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Risk Factors and the Level of Depression in Mild Coronavirus Disease 2019 (COVID-19) Patients Hospitalized at the COVID-19 Hospital Kemayoran Athletes Village, Jakarta, Indonesia

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Abstract

Background: Indonesia have documented more than 400.000 Covid-19 Cases. Stigma lead Covid-19 patients to experiences depression. Suicide cases are documented at the Covid-19 Emergency Management Hospital Wisma Atlet Kemayoran Jakarta (EMHWAKJ). Goal: To determine the prevalence of depression, risk factors for depression and to see the relationship between length of stay, age and level of education with the incidence of depression in Covid-19 patients treated at EMHWAKJ.Method: Analytical descriptive with a cross-sectional approach to mild COVID-19 patients treated at EMHWAKJ. Researchers conducted interviews with MINI, Hamilton and Holmes Rahe questionnaires to 108 patients who had been screened using inclusion and exclusion criteria.Results: Depression occurred in 9 patients (8.3%). The level of depression was mild in 4 patients (44.4%), moderate in 2 patients (22.2%), severe in 1 patient (11.1%) and very severe in 2 patients (22.2%). Multiple linear regression test showed no significant correlation between length of stay and education. Age is significant correlation (p-value = 0.042) with the incidence of depression.Conclusion: There was no significant correlation between length of stay, age and education level with the incidence of depression, age had a significant correlation with the incidence of depression.

Keywords
Covid-19; depression; mini-international neuropsychiatric interview; hamilton depression rating scale; holmes rahe questionnaire.

I. Introduction

The world health agency (WHO) has also announced that the corona virus, also called COVID-19, is a global threat worldwide. The outbreak of this virus has an impact especially on the economy of a nation and globally. These unforeseen circumstances automatically revised a scenario that was arranged in predicting an increase in the global economy. (Ningrum, P. et al. 2020)

The Covid-19 pandemic caused everyone to behave beyond normal limits as usual. One of the behaviors that can change is deciding the decision to choose a college. The problem that occurs in private universities during covid 19 is the decrease in the number of prospective students who come to campus to get information or register directly to choose the department they want. (Sihombing, E and Nasib, 2020)

Respiratory tract infection caused by a new type of coronavirus called Corona Virus Disease 2019 (Covid-19) was first reported in Wuhan, China at the end of 2019. Covid-19 incident in a short time became an epidemic that threatens world health1. The first case in

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Indonesia was a 31-year-old woman with her 50-year-old mother who was exposed to a foreign national from Japan while attending a dinner 2.3

The social impact arising from Covid-19 is the stigmatization of people who are tested positive for Covid-19 Stigmatization that occurs against a certain population will cause problems such as sick people will hide signs and symptoms to avoid discrimination, make sick people do not want to immediately go to health facilities and make sick people do not want to live a healthy lifestyle. There have been some documented cases of stigmatization that have occurred both to patients and to medical officers who treat Covid-19 patients. One of the effects of stigmatization is seen in the incident where a confirmed Covid-19 patient who was being treated at the EMHWAKJ died from suicide by jumping from tower 6, 17th floor in September 2020. The patient had a history of impaired adjustment to the new environment. The new environment can trigger depression if the person's coping mechanisms fail. Suicidal ideation acquired in people with very severe depression should be prevented if early screening can be done.4

As many as 16.5% of Covid-19 patients experienced moderate to severe symptoms of depression. However, there is no research on the level of depression in Covid-19 patients in Indonesia. The purpose of the study was to see how many cases of depression there were, how severe it was, and the factors that influenced the occurrence of depression.5 The study was conducted at Wisma Atlet Kemayoran which is an Emergency Hospital for Covid-19 Management in the Jakarta area.

II. Research Method

The subjects are patients diagnosed with mild COVID-19 and treated at EMHWAKJ. Inclusion criteria were patients aged >18 years with good consciousness Glasgow Coma Score (GCS) with a value of 15 and willing to participate in the study by filling in the consent column in the google form link. Exclusion criteria were patients who had a history of comorbid diseases such as hypertension, diabetes, asthma, Chronic Obstructive Pulmonary Disease (COPD), epilepsy, stroke, mental disorders whose diagnosis was confirmed by a psychiatrist and dementia specialist.

This research is a descriptive analytic study using a cross-sectional research design. The study conducted was a quantitative study. This research was conducted on 7-8 September 2020 in tower 6 floors 11.12 and 13 EMHWAKJ. Sampling was carried out by consecutive sampling until the number of samples was met by using a tool in the form of a questionnaire that had been transformed from a sheet of paper into a google form/electronic link. The researcher will enter the red zone and distribute the research procedure sheet in the form of a barcode link to the google form link at the same time as the vital sign examination process by the nurse on duty, the researcher will also share the google form link through the whatsapp application group that is already in the nurse's room, then Researchers will conduct interviews with patients

Statistical data was processed using SPSS 23 software. Categorical and ordinal data was analyzed using the Chi Square test or Fisher's exact test. Statistical analysis of the relationship between the independent variables, namely the incidence of depression and the dependent variable, namely length of stay, age and education level used multiple linear regression test.

The patient's depression will be assessed using a validated MINI questionnaire. Questionnaire questions asked by the research team to patients using the google form file link. The MINI Questionnaire consists of 3 questions with YES and NO answers. Patients with 2 or more YES answers then the patient is diagnosed with depression. The results of the

questionnaire will then be used as research data and processed using SPSS software. This research was conducted with the permission of the Ethics Committee of the Faculty of Medicine, University of Indonesia and the Ethics Committee of the EMHWAKJ.

III. Result and Discussion

The number of research respondents who answered the online questionnaire using google form was 108 patients. The mean age of the patients was 35.2±11.5 with the youngest age being 17 years and the oldest age being 75 years. The patient's duration of hospitalization had a mean of 5.3±4.2 days with the shortest day of hospitalization being 1 day and the longest being 17 days. The dominant number of respondents were female patients at 55.6% (n=60), Muslim (85.2%), married (64.8%), graduated (43.5%), private employees (42.6%), having income of more than Rp 4,000,000 ,- per month (54.6%) and feel satisfied with their income (78.7%).

The incidence of depression was 9 people (8.3%), with the highest incidence in women as many as 5 patients (55.5%) and in men as many as 4 patients (44.4%). with the youngest age being 27 years old and the oldest being 57 years old, the mean age for depression in 9 patients was 43 years. The incidence of depression was obtained from the results of interviews with the research team to patients using the MINI questionnaire as a standard diagnostic tool. The mean age of the 9 patients was 37 years. The length of stay of 9 patients diagnosed with depression was 1 patient who was only treated for 1 day and the longest period of stay was day 8 which was obtained in 2 people.

The classification of the severity of depression was made based on the HDRS questionnaire. The results showed that mild depression occurred in 4 patients (44.4%), moderate depression in 2 patients (22.2%), severe depression in 1 patient (11.1%) and very severe depression occurred in 2 patients (22.2%). The results of the study from the HDRS questionnaire showed that although there were 2 patients who experienced very severe depression, both patients did not have suicidal ideation even though there was a sense of hopelessness in both patients. Feelings of deep sadness, guilt, sleep disturbances, anxiety and hopelessness were the signs and symptoms mentioned by the two patients with very severe depression in the HDRS questionnaire.

Based on the Holmes Rahe questionnaire, people with a final score of <150 are defined as people who have a low probability of experiencing depression, people with a final score of 150-299 have a 50% chance of experiencing depression and people with a final score of 300 have an 80% chance of experiencing depression. The final calculation value of the Holmes Rahe questionnaire from 9 patients with depression has a range starting from the lowest, namely 126 in patients with mild depression and the highest value, which is 498 in patients with very severe depression. One of the depressed patients has a Holmes Rahe score of <150 which in interpretation is a low probability of experiencing depression, while the other 8 patients have a score above >150 which means that there is a 50%-80% chance of depression. The same events experienced during life that became risk factors for both patients with very severe depression were separation from a partner, sick family member, death of a close friend, arguments with partners, changes in living conditions, changes in living habits, changes in working conditions or hours, changes in residence, changes in social activities, forest or small installments, changes in sleeping habits, changes in the frequency of gathering with family and changes in eating habits.

The Holmes Rahe questionnaire consists of a total of 43 life events that can describe risk factors for depression. The aspects in life events that change from a total of 9 depressed patients on the Holmes Rahe questionnaire were changes in living conditions, changes in

residence and changes in the frequency of gathering with family, each answered by 8 patients. The second most common life event that changed were personal living habits and changing sleep patterns, which were answered by 7 patients. The third most common life event was a change in finances and an argument with a partner which was answered by 6 patients.

Statistical testing of the relationship between length of stay and the incidence of depression was carried out using the Chi Square test to examine the correlation between two variables, namely the length of stay of Covid-19 patients with the incidence of depression, but due to the small number of depression events (<20) one cell had an expected value of <5. so that the correlation analysis was carried out using Fisher's exact test. Length of stay was classified into two, namely <5 days and >5 days. 3 patients (33.3%) experienced depression and 6 patients (66.6%). The results of the correlation analysis using Fisher's exact test obtained a p-value of 0.730 > 0.05 so that it was concluded that there was no correlation between length of stay and the incidence of depression in mild Covid-19 patients.

Statistical testing of the correlation between the patient's age and the incidence of depression was carried out using the Chi Square test, but due to the small number of depression events (<20) one cell had an expected value of <5, so the correlation analysis was performed using Fisher's exact test. The patient's age was classified into two, namely <35 years and >35 years. The age of 35 years is a vulnerable age for depression. The results in the table show that from a total of 9 patients who had depression, 4 (44%) were <35 years old and 5 patients (55%) were >35 years old. The results of Fisher's test to assess the correlation between age and the incidence of depression obtained a p-value of 0.732 > 0.05 so it was concluded that there was no correlation between age and the incidence of depression.

Statistical testing of the correlation between the education level of the patient and the incidence of depression was carried out using the Chi Square test, but due to the small number of depression events, the correlation analysis was carried out using Fisher's exact test. The level of education is classified into four category namely Junior High School, Senior High School, bachelor degree and master degree, but for the convenience of statistical testing the classification is simplified into 2 groups, namely high school and college degree. The data shows that from a total of 9 patients who experienced depression, 3 patients or 33.3% who experienced depression had a high school education level and 6 patients with a college degree education level experienced depression or 66.6%. Fisher's test results show a p-value of 0.173 > 0.05. The results of the Fisher test p-value show that there is no significant correlation between the patient's education level and the incidence of depression.

IV. Conclusion

The incidence of depression in Covid-19 patients can be caused by a direct infection process from the corona virus in the central nervous system or can also indirectly through the body's immune response process such as a cytokine storm that can cause central nervous system inflammation, causing an imbalance between norepinephrine, dopamine and serotonin. This imbalance will lead to symptoms of depression in patients. Desforges et al in 2019 stated that in vitro autopsy results from experimental animals showed that the coronavirus can be neurotrophic and can cause neuronal injury. One way to be able to prove the presence of the coronavirus in the central nervous system is to take brain or spinal fluid and do a culture. The purpose of this study was not to prove whether depression was caused by direct infection or due to the effects of a cytokine storm on the patient's central nervous system, so this study did not perform cerebrospinal fluid, spinal fluid or autopsy procedures on patients.6,7

The incidence of depression in Covid-19 patients in this study was 9 patients (8.3%) out of a total of 108 patients who were interviewed using the MINI questionnaire. The incidence of depression in women was more in 5 patients (55.5%) compared to the incidence of depression in men as many as 4 patients (44.4%). These results are similar to the results in a study conducted by Mazza et al in Italy, the results of the study stated that the incidence of depression with a higher number of the total subjects of 402 people who confirmed positive for Covid-19 in the hospital the incidence of depression reached 31%. Another study conducted by Paz et al in Ecuador stated that of the 306 subjects diagnosed with Covid-19, there were 70 subjects (22.9%) diagnosed with depression. The most basic difference between the two studies and this study is the number of subjects which in both studies had a larger number of subjects, so that the incidence of depression has the potential to be obtained in large numbers. 7,9

The level of depression used as a reference in this study refers to the Guidelines for Classifying the Diagnosis of Mental Disorders III (PPDGJ III) which consists of three classifications, namely mild, moderate and severe, but this study used the HDRS questionnaire which in the end divided depression into four, namely mild, moderate , severe and very severe. The results showed that from 9 patients diagnosed with depression as many as 4 patients (44.4%) had mild depression, 2 patients (22.2%) moderate depression, 1 patient (11.1%) severe depression and 2 patients (22 ,2%) very severe depression. Two patients with very severe depression were aged 27 years and 32 years and had a length of stay of 1 day and 2 days. The level of depressive symptoms is in line with the study of Paz et al in Covid-19 patients in Ecuador which stated that the degree of depressive symptoms was dominated by mild depression (77.1%), moderate depression (12.8%) and severe (10.1%). Another study conducted in Iran by Samrah et al stated that of a total of 66 confirmed Covid-19 research subjects who answered the Patient Health Questionnaire -9 (PHQ-9) questionnaire, 29 people experienced depression. The classifications obtained were 15 subjects with mild depression, 10 people with moderate depression and 4 people with severe depression. The difference with this study is that the research instrument in Samrah et al's study used the PHQ-9 questionnaire which only consisted of 9 questions.8

This study used a Holmes Rahe questionnaire to see what the risk factors for depression occurred in 9 patients. The Holmes Rahe questionnaire consists of 43 living conditions that are considered representative as risk factors for stress in individuals. The results of this study stated that from 9 patients there were 4 patients with Holmes Rahe questionnaire results > 300, namely 1 moderate depression patient, 1 severe degree, 2 very severe degree (372, 377, 478 and 498). Holmes Rahe score >300 indicates that the individual is 80% likely to experience depression. The most frequently mentioned living conditions in the Holmes Rahe questionnaire were changes in living conditions (8 patients) and changes in residence (8 patients). These two living conditions were indeed mentioned by the patient as an illustration of the conditions currently being experienced due to being diagnosed with Covid-19. The pandemic due to Covid-19 and self-isolation at the Kemayoran Athlete Hospital in Jakarta, of course, changes a person's life and place of residence, this can cause excessive anxiety and anxiety in the individual which can then lead to depression.

The pandemic that occurred as a result of Covid-19 made almost all countries in the world implement a quarantine policy which is defined as the separation and restriction of the movement of healthy citizens from exposure to Covid-19. Individuals who have been diagnosed with Covid-19, the policy is to self-isolate either independently at home or in government facilities. Quarantine is an experience that is described as unpleasant for almost everyone. Quarantine means separating yourself from the people closest to you, losing freedom of movement, and increasing boredom. Changes to habits and lifestyles in

individuals can increase feelings of high anxiety and anxiety so that in the end depression can occur. Stressors that can arise during quarantine such as the duration of quarantine, there are several studies which state that there is a correlation between the length of quarantine time and individual mental health. Longer quarantine time is associated with decreased mental health, post-traumatic stress symptoms, avoidance habits and increased anger. A study stated that quarantine duration >10 days resulted in a significant increase in post-traumatic stress symptoms compared to quarantine duration <10 days. The fear of exposure to infection is a stressor in the population that implements quarantine policies. Boredom due to long quarantine is also said to be a stressor for the population with quarantine policies. The low intake of basic consumption such as water, food and clothing during quarantine was also mentioned as a change in lifestyle that became a stressor. A study states that changes in financial status (decreased) due to quarantine can cause serious socioeconomic distress and are also a risk factor for the emergence of symptoms of psychological disorders, excessive anxiety and increased emotions.8

The results of this study stated that from a total of 108 patients, the average length of stay for mild Covid-19 patients at the EMHWAKJ was 5.3±2.5 days. Analysis of the correlation between length of stay and the incidence of depression cannot be analyzed using the Chi Square test because there is 1 cell that has a value of <5. Another option for correlation analysis is to use Fisher's exact test. Fisher's test results show a p-value of 0.730 > 0.05, which means that there is no correlation between length of stay and the incidence of depression in Covid-19 patients. The factor that influenced the results of Fisher's exact test in this study was due to the small number of depression events, which was only 9 patients, causing cells whose values were less than 5. Similar to study done by Zang et al. in China showed that there are 55 mild Covid-19 patients who experience depression. The length of stay <10 days was experienced by 9 depressed patients, 11-20 days in 46 depressed patients and there were no depressed patients found in the length of stay >20 days. The results of the analysis of the correlation between length of stay and the incidence of depression, the p-value obtained in Zang et al's study was 0.556 > from p-value= 0.05. The conclusion of Zhang et al's study stated that length of stay had no correlation with the incidence of depression.10

The average age of a total of 108 patients diagnosed with Covid-19 who were treated at the EMHWAKJ was 35 years ± 21 days. The oldest patient out of 9 patients with depression was 57 years old and the youngest was 27 years old. The results of the data analysis test also cannot be done using the Chi Square test because there is one cell that has an expected value of <5 so that the correlation analysis is carried out using Fisher's exact test. Fisher's test results obtained a p-value of 0.732 > 0.05, so it was concluded that there was no correlation between age and the incidence of depression in patients diagnosed with mild Covid-19 who were treated at the EMHWAKJ.

A study that is similar to this research is a study conducted by Danesh et al in Canada in 2007. The results of the study of Danesh et al stated that from a total of 12,376 subjects, 5,660 males and 6716 females were divided. The age of the subjects ranged from 15 years - > 75 years. . The results showed that the highest mean prevalence of depression was 14.3% in the age group 20-24 years and the lowest average prevalence of depression was 4.3% in the >75 year group. The theory says that the incidence of depression will decrease with age, this is because with increasing age the individual achieves better emotional control, is more able to accept difficult realities and has more life experiences, however, one of the factors mentioned plays a role. An important factor in the low incidence of depression in old age is good communication from family or loved ones. A study found that parents who regularly received calls from their family at a nursing home experienced a decrease in depression scores compared to parents who did not receive calls from their family regularly.7,8

The results of this study indicate that from a total of 9 patients who experienced depression, the highest education level was in bachelor degree 5 patients (55.5%), Junior High school 3 patients (33.3%) and master degree in 1 patient (11.1%). The results of the analytical test carried out were using Fisher's exact test showed a p-value of 0.173 > 0.05 that there was no significant correlation between the level of patient education and the incidence of depression in patients diagnosed with mild Covid-19 who were treated at the EMHWAKJ. A study with different results conducted by Ma et al conducted in Wuhan China in 2020 stated that out of a total of 336 patients with an undergraduate level of education and more, 128 individuals experienced depression with a p-value of 0.31 > 0.05. This study shows that the level of education does not have a significant correlation with the incidence of depression.9

Multiple linear regression test was used to see the correlation between 3 independent variables, namely length of stay, age and education level with the incidence of depression. Multiple linear regression test is used in this study as an alternative to the statistical analysis test that has been used, namely Fisher's exact test. The results obtained from the multiple linear regression test are in line with the results of the Fisher's exact test that has previously been carried out in this study. Multiple linear regression test in this study obtained p-values for length of stay (0.207), age (0.042) and education level (0.121). The results of the linear regression test showed that of the three independent variables, only age had a significant correlation with the incidence of depression.

This study took place at the Covid-19 Emergency Management Hospital EMHWAKJ on the grounds that the number of confirmed cases of mild Covid-19 was large and in June 2020. The time for determining the sample size of 100 respondents was in June 2020 when the number of Covid-19 cases at the EMHWAKJ was decreasing. The number of 100 respondents determined in June 2020 was considered to represent the population of confirmed Covid-19 patients at the EMHWAKJ at that time, but the sampling was only carried out in October 2020 due to constraints on research ethics. In October 2020, at the EMHWAKJ, the number of confirmed cases of Covid-19 at that time was more than 4000 cases being treated. The significant difference between the number of confirmed cases of Covid-19 in June 2020 and October 2020, of course, made the number of respondents in this study no longer able to represent the total population of confirmed Covid-19 patients at the EMHWAKJ.

The sampling method is the consecutive method by previously conducting an initial screening using inclusion and exclusion criteria from the patient's medical record data. Screening of patients did not include length of stay as an inclusion or exclusion criterion with the consideration of the researcher that the purpose of this study was to find the prevalence of depression not the incidence of depression, but because the diagnosis of depression was made based on the criteria that symptoms of depression that appeared must last for a minimum of 14 days, of course this could lead to bias. The incidence-prevalence in this study is a bias caused by the use of prevalence data as a substitute for incidence.

The risk factors obtained in this study were derived from the Holmes Rahe questionnaire which contained 43 life events. The final result of this questionnaire is the potential for depression in the future. The weakness of the questionnaire is that there is no definite data regarding the time span of the potential for depression after the individual fills out the Holmes Rahe questionnaire, whereas if the individual scores >300, the individual has 80% potential to experience depression in the future. This study did not look at other risk factors outside the Holmes Rahe questionnaire with the consideration that this study is quantitative in nature, however, patient life events that occur outside the Holmes Rahe questionnaire may be the main risk factor for depression at the time of the study. Risk factors

that have the potential to make a patient depressed include a history of taking drugs that can reduce 3 neurotransmitters in the brain, social stigma, individual or professional patients, boredom while being treated at the EMHWAKJ, the results of the RT-PCR swab that took a long time to come out, the value of The cycle threshold (CT) of the RT-PCR swab is still low, the attitude of health workers and the attitude of roommates while being treated at the EMHWAKJ and the lack of activities that can be done.

This study uses stigma as the background of the problem, but in this study there was no assessment of the stigma that might indeed be obtained by the patient, whether it was social stigma, individual stigma or professional stigma. This makes this study unable to determine for sure whether stigma can be used as a background problem from the incidence of depression that appears in patients with mild COVID-19 confirmed cases. The results of statistical analysis tests to assess the correlation between length of stay, age and education level with the incidence of depression from Fisher's test and multiple linear regression in this study were found to have no significant correlation. This result can be influenced due to the small sample size, only 9 patients (8.3%) were found to be depressed, so the statistical analysis test in this study could not represent the general population, namely confirmed Covid-19 patients who were treated at the EMHWAKJ due to the size of the research sample is small.

From this study, it can be concluded that there is no correlation between length of stay, age and level of education with the incidence of depression in mild Covid-19 patients treated at the Covid-19 Emergency Management Hospital Wisma Atlet Kemayoran Jakarta.

References

Brooks Sk, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N et al.(2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. Lancet.;395:912-20

Desforges M, Coupanec AL, Dubeau P, Bourgouin A, Lajoie L, Dobe M et al. (2019) Human coronaviruses and other respiratory viruses: underestimated opportunistic pathogens of the central nervous system?. Viruses.;12:1-28.

Jahangir MA, Muheem A, Rizvi MF. (2020). Coronavirus (Covid19): History, current knowledge and pipeline medications. Int J Pharmacol.;4:1-5

Kementrian Kesehatan Republik Indonesia. Dashboard kasus Covid-19 di Indonesia periode 2/3/2020 sampai dengan 12/6/2020. 2020. Kementerian Kesehatan Republik Indonesia. (Available at: https://data.kemkes.go.id/covid19/index.html)

Lesmana AS, Isdiansyah B. (2020). Pasien Corona yang bunuh diri di RSDPC Wisma Atlet diduga sulit adaptasi. Suara.. (Available at: https://www.suara.com/news/2020/09/11/185021/pasien-corona-yang- bunuh-diri-di-rsd-wisma-atlet-diduga-sulit-adaptasi?page=2)

Ningrum, P. et al. (2020). The Potential of Poverty in the City of Palangka Raya: Study SMIs Affected Pandemic Covid 19. Budapest International Research and Critics Institute Journal (BIRCI-Journal). P. 1626-1634

Paz C, Mascialino G, Adana DL, Rodriguez LA, Rivera S, Barreno GL et al. (2020). Anxiety and depression in patients with confirmed and suspected Covid-19 in Ecuador. Psychiatry Clin Neurosci.;10:1-14.

Sari AK, Afrianti D. (2015). Jelang Asian Games 2018, DKI bangun kampung atlet di Kemayoran. KOMPAS. (Available at : https://megapolitan.kompas.com/read/2015/01/07/18063451/Jelang.Asian. Games.2018.DKI.Akan.Bangun.Kampung.Atlet.di.Kemayoran)

Sihombing, E and Nasib, (2020). The Decision of Choosing Course in the Era of Covid 19 through the Telemarketing Program, Personal Selling and College Image. Budapest International Research and Critics Institute-Journal (BIRCI-Journal). P. 2843-2850.

World Health Organization. Coronavirus disease (Covid-19) situation report-144. 2020. World Health Organization. (Available at: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200612-covid-19-sitrep-144.pdf?sfvrsn=66ff9f4f_2)

Ye Q, Wang B, Mao J. (2020). The pathogenesis and treatment of the cytokine storm in Covid-19. J Infect.;80(6):607-13.

Zhang J, Yang Z, Wang X, Li J, Dong L, Wang F et al. (2020). The relationship between resilience, anxiety and depression among patients with mild symptoms of Covid-19 in China: A cross-sectional study. J Clin Nurs.;29:21-32.