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COVID-19 Disease Anxiety and Stress in Human health

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ABSTRACT:

Corona viruses are the most important single-stranded RNA viruses, which infects both animal and human, causing respiratory diseases. In late December 2019, in Wuhan, China; there were a group of patients admitted to the hospitals with a principal diagnosis of pneumonia of an unknown etiology. The history of the patients was related to seafood and wet animal market in Wuhan, the early report detected that this new corona virus outbreak which termed by WHO as (COVID-19) on Feb 11, 2020. When the COVID-19 outbreak has been declared in Wuhan and recently became pandemic till now; the lifestyle of the human being has been changed to that are not as usual, and they begin to feel anxious and stress from this dangerous and life-threatening disease. The current article covers the extent of anxiety and stresses that people have affected due to the spread of the COVID-19 pandemic, their anxiety apparent in physical, affective, cognitive and behavioral domains, whether the stress apparent in physical, emotional and behavioral domains. And what they should do to stay safe from those abnormal situations. In fact, life in fearfulness conditions during the COVID-19 outbreak may make them uncomfortable at all. Therefore, we recommend that ongoing evaluation of the impact of anxiety and stress due to COVID-19 pandemic on human is necessary to enhance a human situation.

Keywords: COVID-19, pandemic, anxiety, human, stresses.

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INTRODUCTION:

Corona viruses (CoVs) are the more important causative agent of the disease in mammals and also birds. (CoVs) an enormous family of single-stranded RNA viruses, which have the ability for infecting both animals and humans, causing respiratory, gastrointestinal, hepatic, and neurologic diseases [1].

As the greatest known RNA viruses, CoVs are further divided into four types those involved: alpha-corona virus, beta-corona virus, gamma-corona virus and delta-corona virus [2]. Up to the present time, there are six human corona viruses (HCoVs) which have been recognized, including the alpha-CoVs HCoVs-NL63 and HCoVs-229E and the beta-CoVs HCoVs-OC43, HCoVs-HKU1, severe acute respiratory syndrome-CoV (SARS-CoV)[3] and Middle East respiratory syndrome-CoV (MERS-CoV) [4].

Severe acute respiratory syndrome (SARS), the first recognized in 2002 and diagnosed in Southern China, that happened from a human CoV [5]. An international effort harmonized by WHO led to the identification of the virus, in April 2003, of a new corona virus, SARS-corona virus (SARS-CoV), as the causative agent of the outbreak [6]. But the outbreak of SARS was taken under control in July 2003 by effective quarantine, patient-separation and travel limitations [5].

Then, precisely after 10 years of SARS-CoV appearance, a new emerging Coronavirus called Middle East Respiratory Syndrome (MERS-CoV) has infected human with a high mortality rate of approximately 50% in the Middle East [7].

These Coronaviruses outbreak induced lower respiratory tract infection as well as extra pulmonary appearance, leading to hundreds or thousands of cases with high mortality rates of up to 50% in certain populations [8].

In late December 2019, there are a group of patients was admitted to hospitals with the principle diagnosis of pneumonia of an unknown etiology [9]. These patients were epidemiologically related to seafood and wet animal wholesale market in Wuhan, Hubei Province, China [10, 11]. Early reports expected that, the beginning of a potential Coronavirus outbreak given the estimate of a reproduction number for the 2019 Novel (New) Coronavirus (COVID-19, termed by WHO on Feb 11, 2020)

which was considered to be significantly bigger than 1 (ranges from 2.24 to 3.58) [12].

The pathogen, a novel corona virus (SARS-CoV-2), was recognized by local hospitals using a surveillance mechanism for "pneumonia of unknown etiology" that was established in 2003 when the outbreak of SARS has been waked, with the object of allowing timely identification of novel pathogens [13].

But in recent days the COVID-19 has been pandemic, spread and confirmed in more than 100 countries around the world along international air-travel routes, with a high mortality rate.

Transmission:

SARS-CoV, MERS-CoV, and several other corona viruses, as SARS-CoV-2 probably originated in bats, but this information needs further confirmation whether pneumonia caused by the COVID-19 is transmitted directly from bats or through an intermediate host [14, 15].

Some study reported that five patients case in a family cluster, which confirmed Person-to-person transmission of CoVID-19 [16].

According to the large number of infected people that were exposed to the wet animal market in Wuhan City wherever the live animals are habitually sold, it is suggested that this is the possibly zoonotic source of the COVID-19, first reports recognized two species of snakes that could be a possible reservoir of the COVID-19[9]. Also snack is a probable virus reservoir for human infection [17].

The transmission of COVID-19 mostly occurs when an infected person sneezes and through the respiratory droplets produced just as the spread of the influenza virus and other respiratory pathogens, these droplets can stabilize in the mouth or nasal mucosa and lungs of persons with inhaled air [18]. And it can also be transmitted through aerial droplets and contact [19]. Transmission may also occur through fomites in the immediate environment around the infected person

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[20] Therefore, the transmission of the COVID-19 virus can occur by direct contact with infected people and indirect contact with surfaces in the immediate environment or with objects used on the infected person (e.g., stethoscope or thermometer) according to (WHO) publication. Recently, new corona virus

was detected in the faeces of confirmed patients in Wuhan, Shenzhen and even the first case in the United States, indicating that the virus can replicate in the digestive tract and exist, suggesting the possibility of faecal-oral transmission [21]
but it is not certain that eating virus-contaminated food causes infection and transmission
[22]. Suggesting that the new type of corona virus may cause neonatal infection through mother-to-child transmission, which of course needs to be confirmed by more scientific studies [23].
However; furthermore research about the transmission of COVID-19 has been required in order to control its spread.

Pathogenesis:

Angiotensin-converting enzyme2 (ACE2) is the one of membrane proteins that expressed in lung, kidney, heart, and intestine essentially associated with cardiovascular diseases [24].
Human ACE2 is a functional receptor hijacked by SARS-CoV-2 for cell entry, which parallel to SARS-CoV [14, 25].
Therefore, although the pathogenesis of COVID-19 is unwell understood, but the alike mechanisms of SARSCoV and MERS-CoV are still can give us a more of info on the pathogenesis of SARS-CoV-2 infection to deskill our recognition of COVID-19
[26]. The protein that has been reported as a significant determinant of Coronavirus which entry into host cells is S protein [27].
The entry of SARS-CoV into cells was primarily recognized to be accomplished by direct membrane fusion between the virus and cell plasma membrane [28]
As well as membrane fusion, the clathrin-dependent and –independent endocytosis mediated SARS-CoV entry also [29].
After the entering of the virus to cells, directly begin releasing of viral RNA genome into cell cytoplasm and is translated into two polyproteins and structural proteins, after which the viral genome begins to duplicate [30]

Diagnosis: the diagnosis of Corona virus (COVID-19) is mainly depending on patient history, clinical signs/symptoms and some laboratory examination for example (nucleic acid detection , CT scans and other method) .

Clinical symptoms and signs: the clinical symptoms of COVID-19 infection appear after spend an incubation period of about 5.2 days [13]. Those home are confirmed with COVID-19 infection commonly had respiratory signs and symptoms [21, 31]. Therefore; the most common symptoms at beginning of COVID-19 illness are cough, fever, and exhaustion, while other symptoms include mucus production, headache, hemoptysis, diarrhea, dyspnea, and lymphopenia [32, 33]

Laboratory test:

the laboratory test assays of COVID-19 were based on the previous WHO recommendation. The two methods which frequently used nucleic acid detection technologies for SARS-CoV-2 are real-time quantitative polymerase chain reaction (RT-qPCR) and high-throughput sequencing [26]. Coronaviruses have a high number of molecular marks inside their positive-sense, single-stranded RNA genome which can be used for PCR examines [34, 35]. These targets comprise structural proteins, including envelope glycoproteins spike (S), envelope (E), helicase (Hel), transmembrane (M), and nucleocapsid (N) [36]. A novel and robust real-time RT-PCR assay was advanced by Tib-Molbiol, Germany, in collaboration with several companions by the 2nd week of January 2020 [35]. It was very sensitive for SARS-CoV-2 RNA and did not cross-react with other corona viruses [37]. whereas WHO recommends that first line must be checking with the E gene test followed by a confirmatory examine using the RdRp gene [35]. Detects test of the COVID-19 RNA through the envelope (E) and

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RNA-dependent RNA polymerase (RdRp) gene assays [35, 37, 38].

Computed Tomography:

Due to the lack of kits and the wrong negative rate of RT-PCR, the Hubei Province, China momentarily used Computed Tomography (CT) scans as a clinical diagnosis for COVID-19 [39]. Chest CT scans are non-invasive and include taking many X-ray measurements at different angles across a patient's chest to create cross-sectional images [40, 41]. The ideal CT

images show two-sided pulmonary parenchymal ground-glass and consolidative pulmonary opacities, that occasionally with a rounded morphology and a peripheral lung distribution [26]. In patients with SARS-CoV and MERS-CoV infections previously; has been detected that, lung involvement with a peripheral predominance and the chest CT indicated that disease progressed with ground-glass opacities and consolidation, which is parallel to that of SARS-CoV-2 infection [42-45] Chest CT has a great sensitivity for diagnosis of COVID-19 according to the report [46]. And according to report of 51 patients conducted chest CT and RT-PCR assay for them within 3 days, performed that, the sensitivity of chest CT was better than that of RTPCR for COVID-19 at initial patient presentation (98% vs 71%, respectively, $p < 0.001$) [47]. Therefore, the chest CT in the detection of COVID-19 is has a high clinical diagnostic value and more required than RT-PCR, although of some disadvantages of CT in the differentiation between viral pneumonia and other abnormal image of CT

Anxiety and stress:

Anxiety is a self-reaction or filling worry to a noncommittal or unknown threat. This manifest it-self when the person believes that dangerous could take place on everyone's body. Whereas stress is behavioral, emotional, or physical factor that cause tension of the body or main, which can be from social situation or medical procedure. When any pathological outbreak happened whether with known or unknown causative agent, stress and anxiety will arise among people. Since the declared of Corona virus disease-19 outbreak in Wuhan, China, and spread in more countries across the worldwide, which became pandemic disease, the level of the anxiety and stress within community are increased.

Anxiety:

the people in frightening time, because of Covid-19 outbreak which spread throughout the world .The COVID-19 outbreak makes anxiety between people, particularly in affected countries [48]. Furthermore; the social media have huge impacts for making the

people in a fearful situation. For example, there are some media have been using the term "end of the world" since the spread of the disease, which leads to increased concern [49]. Symptoms of anxiety apparent in physical, affective, cognitive and behavioral domains. Anxiety physical symptoms are characteristically reflecting autonomic arousal, as well shortness of breath, chest narrowness, racing heartbeat, dizziness, disorder stomach, trembling and numbness/tingling. Anxiety emotional symptoms are range from feelings of nervousness and edginess to terror and panic. Anxiety cognitive symptoms comprise disquiet, apprehension, trouble focused and negative thoughts concerning possible threat. Behavioral symptoms of anxiety are typically aimed at lessening or preventing the perceived threat or distress through avoidance, escape and safety-seeking behaviours; both behavioural and cognitive symptoms of anxiety overwhelmingly lead to reduced functioning at home, work and even at the community level. This dividing of anxiety symptoms based on [50].

The reactions that happen to human when the COVID-19 outbreak spread through worldwide:

A person worries that he may not survive this dangerous disease, a person worries that the pandemic will lose his children, one of his relatives or a loved one, merchants and companies are thinking due to the home quarantine that goods will expire and they will lose, some people think that they will die from other diseases because some countries have closed most health centers due to the

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pandemic, Family problems caused by unemployment resulting from home quarantine.

Stress:

When the COVID-19 pandemic happened, the human being has been stressful because of your fear of yourself, family or any other loved one to might exposing for this threat disease, which spread through more countries.

Physical stress:

Through the outbreak of COVID-19 in worldwide, the human in affected countries has been felling with multiple physical disorders in

their bodies, and the majority of human felling un activities, this may due to an unpleased situation and loss of energy, they also feel very exhausted as if they have been working for a long time, they also lose their appetite from eating and drinking, they fatigue, gastrointestinal problems and headache, and they face various physiological problems so that they cannot sleep [51-54]. These physicals stress at sometimes may be predisposing factors that may present an opportunity for opportunistic diseases.

Emotional stress:

the majority of people in affected countries especially may express with some an abnormal emotional condition such as depression, sadness or unhappiness Nervousness and excitement, sulkiness, touchiness, Also, there may be a feeling of anger, discomfort and loneliness [52, 53, 55]. Or loss of interest in usual enjoys activities. Strong feelings that won't go away, last longer than a few weeks, or are interfering with normal functioning may be a symptom of depression and are a sign that you should seek specialized mental health help [56, 57]. And this is not limited to emotional problems.

Behavioral stress:

stress due to COVID-19 has been created some abnormalities behavioral in human being, regarding in affected countries. These abnormal behaviors need to be stopped because they cannot only harm your physical and mental health, but they also make

the bad situation for other [59 ,58]. These abnormal behavior include; change in the mode of eating, sleeping and Procrastinating or neglecting responsibilities, pull out from others, increase the using of alcohol, cigarettes [54]. substance abuse, gambling, blaming others, spreading bruits or conspiracy theories for others and ignoring public health and safety recommendations [57, 60]. But these harmful behaviors are not limited yet.

Things those human must to do to copying with anxiety and stress of COVID-19:

Anxiety and stress of COVID-19 must be broken by following what we are going to mention in this paper and these are little not limited to. Avoid most contact with media that coverage of COVID-19.

Try to do some other activities you could be enjoyable with. Join with others. Contact with people you trust about your concerns and how you are feeling good with them. Or talk "face to face" with friends using Skype or applications. Take breaks from watching, reading, or listening to news stories. It can be an annoyance for hearing about the crisis and see images frequently. Take care of your body. Take deep breaths, stretch. Eat healthy, balanced meals, do exercise in the regular system, and get plenty of sleep. Follow a trust information source about how to protect yourself such as Centers for Disease Control and Prevention (CDC) [54, 61, 62].

Treatment and vaccination: Right now there is no specific medication using for treating virus diseases. When the SARS-Cov2 infection has been diagnosed, the prevention and quarantine are considered as the most mode to stop the fast spreading of the virus [63] because there are no specific antiviral drugs or vaccine against COVID-19 infection for potential therapy of humans [64, 65]. Therefore; the only choice available is using broad-spectrum antiviral drugs such as Nucleoside analogues and also HIV-protease inhibitors that

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could reduce virus infection until the specific antiviral becomes available [66]. Studies assessing the antiviral activity of types I and II interferons have reported, interferon-beta (IFNb), has been the most effective interferon, was reducing in- vitro MERS-CoV replication [67]. Other studies reported that the broad-spectrum antiviral as remdesivir and chloroquine are characterized highly potent in the control of COVID-19 infection in vitro, so these compounds have been used in human patients which affected by COVID-19 with a safety way record. [64]. So that the management of patients of COVID-19 essentially focuses on the item of supportive care, e.g., oxygenation, ventilation, and fluid management [65]. Our great washes to all researchers and scientists around the world those are doing to discovering and treatments vaccines of COVID-19.

Conclusion:

Coronaviruses (CoVs) are an important cause of illness in both humans and animals. Most corona viruses cause comparatively mild respiratory diseases as common; however human corona viruses as well SARS-CoV, MERS-CoV and COVID-19 can cause severe respiratory illness even led to death. The last one is a new type of Coronavirus caused respiratory outbreak which detected in late of December 2019, in China, Wuhan. Now has been detected globally, and has not any specific drug or vaccine. This new virus makes human life very anxious and stressful, which changed their lifestyle totally.

It is very important to remember that guidance for human on how to copying with stress and anxiety during this threat disease. Avoiding exposure to media coverage with disease, doing some activities you are enjoy to, Connect with others you trust, take deep breaths, stretch, eat healthy food, balanced meals, do exercise in regular system and get plenty of sleep, following safety guidance provide by WHO or local health department, following the recommendations of trusted health professionals, When you do these; anxiety, stress and misinformation will reduce and community safety will enhance. Mouth and nose covering, when coughing and sneezing use a paper tissue, and staying at home, washing hands after coughing. These might prevent and reduce COVID-19 transmission. Ongoing evaluation of the impact of anxiety and stress (associated with the pandemic) on human is necessary to enhance a human situation.

Reference:

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1. Weiss, S.R. and J.L. Leibowitz, *Coronavirus pathogenesis.* Adv Virus Res, 2011. **81**: p. 85-164.
2. Yang, D. and J. Leibowitz, *The Structure and Functions of Coronavirus Genomic 3' and 5' Ends.* Virus Research, 2015. **206**.
3. Drosten, C., et al., *Identification of a Novel Coronavirus in Patients with Severe Acute Respiratory Syndrome.* New England Journal of Medicine, 2003. **348**(20): p. 1967-1976.
4. Zaki, A.M., et al., *Isolation of a Novel Coronavirus from a Man with Pneumonia in Saudi Arabia.* New England Journal of Medicine, 2012. **367**(19): p. 1814-1820.
5. Du, L., et al., *The spike protein of SARS-CoV - A target for vaccine and therapeutic development.* Nature reviews. Microbiology, 2009. **7**: p. 226-36.
6. *Newly Discovered Coronavirus as the Primary Cause of Severe Acute Respiratory Syndrome.* Infectious Diseases in Clinical Practice, 2004. **12**(1): p. 75-76.
7. Taskin Tok, T. and G. Tatar, *Structures and Functions of Coronavirus Proteins: Molecular Modeling of Viral Nucleoprotein.* 2017.
8. Chen, T., et al., *Clinical characteristics of 113 deceased patients with coronavirus disease 2019: retrospective study.* BMJ, 2020. **368**: p. m1091.
9. Rothan, H.A. and S.N. Byrareddy, *The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak.*

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Online ISSN 2582-7197
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Volume 01, Issue 02, 2020

Journal of autoimmunity, 2020: p. 102433-102433.

10. Bogoch, I.I., et al., *Pneumonia of unknown aetiology in Wuhan, China: potential for international spread via commercial air travel.* Journal of Travel Medicine, 2020. **27**(2).
11. Lu, H., C.W. Stratton, and Y.-W. Tang, *Outbreak of pneumonia of unknown etiology in Wuhan, China: The mystery and the miracle.* Journal of Medical Virology, 2020. **92**(4): p. 401-402.
12. Zhao, S., et al., *Preliminary estimation of the basic reproduction number of novel coronavirus (2019-nCoV) in China, from 2019 to 2020: A data-driven analysis in the early phase of the outbreak.* International Journal of Infectious Diseases, 2020. **92**.
13. Li, Q., et al., *Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus–Infected Pneumonia.* New England Journal of Medicine, 2020. **382**(13): p. 1199-1207.
14. Zhou, P., et al., *A pneumonia outbreak associated with a new coronavirus of probable bat origin.* Nature, 2020. **579**.
15. Perlman, S., *Another Decade, Another Coronavirus.* New England Journal of Medicine, 2020. **382**(8): p. 760-762.
16. Yu, P., et al., *A Familial Cluster of Infection Associated With the 2019 Novel Coronavirus Indicating Possible Person-to-Person Transmission During the Incubation Period.* The Journal of Infectious Diseases, 2020.
17. Ji, W., et al., *Homologous recombination within the spike glycoprotein of the newly identified coronavirus may boost cross-species transmission from snake to human.* Journal of Medical Virology, 2020. **92**.
18. *2019 Novel Coronavirus (COVID-19) Outbreak: A Review of the Current Literature.* 2020. **4**(1): p. 1-7.
19. Jin, Y.-H., et al., *A rapid advice guideline for the diagnosis and treatment of 2019 novel coronavirus (2019-nCoV) infected pneumonia (standard version).* Military Medical Research, 2020. **7**.
20. Ong, S.W.X., et al., *Air, Surface Environmental, and Personal Protective Equipment Contamination by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) From a Symptomatic Patient.* JAMA, 2020.
21. Holshue, M.L., et al., *First Case of 2019 Novel Coronavirus in the United States.* New England Journal of Medicine, 2020. **382**(10): p. 929-936.
22. Wu, D., et al., *The SARS-CoV-2 outbreak: what we know.* International Journal of Infectious Diseases, 2020.
23. Zhu, H., et al., *Clinical analysis of 10 neonates born to mothers with 2019-nCoV pneumonia.* Translational Pediatrics, 2020. **9**(1): p. 51-60.
24. Donoghue, M., et al., *A Novel Angiotensin-Converting Enzyme-Related Carboxypeptidase (ACE2) Converts Angiotensin I to Angiotensin 1-9.* Circulation research, 2000. **87**: p. E1-9.
25. Li, W., et al., *Angiotensin-converting enzyme 2 is a functional receptor for the SARS coronavirus.* Nature, 2003. **426**(6965): p. 450-454.
26. Li, X., et al., *Molecular immune pathogenesis and diagnosis of COVID-19.* Journal of Pharmaceutical Analysis, 2020.
27. Wit, E., et al., *SARS and MERS: Recent insights into emerging coronaviruses.* Nature Reviews Microbiology, 2016. **14**.
28. Simmons, G., et al., *Characterization of severe acute respiratory syndrome-associated coronavirus (SARS-CoV) spike glycoprotein-mediated viral entry.* Proceedings of the National Academy of Sciences, 2004. **101**(12): p. 4240-4245.
29. Kuba, K., et al., *Trilogy of ACE2: A peptidase in the renin–angiotensin system, a SARS receptor, and a partner for amino acid transporters.* Pharmacology & Therapeutics, 2010. **128**(1): p. 119-128.
30. Perlman, S. and J. Netland, *Coronaviruses post-SARS: update on replication and*

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International Journal of Medical Sciences and Academic Research
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Online ISSN 2582-7197
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Volume 01, Issue 02, 2020

pathogenesis. Nature reviews. Microbiology, 2009. **7**(6): p. 439-450.
31. Kui, L., et al., *Clinical characteristics of novel coronavirus cases in tertiary hospitals in Hubei Province.* Chinese medical journal, 2020.
32. Huang, C., et al., *Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China.* The Lancet, 2020. **395**.
33. Carlos, W.G., et al., *Novel Wuhan (2019-nCoV) Coronavirus.* American Journal of Respiratory and Critical Care Medicine, 2020. **201**(4): p. P7-P8.
34. Cui, J., F. Li, and Z.-L. Shi, *Origin and evolution of pathogenic coronaviruses.* Nature Reviews Microbiology, 2019. **17**(3): p. 181-192.
35. Corman, V., et al., *Detection of 2019 novel coronavirus (2019-nCoV) by real-time RT-PCR.* Eurosurveillance, 2020. **25**.
36. Chan, J.F.-W., et al., *Improved molecular diagnosis of COVID-19 by the novel, highly sensitive and specific COVID-19-RdRp/Hel real-time reverse transcription-polymerase chain reaction assay validated in vitro and with clinical specimens.* Journal of clinical microbiology, 2020.
37. Vashist, K.S., *In Vitro Diagnostic Assays for COVID-19: Recent Advances and Emerging Trends.* Diagnostics, 2020. **10**(4).
38. Udugama, B., et al., *Diagnosing COVID-19: The Disease and Tools for Detection.* ACS nano, 2020: p. acsnano.0c02624.
39. Yang, W. and F. Yan, *Patients with RT-PCR-confirmed COVID-19 and Normal Chest CT.* Radiology, 2020. **295**(2): p. E3-E3.
40. Whiting, P., N. Singatullina, and J.H. Rosser, *Computed tomography of the chest: I. Basic principles.* BJA Education, 2015. **15**(6): p. 299-304.
41. Lee, E., M.-Y. Ng, and P.-L. Khong, *COVID-19 pneumonia: what has CT taught us?* The Lancet Infectious Diseases, 2020. **20**.
42. Ooi, G.C., et al., *Severe Acute Respiratory Syndrome: Temporal Lung Changes at Thin-Section CT in 30 Patients.* Radiology, 2004. **230**(3): p. 836-844.
43. Yang, W., et al., *The role of imaging in 2019 novel coronavirus pneumonia (COVID-19).* European Radiology, 2020: p. 1-9.
44. Kanne, J., *Chest CT Findings in 2019 Novel Coronavirus (2019-nCoV) Infections from Wuhan, China: Key Points for the Radiologist.* Radiology, 2020. **295**: p. 200241.
45. Chung, M., et al., *CT Imaging Features of 2019 Novel Coronavirus (2019-nCoV).* Radiology, 2020. **295**: p. 200230.
46. Ai, T., et al., *Correlation of Chest CT and RT-PCR Testing in Coronavirus Disease 2019 (COVID-19) in China: A Report of 1014 Cases.* Radiology, 2020: p. 200642.
47. Fang, Y., et al., *Sensitivity of Chest CT for COVID-19: Comparison to RT-PCR.* Radiology, 2020: p. 200432.
48. Alrabiaah, A., et al., *Middle East Respiratory Syndrome-Corona Virus (MERS-CoV) associated stress among medical students at a university teaching hospital in Saudi Arabia.* Journal of Infection and Public Health, 2020. **13**.
49. Rubin, G.J. and S. Wessely, *The psychological effects of quarantining a city.* BMJ, 2020. **368**: p. m313.
50. Baker, A., et al., *Anxiety Symptoms Questionnaire (ASQ): development and validation.* Gen Psychiatr, 2019. **32**(6): p. e100144.
51. Puta, C., et al., *Standardized Assessment of Resistance Training-Induced Subjective Symptoms and Objective Signs of Immunological Stress Responses in Young Athletes.* Front Physiol, 2018. **9**: p. 698.
52. Wolkow, A., et al., *Psychophysiological relationships between a multi-component self-report measure of mood, stress and behavioural signs and symptoms, and physiological stress responses during a simulated firefighting deployment.* Int J Psychophysiol, 2016. **110**: p. 109-118.
53. Landes, S., et al., *Cold Pressor Stress Cardiac Magnetic Resonance Myocardial*

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Flow Reserve Is Not Useful for Detection of Coronary Endothelial Dysfunction in Women with Signs and Symptoms of Ischemia and No Obstructive CAD. PLoS One, 2017. **12**(1): p. e0169818.

54. Stanton, R., et al., *Depression, Anxiety and Stress during COVID-19: Associations with Changes in Physical Activity, Sleep, Tobacco and Alcohol Use in Australian Adults.* International journal of environmental research and public health, 2020. **17**(11): p. 4065.
55. Severinsson, Y., O. Bunketorp, and B. Wenneberg, *Jaw symptoms and signs and the connection to cranial cervical symptoms and post-traumatic stress during the first year after a whiplash trauma.* Disabil Rehabil, 2010. **32**(24): p. 1987-98.
56. Azoulay, E., et al., *Symptoms of Anxiety, Depression and Peritraumatic Dissociation in Critical Care Clinicians Managing COVID-19 Patients: A Cross-Sectional Study.* Am J Respir Crit Care Med, 2020.
57. Hagger, M.S., J.J. Keech, and K. Hamilton, *Managing stress during the coronavirus disease 2019 pandemic and beyond: Reappraisal and mindset approaches.* Stress Health, 2020. **36**(3): p. 396-401.
58. Baum, A., H. Herberman, and L. Cohen, *Managing stress and managing illness: Survival and quality of life in chronic disease.* J Clin Psychol Med Settings, 1995. **2**(4): p. 309-33.
59. Allcorn, S. and M.A. Diamond, *Managing stress and anxiety in clinical laboratories. Guidelines for psychologically informed interventions.* Clin Lab Manage Rev, 1991. **5**(3): p. 154-5, 158-61, 164-5.
60. Alexander, M., *Managing patient stress in pediatric radiology.* Radiol Technol, 2012. **83**(6): p. 549-60.
61. Abdul Khaiyom, J.H., *Managing Mental Health in Pandemic COVID-19 and Movement Control Order.* Malays J Med Sci, 2020. **27**(4): p. 147-153.
62. Blazquez Martin, D., et al., *Managing and Controlling Stress Using mHealth: Systematic Search in App Stores.* JMIR Mhealth Uhealth, 2018. **6**(5): p. e111.
63. Ouassou, H., et al., *The Pathogenesis of Coronavirus Disease 2019 (COVID-19): Evaluation and Prevention.* Journal of Immunology Research, 2020. **2020**: p. 7.
64. Rothan, H. and N. Siddappa, *The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak.* Journal of Autoimmunity, 2020. **109**: p. 102433.
65. Cunningham, A., H. Goh, and D. Koh, *Treatment of COVID-19: Old tricks for new challenges.* Critical Care, 2020. **24**.
66. Lu, H., *Drug treatment options for the 2019-new coronavirus (2019-nCoV).* BioScience Trends, 2020. **14**.
67. Hui, D.S., et al., *The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health - The latest 2019 novel coronavirus outbreak in Wuhan, China.* Int J Infect Dis, 2020. **91**: p. 264-266.

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