STAFF CRISIS IN THE HEALTHCARE SYSTEM DURING THE PANDEMIC PERIOD IN UZBEKISTAN

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ANNOTATION

The COVID-19 Pandemic had rolled through many countries' health and economy, creating holes and cracks, also revealed many of humanity's ingrained problems. The Pandemic affected many areas and industries. The main blow was taken in the Healthcare and by the medical personnel. In this connection, medical workersshould be depicted on the poster for 2020, and now, as one can see, in 2021 as the bravest, sympathetic, unshakable, strong characters. With an increase in patients' flow with coronavirus infection, doctors did everything to make the treatment process more effective, faster without complications and consequences. Every day they risked not only their health but also the health and lives of their loved ones. Due to the planetary scale of the coronavirus's spread, a challenging physical and moral burden fell on medical personnel's shoulders in all countries. According to reliable data, there were not enough doctors for all the patients who admitted. In the context of a shortage of supply of substandard PPE (personal protective equipment), physicians treating patients with COVID-19 are at high risk of infection. The widespread virus among healthcare workers created new healthcare system constraints and increasedcolleagues' burden, replacing those who went into quarantine for at least 14 days. In Uzbekistan, there was some correlation between the increased number of patients and increased infected health workers. "With every infected health worker, there was another gap in the ranks of the pandemic fighters" [1]. As you know, at the time of mid-February 2021, about 79 thousand people registered in Uzbekistan with a positive test result for COVID-19, 106 million people worldwide. According to statistics, the Pandemic peak was in June-August and September-November - which are publicly available on the Google platform [2].

Keywords: COVID-19, Pandemic, Healthcare, Coronavirus, Doctor, PPE (personal protective equipment), Quarantine.

Purpose of the study

The study aimed to clarify the essence of the shortage of medical personnel during a pandemic in Uzbekistan andto reveal its causes and acquire recommendations based on the material studied on work experience in difficult epidemiological periods in the world.

I. INTRODUCTION

Disease SARS-Cov-2 was an acute pathological process occurring in the upper respiratory tract; based on the data obtained in the treatment of patients worldwide, doctors - with a known etiology, the disease's pathogenesis was still not clear enough. It was clear that the disease affected the respiratory system; however, the virus itself was capable of causing some complications associated with the course of the acute respiratory syndrome disease

itself. The disease proceeded in everyone in a different scenario, while patients who got to a medical institution might have different pathologies. This obliged the health care system to provide the hospital with a sufficient number of specialists and personnel of a wide variety of profiles, thereby provided a footholdtoo safely and successfully treated infected people. This picture, without a doubt, observed in all medical institutions around the world that faced the need to treat those infected with COVID-19. On November 19, 2020, the Associated Press magazine published a report stating that all American hospitals filled with coronavirus patients [3]. In Uzbekistan at that time, a different picture was observed: and, according to the Gazeta.uz as of November 17, 89 hospitals in Uzbekistan occupied 38% of hospital beds that were being treated thereCOVID-19 [4]. Uzbekistan faced this situation later, in July-August.

In the early days, insufficient attention paid to excluding infections of medical workers. The disease's center and the spread of COVID-19 among medical personnel often arose due to insufficient PPE (personal protective equipment provision). According to the Department Healthcare publication of International and Regional Cooperation of the Russian Federation, every month, medical workers needed 2.3 million N95 respirators to protect themselves and those around them; 89 million masks, 30 million gowns, 1.59 million glasses, 76 million pairs of gloves and 2.9 millionliters of hand sanitizer [5,8]. Cases of infection registered among doctors, nurses and medical staff (the World Health Organization published a report on an acute shortage of medical personnel worldwide. According to WHO, the shortage of nurses was about 5.9 million people - there were about 28 million nurses worldwide. The most acute personnel issue threatened countries where the coronavirus pandemic could not bring under control [6]), as well as among ambulance drivers. This contributed to the emergence of a shortage in medical institutions of some categories of specialists. Shortcomings in the organization of infection prevention and timely detection of patients among medical workers nullified all efforts to provide medical care and effective patient treatment. First, these shortcomings concerned the logistics of distributing forces and providing medical care, a shortage of medical personnel and a shortage of beds [7]. Meanwhile, untimely detection of cases of deterioration of the condition of patients undergoing treatment at home, in many respects, became the reason for their hospitalization in medical institutions in a serious condition. Shortcomings in the logistics of the distribution of beds, placement of patients inwards and the provision of oxygen equipment often led to the need for resuscitation measures that could have been prevented [7].

II. MATERIALS AND METHODS

Studies are done based on analysis, synthesis, systematic approach, generalization, sociological survey, consisting of 15 questions (in the form of interviews conducted in 1, 2 TMA clinics and the Research Institute of Epidemiology, Microbiology and Infectious Diseases of the Ministry of the Republic of Uzbekistan among 30 doctors; in the form survey in an online form, using the Google platform, where more than 60 doctors participated). The article prepared based on studying the material available on the Internet, research papers, articles and abstracts of foreign and national experts published in the world's journals, government statistics from the Ministry of Health of Uzbekistan's official websites and Russia also used.

III. RESULTS

Amid the COVID-19 Pandemic, many doctors had to change their specialization and way of life. For a long time, specialized specialists worked with infected patients and surgeons, oncologists, traumatologists, and many others. Even medical students were attracted. Most of them did not see relatives and friends for weeks and months, and sometimes they lived directly in hospitals or provided hotels. The non-stop mode of work could not but affect the doctors. Despite all precautions, many of them infected.

In order to identify whether there was a problem of lack of specialists in Uzbekistan, what narrow medical specialties it concerned, and also in order to find out the opinion of the doctors themselves, why we had to face this problem, we conducted a sociological survey, tried to analyze the material and find answers to the above questions. The survey involved doctors of various profiles and ages, including phthisiatricians, infectious disease epidemiologists, resuscitators, surgeons, several cardiologists and endocrinologists, and pulmonologists.

1) Among all respondents, 26.4% of the respondents turned out to be phthisiatricians, 20.5% were anesthesiologists-resuscitators, the rest of the respondents included surgeons - 8.8%, neurologists - 3%, cardiologist, phthisiopulmonologist, endocrinologist and emergency medicine doctor - 3 each % of dentists - 3%, infectious disease specialists - 26.4%. Most were infectious disease epidemiologists, phthisiatricians and resuscitators.

2) To the question "Did you have any involvement in work in medical institutions where patients with coronavirus treated" 88% of all respondents answered that they involved in work in this type of institution. Due to the lack of medical personnel, all doctors forced to fulfil their medical duties.

3) To the question: "Did you receive special training to work in a medical institution where patients with coronavirus are treated?", 50% of all received special training just before entering the institution. On March 23, RBC published that all doctors, according to the information they have provided, are required to undergo special online training on two aspects of coronavirus infection: "COVID-19: Pneumonia and viral positions of the lungs (tactics of a non-infectious hospital doctor)" and "Diagnostics, treatment, prevention of new coronavirus infection in primary health care at home" [8]. Under a particular set of circumstances, doctors of a very different profile could be in demand, and there was no talk of the specialty of a doctor. Thus, the Ministry of Health prepared spare resources in additional, auxiliary "working hands".

4) To the question: "How long have you been in a medical institution where patients with coronavirus treated?", 50% answered that they had worked there for more than a month; 30% answered that they had stayed for two weeks.

5) To the question: "Was there an overload of doctors in a medical institution where patients with coronavirus treated?", about 88% of respondents, according to the results of both surveys, noted the overload of medical workers who worked with patients with COVID-19.

6) To the question: "Assess the congestion of doctors in a medical institution where patients with coronavirus are treated?" 76% (online) of the respondents assessed the degree of overloading of medical personnel as severe. The rest's opinion divided equally into two answers: "when how" and "the load was moderate." In the form of interviews: 53% - the workload was heavy, 24% - there were periods of congestion, 12% - moderate workload and 6% - did not notice any signs of congestion.

7) To the question: "Was there a shortage of medical personnel in a medical institution where patients with coronavirus treated?" 65% of the respondents said that the shortage of medical staff made itself felt clear. 30% answered that the deficiency was present, but not in a particularly acute form. One respondent did not report a shortage. In the form of interviews: 30% of the respondents felt the lack of medical personnel; 47% - felt the lack, but to a lesser extent and in different periods; 17% did not notice any shortage. It should be noted that there was a shortage of medical personnel all over the world. The UK SAI conducted an audit of the health care system, which showed its unpreparedness for the peak of the epidemic in June 2020 and an acute shortage of medical personnel [9].

8) To the question: "The shortage of medical personnel especially concerned" - the responses of the online survey and interviews received some difference: 36% of respondents answered that the shortage concerned doctors, as well as, separately, doctors of narrow specialties. Another group of respondents - 24% noted a shortage of nurses and other medical staff. Interviews: 60% of respondents noted a shortage of specialized doctors; 40% of the respondents noted the lack of nursing staff; 13% noted a shortage of nursing staff and general practitioners.

9) To the question: "In your opinion, did the help of the volunteers help with the rest of the doctors?" 36% (online) and 6% (interviewing) of all respondents noted the volunteers' contribution in the fight against the Pandemic. The rest of the respondents did not notice their activities or did not know about them. Here we want to highlight some critical measures taken in other countries: In Ireland, voluntary recruitment of health workers carried out in the event of a shortage of "workers" soon. The project called "Ireland Calling". Currently, not on Public Health staff, employees of all directions were accepted [1,6]. In the Republic of Korea, a tripartite agreement (economic, social and labor) concluded to improve all medical workers' working conditions and safety in the workplace. Extensive measures took to overcome the difficulties and crisis of Healthcare, medical facilities, hospitals [1,8].

10) To the question: "Did you get infected with the coronavirus while you were in a medical facility where patients with coronavirus treated?" - More than half of the respondents with involvement in medical institutions were patients with coronavirus treated infected with coronavirus while they were there. The rest stated that they were not infected. There was a high risk of healthcare workers infection in primary health care centers and hospitals for information worldwide. Up to 10% of reported cases were in China, and up to 9% of all Italian cases attributed to healthcare workers. In some EU countries, this figure reached 26% [5.4].

11) To the question: "Do you think the lack of hygiene products influenced the increase in the number of infected medical workers?" 75% - online and 47% - in the form of interviews, doctors note that a temporary shortage of hygienic protective equipment took place and could be one reason for the medical workers' infection. The rest gave a negative answer. In the United States, according to the results of the study, only a third of medical workers were able to confirm the availability of an adequate supply of PPE in case of a sharp increase in patients, which could not but was alarming. 65% of medical workers in 2019-2020 trained in safe methods of putting on and taking off PPE [10.3]. When interviewing our doctors, only half managed to take special courses before starting work in the "Red Zones". More than half also named the lack of PPE as one reason for the morbidity among the medical workers themselves.

12) To the question: "How do you explain the shortage of medical personnel in a medical institution where patients with coronavirus treated?" 47% of respondents answered that the large wave of infected patients at times unsettled some workers, due to which there was a shortage of them. 30% of respondents consider the hygienic insecurity of medical personnel as one reason; 70% said a shortage of health workers before the quarantine measures and the Pandemic. Another 30% chose low wages as one of the reasons. The interview answers are somewhat different: 76% of the respondents attribute a large wave of SARS-CoV-2 infections to the main reasons for the sharp shortage of doctors and specialists; 29% of doctors noted that the deficit existed before that; 24% of doctors also attributed the quarantine and sick leave of many doctors as one of the reasons; singly noted panic and fear in the early periods of the Pandemic and unwillingness to work in the "Red Zone"; singly noted that there was no shortage at all.

13) To the question: "What narrow specialist doctors especially lacked in a medical institution where patients with coronavirus are treated?" 44% of respondents noted the lack of epidemiologists / infectious disease specialists. According to the results of both forms of survey; 77% of the respondents believed that there were not enough resuscitation specialists for all patients; 20% noted a shortage of psychiatrists; 27% noted a shortage of pulmonologists; 33% of respondents believe that there was a shortage of cardiologists; singly stated that there was a shortage of endocrinologists, surgeons, laboratory doctors. A similar situation took place all over the world. According to research by the Association of Medical Colleges of America, an article published stating that by 2032 the United States would have an acute shortage of 122 thousand doctors if no measures taken with the medical staff's current situation [11]. According to our research, there was also a shortage of specialists in some institutions, particularly resuscitation specialists, endocrinologists, infectious disease specialists/epidemiologists.

14) To the question: "What do you think, what medical specialists lack in Uzbekistan, after the closure of many in medical institutions where patients with coronavirus treated and their transition to a normal regimen?" - about the small staff of doctors today: 32% mentioned infectious disease specialists/epidemiologists; another 24% noted cardiologists, 50% believe that there are few resuscitators, 39% believe that there are few doctors in the intensive care unit; 30% say they have a small staff of neurosurgeons, 18% each stated a small number of endocrinologists, 12% - neonatologists and pulmonologists, singly chose oncologists, GPs and laboratory doctors.

In world practice, the examples of China and Italy showed how important it was to ensure a sufficient number of hospital beds and increase intensive care units' capacity to receive many patients. Japan and Korea had the most significant number of beds in intensive care units - more than 7 per 1,000 people, Germany - 6 per 1,000 people. For most OECD countries, this indicator varied from 2.5 to 5. Simultaneously, in countries such as Mexico, Canada, Chile, Sweden, Israel, Spain and the United States, it was lower [9].

According to publicly available state statistics, in 2019, for every 10th thousand of the population of Uzbekistan, there were 108 nursing staff; in 2007, this figure was 103.5 workers. Even though since 2007 the number of these workers had increased from 280 thousand in 2007 to 365 thousand in 2019, relative to the Republic population's growth, the number of employees has hardly changed - there is an influx of 4%. Simultaneously, the number of visits to hospital institutions per shift compared to 2007 data increased by 13% [12].

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
number of visits	414,7	413,8	415,9	422,(	423,1	424,2	418,3	406,4	407,5	411,(	405,1	440,8	468,9

per shift (thousand)	5	6	5	5	1	3	5	4	6	9	1	9	6
Number of nursing staff (thousand)	280,3	287,5	301,9	310,1	319,1	324,6	327,4	332,4	336,4	341,1	348,1	356,1	365,6

In addition, taking into account the Ministry of Health of Uzbekistan's statistics, for 2018, the population's provision with doctors reached 27 doctors for every 10th thousand people. Almost a quarter (22.6%) of the number of doctors located in Tashkent; in other regions, the number was several times less [13]. The published State of Nursing in the world 2020 report highlighted the need to create at least 6 million new nursing jobs by 2030, which would fill the projected shortage of nursing staff, especially in low- and middle-income countries, as well as ensure its more even distribution throughout the world [10,10].

15) The last two questions asked the respondents to present their point of view on specific issues. To the question: "What do you think is the reason for the shortage of medical personnel in Uzbekistan? Your opinion? ". Moreover, 56% of respondents of the online survey and interviews answered that the main reason for the shortage of doctors in Uzbekistan, in their opinion, was the low pay; 8% state a low level of the social status of the profession of a doctor, and also singly saw the reason for studying at universities, minor prospects for career growth, 6% note a low inflow of workers; 9% note the low legal protection of doctors, 6% - did not answer in any way, refuting the information about the shortage; singularly - a low level of student learning and staff turnover, the absence of particular training institutions and not the best efficiency of the working system.

16) To the question: "How can this situation be corrected, in your opinion? Your opinion?"- various proposals were heard from the respondents themselves to improve the situation. In their opinion: 50% suggested increasing the salaries of medical workers; 6% suggested modernizing educational facilities, increasing admission to medical institutions, creating more comfortable working conditions, updating literature, eliminating bureaucracy and eradicating corruption; 18% propose to make changes at the level of universities - to increase quotas, increase the number of places, strengthen control over the education of students, increase the number of hours allocated for practical training for students; 6% proposed to revise the legal norms for the medical profile; singly suggested increasing the scientific potential of doctors and attracting medical personnel to more comfortable working conditions, several respondents found it challenging to answer.

IV. DISCUSSIONS

In the course of the study, one evident tendency emerged: the more patients admitted, the more beds were formed and filled, with unobserved recruitment of the appropriate and the proportionate number of personnel - purely theoretically, the amount of time that one or another physician could devote to a particular patient decreases. They were even considering this statement from a physical point of view. Not to mention the concentration of attention, which arose in this case and the overall effectiveness of a person working with patients. At the same time, an ethical moment allowed - a person became a hostage of the situation, the doctor had to choose between which particular patients should devote his precious time.

During peak periods, this would not be enough, given the trend and state of the staff in Healthcare. This principle of cure would not have a beneficial effect on patients. Such challenging conditions forced the government and the administration to go to extreme measures: in Italy, during the peak of hospital occupancy, the Healthcare, due to the lack of nursing staff and attending physicians, had to turn to those who had the most involvement in medicine, in addition to the doctors themselves - medical graduates, and educational institutions, foreign doctors without Italian citizenship (who were temporarily in the country). In total, about 78 thousand people were voluntarily hired [14].

Doctors in 2020 topped the ranking of dangerous professions, overtaking miners, firefighters and military personnel. "Compared to similar studies of previous years, doctors for the first time were in first place in the ranking of hazardous professions: earlier their work called the riskiest by 2-3%, today - every fifth," said the study of the SuperJob service [15]. "Unfortunately, doctors were the first echelon to take the blow of the pandemic" [16].

In the initial period of the Pandemic, medical workers found themselves in a challenging professional and psychological situation. They had to contact patients without having an acceptable amount of protective equipment. There were no sufficient disposable gowns, masks, hats and gloves. Doctors often purchased the necessary funds, established and followed the rules for safe communication, and contacted patients with suspected coronavirus infection. Primary health care workers experienced the most implausible stress. To reduce queues and waiting times, outpatient clinics and home care for emergency calls carried out until late at night. Emergency teams also went out to work on night shifts. An enormous burden fell on the doctors and paramedics of the ambulance stations. There were not enough brigades to go to all the calls. Oxygen was not always available for emergency treatment. Not only ambulance crews worked in a stressful state, but also dispatchers and ambulance heads and emergency stations. Patients hospitalized in severe and critical condition. Medical workers' workload in hospitals, working at 1.5-2 rates due to a lack of personnel, often exceeded human capabilities, especially when they had to work day after day.

The work of medical personnel in the "Red" zones was difficult and responsible. It carried out under conditions of neuropsychic stress, affecting the state of health. The negative impact of hard work on a person's functional capabilities confirmed by the results of a particular study that assessed doctors and nurses' psychological state in the department of anesthesiology and resuscitation. All workers found to have an average degree of situational and personal anxiety and found to be susceptible to burnout syndrome formation [7]. All this indicated the need to support medical personnel to prevent the adverse consequences of decreased motivation and deterioration of the psychosomatic state.

After studying the material on this topic and comparing them with the responses received from the questionnaires and interviews, several conclusionswere drawn: firstly, there was a shortage of medical workers in all medical institutions where patients with coronavirus treated; secondly, the lack of medical personnel significantly affected: narrow specialties, such as resuscitation specialists, doctors of the intensive care unit, epidemiologists-infectious disease specialists; thirdly, the personnel crisis was taking place, during the stabilization of the situation. This applied to such specialties as infectious disease specialists, resuscitators, neurosurgeons, pulmonologists, cardiologists; fourthly, the personnel crisis in the health care system was facilitated by the low pay of medical personnel, as well as a small inflow of the necessary narrow specialties of medicine and some peculiarities of working conditions. According to some, many doctors forced to work in multiple locations. An initiative expressed to overcome the shortage of medical personnel manifested itself in carrying out some changes in the structure of education of medical universities and the specialists themselves' scientific potential. Also, in communicating with the respondents, the idea expressed to stimulate their work's performance. It stated that the increase in wages wouldundoubtedly positively affect the overall picture of health care.

Anyone could be attracted by money, but not every well-earning doctor would treat people as effectively as expected. Earning might entail quantity, but quantity did not imply quality. The word "quality" meant a high level of knowledge of a specialist, moral qualities and mental abilities. Wages could not provide this, but they could form a kind of "cushion" for a person engaged in medical activities. Many medical people spent most of their lives at work, entirely devoting themselves to their craft - a noble cause. By increasing earnings, thereby increasing the pleasure of the time spent, a person would feel the value of his strength; thus, this positively affected the work's efficiency. As for learning, influencing this process, the effect would be many times greater.

Thus, it was worth considering and proposing deeper and longer-lasting reforms related to doctors, middle and junior personnel - this was how medical personnel's efficiencycould be increased without changing its number. The number of employees was worth revising the doctor's profession's social and legal component and its place in society. If we consider this area of the issue, in society, a doctor's profession involved living in a hospital while earning less than someone else who earned more but spent less time on it. However, few consider the ethical component of the issue and the benefits to society and the state. Therefore, this point of view should be given special attention.

It was, of course, necessary to increase the value of the profession of a doctor, correlating his contribution to a common cause with an incredible feat and a good deed before the people for an honest and noble work of healing. Measures should be taken to revise benefits, legal protection and social status, and care when they retired. Doctors tied by duty to their workplace - the hospital, therefore, any measures must be taken to compensate for this work to a person.

Medical personnel who worked in a pandemic need to develop and take measures for material incentives and psychological support, and social protection. The spread of COVID-19 had a profound impact on the psychological state of the population. In OECD countries, about 15% of the population had mild to moderate mental illness, while 5% had serious mental illness [9].

In the conditions of the uncontrolled spread of infection, it wasimpossible to guarantee that medical personnel would not encounter patients, particularly coronavirus infection. Material compensation for the risk of infection through contact with both sick and asymptomatic carriers of the infection was necessary but insufficient for protecting their health. In addition to additional material remuneration for special working conditions about medical personnel engaged in the examination, diagnosis, treatment and care of patients with coronavirus infection, socio-psychological support measures and ensuring efficiency and maintaining a psycho-emotional state must be taken.

V. CONCLUSION

The main principle of social protection of medical workers in such conditions was to extend it to both doctors and nurses and medical staff (according to the WHO report, countries need to train 8% more nurses per year than now [6]) as well as other primary health care workers. In the event of their illness, insurance guarantees must be provided, including in the event of disability due to complications resulting from the illness. Increased insurance benefits shouldbe paid to families and relatives in the death of medical workers. If one's receive a disability due to an illness, it wasalso necessary to make increased insurance payments. A pandemic was a scarcity of resources for more than treating patients. In all countries, there was a complaint about the lack of personal protective equipment for medical workers. Was it ethical for doctors to refuse work in this case? [17]. Another fundamental question was how to continue caring for patients in a safe, fair and effective way. Moreover, alarmingly, the crisis had highlighted the lack of preparedness of politicians and health systems and the inability to develop appropriate ethical standards. In summary, among the many challenges posed by COVID-19, almost all healthcare systems faced challenges in recruiting, placing and retaining a sufficient number of well-trained, supported and motivated healthcare workers [10,10]. Therefore, it was necessary to strengthen medical personnel's flow as an integral part of any sustainable health care system [10,1]. To achieve these results, they must be provided with the protection they need, and priority must be given to respecting their labor rights and creating decent working conditions for them.

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