Acta Scientific Gastrointestinal Disorders (ISSN: 2582-1091)

Volume 5 Issue 9 September 2022

Research Article

Comparative Characteristics of the Prevalence of Autonomic Dysfunction and Depressive Disorders Among Sexually Active and Inactive Foreign Students of National Pirogov Memorial Medical University, Vinnytsya

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DOI: 10.31080/ASGIS.2022.05.0479

Received: August 01, 2022

Published: August 20, 2022

Abstract

The prevalence of depression among physicians ranks third at 9.6%. In the first place (11.3%) people, whose work is related to the care of people with limited mobility, elderly and sick people, nannies who take care of small children; in second place are catering workers (10.3%) [3,5,7]. The risk of developing depression among scientists, architects and engineers is 4.3%. That is why physicians and other healthcare professionals need to know about the diagnosis and treatment of depressive disorders from the very beginning of their education [1,4,12].

A person who is depressed cannot concentrate, his memory worsens, anxiety grows, self-esteem decreases, suicidal thoughts may appear. This condition significantly impairs the quality of life and perception of the world [2,8,9,18,31].

The purpose of the study was to identify clinical psychopathological features of somatized depressive disorder and autonomic dysfunction among sexually active foreign students compared with students without a sexual debut of National Pirogov Memorial Medical University, Vinnytsya (NPMMU, V). An anonymous survey of 198 medical foreign students of the 4th year of NPMMU, V has been conducted using a questionnaire that included 25 questions on various aspects of the sexual life of the respondents. The analysis of the obtained results of the study was carried out on the basis of the computer programme "Statistica 6.1" using nonparametric methods to evaluate obtained results. It has been established that among medical students the percentage of dysthymia - 78.78% and autonomic dysfunction - 38.9%.

Keywords: Sexual Life; Sexual Activity; Autonomic Dysfunction; Depressive Disorders; Autonomic Nervous System; Autonomic Dysfunction

Introduction

According to the Ministry of Health of Ukraine, from 2008 to 2012, the prevalence of depressive disorders increased from 65.37 to 73.6 people per 100,000 population, and the incidence increased from 8.74 to 9.06 per 100,000 population. In recent decades, there has been no increase in cases of depressive disorders, which

would not correspond to global trends and indicate inadequate thus incomplete organization of identification, registration and assistance to people with depressive state. This is due to the lack of opportunities for a family doctor in Ukraine to diagnose and treat depression [21,33].

The prevalence of depressive spectrum disorders in Europe and the USA is currently about 5-10%. Their lifetime prevalence is 16%, within 12 months - about 7%. In general medical practice, the frequency of depression reaches 22-33%. Depressive disorders are one of the leading causes of disability (World Health Organization, 2018). 45 to 60% of suicides are committed because of depression. According to a survey of 37,000 adults in 10 countries in America, Europe, Asia, conducted by the International Consortium of Psychiatric Epidemiology (ICPE) using WHO-CIDI (Combined Diagnostic Interview of the World Health Organization) depression often begins between the age of 20 and 30. The prevalence of depression in women is twice higher than men (20-26% and 8-12% respectively) according to the National Institute of Mental Health (NIMH) [13,14,18,31].

General practitioners and medical specialists (neurologists, cardiologists, gastroenterologists) treat mild and moderate depression in most countries of Europe and North America, not psychiatrists. 80% of antidepressants in Western Europe, the USA and Canada are prescribed by doctors of various specialties. Psychiatrists focus their attention on severe cases. The Patient Health Questionnaire (PHQ-2) is used to screen depression. If one question is answered positively we should used the PHQ-9 questionnaire. With a confirming score, the features of the course of depression are clarified, which generally makes it possible to make a syndromic diagnosis of depression and determine its severity. The risk group for developing depression includes the following criteria:

- Presence of mental and behavioral disorders in personal and/or in family history;
- Presence of episodes of depression in the anamnesis;
- The presence of serious diseases with a chronic course;
- Disability;
- Psychoemotional stress, loss of a loved one; job loss etc;
- Social isolation [19,20,24].

Despite the social stigma, depression is a common illness. According to the Centers for Disease Control and Prevention (CDC), about one of 20 Americans over the age of 12 has some form of depression [6,27,28,30].

Depression is common for everyone. The most common types of depression include:

- Minimal depressive episode (dysthymia);
- Mild depressive disorder;
- Moderate depressive disorder;
- Severe depressive disorder;
- Recurrent depressive disorder [10,11].

According to NIMH Trusted Source, higher levels of depression are found among women, which are directly related to hormonal changes associated with physiological processes in their organisms. Among the most common symptoms include: constant sadness, lack of interest in past favorite activities, feelings of guilt and hopelessness, insomnia and fatigue, irritability and anxiety, weakness, sexual dysfunction, difficulty concentrating, weight loss or gain, suicidal mood.

Symptoms of depression vary in frequency and severity for each person. Generally, the more severe depression is the more problems are present in sexual health.

Sexual desire is cultivated in the brain, and the genitals work according to nerve impulses and biochemical reactions in the brain to stimulate libido and the changes in blood flow necessary for sexual intercourse. When depression disrupts chemical reactions in the brain, it makes sexual activity difficult. The older person is, the more clearly sexual dysfunction is manifested [10,11,23].

In addition, antidepressants can often have unwanted sexual side effects, including monoamine oxidase inhibitors (MAOIs), serotonin and norepinephrine reuptake inhibitors (SNRIs), selective serotonin reuptake inhibitors (SSRIs), tetracyclic and tricyclic drugs [26].

Rebecca Birch, Ph.D., researcher in the Department of Psychology at the State University of New York, author of the sperm study, in Oswego established a link between depression and sexual activity.

In the study that conducted on female students, the effect of sperm on the fight against depression was evaluated. The results showed that the hormones and chemicals found in semen boost mood. They also found that students who used condoms, had less contact with sperm, suffered from depression more than those who did not use mechanical contraceptives. Among young women, a relationship has been established between the lack of sexual contact and a higher likelihood of depression. These findings suggest that mood-enhancing benefits of sex for women, who are more likely than men to suffer from depressive disorders. Also, sexual intercourse improves mood in men.

Despite of the positive effect of semen on improving mood, unprotected sexual contact can lead to many depressive disorders because of sexually transmitted diseases and unwanted pregnancy [25].

Regular sexual intercourse with a regular partner has a beneficial effect on the state of the cardiovascular system. A study published in January 2015 in the American Journal of Cardiology found that men who had more sex had a lower risk of heart attack, regardless of erectile dysfunction. The study that had published in the Journal of Health and Social Behavior in September 2016 found that excessive sexual activity increased the risk of stroke and heart attack for older men (57 to 85), female partners of the same age, with a regular sex life, were less likely to develop hypertension, a risk factor for heart attack and stroke [22].

The study of domestic medical students of NPMMU, V among sexually active youth found that 65.3% had mild and minimal manifestations of depressive disorders. Signs of depression were absent only in 3.9% of students. Symptoms of severe depression occurred in 6% of virgins and 1.6% of sexually active young women and 1.6% of sexually active young men [15,16].

Autonomic dysfunction is an interdisciplinary problem that attracts the attention of doctors of various specialties due to the fact that it has not yet been clarified whether it is an independent disease or a risk factor for other diseases. Autonomic dysfunction is unpredictable in the variety of its manifestations and consequences. Autonomic dysfunction is a polyetiological disease. Clinical manifestations are due to an imbalance in the functions of the sympathetic and parasympathetic divisions of the autonomic nervous system, which are manifested by a variety of permanent and paroxysmal symptoms, especially during physical and emotional stress: pulse instability, blood pressure, fever, cephalalgia, cardialgia, emotions. Analysis of the features of the clinical picture of autonomic dysfunction is important primarily because it simulates many diseases. The discrepancy between the severity of complaints and minimum changes in an objective study is considered typical for autonomic dysfunction and is one of the foundations of diagnosis. Comorbidity - is a combination of depression and somatoform [12,16,28,29].

Attention should be paid to the combination of somatoform disorders and somatized (hidden) depressions due to the fact that they «can imitate» various autonomic dysfunctions in their clinical course, and this requires differentiation. «If nothing helps the patient - look for hidden depression» is well-known fact [28,29].

Thus, if we want to prevent the occurrence of depressive disorder, we should determine what may be a prerequisite for their occurrence.

Materials and Methods

For the first time on the basis of National Pirogov Memorial Medical University, Vinnytsya in October 2021, the discipline “Fundamentals of Sexology and Sexopathology” was launched as an elective on the basis of the Department of Obstetrics and Gynecology N 1. Within the framework of which the main topics in sexology are considered. At the first lesson, students were asked to complete an anonymous survey, with the help of a questionnaire that included 25 questions on various aspects of the sexual life of the respondents.

A comprehensive clinical and psychological examination was conducted of 198 foreign students of the 4th year of the 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. We used pathopsychological methods for self-assessment of depression (Patient Health Questionnaire - PHQ-9) (Table 1) and the test for detecting signs of autonomic changes (A. Wayne`s test) (Table 2). The essence of the assessment was that the students independently determined their condition according to a number of signs in a multilevel scale.

The questionnaire for identifying signs of vegetative changes (A. Wayne's test) consisted of 11 questions (Table 2). The sum of points less than 15 is the absence of signs of vegetative changes; 16-25 points - moderate autonomic dysfunction, more than 26 points - severe dysfunction [20,32]. The Depressive Disorders Identification Scale (PHQ-9) is a 9-question questionnaire that reflects the level of depression. The results were evaluated as follows: indicators from 1 to 9 points were considered as minimal depressive disorders (dysthymia), 10-14 points indicated mild depressive disorders; 15-19 points - depressive disorders of moderate severity; 20 and more - severe depression. Statistical processing of the obtained results of the study was carried out on the basis of the computer program Statistica 6.1 (StatSoftInc., USA) using nonparametric methods for evaluating the results obtained [17].

How often have you been concerned with the following over the last 2 weeks?		**Not at all**	**Several days**	**More than a half of the time**	**Nearly every day**
1.	Little interest or pleasure in doing things?	0	1	2	3
2.	Feeling down, depressed, or hopeless	0	1	2	3
3.	Trouble falling or staying asleep, or sleeping too much?	0	1	2	3
4.	Feeling tired or drained?	0	1	2	3
5.	Poor appetite or overeating?	0	1	2	3
6.	Feeling bad about yourself — or that you are a failure or have let yourself or your family down?	0	1	2	3
7.	Trouble concentrating on things, such as reading the newspaper or watching television?	0	1	2	3
8.	Moving or speaking so slowly that other people could have noticed? Or so fidgety or restless that you have been moving a lot more than usual?	0	1	2	3
9.	Thoughts that you would be better off dead, or thoughts of hurting yourself in some way?	0	1	2	3
Sum					
total score = ___					

Table 1: Questionnaire Patient Health Questionnaire - PHQ-9.

Mark your answer as "Yes" or "No"	Yes	No	point
1. Have you ever noticed (when excited etc.) a tendency to: a) Blush? b) No facial color change?	Yes	No	 3 3
2. Do you ever get numb or cold: a) Fingers, toes? b) palms completely, feet?	Yes	No	 3 4
3. Do you have a change in color (paleness, redness, cyanosis): a) Some fingers, toes, feet? b) Palms completely, feet?	Yes	No	 5 5
4. Do you notice excessive sweating? If yes, underline when "constantly" or "when excited"	Yes	No	4
5. Do you often have a feeling of palpitations, "fading", "cardiac arrest"?	Yes	No	7
6. Do you often experience difficulty breathing: shortness of breath? In case of the answer "Yes" specify: "when excited" "in musty place" (underline the necessary word)	Yes	No	7
7. Are you characterized by dysfunction of the gastrointestinal tract: a tendency to constipation, diarrhea, "bloating" of the abdomen, pain?	Yes	No	6
8. If you faint (sudden loss of consciousness or a feeling close to losing it?) If "Yes", specify the conditions: musty room, excitement, prolonged stay in an upright position (underline which)	Yes	No	7
9. Do you have paroxysmal headaches? If "Yes", specify: "diffused" "half of the head" "whole head", compressive or pulsating (underline which)	Yes	No	7
10. Do you currently notice a decrease in efficiency, rapid fatigue?	Yes	No	5
11. Have you noticed sleep disorders? If the answer is "Yes", specify: a) difficulty falling asleep; b) superficial, shallow sleep with frequent awakenings; c) a feeling of insomnia, fatigue when waking up in the morning	Yes	No	5

Table 2: A test for identifying signs of vegetative changes (A. Wein, 1998).

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

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

Results and Discussion

The increase in the level of development of depression in the modern world is associated with a high pace of life, an increased level of its stressogenicity: high competitiveness, social instability, difficult economic conditions, uncertainty about the future, as well as a person's self-esteem, emotional burnout, carelessness as factors leading to the emergence of depressive disorder. All these factors have negative effect on people, and especially on people who work with people. Specifically, there are many reasons for the development of anxiety in relationships between people. Depression, in particular, is one of the most common diseases in the world.

We did not find statistically significant results between depressive disorders of sexually active and inactive young men p ≥ 0.05 (t = 0.488). Depressive disorders in sexually inactive young men are less common compared to sexually active young men. Minimal depressive episode is present in 53.65% ± 8.813% among sexually active young men and 26.83% ± 7.830% among sexually inactive young. Mild depressive disorder is more common for sexually inactive young men (6.51% ± 4.360%) compared to sexually active (9.76% ± 5.245%). Moderate and severe depressive disorders are present only among sexually active young men 0.81% ± 1.584% and 2.44% ± 2.727%, respectively (Figure 1, Table 3).

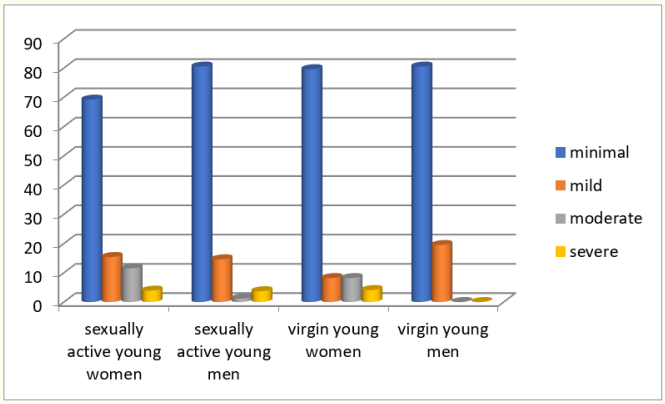

Figure 1: Prevalence of depressive disorders among sexually active young people and virgin youth.

Depressive disorders	Male		Value P*	Female		Value P*
	Sexually active	Sexually inactive		Sexually active	Sexually inactive	
Minimal	66 (53.65% ± 8.813%)	33 (26.83% ± 7.830%)	p ≥ 0.05	18 (24% ± 9.666%)	39 (52% ± 11.307%)	p ≥ 0.05
Mild	12 (9.76% ± 5.245%)	8 (6.51% ± 4.360%)	p ≥ 0.05	4 (5.33% ± 5.084%)	4 (5.33% ± 5.084%)	p ≥ 0.05
Moderate	1 (0.81% ± 1.584%)	0	p ≥ 0.05	3 (4% ± 4.435%)	4 (5.33% ± 5.084%)	p ≥ 0.05
Severe	3 (2.44% ± 2.727%)	0	p ≥ 0.05	1 (1.33% ± 2.593%)	2 (2.68% ± 3.655%)	p ≥ 0.05
Total	n = 82 (%)	n = 41 (%)	123 (100%)	n = 26 (%)	n = 49 (%)	75 (100%)

Table 3: Prevalence of depressive disorders among foreign students of National Pirogov Memorial Medical University, Vinnytsya. Value p*- statistically significant difference with a Confidence Level of 95.5%.

We did not find statistically significant results between depressive disorders of sexually active and inactive young women p ≥ 0.05 (t = 0.907). Depressive disorders among sexually inactive young women are almost the same as those among sexually active young women. The prevalence of minimal depressive episode is - 24% ± 9.666% for sexually active and 52% ± 11.307% for virgin

young women. Mild manifestations of depressive disorder were found in 5.33% ± 5.084% in both group among young women, moderate manifestations in 4% ± 4.435% and 5.33% ± 5.084%, respectively. Severe manifestations of depressive disorder were found in 1.33% ± 2.593% among sexually active and 2.68% ± 3.655% among sexually inactive young women (Figure 1, Table 3).

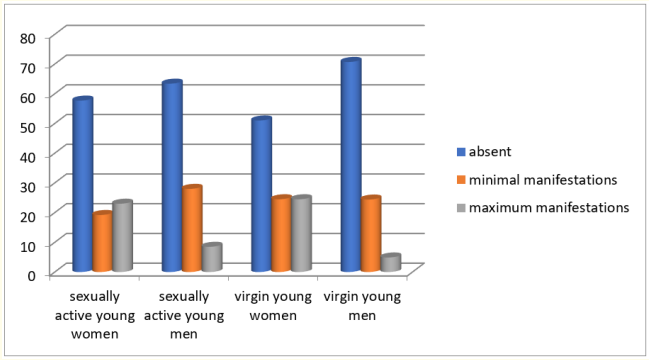

Figure 2: Prevalence of autonomic dysfunction among sexually active young people and virgin youth.

We did not find statistically significant results between manifestations of vegetative dysfunctions between sexually active and inactive young men p ≥ 0.05 (t = 0.07) and sexually active and inactive young women p ≥ 0.05 (t = 0.474). Autonomic dysfunction is more common among young sexually active men than among sexually inactive. At the same time, in sexually active young women, manifestations of autonomic dysfunction ware detected less frequently than among sexually inactive women (Figure 2, Table 4).

In 42.27% ± 8.730% of young sexually active men and in 23.58% ± 7.502% of sexually inactive men, there were no manifestations of autonomic dysfunction. Among young women, this indication was 20% ± 9.053% and 33.33% ± 10.669% respectively. Minimal manifestations of autonomic dysfunction were present in 18.7% ± 6.891% among sexually active men and 8.13% ± 4.830% among sexually inactive young men. Among young women, this indication was 6.67% ± 5.647% and 16% ± 8.297%, respectively. The maximum manifestations of autonomic dysfunction were found in 5.7% ± 4.097% among sexually active young men and 8% ± 6.140% among sexually active young women and 1.62 ± 2.231% of sexually inactive young men and 16% ± 8.297% among sexually inactive young women (Figure 2, Table 4).

Autonomic dysfunction	Male		Value P*	Female		Value P*
	Sexually active	Sexually inactive		Sexually active	Sexually inactive	
No manifestations	52 (42.27% ± 8.730%)	29 (23.58% ± 7.502%)	p ≥ 0.05	15 (20% ± 9.053%)	25 (33.33% ± 10.669%)	p ≥ 0.05
Minimal manifestations	23 (18.7% ± 6.891%)	10 (8.13% ± 4.830%)	p ≥ 0.05	5 (6.67% ± 5.647%)	12 (16% ± 8.297%)	p ≥ 0.05
Maximum manifestations	7 (5.7% ± 4.097%)	2 (1.62 ± 2.231%)	p ≥ 0.05	6 (8% ± 6.140%)	12 (16% ± 8.297%)	p ≥ 0.05
Total	n = 82 (%)	n = 41 (%)	123 (100%)	n = 26 (%)	n = 49 (%)	75 (100%)

Table 4: Prevalence of autonomic dysfunction among foreign students of National Pirogov Memorial Medical University, Vinnytsya.

Value p*- statistically significant difference with a Confidence Level of 95.5%.

Conclusions and Prospects for Further Development

- Minimal depressive episode is usual for 78.8% ± 5.741% of all respondents p ≥ 0.05.
- Symptoms of moderate and severe depression are absent only in sexually inactive young men, p ≥ 0.05.
- Depressive disorders in young people are not associated with their sexual activity.
- It has been established that the vast majority of young people don't have manifestations of autonomic dysfunction and this is not related to their sexual activity (61.11% ± 6.790%, p ≥ 0.05).

- Young women have more pronounced manifestations of autonomic dysfunction compared to young men, and this is also not related to their sexual activity ($p \geq 0.05$).

In the future, we plan to conduct a comparative characteristic with a reference group among domestic medical students. And also to establish the presence or absence of connection between sexual life with academic performance.

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