THE LEVEL OF DEPRESSION AS ONE OF THE RISK FACTORS FOR SUICIDE AMONG THE POPULATION OF SEMEY CITY (ABAY REGION, KAZAKHSTAN)

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Abstract

Introduction. Suicide is an urgent medical and social problem of modern society, showing an upward trend in many countries of the world. according to WHO (2021), 700,000 people die of suicide worldwide, 10-20 times more people attempt suicide every year,. The majority (77%) of these deaths occur in low- or middle-income countries

Aim: this study aimed to determine of degree of depression among population of Semey city of Abay region in Kazakhstan.

Material and methods: a cross-sectional study was carried out in the Semey city of Abay region Kazakhstan. A special questionnaire was used for determining of degree of depression.

Results. A total number of participants was 159, of these 52,8% were male, 47,2% were female, the mean age was 36,92 years. The lowest balls of the Biological factors were in the age group of 31-40 years (5,06 balls). Comparison of factors according to gender is showed significant difference in biological block (p=0,009). Participants who have college level of education showed the lowest balls in the biological factors (p=0,000) and psychological health (p=0,000).

Conclusion. Participants showed the presence of risk of all three factors as in the biological, the "basic acquisitions" and psychological health factors. The level of depression was higher in college graduates and service sector workers.

Key words: depression, suicide, risk factors, Kazakhstan

Резюме

УРОВЕНЬ ДЕПРЕССИИ КАК ОДИН ИЗ ФАКТОРОВ РИСКА СУИЦИДА СРЕДИ НАСЕЛЕНИЯ ГОРОДА СЕМЕЙ (АБАЙСКАЯ ОБЛАСТЬ, КАЗАХСТАН)

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Введение. Суицид - актуальная медико-социальная проблема современного общества, демонстрирующая тенденцию к росту во многих странах мира. Ежегодно, по данным ВОЗ (2021), в мире от самоубийств умирает 700 000 человек, в 10-20 раз больше людей совершают попытки самоубийства. Большинство (77%) этих смертей происходит в странах с низким или средним уровнем дохода.

Цель исследования определить степень депрессии среди населения города Семей Абайской области Казахстана.

Материал и методы: было проведено одномоментное поперечное исследование в городе Семей Абайской области Казахстана. Для определения степени депрессии использовался специальный опросник.

Результаты. Общее количество участников составило 159 человек, из них 52,8% мужчин, 47,2% женщин, средний возраст 36,92 года. Самые низкие балы по биологическому фактору были в возрастной группе 31-40 лет (5,06 бала). Сравнение факторов в зависимости от пола показало значительную разницу в биологическом блоке (p=0,009). Участники, имеющие высшее образование, показали самые низкие баллы по биологическому фактору (p=0,000) и психологическому здоровью (p=0,000).

Выводы. Участники показали наличие риска по всем трем факторам, как по биологическому, так и по «базовым приобретениям» и психологическому здоровью. Уровень депрессии был выше у выпускников колледжей и работников сферы обслуживания.

Ключевые слова: депрессия, суицид, факторы риска, Казахстан.

Түйіндеме

ҚАЗАҚСТАН, АБАЙ ОБЛЫСЫ, СЕМЕЙ ҚАЛАСЫНЫҢ ТҰРҒЫНДАРЫ АРАСЫНДА СУИЦИД ҚАУПІНІҢ ФАКТОРЛАРЫНЫҢ БІРІ РЕТІНДЕ ДЕПРЕССИЯ ДЕҢГЕЙІ

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Кіріспе. Суицид-әлемнің көптеген елдерінде өсу үрдісін көрсететін қазіргі қоғамның өзекті медициналық-әлеуметтік мәселесі. Жыл сайын, ДДҰ (2021) мәліметтері бойынша, әлемде 700 000 адам суицидтен қайтыс болады, 10-20 есе көп адам өз-өзіне қол жұмсауға тырысады. Бұл өлімнің көпшілігі (77%) табысы төмен немесе орташа деңгейдегі елдерде болады.

Мақсаты: бұл зерттеу Қазақстанның Абай облысы Семей қаласының тұрғындары арасындағы депрессия дәрежесін анықтауға бағытталған.

Құралдар мен әдістер: Қазақстанның Абай облысы Семей қаласында бір мезгілде көлденең зерттеу жүргізілді. Депрессия дәрежесін анықтау үшін арнайы сауалнама қолданылды.

Нәтижелер. Қатысушылардың жалпы саны 159 адамды құрады, оның 52,8% - ы ерлер, 47,2% - ы әйелдер, орташа жасы 36,92 жас. Биологиялық факторлардың ең төменгі ұпайлары 31-40 жас тобында болды (5,06 балл). Гендерге байланысты факторларды салыстыру биологиялық блокта айтарлықтай айырмашылықты көрсетті (p=0,009). Жоғары білімі бар қатысушылар биологиялық факторлар (p=0,000) және психологиялық денсаулық (p=0,000) бойынша ең төмен балл жинады.

Қорытындылар. Қатысушылар биологиялық және "базалық сатып алулар" және психологиялық денсаулық бойынша барлық үш фактор бойынша қауіп бар екендігін көрсетті. Колледж түлектері мен қызмет көрсету қызметкерлерінде депрессия деңгейі жоғары болды.

Түйінді сөздер: депрессия, суицид, қауіп факторлары, Қазақстан.

Introduction

Suicide is an urgent medical and social problem of modern society, showing an increasing trend in many countries of the world. Every year, according to WHO (2021), 700,000 deaths people die by suicide worldwide, 10 to 20 times more people attempt suicide. The majority (77%) of these deaths occurs in low- or middle-income countries [12], [1]. Suicidal behavior lacks simple explanations in scientific terms. It is never caused by a single factor or event. The factors that lead a person to take their own life are numerous and complex. When trying to understand the reasons for suicidal behavior, it is necessary to consider the individual's physical and mental health, stressful life events, as well as social and cultural factors [10].

According to early research findings, less than 10% of individuals with suicidal attempts were found to have a depressive state [5]. However, when using standardized depression assessment tools, depression was detected in approximately two-thirds of cases [9], [8], [2]. Depressive disorder is a common mental illness characterized by prolonged periods of low mood or loss of interest in usual activities, as well as a diminished ability to experience pleasure from them [4]. Anyone can get ill by depression. People who have history of abuse, loss of relatives, or other high-pressure situations are more vulnerable to depression. Women are more susceptible to depression than men. [6]. Many investigations discovered that 3.8% of the population suffers from depression, including 5% of adults (6% of women and 4% of men) and 5.7% is belonged to people aged older than 60. Nearly 280 million people is suffered depression in the world. [7]. The incidence of depression in women is about 50% higher than in men. It has been determined that over than 10% of women during pregnancy and after childbirth worldwide suffer from depression [11]. One of the reasons of suicide is depression. The fourth leading cause of death among young people aged 15-29 is suicide. [3].

This investigation aimed to determine of degree of depression among population of Semey city of Abay region in Kazakhstan.

Materials and Methods. A cross-sectional study was carried out in the Semey city of Abay region Kazakhstan. A special questionnaire was used for determining the degree of depression which could be one of the reasons of suicide. This form is work out for investigation among different age cohorts, gender groups, educational attainment, and occupations, with aimed to identify the level of risk for developing depression and impulses towards suicide considering a comparison of biological risk factors along with psychological and social risks. This diagnostic instrument, created based on the idea of personal and social mental health, facilitates a thorough examination of the basic processes underlying depression and risk of suicide. The examination instrument uses a ten-point scale to estimate all study characteristics, including biological factors, «basic acquisitions», and psychological health. There are the three points according to this scale: High risk: 0-2.99; Presence of risk: 3-6.99; Absence of risk: 7-10.

The survey was conducted between June 2023 and December 2023 in the different public place of Semey city of Abay region in Republic of Kazakhstan. *The inclusion criteria* were voluntary agreement to participate in the investigation and onset age 18 or elder. The *exclusion criteria* were disapproval to participate and citizens from other regions of Kazakhstan. All persons who took participation in the study gave written agreement after receiving detailed information about the study's aims and the confidentiality of their individual data. Persons' information was encoded with a unique identifier. The link between this identifier and the individual identification details was maintained in a file accessible only to the database custodian. Access to the encoded (secure) database was granted to other person. Before data collection began, the study obtained approval from the Ethics Committee of Semey Medical University. (Protocol No. 4 of November 20, 2021).

Statistical analysis

We use descriptive statistics for analyze the data collection. The choose of statistical methods for analysis was considered according to the type of variables

examined. The Mean value and its standard deviation were defined, and Student's t-test was used to estimate the significance of the differences. ANOVA was used to define the differences between the means of more than two groups. The data collected were analyzed statistically using SPSS version 20.0. (IBM Ireland Product Distribution Limited, Ireland).

Results

A total number of participants was 159, of these, 84 (52,8%) were male,75 (47,2%) were female. Most of the patients were Kazakh nationality (69,8%). The mean age was 36,9 (SD=16,325) years; max 68 years, min 16 years. The main age group 21-30 years old accounted for 34,0% of the total study sample. Most of the participants had a high school education (49,7%), the majority of study participants work in the service sector. The baseline patients' characteristics are presented in Table 1.

There is no significant difference between factors according to age groups. The lowest balls of the Biological factors were in the age group of 31-40 years (5,06 balls). Comparison of factors according to gender is showed significant difference in biological block (p=0,009). Participants who have college level of education showed the lowest balls in the biological factors (p=0,000) and psychological health (p=0,000). Comparison of factors according to age groups, gender, education level and occupation are presented on the tables 2, 3, 4, 5.

Table 1.

Participant Characteristics (n=159).

Characteristics	N	%
Gender		
Male	84	52,8
Female	75	47,2
Age (years)		
To 20	23	14,5
21-30	54	34,0
31-40	16	10,1
41-50	23	14,5
Up to 51	43	27,0
Nationality		
Kazakh	111	69,8
Others	48	30,2
Education level		
Higher	79	49,7
College	28	17,6
Secondary	52	32,7
Occupation		
Employees	41	25,8
Service sector	66	41,5
Laborers	7	4,4
Students	45	28,3

Table 2.

Comparison of factors according to age groups.

Block	Age (years)					AVOVA
	To 20	21-30	31-40	41-50	Up to 51	
Biological factors M (±SD)	5,62 (±2,11)	5,46 (±1,32)	5,06 (±1,16)	5,17 (±1,00)	5,23 (±1,20)	$F_4=0,650$, p=0,628
"Basic acquisitions" M (±SD)	6,70 (±1,26)	6,45 (±1,25)	6,21 (±1,08)	6,37 (±1,24)	6,32 (±1,24)	$F_4=0,507$, p=0,731
Psychological health M (±SD)	6,74 (±1,17)	6,39 (±1,39)	6,55 (±0,83)	6,10 (±0,94)	6,34 (±1,18)	$F_4=0,900$, p=0,465

Table 3.

Comparison of factors according to Gender.

Block	Gender		t, df, p
	Male	Female	
Biological factors M (±SD)	5,07 (±1,48)	5,64 (±1,18)	t=-2,663; df=157; p=0,009
"Basic acquisitions" M (±SD)	6,35 (±1,20)	6,49 (±1,25)	t=-0,706; df=157; p=0,481
Psychological health M (±SD)	6,25 (±1,15)	6,57 (±1,23)	t=1,683; df=157; p=0,094

Table 4.

Comparison of factors according to Education level.

Block	Education level			AVOVA
	Higher	College	Secondary	
Biological factors M (±SD)	5,87 (±1,10)	4,56 (±1,69)	4,95 (±1,26)	$F_2=14,578$, p=0,000
"Basic acquisitions" M (±SD)	6,61 (±1,17)	6,02 (±1,28)	6,34 (±1,23)	$F_2=2,661$, p=0,073
Psychological health M (±SD)	6,76 (±1,17)	5,72 (±1,09)	6,22 (±1,11)	$F_2=9,623$, p=0,000

Table 5.

Comparison of factors according to Occupation.

Block	Occupation				AVOVA
	Employees	Service sector	Laborers	Students	
Biological factors M (±SD)	5,34 (±1,13)	4,77 (±1,48)	5,11 (±1,41)	6,21 (±0,93)	$F_3=11,781$, p=0,000
"Basic acquisitions" M (±SD)	6,29 (±1,19)	6,15 (±1,28)	6,61 (±1,09)	6,89 (±1,07)	$F_3=11,781$, p=0,000
Psychological health M (±SD)	6,30 (±1,15)	5,96 (±1,07)	6,37 (±1,38)	7,15 (±1,05)	$F_3=3,67$, p=0,014

Discussion

The cluster of biological factors is estimated by a ten-point scale, which help to define the biological predisposition between pathological and normal development on such variables as: genetics, delivery complications and the first years of life, developmental disease in childhood and adolescence, psychological health. The mean level of biological factors in the participants was 5,34 (95% CI: 5,12-5,55) balls SD=1,38, minimal was 0,75 balls, maximal 7,50 ball. This level is corresponding to presence of risk.

According to age group biological factors was better in the age group of to 20 years, the worse balls was in the age group of 31-40 years but this difference was not significant (p=0,628). According to gender female participants had better results in the biological factors, this difference was significant (p=0,009).These persons who had higher education level biological factors were better in the comparison with people with college and secondary educational level, the worse balls of biological factors was in college graduates, the difference was significant (p=0,000). Students had better level of biological factors with comparison of employees, service sector workers and laborers. The worse balls were on the service sector workers this difference was significant (p=0,000).

The "basic acquisitions" block takes attention the deficiency or presence of certain essential acquisitions, and the level of mental health development is identified based on this scale. This ten-point scale section allows for the assess the level of maladaptive and adaptive mental health, as well as the lack and existence of the considered basic acquisitions including: confidence - disbelief; independence - vulnerability; confidence - doubt, guilt, shame; initiative - feelings of inferiority, restraint; diligence - avoidance of stress and difficulties; responsibility - irresponsibility; transparency - closeness. The mean level of "basic acquisitions" in the participants was 6,42 (95%CI: 6,22-6,61) balls SD=1,22, minimal was 3,86 balls, maximal 9,14 ball. This level is corresponding to presence of risk.

In the age group analysis, "basic acquisitions" were more favorable for individuals under 20 years old, while the lowest scores were observed in the 31-40 age group; however, this difference was not significant (p=0.731). In terms of gender, female participants performed better in "basic acquisitions," but this difference was also not significant. (p=0,481). Participants with higher education had more balls in the basic acquisitions in the comparison with people with college and secondary educational level, the worse balls were in college graduates but this difference was not significant (p=0,073). Students had better level of "basic acquisitions" factors with comparison of employees, service sector workers and laborers, the worse balls were in service sector workers the difference was significant (p=0,000).

The psychological health block assesses the lack or presence of particular elements of mental health. Using a ten-point scale, this section measures the range between maladaptive and adaptive levels of psychological health, as well as the lack and presence of key psychological health characteristics, which include: personal identification; the existence of a positive life scenario; decision-making skills; an internal locus of control; and personal resources. The mean level of psychological health in the participants was 6,40 (95%CI: 6,21-6,59) balls SD=2,00, minimal was 3,20 balls, maximal 9,00 ball. This level is corresponding to presence of risk.

In the analysis of age groups, the psychological health block scored higher in individuals under 20 years old, while the lowest scores were found in the 41-50 age group; however, this difference was not significant (p=0,465). Regarding gender, female participants showed better results in the psychological health block, but this difference was also not significant (p=0,094). Participants with higher education had more balls in psychological health block in the comparison with people with college and secondary educational level, the worse balls were in college graduates, the difference was significant (p=0,000). Students had better level of psychological health block with comparison of employees, service sector workers and laborers. The worse balls were on the service sector workers this difference was significant (p=0,014).

Conclusion

Participants showed the presence of risk of all three factors as in the biological, the "basic acquisitions" and psychological health factors. The level of depression was higher in men rather than women due to low balls in the biological, the "basic acquisitions" and psychological health factors. Age group to 20 years showed better results in all factors with comparison the other age group. The level of depression was higher in college graduates and service sector workers due to low balls in all three factors.

Literature:

1. Ahmed H.U. Hossain M.D., Aftab A., Soron T.R., Alam M.T., Chowdhury M.W.A., Uddin A. Suicide and depression in the World Health Organization South-East Asia region: A systematic review. WHO South-East Asia journal of public health. 2017, №6 (1). P. 60-66. DOI: 10.4103/2224-3151.206167. PMID: 28597861.

2. Conejero I., Olie E., Calati R., Ducasse D., Courtet P. Psychological pain, depression, and suicide: recent evidences and future directions. Current psychiatry reports. 2018. №20. P.1-9. DOI: 10.1007/s11920-018-0893-z

3. Evans-Lacko S., Aguilar-Gaxiola S., Al-Hamzawi A., et al. Socio-economic variations in the mental health treatment gap for people with anxiety, mood, and substance use disorders: results from the WHO World Mental Health (WMH) surveys. Psychol Med. 2018. №48(9). P.1560-1571. DOI: 10.1017/S0033291717003336

4. Haque A., Reddi V., Giallanza T. Deep learning for suicide and depression identification with unsupervised label correction. Artificial Neural Networks and Machine Learning–ICANN 2021: 30th International Conference on Artificial Neural Networks, Bratislava, Slovakia, September 14–17, 2021, Proceedings, Part V 30. – Springer International Publishing, 2021. 436-447. https://doi.org/10.48550/arXiv.2102.09427

5. Hedegaard H., Curtin S.C., Warner M. Increase in Suicide Mortality in the United States, 1999-2018. NCHS Data Brief. 2020 Apr. (362). P.1-8. PMID: 32487287.

6. Hedstrom A.K. Bellocco R., Hossjer O., Ye W., Trolle L.Y., Akerstedt T. The relationship between nightmares, depression and suicide. Sleep medicine. 2021. №77. C.1-6. DOI: 10.1016/j.sleep.2020.11.018

7. Institute of Health Metrics and Evaluation. Global Health Data Exchange (GHDx) - на английском языке (as of March 4, 2023)

8. Kalin N.H. Insights into suicide and depression. American Journal of Psychiatry. 2020. №177 (10). C.877-880. DOI: 10.1176/appi.ajp.2020.20081207

9. Orsolini L. et al. Understanding the complex of suicide in depression: from research to clinics. Psychiatry investigation. 2020. №17 (3). P. 207. DOI: 10.30773/pi.2019.0171

10. Turecki G. Brent D.A., Gunnell D., O'Connor R.C., Oquendo M.A., Pirkis J., Stanley B.H. Suicide and suicide risk. Nature reviews Disease primers. 2019. №5 (1). P.74. DOI: 10.1038/s41572-019-0121-0. PMID: 31649257.

11. Woody C.A., Ferrari A.J., Siskind D.J., Whiteford H.A., Harris M.G. A systematic review and meta-regression of the prevalence and incidence of perinatal depression. J Affect Disord. 2017. №219. P.86–92. DOI: 10.1016/j.jad.2017.05.003

12. Bertuccio, P., Amerio, A., Grande, E., La Vecchia, C., Costanza, A., Aguglia, A.,Odone, A. Global trends in youth suicide from 1990 to 2020: an analysis of data from the WHO mortality database. 2024. EClinicalMedicine, 70.

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