [2], rather than those with cognition defects. It is currently not fully known how these drugs work, but early research indicates that they affect different body systems simultaneously. Some drugs increase the blood flow to the brain, which allows it to use more oxygen; others tend to increase the amount of chemicals like dopamine, which is also known as the happy hormone. Some drugs may act as caffeine, only in much larger concentration than coffee, causing the body to stay awake for a very long time thus boosting alertness and concentration. Most popular CEs like methylphenidate and modafinil are stimulants. Methylphenidate works by blocking noradrenaline from being taken back up into the nerve cells in the brain after being released. On the other hand modafinil – significantly increases dopamine in the human brain by blocking dopamine transporters. Amphetamine salt

mixtures block the return of both NA and DA into the pre synaptic neuron, thus improving their concentrations in the synaptic cleft [3].

Drugs like modafinil and amphetamines have been under careful research by the military for the past 80 years, to help soldiers stay alert whilst attenuating the effects of sleep deprivation. A bright example of mass use of these stimulants is World War 2, where most countries supplied troops with methamphetamine pills to let the soldiers be alert and ready at all times. Nazi Germany was the one to embrace it the most. German soldiers were able to go on without sleep for 3 days, not stopping their invasion in other countries territories.

Nowadays cognition improvement drugs are used by healthy individuals in order to improve their cognitive functions. University students are a prime example. They seek not only improvement in cognitive abilities but also motivational. Students from Higher Educational Institutes (HEI) usually use a combination of different types of CEs in an attempt to improve the overall performance in study related assessments.

The Global Drug Survey carried out in 2015 and 2017 among healthy university students reported on CE prescription drug use rates; these increased over time in all 15 countries for which data were analyzed [4].

Although university students usually take such popular stimulants as caffeine, methylphenidate, modafinil and amphetamines, in reality there are hundreds of different types of CEs and it is almost impossible to track all of them.

The aim of this study is to study the prevalence of drugs to enhance brain activity among students and their impact on the health of users.

MATERIAL AND METHODS

The study includes an analysis of theoretical scientific sources. Two online questionnaires (in google forms) were developed to thoroughly analyze the results. Students from universities such as USURT, USMU and USLU have participated. The questionnaires were fully anonymous.

The main aim of the surveys is to find out how widespread are cognitive enhancers among students of different universities, how often are these stimulants used and what are the main side effects that people have encountered. The study involved a total of 237 students aged from 18 to 24 years, of which 66% were boys and 34% - girls. All participants have been divided in two major groups. The first group consisted of those that are familiar with nootropics, regardless of how often they use them and the second group was made of those that have never heard about non-medical use of cognitive enhancers.

The second survey was created mainly for the aim of analyzing the usage of an incredibly popular cognitive enhancer that is extremely popular among people in general – caffeine.

RESULTS

According to the obtained data, a lot of HEI students are aware of CEs and use them in order to improve their concentration and learning ability on a daily basis. According to the survey – the most popular choice for most are stimulants such as methylphenidate, modafinil and amphetamines.

Out of 237 students about 72 of them (around 30%) have admitted in using CEs in the past 12 months for the main aim of study. Out of which methylphenidate, modafinil and amphetamine were respectively at 8.2% (20 students), 6.9% (17 students) and 3% (8 students). 28% of students have at least tried using CEs once in their life and later stopped. 20% (67students) have heard about these smart drugs but decided against using it. 14% have never heard about CEs and thus didn't ever use them. And the last 8% of surveyed have been using these types of drugs for a long time and stopped quite recently due to occurring side effects.

The use of caffeine as a CE has been growing worldwide and it was reported in an additional survey that over 165 (70%) students consumed it multiple times a day in high concentration in order to improve their attentiveness and stay awake for a long time without sleep, 17% (around 28 people) of consumers are already showing signs of addiction.

There are a lot of reasons why university students are so attracted to stimulants; some of them include enhancing cognitive performance, to stay awake and improving academic achievements. In

reality this really is the case, the main motivation of using stimulants as methylphenidate is improving concentration (72.4%), wakefulness (35%) and improving study performances (62.3%).

The use of CEs is not without risk; all of the benefits that people get consuming them also come with a multitude of side effects. It was reported that most users are experiencing: high body temperature – 8.4% (20 students), increased blood pressure and respiration – 12% (29 students), increased activity, talkativeness and alertness - 34% (81 students), reduced appetite – 44% (105 students), irregular or increased heartbeat and palpitations – 27% (64 students), nausea and headache – 81.8% (194 students), mental health and behavior problems – 57.2% (134 students), unusual tiredness or weakness – 87% (206 students), insomnia – 46% (110 students), blurry vision – 19.6% (47 students), addiction – 21.9% (caffeine for the most part) (52 students).

The side effects of nootropics are often overshadowed by the different positive effects such as cognitive enhancement, wakefulness and drastic improvement in concentration and study related matters. But over/misuse of such stimulants can cause irreversible damage to your body and can even lead to death. It is very important to consult a doctor before deciding to consume CEs.

DISCUSSION

According to the results of our study, cognitive enhancers are quite popular among university students. A huge percentage of people are using them on a daily basis (around 30%) for non-medical aims. Usage of CEs is generally connected to a lot of side effects. The results confirm this. The most common are: unusual tiredness or weakness (87%), nausea and headache (81.8%), mental health and behavior problems (57.2%). These are still considered mild compared to addiction (21.9%) and cardiovascular disorders (12%).

During the past few years there has been a lot of concern worldwide about the use of pharmaceutical cognitive enhancement among university students, especially the misuse of such stimulants. Most people consume them blindly, without any investigation or consultation from a doctor. This leads to a lot of cases where young men and women end up receiving irreversible damage to their health which in some cases can even lead to death.

The most popular stimulants among many are methylphenidate (8.2%), modafinil (6.9%), and amphetamine salt mixtures (3%), where methylphenidate is noticeably the most popular among University students. On the other hand the most available CE in the market is caffeine.

Additionally, during the study it was reported that male use of nootropics was much higher than female use. Although for both genders methylphenidate is the most popular type of CEs, the difference between two genders lies in motivation for their use. Female students used stimulants in order to improve their memory, concentration and alertness and because “most of their friends do so”, while male students use it to increase study time and experiment. The main reason for this disparity is societal stigma, shame and cultural belief around women taking drugs. Another important factor stopping most women from taking drugs is pregnancy. Negative health impact of the drugs on the mother’s body may transfer to the baby, causing it to be born with problems.

Social factor is also a very important reason that forces students to decide using CEs completely disregarding possible side effects. Different competition performance demands and peer pressure are the most noteworthy.

The availability of CEs for non-medical indication is a major concern. Nowadays it is not a problem to simply buy the ADHD medication methylphenidate online without any documents being needed. Sometimes popular CEs are even advertised as “smart drugs” or “study drugs” in order to attract people in buying them. Various discounts and free shipping is another trick in order to get more customers. It is not rare to see different deals offered on the eve of study assessments, attracting a lot of students into buying them.

One of the main reasons for methylphenidate, modafinil and amphetamine salt mixtures being so popular is their availability, effectiveness and affordable price.

In 2008 Sahakian et al. opened a debate on the positive impact on improving cognitive functions. In some studies multiple healthy individuals have shown a moderate increase in their cognitive abilities [5]. Therefore the use of pharmaceutical cognitive enhancers can be used in the daily life of normal people and improve their workability thus benefitting the society. A study by

Smith and Farah in 2011 suggested that the effects of both methylphenidate and amphetamine salt mixtures on cognitive performances in healthy participants have shown a positive effect in learning, suggesting in memory improvement during the drugs consumption [6]. Although the results of the study seem promising but it important to remember that cognitive improvement varies considerably from one individual to another.

Alternatively, the use of CEs can also be associated with decline of academic performances with abnormal mood swings preventing the student in preparing for the exam. Furthermore both methylphenidate and modafinil have cases of severe dependence. Amphetamine-type substance-related dependence and psychotic episodes are also worth paying attention to. If we take into account worldwide statistics then the use of methylphenidate has increased to 2.4 billion in daily basic doses [7].

Lastly, although caffeine is also a stimulant, its use is not associated with availability or affordability issues. However, with caffeine high-dosage intake a lot of different effects can be observed, most common are: nervousness, restlessness, nausea, sleeping and cardiovascular disorders.

Compared to sports organizations such as WADA that strictly prohibits the use of pharmaceutical drug enhancement and heavily punishes those that do, Universities doesn't have such strong control. So in order to decrease the negative effects of CEs on students, government involvement is absolutely necessary. If more students are aware of the many problems concernic CEs, their intake can be heavily reduced.

CONCLUSION

The analysis of aspects of CEs usage and popularity allow us to draw the following conclusions.

1. Out of the 237 surveyed students over 157 of them (around 66%) have at least tried nootropics once in their life. Despite the large amount of different type of cognitive enhancers, three stand out from the rest. These are: methylphenidate 8.2% (20students), modafinil (6.9% (17 students)) and amphetamine (6.9% (17 students)) and (3% (8 students)).

2. The prevalence of CEs can be attributed to two things. The first one being that most stimulants are very accessible to the general public. Since most of them are meant to be used for medical aims, to treat ADHD, OSAHS etc. The second reason being the stimulants affordable price, most nootropics don't cost much, making it extremely easy for most people to buy them in large amounts.

3. The use of CEs in general can be drastically reduced if students were fully aware of the various dangers they carry. According to our study the most common side effects include unusual tiredness or weakness (87% (206 students)), nausea and headache (81.8% (194 students)), mental health and behavior problems (57.2% (134 students)). More serious negative side effects that we have encountered are - addiction (21.9% (52 students)) and cardiovascular disorders (12% (29 students)). Most nootropics improve the effects of neurotransmitters, while boosting circulation in the brain. This mechanism is the main reason for such drastic side effects.

4. The increasing lifestyle of using drugs by healthy people in order to enhance cognition, improve concentration, wakefulness and study performances is changing society as we know it. The main solution to such an occurrence is making sure all of the stimulants users/potential users are aware about the different side effects. Another way of reducing users is through government intervention. The amount of "study drugs" sold should be strictly regulated.

An organization similar to WADA in sports should be founded but for Higher Educational Institutes. RUHOs (Russian University Health Organization) main aim would be taking care of the students' health and regulating the various stimulants intake.

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РИСК РАССТРОЙСТВ ПИЩЕВОГО ПОВЕДЕНИЯ И ЕГО СВЯЗЬ С ОБРАЗОМ ТЕЛА, АЛЕКСИТИМИЕЙ И ДЕПРЕССИЕЙ СРЕДИ СТУДЕНТОВ СТАРШЕГО КУРСА ЛЕЧЕБНО-ПРОФИЛАКТИЧЕСКОГО ФАКУЛЬТЕТА

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Аннотация

Введение. Риск пищевого поведения является одним из малоизученных психических расстройств, которое может привести к значительной заболеваемости. В связи с высокой учебной нагрузкой, необходимостью поддерживать хороший уровень академической успеваемости и практической деятельностью в лечебных учреждениях студенты лечебно-профилактического факультета более склонны к развитию расстройств пищевого поведения.

Цель исследования – оценка распространенности расстройств пищевого поведения и его связь с образом тела, алекситимией и депрессией среди студентов старшего курса лечебно-профилактического факультета в гендерном аспекте. **Материал и методы.** Основным методом было поперечное исследование 60 студентов 5-го курса лечебно-профилактического факультета медицинского университета; из них: 32 девушки и 28 юношей; средний возраст 22,5 года. Использованы тест пищевого поведения (EAT-26), опросник образа собственного тела (О.А. Скугаревский и С.В. Сивуха), шкала тревоги и депрессии А. Бека, Торонтская алекситимическая шкала (TAS). **Результаты.** Распространенность риска расстройств пищевого поведения у девушек обследуемой группы (16,7%) в два раза выше, чем у юношей (8,3%). Нарушение образа тела, показатели алекситимии и депрессии также значительно выше в группе девушек. **Выводы.** Исследование показало, что риск расстройств пищевого поведения более выражен у девушек-студенток старшего курса лечебно-профилактического факультета, что связано с неудовлетворенностью образом тела, аффективными и депрессивными расстройствами.

Ключевые слова: расстройства пищевого поведения, образ тела, алекситимия, депрессивные расстройства.

RISK OF EATING DISORDERS AND ITS ASSOCIATION WITH BODY IMAGE, ALEXITHYMIA, AND DEPRESSION AMONG SENIOR STUDENTS OF THE FACULTY OF TREATMENT AND PREVENTION

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Abstract

Introduction. The risk of eating behavior is one of the little-studied mental disorders that can lead to significant morbidity. Due to the high academic load, the need to maintain a good level of academic performance and practical activities in medical institutions, students of the Faculty of Medicine and Prevention are more likely to develop eating disorders. **The aim of this study** to assess the prevalence of eating disorders and its relationship with body image, alexithymia and depression among senior students of the Faculty of Medicine and Prevention in a gender perspective.

Material and methods. The main method was a cross-sectional study of 60 5th-year students of the Faculty of Medicine and Prevention of the Medical University; of them: 32 girls and 28 boys; average age 22.5 years. The eating behavior test (EAT-26), questionnaire of the image of one's own body (O.A. Skugarevsky and S.V. Sivukha), the A. Beck scale of anxiety and depression, the Toronto Alexithymic Scale (TAS) used. **Results.** The prevalence of the risk of eating disorders