A Turkish Plague Tale: Dying Healthcare Workers in Pandemics

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Abstract

Background: The aim of the present study is to analyze the data obtained in the pandemics to highlight the picture that emerged in the struggle against the disease in Turkey, with special emphasis on the deaths of healthcare workers (HCW).

Methods: In this report, the age, gender, province and institution of employment, distribution of death by months, occupation, chronic disease status, and death rates by occupation of 403 active HCW who died due to COVID-19 disease from the beginning of the epidemic until May 31, 2021 were evaluated.

Results: A majority (n=351, 87.1%) of the HCW who lost their lives due to COVID-19 are male. More than one third (36.0%) of all COVID-19 deaths in HCW are physicians; 13.2% (n=53) was pharmacists and 6.0% (n=24) was nurses and midwives. Working in private sector is overrepresented in deaths. Death due to COVID-19 is 8.32 per 10,000 among physicians; 13.78 in male physicians; while only 0.56 in female physicians. Mortality among HCW has slowed down since the vaccine was introduced.

Conclusions: Deaths that have occurred or may occur due to COVID-19 are mostly preventable deaths. Deceased HCW are significantly younger than all COVID-19 deaths, which suggests that HCW have not been protected necessarily. Likewise, the number of deaths among blue-collar workers in healthcare is more frequent in those younger than 50 years old is an indication of the class nature of the pandemic.

Trial registration: The article has not been pre-registered because it does not include reports of a health care intervention on human participants.

Introduction:

The first person realizing that we are into a new and deadly virus and that the impact of the virus could be huge, is Dr. Li Wenliang. On December 30, 2019, he warned healthcare professionals and the public to be careful about the coronavirus outbreak in Wuhan and made an emergency call on social media throughout the world (1, 2). The governments that surrendered to capitalism, which is the main cause of all inequalities by exploiting both nature and citizens, ignored the virus that Dr Li was trying to tell the humanity. Thus, these governments caused the preventable death of millions of people and thousands of healthcare workers all over the world. This rendered existing discrimination and inequalities more visible and deepened over the poor; whilst literally committing “social murder” directly via the governments’ hands (4). As a matter of fact, as of June 1, 2021, around 171 million people in the world were infected with the SARS-CoV-2 virus and around 3,550,000 (2.1%) of them died due to COVID-19 (3). We can postulate that, due to the failure to carry out a scientific basis in the fight against the pandemics in most countries worldwide -mainly comprising developing countries- millions of citizens, and healthcare workers have contracted the disease; while many citizens and healthcare workers have died.

Healthcare workers have served as the pioneers in this struggle against the global crisis. They have undertaken the vital task of detecting and treating an exponentially growing number of cases and had to

make critical decisions under physical and psychological pressure (5–7).

The number of healthcare workers both infected and killed by the COVID-19 virus worldwide does not reflect the actual number due to the incomplete collection of data (8). Only under the leadership of Amnesty International; a wide variety of data has been compiled and analyzed to track the actual number of deaths in many countries. As far as the subgroups of healthcare workers victimized under pandemic conditions; the number of physicians who died is disproportionately high in some countries, while the number of deaths of healthcare professionals other than physicians is high in some countries. The mortality of non-physician healthcare workers is higher in the ‘western’ central capitalist countries (9–14).

Workload excess, precarious work, discrimination among healthcare workers in top 10 countries with the highest number of deaths are remarkable (17).

It is not "inevitable" for a healthcare worker to routinely afflicted by COVID-19 at work. It is not difficult to carry out the necessary structural improvements in ventilation systems, and to provide PPE against airborne spread and contamination (18). When this is achieved, healthcare workers are neither infected nor serving as spreader to the others, as exemplified in some Asian countries (19–21).

Employment of adequate precautions can help overcome the risk of COVID-19 infection of healthcare workers and related deaths (22). Mortality figures of healthcare workers related to COVID-19 in Turkey show how the pandemics have not yet been managed necessarily. In this study, it is aimed to analyze the data that can be obtained in order to evaluate the picture that emerged in the fight against the pandemic disease in Turkey.

Materials And Methods:

The ethical approval of the study was obtained from The Human Rights Foundation of Turkey in 31 May 2021 (Decision No: 31/2021). TMA communicated with the provincial medical chambers, and asked them daily for the information of the healthcare workers who died while receiving COVID-19 treatment. In addition, the relevant information was collected regularly by daily monitoring the social media. The data of healthcare professionals other than physicians from the data collected; The data of non-physician healthcare professionals were monthly summoned from the Turkish Dental Association, the Turkish Pharmacists Association, the Turkish Nurses Association and health unions every month. The present study exclusively engaged in the analysis of data related to healthcare workers who died due to COVID-19 while actively working in Turkey.

There are 403 active healthcare workers who died due to causes related to the pandemics in the 14-month period between April 1, 2020 and May 31, 2021. The age, gender, province and institution where the deceased healthcare staff worked were evaluated, along with the distribution of death by months, occupation and presence of chronic disease states, and also the medical branches of the physicians. Microsoft Excel program was used for data analysis.

Patient and Public Involvement:

As the study is conducted with a retrospective design, patients were not included individually to the study after an informed consent. The study recruited patients via abstracting recorded data in the hospital information system.

Results:

A great majority (87.1%, n = 351) of 403 healthcare workers and 97.2% (n = 141) of the physicians who lost their lives due to COVID-19 are male. Nearly half (48.6%) of all health care workers, 58.6% of physicians; 95.7% of the dentists and 98.1% of the pharmacists who died of COVID-19 in Turkey had been employed in private health institutions (Table 1). On the other hand, only 23.8% of all healthcare workers in Turkey; 18.6% of physicians; 51.9% of dentists; 14.5% of midwives and nurses; 22.2% of other healthcare personnel and 24.8% of other non-healthcare (support) personnel work in the private healthcare institutions (23). According to Pharmacy Information System data, the total number of pharmacists in Turkey is 37,442 and 69.9% of them (n = 26.177) work as community pharmacists (pharmacy owners and managers) (24).

In Turkey, 14.8% of healthcare professionals are physicians, 3.0% are pharmacists, 24.5% are nurses and midwives. 36.0% of deaths due to COVID-19 occurred in physicians; 13.2% were in pharmacists and 6.0% were in nurses and midwives. Death rate due to COVID-19 in nurse-midwives is 0.83 out of 10,000.

A total of 71,933 physicians (41%) out of 174,187 are women in Turkey (25). The death rate due to COVID-19 among physicians is 8.32 per 10,000; 13.78 per 10,000 for males; 0.56 per 10,000 in females. Deaths due to COVID-19 in pharmacists are 14.70 out of 10,000; however, 52 (98.1%) of the 53 pharmacists who died were working in private pharmacies (community pharmacists). The number of private pharmacies in Turkey is 26,177 (24). It is calculated that, death rate due to COVID-19 among private pharmacists is 19.86 per 10,000.

Mean age of occupational physicians whose age data are available is 63.6 years (n = 18); 56,1 (n = 18) in family physicians. 66,0 (n = 7) in general surgeons; 62,9 (n = 12) in internists; 79.0 (n = 2) in ophthalmologists; 65.6 (n = 5) in ENT specialists and 55.8 in radiologists (n = 6).

A substantial percentage (38.9%) of healthcare workers aged under 35 who died of COVID-19; 43.8% of those between the ages of 35 and 49 are employees with worker (blue collar) status. Fifty (56.8%) of the healthcare workers who are 65 years and older and died due to COVID-19 are physicians. 81.8% of deaths in nurses and midwives are under the age of 50; 83.9% of the deaths in physicians are 50 years and over.

A total of 13.8% of the physicians who died from COVID-19 were working in occupational medicine units; while another 13.8% were working as family physicians. A history of comorbid diseases were obtained about only 48 (11,9%) of 403 healthcare workers (47 of them are physicians) who died due to COVID-19. Only 14.9% (n = 7) of these 47 physicians did not have any comorbid diseases. A total of 40 physicians

(85.1%) with comorbid diseases had one or more diseases such as hypertension, diabetes, cancer, and cardiovascular diseases.

Most (85.7%) of the physicians who died in January 2021 due to COVID-19; 75.0% of the physicians who died in February 2021; 80.0% of the physicians who died in March 2021; 83.3% of the physicians who died in May 2021 was working in private.

Mean age of healthcare workers who died due to COVID-19 in Turkey is 55.3 years while the corresponding figure is 59.7 in physicians, 66.9 in pharmacists, and 40.9 in nurses and midwives (Table 2).

As far as gender differences, 38.9% (n = 7) of those under the age of 35 among the healthcare workers who died due to COVID-19; 22.4% (n = 22) of those between the ages of 35 and 49; 8.8% (n = 13) of those between the ages of 50 and 64 and 8.0% (n = 7) of those aged 65 and over are women. Mean age of female healthcare workers who died of COVID-19 was 48.2+-11.8.

A total of 57.3% (n = 231) of healthcare workers who died in Turkey were employed in hospitals; whilst 16.6% (n = 67) were working at the pharmacy (52 pharmacists, 15 technicians). Of the 145 physicians who died, 66.9% (n = 91) were working in the hospitals, 13.8(n = 20) % in the family medicine units, and 13.8(n = 20)% in the occupational healthcare units (Table 4). 66.0% (n = 64) of the physicians employed in the hospitals were working in private sector. 95.7(n = 22)% of the deceased dentists were working in private practices. A total of 12 employees of the emergency medical services stations died due to COVID-19 and a majority (n = 11) of them were working as ambulance drivers.

A majority 68.4 % of deaths in healthcare professionals due to COVID-19 were recorded between September 2020 and January 2021 (Table 6). In accord with the data released by the Turkish Ministry of Health, a total of 25,993 deaths due to COVID-19 took place within the period of pandemics (until the end of January 2021). More than three-fourths (75.4%) of these deaths occurred in the five-month period specified above (26).

As far as the temporal changes in the number of deaths due to COVID-19 in Turkey; the increases and decreases in the number of deaths in the general population during the pandemic generally parallels with the numbers of deaths of healthcare workers. However, this correlation faded between March 2020 and June 2020 and decreased to 0.33%; then again increased to 2.79% between June 2020 and August 2020 (the highest level). This figure decreased to 0.17% through March 2021 (despite a slight increase in October 2020).

Discussion

On September 2, 2020, Turkish Ministry of Health announced that 29,865 healthcare workers had a positive PCR test indicating COVID-19 in the pandemic period, including 52 deaths. However, the Ministry of Health announced the number of healthcare workers diagnosed with COVID-19 with positive PCR tests

as 120,000 (including 216 deaths) on December 9, 2020, which has been the last time of formal announcement of these figures so far.

When these data obtained from the Ministry of Health are adjusted to the fact that 403 healthcare workers died from the pandemic disease, we can postulate that at least 220.000 healthcare workers must have been PCR (+), which also implicate that 19% of all healthcare workers had contracted the virus in Turkey. These data also suggest that appropriate precautions have not been undertaken as necessary for a long time in the pandemic period.

The number of physicians, dentists and pharmacists working in the private sector among the deceased healthcare professionals is higher than those employed in the public sector. Failure of implementing additional precautions for those employees who prefer working in the private sector for economic reasons and even after retirement at an age when they should not work at all, failing to shorten their working hours, and even increasing the number of patients they had to care - since public hospitals are generally transformed into pandemic hospitals – have been effective factors in this excess.

The rate of physicians working in the private sector among those who died due to COVID-19 turned out to be much higher than those in the public sector. All these excessive number of physicians lost due to COVID-19 in Turkey are closely related to the commercialization of healthcare labor and services which should be analyzed further in all aspects.

The case fatality rates of COVID-19 in Turkey are the highest in professional groups such as pharmacists and almost all of the deceased pharmacist were working as private pharmacists. It is necessary to examine the workplaces and financial conditions of all healthcare professionals, especially the working environments of family physicians and occupational physicians who died due to COVID-19 in detail.

The disease demographics of employees in the health sector in the world is important. During the pandemic period, female healthcare workers were more frequently infected than male workers; however, the percentage of male healthcare workers who died of the pandemic disease is remarkably higher than female colleagues. The difference between the number of male doctors and female doctors who died is very clear.

The fact that deaths among healthcare workers are more frequent for those with worker status below the age of 50 is another confirmation of the class predilection of the pandemic disease.

Considering that the majority of deaths in pandemics are 65 years and above, mean age of the deceased healthcare workers (55.3) is a point to ponder.

Information on comorbid diseases of only one person among the non-physician healthcare professionals could be accessed per study purposes, in addition to 47 physicians. According to these data, most of the physicians who had comorbid disease information had serious accompanying diseases. The government did not seem to appreciate the fact that physicians had to work at the forefront during the pandemic despite these diseases, and in result, many deaths occurred among the physicians.

Outstanding factors which have an impact on the deaths of healthcare workers in the globe include overworking due to economic reasons, increased workload in the pandemic, working in public and private sectors at the same time, shortage of personal protective equipment, inadequate screening tests, working in unsuitable physical conditions and insufficient ventilation, burnout, stress and exhaustion, comorbid illnesses, male gender, high mean age of the healthcare workers at the forefront, and inadequate in-service training (26–37). It is apparent that deaths of healthcare workers in Turkey are related to multiple factors as mentioned previously.

Mortality among healthcare workers has visibly slowed down since the vaccine was introduced in January 2021. Had the Ministry of Health been able to vaccinate all healthcare workers in December as promised previously, there would be a significant decrease in the number of deaths following this timeframe.

Vaccine hesitancy should not be ignored in the deaths of healthcare workers in 2021. The vaccination information of 9 healthcare workers who died in April and after could be accessed by TMA. It is known that 6 out of 9 healthcare professionals, whose vaccination information was reached, were not vaccinated for 2 doses due to hesitations about being vaccinated.

Although the percentage of healthcare workers in deaths declined to 0.33% until June 2020, it increased in the following months, which could have attributed to rendering healthcare workers more vulnerable to the virus with the “normalization” of hospitals in June 2020.

After the reopening practices in May and June of 2020, which were launched despite the warnings of TMA, the death rate of healthcare workers increased earlier than the death increase in the general population of Turkey. Even when the Ministry of Health's data were considered to be close to truth, the increase in infection and mortality in healthcare workers should have been a canary in the mine for early measures to be taken.

During the pandemic, there were no health worker deaths in some countries, while in some others, deaths occurred at the first peak of the pandemic were examined in detail and no healthcare worker deaths were encountered in the following period, thanks to the strict measures taken. In Turkey, the occurrence of 90.8% of all deaths, including healthcare workers between June 2020 and May 2021 demonstrates that no measures and/or lessons were taken. In other words, it can be postulated that almost all deaths could have been prevented should the causes of 9.2% deaths in the first 3 months of the pandemic be thoroughly examined and additional measures taken.

We should admit that collection of robust data is not so straightforward in most parts of the world, especially in the developing countries. Few governments around the world have collected comprehensive data about the pandemic disease. Turkey is among the (mostly developing) countries which have not yet detailed the struggle carried out against COVID-19. An accurate and inclusive assessment will be very difficult without the collection and analysis of data, based on the principles of accountability and transparency and fully compatible with human rights around the world.

Conclusions

While COVID-19 has been officially accepted as an occupational disease for healthcare workers in dozens of countries without a need for establishment of any causal link, this has not been the case in Turkey. The factors to determine this discrepancy are (1) the class characteristics of the COVID-19 disease, (2) the fact that they are private health sector workers, and (3) the failure to implement measures to prevent the majority of deaths, especially after the first wave, in the deaths of healthcare workers due to this disease.

Deaths that have occurred or may occur due to COVID-19 are mostly preventable deaths. In this context, a joint and collaborative approach comprising the representatives from the Ministry of Health, the Ministry of Labor, chambers of medicine, unions and other relevant bodies should be launched.

Declarations

Ethics approval and consent to participate

The ethical approval of the study was obtained from The Human Rights Foundation of Turkey in 31 May 2021 (Decision No: 31/2021).

Consent for publication

The manuscript does not contain any individual person's data in any form (including any individual details, images or videos).

Availability of data and materials

The individual de-identified participant data integrated in this research (including data dictionaries) will be shared with third parties. Additional, related documents will be available (eg, study protocol, statistical analysis plan) for any purpose. Data are available indefinitely in the repository of Turkish Medical Association (TMA).

Competing interests

The authors declare that they have no competing interests relating to the study.

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Authors' contributions

N.N. and A.B. conceived of the presented idea. N.N. developed the theory and performed the computations. N.N., O.K., A.B., and S.K.F. devised and verified the analytical methods. All authors discussed the results and contributed to the final manuscript.

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With our great respect and commemoration of all healthcare professionals we lost to COVID-19...

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Tables

Due to technical limitations, table 1,2,4,6 are only available as a download in the Supplemental Files section.

Figures

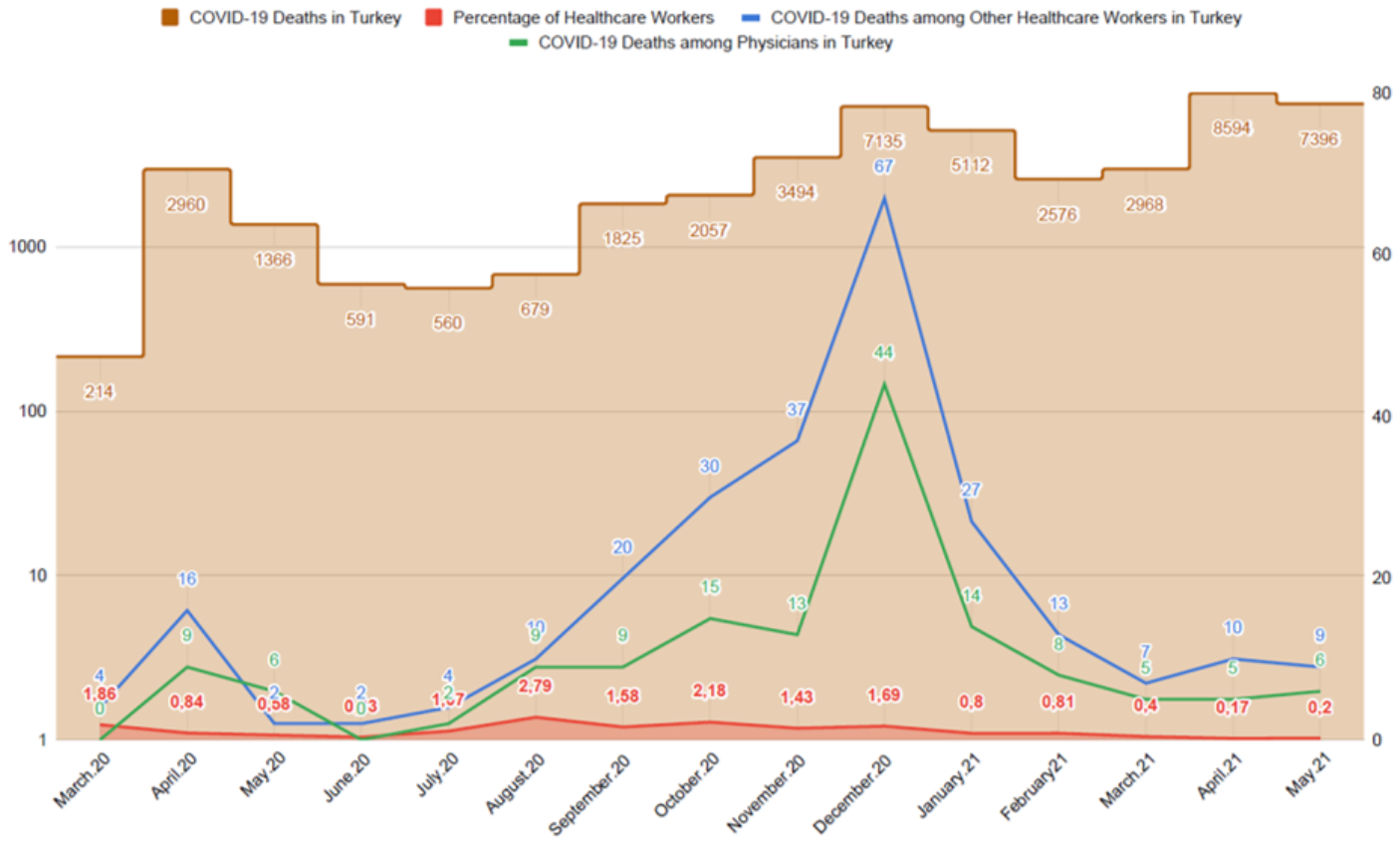

Figure 1

Distribution of deaths due to COVID-19 of Turkey's population, physicians and other healthcare workers by months and the proportion of deaths of healthcare workers among those of general population.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Tables.pdf