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## AWARENESS OF THE "ONE HEALTH" PRINCIPLES AMONG SPECIALISTS OF THE PUBLIC HEALTH SYSTEM AND VETERINARY SERVICE OF KAZAKHSTAN

**Togzhan Zh. Akpanova**<sup>1-2</sup>, <http://orcid.org/0000-0002-9041-1983>

**Tolebay K. Rakhypbekov**<sup>3</sup>, <http://orcid.org/0000-0002-5699-3086>

**Akmaral K. Mussakhanova**<sup>4</sup>, <http://orcid.org/0000-0002-0399-5045>

**Marzhan A. Dauletyarova**<sup>5</sup>, <http://orcid.org/0000-0001-8178-4051>

**Ulzhan S. Jamedinova**<sup>6</sup>, <https://orcid.org/0000-0003-1671-289X>

<sup>1</sup> The Department of Science and Human Resources of the Department of Science and Human Resources of the Ministry of Health of the Republic of Kazakhstan, Astana, Republic of Kazakhstan;

<sup>2</sup> «Astana Medical University» NJSC, Astana city, Republic of Kazakhstan;

<sup>3</sup> «Primary Health Care» National Association, Astana, Republic of Kazakhstan;

<sup>4</sup> Department of Public Health and Management, «Astana Medical University» NJSC, Astana, Republic of Kazakhstan;

<sup>5</sup> LLC «Next Event Group», Astana city, Republic of Kazakhstan;

<sup>6</sup> «Semey Medical University» NJSC, Semey, Republic of Kazakhstan.

**Introduction:** The «One Health» concept aims to recognize the inseparability of human health from the health of other animals and the environment. The main objective of the concept is to ensure the timely exchange of information between sectors. Effective implementation of the «One Health» concept requires the coordinated and cohesive work of health and veterinary professionals.

**The purpose of the work** is to study the awareness of the One Health principles among the specialists of the public health system and veterinary service of Kazakhstan.

**Materials and methods.** The cross-sectional study was conducted by questioning of specialists, 771 specialists whose activities are directly or indirectly related to the functions of implementation of the principles of "One Health" took part in the survey.

Statistical processing of the results was carried out using the statistical package of the program SPSS (Statistical Package for the Social Sciences) version 23.0 for Windows (NAO "Medical University of Astana"). Correlation analysis was carried out using Pearson's correspondence criterion.

**Results.** Only 282 (36.6%) respondents use the principles of «One Health» in their professional activities, only 294 (38.1%) respondents have theoretical knowledge of the principles of «One Health» and 195 (25.3%) are not aware of these principles) specialties and medical workers took part in the survey.

**Conclusion.** The low level of awareness of «One Health» among professionals represents a serious obstacle to the implementation of the concept.

**Keywords:** «One Health», Delivery of Health Care.

Резюме

## ОСВЕДОМЛЕННОСТЬ СПЕЦИАЛИСТОВ СИСТЕМЫ ЗДРАВООХРАНЕНИЯ И ВЕТЕРИНАРНОЙ СЛУЖБЫ КАЗАХСТАНА О ПРИНЦИПАХ «ЕДИНОЕ ЗДОРОВЬЕ»

**Тогжан Ж. Акпанова**<sup>1-2</sup>, <http://orcid.org/0000-0002-9041-1983>

**Толбай К. Рахыпбеков**<sup>3</sup>, <http://orcid.org/0000-0002-5699-3086>

**Акмарал К. Мусаханова**<sup>4</sup>, <http://orcid.org/0000-0002-0399-5045>

**Маржан А. Даулетьярова**<sup>5</sup>, <http://orcid.org/0000-0001-8178-4051>

**Улжан С. Джамединова**<sup>6</sup>, <https://orcid.org/0000-0003-1671-289X>

<sup>1</sup> Управление медицинского образования Департамента науки и человеческих ресурсов Министерства здравоохранения Республики Казахстан, г. Астана, Республика Казахстан;

<sup>2</sup> НАО «Медицинский университет Астана», г. Астана, Республика Казахстан;

<sup>3</sup> Национальная Ассоциация «Primary Health Care», г. Астана, Республика Казахстан;

<sup>4</sup> Кафедра общественного здоровья и менеджмента, НАО «Медицинский университет Астана», г. Астана, Республика Казахстан;

<sup>5</sup> ТОО «Next Event Group», г. Астана, Республика Казахстан;

<sup>6</sup> НАО «Медицинский университет Семей», г. Семей, Республика Казахстан.

**Актуальность.** Концепция «Единое здоровье» направлена на признание неразрывности здоровья человека со здоровьем других животных и окружающей средой. Основной целью концепции является обеспечение своевременного обмена информацией между секторами. Для эффективного внедрения концепции «Единое здоровье» необходима слаженная и сплоченная работа специалистов в области здравоохранения и ветеринарной службы.

**Целью работы** является изучение осведомленности о принципах «Единое здоровье» среди специалистов системы здравоохранения и ветеринарной службы Казахстана.

**Материалы и методы.** В поперечное исследование проводилось путем анкетирования специалистов, в анкетировании приняли участие 771 специалист, деятельность которых прямо или косвенно сопряжена с функциями внедрения принципов «Единое здоровье».

Статистическая обработка результатов проводилась с использованием статистического пакета программы SPSS (Statistical Package for the Social Sciences) версии 23.0 для Windows (НАО "Медицинский университет Астаны"). Корреляционный анализ проводился с использованием критерия соответствия Пирсона.

**Результаты.** Принципы «Единое здоровье» в своей профессиональной деятельности использует только 282 (36.6%) респондента, только 294 (38.1%) опрошенных в теории владеют знаниями о принципах «Единое здоровье» и 195 (25.3%) не осведомлены о данных принципах).

**Выводы.** Низкий уровень осведомленности о «Едином здоровье» среди специалистов представляет собой серьезное препятствие на пути к внедрению данной концепции.

**Ключевые слова:** «Единое здоровье», система здравоохранения.

Түйіндеме

## ҚАЗАҚСТАННЫҢ ДЕНСАУЛЫҚ САҚТАУ ЖҮЙЕСІ МЕН ВЕТЕРИНАРИЯЛЫҚ ҚЫЗМЕТІ МАМАНДАРЫНЫҢ "БІРЫҢҒАЙ ДЕНСАУЛЫҚ" ҚАҒИДАТТАРЫ ТУРАЛЫ ХАБАРДАР БОЛУЫ

**Тогжан Ж. Акпанова**<sup>1-2</sup>, <http://orcid.org/0000-0002-9041-1983>

**Толбай К. Рахыпбеков**<sup>3</sup>, <http://orcid.org/0000-0002-5699-3086>

**Акмарал К. Мусаханова**<sup>4</sup>, <http://orcid.org/0000-0002-0399-5045>

**Маржан А. Даулетьярова**<sup>5</sup>, <http://orcid.org/0000-0001-8178-4051>

**Улжан С. Джамединова**<sup>6</sup>, <https://orcid.org/0000-0003-1671-289X>

<sup>1</sup> Қазақстан Республикасы Денсаулық сақтау министрлігі Ғылым және адам ресурстары департаменті медициналық білім басқармасы, Астана қ., Қазақстан Республикасы;

<sup>2</sup> «Астана медицина университеті» КеАҚ, Астана қ., Қазақстан Республикасы;

<sup>3</sup> «Primary Health Care» Ұлттық Қауымдастық, Астана қаласы, Қазақстан Республикасы;

<sup>4</sup> «Астана медицина университеті» КеАҚ, Жалпы денсаулық және менеджмент кафедрасы, Астана қ., Қазақстан Республикасы;

<sup>5</sup> «Next Event Group» ЖШС, Астана қ., Қазақстан Республикасы;

<sup>6</sup> «Семей медицина университеті» КеАҚ, Семей қ., Қазақстан Республикасы.

**Кіріспе:** «Бірыңғай денсаулық» тұжырымдамасы адам денсаулығының басқа жануарлардың денсаулығы мен қоршаған ортамен ажырамастығын тануға бағытталған. Тұжырымдаманың негізгі мақсаты секторлар арасында уақытылы ақпарат алмасуды қамтамасыз ету болып табылады. «Бірыңғай денсаулық» тұжырымдамасын тиімді енгізу үшін денсаулық сақтау және ветеринариялық қызмет саласындағы мамандардың үйлесімді және ұйымшыл жұмысы қажет.

**Жұмыстың мақсаты** Қазақстанның денсаулық сақтау жүйесі мен ветеринариялық қызмет мамандары арасында "Бірыңғай денсаулық" қағидаттары туралы хабардарлықты зерделеу болып табылады.

**Материалдар мен әдістер.** Келденең зерттеу мамандарға сауалнама жүргізу арқылы жүргізілді, сауалнамаға 771 маман қатысты, олардың қызметі "бірыңғай денсаулық" қағидаттарын енгізу функцияларымен тікелей немесе жанама байланысты.

Нәтижелерді статистикалық өңдеу Windows үшін SPSS (Statistical package for the Social Sciences) бағдарламасының 23.0 нұсқасының ("Астана медицина университеті" КеАҚ) статистикалық пакетін пайдалана отырып жүргізілді. Корреляциялық талдау Пирсонның сәйкестік критерийін қолдана отырып жүргізілді.

**Нәтижесі.** «Бірыңғай денсаулық» қағидаттарын өзінің кәсіби қызметінде респонденттердің тек 282-і (36.6%) пайдаланады, теорияда сұралғандардың тек 294-і (38.1%) «Бірыңғай денсаулық» қағидаттары туралы білімге ие және 195-і (25.3%) осы қағидаттар туралы білмейді.

**Қорытынды.** Мамандар арасында «Бірыңғай денсаулық» туралы хабардарлықтың төмен деңгейі осы тұжырымдаманы енгізу жолында елеулі кедергі болып табылады.

**Түйін сөздер:** «Бірыңғай денсаулық», денсаулық сақтау жүйесі.

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**Introduction**

According to the World Health Organization (WHO), «One Health» is an interdisciplinary approach to the study of public health problems in humans, animals, and their environment [9, 17]. The aim of «One Health» is to prevent and control the emergence as well as spread of zoonotic pathogens [11,20], it includes surveillance of reservoir animals, identification of factors contributing to emergence and actions to control them [22]. Over the years, zoonotic infections have caused numerous outbreaks and pandemics and millions of deaths, the most recent being the COVID-19 pandemic [12]. «One Health» is recognized as a core element of disease control and prevention strategies [24].

One of the key components of the «One Health» approach to epidemic preparedness is to increase awareness and knowledge about new infectious diseases, prevention and risk reduction [6]. Despite the potential of the «One Health» policy, this approach has not gained much awareness or support in the medical community [7, 19].

The implementation of the «One Health» approach requires policy change on the part of the government, changes in the systems in place, and professional readiness of professionals (health and veterinary services) [2]. Despite the growing attention to strengthening the capacity of «One Health» at the global level, problems remain in the development and implementation of real measures [25].

The World Health Organization emphasizes that the lack of training and low awareness of the «One Health» principles among health professionals represents a major obstacle to the implementation of this principle [1]. The important role of health and veterinary professionals in the implementation of the «One Health» approach should be emphasized. as the approach cannot be realized without their involvement [19].

In addition, studies have been carried out to confirm the positive impact of the «One Health» concept in the control of zoonotic infections. For this reason, it is necessary to raise awareness of this approach among the medical and veterinary community [19].

In the Republic of Kazakhstan the concept of «One Health» is at the stage of formation.

**The purpose of the work** is to study the awareness of the principles of «One Health» among the specialists of the health care system of Kazakhstan.

**Materials and Methods.** The design of this study is a cross-sectional. Based on the literature analysis [10], a questionnaire was developed to determine the readiness of public health and veterinary professionals.

The questionnaire was developed in the form of a web-based questionnaire and consists of two sections: (1) general information; (2) on «One Health». The second section was considered in two directions: (2.1) - level of respondents' awareness of the «One Health» approach (principles, tools, institutional framework); (2.2) - use of «One Health» principles in professional activities. The questionnaire was administered in WebAnketa, an informed consent form was provided at the beginning of the questionnaire informing the respondents that the questionnaire was anonymous, the study participants were warned that the results obtained from the survey would not have negative consequences for them, the answers would be used in a summarized form and only in this study confidentiality was guaranteed. The questionnaire was available for 10 months (October 2021-July 2022). Subsequently, the questionnaire was closed, and the collected data were downloaded. Respondents' answers that were incomplete were excluded from the study.

The questionnaire was adapted into Kazakh and Russian languages. The questionnaire was culturally and linguistically adapted according to international standards [3, 18].

The questionnaire was validated on a group of 20 professionals who did not participate in the main study.

When performing validation, the reliability, validity, and sensitivity of the instrument were analyzed. To check the reliability of the questionnaire, the internal consistency of the questionnaire was calculated by determining the Cronbach's  $\alpha$ -coefficient. The questionnaire has high validity (Cronbach's  $\alpha > 0.7$ ), which indicated a satisfactory level of reliability of the questionnaire scales.

To assess the authenticity of the content, we have assembled a group of six experts to work on this topic. First, the experts conducted an individual assessment of the questionnaire, followed by a joint assessment during a face-to-face meeting, at which they discussed the wording of the questions and answers, as well as the presentation of the questionnaire (structure and format). The results of the literature review were presented by experts and served as the basis for discussion.

Preliminary testing was conducted to obtain information about how the questionnaire works and whether it is possible to use it in real conditions, to assess its ease of understanding, acceptability and the possibility of filling it out in a reasonable time. The questionnaire was filled out among 20 people. After completing the questionnaire, they were asked to comment in a structured interview on any aspect that caused difficulties.

The survey consisted of 22 questions aimed at achieving the above-mentioned objectives (i.e. exploring existing cooperation between animal health, human health/public health, environmental protection sectors), collecting information on the existence and implementation of environmental protection activities and initiatives in 16 regions of Kazakhstan. 19 questions were closed-ended and 3 were open-ended. An informed consent form was provided at the beginning of the questionnaire, informing respondents that the questionnaire was anonymous and that by completing and submitting it, they voluntarily agreed to participate. Ethical approval was requested and received by the Local Bioethics Commission of Astana Medical University (Protocol №2 of 28.10.2021).

The readiness of human resource capacity was assessed by interviewing specialists 771 (n=771) whose activities are directly or indirectly related to the functions of implementation of One Health principles: epidemiologists (n=264), veterinarians (n=213), public health specialties (n=165) and medical workers (n=129). Respondents filling the inclusion criteria were taken into the study using purposive sampling method till required sample size was

achieved. A correlation analysis was carried out between the специальностям и length of service (in the industry, in the main specialty, in the specialty in the organization).

*Inclusion criteria:* – specialists related to sanitary and epidemiological welfare services and veterinarians and consent to participate in the survey.

*Exclusion criteria* - refusal and ineligible groups according to inclusion criteria.

**Results**

A total of 771 people who are related to this field of work (epidemiologists, public health professionals, veterinarians) and who voluntarily agreed to participate in the study were included.

Professionals of inter sectoral collaboration participated in the questionnaire. A total of 771 people participated in the survey (epidemiologists 264 (34.2%), veterinarians 213 (27.6%), public health specialists 165 (21.4%) and 129 (16.7%) health professionals.

These specialists by length of service in the industry, length of service in the given organization, and length of service in the specialty are presented in Table 1.

Table 1.

**length of service in the industry, length of service in the given organization, and length of service in the specialty.**

Variables	Specialty				P
	Epidemiologist abs. (%)	Public health specialist abs. (%)	Veterinarian abs. (%)	Medical professional abs. (%)	
<b>Length of service in the organization</b>					
Up to one year	87 (46.8%)	57 (30.6%)	12 (6.5%)	30 (16.1%)	<b>&lt;0.0001</b>
1-5 years	96 (36.4%)	54 (20.5%)	78 (29.5%)	36 (13.6%)	
6-10 years	54 (38.3%)	30 (21.3%)	39 (27.7%)	18 (12.8%)	
11 and more years	27 (15%)	24 (13.3%)	84 (46.7%)	45 (25%)	
<b>Industry experience</b>					
Up to one year	33 (55%)	18 (30%)	6 (10%)	3 (5%)	<b>p&lt;0.0001</b>
1-5 years	60 (29.4%)	66 (32.4%)	39 (19.4%)	39 (19.4%)	
6-10 years	60 (35.7%)	36 (21.4%)	36 (21.4%)	36 (21.4%)	
11 and more years	111 (32.7%)	45 (13.3%)	132 (38.9%)	51 (15%)	
<b>Length of service in the specialty</b>					
Up to one year	48 (57.1%)	27 (32.1%)	6 (7.1%)	3 (3.6%)	<b>p&lt;0.0001</b>
1-5 years	66 (30.1%)	57 (26%)	48 (21.9)	48 (21.9)	
6-10 years	54 (36%)	39 (26%)	30 (20%)	27 (18%)	
11 and more years	96 (30.2%)	42 (13.2%)	129 (40.6%)	51 (16%)	

In our study, the length of service in the industry, in the organization and in the specialty was taken into account.

As demonstrated in Table 1, the study was mainly attended by professionals with more than 11 years of professional experience 318 (41.2%), among which the majority were veterinary professionals 129 (40.6%). Also, professionals with more than 11 years of experience in the industry participated in the study 339 (43.9%), among them most of them were veterinary professionals 132 (38.9%). The respondents mostly had 1-5 years of experience in the organization, 264 (34.2%), among them epidemiologists 96 (36.4%).

The results show a correlation between the length of service (in the industry, in the main specialty, in the specialty in the organization) and specialties (p<0.0001).

Only 282 (36.6%) respondents use the principles of «One Health» in their professional activities, and 294 (38.1%) respondents have knowledge of the principles of «One Health» in theory. Among the respondents, 195 (25.3%) are not aware of these principles.

Also, Table 2 presents data on some questions regarding One Health by specialty.

The results show a correlation between the knowledge of the One Health and specialties (p<0.0001).

The concept of «One Health» was familiar to the 518 majority of respondents (67.3%). When asked what is included in «One Health», 513 (66.5%) respondents mentioned «human health», «animal health» and «environmental health» as important components to define «One Health». However, 198 (25.7%) respondents mentioned «unity of infectious diseases and epidemiology» and 60 (7.8%) «unity of zoonotic infections and environment». Also, 654 (84.8%) respondents realize that the implementation of «One Health» requires cross-sectoral collaboration between the ministries responsible for human, animal and environmental health, 118 (15.2%) respondents believe implementation is more dependent on local executive bodies.

Table 2.

## Variables regarding One Health by specialties.

Variables	Specialty				P
	Epidemiologist abs. (%)	Public health specialist abs. (%)	Veterinarian abs. (%)	Medical professional abs. (%)	
Do you know about One Health?					
yes, I use it in my professional activity	96 (34%)	66 (23.4%)	60 (21.3%)	60 (21.3%)	<0.0001
yes, only in the theoretical aspect	114 (39%)	72 (24.1%)	60 (20.4%)	48 (16.4%)	
no, I am not familiar with the principles of "One Health"	54 (27.7%)	27 (13.9%)	93 (47.7%)	21 (10.7%)	
What does "One Health" include?					
Unity of infectious diseases and epidemiologists	78 (39.4%)	36 (18.2%)	39 (19.7%)	45 (22.7%)	0.001
The unity of man-animal-environment	162 (31.6%)	123 (24.0%)	156 (30.4%)	72 (14.0%)	
The unity of zoonotic infections and the environment	24 (40.0%)	6 (10.0%)	18 (30.0%)	12 (20.0%)	
Where did you first learn about the principles of "One Health"?					
university base (basic)	36 (34.3%)	27 (25.7%)	27 (25.7%)	15 (14.3%)	<0.0001
in the process of work	135 (31.9%)	99 (23.4%)	105 (24.8%)	84 (19.9%)	
additional education	12 (23.5%)	18 (35.3%)	15 (29.4%)	6 (11.8%)	
Other	81 (42.2%)	21 (10.9%)	66 (34.4%)	24 (12.5%)	

When asked about the first acquaintance with the principles of «One Health», the respondents gave the following answer: 285 (54.9%) were acquainted with the principles of «One Health» in the course of professional activity and 106 (20.4%) respondents were acquainted with them during training at different levels, 128 (24.7%) respondents refer to the fact that they have a superficial understanding of these principles, obtained from various literary sources, mass media, etc. The question about the first acquaintance with the principles of «One Health» was answered in the following order.

More than 3/4 of public health professionals use the «One Health» principles in their professional activities: 96 (34 %) epidemiologists, 66 (23.4%) public health workers and 54 (19.1%) medical workers (Figure 1). Veterinary service specialists accounted for 23.5%. It is important to note that in both groups, only 1/3 utilize «One Health» principles in their practice to the fullest extent.

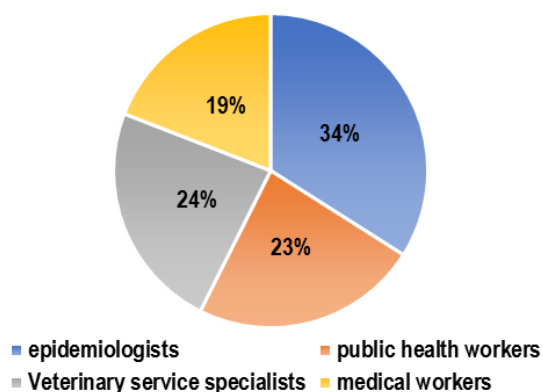


Figure 1: Utilization of «One Health» principles by specialty.

The need to include the principles of «One Health» in the educational process at all levels of training is noted by 735 (95.4%) respondents, the rest of the respondents believe that it is feasible in the process of practical activity.

Only 98 (12.8%) respondents believe that their knowledge of the principles of «One Health» is sufficient for their practical application, the rest expressed the need to increase their capacity.

There are 465 respondents (60.4%) involved in initiatives related to the interdisciplinary approach, which indicates the need to disseminate information regarding One Health among the medical and veterinary community.

#### Discussion

This study investigated the level of knowledge of «One Health» among health and veterinary professionals. The study demonstrated a low level of knowledge of «One Health» professionals [14].

It is important to realize that the primary link in the adoption of «One Health» is health and veterinary professionals, without them the potential of «One Health» cannot be realized.

The «One Health» principles can be defined as a generalized and flexible term that reflects a desire to address the challenges and interrelationships that exist between human, animal, and environmental health. This is the first time that a study has been conducted to investigate the awareness of intersectoral collaboration professionals regarding the «One Health» principles.

Our study, also confirms the study conducted by *Hristovski M.* [15] who stated that despite the growing popularity of the «One Health» concept, there is a problem with its recognition by the professional community and not enough understanding of the term.

To a greater extent, the principles of «One Health» among health professionals own 96 respondents in the specialty of epidemiology (34%), which is associated with the presence of the labor function «implementation of state sanitary and epidemiological control and supervision on the territory of the Republic of Kazakhstan», ideologically reflecting the main essence of the principles of «One Health».

In studies conducted by the World Health Organization and *van Herten J.* A key role in shaping the relationship

between «animal, human and environmental health» in the concept of «One Health» has been assigned to veterinary professionals [23]. Interestingly, in our study, veterinary professionals are less aware of these principles.

Despite the country's initiatives to address and shape the interrelationships that exist between human, animal and environmental health, similar results have been obtained in studies conducted on awareness research [5, 8, 10].

It is important to realize that the primary link in the adoption of «One Health» is health and veterinary professionals, without them the potential of «One Health» cannot be realized [21].

The «One Health» approach is being implemented by an increasing number of educational institutions around the world to build the capacity of competent employees of the global healthcare «One Health» [4, 16]. In many countries, e.g. Canada, UK, Italy, USA, in addition to the discipline of «One Health», the educational trajectory includes training in the specialty of «One Health» [1, 13]. In Kazakhstan, the current system of training of specialists in these sectors (university level and additional education) does not provide for the study of the conceptual framework of «One Health». The knowledge of specialists to a greater extent is acquired in the process of their professional activity.

The inclusion of the labor function to implement the principles of «One Health» in the professional standards of specialists of public health and veterinary services, epidemiologists, will allow not only to build an interdisciplinary and intersectoral approach to prevent zoonotic diseases in their work activities, but also the introduction of this concept in the educational process at the university level.

#### Conclusion

The «One Health» approach is aimed at the importance of intersectoral development, the relationship between "human-animal-environment".

According to the results of the study it was revealed that in Kazakhstan a low level of awareness of specialists, it is a serious obstacle to the implementation of the concept.

For effective implementation of the principles of «One Health», a key role is determined by raising awareness of specialists involved in intersectoral cooperation. In order to form a pool of specialists with relevant competencies, a key role is assigned to educational organizations in organizing advanced training courses and further dissemination of knowledge regarding the principles of «One Health».

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#### Information about the authors:

**Togzhan Zh. Akpanova** - Chief Expert of the Department of Science and Human Resources of the Department of Science and Human Resources of the Ministry of Health of the Republic of Kazakhstan, 3<sup>rd</sup> year PhD student of the Astana Medical University NJSC, Astana, Republic of Kazakhstan, email: t.shalaganova@mail.ru, <https://orcid.org/0000-0002-9041-1983>;

**Tolebay K. Rakhypbekov**<sup>3</sup>- Professor, researcher, chairman of the board «Primary Health Care» National Association, Astana, Republic of Kazakhstan, email: tolebay52@inbox.ru, <https://orcid.org/0000-0002-5699-3086>;

**Akmaral K. Mussakhanova** - Associate professor, researcher, Department of Public Health and Management of the Astana Medical University NJSC, Astana, Republic of Kazakhstan, e-mail: makmaral1@gmail.com, <https://orcid.org/0000-0002-0399-5045>;

**Marzhan A. Dauletyarova** - Researcher, LLC «Next Event Group», Astana, Republic of Kazakhstan, email:marzhanscc@gmail.com, <https://orcid.org/0000-0001-8178-4051>..

**Ulzhan S. Jamedinova** — Researcher, Epidemiology and Biostatistics Department, Semey Medical University NJSC, Semey, Republic of Kazakhstan, email: u.jamedinova@gmail.com, <https://orcid.org/0000-0003-1671-289X>.

#### Corresponding author:

**Togzhan Akpanova**, Chief Expert of the Department of Science and Human Resources of the Department of Science and Human Resources of the Ministry of Health of the Republic of Kazakhstan, 3<sup>rd</sup> year PhD student of the Astana Medical University NJSC

**Address:** Kazakhstan, 010000, Astana, Beibitshilik 49A.

**Phone:** +77057953949

**E-mail:** t.shalaganova@mail.ru