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The demography of deaths in healthcare workers – an overview of 1004 reported COVID-19 deaths

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Abstract

Objectives: As of May 13, 2020, 1004 healthcare worker (HCW) deaths due to coronavirus disease 2019 (COVID-19) have been reported globally. This study seeks to organize these deaths by demographic group, including age, gender, country and occupation.

Methods: *Medscape* publishes a crowdsourced list of global HCW COVID-19 deaths. We collected data from this list, including age, gender, country, occupation and for physicians, specialty.

Results: As of May 13, 2020, of 1004 HCW deaths, 550 were physicians. The average age of physician death is 62.49 and skewed right and non-physician death is 52.62 and approximately symmetrical. The majority of United States HCW deaths are male (64.1%). General practitioners, family medicine and primary care physicians account for 26.9% of physician deaths while anesthesiologists, emergency medicine and critical care physicians account for 7.4%. The United States has the highest number of HCW deaths but a similar number as a fraction of national cases and deaths compared to other developed countries.

Conclusions: Among HCWs globally, there have been more reported deaths of physicians (vs. non-physicians), primary care physicians (vs. physicians of other specialties), males in the United States (vs. females in the United States), and HCWs living in the United States (vs. HCWs of other countries). Further research is needed to understand relative risks of death due to COVID-19 in each of these demographic groups.

Keywords: demography, COVID-19, healthcare workers, frontline workers, primary care

Introduction

Since coronavirus disease 2019 (COVID-19) has impacted the world beginning in December 2019, there has been a great deal of concern about the safety of healthcare workers (HCWs). Inadequate personal protection is a core issue, especially for frontline HCWs. Duration of exposure and frequency of exposure is another important risk factor (1).

Analysis of HCW deaths due to COVID-19 will provide a way of identifying the scope of this problem. An exploration of these deaths might assist administrators in planning safety and resource utilization.

Methods

We gathered data on reported HCW deaths globally from *Medscape*, which publishes a crowdsourced list of HCW deaths from its readers. *Medscape* requires a confirmation of death for all submissions. The list contains some or all demographic data on age, country of death and occupation. We inferred gender of United States HCWs based on first name. We subdivided occupation into physician and non-physician, and further subdivided physicians into specialties.

Results & Discussion

As of May 13, 2020, a total of 1004 HCW deaths have been reported globally by *Medscape*. More than half of the HCWs were physicians (54.8%). Non-physicians in our study included nurses, nursing assistants, physician assistants, paramedics, technicians, patient transporters, social workers, pharmacists, epidemiologists and administrative staff.

The mean age of physician deaths is 62.49 years and non-physician deaths is 52.62 years. Disproportionately more physician deaths occurred in the age group above 50 years, especially 60-80. This is possibly due to the skewed age distribution between physicians and non-physicians. 22% of approximately 2 million registered nurses in the United States are over the age of 55. Similarly, 20% of approximately 1.2 million physicians are over the age of 55 (2). This difference in average age must be accounted for in understanding this data.

In the United States, more male than female HCW deaths have been reported (132 vs. 74). This difference is consistent with other published data on gender susceptibility to COVID-19. Jin et al. found that two-thirds of COVID-19 patients were male and male cases tended to be more serious (3). Other studies have also addressed issues such as gender and ethnicity in relation to HCW deaths. Disproportionately more African Americans have died in the United States. In the United Kingdom, black, Asian and minority doctors have died in disproportionately larger numbers (4).

General practitioner/family medicine/primary care physicians form the largest subset of physician deaths (26.9%, Table 1). Anesthesiologists, emergency medicine and critical care physicians, who are often frontline workers, form a smaller subset (7.4%). A possible explanation is that they are more likely to interact with asymptomatic patients and have inadequate PPE (5).

The United States has more HCW deaths than any other country but not as a fraction of cases and total national deaths. Using these metrics, the United States is similar to other developed countries including the United Kingdom, Italy and France. In the United States, New York and New Jersey have the highest number of HCW deaths

A limitation of this study is that the *Medscape* list of HCW deaths is a convenience sample and likely to be incomplete, as it is crowdsourced from its readers. There is likely more than 1004 HCW deaths globally. Reporting of deaths also varies from country to country. Physicians, for example, may have more access to testing and treatment, and as a result be overrepresented compared to non-physicians. At least two reported deaths were suicides. Although the issues of work related stress and burnout among HCWs should not be understated, this is another factor which may skew our data.

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Specialty of physician deaths

Table 1. Specialty of physician HCW deaths, as of May 13, 2020

	Number	Percent
Anesthesiology	15	2.7
Cardiology	21	3.8
Dermatology	4	0.7
Emergency Medicine / Critical Care	26	4.7
Endocrinology	2	0.4
ENT	8	1.5
Gastroenterology	1	0.2
General Practitioner / Family Medicine / Primary Care	148	26.9
Geriatrics	4	0.7
Hematology	4	0.7
Infectious Disease	5	0.9
Internal Medicine	30	5.5
Nephrology	6	1.1
Neurology	6	1.1
Neurosurgery	6	1.1
OB-GYN	22	4.0
Oncology	3	0.5
Ophthalmology	13	2.4
Orthopedist	15	2.7
Otolaryngology	6	1.1
Pathology / Histopathology	10	1.8
Pediatrics	26	4.7
Plastic Surgery	4	0.7
Psychiatry	11	2.0
Pulmonology	13	2.4
Radiology	13	2.4
Rheumatology	1	0.2
Surgery	33	6.0
Urology	8	1.5
Other	29	5.3
Total	493	89.6
Missing	57	10.4
Total	550	100.0