DOI: 10.17986/blm.1540
Adli Tıp Bülteni 2021;26(3):142-147

Working Conditions of Forensic Medicine Specialists and Residents During COVID-19 Pandemic and Lockdown Periods: A Survey Study

Adli Tıp Uzman ve Araştırma Görevlilerinin COVID-19 Pandemisi ve Eve Kapanma Döneminde Çalışma Koşulları: Bir Anket Çalışması

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ABSTRACT

Objective: Coronavirus disease-2019 (COVID-19) pandemic has caused changes in the work and daily life of forensic medicine physicians. The present study examines the pandemic's risks on forensic medicine physicians' health, changes in forensic medicine service, and physicians' opinions about the non-forensic medical duties.

Methods: We applied a survey with 31 questions to 220 physicians, including specialist and assistant positions in the field of forensic medicine. We surveyed changes in daily and working life conditions.

Results: 52% of physicians stated that their occupation increased their worries about COVID-19. The rate of the participants, who changed their accommodation sites during the pandemic, was 19%. They also declared a diminishing number of weekly working days. Of 154 people performing a forensic clinical examination, 87% stated that the number of cases decreased, and 23% specified that family violence cases increased. One hundred twenty-eight physicians (58%) were redeployed to non-forensic medicine services. COVID examination room and COVID clinic were the most assigned departments (60 and 26 participants, respectively). The rate of those who did not consider themselves sufficient for these tasks was 27%.

Conclusion: The lockdown period has reduced the workload of forensic medicine for a while. In this period, forensic medicine physicians have highly employed in COVID services, especially residents. As there were notable changes in examination and living environments, the rate of feeling inadequate for non-forensic medical duties has approached one fifth. Structuring postgraduate or on-site education of the physicians will keep these skills alive.

Keywords: Redeployment, competency, COVID-19, medical education, personal protective equipment, autopsy

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Received/Geliş tarihi: 15.01.2021
Accepted/Kabul tarihi: 21.09.2021

ÖZ

Amaç: Koronavirüs hastalığı-2019 (COVID-19) pandemi süreci, adli tıp alanında çalışan hekimlerin de çalışma yaşamlarında değişikliğe yol açtı. Bu çalışma, pandeminin adli tıp hekimlerinin sağlığı üzerinde oluşturduğu riskleri, adli tıp hizmetlerinde görülen değişim ve aldıkları adli tıp dışı tıbbi görevler hakkındaki görüşlerini incelemeyi amaçlamaktadır.

Yöntem: Adli tıp alanında uzman ve asistan pozisyonundaki 220 hekime 31 soruluk anket uygulanarak, genel çalışma ve yaşam koşullarında pandemi sürecinde gerçekleşen değişiklikler sorgulandı.

Bulgular: İki yüz yirmi katılımcının %52'si, mesleklerinin COVID-19 konusunda tedirginliklerini artırdığını belirtti. Pandemi sürecinde konaklama yerini değiştirenlerin oranı %19 idi. %82 katılımcı işe daha az gittiğini bildirdi. Adli klinik muayene yapan 154 kişinin %82'si olgu sayısının azaldığını, %23'ü ise aile içi şiddet olgularının arttığını beyan etti. Yüz yirmi sekiz doktor (%58) adli tıp dışı tıp hizmetinde görevlendirilmişti. COVID polikliniği ve servisi en fazla görev verilen yerlerdi. Bu görevler için kendini yeterli görmeyenlerin oranı %27 idi.

Sonuç: Eve kapanma dönemi adli tıp iş yükünü bir süreliğine azaltmıştır. Bu dönemde, adli tıp hekimleri asistanlar daha ağırlıklı olmak üzere COVID servislerinde yüksek oranda görev almışlardır. Muayene ve yaşam ortamlarında göze çarpan değişimler olurken, adli tıp dışı tıbbi görevler için kendini yetersiz hissetme oranı %20'ye yaklaşmıştır. Hekimlerin mezuniyet sonrası eğitim yapılandırması, bu becerileri canlı tutacak komponentler içermelidir.

Anahtar Kelimeler: Alan dışı görevlendirme, yetkinlik, COVID-19, tıp eğitimi, kişisel koruyucu ekipman, otopsi

INTRODUCTION

Coronavirus disease-2019 (COVID-19) pandemic has led to a severe change in the medical staff's working order worldwide (1-3). While the closed or restricted services have caused a decrease in routine work, most physicians (voluntarily or in charge) have undertaken out of forensic field medical responsibilities that they haven't been in for a long time (4).

Forensic medicine, a branch of medicine based on anamnesis, examination, and diagnosis, is not a specialty providing treatment services. Moreover, the organizational structure of forensic medicine in Turkey is strikingly different from the conventional medical branches. Ministry of Justice delivers forensic medicine services in all the cities of Turkey. A lot of hospitals of the Ministry of Health and the Forensic Medicine Departments of the Medical Faculties also provide this service.

We conduct a survey to determine both specialists and residents' practices and conditions of the specialists and assistants working in forensic medicine in Turkey during the pandemic period.

MATERIALS and METHODS

The study is a survey in which the specialists and residents are working in forensic medicine voluntarily participating. Approval of the Ethics Committee and the permission of the Ministry of Health were obtained for the study. Apart from the limited number of physicians working privately, there are three essential corporate organizations in Turkey's employer position: The Ministry of Justice, the Ministry of Health, and the Universities. We included all these organizations in the study. Although there is no exact data about the number of physicians working in Forensic Medicine in Turkey, the approximate estimation is about 700 physicians. Ministry of Justice is a leading employer with 465 physicians. Universities have the second big pool of physicians, whereas the Ministry of Health employs approximately 70 physicians. The number of private-working employees is negligible. Accordingly, we included 220 people to study as a sample group. The informed consent of each attendant was taken before starting the questionary.

We used a questionnaire form available to users on the "Google forms" platform for data collection. The survey consisted of 23 multiple choices, eight open-ended, 31 questions in total. The survey's announcement was made from the specialist association's e-mail group and the instant messaging groups used by specialists and residents.

We finalized the data collection process when we reached the determined sample size. At the end of the study, data from 39 of 81 cities in Turkey were collected.

Statistical Analyses

Content analysis was conducted on open-ended questions. We performed descriptive studies using frequency analysis and crosstabs with the help of IBM SPSS Statistics V20.0 (IBM Corp. in Armonk, NY.) program on multiple-choice questions. The statistical distribution differences between the groups were found by using the chi-square test. The significance level was accepted as $p<0.05$.

RESULTS

The average age of 220 participants was 34.7±9.2 (r=24-62) years. Among the participants, the largest group (n=145.66%) was the employees working at the Universities (Dominantly Medical Faculties), followed by the Ministry of Justice with 45 participants (20%), and the Ministry of Health with 30 participants (14%). One hundred twenty-three (56%) physicians were in the residence position, and 97 participants were in the specialist role.

Overall, 115 (52%) of the participants stated that they were worried that their profession increased the risk of COVID-19 disease. The participants' distribution in terms of health conditions, accommodation status, and the co-existing risk group is given (Table 1).

Among the participants, who changed their accommodation environment during the lockdown, the rate of those with children or 65+ years older adults at home was 57% (n=24).

Table 1. Health status and risks of the participants

	n/N (%)
Any chronic disease?	21/219 (10)
Any COVID-19 diagnosis on his/herself or co-worker?	49/218 (22)
Living with[a]	
Child/children	70/220 (32)
65+ ages person	30/220 (14)
Risk free person or alone	132/220 (60)
Changing of household during pandemic	42/220 (19)

[a]12 attendants who live with both 65+ person and children

Table 2. Weekly working frequencies of the participants and data regarding non-forensic area tasks

			p
Work days n (%)			
None or flexible	26 (12)		ne
1-2 days	107 (49)		
3 days or more	87 (39)		
Did you work every day on weekdays?	Yes	No	
Ministry of justice	4	41	X^2=10.853 p<0.05
Ministry of health	10	20	
Universities	17	128	
	Specialist	Assistant	
COVID-19 duty n/(%)			
-Voluntary	13 (65)	7 (35)	X^2=9.834 p<0.01
-Officially in charge	31 (29)	77 (71)	
Are you competent for COVID-19 duties? n (%)			
Competent	16 (33)	32 (67)	X^2=1.724 >0.5
Non-competent	5 (19)	22 (81)	
Neither/nor	18 (35)	33 (65)	
What role did you take regarding COVID-19? (N=128)	n		
COVID-19 examination room and/or triage	60		
COVID-19 clinic	26		
Emergency service	16		
Administrative duties	12		
Sampling room	3		

ne: Not evaluated

This rate was 36% (n=64) among the people, who continued to stay at their home, and this rate was significantly lower than the previous group (X^2=6,356; p=0.01).

Working Days and Non-forensic Medical Duties

During the lockdown period, there was a significant change in the weekly working orders of the participants. The number of participants continuing to work regularly (every weekday) only reached 31 (14%). The declared rates for working from home and going to work are given in Table 2. The quality of working every day of the week varied according to the relevant institution, and it was significantly higher for the employees working at the Ministry of Health. One hundred eighty-nine people worked from home at least one day a week, 179 stated that this frequency meant a decrease compared to normal; 73.5% of them specified that they were working from home about forensic medicine.

There were 128 physicians (58%) undertaking non-forensic medicine duties. Twenty of the participants specified that they participated voluntarily. While the rate of assistants was high in assignments, the number of experts was high in volunteers (X^2=11.7282; p<0.001) (Table 2). There was no significant difference between the rates of out-of- (forensic) field assignments at the ministry of health (n=25; 83%) and the universities (n=95, 66%) (since the ministry of justice does not have a medical clinic other than forensic medicine, we excluded this institution in this analysis). Table 2 shows the distribution of non-forensic medicine duties undertaken, although people are also working in more than one position.

Among the non-forensic medical staff for COVID-19, 48 people found themselves fully or partially competent (38%, n=126), 27 people (21%) stated that they are not qualified, and 51 people did not see their task as a competency issue (Table 2). The number of residents who consider themselves competent and non-competent was thirty-two (66.7%) and 22 (81.5%), respectively. There was no significant difference between the residents and specialists in considering themselves as competent (Table 2).

Forensic Medical Practice During the Pandemic

There were 154 people (70%, n=206) who reported that they performed forensic clinical examination during the pandemic. Among them, 134 (87%) stated that the number of patients coming to the out-patient clinic decreased. On the other hand, 34 physicians reported an increase in some types of cases, and 23 of them (15%) stated that the most increase in this process was in the cases of family/partner violence. Apart from this, the number of other types of reported cases was quite a few. Such cases were sequenced as file examination (n=3), execution suspending (n=3), trauma examination (n=2), sexual abuse of children (n=1), and miscellaneous (n=2).

Eighty-four people (56%) thought that working hours' flexibility did not affect the length of time for completion of forensic reports, whereas the number of attendants who declared lengthening or shortening was 42 and 23, respectively.

Twenty-two people (14%) stated that administrations changed the forensic medicine clinic's location during the COVID-19 pandemic. Two participants also informed two requests for physical examination outside the existing forensic medicine clinic: at the police station and in a police vehicle.

In terms of the working conditions, a significant number of participants stated that appropriate physical conditions were not available in the out-patient clinic environment and that there was a deficiency in the number of protective equipment, especially the N95 mask (Table 3).

Seventy-one people stated that they performed an autopsy during the pandemic (32.2%). Sixty-eight people noted that the place where they performed autopsy during the pandemic did not change. Negative-pressure autopsy room and N95 masks were the most frequently reported requests (Table 3).

DISCUSSION

It is possible to categorize the impact of the COVID-19 pandemic on forensic medicine practice under three main titles. The first of them is the changes in direct forensic medicine clinical examination and autopsy burden. The decrease in social mobility during the lockdown period caused a fluctuation in the crime rates in line with the "Routine Activity Theory": Besides, an overall reduction of crimes, family violence, and business place-breaking had increased depending on the region (5,6). The participants of the survey also reported a parallel trend. Fifteen percent of the physicians, who performed forensic medical examinations during the pandemic, stated an increase in family violence cases. Reflection of the similar rise in Istanbul, the largest city of Turkey, on the press in the relevant period had taken place in media as the news supporting this statement (7). On the other hand, these rates are still not disclosed by official statistics or scientific records in Turkey.

Table 3. The level of satisfaction for the attendants, in regard to sufficiency of personal protective equipment and physical conditions of examining room

	Deficiency of protective equipment in clinical forensic examination	Deficiency of protective equipment in autopsy
	(N=154)	(N=71)
	n (%)	n (%)
Is the outpatient environment suitable for COVID-19 conditions?		
Yes	53 (34)	Not asked
No	70 (46)	
Not sure	28 (18)	
No answer	3 (2)	
N95 mask	79 (51)	14 (20)
Overshoes	56 (36)	-
Visors, safety glasses	51 (35)	4 (6)
Apron	39 (25)	7 (10)
Surgery mask	15 (10)	5 (7)
Gloves	12 (8)	4 (6)
Protective gloves	Not asked	6 (8)
Standard autopsy room	Not asked	5 (7)
Negative-pressure autopsy room	Not asked	49 (69)

As there was a decrease in the crime rates, the changes in forensic medicine clinic's daily routine were anticipated, except for acute cases, due to the interruption of judicial processes in the same period (8,9). This factor, combined with a decrease in crime rates, leads to a decline in physicians' workload in the field. Among the participants, only 14% reported that they went to work every day. Of participants, 73.5% also provide forensic services from home. A forensic report will be a desk job if physicians complete a medical examination of the patient before. Due to such cases, forensic medicine physicians can work from home, at least partially (similar to Surgical Pathology). 72% of the participants stated that working at home did not affect the time spent preparing reports.

On the other hand, clinical forensic examination services have to continue in institutions, even though crime incidents have decreased. In addition to a small number increase in execution suspending cases, trauma examination, and sexual abuse of children, there is a significant increase in domestic violence cases.

The second effect of the pandemic on forensic medicine practice is the conditions increasing physicians' risk of becoming infected. As in all the health personnel, the COVID-19 period also threatens the physicians working in forensic medicine. According to the results, the rate of chronic disease among physicians is 10%. Additionally, 22% of them (or someone around) has been diagnosed with COVID-19. As expected, the ratio of living together with children or the elderly is notable. The physicians' rate that experiencing temporary or permanent changes in their accommodation has reached 19%. This percentage increases with the presence of children or older adults living in the same house.

The most frequently reported deficits were the N95 masks for those providing clinical examination services and the negative-pressure room for those performing autopsy. A negative-pressure autopsy room is only present at the Ministry of Justice Forensic Medicine Institute's headquarter in Istanbul. So in routine practice, most of Covid positive autopsies addressed to this institute. On the other hand, from standard surgical masks to aprons, we can specify a deficit in these materials' procurement, which reaches up to 35%.

The importance of examination conditions allowing appropriate social distance for protection is known. Almost in every country, hospitals have been reorganized and switched to a settlement plan according to COVID-19 during the pandemic. In case the forensic medicine working environments are considered, forensic medical examination rooms are generally small at various centers in Turkey. A standard examination table bed and a bedside locker or trolley having materials such as gloves and disinfectants narrow the room even more. The participants' rate, who stated that the examination conditions were not suitable, was 46%. Among 22 people reporting a change in the examination room location after the pandemic, 11 took place in this group. Therefore, the administrative approach to physicians with changed examination rooms is not always in the direction of forensic medicine providers' health safety. The inappropriateness of the conditions sometimes reached such a point to force the physicians to perform medical examinations in a police car or the hospital corridor.

In the Forensic Medicine services, where the number of cases decreased significantly during the lockdown, the most crucial measure for health personnel's safety -except for acute cases, is to reduce the out-patient clinic services. As discussed below, this requirement also increased since COVID clinics employed many forensic medicine physicians. It will be sufficient to fulfill the forensic medicine service in an overtime system with fewer physicians by evaluating all the cases at a particular center.

The third impact of the COVID-19 pandemic on forensic medicine professionals is the emergence of out-of-field medical services. The intense labor need that occurred during the pandemic created an excessive workload for healthcare professionals. To meet this workload, many health care organizations applied rotation at the healthcare personnel's business places. Hospitals redeployed forensic physicians at the emergency rooms, sampling rooms, COVID-19 out-patient clinics, or COVID-19 services. Employees working in the field of forensic medicine also took part in this redeployment pool. Excluding the Ministry of Justice, which does not have benefits other than forensic medicine and forensic pathology, the participants' redeployment reaches 69%. This high rate shows that the physicians working in forensic medicine can provide quantitative participation in the health force with correct planning. Forensic medicine physicians were mostly employed in COVID-19 out-patient clinics and triage (47%), while COVID-19 in-patient services were in the second rank with a rate of 20%. There were no intensive care assignments and 13% emergency service assignments. The percentage of volunteering in specialists is higher than that of residents. An out-of-field task is a significant stress factor. Not only elderly physicians but also the physicians in many fields, who have not practiced necessary medical practices for a long time, experience this concern (4,10). Pandemic became a period for integrating senior medical students (with short and intense courses) into the service (11). Despite a decision to reduce the physical and moral burden on personnel and eliminate the shortage of competent personnel, medical students' integration into the service is controversial both ethically and legally (12).

Long and heavy working hours may lead to burnout on the personnel, where there is also a high rate of loss of life among them. One can easily foresee that long-term health problems will arise, especially mental problems. Not only workload but also contact with patients with COVID increases stress and even causes disruptions in routine life with the family (13). A meta-analysis study revealed that insomnia in health care workers increased more significantly than the non-healthcare workers (14).

As seen in the current study results, the health anxiety caused by COVID-19 increases more with occupational performance anxiety. In the present study, 21% of forensic medicine physicians, who stated that they undertook such a task, indicated that they did not find themselves competing for this task. Legal legislations in Turkey do not care about the physicians' concerns and assume that they are competent. However, many physicians may not have performed these clinical practices required in the emergency service or under clinical conditions for a long time. If they are assigned to the emergency service, matching them with the relevant service's primary physician will reduce the anxiety to a certain extent (15).

Although humanity encountered a pandemic with a similar severity already 100 years ago, there have been epidemics with a limited impact, such as Severe Acute Respiratory syndrome and Middle East Respiratory syndrome. It is also probable that the possible pictures will become more severe in the future. Thus, intensive course programs have been structured, especially on emergency response practices and public health issues. A sample program prepared for this purpose consists of subjects such as Arterial blood gases, examinations such as Chest X-rays, Palliative care guidance, and Resuscitation simulations (16). In the long-term, the programs such as continuous medical education (CME) should also be structured (17). CME programs will refresh healthcare professionals' competence, reduce work stress, and burnout (18). We can handle such programs' inclusion, which can reach a limited number of physicians today, into standard duty applications as a "disaster recovery" issue.

CONCLUSION

The pandemic's social freeze has caused field-specific effects in forensic medicine practice. As many are not urgent, clinical forensic medicine practices have come to a halt, and some of the physicians had an obligation to perform medical

procedures that they left for a long time. When the criminal events hit bottom, forensic medicine physicians will be suitable candidates for redeploying medicine's necessary fields. Thus, they can refresh their skills and knowledge about the relevant subjects using postgraduate or real-time on-site courses. Such a need is valid for all the medical professionals who are far away from the practices mentioned above.

ETHICS

Ethics Committee Approval: This study was approved by the Dokuz Eylül University, Non-Invasive Research Ethics Board (04.08.2020; 2020/17-17) and this study also approved by the Ministry of Health, Directorate-General for Health Services (2020-06-08T14_05_37). The authors ensure that the work has been carried out under The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans.

Informed Consent: The informed consent of each attendant was taken before starting the questionary.

Peer-review: Internally peer-reviewed.

Authorship Contributions

Concept: G.Ö., A.T.E., B.A., Design: G.Ö., Data Collection or Processing: E.S.U., M.G., M.O.Ö., Analysis or Interpretation: E.S.U., M.G., Literature Search: M.O.Ö., Writing: G.Ö., A.T.E., B.A.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

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