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Early View

Editorial

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Editorial

An Italian sacrifice to COVID-19 epidemic.

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As reported by Newsweek magazine on April 4th, 2020 (1) Coronavirus has killed over 100 doctors and nurses around the world, nearly half of whom are reported to be in Italy. This report however underestimated the size of the problem. Up to day 151 doctors and more than 40 nurses have died in Italy for COVID-19.

Overall, infection rates among healthcare workers in Italy and Spain are reported to be 9% and 14%, respectively, while in China (2) and other part of the world this number was lower. There is no clear answer yet as to why Italian doctors has been so badly affected, but several factors may have played a role.

First, the outbreak was somehow underestimated by scientists and politicians since they interpreted the data coming from China in a way that confirms their a priori beliefs that virus will not have hit seriously Italy (i.e. confirmation bias).

The Centre for Disease Prevention and Control in Europe pointed out that the impact of COVID-19 depended on the single country's level of preparation and ability to implement rapid responses. Unfortunately, the time “advantage” that Italy has after the Chinese outbreak was lost.

The increase in cases after February 21st (first case reported in Codogno) has been fast, and if so the human and technical resources to fight the virus are not guaranteed, leading to a more serious impact i.e. a greater number of deaths among the most vulnerable sectors of society, especially if medical professionals are among those affected. Poor coordination by authorities and a slow reaction to take drastic and protective measures for the hospital personnel have put at risk those on the front line. Most of the district and rural hospitals (where the first cases occurred) were fully unprepared to face epidemic, so that they immediately faced with lack of masks, shields, glasses, and protective suits. At difference with nurses, doctors were not trained and sufficiently skilled in both wearing and using this equipment (3).

Second, doctors were working under extreme pressure for many hours without any break or day off, decreasing probably their attention towards protection. This became even more dramatic when the first doctors got sick, thus "obliging" the colleagues on duty to work even more harder to replace the reduced staff.

Third, critical care beds and negative pressure rooms run out very quickly in the first few weeks of the outbreak, since hospitals were overloaded by patients with acute respiratory failure (ARF). Therefore, physicians rapidly implemented in the general ward, as trenches, aerosol generating procedures such as oxygen through different route of administration and respiratory devices (CPAP and BIPAP). To obviate the problem hospital staff has usually chosen rooms with natural ventilation (airflow of at least 160 $L \cdot s^{-1}$ per patient as suggested by WHO) but obviously, this was a makeshift remedy.

In order to better understand the problem of "*deaths on the field*" and avoid speculations, we have performed a descriptive statistic of colleagues who died. Data have been extracted from the national federation of medical doctor website (FNOMCEO, https://portale.fnomceo.it) reporting the daily bulletin of deaths. The present report is based on the available information by May 3rd 2020 as the latest update just before the re-opening (phase 2). Cross-check by each name/surname has been made on a web search across local press and the individual's professional order to obtain any other useful information. We included only those who were active or called back from retirement (124/154).

The figure 1 shows demographics, residence, and distribution of both specialty and the site of residence and activity of this population. In addition, the trend of deaths over the period as compared with the last updated national epidemic outbreak (4) is also displayed.

The geographical distribution of doctors' residence, closely paralleled the distribution of the patients' clusters, so that we can rule out the fact that Italian hospitals and medical services run autonomously by different regions may have create some inequalities.

The median age of dead colleagues was quite high, which might reflect the expected death rate in the patients with positive swabs in the general population (>10% in the range 60-70 years). However, we cannot exclude the role of their lower performance (i.e. in adapting to the hospital transformation in response to the emergency, the ability to dress protective equipment, etc.) as described in older physician vs the younger ones (5).

Last, but probably most important, there was the impact of the specialty of the doctors died on duty. The large majority of them worked as General Practicioner (GP) in or close the area mostly hit by the virus (i.e. Bergamo in Lombardy). The hospitals in that province were very quickly filled by patients, and the authorities suggested to the people to present at the Emergency Room only in case of body temperature >37.5 C°, even if prolonged over days and associated with dyspnea. GPs in Italy have also the duty to go to the patient's house when needed (i.e. the patient cannot go to the doctor's office because she/he is too sick). GPs were the last one to receive protection equipment, very often only few surgical mask to be reused for days, and therefore it is very likely that both in their office and at home they have visited many patients without the desirable protection.

The second more represented category was that of dentists, the large majority of them with a degree also in Medicine. They had to buy the protective equipment by themselves being not employees of the National Health Care System, but unfortunately pharmacies run out very quickly of mask and shields, due to a massive demand from all the citizens. Thus, they operated for several days/weeks very close to the patient's airways with non-sufficient protection. Afterward

during the outbreak, the dentistry offices locked down by law, except for the emergency, so the number of dentists affected by COVID-19, dramatically decreased.

Quite surprisingly, doctors in critical care and emergency areas as well pulmonologists were spared by the infections, despite working on the frontline. This may simply mean that they are more used to work in their everyday practice with patients at risk for airway-derived infections, and therefore they are probably more cautious and skilled in using and wearing the protective equipment.

Last, and quite interestingly, the distribution of deaths among the medical doctors during the epidemic closely mirrors the curve of new cases among the Italian population. This confirms that the exposure to risk in the front line also reflects a similar inauspicious outcome of doctors on duty.

It is hard to face with this sacrifice of human beings payed to this dramatic COVID-19 epidemic leaving us alone with thousands of thoughts and regrets, but it also should teach us not to forget.

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Figure legend

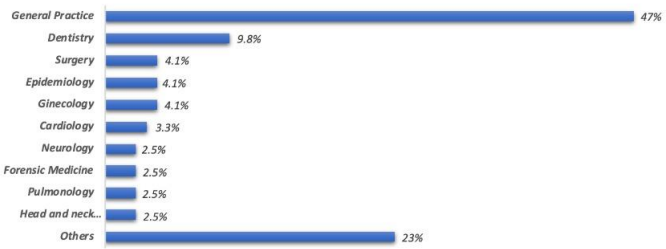
Figure 1.

Demographics (panel A), specialties (panel B), and geographical distribution (panel D) of medical doctors' death during COVID-19 epidemic in Italy. Time course and frequency of deaths in the general population and in the medical doctors' one is also reported (panel C).

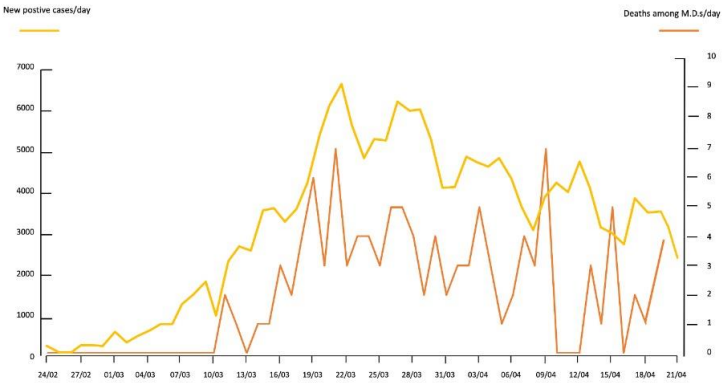
A

Feature	
Male sex, n (%)	115 (94.3)
Age, y (IQR)	68 (63 – 71)
Age class	
< 50, n (5)	2 (1.6)
51 – 60, n (%)	14 (11.5)
61 – 70, n (%)	70 (57.4)
71 – 80, n (%)	35 (28.7)
81 – 90, n (%)	1 (0.8)
Service status	
Active, n (%)	114 (93.4)
Back from retirement, n (%)	8 (6.6)

B



C



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