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REGULARITIES OF PROCESSES OF DEVELOPMENT OF PSYCHOPHYSIOLOGICAL FUNCTIONS OF STUDENTS DURING THE APPLICATION OF REMOTE AND AUDITORY LEARNING FORMATS

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In the course of the study the regularities of development of psychophysiological functions of the organism of student youth, which is in the conditions of using remote (on-line) and classroom (off-line) forms of organization of educational process in higher education institutions, are established. It was found that under the conditions of using the remote format of the educational process there was a marked improvement of indicators that noted such characteristics of the functional capabilities of the organism as the latent period of simple and differentiated visual-motor reactions ($p < 0.05$) and mobility of nervous processes ($p < 0.05$) in young girls and young boys. However, using the traditional classroom format of the educational process, there was an improvement in the balance of nervous processes ($p < 0.05$) and the latency period of simple audio-motor response in girls and simple audio-motor response in boys. The identified trends in most cases confirmed intergroup differences ($p < 0.05-0.001$).

Key words: students, psychophysiological functions, remote learning, classroom learning.

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ЗАКОНОМІРНОСТІ ПРОЦЕСІВ РОЗВИТКУ ПСИХОФІЗІОЛОГІЧНИХ ФУНКЦІЙ СТУДЕНТІВ ПІД ЧАС ЗАСТОСУВАННЯ ДИСТАНЦІЙНОГО ТА АУДИТОРНОГО ФОРМАТІВ НАВЧАННЯ

В ході проведених досліджень встановлені закономірності розвитку психофізіологічних функцій організму студентської молоді, яка перебуває в умовах використання дистанційних (on-line) та аудиторних (off-line) форм організації навчального процесу у закладах вищої освіти. Виявлено, що за умов використання дистанційного формату організації навчального процесу спостерігалось виражене покращання показників, що відзначали такі характеристики функціональних можливостей організму, як: латентний період простої і диференційованої зорово-моторної реакції ($p < 0,05$) та рухливість нервових процесів ($p < 0,05$) у дівчат і юнаків. Разом з тим за умов використання традиційного аудиторного формату організації навчального процесу реєструвалось покращання показників зрівноваженості нервових процесів ($p < 0,05$) і латентного періоду простої аудіо-моторної реакції у дівчат та простої аудіо-моторної реакції у юнаків. Визначені тенденції у більшості випадків підтверджували міжгрупові відмінності ($p < 0,05-0,001$).

Ключові слова: студенти, психофізіологічні функції, дистанційне навчання, аудиторне навчання.

The work is a fragment of the research project: "Features of functional capabilities and adaptive resources of the organism, health and quality of life of pupils and students under the conditions of implementing innovative approaches to the organization of educational activities: modern approaches to comprehensive hygienic diagnostics, psychophysiological and psychohygienic correction and prognostic assessment", state registration No. 0122U000103.

Time is associated with studying in a modern higher education institution, due to the degree of stress, duration and depth of adaptive transformations it is one of the most important periods in human life, especially from the standpoint of adequate personality development, formation of its social status and professional training [1, 2]. It significantly deepens the level of expression of adverse reactions of adaptive content, which are registered, and the fact that this time coincides with such a sensitive period in human life as adolescence, which is characterized by incomplete construction of hierarchy relations with the outside world, instability of motivational attitudes, processes of selectivity in the field of claims and ways of their realization, formation of creative abilities in the field of intellectual activity against the background of significant strengthening of individual differences due to processes of independence of thinking and creative approach to social and educational-significant tasks [1, 3, 10]. It should be noted that during this time there are extremely pronounced adaptively important changes in the leading correlates of psychophysiological adaptation and, above all, the functional state of students and the development of socially and professionally significant psychophysiological functions of their organism [1, 2, 7, 10].

Various forms of learning have a significant impact on the state of the organism's adaptive resources. Indeed, the modern education system at present, in connection with the emergence of new infectious viral diseases, has undergone significant changes, it is the introduction of new forms of learning, such as distance learning, which creates a completely new approach to organizing the learning process and obtaining education. In this context, it should be noted that distance learning in higher education institution is a set of information technology teaching, which involves obtaining education without the physical presence of students in one room, the defining features of which are: using of synchronous mode in which students work with teachers live and certain technical solutions in real time, clearly outlined interactive interaction in the

learning process to set aside time for self-study, extensive use of modern information tools, involvement in the learning process of physically remote experts and specialists, which allows best use of the principle of clarity. It has a certain, significant number of adverse effects on the course of psychophysiological adaptation processes and the state of mental health of young women and young men [4, 5, 6, 8, 9].

However, the features of the impact of distance format on the organism of young women and young men, including features of physiological and hygienic content, are practically unexplored, there have not been done prognostic assessment of the main regime elements of daily educational and extracurricular activities, level of educational adaptation under the conditions of its use, psycho-hygienic assessment of the formation of psychophysiological functions etc.

The purpose of the study was to establish patterns of development of leading educational and professionally significant psychophysiological functions of the organism of student youth, which is in the use of remote (on-line) and classroom (off-line) forms of organization of the educational process in higher education.

Materials and methods. Scientific research was conducted on the basis of National Pirogov Memorial Medical University, Vinnytsya, where 127 students were supervised during the observation period, including 64 young women and 63 young men who were the 3rd year students of the medical faculty.

Determining the level of psycho-physiological functions indicators during the school year (early autumn and late spring semesters) was carried out using the computer system “Effect on Studio” (test package “Jaguar”), it had been developed by a team of scientists from the Department of Higher Mental Functions of the human brain at Research Institute of Neurocybernetics and the University of Tampere (Finland). The complex is licensed, it was registered in the Fund of computer programs for educational purposes (registered No. 1717) and has a certificate of conformity of the Institute of Education Informatization.

Peculiarities of psychophysiological functions development were investigated on the basis of estimating the values of latent periods of simple and differentiated visual-motor reaction (test tasks “Shooting range” and “Taxi”), simple audio-motor response (test task “Duel”), as well as indicators of mobility and balance of nervous processes (test tasks “Taxi” and “Stuntman”).

According to the decision of the Committee on Bioethics of National Pirogov Memorial Medical University, Vinnytsya (protocol No. 12 dated May 15, 2019) studies were fully met the bioethical and moral requirements of the Helsinki Declaration, the Council of Europe Convention on Human Rights and Biomedicine, WHO regulations, laws of Ukraine and orders the Ministry of Health Of Ukraine No. 281 dated November 1, 2000.

Results of the studies and their discussion. In the course of research during the physiological and hygienic assessment of changes in the dynamics of medical health education by its criteria, it should be noted that in the distance format of the educational process, the latent period of simple visual-motor reaction among young women decreased from 392.09 ± 14.20 to 358.43 ± 12.54 ms ($p_{b-e} < 0.05$), among young men – from 384.41 ± 11.12 to 378.70 ± 18.06 ms ($p_{b-e} > 0.05$). Instead, under the traditional classroom format of the educational process, changes of the opposite content were registered – the values of the latent period of simple visual-motor reaction increased among young women from 382.46 ± 12.35 to 422.34 ± 9.23 ms ($p_{b-e} < 0.05$), among young men – from 384.70 ± 10.13 to 423.29 ± 10.50 ms ($p_{b-e} < 0.05$). Statistically significant differences in the studied indicators, typical for representatives of different comparison groups, both among young women ($p_{rl-cl} < 0.05$) and among young men ($p_{rl-cl} < 0.05$) were observed only at the end of the study period.

Probably, the reason for such rather divergent shifts should have been considered to be a longer and deeper period of direct “communication” of the studied students with a personal computer, laptop, smartphone or other gadget during on-line classes, which is peculiar “training” factor that determines the registration of the phenomenon of “positive transference” and which, given the data obtained, should be compared with the consequences of the use of professionally applied physical culture and psychotechnical exercises (Table 1).

Quite similar to the previous content, there were changes registered by such an indicator of the functional state of higher nervous activity as the value of the latent period of differentiated visual-motor reaction, which showed the degree of efficiency and adequacy of coordinated motor actions during stereotyped educational and professionally significant techniques, related to the processes of recognizing different in content (positive, negative or indifferent) signals coming to a person during their implementation. As in the previous case, on-line learning was characterized by a gradual improvement in the level of expression of the studied characteristics, and off-line learning, on the contrary, was characterized by a gradual deterioration of the level of expression of the studied characteristics.

Indicators of the leading characteristics of the higher nervous activity of students under different conditions of the educational process (M±m)

Indices	Time of the study	Student group				p _{rl-cl}
		Remote learning		Classroom learning		
		n	M±m	n	M±m	
Young women						
Latent period of simple visual-motor reaction, ms	Beginning	32	392.09±14.20	32	382.46±12.35	>0.05
	Ending	32	358.43±12.54	32	422.34±9.23	<0.001
	P _{b-e}	<0.05		<0.05		
Latent period of differentiated visual-motor reaction, ms	Beginning	32	488.75±12.67	32	476.34±9.20	>0.05
	Ending	32	444.50±12.59	32	511.46±10.56	<0.001
	P _{b-e}	<0.05		<0.05		
Balance of nervous processes, error in ms	Beginning	32	117.43±10.47	32	116.84±10.02	>0.05
	Ending	32	171.00±14.68	32	99.15±5.69	<0.001
	P _{b-e}	<0.01		>0.05		
Latent period of simple audio-motor reaction, ms	Beginning	32	351.81±8.86	32	355.78±11.12	>0.05
	Ending	32	395.28±10.55	32	336.53±11.03	<0.05
	P _{b-e}	<0.05		>0.05		
Young men						
Latent period of simple visual-motor reaction, ms	Beginning	32	384.41±11.12	31	384.70±10.13	>0.05
	Ending	32	378.70±18.06	31	423.29±10.50	<0.05
	P _{b-e}	>0.05		<0.05		
Latent period of differentiated visual-motor reaction, ms	Beginning	32	461.80±8.13	31	448.41±10.13	>0.05
	Ending	32	428.64±14.82	31	493.83±9.43	<0.001
	P _{b-e}	<0.05		<0.01		
Balance of nervous processes, error in ms	Beginning	32	92.38±6.65	31	102.83±5.71	>0.05
	Ending	32	134.51±14.41	31	123.67±6.53	>0.05
	P _{b-e}	<0.01		<0.05		
Latent period of simple audio-motor reaction, ms	Beginning	32	314.09±10.77	31	317.54±10.03	>0.05
	Ending	32	365.80±13.49	31	304.35±9.01	<0.05
	P _{b-e}	<0.05		>0.05		

In general, at the beginning of the school year and, consequently, during the period of research in young women and young men in the case of distance format of the educational process, the latent period of differentiated visual-motor reaction was 488.75±12.67 ms and 461.80±8.13 ms, respectively, at the end – 444.50±12.59 ms ($p_{b-e}<0.05$) and 428.64±14.82 ms ($p_{b-e}<0.05$). At the same time, in the case of the classroom format of the educational process, the values of the latent period of differentiated visual-motor reaction were 476.34±9.20 ms and 448.41±10.13 ms, respectively, at the end – 511.46±10.56 ms ($p_{b-e}<0.05$) and 493.83±9.43 ms ($p_{b-e}<0.01$). Authentic differences in the studied indicators are characteristic of representatives of different comparison groups, both in young women ($p_{rl-cl}<0.001$) and in young men ($p_{rl-cl}<0.001$) were registered only at the end of the study period.

Therefore, in this case, it was necessary to note the presence of “positive transferens” of the consequences of on-line learning on the processes of formation of indicators of the latent period of differentiated visual-motor reaction.

Data of hygienic assessment of the characteristics of the functional state of higher nervous activity determine the features of mobility of nervous processes in this case, and therefore they provide detailed information on the relationship between excitation and inhibition of the central nervous system, characterizing the formation of working dynamic stereotype typical motor actions in the course of performing certain activities, including those of its types that are inherent in the medical profession, determine the following. Thus, under the conditions of the remote format of the organization of the educational process, the values of the mobility of nervous processes, which were determined by the number of disruptions of differentiated reactions decreased from 1.00±0.19 to 0.65±0.13 ($p_{b-e}>0.05$), in young men – from 1.48±0.21 to 0.93±0.16 ($p_{b-e}<0.05$). At the same time, under the traditional classroom format of the educational process, changes of the opposite content were also registered – the values of mobility of nervous processes increased in young women from 0.87±0.17 to 1.53±0.28 ($p_{b-e}>0.05$), in young men – from 1.16±0.20 to 1.87±0.32 ($p_{b-e}<0.05$). Statistically significant differences in the studied indicators are characteristic for representatives of different comparison groups, both among young women ($p_{rl-cl}<0.01$) and young men ($p_{rl-cl}<0.05$) and they were observed only at the end of professional training.

During the hygienic assessment of the leading characteristics of balance of nervous processes, which is considered an important prerequisite for the adequate implementation of certain (in our case, educational or professionally significant) stereotypical actions in the imposed rhythm during daily activities, a complex temporal reflex that can be used to determine the level of relationships and the

relationship between the processes of excitation and inhibition of the central nervous system, it should be noted that at the beginning of the study period in young women and young men in the case of on-line learning balance of nervous processes values were 117.43 ± 10.47 ms and 92.38 ± 6.65 ms, respectively 171.00 ± 14.68 ms ($p_{b-e} < 0.01$) and 134.51 ± 14.41 ms ($p_{b-e} < 0.01$). At the same time, in the case of off-line training, the balance of nervous processes values were 116.84 ± 10.02 ms and 102.83 ± 5.71 ms, respectively, at the end of which – respectively 99.15 ± 5.69 ms ($p_{b-e} < 0.05$) and 123.67 ± 6.53 ms ($p_{b-e} < 0.01$). Significant differences in the studied indicators, characteristic for representatives of different comparison groups, in young women ($p_{r-cl} > 0.001$), were observed only at the end of study time, at the same time, among young men – were not registered at all ($p_{r-cl} > 0.05$).

Finally, in determining and hygienic assessment of the development of such an indicator of the functional state of higher nervous activity as the latent period of simple audio-motor reaction, which reveals the degree of formation of criterion characteristics of audio-motor coordination abilities, which are also an indisputable prerequisite for effective performance necessary to ensure the successful theoretical and practical activities of modern students, established quite opposite in relation to the characteristics of simple and differentiated visual-motor reactions, trends. In particular, under the conditions of the distance format of the educational process, the values of the latent period of simple audio-motor reaction, which were determined, in young women increased from 351.81 ± 8.86 to 395.28 ± 10.55 ms ($p_{b-e} < 0.05$), in young men – from 314.09 ± 10.77 to 365.80 ± 13.49 ms ($p_{b-e} < 0.05$). At the same time, under the traditional classroom format of the educational process, the values of the latent period of simple audio-motor reaction decreased in young women from 355.78 ± 11.12 to 336.53 ± 11.03 ms ($p_{b-e} > 0.05$), in young men – from 317.54 ± 10.03 to 304.35 ± 9.01 ms ($p_{b-e} > 0.05$). Statistically significant differences in the studied indicators are typical for representatives of different comparison groups, both among young women ($p_{r-cl} < 0.05$) and young men ($p_{r-cl} < 0.05$), as in most previous cases were observed only at the end of training.

In our opinion, a much more significant role of audio-motor signals during classroom learning should be noted as the main reason for the changes in this content, which contributed to the “positive transferens” of a certain effect on the process of the identified changes in characteristics simple audio-motor reaction of young women and young men.

Quite diverse nature was characteristic for the results obtained during the analysis and subsequent hygienic assessment of the ratio number of premature reactions, delayed reactions, as well as the number of accurate reactions.

Thus, the number of premature reactions in the case of on-line training decreased significantly from 8.18 ± 0.85 to 5.81 ± 0.80 ($p_{b-e} < 0.05$) among young women and increased slightly from 8.51 ± 0.84 to 8.58 ± 0.90 ($p_{b-e} > 0.05$) – among young men. At the same time, in the case of off-line training, their number also increased significantly, reaching the maximum values during the research, from 7.84 ± 0.83 to 10.68 ± 0.74 ($p_{b-e} < 0.05$) – among young women and, instead, decreased slightly from 8.25 ± 0.79 to 7.83 ± 0.70 ($p_{b-e} > 0.05$) – among young men. Significant differences in the studied indicators are characteristic for representatives of different comparison groups, both in young women ($p_{r-cl} < 0.001$) and in young men ($p_{r-cl} < 0.001$) were registered only at the end of the study period.

Shifts in changes in the number of delayed reactions confirmed the trends identified in the previous case. Under the conditions of the distance format of the educational process, their values in young women increased significantly from 11.71 ± 0.87 to 14.09 ± 0.79 ($p_{b-e} < 0.05$), in young men, on the contrary, decreased slightly from 11.35 ± 0.84 to 11.12 ± 0.91 ($p_{b-e} > 0.05$). At the same time, under the traditional classroom format of the educational process, their values decreased in young women from 12.09 ± 0.84 to 9.18 ± 0.74 ($p_{b-e} < 0.05$), and in young men, on the contrary, increased from 11.61 ± 0.79 to 11.96 ± 0.71 ($p_{b-e} > 0.05$). Statistically significant differences in the studied indicators, which are characteristic for representatives of different comparison groups, were observed only at the end of training in young women ($p_{r-cl} < 0.001$), however, among young men – were not registered at all ($p_{r-cl} > 0.05$).

The data on the number of accurate reactions during the determination of balance of nervous processes indices should be considered the most stable. In general, the number of accurate reactions during the studies in the case of on-line training ranged from 0.09 ± 0.05 to 0.06 ± 0.04 ($p_{b-e} > 0.05$) among young women and in the range from 0.12 ± 0.06 to 0.29 ± 0.04 ($p_{b-e} > 0.05$) – among young men. However, in the case of the organization of off-line training for young women, their number ranged from 0.15 ± 0.06 to 0.18 ± 0.07 ($p_{b-e} > 0.05$), for young men – in the range from 0.12 ± 0.06 to 0.22 ± 0.07 ($p_{b-e} > 0.05$). Significant differences between the studied indicators among the representatives of different comparison groups, both in young women ($p_{r-cl} > 0.05$) and in young men ($p_{r-cl} > 0.05$) were not registered.

The obtained results fully confirmed the data of the assessment of the structural features of the indicators to be studied. In particular, in the case of on-line training among young women the share of premature reactions in the dynamics of the observation period decreased from 41.0 % to 29.0 %, among young men – ranged from 42.6 % to 42.9 %, the share of delayed reactions – in young women, on the contrary, increased from 58.5 % to 70.7 %, among young men, remained stable, ranging from 56.8 % to

55.6 %, and, finally, the share of accurate reactions was quite small, corresponding to a slight decrease from 0.5 % to 0.3 % – among the first, and growing from 0.6 % to 1.5 % – among the latter. At the same time, in the case of off-line training among young women the share of premature reactions in the dynamics of the observation period increased from 39.2 % to 53.1 %, among young men – ranged from 41.3 % to 39.0 %, the share of delayed reactions – in young women, on the contrary, decreased from 60.0 % to 45.9 %, in young men, remained stable, fluctuating in a rather small range of values from 58.1 % to 59.9 %, and, finally, the share of accurate reactions, as in the previous case was quite small, increasing from 0.8 % to 1.0 % – among the former, and growing from 0.6 % to 1.5 % – among the latter.

Thus, in the course of the research it was carried out physiological and hygienic assessment of the processes of psycho-physiological functions development of the organism of medical students in the case of the use of classroom and distance learning and the following main trends in their changes were identified. Thus, it should be noted that under the conditions of using the distance format of the educational process there was a significant improvement in indicators that noted such characteristics of functional capabilities and adaptive resources of the organism as: latent period of simple visual-motor reaction ($p_{b-e} > 0.05$), mobility of nervous processes in young women and also the latent period of simple visual-motor reaction ($p_{b-e} > 0.05$), latent period of differentiated visual-motor reaction ($p_{b-e} > 0.05$), mobility of nervous processes in young men. Such results were quite clearly correlated with the data obtained in a number of studies which were devoted to the assessment of the process peculiarities of formation of the leading correlates of psychological well-being and psycho-physiological adaptation of student youth [2, 3, 6, 9].

At the same time, using the traditional classroom format of the educational process, there was a marked improvement in indices that noted such characteristics of functional capabilities and adaptive resources of the organism as balance of nervous processes ($p_{b-e} < 0.05$), latent period simple audio-motor reaction of young women and latent simple audio-motor reaction of young men. Similar results were obtained during studies conducted in normal living conditions during the period immediately preceding the quarantine period [1, 10]. The fact that rather stable results in the dynamics of the studied period were characteristic of the data on the ratio of the number of premature reactions, reactions with delays in accurate reactions during the determination of BNP characteristics was noteworthy. Finally, it should be noted that the identified trends in the vast majority of cases (latent period of simple visual-motor reaction, latent period of simple visual-motor reaction of young, mobility and balance of nervous processes (among young women), latent period of simple audio-motor reaction (among young men) confirmed intergroup differences ($p_{n-cl} < 0.05-0.001$).

Conclusions

1. There is a significant improvement of indicators that indicate such characteristics of functional capabilities and adaptive resources of the organism as: latent period mobility of nervous processes in young women and also the latent period of simple visual-motor reaction ($p_{b-e} < 0.05$), latent period of differentiated visual-motor reaction ($p_{b-e} < 0.05$), balance of nervous processes in young men under the conditions of using the distance format of the educational process.

2. There was a marked improvement in indicators that noted such characteristics of functional capabilities and adaptive resources of the organism as balance of nervous processes ($p_{b-e} < 0.05$), latent period of simple audio-motor reaction in young women and latent simple audio-motor reaction in young men under the conditions of using the traditional classroom format of the educational process.

3. The identified trends in the vast majority of cases (latent period of simple visual-motor reaction, latent period of differentiated visual-motor reaction, mobility and balance of nervous processes (among young women), latent period of simple audio-motor reaction (among young men) confirmed intergroup differences ($p_{n-cl} < 0.05-0.001$).

4. Prospects for further research are to develop effective health technologies that provide a preventive educational environment in the Free Economic Zone and take into account the patterns of development of leading psychophysiological functions of organism of student youth, which is in the use of remote (on-line) and classroom (off-line) forms of organization of the educational process.

References

1. Moroz VM, Makarov SYu, Serebrennikova OA, Serheta IV. Navchalnyi stres ta psykhofiziologichni kryterii otsinky adaptatsiinykh mozhlyvostei orhanizmu studentiv zakladiv vyshchoi medychnoi osvity. Vinnytsya : TOV "TVORY", 2020. 184 s. [in Ukrainian]
2. Akhtar M, Kroener-Herwig B. Coping styles and socio-demographic variables as predictors of psychological well-being among international students belonging to different cultures. *Curr. Psychol.* 2019;38:618–626. doi:10.1007/s12144-017-9635-3
3. Cvetkovski S, Jorm AF, Mackinnon AJ. An analysis of the mental health trajectories of university students compared to their community peers using a national longitudinal survey. *Stud. High. Educ.* 2019;44:185–200. doi:10.1080/03075079.2017.1356281
4. Dodd RH, Dadaczynski K, Okan O, McCaffery KJ, Pickles K. Psychological Wellbeing and Academic Experience of University Students in Australia during COVID-19. *Int. J. Environ. Res. Public Health.* 2021;18(3):866. doi:10.3390/ijerph18030866
5. Hollingworth S. Performances of social class, race and gender through youth subculture: Putting structure back in to youth subcultural studies. *Journal Of Youth Studies.* 2015;18(10):1237–1256. doi:10.1080/13676261.2015.1039968

6. Huckins JF, Wang W, Hedlund E, Rogers C, Nepal SK, Wu J, et al. Mental Health and Behavior of College Students During the Early Phases of the COVID-19 Pandemic: Longitudinal Smartphone and Ecological Momentary Assessment Study. *Journal of Medical Internet Research*. 2020;22(6):e20185. doi:10.2196/20185
7. Lai J, Ma S., Wang Y, Cai Z, Hu J, Wei N, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open*. 2020;3(3):e203976. doi:10.1001/jamanetworkopen.2020.3976
8. Naser AY, Dahmash EZ, Al-Rousan R, Alwafi H, Alrawashdeh HM, Ghoul I, et al. Mental health status of the general population, healthcare professionals, and university students during 2019 coronavirus disease outbreak in Jordan: A cross-sectional study. *Brain Behav*. 2020;10(8):e01730. doi:10.1002/brb3.1730
9. Nelson A, Pettitt J, Flannery N. Allen Rapid assessment of psychological and epidemiological correlates of COVID-19 concern, financial strain, and health-related behavior change in a large online sample. *Int J Methods in Psychiatr Res*. 2020;21(3):169–184. doi:10.1371/journal.pone. 0241990
10. Vugt M, Kameda T. Evolution of the social brain: Psychological adaptations for group living. In book: *Mechanisms of social connection: From brain to group*. American Psychological Association, 2014. pp.335–355. doi:10.1037/14250-019

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FEATURES OF MENTAL AND BEHAVIOR DISORDERS AMONG MILITARY PERSONNEL IN PEACE TIME AND SPECIAL PERIOD AND ITS MEDICAL AND SOCIAL IMPORTANCE

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A retrospective analysis of statistical data on the level, structure, dynamics of the general, hospitalized morbidity rate of mental disorders among military personnel of Ukrainian Armed Forces and health status dismissal based on long-term observation data (2008–2017) as well as comparison of indicators of the period 2008–2013 and 2014–2017 on the basis of official statistical reporting has been performed. It was discovered that in the structure of the total incidence of military personnel of Ukrainian Armed Forces on the class V for the period 2014–2017 there was a redistribution of all categories of military personnel in comparison with 2008–2013 (in the case of officers as well as contract servicemen, the overall morbidity decreased reliably). It has been established that, starting from 2014, the rates of health-related layoffs for class V diseases increased among officers with the highest rates by 2015 (in comparison with 2013 at 7 times) and the contract servicemen by 2016 (as compared to 2013, 5.3 times) with subsequent decrease. The revealed features of mental health disorders in military personnel and their consequences on the basis of long-term observation are priority for development and the introduction of an effective psycho-medical intervention system in defense forces based on NATO standards.

Key words: military personnel of the Armed Forces of Ukraine, general morbidity, hospitalized illness, dismissal due to health state, mental and behavior disorders.

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ОСОБЛИВОСТІ РОЗЛАДІВ ПСИХІКИ ТА ПОВЕДІНКИ У ВІЙСЬКОВОСЛУЖБОВЦІВ В МИРНИЙ ЧАС ТА ОСОБЛИВИЙ ПЕРІОД ТА ЇХ МЕДИКО-СОЦІАЛЬНЕ ЗНАЧЕННЯ

Було проведено ретроспективний аналіз статистичних даних рівня, структури, динаміки загальної, госпіталізованої захворюваності на психічні розлади у військовослужбовців ЗС України та звільнень за станом здоров'я за даними багаторічного спостереження (2008–2017 рр.) та порівняння показників періоду 2008–2013 рр. з 2014–2017 рр. за даними офіційної галузевої статистичної звітності. Виявили, що в структурі загальної захворюваності військовослужбовців ЗС України за V класом за період 2014–2017 рр. відбувся перерозподіл у всіх категорій військовослужбовців у порівнянні з 2008–2013 рр. (у офіцерів та військовослужбовців за контрактом загальна захворюваність достовірно зменшилась). Встановили, що починаючи з 2014 р. показники звільнень за станом здоров'я за V класом хвороб у офіцерів мала тенденцію до збільшення з максимальними показниками у 2015 р. (у порівнянні з 2013 р. у 7 разів) та військовослужбовців за контрактом у 2016 р. (у порівнянні з 2013 р. у 5,3 рази) з подальшим зниженням. Виявлені особливості порушень ментального здоров'я у військовослужбовців та їх наслідки за даними багаторічного спостереження є пріоритетними для розроблення та запровадження дієвої системи медико-психологічної допомоги в силах оборони, адаптованої до стандартів НАТО.

Ключові слова: військовослужбовці ЗС України, загальна захворюваність, госпіталізована захворюваність, звільнення за станом здоров'я, розлади психіки та поведінки.

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In the last decade, in Ukraine, as in many countries of the world, under the influence of economic, social, psychological and environmental factors, there has been an increase in the incidence of mental diseases, which is mainly due to non-psychotic mental disorders, which include neuroses, reactions to stress, personality disorders and other violations [1]. In the conditions of a long socio-economic crisis, the socio-psychological factors of mental disorders acquire a significant specific weight, which leads to the strengthening of the internal conflict of a person and contributes to their even greater prevalence [7].