**Additional file 1: Methods – Additional Information on the Methods of the study.**

Full search strategy, extracted variables on predetermined Excel table, Modified Newcastle-Ottawa Scale (NOS) for Cross-Sectional studies, further explanations for statistical analyses.

1a: Details on statistical analysis

* Transformations

When continuous data was provided as median (interquartile range [IQR]) or median (range), we used validated formulae to transform it into mean (SD) [1, 2]. In case data was only reported for subgroups, we additionally calculated overall metrics [1].

* Main meta-analysis

We sought to stabilize the variance and achieve approximate normality of the meta-analyzed proportions by utilizing the Freeman-Tukey (FT) double arcsine transformation [3]. Added benefits of this method include admissibility of all studies to the meta-analysis (for example the logit transformation may exclude studies with proportions near 0% or 100%), while the pooled CIs always lie within the desired range of 0-100% [3, 4]. We carried out a meta-analysis of the FT transformed estimates using the DerSimonian and Laird (DL) random-effects model, with the estimate of tau2 being taken from the inverse variance fixed-effect model [5]. We used the originally suggested harmonic mean in the back-transformation formula of FT estimates to proportions [6]. When applicable, we pooled standardized mean differences (SMDs) with the method of Cohen, as sample sizes were relatively large and the Hedge’s correction factor seemed unnecessary [7].

* Additional meta-analytical approaches

To statistically better account for the anticipated considerable heterogeneity, we sought to investigate the robustness of our findings by performing additional meta-analytical approaches. Specifically, for our main analyses, we used: (i) the Paule-Mandel estimator to calculate the between-study variance. It has been demonstrated that the former outperforms the DL estimator when heterogeneity increases; [8] and (ii) the Hartung-Knapp method for the CI calculation, which has been shown to be preferable in several instances and is by definition more conservative than the standard method (i.e., guarantees a CI coverage equal to or wider than the standard) [9].

1b: Detailed Search Strategy for different databases

**Algorithm for Pubmed**

("covid" OR "covid-19" OR "coronavirus" OR "corona virus" OR "2019- nCoV" OR "Coronavirus"[Mesh] OR "SARS-CoV-2" OR "SARS-CoV-2"[Mesh] OR "severe acute respiratory syndrome coronavirus 2"[Supplementary Concept] OR "COVID-19"[Supplementary Concept] OR "Coronavirus Infections"[Mesh]) AND ("health care professional\*" OR "health care worker\*" OR "health worker\*" OR "health profession\*" OR "practitioner" OR "health personnel" OR "Health Personnel"[Mesh] OR "nurs\*" OR "midwi\*" OR "clinic\*" OR "paramed\*" OR "dent\*" OR "medic\*"[tiab] OR "physician\*" OR "pharmac\*" OR "surg\*" OR "anesthesiol\*" OR "anaesthesiol\*" OR "Oncolog\*" OR "neurolog\*" OR "nephrolog\*" OR "cardiolog\*" OR "neonatolog\*" OR "endocrinolog\*" OR "gastroenterolog\*" OR "pediatr\*" OR "pulmonolog\*" OR "radiolog\*" OR "urolog\*" OR "gynecolog\*" OR "gynaecolog\*" OR "rheumatolog\*" OR "patholog\*" OR "optometr\*" OR "allied health" OR "therap\*" OR "public health student\*" OR "global health" OR "Students, Health Occupations"[Mesh] OR "residen\*" OR "intern\*" OR "Internship and Residency"[Mesh] OR "student") AND ("teach\*" OR "education\*" OR "train\*" OR "learn\*" OR "instruct\*" OR "supervis\*" OR "assessment\*" OR "curricul\*" OR "examination" OR "OSCE" OR "evaluation" OR "preceptor\*" OR "interview" OR "selection" OR "recruitment" OR "clinical skills" OR "undergraduate" OR "pre-service" OR "postgraduate" OR "in-service" OR faculty[tiab] OR "staff" OR school[tiab] OR "institution" OR "Education"[Mesh]) AND (2020/01/01:2021/02/23[pdat])

**Algorithm for Embase**

("covid" OR "covid-19" OR "coronavirus" OR "corona virus" OR "2019- nCoV" OR "SARS-CoV-2" OR "severe acute respiratory syndrome coronavirus 2") AND ("health care professional\*" OR "health care worker\*" OR "health worker\*" OR "health profession\*" OR "practitioner" OR "health personnel" OR "nurs\*" OR "midwi\*" OR "clinic\*" OR "paramed\*" OR "dent\*" OR "medic\*":ti,ab OR "physician\*" OR "pharmac\*" OR "surg\*" OR "anesthesiol\*" OR "anaesthesiol\*" OR "Oncolog\*" OR "neurolog\*" OR "nephrolog\*" OR "cardiolog\*" OR "neonatolog\*" OR "endocrinolog\*" OR "gastroenterolog\*" OR "pediatr\*" OR "pulmonolog\*" OR "radiolog\*" OR "urolog\*" OR "gynecolog\*" OR "gynaecolog\*" OR "rheumatolog\*" OR "patholog\*" OR "optometr\*" OR "allied health" OR "therap\*" OR "public health student\*" OR "global health" OR "residen\*" OR "intern\*" OR "student") AND ("teach\*" OR "education\*" OR "train\*" OR "learn\*" OR "instruct\*" OR "supervis\*" OR "assessment\*" OR "curricul\*" OR "examination" OR "OSCE" OR "evaluation" OR "preceptor\*" OR "interview" OR "selection" OR "recruitment" OR "clinical skills" OR "undergraduate" OR "pre-service" OR "postgraduate" OR "in-service" OR faculty:ti,ab OR "staff" OR school:ti,ab OR "institution")

**Algorithm for Web of Science**

("covid" OR "covid-19" OR "coronavirus" OR "corona virus" OR "2019- nCoV" OR "SARS-CoV-2" OR "severe acute respiratory syndrome coronavirus 2") AND ("health care professional\*" OR "health care worker\*" OR "health worker\*" OR "health profession\*" OR "practitioner" OR "health personnel" OR "nurs\*" OR "midwi\*" OR "clinic\*" OR "paramed\*" OR "dent\*" OR "medic\*" OR "physician\*" OR "pharmac\*" OR "surg\*" OR "anesthesiol\*" OR "anaesthesiol\*" OR "Oncolog\*" OR "neurolog\*" OR "nephrolog\*" OR "cardiolog\*" OR "neonatolog\*" OR "endocrinolog\*" OR "gastroenterolog\*" OR "pediatr\*" OR "pulmonolog\*" OR "radiolog\*" OR "urolog\*" OR "gynecolog\*" OR "gynaecolog\*" OR "rheumatolog\*" OR "patholog\*" OR "optometr\*" OR "allied health" OR "therap\*" OR "public health student\*" OR "global health" OR "residen\*" OR "intern\*" OR "student") AND ("teach\*" OR "education\*" OR "train\*" OR "learn\*" OR "instruct\*" OR "supervis\*" OR "assessment\*" OR "curricul\*" OR "examination" OR "OSCE" OR "evaluation" OR "preceptor\*" OR "interview" OR "selection" OR "recruitment" OR "clinical skills" OR "undergraduate" OR "pre-service" OR "postgraduate" OR "in-service" OR “faculty” OR "staff" OR “school” OR "institution")

**Algorithm for CENTRAL**

(covid-19) AND (health care professional OR health worker) AND (teach OR education OR train OR learn)

**Algorithm for Google Scholar**

("covid" OR "covid-19" OR "coronavirus" OR "corona virus" OR "2019- nCoV" OR "SARS-CoV-2" OR "severe acute respiratory syndrome coronavirus 2") AND ("health care professional\*" OR "health care worker\*" OR "health worker\*" OR "health profession\*" OR "practitioner" OR "health personnel" OR "nurs\*" OR "midwi\*" OR "clinic\*" OR "paramed\*" OR "dent\*" OR "medic\*" OR "physician\*" OR "pharmac\*" OR "surg\*" OR "anesthesiol\*" OR "anaesthesiol\*" OR "Oncolog\*" OR "neurolog\*" OR "nephrolog\*" OR "cardiolog\*" OR "neonatolog\*" OR "endocrinolog\*" OR "gastroenterolog\*" OR "pediatr\*" OR "pulmonolog\*" OR "radiolog\*" OR "urolog\*" OR "gynecolog\*" OR "gynaecolog\*" OR "rheumatolog\*" OR "patholog\*" OR "optometr\*" OR "allied health" OR "therap\*" OR "public health student\*" OR "global health" OR "residen\*" OR "intern\*" OR "student") AND ("teach\*" OR "education\*" OR "train\*" OR "learn\*" OR "instruct\*" OR "supervis\*" OR "assessment\*" OR "curricul\*" OR "examination" OR "OSCE" OR "evaluation" OR "preceptor\*" OR "interview" OR "selection" OR "recruitment" OR "clinical skills" OR "undergraduate" OR "pre-service" OR "postgraduate" OR "in-service" OR “faculty” OR "staff" OR “school” OR "institution")

1c: Extracted Variables in Predesigned Excel Spreadsheet

**Study Characteristics**

* Title
* Journal
* Doi
* Publication date (Jan 2020-Dec 2021)
* Study start (Jan 2020-Dec 2021)
* Study end (Jan 2020-Dec 2021)
* Institution or Organization of Intevention
* Country
* Continent
* WHO Region
* Setting-1 (university/college/school/preclinical, WHO health care provider, not classified)
* WHO health care provider (academic teaching, community teaching, non-teaching, not specified)
* Setting-2 (urban, rural, not-specified)
* Study type (observational, RCT)
* Type of observational study (cross-sectional, case-control, cohort, including retrospective, prospective observational)

**Participant Demographics**

* Age (mean)
* Age (SD)
* Women (N)
* Women (%)
* Total N of study participants
* N of specific sub-population of participants
* Learner or Faculty
* HCW population according the 4-digit ISCO population
* Level of training of Learner (undergraduate, graduate trainee, continuing education, not specified)
* Level of training of Faculty (undergraduate, graduate trainee, continuing education, not specified)
* Specialty (e.g., medical specialty/area of practice)
* If student, year of studies

**Outcome 1: Impact of the pandemic on Health Worker Education**

**1.1: Training Disruption**

* Type of disruption (what changed, stopped, etc.)
* Participants (%) that perceived training disruption
* Participants (%) that perceived reduction in cases/patients/clinical activity
* Participants (%) that perceived reduction in surgeries/ invasive medical procedures
* Participants (%) that perceived reduction in non-invasive medical procedures/rounds/etc
* Trainees (%) believing their training (e.g. residency) should be prolonged due to the disruption

**1.2: Disruption of Career Plans**

* redeployment of participants (%)
* Trainees (%) re-thinking specialty (e.g., residency) selection or future plans

**1.3: Mental Health of learners**

*Anxiety*

* anxiety (%) (mild, moderate, severe)
* anxiety/ stress scale score (numeric)
* scale used
* range, cut-off

*Depression*

* depression (%) (mild, moderate, moderately severe, severe)
* depression scale score (numeric)
* scale used
* range, cut-off

*Insomnia*

* insomnia (%)
* insomnia scale score (numeric)
* scale used
* range, cut-off

*Burnout*

* burnout (%)
* burnout scale score (numeric)
* scale used
* range, cut-off

**Outcome 2: Policies**

* Type of policy
* Organization instituting or implementing the policy

**Outcome 3: Outcomes of policy responses**

**3.1: Innovations in training**

* Type of innovation (online vs face- to-face, other innovation)
* Brief description of comparator
* Prior existence of innovation (transform existing course into a remote format, did not exist prior to covid, transform existing course, but deliver face to face, not specified)
* training on covid-19 specific protocols (1=yes, 2=no)
* X skill % (before intervention, with old method of training)
* X skill % (after intervention)
* improvement of skill (1= yes, 2=no, 3=not specified)
* satisfaction % online (or new method)
* satisfaction % face-to-face (or old method)
* preference % online (or new method)
* preference % face-to-face (or old method)
* preference % blended learning/ combination of methods
* % of attendees wanting to keep innovation in the future; (online-only, blended)
* % of attendees NOT wanting to keep innovation in the future
* % of attendees who cannot afford online (or new method) or their environment is not adequate for remote studying
* Scale used, cut-off (by author, by us)

**3.2: Innovations in exam assessment/evaluation**

* description-type of innovation
* brief description of comparator
* satisfaction (%) online
* satisfaction (%) face-to-face
* preference (%) face-to-face
* preference (%) online
* mean score face-to-face / comparator
* SD face-to-face
* mean score online
* SD online

**3.3: Volunteerism**

* Participants who volunteered (%)
* Participants who wanted to volunteer

**Quality Assessment**

* Quality assessment Scale (NOS, modified NOS, ROB2)
* (Categories about each Scale in separate columns)

1d: Modified Newcastle-Ottawa Scale (mNOS) for Cross-Sectional Studies

1. Selection of participants

* Representativeness of the sample

*(1= random sampling or non-random, 0=selected group or no explanation)*

* Sample Size

*(1=justified and satisfactory [>60], 0=not justified)*

* Response Rate/ Non-responders

*(1=response rate >80%, 0=not)*

* Ascertainment of exposure (measurement tool)

*(2=validated measurement tool, 1=not verified but explained, 0=not explained)*

1. Comparability (Confounding factors are checked, and there is comparability between subject groups)

*(2=more than one factors checked, 1=one major factor checked, 0=no factors checked)*

1. Outcome

* Assessment of outcome

*(2=independent blind ass/ment or record linkage, 1=self report, 0=no description)*

* Statistical Analysis

*(1=statistical analysis adequate, tools described, 0=not adequate, no description)*

*Total maximum of 10 points*

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3. Nyaga VN, Arbyn M, Aerts M: **Metaprop: a Stata command to perform meta-analysis of binomial data.** *Archives of Public Health* 2014, **72:**39.

4. Barendregt JJ, Doi SA, Lee YY, Norman RE, Vos T: **Meta-analysis of prevalence.** *J Epidemiol Community Health* 2013, **67:**974-978.

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7. LLC S: **STATA META-ANALYSIS REFERENCE MANUAL RELEASE 17.** 4905 Lakeway Drive, College Station, Texas 77845 Stata Press; 2021.

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