

Infection and mortality of health care workers worldwide from COVID-19: a scoping review

Citation

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Review question(s)

Our primary aim is to perform a scoping review to estimate the number and proportion of health care workers who have become infected with COVID-19 in every country in the world.

Our secondary aims are:

- (1) to establish health care worker mortality rate linked to COVID-19 in every country in the world, and
- (2) to identify factors that could be linked to levels of infection and mortality of health care workers between countries.

Searches

A full systematic search of bibliographic databases will be performed - Embase and MEDLINE. All databases will be searched from 17th November 2019 to 22nd April 2020 without language restriction for all terms related to health care workers and COVID-19 (Appendix S1). The search results will be merged, and duplicate citations will be discarded. Titles and abstracts will be screened by two reviewers independently based on the pre-defined inclusion and exclusion criteria. The full text of the remaining articles will be retrieved and screened by two reviewers independently. Conflicts are to be resolved by mutual agreement or by a third reviewer. The reference lists of included documents will be examined to identify any further relevant documents missed through the above search strategy.

A grey literature search of WHO documents, government documents, and non-governmental organisation documents will also be conducted. Social media sites, media websites, and google will be utilised to find these documents and cross-reference sources. All documents

will be collected by two reviewers independently. The reference lists of included documents will be examined to identify any further relevant documents missed through the above search strategy. The inclusion of the documents and data extracted from them will be compared between the two reviewers and validated by a third reviewer.

The search strategy outlined above will be performed by individuals who have experience in research methodologies. All reviewers will attend an online training and support session delivered by SB and RK before performing any searches. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension for Scoping Reviews (PRISMA-ScR) guidelines will be used to write and report the findings

Inclusion Criteria:

Types of study to be included

All studies, synopses of studies, synthesis, synopses of synthesis, and summaries are eligible to be included. Primary data – where available – will be eligible for inclusion

Studies will be excluded if they do not use real human data or do not state their methodology.

Condition(s) or domain(s) to be included

The infection and mortality of health care workers associated with COVID-19 in all country settings. For the purposes of this review, a country is that which is recognised by the United Nations (UN) to be a sovereign country.

Participants/population to be included:

Inclusion:

- Health care workers. For the purposes of this review, a health care worker is one who delivers care and services to the sick and ailing either directly as paramedics, nurses and doctors, or indirectly as aides, helpers, laboratory technicians, and medical waste handlers.

Exclusion:

- Animal studies
- Statistical modelling

Intervention(s), exposure(s)

COVID-19 in a health care worker

Comparator(s)/control

Not applicable

Context

This review includes settings at all levels of development. It considers low-, middle-, and high-socio-demographic index (SDI) countries

Main outcome(s)

1. COVID 19 infections in healthcare workers (a) worldwide and (b) by country
2. Healthcare workers deaths related to COVID 19 (could be with or from) (a) worldwide and (b) by country

***Measures of effect**

There is no restriction on time to mortality outcome

Additional outcome(s)

Demographics of health care workers who have been (a) infected with and (b) died from COVID-19

Factors that could be linked to infection and mortality of health care workers with COVID-19

***Measures of effect**

Not applicable

Data extraction (selection and coding)

Using a pre-designed and pre-piloted data extraction form, data from each included document will be collected by two independent reviewers. Conflicts in data collection will be resolved by a third reviewer. From all included documents information will be extracted on study design, study setting, study population, participant demographics, timeframe of the study, date of publication, public health measures implemented, health care worker infected with COVID-19, health care worker mortality related to COVID-19, and information for assessment of the risk of bias.

Risk of bias (quality) assessment

Two reviewers will independently classify the risk of bias in each included document using the risk of bias in randomised trials 2 (ROB 2) tool, risk of bias in non-randomised studies (ROBINS I) tool, assessing the methodological quality of systematic reviews (AMSTAR) tool, and AACODS checklist as appropriate. Documents will be graded as high (bias is very

likely due to essential errors), moderate (no essential deficiencies, but not all criteria are met), low (bias is unlikely), or unclear.

The reviewers will discuss and resolve any disagreements with the level of bias in a study.

Strategy for data synthesis

A random effects model will be used to pool mortality and infection rates. Where possible, associations will be analysed by computing and/or pooling this estimation using a random effects meta-analysis.

Health care workforce deaths due to COVID-19 as a proportion of total population deaths due to COVID-19 will be calculated. Health care workforce deaths due to COVID-19 as a proportion of all health care work force COVID-19 infections and health care workforce deaths due to COVID-19 as a proportion of the total healthcare workforce will be calculated and compared to publicly available total population data. Prevalence and risk ratios will be given.

Analysis of subgroups or subsets

Where possible, subgroup analysis will be by region (by world bank), SDI status (low SDI country, middle SDI country, and high SDI country), age range (18-29; 30-39; 40-49; 50-59; 60-70), gender (male/female), ethnicity, type of healthcare worker, sub-specialities, and level of training.

Contact details for further information

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Type and method of review

Epidemiologic, Meta-analysis, Narrative synthesis, Systematic review

Anticipated or actual start date

20 April 2020

Anticipated completion date

10 May 2020

Funding sources/ sponsors

Not applicable

Conflicts of interest

None

Language

English

Country

Not applicable

Stage of review

Review Ongoing

Subject index terms status

Subject indexing assigned by CRD

Subject index terms

These are assigned by the CRD

Details of any existing review of the same topic by the same authors

Appendix S1

- health care practitioner
- health care professional
- health care provider
- health care worker
- health personnel
- health profession personnel
- health worker
- healthcare personnel
- healthcare practitioner
- healthcare professional
- healthcare provider
- healthcare worker
- health care manpower
- health care work force
- health care workforce
- health labor force
- health labour force
- health manpower
- health work force
- healthcare labor force
- healthcare labour force
- healthcare manpower
- healthcare work force
- healthcare workforce
- medical manpower
- doctor
- medical practitioner
- physician associate
- physicians
- practitioner
- private physician
- nurse
- nurses' aides
- nursing aid

- nursing aide
- nursing assistants
- orderlies
- porters
- healthcare assistants
- physician assistant
- advanced clinical practitioner
- advanced practice clinician
- advanced practice professional
- allied health provider
- clinical associate
- limited-license practitioner
- mid-level practitioner
- mid-level provider
- non-physician practitioner
- non-physician provider
- physician extender
- care coordinator
- health care coordinator
- healthcare coordinator
- medical dispatcher
- accredited social health activist
- ASHA (accredited social health activist)
- ASHA workers
- auxiliary health worker
- barefoot doctor
- health practitioner
- health aides
- health officers
- medical auxiliary
- hospital personnel
- hospital employee
- hospital staff
- hospital staffing
- hospital worker
- personnel, hospital
- hospital administrator
- hospital volunteer
- medical staff
- hospital auxiliary worker
- hospitalists

- coroner
- medical assistant
- medical chaperone
- medical expert
- medical staff
- physician assistant
- psychotherapist
- physiotherapist
- occupational therapist
- pharmacist
- allied health personnel
- paramedical personnel
- para medical personnel
- paramedical assistant
- paramedical manpower
- paramedical professional
- paramedical staff
- psychiatric aides
- medical student
- student nurse
- corona
- coronavirus
- COVID
- COVID-19
- SARS-CoV-2
- pandemic