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IMPACT OF COVID-19 ON THE ACTIVITIES OF MEDIUM- AND SMALL-SIZE MEDICAL ENTERPRISES IN KAZAKHSTAN

[1]G. Kapanova, [1,2]L. Kosherbayeva, [1]S. Kalmakhanov, [2]N. Akhtaeva, [1]G. Dauliyeva

[1]Higher School of Public Healthcare, Al-Farabi Kazakh National University, Almaty, Kazakhstan;
[2]Kazakh National Medical University, Almaty, Kazakhstan

Background: The COVID-19 pandemic has led to a rethinking of the processes in medical organizations. Managers and medical staff faced new challenges that needed immediate response.
Aims: To study the impact of the COVID-19 pandemic on the economic conditions of private medium- (<250 employees) and small-size (<100 employees) enterprises (MSEH) and to assess psychological consequences of COVID-19.
Methods: In total, 45 managers (14 %) and 279 medical employees (86 %) of the 25 MSEH took part in a mixed-methods study. Qualitative interviews were conducted with MSEH managers in the city of Almaty and Almaty region. Economic issues and working conditions of the personnel in MSEH during the time pandemic as well as the psychological impact of COVID-19 were studied using a questionnaire.
Results: During the pandemic period the respondents' salaries increased, but medical organizations are faced with a decrease in profits (P = 0.003) and substantial shortage of nurses (P = 0.001). All medical organizations developed a preparedness plan in collaboration with the emergency / pandemic outbreak team P < 0.001, with different scenarios P = 0.009, and roles and responsibilities P = 0.007. Anxiety and depression symptoms were greater among the managers compared to the medical staff.
Conclusions: Healthcare professionals and managers of MHES in Kazakhstan face similar challenges as medical workers in other countries during the pandemic. Collaboration and teamwork can strengthen and improve the organization's outbreak preparedness. In addition, medical personnel and particularly the managers of MESH need psychological support.

Key words: Managers, Kazakhstan, Pandemic, Medical enterprises, Medical staff

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ВЛИЯНИЕ COVID-19 НА ДЕЯТЕЛЬНОСТЬ СРЕДНИХ И МАЛЫХ ПРЕДПРИЯТИЙ В СИСТЕМЕ ЗДРАВООХРАНЕНИЯ В КАЗАХСТАНЕ

2021 г. **[1]Г. Ж. Капанова, [1,2]Л. К. Кошербаева, [1]С. Б. Калмаханов, [2]Н. Ахтаева, [1]Г. Даулиева**

[1]Высшая школа общественного здравоохранения, Казахский национальный университет имени Аль-Фараби, г. Алматы; [2]Казахский национальный медицинский университет, Казахстан

Введение: COVID-19 привел к переосмыслению процессов в медицинской организации. Руководители и медицинский персонал столкнулись с рядом вопросов, требующих изменения и решения.
Цель: изучить влияние пандемии COVID-19 на экономическое состояние частных средних и малых предприятий здравоохранения и определить психологические последствия COVID-19.
Методы: С использованием смешанных методов был проанализирован опыт руководства и медицинского персонала средних и малых предприятий системы здравоохранения (МСЭЗ), связанной с COVID-19. В опросе приняли участие 45 руководителей (14 %) и 279 человек (86 %) медицинского персонала из 25 МСЭЗ. Качественные интервью проведены с десятью менеджерами МСЭЗ в городе Алматы и Алматинской области. Была разработана анкета на русском языке, которая охватывала две части: экономические вопросы и условия работы в МСЭЗ во время пандемии; психологическое воздействие карантина COVID-19.
Результаты: В период пандемии у респондентов увеличилась заработная плата, медицинские организации столкнулись с падением прибыли (P = 0,003), нехваткой медсестер (P = 0,001). План готовности медицинской организации подготовлен совместно с бригадой по чрезвычайным ситуациям / вспышке пандемии P < 0,001, с различными сценариями P = 0,009, ролями и обязанностями P = 0,007. У руководителей психологическое воздействие COVID-19 на тревогу и депрессию было выше по сравнению с медицинским персоналом.
Выводы: Медицинские работники и руководители средних и малых предприятий системы здравоохранения столкнулись с такими же проблемами, как и в других странах. Сотрудничество и командная работа могут укрепить и улучшить готовность организации к эпидемиям. Кроме того, менеджеры и медицинский персонал нуждаются в психологической поддержке, однако у менеджеров потребность превалирует.

Ключевые слова: менеджеры, Казахстан, COVID-19, средние и малые предприятия, медперсонал

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Background

COVID-19, which dates back to 2019 [12], has led to a change in the current practice of the private health care system in all countries [11, 13, 16, 18]. The preparedness for the pandemic challenges of medical and preventive care of each country was different depending on the level of country development [14]. At the same time, COVID-19 has changed the cyclical image of entre-

preneurship by introducing changes and restructuring of business processes [5, 14]. Managers with creative ideas were able to move from offline to online mode [20, 22]. There are a number of organizations that have been able to make a profit, while the main business environment has suffered various levels of losses [1].

In Kazakhstan, small and medium-sized businesses in the health sector began to expand through changes in the financing of the health care system [17]. The transition from a budget model to insurance medicine allowed private medical organizations to participate in tenders and purchase medical services for the population. The development of a competitive environment has made it possible to expand the competitive environment [23]. However, to date, it has not been studied how much the pandemic has made changes in the life of small and medium-sized businesses in the healthcare system.

The purpose is to study the economic and work condition of medium and small enterprises in the health care system and determination of the psychological consequences of COVID-19.

Methods

Study design and sample

This mixed-methods study analysed managers and medical staffs of the medium and small enterprises of healthcare system (MSEH) experiences of the Covid-19. In survey attend 45 managers (14 %) and 279 (86 %) medical staffs in MSEH. Qualitative interviews were conducted with ten manager's MSEH (with less than 10 employees) in regions across the Almaty city and Almaty oblast.

More specifically, the analysis focused on the economic issue of MSEH under quarantine conditions, the conditions for medical staffs during a pandemic, the impact of having a preparedness plan on overcoming an organization's crisis, how provided updated information, the protection and support of medical staffs, the availability of timely information and psychological impact of the COVID-19. The psychological impact of quarantine on medical staffs and managers MSEH was studied using the Beck Depression Inventory (BDI) and the Beck Anxiety Inventory (BAI) [19].

The use of quantitative and qualitative methods allows a more in-depth study of the issue under study [21].

Managers and medical staffs of the MSEH informed that participation was voluntary before they answered questionnaire and interviews. Moreover, participants informed about the objectives of the study, the questions and duration of the questionnaire and the possibility of leaving the study at any time.

The study was approved by the local ethical committee of Faculty medicine and Health Care No 2668/5 in 01.10.2020 (Al-Farabi Kazakh National University).

Data sources

Contact with hospital staff and managers was organised through the Department of Public Health of the city of Almaty and Department of Health of the Almaty oblast. Medical organizations for each region were included with a coverage of 10 % (due to limited time), thus the Department sent a letter to the heads of medical organization in Almaty (18) and in Almaty oblast (7), where asking them to invite their managers and medical staffs to participate in the survey.

Contact information was provided for those staff to obtain additional information on the survey and to indicate their interest in participating. Expressions of interest were received from staffs of all 25 medical organizations. A questionnaire in Russian was developed that covered two parts: the economic issue and work condition in MSEH during a pandemic time and the psychological impact of the COVID-19 quarantine.

The questionnaire was pilot tested with five managers and ten medical staffs from three medical organizations who found all items to be understandable and acceptable. The survey was conducted during July to August 2021 (period of the second wave of the highest incidence) with those staff who responded to the invitation, using an online Google platform, and paper based (at respondent's work place) depends on desire of participants.

Statistical processing was carried out using the SPSS 13 software (IBM, USA). Variables are presented as mean and standard deviation $M \pm SD$, and qualitative indicators in %. The analysis of the frequency characteristics of qualitative indicators was carried out using non-parametric methods using the Pearson criterion (χ^2). Differences in the data were considered statistically significant at $p < 0.05$.

Qualitative interviews

Semi-structured interviews were covered matters on which full answers had not been obtained in the survey. Background information; the manager's leadership role and impact of work on personal life and health. Interviewees were free to suggest and discuss further related issues.

Interviews were conducted on-line by mobile phone or zoom, depending on the preference of the interviewee, in September 2021. The duration of interviews was 25-30 minutes. Interviewing was carried out on the basis of the methodology presented Graneheim and coauthors [9]. The interviews were recorded and the scripts were read several times for the researchers to familiarise themselves with the data, transcripts were encoded line by line, with codes assigned to each meaningful segment of text. Two researchers independently conducted a comparative analysis of transcripts, and identified similarities and differences in the answers from participants. At each stage, there was a discussion of the results and a consensus.

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Results

The economic issue and work condition in MSEH during COVID-19

During the pandemic period in comparison before the pandemic, respondents' wages increased by 1.3

times. According to respondents, in the context of COVID-19, medical organizations are faced with a decrease in profits 35.5 % (MB 36.9 %, SB 33.3 %) P = 0.003, shortage of nurses 3.7 % (MB 1.0 %, SB 7.9 %) P = 0.001. In addition, medical organizations can solve the problem of lack of funds during COVID-19 by reducing staff salaries 13.9 % (SB 7.9 %, MB 17.7 %) P = 0.013, search for subsidies 14.5 % (SB 20.6 %, MB 10.6 %) P = 0.012, and government assistance 3.4 % (SB 6.3 %, MB 1.5 %) P = 0.019. The medical organization must have a preparedness plan to cope with a crisis such as COVID-19 indicated 62.8 % respondents. (table 1).

A plan must be prepared: together with the emergency / pandemic outbreak team 92.6 % P < 0.001; preparation of response measures for different scenarios 96.5 % P = 0.009; determine who in the company will be included in the emergency / pandemic outbreak team 92.0 % P < 0.001; roles and responsibilities, as well as possible replacements 96.2 % P = 0.007;

Table 1

Results of the MSEH survey on the economic situation during COVID-19

Economic condition and working conditions	Answer	Middle business N (%)	Small business N (%)	Total N (%)	P
In your opinion, what problems does the company face in the context of COVID-19?					
Insufficient volume of production of oxygen stations	No	193 (97,5)	120 (95,2)	313 (96,6)	0.278
	Yes	5 (2,5)	6 (4,8)	11 (3,4)	
	Total	198 (100,0)	126 (100,0)	324 (100,0)	
Lack of nursing staff	No	196 (99,0)	116 (92,1)	312 (96,3)	0.001
	Yes	2 (1,0)	10 (7,9)	12 (3,7)	
	Total	198 (100,0)	126 (100,0)	324 (100,0)	
Decrease in demand	No	137 (69,2)	95 (75,4)	232 (71,6)	0.227
	Yes	61 (30,8)	31 (24,6)	92 (28,4)	
	Total	198 (100,0)	126 (100,0)	324 (100,0)	
Reduction in the number of employees	No	109 (55,1)	77 (61,1)	186 (57,4)	0.282
	Yes	89 (44,9)	49 (38,9)	138 (42,6)	
	Total	198 (100,0)	126 (100,0)	324 (100,0)	
Cut in profits	No	125 (63,1)	84 (66,7)	209 (64,5)	0.517
	Yes	73 (36,9)	42 (33,3)	115 (35,5)	
	Total	198 (100,0)	126 (100,0)	324 (100,0)	
Reduction of services for chronic patients	No	145 (73,2)	110 (87,3)	255 (78,7)	0.003
	Yes	53 (26,8)	16 (12,7)	69 (21,3)	
	Total	198 (100,0)	126 (100,0)	324 (100,0)	
Financial	No	61 (30,8)	45 (35,7)	106 (32,7)	0.359
	Yes	137 (69,2)	81 (64,3)	218 (67,3)	
	Total	198 (100,0)	126 (100,0)	324 (100,0)	
Supply chain disruption	No	184 (92,9)	117 (92,9)	301 (92,9)	0.980
	Yes	14 (7,1)	9 (7,1)	23 (7,1)	
	Total	198 (100,0)	126 (100,0)	324 (100,0)	
In your opinion, how can your business solve the problem of lack of funds during COVID-19?					
Business closure to reduce costs and manage cash deficits	No	158 (79,8)	109 (86,5)	267 (82,4)	0.122
	Yes	40 (20,2)	17 (13,5)	57 (17,6)	
	Total	198 (100,0)	126 (100,0)	324 (100,0)	
In addition to the help from the state, it will not dare	No	195 (98,5)	118 (93,7)	313 (96,6)	0.019
	Yes	3 (1,5)	8 (6,3)	11 (3,4)	
	Total	198 (100,0)	126 (100,0)	324 (100,0)	
Search for subsidies	No	177 (89,4)	100 (79,4)	277 (85,5)	0.012
	Yes	21 (10,6)	26 (20,6)	47 (14,5)	
	Total	198 (100,0)	126 (100,0)	324 (100,0)	
Development of a strategy to overcome the lack of funds	No	86 (43,4)	53 (42,1)	139 (42,9)	0.808
	Yes	112 (56,6)	73 (57,9)	185 (57,1)	
	Total	198 (100,0)	126 (100,0)	324 (100,0)	
Reduction of staff salaries	No	163 (82,3)	116 (92,1)	279 (86,1)	0.013
	Yes	35 (17,7)	10 (7,9)	45 (13,9)	
	Total	198 (100,0)	126 (100,0)	324 (100,0)	
Dismissal of employees	No	149 (75,3)	105 (83,3)	254 (78,4)	0.085
	Yes	49 (24,7)	21 (16,7)	70 (21,6)	
	Total	198 (100,0)	126 (100,0)	324 (100,0)	

Table 2

Crisis preparedness plan activities

Measures	Agree	Partially agree	Disagree	Total	P	Did not participate
	N (%)					
Availability of uniform information for all employees	312 (100,0)			312 (100,0)		12 (3,7)
Preparing a plan with the emergency / pandemic outbreak team	301 (92,9)	11 (3,4)	12 (3,7)	324 (100,0)	0,001	
Prepare responses for different scenarios: - moderate pandemic - severe pandemic	301 (96,5)	11 (3,5)		312 (100,0)	0,009	12 (3,7)
Provide for various schemes of work, from normal operating to special / emergency modes	289 (89,2)	35 (10,8)		324 (100,0)	0,707	
Provide for various schemes of work, suspension of activities for safety reasons	289 (89,2)	35 (10,8)		324 (100,0)	0,707	
Actions required to prepare, respond and recover from a disaster	267 (85,3)	46 (14,7)		313 (100,0)	0,083	11 (3,4)
Determine who in the company will be part of the emergency / pandemic outbreak team	278 (92,4)	23 (7,6)		301 (100,0)	0,001	23 (7,1)
Roles and responsibilities, and possible replacements	312 (96,3)	12 (3,7)		324 (100,0)	0,007	
Prepare a directory of all external contacts / stakeholders your organization works with	277 (92,0)	24 (8,0)		301 (100,0)	0,135	23 (7,1)
Communicating to employees, suppliers, customers, stakeholders and the media that the plan exists	266 (88,4)	35 (11,6)		301 (100,0)	0,092	23 (7,1)
The responses that can be taken and which policies will be supported	266 (88,4)	35 (11,6)		301 (100,0)	0,823	23 (7,1)
Information on the rules for handling infected personnel,	279 (86,1)	45 (13,9)		324 (100,0)	0,037	
On changes in personnel policy regarding business trips, sick leave and compensation for temporary	242 (80,7)	58 (19,3)		300 (100,0)	0,032	24 (7,4)
Enabling IT and telecommunications networks, video conferencing capabilities and other alternatives	243 (80,7)	58 (19,3)		301 (100,0)	0,063	23 (7,1)
Succession plans	266 (88,7)	34 (11,3)		300 (100,0)	0,627	24 (7,4)
How likely is the organization's core business or environment to change	278 (89,1)	34 (10,9)		312 (100,0)	0,001	12 (3,7)
Development of plans for	242 (80,7)	46 (15,3)	12 (4,0)	300 (100,0)	0,001	24 (7,4)

information on the rules for handling infected personnel 85.6 %, P = 0.037; on changes in personnel policy related to business trips, sick leave and temporary compensation 84.0 % P = 0.032; how likely the main activity or environment of the organization will change 88.7 %, P < 0.001; development of plans for potential new and emerging rice 84.0 % P < 0.001. Communication to employees, suppliers, customers, stakeholders and the media about the existence of the plan 92.0 % P = 0.092; responses that can be implemented and which policies will be supported 87.9 % P = 0.823; inclusion of IT and telecommunication networks, the possibility of video conferencing and other alternatives 84.1 % P = 0.063; succession plans 88.2 % P = 0.627 (table 2).

Psychological impact of the COVID-19

Sum scores for anxiety ranged from 0 to 35 (Mean [M] = 8.05, Standard deviation [SD] = 10.16). According to the Anxiety Scale, managers were (M = 13.69, SD = 8.58) and medical staff (M = 7.14, SD = 10.12). Thus, managers' anxiety was higher compared to medical staff on average 6.55 (P < 0.001). According to BAI, the level of anxiety from 0 to 9 points indicates the absence of anxiety, in our study it was 64.2 %, from 10 to 21 points indicates an insignificant level of anxiety 25.3 % from 22 to 35 points correspond to an average severity of anxiety 10.5 %. A positive trend is the absence of very high anxiety among the respondents.

The cumulative depression scores ranged from 0 to 36 (M = 9.98, SD = 10.02). According to the Depression Scale, managers were (M = 12.78, SD = 10.33) and medical staff (M = 9.52, SD = 9.92). Thus, depression among managers was higher in comparison with medical staff on average 3.26, P = 0.043. According to BDI scores below nine points, 67.7 % were considered normal, a score of 10-15 - mild depression (subdepression) was observed 7.4 %, 16-19 - moderate depression in 7.1 %, 20-29 - severe depression (moderate) 10.8 %, 30-63 - severe depression 7.1 % (table 3).

Table 3

The level of anxiety and depression in different categories of workers

Mental condition	Managers	Medical staff	Total	P
Anxiety level	13,69±8,58	7,14±0,12	8,05±10,16	<0,001
Depression level	12,78±0,33	9,52±9,92	9,98±0,02	0,043

Interviews with managers

Totally ten top managers involved in interview, from small entrepreneurship six and middle entrepreneurship four. Age of the small entrepreneurship managers was 43,22 ± 7,21, middle 51,01 ± 11,31. The work experience as managers of the small entrepreneurship was 13,71 ± 6,53 and middle 19,11 ± 8,58.

Leadership role of a manager

Leadership qualities of a manager are often helped in professional activities. However, in the face of uncertainty as a covid, difficulties were associated with the access of qualitative and evidence-based information. The government tried its best to provide information support, but business processes were often subject to changes, which is associated with constant revision of the guidelines proposed by the government (IP 1 and 2).

Of course, the size of a medical organization affects the efficiency of its activities. It is difficult to manage a situation when the number of staff in the organization is small, and many cannot go to work due to illness or burnout is observed among the medical staff. In this case, it is very important to provide the staff with any kind of psychological support through colleagues, the invitation of a psychologist, group trainings (IP 3).

Working with families has an important effect, since everyone is afraid of infecting their close relatives, thereby moving away from the family, preferring to stay on processing, this aggravates the psychological state of employees, as well as the quality and productivity of the medical organization (IP 5 and 6).

The responsibility of the managers is to carry out prioritization, "like in a war, when many wounded arrive and the doctor triages according to the patient's condition." It was almost the same at the initial stages of covid, when it was necessary to make emergency decisions on revising the list of services, transferring a number of services to online mode, redirecting planned patients at a later date, and determining financial resources (IP 7).

Managers play a vital role in shaping the culture of the team and ensuring peak performance in all conditions. While specific job functions vary from manager to manager, many have similar responsibilities. Difficulty with covid was also associated with the uncertainty of the next outbreaks, as well as the difficulty of defining a goal and a way to achieve it, when it was difficult to agree on a consensus with stakeholders such as government, organizations for the supply of certain services and goods (IP 1, 8, 9).

Managers and medical staff were able to ensure collaborative teamwork. Perhaps this was influenced by the specifics of the activity, everyone understood that during a pandemic, additional conflicts and the need for mutual support were not needed (IP 1 and 10).

Impact of work on personal life and health

In the first period, it was difficult to find a balance between work and home, mostly stayed at work. Insufficient knowledge about the path of spread of covid n constant uncertainty, an increase in the number of patients, questions from members of medical staff who were worried about their relatives required a review of the entire activities of the medical organization (IP 6).

In such a situation, it is important that managers of medical organizations can rally and exchange information with each other, thereby being able to identify the best experience, which allows them to react in a timely manner and at the same time not lose the quality of the services provided (IP 1, 2, 4 and 5).

Cohesive work allows you to effectively distribute work and find time for your family and your needs (IP 2).

Supporting family members and moving closer to work has helped maintain a balance between personal life and work, although it is very difficult to find time for your needs during the initial period of a pandemic or during outbreaks (IP 3, 8, 9).

The period of the pandemic has unambiguously affected the health of managers and medical staff. Constant stress, every death leaves a bad residue in the heart, emotions. Even if you don't voice, we see in each other's eyes (IP 4, 6, 7).

A feeling of constant fatigue, high tension, a state of anxiety took place, and more than once the thought came to give up everything, but our colleagues could not follow us, and their support helped to move further along the course (IP 5, 10).

Discussion

McConnell D, Wilkinson D. Having considered schemes of compensation without fault for harm caused by the epidemic, and pay for hazards for the risks and burden of work during an epidemic, concluded the need to provide additional pay to key workers during an epidemic [17]. In our results we identify that in pandemic period the wages increased in MSEH. The shortage of nurses was identified by a number of researchers [15, 24], respondents of our research noted that the availability of a sufficient number of nurses is important for the preparedness of a medical organization for outbreaks.

Preparing a healthcare organization in a pandemic has been accompanied by a review of processes, for example a hospital in New York has redefined emergency planning, staffing, ethics and staff well-being [10] or the introduction of telemedicine, has contributed to an increase in the volume of continuous services [12, 16, 25]. Our respondents noted that it is important to have a preparedness plan that will actually reduce adverse events.

Numerous studies have identified the presence of depression and anxiety among medical personnel and managers during a pandemic, and it has been proposed to develop mechanisms to reduce it [8, 13]. We found that anxiety and depression were higher among managers in comparison with medical staff on average 6.55 $P < 0.001$ and 3.26, $P = 0.043$, respectively.

Conclusions

1. The healthcare professionals and managers of the medium and small enterprises of healthcare system faced similar challenges as in other countries.

2. During the pandemic period in comparison before the pandemic, some respondents' wages increased by 1.3 times. According to respondents, in the context of COVID-19, but medical organizations are faced with a decrease in profits 35.5 %

3. Collaboration and teamwork can strengthen and improve the organization's outbreak preparedness.

4. The managers' anxiety was higher compared to medical staff. In addition, the need for psychological support of both managers and medical staff is identified, however the need for managers prevails.

Ethical Approval

Approved by local ethical committee of Faculty medicine and Health Care No 2668/5 in 01.10.2020 (Al-Farabi Kazakh National University).

Authorship

Gulnara Kapanova - prepared the first version of the article or significantly revised it for important intellectual content; Lyazzat Kosherbayeva - made a significant contribution to the concept and design of the study, obtaining, analyzing and interpreting data; Sundetgali Kalmakhanov - prepared the first version of the article or significantly revised it for important intellectual content; Nazgul Akhtaeva - finally approved the manuscript sent to the editor; Galiya Dauliyeva - prepared the second version of the article and participated in the analysis of questionnaires on the economic side.

The authors declare they have no competing interests.

Gulnara Kapanova - ORCID 0000-0002-6521-6836
Lyazzat Kosherbayeva - ORCID 0000-0001-8376-4345
Sundetgali Kalmakhanov - ORCID 0000-0001-5198-5506
Nazgul Akhtaeva - ORCID 0000-0002-0835-9814
Galiya Dauliyeva - ORCID 0000-0001- 8233-9830

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Contact details:

Gulnara Kapanova - PhD, Ass. Professor, Higher School of Public Healthcare,

Al-Farabi Kazakh National Medical University, Al-Farabi street 71, Almaty, Kazakhstan

E-mail: g.kapanova777@gmail.com