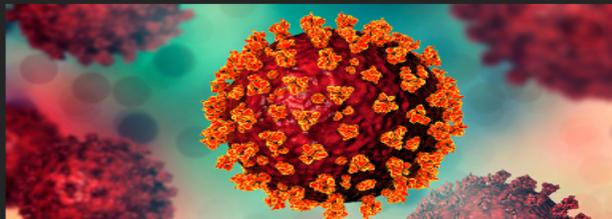


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Assessment and Impact of the risk of Exposure of Portuguese Biomedical Scientists in the context of COVID-19: An exploratory study

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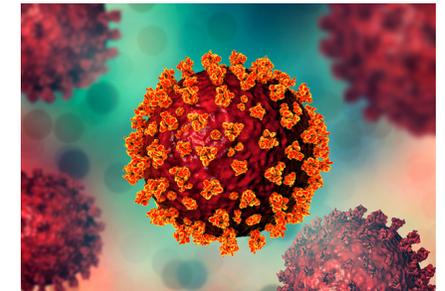
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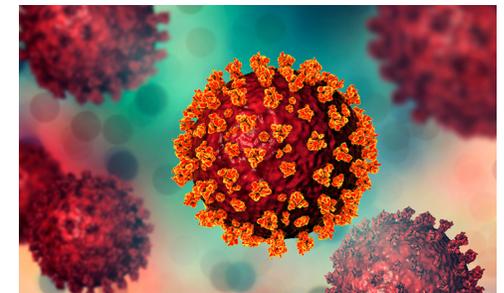
Background

- COVID-19 is a new and emerging public health concern, caused by SARS-COV-2, a new corona virus.
- Health professionals are in the frontline of the fight against this pandemic; hence, there is an undeniable risk of being infected, and through this infection they may introduce or amplify outbreaks in their health units.
- The purpose of this study is to characterize and assess Biomedical Scientists' risk of COVID-19 exposure and stress appraisals in relation to their contact with infected patients.



Materials and Methods

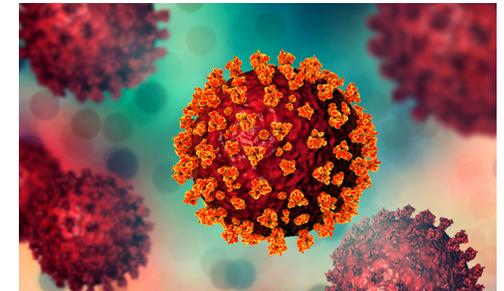
- Cross-sectional, survey-based study.
- A sample of 233 Portuguese Biomedical Scientists (76.4% females) were recruited through social networks and professional associations.
- Data were collected via a structured on-line questionnaire, which included the WHO's Risk Assessment and Management of Exposure Survey (WHO, 2020) and the Stress Appraisal Measure (SAM; Peacock & Wong, 1990).



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Materials and Methods

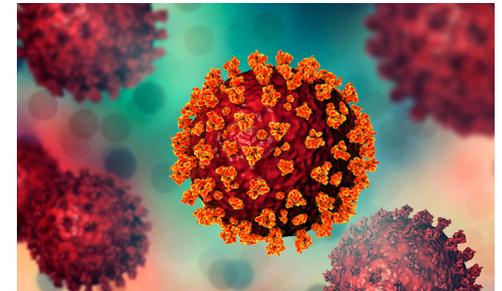
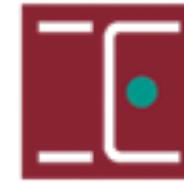
- WHO's Risk Assessment and Management of Exposure Survey (WHO, 2020):
 - Community exposure to COVID-19 virus
 - Occupational exposure to COVID-19 virus
 - Risk categorization of healthcare workers exposed to the COVID-19 virus



Materials and Methods

- **Stress Appraisal Measure (SAM; Peacock & Wong, 1990):**
- 3 primary cognitive appraisals:
 - Threat
 - Challenge
 - Centrality
- 3 secondary cognitive assessments:
 - Control by the same
 - Control by others and
 - Uncontrollability

It consists of 28 items that represent the participants' thinking in relation to a specific situation, in this case, working in a context of exposure to COVID-19.

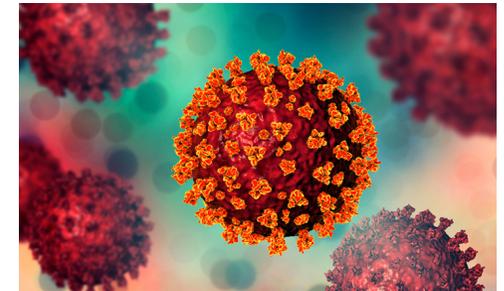


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Materials and Methods

Data Analysis

- Descriptive statistics were calculated for all variables.
- Absolute and relative frequencies were used for categorical variables.
- Means and standard deviations were computed for continuous variables.
- Exposure to COVID-19 virus and risk of COVID-19 infection were calculated according WHO's Risk Assessment and Management of Exposure Survey indications.



Results

Participants worked mainly in outpatient settings (45%) and in emergency services (28%).

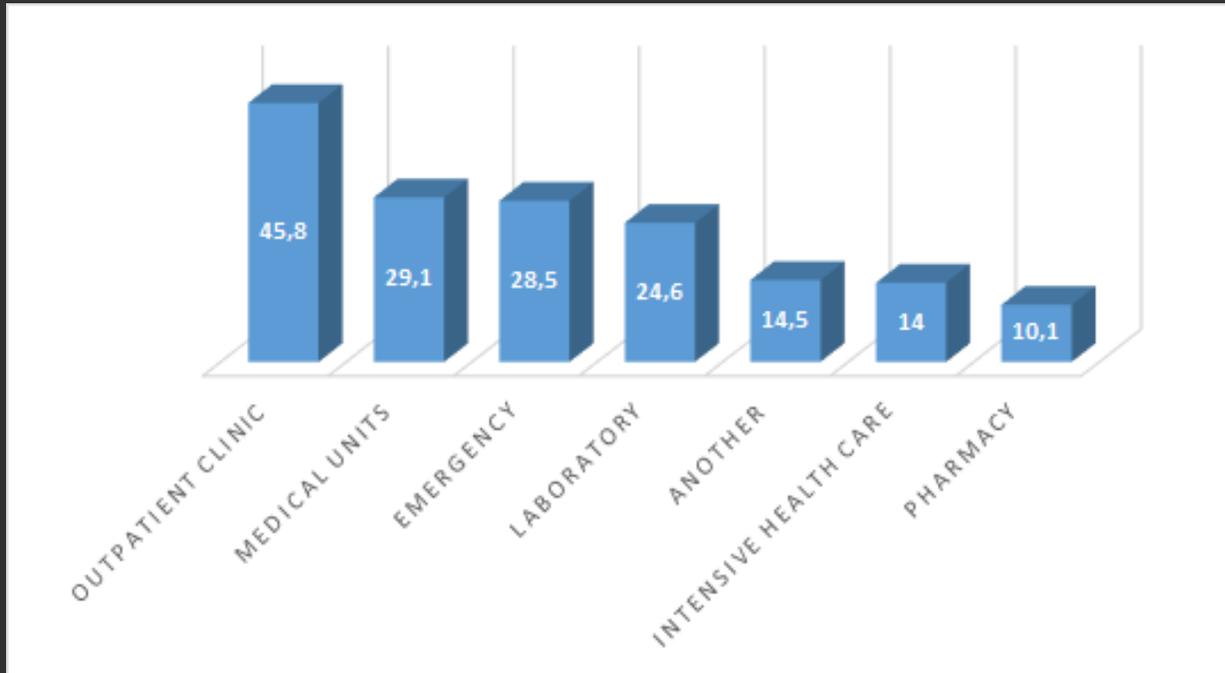
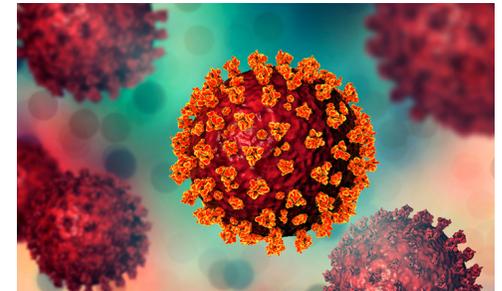


Figure 1 - Workplaces of the participants



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Results

Most participants were biomedical scientists in radiology (28.5%), clinical analysis (26.3%), cardiopneumology (12.3%) and pharmacy (10, 1%).

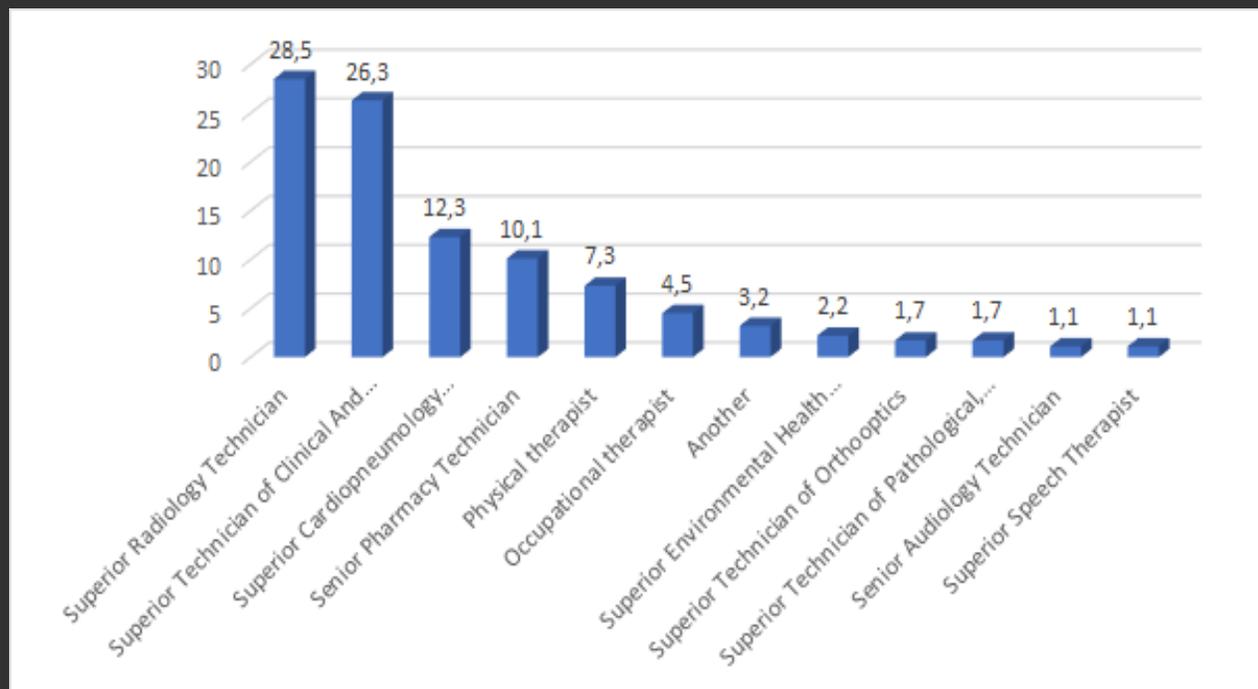
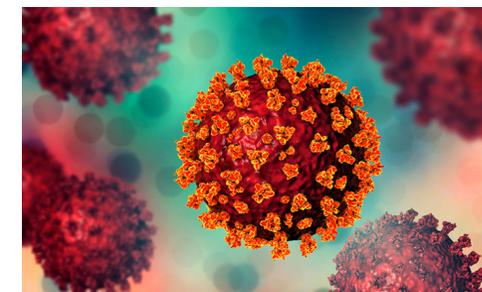


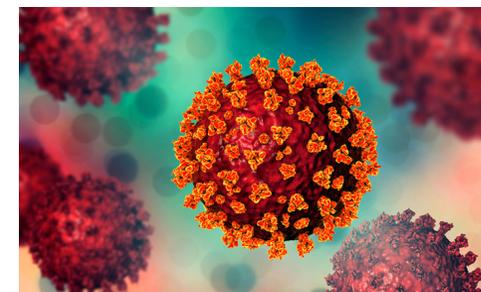
Figure 2 - Biomedical scientist profession



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Results

- 22.9% of participants were exposed to COVID-19 through community exposure, while 39% were exposed in a professional context.
- 89 (50%) directly provided some healthcare to a confirmed patient with COVID-19.
- Although 94.9% reported using personal protective equipment (PPE) while providing healthcare or diagnostic and therapeutic tests to a COVID-19 patient, 83.6% were at high risk of COVID-19 infection.



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Results

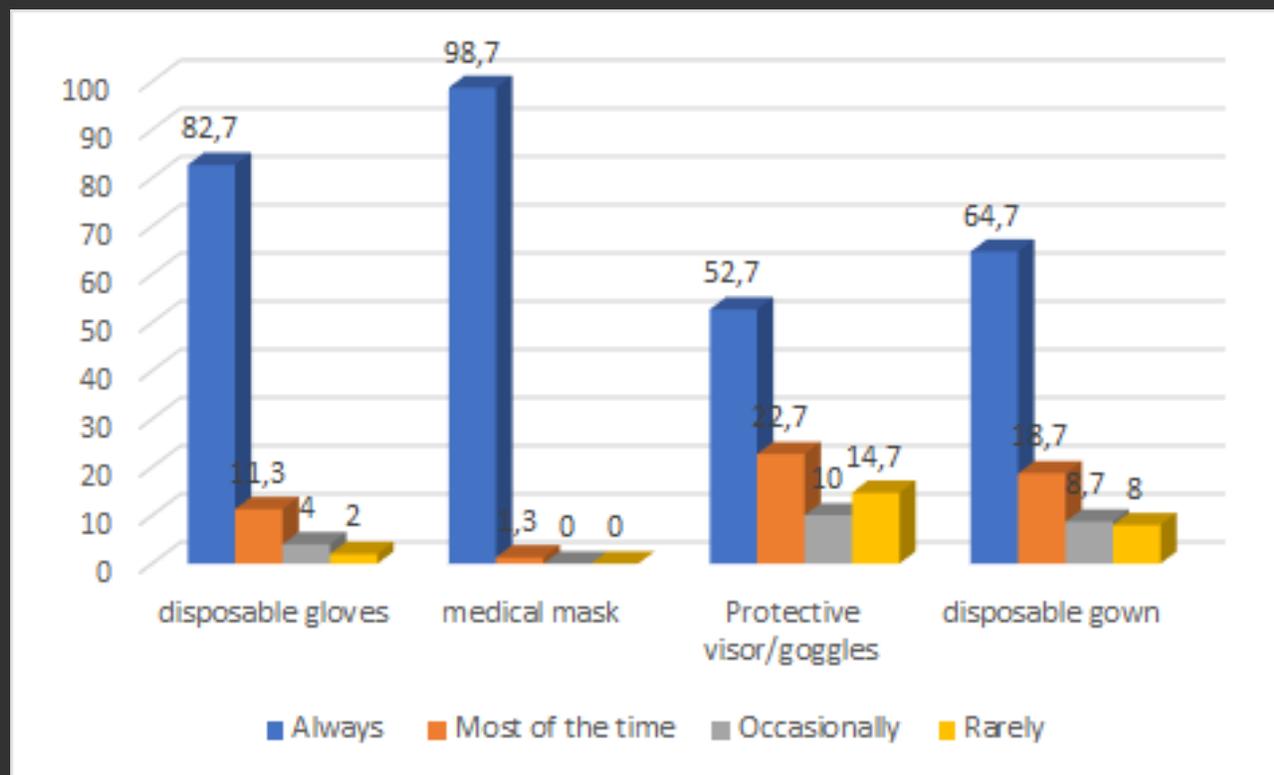
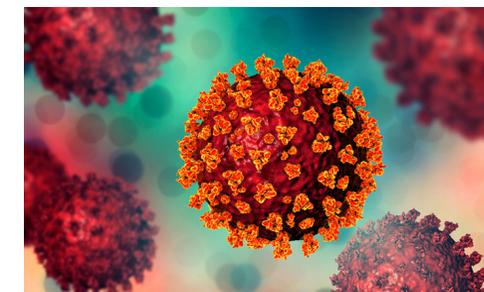


Figure 3 - Frequency of use of PPE by biomedical scientists

Results

According to the biomedical scientist exposure risk categorization to COVID-19, it was found that 83.6% had a high risk and 16.4% a low risk.

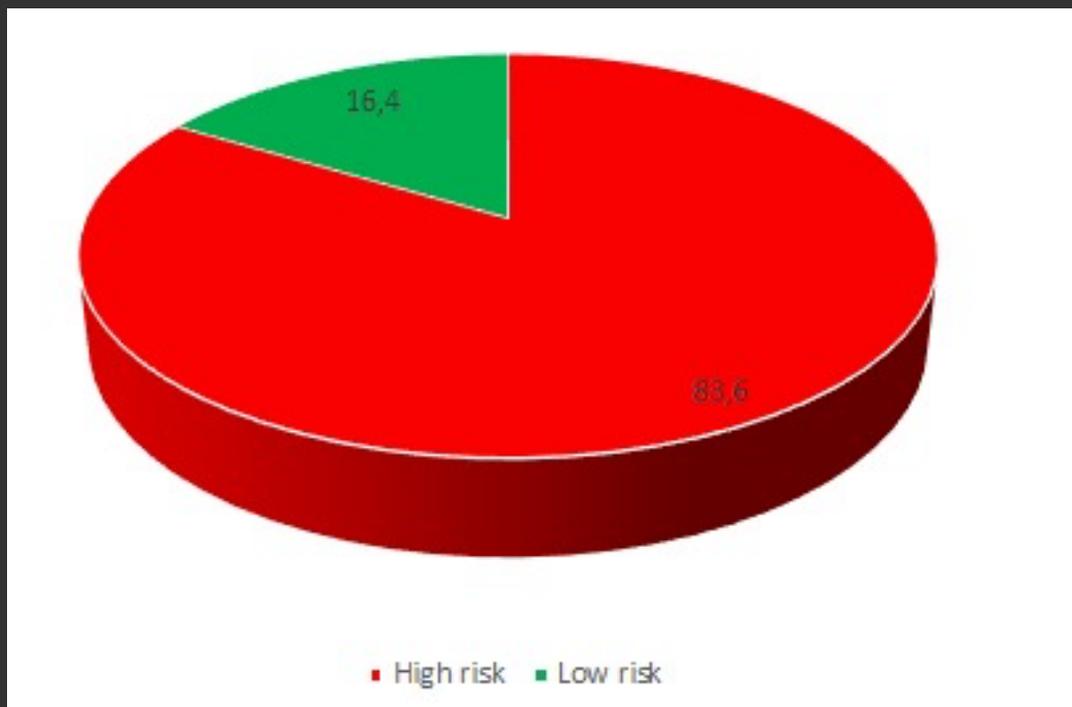
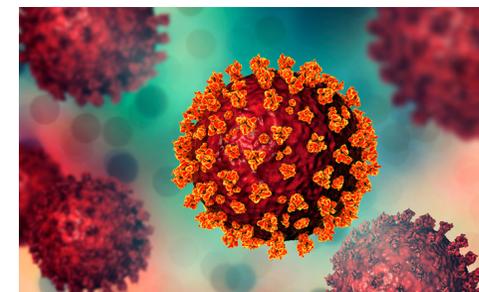


Figure 4 - Biomedical scientists exposure risk categorization to COVID-19



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Results

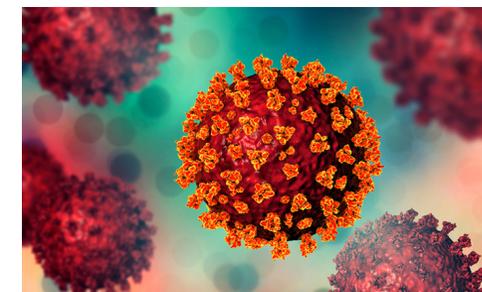
Concerning stress appraisals, results suggest moderate perceptions of stress and threat, but also moderate perceptions of control over the situation.

Table 1: Stress perceptions and primary and secondary cognitive appraisals (means and standard deviations) of biomedical scientists as a function of risk exposure to patients with COVID-19.

Variables	All	Risk		t-value	p-value
		Low	High		
Threat	3.10 (0.88)	3.01 (1.01)	3.12 (0.86)	-0.58	.59
Challenge	2.94 (0.88)	3.14 (0.99)	2.90 (0.86)	1.20	.23
Centrality	3.31 (0.91)	3.29 (1.11)	3.32 (0.88)	-0.12	.90
Uncontrollability	2.69 (0.82)	2.80 (0.91)	2.67 (0.80)	0.65	.52
Controllable-by-others	3.02 (0.93)	3.20 (0.84)	2.98 (0.94)	1.02	.31
Controllable-by-self	3.63 (0.68)	3.73 (0.62)	3.60(0.69)	0.80	.42
Stress	3.40 (0.81)	3.41 (0.78)	3.39 (0.82)	0.10	.92

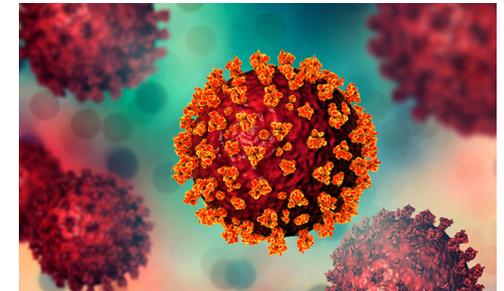


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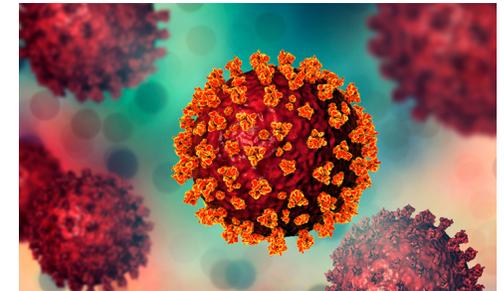
Discussion

- Biomedical scientists are at high risk of exposure to COVID-19 infection, either through direct contact with patients infected with COVID-19 or through contact while handling biological substances.
- These results are similar to those presented by Ashinyo et al. (2020) who estimated an occupational risk of 80.4%.



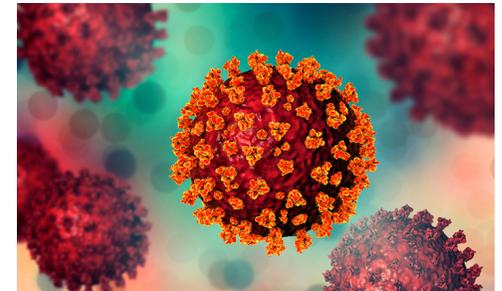
Discussion

- The results depict a complex and textured reality:
- There are mostly moderate perceptions of stress and threat.
- There are also moderate perceptions of control over the situation.
- These moderate appraisals are a probable emanation of a greater level of protection provided by PPE-related measures combined with the recognition of the unpredictable and contingent nature of the COVID-19 pandemic.



Conclusions

- The vast majority of Biomedical Scientists is at high risk of occupational exposure.
- Perceptions of stress and threat, however, are moderate, possibly filtered by a general sense of safety, as the risk can be reduced by consistent and appropriate use of PPE.
- Recommendations for protection rules must: a) reinforce concrete measures of support and working conditions offered by healthcare organizations, and b) adopt a policy encouraging the development of personal agency.

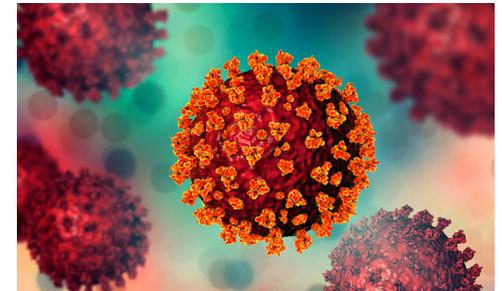




Thank you for your Attention!

- **Acknowledgements**

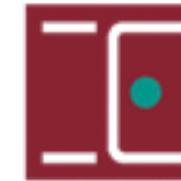
The authors are grateful to Professor Fernando Mendes from ESTESCoimbra for his help with the data collection and to the STSS and SINDITE professional associations for their cooperation.



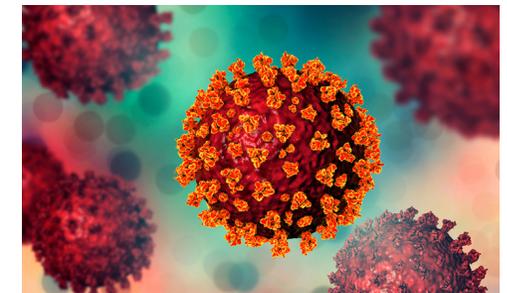
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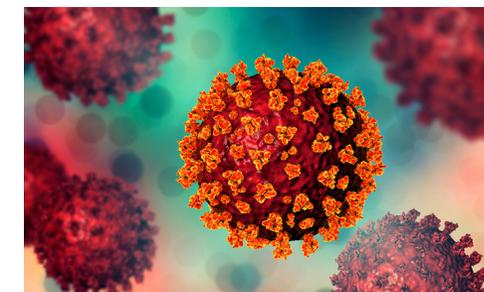
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