Occupational Diseases and Environmental Medicine, 2026, 14(4), 237-250
https://www.scirp.org/journal/odem
ISSN Online: 2333-357X
ISSN Print: 2333-3561

Documented SARS-CoV-2 Infection, Anxiety, Depression, and Work Disruption among Oil Industry Workers in the Republic of the Congo

Ebenguela Ebatetou Ataboho[1,2*], Juste Morel Mantinou[2]

[1]Faculty of Health Sciences, Marien Ngouabi University, Brazzaville, Republic of the Congo
[2]Congolese Society of Forensic Medicine and Occupational Health (SOMELEST), Pointe-Noire, Republic of the Congo
Email: *ebatetou@gmail.com

How to cite this paper: Ebatetou Ataboho, E. and Mantinou, J.M. (2026) Documented SARS-CoV-2 Infection, Anxiety, Depression, and Work Disruption among Oil Industry Workers in the Republic of the Congo. *Occupational Diseases and Environmental Medicine*, **14**, 237-250.
https://doi.org/10.4236/odem.2026.144019

Received: August 18, 2026
Accepted: September 17, 2026
Published: September 20, 2026

Abstract

Background: Continuously operating oil-industry settings combine workforce rotations, shared transport or accommodation, and limited scope for remote work. We described documented SARS-CoV-2 infection, anxiety and depressive symptoms, and work disruption among workers at an oil company in the Republic of the Congo during 2020. **Methods:** This observational study combined a retrospective review of occupational health and human resources records from March to December 2020 with a cross-sectional psychometric survey conducted in November 2020. Among 695 registered workers, 647 met the eligibility criteria. Documented infection was defined as at least one recorded positive RT-PCR result. GAD-7 and PHQ-9 scores of 10 or higher identified clinically significant anxiety and depressive symptoms. Crude prevalence ratios (PRs) compared workers with and without documented infection. **Results:** Documented infection occurred in 119 of 647 workers (18.4%, 95% CI 15.6 - 21.6). Among these cases, 86 (72.3%) were mild, 29 (24.4%) moderate, and 4 (3.4%) severe; no death was recorded. Complete psychometric data were available for 621 workers (96.0%). Anxiety symptoms affected 228/621 (36.7%, 95% CI 33.0 - 40.6), depressive symptoms 133/621 (21.4%, 95% CI 18.4 - 24.8), and both 82/621 (13.2%, 95% CI 10.8 - 16.1). Symptoms were more frequent among workers with documented infection: anxiety, 56.3% versus 32.1% (crude PR 1.76, 95% CI 1.43 - 2.15); depression, 34.5% versus 18.3% (crude PR 1.88, 95% CI 1.38 - 2.56). Work interruption exceeding 14 days affected 92 workers (14.2%), and 15/23 operational units (65.2%) were reorganized. **Conclusions:** Documented infection, psychological symptoms, and operational disruption were substantial. Because testing coverage was unknown, infection status was not temporally aligned with the November survey, and associations were unadjusted, causal inference cannot be supported. Integrated infection surveil-

lance, confidential mental-health care, and continuity planning are warranted in continuously operating industries.

Keywords

COVID-19, Occupational Health, Mental Health, Oil Industry, Republic of the Congo

1. Introduction

On 11 March 2020, the World Health Organization (WHO) characterized coronavirus disease 2019 (COVID-19) as a pandemic [1]. In the Republic of the Congo, virological evidence subsequently demonstrated early SARS-CoV-2 circulation, while serological findings from asymptomatic residents of Brazzaville indicated that routine case counts incompletely captured community transmission [2] [3].

Occupational risk during the first pandemic year depended not only on job title but also on whether work could be relocated away from the worksite. Non-relocatable and essential occupations maintained face-to-face contact, shared transport, and use of common facilities [4]. Oil and gas operations present additional challenges: production continuity, onshore and offshore rotations, collective accommodation, and process-safety requirements can constrain distancing and complicate rapid workforce substitution. Sector-specific guidance, therefore, emphasized infection-control measures, while studies of offshore workers described extended or compressed rotations, separation from families, and uncertainty about travel and employment [5] [6].

Psychological vulnerability in this sector did not begin with the pandemic. Anxiety and depressive symptoms had already been documented among gas and oil workers before 2020 [7]. During the pandemic, longitudinal research in Iranian refineries showed deterioration in psychological and psychosocial indicators [8], and an offshore survey identified substantial anxiety, depression, stress, and insomnia [9]. Within the Republic of the Congo, a cross-sectional study conducted in 2021 among 203 oil-company workers reported a 39.4% prevalence of perceived stress and identified associations with workload, emotional demands, and work-family conflict [10]. That study addressed perceived stress and psychosocial work factors after the first pandemic year; it did not examine documented infection, GAD-7 or PHQ-9 symptoms, or operational disruption. Other studies linked coronavirus-related health anxiety to job stress and productivity loss [11], highlighted the importance of occupational safety culture [12], and documented surveillance and reporting challenges in the oil and gas industry [13]. Evidence integrating these outcomes in Central African industrial workforces remains scarce.

We therefore aimed to estimate the cumulative proportion of workers with documented SARS-CoV-2 infection in an oil company in the Republic of the Congo during 2020. Secondary objectives were to describe clinical severity, quantify clinically significant anxiety and depressive symptoms, examine their crude associa-

tion with documented infection status, and describe recorded work interruptions and operational reorganization.

2. Materials and Methods

2.1. Study Design and Period

We conducted an observational study with three components: a retrospective review of occupational health records for events from March to December 2020; a descriptive review of human resources records; and an embedded cross-sectional psychometric survey administered in November 2020. Reporting follows the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement [14].

2.2. Setting

The study was conducted in an integrated oil company based in Pointe-Noire, on the Atlantic coast of the Republic of the Congo. The company undertook exploration and production activities and comprised 23 operational or functional units. Workers were assigned to administrative locations and onshore or offshore installations; some followed shift or rotational schedules with accommodation in shared living quarters. The company is not named to protect institutional and worker confidentiality.

2.3. Study Population

The source population comprised 695 workers listed between March and December 2020, including permanent employees, local contractors, and expatriate managers. Workers present on site for at least three consecutive months during this period were eligible. Those on extended leave or absent for a reason unrelated to COVID-19 were excluded. After applying these criteria, 647 workers were included (93.1% of the source population). This was therefore near-exhaustive inclusion rather than probability sampling.

2.4. Data Sources

Data came from occupational health records (consultations, RT-PCR results, clinical follow-up, isolation, and hospital admission), human resources records (work interruptions and unit reorganization), and a French-language, self-administered questionnaire completed in November 2020. The questionnaire recorded age, sex, nationality, employment status, tenure, and self-reported medical history and included the seven-item Generalized Anxiety Disorder scale (GAD-7) and the nine-item Patient Health Questionnaire (PHQ-9) [15] [16]. Questionnaires bore a unique study code and no direct personal identifiers. Before de-identification, this code was used to link occupational-health, human-resources, and questionnaire records. Because linkage was code-based, the process was pseudonymized rather than fully anonymous. The retained study documentation does not describe the private setting or return mechanism for questionnaire completion, study-spe-

cific translation or cultural-adaptation procedures, detailed linkage quality-control checks, or personnel-level access logs. After linkage, the analytic extract contained no direct personal identifiers, and results were analyzed and reported in aggregate.

2.5. Documented Infection and Clinical Severity

Documented infection was defined as at least one positive SARS-CoV-2 RT-PCR result from a nasopharyngeal specimen recorded in the occupational-health file between March and December 2020. A result contributed to the analysis only if it appeared in the occupational-health record. The retained records did not identify the individual testing trigger (symptoms, contact tracing, routine screening, or rotation/travel requirements) or the testing channel (company-organized or external); testing frequency and the proportion of workers tested also could not be reconstructed. An externally performed test could therefore be captured only if its result had been entered in the occupational-health record. The comparison category is consequently termed 'no documented infection' and must not be interpreted as a confirmed absence of infection.

Severity was classified from recorded management: mild disease comprised limited symptoms without respiratory distress and management in isolation; moderate disease required regular medical monitoring without hospital admission; and severe disease required hospital admission or oxygen therapy. These pragmatic record-based categories were interpreted in line with WHO clinical-management principles [17].

2.6. Psychometric Outcomes

The GAD-7 contains seven items scored from 0 to 3 (total 0 - 21), and the PHQ-9 contains nine items scored from 0 to 3 (total 0 - 27). The archived questionnaire was in French, but no study-specific forward-backward translation or local cultural adaptation procedure was documented. A score of 10 or higher defined clinically significant anxiety or depressive symptoms, respectively. These thresholds are screening criteria and not psychiatric diagnoses. Analyses were restricted to complete questionnaires. Concurrent GAD-7 and PHQ-9 scores of 10 or higher defined co-occurring symptoms. PHQ-9 item 9 assessed thoughts of death or self-harm; a prespecified response or referral protocol for a positive item 9 response was not retained in the archived study documentation, and item-level responses are no longer available for retrospective audit.

2.7. Organizational Indicators

Human-resources records classified an interruption as COVID-19-related when more than 14 days away from work were attributed to COVID-19 illness, isolation, or medical evacuation. The retained aggregate count did not separate these categories and did not permit travel or rotation restrictions or other operational exclusions to be identified separately. Three available indicators were retained: the

proportion of workers with such an interruption, the mean absence duration among workers with documented infection, and the proportion of the 23 units that underwent reorganization. Reorganization included team changes, temporary reassignment, and suspension of selected projects. A productivity estimate in the original document was excluded because its definition, denominator, and measurement procedure were not verifiable.

2.8. Statistical Analysis

Continuous variables are reported as means with standard deviations (SDs), and categorical variables as counts and percentages. Wilson 95% confidence intervals (CIs) were calculated for proportions. Among the 621 complete questionnaire respondents, symptom frequencies were compared between documented-infection categories using Pearson's chi-squared test. Crude prevalence ratios (PRs) and log-scale 95% CIs were calculated from the aggregate two-by-two tables. Tests were two-sided with alpha = 0.05. Item-level missingness and participant characteristics according to questionnaire completeness were not retained and could not be examined. No multivariable model was possible because the individual-level source dataset was no longer available. Analyses were conducted in R version 4.2.0 (R Foundation for Statistical Computing, Vienna, Austria). All reported proportions, CIs, PRs, and chi-square statistics were verified from the aggregate counts available in the study record.

2.9. Ethics and Consent

The protocol was approved by the company's internal ethics committee under the procedures applicable in 2020 and in accordance with the principles of the Declaration of Helsinki [18]. Questionnaire participation was voluntary, preceded by study information, and accompanied by informed consent. The archived materials do not retain the approval reference number, a separate waiver of individual consent for retrospective record review, or sufficient detail to determine whether the approval explicitly covered linkage and retrospective use of occupational health and human resources records without individual consent. Medical and human-resources records were de-identified after linkage for analysis.

3. Results

3.1. Participant Characteristics

Of 695 registered workers, 647 met the eligibility criteria (93.1%). Mean age was 38.6 years (SD 8.4), and 534 workers (82.5%) were men, corresponding to a male-to-female ratio of 4.7. Most workers were Congolese nationals (574; 88.6%) and permanent employees (442; 68.3%) (Table 1).

3.2. Documented Infections and Clinical Severity

Overall, 119 workers had at least one documented positive RT-PCR result between March and December 2020, corresponding to 18.4% of the included workforce

(95% CI 15.6 - 21.6). Most recorded episodes were mild (86/119; 72.3%). Four workers (3.4%) had severe disease, and no death was recorded (Table 2).

Table 1. Sociodemographic and occupational characteristics (N = 647).

Characteristic	Value
Age, years, mean (SD)	38.6 (8.4)
Male sex, n (%)	534 (82.5)
Congolese nationality, n (%)	574 (88.6)
Permanent employees, n (%)	442 (68.3)
Local contractors, n (%)	139 (21.5)
Expatriate managers, n (%)	66 (10.2)
Service tenure, years, mean (SD)	7.2 (5.1)

SD, standard deviation. Employment categories sum to 647 workers.

Table 2. Recorded clinical severity among workers with documented infection (n = 119).

Clinical Category	n (%)
Mild	86 (72.3)
Moderate	29 (24.4)
Severe	4 (3.4)
Death	0 (0.0)

Percentages may not sum to exactly 100% because of rounding.

3.3. Anxiety and Depressive Symptoms

Complete psychometric data were available for 621 of the 647 workers (96.0%, 95% CI 94.2 - 97.2); 26 incomplete questionnaires were excluded. All 26 incomplete questionnaires occurred in the "no documented infection" category, whereas all 119 workers with documented infection had complete questionnaires. Item-level missingness and participant characteristics according to questionnaire completeness were not retained. Among complete respondents, 228 (36.7%, 95% CI 33.0 - 40.6) had GAD - 7 scores of 10 or higher, 133 (21.4%, 95% CI 18.4 - 24.8) had PHQ - 9 scores of 10 or higher, and 82 (13.2%, 95% CI 10.8 - 16.1) met both criteria.

Among the 119 complete respondents with documented infection and the 502 complete respondents with no documented infection, anxiety symptoms were present in 67/119 (56.3%) and 161/502 (32.1%), respectively, corresponding to a crude PR of 1.76 (95% CI 1.43 - 2.15; $p < 0.001$). Depressive symptoms occurred in 41/119 (34.5%) versus 92/502 (18.3%), corresponding to a crude PR of 1.88 (95% CI 1.38 - 2.56; $p < 0.001$) (Table 3).

Table 3. Psychometric symptoms by documented infection status (n = 621).

Outcome	Documented Infection (n = 119)	No Documented Infection (n = 502)	Crude PR (95% CI)	p
GAD-7 ≥ 10, n (%)	67 (56.3)	161 (32.1)	1.76 (1.43 - 2.15)	<0.001
PHQ-9 ≥ 10, n (%)	41 (34.5)	92 (18.3)	1.88 (1.38 - 2.56)	<0.001

CI, confidence interval; PR, prevalence ratio. Column percentages are shown. The "no documented infection" category is not a confirmed-negative group. p values are from Pearson's chi-squared tests. Infection records covered March-December, whereas the questionnaire was administered in November.

3.4. Work Disruption

A COVID-19-related work interruption longer than 14 days was recorded for 92 workers (14.2%, 95% CI 11.7 - 17.1). The human-resources definition encompassed illness, isolation, or medical evacuation, but the retained aggregate count did not distinguish these reasons. Among workers with documented infection, the mean absence duration was 17 days (SD 5). Fifteen of the 23 units underwent operational reorganization (65.2%, 95% CI 44.9 - 81.2) (Table 4).

Table 4. Organizational indicators recorded in 2020.

Indicator	Denominator	Result
COVID-19-related work interruption > 14 days	647 workers	92 (14.2%; 95% CI 11.7 - 17.1)
Absence duration among workers with documented infection	119 workers	17 days (SD 5)
Operational units reorganized	23 units	15 (65.2%; 95% CI 44.9 - 81.2)

CI, confidence interval; SD, standard deviation. Reorganization included team changes, temporary reassignment, and suspension of selected projects.

4. Discussion

4.1. Principal Findings

This study provides an integrated account of infection records, psychological symptoms, and operational disruption during the first pandemic year among a large oil company workforce in Central Africa. Almost one in five workers had a documented SARS-CoV-2 infection. Recorded disease was predominantly mild, although four workers required hospital admission or oxygen therapy. More than one-third of complete respondents screened positive for clinically significant anxiety symptoms, approximately one-fifth screened positive for depressive symptoms, and one in eight met both criteria. Both symptom categories were substantially more frequent among workers with documented infection. At the organizational level, prolonged work interruption affected one in seven workers, and nearly two-thirds of operational units were reorganized.

4.2. Interpreting the Documented Infection Burden

The 18.4% estimate is a cumulative proportion of infections captured by occupational-health records, not a seroprevalence, and not an unbiased estimate of occupational acquisition. Testing indications, the number of tests performed, and their distribution over time were unavailable. Asymptomatic infections, false-negative tests, and diagnoses made outside the company system may therefore have been missed. This concern is not theoretical: studies in the Republic of the Congo documented early viral circulation and a high antibody prevalence among asymptomatic people in Brazzaville, illustrating how strongly measured burden depends on sampling frame, period, and diagnostic method [2] [3]. Direct numerical comparison with community estimates would consequently be misleading.

The predominance of mild disease is plausible in a workforce with a mean age below 40 years and may also reflect healthy-worker selection. Nonetheless, the four severe cases confirm that an employed population is not protected from clinically consequential illness. The absence of recorded deaths should be interpreted within the small number of severe cases and the possibility that outcomes managed outside the company system were incompletely captured. Neither the source of infection nor transmission chains could be established, so the study cannot separate occupational exposure from household or community acquisition.

4.3. Psychological Symptom Burden in Context

Anxiety symptoms affected 36.7% of respondents, and depressive symptoms 21.4%. A widely cited early meta-analysis of general-population studies reported pooled prevalences of 31.9% for anxiety and 33.7% for depression, but heterogeneity exceeded 99%, underscoring the limited value of direct cross-study ranking [19]. The Global Burden of Disease analysis subsequently estimated marked worldwide increases in both disorders during 2020 [20]. In low- and middle-income countries, pandemic-related distress occurred in health systems already facing substantial treatment gaps, constrained specialist capacity, and unequal access to digital or community support [21]. The present findings therefore identify a meaningful screening burden, but GAD-7 and PHQ-9 thresholds do not establish psychiatric diagnoses or determine treatment need without clinical assessment.

Oil-industry studies provide a more relevant, although still imperfect, comparison. Before the pandemic, anxiety and depressive symptoms were reported in approximately 15% and 18% of a large oil-and-gas workforce [7]. During the pandemic, Baygi and colleagues reported anxiety in about one quarter and depressive symptoms in about three tenths of offshore platform workers, using a different instrument and threshold [9]. A longitudinal study in Iranian refineries found deterioration in psychological and psychosocial measures from the pre-pandemic period to July 2020 [8]. Our higher anxiety estimates but lower depression estimates than the offshore survey should not be interpreted as a true geographic difference: instruments, timing, workforce composition, exposure intensity, and local restrictions all differed. The predominantly male composition of our work-

force and possible stigma around disclosure may also have influenced self-reporting, but these mechanisms were not measured.

Within the Republic of the Congo, the 39.4% prevalence of perceived stress reported in a 2021 oil-company study provides useful local context [10]. Direct comparison is not appropriate because perceived stress is distinct from anxiety and depressive symptoms. The study used the PSS-10 rather than the GAD-7 and PHQ-9, and data were collected during a later phase of the pandemic. Nevertheless, both studies indicate a sustained need for structured mental-health surveillance in the sector.

4.4. Association between Documented Infection and Symptoms

The prevalence of anxiety and depressive symptoms was 1.76 and 1.88 times higher, respectively, among workers with documented infection. Several pathways are plausible. Acute illness, isolation, fear of deterioration or transmission to family members, perceived stigma, uncertainty about fitness for duty, and disruption of income or rotations may increase distress. Large health-record cohorts have also reported psychiatric diagnoses after COVID-19 and evidence of a bidirectional relationship between infection and mental health [22] [23]. These external findings support biological and psychosocial plausibility, but they do not convert the present crude association into a causal effect.

Three design features are decisive. First, the November questionnaire was compared with infection status defined over March-December; some infections may therefore have occurred after symptom measurement. Second, the "no documented infection" category almost certainly included undetected infection. Third, individual data were unavailable for adjustment. Age, sex, comorbidity, employment category, worksite, rotation pattern, prior mental health, family illness, and differential access to testing could confound the association. Reverse causation and selection into testing are also possible. The estimates should therefore be read as signals for occupational-health surveillance, not as measures of the psychiatric effect of SARS-CoV-2 infection.

4.5. Work Disruption and Operational Resilience

The organizational indicators show that the pandemic response extended well beyond clinical case management. A mean absence of 17 days among documented cases is compatible with the combined duration of illness, isolation, and return-to-work procedures used early in the pandemic. Reorganization of 15 of 23 units suggests wide system effects, even though only 14.2% of workers had an interruption exceeding 14 days. Oil operations are tightly interdependent: removal of a small number of specialized workers can require team changes, delayed projects, or altered rotations across an entire unit.

Qualitative evidence from offshore workers describes compressed or extended rotations, prolonged family separation, and uncertainty about travel and relief crews [6]. Research in refineries has linked coronavirus-related health anxiety, job

stress, resilience, and productivity [11], while oil-and-gas studies have emphasized safety culture and the quality of surveillance and reporting [12] [13]. These findings are consistent with our operational observations, but the available indicators cannot quantify lost production, distinguish preventive from reactive reorganization, or determine whether changes reduced transmission. Exclusion of the unverifiable productivity estimate avoids a precision that the source records cannot support.

4.6. Implications for Occupational Health Practice

The findings support an integrated preparedness model for continuously operating industries. Infection surveillance should prospectively record testing indications, numbers tested, dates, worksite, likely exposure setting, clinical outcome, vaccination status, absence, and return-to-work decisions. Business-continuity plans should identify scarce competencies, cross-train replacement staff, maintain protected transport and accommodation arrangements, and prevent rotations from becoming excessively long during outbreaks. Contractors and expatriate workers should be included in the same surveillance and access-to-care pathways as permanent employees.

Mental-health action should not be limited to resilience training for individuals. WHO guidance prioritizes prevention of psychosocial hazards through organizational interventions, manager training, worker mental-health literacy, confidential access to evidence-based care, reasonable accommodation, and coordinated return-to-work support [24]. In the present setting, a stepped pathway could combine periodic confidential screening, clinical confirmation for positive screens, rapid referral for severe symptoms or suicide risk, and follow-up linked to occupational physicians without disclosing diagnoses to line management. Future studies should use repeated measures, validated local-language instruments, exact infection dates, pre-pandemic baselines where available, and multivariable or longitudinal designs.

4.7. Strengths and Limitations

Strengths include coverage of 93.1% of the source workforce, a 96.0% complete-questionnaire rate, use of two widely recognized screening instruments, and triangulation of occupational-health, psychometric, and organizational records. The study also contributes uncommon evidence from a Central African industrial workforce and distinguishes documented infection from confirmed absence of infection.

The limitations substantially constrain inference. Testing coverage, testing triggers, and testing channels were unknown, producing outcome misclassification and preventing estimation of infection incidence among those tested. The psychometric survey was cross-sectional, administered once, and not temporally aligned with the full infection window; no pre-pandemic measurement was available. The archived materials did not document a formal translation or cultural-adaptation

procedure, a prespecified PHQ-9 item 9 response protocol, detailed linkage quality-control checks, or personnel-level access logs. GAD-7 and PHQ-9 identify symptom severity rather than clinical disorders.

Organizational indicators came from internal records without a pre-pandemic comparator. Although the human-resources definition encompassed COVID-19 illness, isolation, and medical evacuation, the aggregate count did not distinguish these reasons or permit travel/rotation restrictions and other operational exclusions to be identified separately. The study could not distinguish workplace from community transmission or assess compliance with preventive measures. Finally, a single, male-dominated company limits external validity, especially for informal workers, other extractive settings, and later pandemic phases shaped by variants, vaccination, and changing public-health policy.

5. Conclusion

During 2020, 18.4% of workers in this Congolese oil company had a documented SARS-CoV-2 infection, while clinically significant anxiety and depressive symptoms affected 36.7% and 21.4% of complete questionnaire respondents. Symptoms were more frequent among workers with documented infections, and prolonged absences and unit reorganizations indicated substantial operational consequences. Incomplete infection ascertainment, uncertain temporal ordering, and lack of individual-level adjustment preclude causal interpretation. The findings nevertheless support occupational health systems that link auditable infection surveillance, confidential mental health care, equitable worker coverage, and business continuity planning, with prospective data governance built into future emergency response.

Acknowledgements

The authors thank the occupational-health service, company management, and all workers who participated in the study.

Author Contributions

Conceptualization: E.E.A. and J.M.M.; Methodology: E.E.A. and J.M.M.; Investigation: E.E.A. and J.M.M.; Data curation: E.E.A. and J.M.M.; Formal analysis: E.E.A.; Validation: E.E.A. and J.M.M.; Writing—original draft preparation: E.E.A.; Writing—review and editing: E.E.A. and J.M.M.; Project administration: E.E.A. Both authors have read and approved the final manuscript.

Ethics Approval and Consent to Participate

The protocol was approved by the company's internal ethics committee under the procedures applicable in 2020 and in accordance with the principles of the Declaration of Helsinki. Questionnaire participation was voluntary, preceded by study information, and accompanied by informed consent. The administrative approval reference, a separate waiver of consent for the retrospective record review, and

documentation confirming that approval explicitly covered record linkage and retrospective use were not retained. Occupational-health and human-resources records were de-identified after linkage for analysis.

Data Availability

The retained data consist of the aggregate counts reported in Tables 1-4 and used to reproduce the descriptive estimates and crude comparisons. The original individual-level occupational-health, human-resources, questionnaire, linkage-key, and analytic files are no longer available; consequently, no de-identified individual records can be accessed or shared. Questions about the aggregate calculations may be directed to the corresponding author.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] World Health Organization (2020) WHO Director-General's Opening Remarks at the Media Briefing on COVID-19—11 March 2020. https://www.who.int/news-room/speeches/item/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020

[2] Bonguili, N.C.B., Fritz, M., Lenguiya, H., Mayengue, P.I., Koukouikila-Koussounda, F., Dossou-Yovo, L.R., *et al.* (2022) Early Circulation of SARS-CoV-2, Congo, 2020. *Emerging Infectious Diseases*, **28**, 878-880. https://doi.org/10.3201/eid2804.212476

[3] Batchi-Bouyou, A.L., Lobaloba Ingoba, L., Ndounga, M., Vouvoungui, J.C., Mfoutou Mapanguy, C.C., Boumpoutou, K.R., *et al.* (2021) High SARS-CoV-2 IgG/IgM Seroprevalence in Asymptomatic Congolese in Brazzaville, the Republic of Congo. *International Journal of Infectious Diseases*, **106**, 3-7. https://doi.org/10.1016/j.ijid.2020.12.065

[4] Baker, M.G. (2020) Nonrelocatable Occupations at Increased Risk during Pandemics: United States, 2018. *American Journal of Public Health*, **110**, 1126-1132. https://doi.org/10.2105/ajph.2020.305738

[5] U.S. Department of Labor, Occupational Safety and Health Administration (2020) U.S. Department of Labor Issues Guidance to Employers to Help Protect Oil and Gas Workers during the Coronavirus Pandemic. https://content.govdelivery.com/accounts/USDOL/bulletins/2947dd5

[6] D'Antoine, E., Jansz, J., Barifcani, A., Shaw-Mills, S., Harris, M. and Lagat, C. (2023) COVID-19 and Offshore Oil and Gas Workers: The Role of Personality. *Social Sciences & Humanities Open*, **7**, Article ID: 100402. https://doi.org/10.1016/j.ssaho.2023.100402

[7] Pavičić Žeželj, S., Cvijanović Peloza, O., Mika, F., Stamenković, S., Mahmutović Vranić, S. and Šabanagić Hajrić, S. (2019) Anxiety and Depression Symptoms among Gas and Oil Industry Workers. *Occupational Medicine*, **69**, 22-27. https://doi.org/10.1093/occmed/kqy170

[8] Soltanzadeh, A., Ghasemi, M., Sadeghi-Yarandi, M., Golmohammadpour, H., Maddahi, M., Sadeghi-Yarandi, S., *et al.* (2021) Psychological and Psychosocial Impact and Related Factors during the COVID-19 Pandemic among Iranian Oil Refineries Personnel: A Longitudinal Study. *Archives of Iranian Medicine*, **24**, 811-821.

https://doi.org/10.34172/aim.2021.121

[9] Baygi, F., Mohammadian Khonsari, N., Seif, E., Asayesh, H. and Qorbani, M. (2022) The Mental Health Status of Offshore Oil Platform Workers during the COVID-19 Pandemic. *Frontiers in Psychiatry*, **13**, Article 1009602. https://doi.org/10.3389/fpsyt.2022.1009602

[10] Ebatetou-Ataboho, E., Nguissaliki, M.N., Yansané, A., Atipo-Galloye, P. and Kokolo, J.G. (2023) Psychosocial Risk Factors and Stress in an Oil Company in the Republic of the Congo: A Cross-Sectional Study. *Occupational Diseases and Environmental Medicine*, **11**, 187-198. https://doi.org/10.4236/odem.2023.114015

[11] Yazdanirad, S., Sadeghian, M., Jahadi Naeini, M., Abbasi, M. and Mousavi, S.M. (2021) The Contribution of Hypochondria Resulting from Corona Virus on the Occupational Productivity Loss through Increased Job Stress and Decreased Resilience in the Central Workshop of an Oil Refinery: A Path Analysis. *Heliyon*, **7**, e06808. https://doi.org/10.1016/j.heliyon.2021.e06808

[12] Guzman, J., Recoco, G.A., Pandi, A.W., Padrones, J.M. and Ignacio, J.J. (2022) Evaluating Workplace Safety in the Oil and Gas Industry during the COVID-19 Pandemic Using Occupational Health and Safety Vulnerability Measure and Partial Least Square Structural Equation Modelling. *Cleaner Engineering and Technology*, **6**, Article ID: 100378. https://doi.org/10.1016/j.clet.2021.100378

[13] Almeida, B.D.A., Nunes, C.H., Cozendey-Silva, E.N., Vasco, M.J. and Teixeira, L.R. (2023) Impacts of COVID-19 on the Oil and Gas Industry in Brazil. *Revista Brasileira de Medicina do Trabalho*, **21**, 01-12. https://doi.org/10.47626/1679-4435-2022-1015

[14] von Elm, E., Altman, D.G., Egger, M., Pocock, S.J., Gøtzsche, P.C. and Vandenbroucke, J.P. (2007) The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: Guidelines for Reporting Observational Studies. *The Lancet*, **370**, 1453-1457. https://doi.org/10.1016/s0140-6736(07)61602-x

[15] Spitzer, R.L., Kroenke, K., Williams, J.B.W. and Löwe, B. (2006) A Brief Measure for Assessing Generalized Anxiety Disorder. *Archives of Internal Medicine*, **166**, 1092-1097. https://doi.org/10.1001/archinte.166.10.1092

[16] Kroenke, K., Spitzer, R.L. and Williams, J.B.W. (2001) The PHQ-9: Validity of a Brief Depression Severity Measure. *Journal of General Internal Medicine*, **16**, 606-613. https://doi.org/10.1046/j.1525-1497.2001.016009606.x

[17] World Health Organization (2021) COVID-19 Clinical Management: Living Guidance, 25 January 2021. https://iris.who.int/server/api/core/bitstreams/0eccae52-5229-44d4-b009-ac4ce31f787c/content

[18] World Medical Association (2013) World Medical Association Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects. *JAMA*, **310**, 2191-2194.

[19] Salari, N., Hosseinian-Far, A., Jalali, R., Vaisi-Raygani, A., Rasoulpoor, S., Mohammadi, M., *et al.* (2020) Prevalence of Stress, Anxiety, Depression among the General Population during the COVID-19 Pandemic: A Systematic Review and Meta-Analysis. *Globalization and Health*, **16**, Article No. 57. https://doi.org/10.1186/s12992-020-00589-w

[20] Santomauro, D.F., Mantilla Herrera, A.M., Shadid, J., Zheng, P., Ashbaugh, C., Pigott, D.M., *et al.* (2021) Global Prevalence and Burden of Depressive and Anxiety Disorders in 204 Countries and Territories in 2020 Due to the COVID-19 Pandemic. *The Lancet*, **398**, 1700-1712. https://doi.org/10.1016/s0140-6736(21)02143-7

[21] Kola, L., Kohrt, B.A., Hanlon, C., Naslund, J.A., Sikander, S., Balaji, M., *et al.* (2021) COVID-19 Mental Health Impact and Responses in Low-Income and Middle-Income

Countries: Reimagining Global Mental Health. *The Lancet Psychiatry*, **8**, 535-550. https://doi.org/10.1016/s2215-0366(21)00025-0

[22] Taquet, M., Luciano, S., Geddes, J.R. and Harrison, P.J. (2021) Bidirectional Associations between COVID-19 and Psychiatric Disorder: Retrospective Cohort Studies of 62 354 COVID-19 Cases in the Usa. *The Lancet Psychiatry*, **8**, 130-140. https://doi.org/10.1016/s2215-0366(20)30462-4

[23] Xie, Y., Xu, E. and Al-Aly, Z. (2022) Risks of Mental Health Outcomes in People with Covid-19: Cohort Study. *BMJ*, **376**, e068993. https://doi.org/10.1136/bmj-2021-068993

[24] World Health Organization (2022) Guidelines on Mental Health at Work. https://www.who.int/publications/i/item/9789240053052