



Short Communication

Healthcare worker infections and deaths due to COVID-19: A survey from 37 nations and a call for WHO to post national data on their website

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The coronavirus disease-2019 (COVID-19) pandemic is an ongoing devastating threat to human lives and livelihoods around the world. Healthcare workers (HCW) are part of the frontline in the struggle against the pandemic. Many HCWs have been infected with the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and have lost their lives worldwide during the pandemic. Recently, the World Health Organization (WHO) African Regional Office in Brazzaville reported that over 10,000 HCW in Africa were infected with this coronavirus ([African Regional Office \(AFRO\)/World Health Organization \(WHO/OMS\), 2020a](#)). On September 2, the WHO Pan American Regional Office in Washington, DC, reported that 570,000 HCW were infected and 2500 were dead due to COVID-19 ([PanAmerican Health Organization \(PAHO\)/World Health Organization \(WHO\), 2020b](#)). The WHO Director-General, Dr. Tedros Adhanom Ghebreyesus, emphasized during the announcement of the WHO Health Worker Safety Charter September 17, 2020 that “thousands of health workers infected with COVID-19 have lost their lives worldwide” ([WHO Geneva, 2020c](#)).

The nation-by-nation number of HCW infections and deaths is unclear, however, because some countries do not make the data publicly available. Moreover, the WHO headquarters in Geneva does not currently post on their COVID-19 website the number of HCW infections and deaths by country. We call on the WHO Director-General to make this information available nation-by-nation on their COVID-19 website beginning from November 2020 to focus attention on this ongoing tragedy and the steps to be taken to stop it.

To help catalyze this nation-by-nation data sharing, we performed a survey among members of the ID-IRI (Infectious Diseases International Research Initiative; <https://infectdisiri.com/>). We asked members to complete a brief survey that requested the number of deaths and number of infected in four categories: medical doctors, medical nurses, other medical staff as well as the total number of HCWs (see [Table 1](#)). The data were reported through Google Drive to one of the authors (HE). The sources of information for each country are provided by the collaborators as listed below the [Table 1](#). The updated population of the countries were obtained from [Worldometer \(2020e\)](#). Data were obtained between July 22 and August 15, 2020. As a limitation of the study, we could not provide data where HCWs contracted the disease—during work with patients or from the community. We found that although

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Table 1
Healthcare workers' losses due to Covid-19 in 37 countries.

Country	Medical Doctors		Medical Nurses		Other Medical Staff		HCWs (total)		Population	HCW Mortality per 100,000
	died	infected	died	infected	died	infected	died	infected		
Afghanistan	?	?	?	?	?	?	26	?	38,928,346	0.07
Albania	2	6	0	15	0	6	2	27	2,877,797	0.07
Azerbaijan	18	?	12	?	15	?	45	?	10,139,177	0.44
Bangladesh	69	2447	09	1792	04	2805	82	7044	164,689,383	0.05
Botswana	0	0	0	1	0	0	0	1	2,351,627	0
Bulgaria	4	213	1	212	2	188	7	613	6,948,445	0.10
Colombia	14	602	7	1738	10	1315	31	3655	50,882,891	0.06
Croatia	0	127	0	167	0	112	0	406	4,105,267	0
Czech Republic	0	211	2	487	0	421	2	1119	10,708,981	0.02
Denmark	0–5	431	0–5	1344	0–5	605	0–15	2380	5,792,202	0.17 ~
Egypt	35	375	10	75	11	300	56	750	102,334,404	0.05
France	5	2906	0	8626	11	18,500	16	30,032	65,273,511	0.02
Hong Kong	0	0	0	3	0	2	0	5	7,496,981	0
India	108	1073	2	144	?	96	110	1313	1,380,004,385	0.01
Iran	91	3000	31	7000	42	2000	164	>12,000	83,992,949	0.20
Italy	174	17,000	16	12,000	24	896	214	28,896	60,461,826	0.35
Jordan	0	5	0	23	0	1	0	26	10,203,134	0
Kosovo	4	174	0	341	0	65	4	580	1,810,366	0.22
Lebanon	1	65	1	122	0	220	2	416	6,825,445	0.03
Mexico	205	13,800	274	18,400	683	46,000	1162	78,200	128,932,753	0.90
Nepal	0	23	0	3	0	135	0	161	29,136,808	0
N. Macedonia	3	24	0	63	0	22	3	109	2,083,374	0.14
Oman	1	192	0	508	0	486	1	1186	5,106,626	0.02
Pakistan	42	3275	15	718	13	1374	70	5367	220,892,340	0.02
Palestine Gaza	0	0	0	0	0	0	0	0	?	0
Peru	70	2062	?	?	?	?	?	?	32,971,854	?
Poland	1	660	4	1659	2	85	7	2404	37,846,611	?
Portugal	1	516	0	1180	0	1985	1	3681	10,196,709	0.01
Romania	8	575	9	1734	11	1595	28	3907	19,237,691	0.14
Sierra Leone	3	4	1	110	1	35	5	149	7,976,983	0.06
Slovakia	0	4	0	0	0	0	0	4	5,459,642	0
Spain	76	52,746	6	?	?	?	?	?	46,754,778	?
Syria	3	41	0	8	0	3	3	52	17,500,658	0.02
Tunisia	0	?	0	?	0	?	0	145	11,818,619	0
UK	19	?	35	?	52	?	106	?	67,886,011	0.16
USA	?	?	?	?	?	?	574	114,529	331,002,651	0.17
Uzbekistan	6	?	?	?	?	?	?	?	33,469,203	?

UK: The United Kingdom and USA: The United States of America.

Data sources (provided by the collaborators).

- 1) **Afghanistan** (data provided by the collaborator).
- 2) **Albania** (data provided by the collaborator).
- 3) **Azerbaijan** (data provided by the collaborator).
- 4) **Bangladesh** (Bangladesh Medical Association website daily update).
- 5) **Botswana** (Ministerial data).
- 6) **Bulgaria** (Official informational portal for COVID-19 in Bulgaria: <https://coronavirus.bg>).
- 7) **Colombia** (<https://www.ins.gov.co/Noticias/Paginas/Coronavirus.aspx>).
- 8) **Croatia** (Ministerial data).
- 9) **Czech Republic** ("Czech Medical Association official magazine, online at https://www.lkcr.cz/doc/tempus_file/tm-07_08_20-166.pdf, page 13").
- 10) **Denmark** (<https://www.ssi.dk/sygdomme-beredskab-og-forskning/sygdomsovervaagning/c/covid19-overvaagning>).
- 11) **Egypt** (data provided by the collaborator).
- 12) **France** (<https://www.santepubliquefrance.fr/>).
- 13) **Hong Kong** (CHP Hong Kong).
- 14) **India** (ijMRHCW.PDF, preprint202007.0346,v1.pdf, <https://demagclinic.Com/2020/07/20/lessons.learned.from.108.deaths.in.india/amp/>, <https://theprint.in/health/first-official-figures-on-covid-among-healthcareworkers-in-Ind>).
- 15) **Iran** (irimc.org Iranian Medical Council).
- 16) **Italy** ("https://www.epicentro.iss.it/coronavirus/bollettino/Bollettino-sorveglianza-integrata-COVID-19_21-luglio-2020.pdf, <https://portale.fnomceo.it/elenco-dei-medici-caduti-nel-Corso-dellepidemia-di-COVID-19/>, https://www.ilmessaggero.it/salute/prevenzione/infermieri_giornata_internazionale_covid_12mila_contagiati_roberto_speranza_lettera-5223101.html, <https://www.assocarenews.it/oss-raa/coronavirus-ecco-tutti-gli-operatori-socio-sanitari-oss-deceduti-per-COVID-19>").
- 17) **Jordan** (MOH, Jordan. Department of Communicable disease. <https://corona.moh.gov.jo/en>).
- 18) **Kosovo** (data provided by the collaborator).
- 19) **Lebanon** (Ministerial data).
- 20) **Mexico** (<https://www.gob.mx/salud>).
- 21) **Nepal** ("<https://www.edcd.gov.np>, <https://swasthyakhabar.com/story/33845>").
- 22) **N. Macedonia** (www.iph.mk).
- 23) **Oman** (Ministry of Health; Disease Surveillance and Control).
- 24) **Pakistan** (National health services regulations and coordination. NHSR&C Pakistan).
- 25) **Palestine Gaza** (<http://www.moh.gov.ps/portal/>).
- 26) **Peru** (<https://www.cmp.org.pe/cuarentena-se-levanta-con-70-medicos-fallecidos/>).
- 27) **Poland** (www.medonet.pl/koronawirus-w-Polsce_zakazenia-koronawirusem-wsród-pracowników-medycznych).
- 28) **Portugal** (Data from the Portuguese health minister conference in the end of June).
- 29) **Romania** (<https://covid.solidaritate-sanita.ro/categorii-profesionale/>).
- 30) **Sierra Leone** (Ministry of Information and Ministry of Health and Sanitation).
- 31) **Slovakia** (Ministerial data).

- 32) **Spain** ("<https://t.co/mzZlAdkVbM>; Updated May 16th for MD: https://www.elespanol.com/reportajes/20200516/numero-sanitarios-muertos-coronavirus-asciende-doble-oficial/490202041_0.html; Updated July 16th: <https://www.rtve.es/noticias/20200717/profesionales-sanitarios-contagiados-covid-19-superan-50000/2014047.shtml>").
- 33) **Syria** (Ssnsy.org).
- 34) **Tunisia** (<https://www.onmne.tn/fr/actuality.php>).
- 35) **The United Kingdom** (<https://www.hsj.co.uk/exclusive-deaths-of-nhs-staff-from-covid-19-analysed/7027471.article>).
- 36) **The United States of America**, <https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html>.
- 37) **Uzbekistan** (data provided by the collaborator).

there were differences among the countries that joined the survey, the median of the HCW deaths in 100,000 per population of the country was 0.05.

COVID-19 HCW infections and deaths are tragedies for the individuals, their families, colleagues, and an existential crisis for HCWs and for local and national healthcare infrastructures. China reported that 3387 HCW were infected with this novel coronavirus. Of this number, 23 died, including 21 who were physicians and surgeons, one nurse, and one technician (Zhan et al., 2020). A 34-year-old ophthalmologist in Wuhan Central Hospital, Dr. Li Wengliang, died due to COVID-19 on February 7, 2020 in Wuhan. He was recognized in this journal by Petersen et al. as “a face to the frontline healthcare worker. The first doctor to notify the emergence of the SARS-CoV-2, (COVID-19), outbreak” (Petersen et al., 2020).

This ongoing tragedy will continue as long as most nations lack safe and effective vaccines, drugs, and antibodies. Most immediately important, however, is to make available enough highly effective COVID-19 personal protective equipment, training, and donning and doffing protocols (World Health Organization, 2020d).

We add these data on infections and deaths due to COVID-19 from 37 nations to emphasize this continuing and preventable tragedy involving healthcare workers. We also call on the WHO Director-General to highlight this tragedy and the need to stop it by posting nation-by-nation data on the WHO COVID-19 website beginning from November 2020.

Conflict of interest

None to declare.

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Ethical approval

Not applicable.

Collaborators

Bilal A. Rahimi (**Afghanistan**), Edmond Puca (**Albania**), Raksana Jalilova (**Azerbaijan**), Rezaul Karim Ripon and Abu Hena Mostafa Kamal (**Bangladesh**), Sajini Souda (**Botswana**), Michael M. Petrov (**Bulgaria**), Alfonso J. Rodriguez-Morales (**Colombia, Peru**), Gaspar Del Rio and Julio Benavides, (**Colombia**), Rok Civljak (**Croatia**), Matúš Mihalčín (**Czech Republic**), Signe Maj Sørensen (**Denmark**), Ashraf Wegdan (**Egypt**), Pierre Tattevin (**France**), Ivan Hung (**Hong Kong**), Hema Prakash Kumari Pilli (**India**), Masoud Mardani (**Iran**), Antonio Cascio (**Italy**), Jamal Wadi Al Ramahi (**Jordan**), Sadie Namani (**Kosovo**), Abdul Rahman Bizri (**Lebanon**), Leonel Lagunes (**Mexico**), Ranjit Sah (**Nepal**), Marija Dimzova (**North Macedonia**), Nenad Pandak (**Oman**), Altaf Ahmad (**Pakistan**), Rami H. Alabadla (**Palestine Gaza**), Joanna Zajkowska (**Poland**), Lurdes Santos (**Portugal**), Roxana Cernat, Viorel Rotila, Egídia Miftode (**Romania**), Haurace Nyandemoh (**Sierra Leone**), Anna Liskova (**Slovakia**), Jordi Rello (**Spain**), Anas Jouhar (**Syria**), Amel Letaief (**Tunisia**), Effrossyni Gkrania-Klotsas and Sylviane Defres (**United Kingdom**), Daniel Lucey (**USA**), and Uktanjom Suvankulov (**Uzbekistan**).

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