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FACTORS ASSOCIATED WITH ACADEMIC PERFORMANCE AMONG SEXUALLY ACTIVE AND INACTIVE INTERNATIONAL STUDENTS OF NATIONAL PIROGOV MEMORIAL MEDICAL UNIVERSITY, VINNYTSYA

Abstract. Sex education is the key to lead a harmonious personal life, maintain and improve reproductive health, acquire a tolerant attitude towards the LGBT community. It is important to know the anatomical and physiological characteristics of human sexuality, the characteristics of its sexual development, sexual relations, sexual disorders, disharmony, their prevention and treatment. We found a statistically significant association between academic performance and sexual activity.

The purpose - to examine prevalence and correlates of academic performance and different aspects of sexual life foreign students of the 4th year of National Pirogov Memorial Medical University, Vinnytsya (NPMMU, V).

Keywords: academic performance, sexual life, sexual debut, sexual partner, permanent sexual partner.

Introduction. During the period of study at a higher educational institution, a foreign student continues to form and develop in accordance with his new social position, which he occupies in society, under the influence of a new environment, a new team, new conditions and requirements. The range of relations with the representatives of social groups is significantly expanding: fellow students, teachers, methodologists, employees of a higher educational institution, etc. Those who live in a dormitory, or in the apartment expand their circle of everyday communication even more, which means facing new problems, leading students to deal with a constant emotional and informational load [2, 4, 8, 15].

Factors contributing to the emergence of emotional stress:
monotony; insufficiently formed personality traits such as: readiness to learn, ability to learn independently, to have their own individual characteristics of cognitive activity, the ability to rationally plan their working time for self-training; assessment of the work that is exceeding the student's capacity in terms of volume or severity, uncertain requirements, critical circumstances or risk in decision making [1, 3].

The complication of the adaptation process is facilitated by a change in the usual ideas and interests, meaning their narrowing and a certain professionalization. At the same time, the range of interests associated with the chosen profession is expanding while intellectual, aesthetic, ethical and material needs are increasing. All these complexes affect the student as failures, defensive reactions, emotions associated with stress. Stressful situations disrupt the adaptation of a person to the environment. The result of stressful situations is a low academic performance and a high level of seasonal incidence [19, 20].

Comparison of the functional state of the student's body during studying at the university showed that during the adaptation period, the excitability of the nerve cells of the cerebral cortex is less pronounced, the level of working capacity is lower, the body works with great tension and intensity, cases of vegetative vascular dysfunction are often encountered [22, 24].

Students with poor academic performance are characterized by disregard for the interests of others, a peculiar attitude to generally accepted norms of social behavior, rigidity of thinking, etc.

A separate group of factors consists of students' personal difficulties, namely the problem of insufficient self-determination [6, 21, 25].

According to Freud (1856-1939), sexuality is the main motivating force of human behavior and the main cause of all forms of neurosis - a disease, the most striking manifestation of which is anxiety and impaired mental adaptation while maintaining an adequate perception of reality [26]. He argued that the hormones present in the blood of the fetus also affect the development of the brain and pituitary gland. The most convincing documented difference in brain structure between men and women is the number and location of certain types of nerve synapses in the hypothalamus [28]. In the process of sexual differentiation, androgens stimulate the development of the brain, as well as other male-type organs. In the absence of androgens, the brain develops according to the female type [5. 7]. Hormonal programming in the prenatal period determines the nature of the functioning of hypothalamus and pituitary gland in puberty and after its completion. As the result, girls form a system of cyclic production of sex hormones and menstrual cycles, while boys' level of sex hormones remains relatively constant after having reached a certain level of its production. Fertility in women is also cyclical, while in men it is constant. The action of hormones on the brain in the prenatal period can also affect the
behavior of a person in adulthood, including his sexual behavior, aggressiveness, mental activity, although the nature of such effects remains unclear [9, 10].

It is known that sexual life has a positive impact on academic success. This statement was proved experimentally when comparing two groups of students with high and low sexual activity. Scientists have found that those students who abstained from sex experienced difficulties in their studies. On the other hand, peers with regular intimate contacts had a better rating in learning. This is explained by the release of adrenaline and cortisol hormones by stimulating the nervous system and the formation of new neural connections, which, of course, has a positive effect on learning.

There was also a study of biological fluids (saliva) among students with different sexual activity - a higher level of immunoglobulin A was found in the saliva of those who had sexual activity 1-2 times a week, compared with those who did not have sex or had sex more than 3 times a week. This indicates a positive effect of a moderate sexual activity on the immune system of the human body [14, 18].

Sexual experience is divided into two types: "acute sex" and "chronic sex." "Spicy/acute sex" is a new sexual experience with a new sexual partner. "Chronic sex" is a stable sexual relationship. By the way, for rats, under experimental conditions, long-term sexual relations are about 2 weeks. “Acute sex” is more stressful, since new physical close contact increases brain plasticity and the release of cortisol. Chronic sex - activates the formation of new nerve contacts and reduces the level of cortisol. That means that the presence of a permanent sexual partner is one of the essential factors of adaptation to stress. In 2010, a large-scale study was conducted, during which it turned out that regular sexual activity increases the number of cells in the hippocampus, the area responsible for the long-term memory. Especially in women after 50, when due to hormonal changes and the gradual death of brain cells, memory begins to deteriorate. Scientists have noticed that after the resumption of sexual activity, memory is restored. Also, sex is recommended for students in preparation for the session. Watching porn, according to the research published in the Journal of Sex Research, negatively affects working memory, the ability to concentrate and retain information.

A group of scientists from the University of Maryland conducted a study in 2014 and concluded that regular sex contributes to the formation of new neural connections, the formation of new cells in the brain, which affects a person's cognitive abilities. But it should be noted that not only having sex, but getting maximum satisfaction - orgasm - contributes to the development of mental abilities.

Researchers from the University of Amsterdam also confirmed that sex improves analytical thinking. And during an experiment at the Princeton University (USA) on rats, scientists discovered another fact: in sexually active rodents, the number of neurons in the hippocampus and prefrontal cortex increases [16, 17].
According to a study by the United Nations Children's Fund (UNICEF) on Ukrainian adolescents in 2019, sexual debut in Ukraine begins at the age of 12, and a third of adolescents do not use condoms during their first sexual intercourse. It is important to take this into account when developing curricula at secondary schools and to adopt the experience of European countries on educational activities among youth. Thus, it is too late to start talking about sexual activity and contraceptives to the 8th graders.

58.4% of Ukrainian adolescents receive the necessary information from the Internet resources, 41% from friends and peers, from parents and teachers - 32.5% and 28.9%, respectively [11, 12].

Scientists at Oxford University and Coventry University have tested whether intimate life has an impact on intellectual abilities. The study involved 73 people: 45 women and 28 men, aged 50 - 83 years. They first answered the question of how often they had sex in the last twelve months. After that, the volunteers underwent standard tests to measure indicators of brain activity - memory, attention and vocabulary were analyzed.

Scientists have found that people who had sex more often perform better on verbal and visual tests. At the same time, the strongest relationship was established in the case of verbal speed tests. But attention and memory are not so strongly associated with intimacy in adulthood or old age [23].

During the study, scientists from the University of Coventry in the UK interviewed more than 6,800 men and women over the age of 50. They were interested in the sexual activity of the respondents, as well as their success in intellectual tests for memory and ingenuity. In addition, the data of the English longitudinal study of aging were used in the work. As the result, among the male half of the participants, a positive correlation was noted between the frequency of them having sex and two indicators of brain function studied (intelligence and memory). Among women, a relationship was recorded only with cognitive abilities, which may be the result of hormonal characteristics in women [27, 29].

In any case, the positive impact of a fulfilling sex life in old age on brain function has also been proved.

**Methods. Materials.**

A comprehensive clinical and psychological examination was conducted of 198 foreign students of the 4th year of the National Pirogov Memorial Medical University, Vinnytsya (NPMMU, V) from Lower-Middle-Income Countries, such as Angola, Syria, Egypt, Nigeria, India, Vietnam, Yemen, Uganda, Botswana, Zimbabwe, Zambia, Ghana, Kenya, Namibia, Swaziland, Somalia, Central African Republic, Mongolia, Pakistan, Cameroon, Morocco, Palestine, Kenya, New Guinea, Tunisia, Sudan.

The entire students, who chose the elective course "Fundamentals of sexology and sexopathology" of 4th year NPMMU, V was invited to take part in
the survey. Young people were asked with the help of a questionnaire that included 25 questions on various aspects of their sexual life. The main aspects of sexual education among foreign medical students are established as follows: the age of sexual debut, the activity of sexual life and the reasons for its absence, the presence of a permanent sexual partner, satisfaction with sexual life and the main unresolved issues, academic performance, experience of oral and anal sexual contact, use of contraception.

The participation in the study was completely voluntary and anonymity would be guaranteed.

All of the abovementioned characteristics were evaluated comprehensively. Statistical calculations were carried out using “Statistica 6.1” (Stat Soft Inc., USA) using nonparametric methods [13].

The exclusion criterion is religious views.

The results presented in this article represent a hitherto unpublished part of a comprehensive study of the department.

Results. Discussion.
Among respondents, the percentage of young men 62.12%±11.342%, young women - 37.88%±11.342%.

Average age of respondents is M±SD 22.5±2.5y.

A significant percentage of students without a sexual debut was established - 45.45%±11.642%, among which 54.44%±11.644% - young women, 45.55%±11.644% - young men.

54.55%±11.642% is sexually active youth, among them 75.92%±9.997% are young men, 24.08%±9.997% are young women.

The analysis of the results of the survey showed that among young men, the age of initiation into sexual life is most often at the age between 19-20, and for young women it is mostly after 21 years (Table 1).

Table 1. Age of sexual initiation among Young People (95% Confidence Interval)

<table>
<thead>
<tr>
<th>Age of sexual debut</th>
<th>Young men n=82 (%)</th>
<th>Young women n=26 (%)</th>
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<tbody>
<tr>
<td>Before age 15</td>
<td>5 (6.10±3.334)</td>
<td>1 (3.85±2.680)</td>
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<tr>
<td>16-18 years</td>
<td>25 (30.49±9.184)</td>
<td>7 (26.92±8.848)</td>
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<tr>
<td>19-20 years</td>
<td>28 (34.15±9.460)</td>
<td>8 (30.77±9.207)</td>
</tr>
<tr>
<td>21 years and older</td>
<td>24 (29.26±9.076)</td>
<td>10 (38.46±9.705)</td>
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Contributing factors of the beginning sexual life among respondents are: feelings of love, motivation / persuasion of a partner, desire to be «like everyone else», desire to be an «adult», sexual need etc (Table 2).
Table 2.

Contributing factors of beginning sexual life among sexually active young people (95% Confidence Interval)

<table>
<thead>
<tr>
<th>CAUSES</th>
<th>Young men n=82 (%)</th>
<th>Young women n=26 (%)</th>
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<tbody>
<tr>
<td>Feelings of love</td>
<td>46 (56.10±9.900)</td>
<td>18 (69.23±9.207)</td>
</tr>
<tr>
<td>Motivation / persuasion of the partner</td>
<td>2 (2.44±3.078)</td>
<td>4 (15.38±7.197)</td>
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<tr>
<td>Desire to be &quot;like everyone else&quot;</td>
<td>4 (4.88±3.943)</td>
<td>1 (3.85±3.838)</td>
</tr>
<tr>
<td>Desire to feel like an &quot;adult&quot;</td>
<td>1 (1.22±3.035)</td>
<td>0</td>
</tr>
<tr>
<td>Sexual need</td>
<td>14 (17.07±10.401)</td>
<td>1 (3.85±3.838)</td>
</tr>
<tr>
<td>Combination</td>
<td>15 (18.29±9.039)</td>
<td>2 (7.69±5.315)</td>
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</table>

Dissatisfaction with the sexual debut is noted among 14.63% ±6.665% among young men and among 26.92%±8.365% young women (Fig. 1, 2).

![Fig. 1. Satisfaction with sexual debut among young men](image1)

![Fig.2. Satisfaction with sexual debut among young women](image2)
80.77%±7.862% among sexually active young women and 59.76%±9.782% among sexually active young men had experience with less than 5 sexual partners; 7.69%±5.315% among young women and 14.63%±7.050% among young men had experience with 6-7 partners; 8-10 partners – 10.98%±6.237% and 11.54%±6.374%, respectively; only 14.63%±7.050% among young men had sexual contact with more than 11 partners (Figs. 3, 4).

Fig. 3. The number of sexual partners among sexually active young men.  
Fig. 4. The number of sexual partners among sexually active young women.

57.7%±9.855% among young women and only 18.3%±7.713% among young men have a permanent sexual partner.

Academic success among students evaluated according to the criteria European Credit Transfer and Accumulation System (ECTS), «A» (Excellent) - 180-200 points, «B» (Good), «С» (Satisfactory) - 160-179 points, «D», «E» (Pass) - 122-159 points (Table 3).

**Table 3.**

<table>
<thead>
<tr>
<th>Academic performance</th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Sexually active</td>
<td>Sexually inactive</td>
<td>Value P*</td>
<td>Sexually active</td>
</tr>
<tr>
<td>«А», «В» - Excellent</td>
<td>14 (11.38% ±5.612%)</td>
<td>7 (5.7% ±4.509%)</td>
<td>p≥0.05</td>
<td>2 (2.66% ±3.642%)</td>
</tr>
<tr>
<td>«С» - Good</td>
<td>45 (36.58% ±8.512%)</td>
<td>24 (19.51% ±7.003%)</td>
<td>p≥0.05</td>
<td>14 (18.7% ±8.825%)</td>
</tr>
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</table>
A statistically significant difference was established between academic performance among sexually active and inactive young men \( p \geq 0.01 \) (\( t = 7.4 \)) and in sexually active and inactive young women \( p \geq 0.05 \) (\( t = 2.04 \)).

We also received feedback from students. This feedback is also good for the teachers. This evaluation is a step that would precede introducing changes in the syllabus and activating other teaching resources designed to ensure passage of the application of the ECTS at the University.

**Conclusion**

1. The age of initiation into sexual life among foreing students is between 19-20 years.
2. There is no statistically significant difference between academic performance and sexual debut \( p \geq 0.05 \) (\( t = 0.08 \)).
3. There is no statistically significant difference between academic performance and the number of sexual partners \( p \geq 0.05 \) (\( t = 0.7 \)).
4. There is no statistically significant difference between academic performance and presence of a permanent sexual partner \( p \geq 0.05 \) (\( t = 0.1 \)).
5. There is statistically significant difference between academic performance and sex of respondents. Sexually active young men have higher academic rating compared to sexually active young women.
6. Sexually active young people study much better compared to sexually inactive ones.

**References:**


