Supplementary material for the original paper entitled “Inequality on the frontline: A multi-country study on gender differences in mental health among healthcare workers during the COVID-19 pandemic” by Diana Czepiel1,2†, Clare McCormack3†, Andréa Tenório Correia da Silva4,5, Dominika Seblova6, Maria Francesca Moro7, Alexandra Restrepo-Henao7,8, Adriana Maldonado Martínez7, Oyeyemi Afolabi9, Lubna Alnasser10, Ruben Alvarado11,12, Hiroki Asaoka13, Olatunde Ayinde14, Arin Balalian15, Dinarte Ballester16, Josleen A. l. Barathie17, Armando Basagoitia18, Djordje Basic2, María Soledad Burrone19, Mauro Giovanni Carta20, Sol Durand-Arias21, Mehmet Eskin22, Eduardo Fernández-Jiménez23,24,25, Marcela Freytes26, Oye Gureje14, Anna Isahakyan27, Rodrigo Jaldo26, Elie G. Karam17,28,29, Dorra Khattech30, Jutta Lindert31, Gonzalo Martinez-Ales32, Franco Mascayano7,33, Roberto Mediavilla34,35,36, Javier Narvaez7,37,38, Aimee Nasser-Karam17,28,29, Daisuke Nishi39, Olusegun Olaopa40, Uta Ouali30,41, Victor Puac-Polanco42, 43, Dorian E. Ramírez43, Jorge Ramírez12, Eliut Rivera-Segarra44, Bart P. F. Rutten45, Julian Santaella-Tenorio46, Jaime C. Sapag47,48,49, Jana Šeblová50,51, María Teresa Solís Soto52, Maria Tavares-Cavalcanti53, Linda Valeri54,32, Marit Sijbrandij2,55, Ezra S. Susser7,33, Hans W. Hoek56,1,7, Els van der Ven2\* on behalf of the COVID‑19 HEalth caRe wOrkErS (HEROES) study group

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Multilevel models consisted of two levels, with 32,410 individuals (individual-level) nested within 22 countries (country-level) and were fitted using maximum likelihood. The average country sample size was 1,473 (interquartile range: 167 – 5,502). Prior to performing the multilevel analyses, individual-level continuous predictors were group-mean centered, whereas the country-level predictors were grand-mean centered. A separate multilevel model was estimated for each mental health outcome, with the country as a random effect. Predictors of mental health at the individual level (contact with COVID-19 patients, considering PPE to be sufficient, experience of discrimination, interpersonal conflict or violence, support from colleagues and gender) were added as fixed effects, along with sociodemographic and clinical correlates. Interaction terms with gender were included for all individual-level predictors. At the country-level, the GII and COVID-19 mortality rates were added as fixed effects, along with cross-level interactions with gender.At the individual level, consistent with regression models, women were more likely to report depressive symptoms (OR = 1.61, 95% CI = 1.35 - 1.93) and psychological distress (OR = 1.44, 95% CI = 1.27 - 1.65) than men. Also, associations between all predictors and both mental health outcomes remained consistent with the previous regression models. At the country-level, no significant main effects were observed, but there was a statistically significant interaction between gender inequality and gender, suggesting that women living in countries with higher gender inequality reported fewer depressive symptoms (OR = .36, 95% CI = .21 - .62) and psychological distress (OR = .45, 95% CI = .29 - .70) than men.

In the random-effects model calculated to visualize gender differences in mental health outcomes across countries, the pooled effect size for depressive symptoms among women, as opposed to men, was 2.81 (95% CI = 2.77 - 2.86). For psychological distress it was 3.05 (95% CI = 2.85 - 3.27), suggesting that women reported significantly higher scores on both mental health outcomes compared to men across all countries. There seemed to be a mixed pattern regarding the association between psychological distress among women and a country’s gender inequality, with countries both with low and high gender inequality having effect sizes below or above the pooled effect size. Heterogeneity across countries, which was assessed by the I2 index, with higher scores being indicative of higher heterogeneity, was high for both psychological distress (I2 = 73.2%, p < .001) and depressive symptoms (I2 = 68.2%, p < .001).

The results of the regression models that were performed separately for physicians and nurses as sensitivity analyses can be found in Supplementary Table S6. Among nurses, men and women were equally likely to report depressive symptoms and psychological distress. Among women (n = 6,024), mental health outcomes were no longer significantly associated with insufficient PPE and COVID-19 mortality rates. Among men (n = 1,108), this was also the case for contact with COVID-19 patients and insufficient PPE and both mental health outcomes. In addition, the relation between support from colleagues and psychological distress was no longer statistically significant among men. In the subgroup of physicians, we observed a significant association between mortality rates and depressive symptoms (aOR = .58, 95% CI = .39 - .88) among women (n = 6,039), while this was no longer the case for the association with insufficient PPE. Among men (n = 3,597) the observed associations were in the same direction and of the same strength as in the main analyses.

**Supplementary Figure S1**

Map

Description automatically generated

*Map of countries participating in the study*

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| Supplementary Table S1  *Ad-hoc items created for the study and their response categories* | | | | | |
| Variable | Item | | | Response category | |
| Parents’ completed education | *“*What is the highest level of education completed by your mother (or principal caregiver 1)?”  *“*What is the highest level of education completed by your father (or principal caregiver 2)?” | | | Incomplete primary schooling/ primary school/ secondary school/ technical-professional training/ undergraduate degree (university training)/ postgraduate studies (master's, doctorate, medical specialty, etc.)/ does not apply | |
| Previous mental health problems | *“*Before the pandemic, did you have a mental health diagnosis?” | | | Yes/no/ I prefer not to respond | |
| Chronic physical illness | “Before the pandemic, did you have a chronic physical illness?” | | | Yes/no/ I prefer not to respond | |
| Being in contact with COVID-19 patients | *“*During the past week, have you been close to patients who were suspected or confirmed cases of COVID-19?” | | | Yes/no/ I don’t know | |
| Considering PPE to be sufficient | “Do you believe that the personal protective equipment you have access to is sufficient to avoid getting the virus?” | | | 0 = No, it is completely insufficient to 3 = Yes, it is sufficient | |
| Experience of discrimination a | “I have felt stigmatized or discriminated against as a health worker due to the COVID-19 pandemic” | | | 0 = Strongly disagree to 3 = Strongly agree | |
| Experience of interpersonal conflict a | “Since the beginning of the pandemic, have you experienced any problems with family members of patients with COVID-19?” | | | 0 = No, no problems to 4 = Yes, many problems | |
| Experience of violence a | “I have experienced violence due to being a health worker during the pandemic” | | | 0 = Strongly disagree to 3 = Strongly agree | |
| a These three variables were first dichotomized (experienced: “Strongly agree”, “Agree” / “Yes, one problem”, “Yes, some problems”, “Yes, many problems” vs. not experienced: “Strongly disagree”, “Disagree” / “No, no problems”). Then, the dichotomized variables were added creating a variable that indicated the number of types of interpersonal adversity HCWs have experienced. | | | | | |
| Supplementary Table S2  *Demographic and outcome variables by complete cases and non-complete cases* | | | | | |
|  | | Complete  cases  (n = 17,170) | Non-complete cases  (n = 15,240) | | χ2 / *Ws c* |
| Gender, n (%) | |  |  | | 19.40, *p* < .001 |
| Women | | 12,593 (73.4) a | 10,574 (74.5) b | |  |
| Men | | 4,555 (26.5) a | 3,585 (25.2) b | |  |
| Other | | 18 (.1) a | 40 (.3) b | |  |
| Completed education, n (%) | |  |  | | 33.19, *p* < .001 |
| (Incomplete) primary school | | 126 (.7) a | 139 (1.0) b | |  |
| Secondary school | | 984 (5.7) a | 974 (6.9) b | |  |
| Technical-professional training | | 2,548 (14.9) a | 1,913 (13.6) b | |  |
| Undergraduate degree | | 6,091 (35.5) a | 5,092 (36.1) a | |  |
| Postgraduate studies | | 7,402 (43.2) a | 5,995 (42.5) a | |  |
| Occupation, n (%) | |  |  | | 47.22, *p* < .001 |
| Physicians | | 5,177 (30.3) a | 3,672 (28.7) b | |  |
| Nurses | | 4,868 (28.5) a | 3,514 (27.5) a | |  |
| Health technicians | | 3,550 (20.8) a | 2,581 (20.2) a | |  |
| Ancillary HCWs | | 1,864 (10.9) a | 1,545 (12.1) b | |  |
| Other HCWs | | 1,615 (9.5) a | 1,464 (11.5) b | |  |
| Chronic physical illness, n (%) | |  |  | | 12.09, *p* = .253 |
| No | | 10,921 (80.1) a | 5,535 (78.0) b | |  |
| Yes | | 2,718 (19.9) a | 1,560 (22.0) b | |  |
| Previous mental health problems, n (%) | |  |  | | 19.22, *p* = .001 |
| No | | 12,392 (92.4) a | 6,272 (90.6) b | |  |
| Yes | | 1,024 (7.6) a | 652 (9.4) b | |  |
| Age, Mdn (IQR) | | 39 (31-48) | 36 (30-46) | | 77304148.00, p < .001 |
| Psychological distress, Mdn (IQR) | | 13 (9-18) | 13 (9-18) | | 57851376.50, *p* = .228 |
| Depressive symptoms, Mdn (IQR) | | 5 (2-9) | 6 (2-10) | | 43112787.00, *p* < .001 |
| *Note.* Values not sharing the same subscript (a, b) are significantly different  Ancillary HCWs: e.g., non-clinical manager, administrator/secretary/admission, patient transportation, food/hospitality, cleaning staff, maintenance staff, security staff, student, statistician, analyst, IT, health information management  Other HCWs: e.g., clinical manager, psychologist, social worker, physical therapist, respiratory therapist, speech therapist, occupational therapist, first responder, midwife, dentist, dentist assistant, dietician, doctor assistant, epidemiologist/public health, pharmacist, community worker, primary attention worker, health promotion/prevention, health educator  c Value of the Chi square or Wilcoxon rank-sum test respectively | | | | | |

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| Supplementary Table S3  *Sample size, age, gender, and occupation distribution per country and for the entire sample* | | | | | | | | | | |
| Country | Sample  size | Age | Gender | | | Occupation | | | | |
|  |  |  | Women | Men | Other gender | Physicians | Nurses | Health technicians | Ancillary workers a | Other  HCWs b |
|  | n (%) | Mdn (IQR) | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) |
| Argentina | 1,037 (3.2) | 40 (34-48) | 815 (79.8) | 203 (19.9) | 3 (0.3) | 232 (23.7) | 138 (14.1) | 35 (3.6) | 177 (18) | 398 (40.6) |
| Armenia | 570 (1.8) | 42 (31-50) | 465 (85.3) | 80 (14.7) | 0 (0) | 249 (49.8) | 136 (27.2) | 26 (5.2) | 32 (6.4) | 57 (11.4) |
| Belgium | 327 (1) | 40 (31-51) | 269 (82.5) | 56 (17.2) | 1 (0.3) | 46 (14.2) | 205 (63.3) | 9 (2.8) | 6 (1.8) | 58  (17.9) |
| Bolivia | 167 (0.5) | 35 (28-44) | 111 (68.1) | 50 (30.7) | 2 (1.2) | 55 (36.9) | 32 (21.5) | 18 (12.1) | 17 (11.4) | 27 (18.1) |
| Brazil | 3,246 (10) | 36 (30-43) | 2,613 (82.4) | 553 (17.5) | 4 (0.1) | 288 (9.5) | 459 (15.1) | 528 (17.3) | 591 (19.4) | 1,176 (38.7) |
| Chile | 2,495 (7.7) | 34 (30-43) | 1,797 (73.2) | 655 (26.7) | 3 (0.1) | 963 (40.1) | 246 (10.3) | 242 (10.1) | 228 (9.5) | 721 (30) |
| Colombia | 901 (2.8) | 39 (31-49) | 659 (73.6) | 237 (26.4) | 0 (0) | 185 (20.6) | 98 (10.9) | 22 (2.5) | 160 (17.8) | 432 (48.2) |
| Czech Republic | 1,801 (5.6) | 44 (35-53) | 1,349 (76.3) | 416 (23.5) | 44 (.02) | 472 (27.4) | 407 (23.6) | 125 (7.3) | 172 (10) | 546 (31.7) |
| Germany | 204 (0.6) | 39 (31-53) | 129 (63.6) | 74 (36.4) | 0 (0) | 29 (15) | 69 (35.7) | 3 (1.6) | 27 (14) | 65 (33.7) |
| Guatemala | 1,813 (5.6) | 33 (28-43) | 1,172 (66) | 601 (33.8) | 4 (0.2) | 644 (37.5) | 251 (14.6) | 159 (9.3) | 267 (15.5) | 397 (23.1) |
| Italy | 5,502 (17) | 44 (33-54) | 3,793 (70.9) | 1,550 (29) | 5 (0.1) | 1833 (35.6) | 649 (12.6) | 478 (9.3) | 217 (4.2) | 1,974 (38.3) |
| Japan | 810 (2.5) | 38 (31-49) | 215 (31.7) | 456 (67.3) | 7 (1) | 177 (26.4) | 242 (36.2) | 37 (5.5) | 74 (11.1) | 139 (20.8) |
| Lebanon | 768 (2.4) | 33 (27-47) | 530 (72.6) | 198 (27.1) | 2 (0.3) | 85 (13.7) | 207 (33.2) | 103 (16.5) | 127 (20.4) | 101 (16.2) |
| Mexico | 3,253 (10) | 37 (30-44) | 2,222 (70.2) | 939 (29.7) | 1 (0.1) | 1123 (37) | 752 (24.8) | 98 (3.2) | 314 (10.4) | 744 (24.6) |
| Netherlands | 683 (2.1) | 40 (31-51) | 533 (79.5) | 135 (20.2) | 2 (0.3) | 186 (29.4) | 192 (30.4) | 19 (3) | 60 (9.5) | 175 (27.7) |
| Nigeria | 459 (1.4) | 38 (32-45) | 262 (60) | 174 (39.8) | 1 (0.2) | 298 (64.2) | 75 (16.2) | 25 (5.4) | 36 (7.8) | 30 (6.5) |
| Peru | 3,670 (11.3) | 33 (28-40) | 2,742 (78.2) | 761 (21.7) | 5 (0.1) | 717 (21.7) | 931 (28.2) | 664 (20.1) | 209 (6.4) | 777 (23.6) |
| Puerto Rico | 266 (0.8) | 39 (31-48) | 193 (73.4) | 70 (26.6) | 0 (0) | 35 (14.1) | 54 (21.7) | 10 (4) | 50 (20.1) | 100 (40.1) |
| Saudi Arabia | 247 (0.8) | 35 (30-43) | 117 (48.4) | 122 (50.4) | 3 (1.2) | 77 (36.1) | 36 (16.9) | 17 (8) | 14 (6.6) | 69 (32.4) |
| Spain | 2,520 (7.8) | 41 (31-52) | 1,873 (78.2) | 515 (21.5) | 8 (0.3) | 764 (33.5) | 698 (30.7) | 208 (9.1) | 171 (7.5) | 438 (19.2) |
| Tunisia | 633 (1.9) | 34 (29-43) | 475 (76.7) | 142 (23) | 2 (0.3) | 373 (62.3) | 85 (14.2) | 45 (7.5) | 38 (6.3) | 58 (9.7) |
| Venezuela | 1,038 (3.2) | 41 (34-49) | 833 (84.4) | 153 (15.5) | 1 (0.1) | 153 (16.7) | 581 (63.6) | 19 (2.1) | 75 (8.2) | 86 (9.4) |
| Entire sample | 32,410 (100) | 38 (30-48) | 23,167 (73.9) | 8,140 (25.9) | 58 (0.2) | 8,849 (29.5) | 6,539 (21.8) | 2,903 (9.7) | 3,040 (10.1) | 8,656 (28.9) |
| *Note.* All percentages are valid percentages. The total number per gender and occupation differs due to missing data differing throughout survey sections a Non-clinical manager, administrator/secretary/admission, patient transportation, food/hospitality, cleaning staff, maintenance staff, security staff, student, statistician, analyst, IT, health information management b Clinical manager, psychologist, social worker, physical therapist, respiratory therapist, speech therapist, occupational therapist, first responder, midwife, dentist, dentist assistant, dietician, doctor assistant, epidemiologist/public health, pharmacist, community worker, primary attention worker, health promotion/prevention, health educator | | | | | | | | | | |

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| Supplementary Table S4  *GII, average COVID-19 mortality rate and classification by income per country* | | | |
| Country | GII | COVID-19 mortality rate a | Country income b |
| Argentina | .287 | .52 | Upper-middle |
| Armenia | .216 | .33 | Upper-middle |
| Belgium | .048 | .03 | High |
| Bolivia | .418 | .43 | Lower-middle |
| Brazil | .39 | .28 | Upper-middle |
| Chile | .187 | .50 | High |
| Colombia | .424 | .74 | Upper-middle |
| Czech Republic | .12 | .47 | High |
| Germany | .073 | .11 | High |
| Guatemala | .481 | .13 | Upper-middle |
| Italy | .056 | .12 | High |
| Japan | .083 | .002 | High |
| Lebanon | .432 | .25 | Upper-middle |
| Mexico | .309 | .40 | Upper-middle |
| Netherlands | .025 | .04 | High |
| Nigeria | .68 | .003 | Lower-middle |
| Peru | .38 | .53 | Upper-middle |
| Puerto Rico | - | .18 | High |
| Saudi Arabia | .247 | .11 | High |
| Spain | .057 | .19 | High |
| Tunisia | .259 | .41 | Lower-middle |
| Venezuela | .492 | .02 | Upper-middle |
| *Note.* GII: Gender Inequality Index  a Average mortality rates during the recruitment period in each country calculated based on data by the Johns Hopkins Coronavirus Resource Center  b Based on the World Bank's fiscal year 2020 classification, with the exception of Venezuela, for which the year 2019 was utilized due to data unavailability. | | | |

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| Supplementary Table S5  *Odds ratios and 95% confidence intervals [OR (95% CI)] for psychological distress for the entire sample and stratified by gender* | | | | | |
| Entire sample | | | | | |
|  | Unadjusted OR (95% CI) | | Adjusted OR (95% CI) | | |
| Gender (reference category = men) | 1.20\*\* (1.14-1.26) | | 1.15\*\* (1.09-1.22) | | |
|  | Women | | Men | | |
|  | Unadjusted OR (95% CI) | Adjusted OR (95% CI) |  | Unadjusted OR (95% CI) | Adjusted OR  (95% CI) |
| Work-related factors | | | | | |
| Contact with  COVID-19 patients | 1.50\*\*  (1.41-1.59) | 1.34\*\*  (1.25-1.44) |  | 1.59\*\*  (1.44-1.76) | 1.41\*\*  (1.25-1.59) |
| Insufficient PPE | 1.13\*\*  (1.10-1.16) | 1.10\*\*  (1.07-1.14) |  | 1.16\*\*  (1.11-1.21) | 1.14\*\*  (1.08-1.21) |
| Interpersonal factors | | | | | |
| Interpersonal   adversity | 1.46\*\*  (1.42-1.50) | 1.38\*\*  (1.33-1.43) |  | 1.41\*\*  (1.34-1.48) | 1.29\*\*  (1.22-1.37) |
| Unsupportive  colleagues | 1.39\*\*  (1.34-1.44) | 1.33\*\*  (1.28-1.39) |  | 1.26\*\*  (1.19-1.33) | 1.19\*\*  (1.11-1.27) |
| Country-level factors | | | | | |
| Gender inequality | .73\*\*  (.62-.86) | .18\*\*  (.14-.22) |  | .83  (.63-1.08) | .20\*\*  (.14-.29) |
| COVID-19   mortality rates | 2.20\*\*  (1.92-2.54) | 1.94\*\*  (1.63-2.31) |  | 1.44\*  (1.14-1.81) | 1.04  (.78-1.06) |
| Note. Adjusted OR = Odds ratio adjusted for age, mother’s education, father’s education, occupation, chronic physical illness and previous mental health problems and for all other predictors in Supplementary Table S5  \* *p* < .05, \*\* *p* < .001 | | | | | |

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| Supplementary Table S6  *Odds ratios a and 95% confidence intervals [OR (95% CI)] for depressive symptoms and psychological distress including country income stratified by gender* | | | | | |
|  | Depressive symptoms | |  | Psychological distress | |
|  | Women | Men |  | Women | Men |
| Work-related factors | | | | | |
| Contact with  COVID-19 patients | 1.56\*\*  (1.43-1.70) | 1.37\*\*  (1.16-1.62) |  | 1.37\*\*  (1.28-1.47) | 1.44\*\*  (1.27-1.62) |
| Insufficient PPE | 1.10\*\*  (1.06-1.14) | 1.11\*  (1.03-1.19) |  | 1.11\*\*  (1.07-1.15) | 1.16\*\*  (1.10-1.23) |
| Interpersonal factors | | | | | |
| Interpersonal   adversity | 1.50\*\*  (1.44-1.56) | 1.55\*\*  (1.44-1.67) |  | 1.38\*\*  (1.33-1.43) | 1.29\*\*  (1.21-1.37) |
| Unsupportive  colleagues | 1.42\*\*  (1.36-1.49) | 1.56\*\*  (1.44-1.69) |  | 1.32\*\*  (1.27-1.37) | 1.19\*\*  (1.11-1.27) |
| Country-level factors | | | | | |
| Gender inequality | .50\*  (.30-.82) | .53  (.24-1.18) |  | .58\*  (.38-.88) | .46\*  (.25-.84) |
| COVID-19   mortality rates | .95  (.76-1.19) | .86  (.57-1.29) |  | 1.96\*\*  (1.63-2.37) | 1.09  (.80-1.47) |
| Country income | .80\*\*  (.74-.87) | .90  (.79-1.04) |  | .81\*\*  (.76-.86) | .85\*  (.76-.94) |
| a Odds ratio adjusted for age, mother’s education, father’s education, occupation, chronic physical illness and previous mental health problems and for all other predictors in Supplementary Table S6.  Unadjusted OR (95% CI) for country income are as follows: depressive symptoms among women, .94\*\* (.91-.97); depressive symptoms among men, 1.10\* (1.03-1.17); psychological distress among women, .96\* (.94-.99); psychological distress among men, .97 (.93-1.02).  \* *p* < .05, \*\* *p* < .001 | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Supplementary Table S7  *Odds ratios and 95% confidence intervals [OR (95% CI)] for depressive symptoms and psychological distress among physicians and nurses stratified by gender* | | | | | | | | | |
|  | Depressive symptoms | | | | | | | | |
|  | Physicians | | | |  | Nurses | | | |
|  | Unadjusted OR (95% CI) | | Adjusted OR (95% CI) | |  | Unadjusted OR (95% CI) | | Adjusted OR (95% CI) | |
| Gender (reference  category = men) | 1.77\*\*  (1.59-1.97) | | 1.59\*\*  (1.41-1.80) | |  | 1.05 (.89-1.23) | | 1.10  (.92-1.32) | |
|  | Physicians | | | |  | Nurses | | | |
|  | Women  (n = 6,039) | | Men  (n = 3,597) | |  | Women  (n = 6,024) | | Men  (n = 1,108) | |
|  | Unadjusted OR (95% CI) | Adjusted OR (95% CI) | Unadjusted OR (95% CI) | Adjusted OR (95% CI) |  | Unadjusted OR (95% CI) | Adjusted OR (95% CI) | Unadjusted OR (95% CI) | Adjusted OR (95% CI) |
| Work-related factors |  |  |  |  |  |  |  |  |  |
| Contact with  COVID-19 patients | 1.64\*\*  (1.43-1.89) | 1.44\*\*  (1.22-1.69) | 1.90\*\*  (1.53-2.37) | 1.41\*  (1.09-1.82) |  | 1.69\*\*  (1.45-1.97) | 1.64\*\*  (1.38-1.94) | 1.69\*  (1.17-2.45) | 1.21  (.79-1.84) |
| Insufficient PPE | 1.18\*\*  (1.11-1.25) | 1.06  (.98-1.14) | 1.26\*\*  (1.15-1.37) | 1.12\*  (1.01-1.26) |  | 1.04  (.98-1.10) | 1.07  (.99-1.15) | 1.09  (.95-1.26) | 1.05  (.88-1.24) |
| Interpersonal factors |  |  |  |  |  |  |  |  |  |
| Interpersonal adversity | 1.54\*\*  (1.44-1.63) | 1.44\*\*  (1.34-1.55) | 1.86\*\*  (1.70-2.03) | 1.56\*\*  (1.41-1.74) |  | 1.50\*\*  (1.41-1.60) | 1.46\*\*  (1.36-1.58) | 1.74\*\*  (1.50-2.02) | 1.66\*\*  (1.39-2.00) |
| Unsupportive  colleagues | 1.49\*\*  (1.38-1.60) | 1.41\*\*  (1.34-1.55) | 1.54\*\*  (1.39-1.71) | 1.43\*\*  (1.26-1.61) |  | 1.37\*\*  (1.27-1.48) | 1.36\*\*  (1.24-1.48) | 1.60\*\*  (1.34-1.91) | 1.50\*\*  (1.21-1.86) |
| Country-level factors |  |  |  |  |  |  |  |  |  |
| Gender inequality | 1.66\*  (1.13-2.42) | .38\*\*  (.23-.64) | 2.40\*  (1.43-4.02) | .50\*  (.25-.99) |  | .40\*\*  (.28-.58) | .09\*\*  (.05-.15) | 1.31  (.55-3.14) | .16\* (.05-55) |
| COVID-19 mortality rates | 1.13  (.80-1.57) | .58\*  (.39-.88) | 1.71\*  (1.08-2.71) | .81  (.46-1.42) |  | 1.45\*  (1.06-2.00) | 1.01  (.68-1.51) | 2.63\*  (1.20-5.77) | 1.19  (.42-3.35) |
|  | Psychological distress | | | | | | | | |
|  | Physicians | | | |  | Nurses | | | |
|  | Unadjusted OR (95% CI) | | Adjusted OR (95% CI) | |  | Unadjusted OR (95% CI) | | Adjusted OR (95% CI) | |
| Gender (reference  category = men) | 1.41\*\*  (1.29-1.53) | | 1.28\*\*  (1.16-1.41) | |  | 1.03 (.90-1.18) | | 1.08  (.91-1.26) | |
|  | Physicians | | | |  | Nurses | | | |
|  | Women  (n = 6,039) | | Men  (n = 3,597) | |  | Women  (n = 6,024) | | Men  (n = 1,108) | |
|  | Unadjusted OR (95% CI) | Adjusted OR (95% CI) | Unadjusted OR (95% CI) | Adjusted OR (95% CI) |  | Unadjusted OR (95% CI) | Adjusted OR (95% CI) | Unadjusted OR (95% CI) | Adjusted OR (95% CI) |
| Work-related factors |  |  |  |  |  |  |  |  |  |
| Contact with  COVID-19 patients | 1.56\*\*  (1.39-1.75) | 1.37\*\* (1.20-1.57) | 1.84\*\*  (1.57-2.15) | 1.65\*\* (1.38-1.98) |  | 1.44\*\*  (1.27-1.63) | 1.45\*\* (1.27-1.66) | 1.17  (.88-1.56) | 1.09  (.79-1.50) |
| Insufficient PPE | 1.23\*\*  (1.17-1.30) | 1.19\*\*  (1.11-1.27) | 1.18\*\*  (1.10-1.27) | 1.18\*\* (1.08-1.28) |  | 1.02  (.97-1.08) | 1.05  (.98-1.11) | 1.05  (.93-1.18) | 1.05  (.91-1.21) |
| Interpersonal factors |  |  |  |  |  |  |  |  |  |
| Interpersonal adversity | 1.49\*\*  (1.41-1.58) | 1.36\*\*  (1.27-1.45) | 1.46\*\*  (1.35-1.56) | 1.29\*\*  (1.18-1.40) |  | 1.34\*\*  (1.27-1.42) | 1.34\*\* (1.25-1.43) | 1.31\*\*  (1.15-1.48) | 1.33\*\*  (1.14-1.55) |
| Unsupportive  colleagues | 1.43\*\*  (1.34-1.53) | 1.37\*\* (1.26-1.47) | 1.29\*\*  (1.19-1.40) | 1.21\*\* (1.10-1.33) |  | 1.24\*\*  (1.16-1.32) | 1.26\*\* (1.16-1.36) | 1.19\*  (1.02-1.38) | 1.18  (.99-1.42) |
| Country-level factors |  |  |  |  |  |  |  |  |  |
| Gender inequality | 1.49\*  (1.07-2.09) | .29\*\* (.19-.46) | 1.29  (.85-1.89) | .25\*\* (.15-.43) |  | .34\*\*  (.25-.47) | .13\*\*  (.08-.19) | .46\*  (.22-.95) | .14\*\*  (.05-.37) |
| COVID-19 mortality rates | 1.89\*\*  (1.42-2.53) | 1.40  (.98-1.98) | 1.64\*  (1.56-2.32) | 1.12  (.74-1.70) |  | 1.15  (.88-1.51) | .96  (.70-1.33) | .91  (.47-1.77) | .71  (.31-1.64) |
| Note. Adjusted OR = Odds ratio adjusted for age, mother’s education, father’s education, occupation, chronic physical illness and previous mental health problems and for all other predictors in Supplementary Table S7 \* *p* < .05, \*\* *p* < .001 | | | | | | | | | |

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| Supplementary Table S8  *Multilevel models for depressive symptoms and psychological distress* | | | | | |
|  | Depressive symptoms | |  | Psychological distress | |
| Variables | OR | CI |  | OR | CI |
| Intercept | .07\*\* | .05 - .09 |  | .33\*\* | .22 - .50 |
| Individual level |  |  |  |  |  |
| Age | .99\*\* | .98 -.99 |  | .99\*\* | .98 - .99 |
| Mother’s education (ref. cat. = postgraduate studies) |  |  |  |  |  |
| Incomplete primary   school | .88 | .74 - 1.05 |  | .91 | .78 - 1.06 |
| Primary school | .92 | .79 - 1.07 |  | .93 | .82 - 1.06 |
| Secondary school | .89 | .77 - 1.02 |  | .88\* | .78 - .98 |
| Technical- professional   training | .93 | .81 - 1.07 |  | .93 | .82 - 1.05 |
| Undergraduate studies | 1.09 | .95 - 1.25 |  | .96 | .85 - 1.08 |
| N/A | .77 | .58 - 1.03 |  | .73 | .58 - .94 |
| Father’s education (ref. cat. = postgraduate studies) |  |  |  |  |  |
| Incomplete primary   school | .98 | .82 - 1.16 |  | .94 | .81 - 1.09 |
| Primary school | .98 | .85 - 1.13 |  | .91 | .81 - 1.03 |
| Secondary school | .99 | .87 - 1.13 |  | .90 | .81 - 1.01 |
| Technical- professional   training | .98 | .86 - 1.11 |  | .94 | .84 - 1.05 |
| Undergraduate studies | .91 | .80 - 1.03 |  | 1.02 | .92 - 1.14 |
| N/A | 1.13 | .91 - 1.41 |  | .92 | .76 - 1.12 |
| Current occupation (ref. cat. = other HCWs a) |  |  |  |  |  |
| Physicians | 1.01 | .92 - 1.11 |  | 1.28\*\* | 1.18 - 1.38 |
| Nurses | 1.09 | .99 - 1.20 |  | .99 | .92 - 1.08 |
| Health technicians | .99 | .87 - 1.12 |  | .85\* | .76 -.95 |
| Ancillary HCWs b | 1.11 | .98 - 1.26 |  | 1.00 | .90 - 1.12 |
| Chronic physical illness  (ref. cat. = none) | 1.37\*\* | 1.27 - 1.48 |  | 1.33\*\* | 1.24 - 1.42 |
| Previous mental health problems (ref. cat. = none) | 2.77\*\* | 2.50 - 3.06 |  | 2.35\*\* | 2.12 - 2.60 |
| Contact with COVID-19 patients (ref. cat. = no contact) | 1.36\* | 1.42 - 1.63 |  | 1.19\* | 1.04 - 1.36 |
| Insufficient PPE | 1.25\*\* | 1.14 - 1.36 |  | 1.27\*\* | 1.18 - 1.36 |
| Experienced interpersonal adversity (ref. cat. = none) |  |  |  |  |  |
| 1 | 1.86\*\* | 1.56 - 2.22 |  | 1.65\*\* | 1.45 - 1.89 |
| 2 | 2.81\*\* | 2.26 - 3.50 |  | 2.63\*\* | 2.23 - 3.12 |
| 3 | 4.09\*\* | 3.12 - 5.37 |  | 2.98\*\* | 2.40 - 3.69 |
| Unsupportive colleagues | 1.53\*\* | 1.40 - 1.68 |  | 1.52\*\* | 1.41 - 1.65 |
| Gender; women (ref. cat. = men) | 1.61\*\* | 1.35 - 1.93 |  | 1.44\*\* | 1.27 - 1.65 |
| Contact with COVID-19 patients \*  gender; women | 1.05 | .87 - 1.26 |  | 1.03 | .88 - 1.19 |
| Insufficient PPE \* gender; women | .94 | .87 - 1.03 |  | .94 | .87 - 1.01 |
| 1 type of interpersonal adversity \*  gender; women | .84 | .69 - 1.01 |  | .96 | .82 - 1.12 |
| 2 types of interpersonal adversity \*  gender; women | .87 | .69 - 1.09 |  | .89 | .73 - 1.07 |
| 3 types of interpersonal adversity \*  gender; women | .83 | .63 - 1.11 |  | 1.06 | .82 - 1.36 |
| Unsupportive colleagues \* gender; women | .94 | .86 - 1.04 |  | .95 | .87 - 1.03 |
| Country level |  |  |  |  |  |
| Gender inequality | 1.21 | .41 - 3.57 |  | .49 | .06 - 4.04 |
| COVID-19 mortality rates | 2.19 | .88 - 5.44 |  | 3.32 | .54 - 20.34 |
| Gender inequality \*  gender; women | .36\*\* | .21 -.62 |  | .45\*\* | .29 -.70 |
| COVID-19 mortality rates \*  gender; women | 1.30 | .83 - 2.03 |  | 1.01 | .69 - 1.47 |
| Note. Ref. cat. = reference category, PPE = personal protective equipment, N/A = not applicable (HCWs who could not answer the question about their mother’s or father’s education level because it was not applicable to them)  a Other HCWs: e.g., clinical manager, psychologist, social worker, physical therapist, respiratory therapist, speech therapist, occupational therapist, first responder, midwife, dentist, dentist assistant, dietician, doctor assistant, epidemiologist/public health, pharmacist, community worker, primary attention worker, health promotion/prevention, health educator  b Ancillary HCWs: e.g., non-clinical manager, administrator/secretary/admission, patient transportation, food/hospitality, cleaning staff, maintenance staff, security staff, student, statistician, analyst, IT, health information management  \* *p* < .05, \*\* *p* < .001 | | | | | |

**Supplementary Figure S2**

A map of the world

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*Incidence rate ratio (IRR) of psychological distress for women compared to men across countries (A);* the intensity of the color corresponds to the IRR, with darker shades indicating higher IRR values. *(B) IRRs listed according to the Gender Inequality Index of countries in ascending order. IRR’s range from 1.8 to 4.4.*

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| Supplementary Table S9  *The HEORES study group* | |
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|  | Khachatur Gasparyan  Yerevan State Medical University |
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|  | Sonja Memedovic  National Drug and Alcohol Research Centre  University of New South Wales |
|  | Clare McCormack  Center for Science and Society Columbia University |
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|  | Lydia Gisle  Epidemiology and Public Health Sciensano |
| Bolivia |  |
|  | Armando Basagoitia  Unidad de investigación, Consultora Salud Global Bolivia  María Teresa Solís Soto  Universidad San Francisco Xavier de Chuquisaca |
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|  | Gonzalo Cuadra and Josefina Huneeus  Colegio Médico de Chile |
|  | Jaime Sapag, Carolina Traub, and Paula Bedregal  Pontificia Universidad Católica de Chile |
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| Venezuela |  |
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| *Note.* These countries encountered diverse challenges that ultimately hindered data collection, despite their involvement in the study's conceptualization. These challenges included issues such as not obtaining ethical approval (e.g., India), grappling with significant internal crises (e.g., South Africa), or facing difficulties in enrolling participants (e.g., Australia). | |