



ISSN: 0975-833X

Available online at <http://www.journalcra.com>

International Journal of Current Research  
Vol. 12, Issue, 09, pp.13523-13527, September, 2020

DOI: <https://doi.org/10.24941/ijcr.39619.09.2020>

INTERNATIONAL JOURNAL  
OF CURRENT RESEARCH

## RESEARCH ARTICLE

### PREVALENCE AND FACTORS ASSOCIATED WITH MENTAL HEALTH CONDITIONS AND SOCIAL SUPPORT AMONG HOSPITALIZED COVID-19 PATIENTS

<sup>1</sup>Anju Soni, <sup>2</sup>Mohan. P., <sup>3,\*</sup>Anitha Rani.A. and <sup>4</sup>Kusum Soni

<sup>1</sup>Head of the Department Clinical counseling and Diet, Chennai National Hospital, Chennai, Tamil Nadu, India

<sup>2</sup>Chief consultant MDICU, Chennai National Hospital, Chennai, Tamil Nadu, India

<sup>3</sup>Research Scientist, Sankara Nethralaya, Chennai, Tamil Nadu, India

<sup>4</sup>Student, Balaji Medical College, Chennai, Tamil Nadu, India

#### ARTICLE INFO

##### Article History:

Received 04<sup>th</sup> September, 2020

Received in revised form

15<sup>th</sup> September, 2020

Accepted 27<sup>th</sup> September, 2020

Published online 30<sup>th</sup> September, 2020

##### Key Words:

COVID-19, Depression, Anxiety,  
Stress, Social Support, PSSS

#### ABSTRACT

**Background:** The 2019 coronavirus disease (COVID-19) epidemic has raised international concern. Apart from the evident physical symptoms in infected cases, it has caused serious damage to public mental health. Mental health is becoming an issue that cannot be ignored in our fight against it. Present study aimed to explore the prevalence and factors associated with mental health condition and social support among hospitalized COVID-19 patients. **Methods:** A total of 158 patients diagnosed with COVID-19 were included in this study. Current study assessed the depression, anxiety and stress symptoms using the DASS 21 and social support using the Perceived Social Support Scale among patients at admission. The multivariate linear regression analyses were performed to identify factors associated with symptoms of anxiety and depression. **Results:** Of 158 participants, majority of the patients had the symptoms of depression, anxiety and stress symptoms. Bivariate correlations analysis highlighted that significant low social support was correlated with anxiety ( $r=-0.166, p<0.05$ ) and stress ( $-0.238, p<0.01$ ) symptoms among COVID-19 patients. The multiple linear regression analysis highlighted that social support ( $\beta = -1.524, p=0.044$ ) is associated with Depression. Further oxygen saturation ( $\beta = 0.374, p=0.043$ ), and social support ( $\beta = -1.714, p=0.044$ ) were associated with anxiety and oxygen saturation ( $\beta = 0.363, p=0.043$ ), age ( $\beta = 0.072, p=0.043$ ), and social support ( $\beta = -2.259, p = 0.004$ ) were the factors associated with stress. **Conclusion:** The finding suggested that mental health symptoms are prevalent among hospitalized COVID 19 patients. Mental health concern and appropriate intervention is also required for patients along with the treatment regimen of COVID 19 during the epidemics.

Copyright © 2020, Anju Soni et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Anju Soni, Mohan. P., Anitha Rani. A. and Kusum Soni. 2020. "Prevalence and Factors associated with mental health conditions and social support among hospitalized COVID-19 patients", *International Journal of Current Research*, 12, (09), 13523-13527.

#### INTRODUCTION

The current pandemic situation of Coronavirus disease 2019 (COVID 19) has a major health crisis and significant distress around the globe. This widespread outbreak is associated with the adverse mental consequences. The increasing menace of COVID pandemic condition along with the public physical health emergency, COVID-19 threatens global mental health, as evidenced by panic-buying worldwide. It affects several nations and resulted in global atmosphere of depression, anxiety and stress due to interrupted travel plans, social distancing, social isolation, overloaded media information, panic of buying the necessary goods even for daily activities (1). It still remains undetected about changes in the levels of psychological impact such as depression, anxiety and stress in this current pandemic situation.

\*Corresponding author: Dr. Anitha Rani.A.

Research Scientist, Sankara Nethralaya, Chennai, Tamil Nadu, India

In past few months Public health emergency of International concern (PHEIC) has been declared by World health Organization (WHO), which is the 6<sup>th</sup> PHEIC under International health regulation (2, 3). WHO officially declared COVID-19 as "pandemic" condition from global health emergency (4). The global emergency of COVID - 19 and its increasing rate of transmission and relatively high mortality, has gained the attention of scientific community to focus on the research treatment, vaccination and prevention methods (5 - 7). However, this sustained pandemic situation and prolonged social isolation and the effect of economy, many researchers and clinicians focused on the potential negative effect of COVID-19 on the mental health of general population (8), emerging studies producing evidence of supporting these concerns. Cao et al. (2020) showed that 21.3% of students were experiencing mild anxiety, 2.7% showed moderate anxiety, and 0.9% were suffering from severe anxiety (9). This showed that the pandemic has adverse effect on the population's mental health, thus there is a need to focus not

only on its scope but also on its origin. The increased level of anxiety and stress is the fear of COVID-19 and fear of being infected or infecting loved ones. Further the fear may exacerbate with pre-existing mental health disorder or elicit extreme anxiety reactions (10). Depression, anxiety and stress were the major indicators of increase in disability and represent a social and economic health burden on society. The grim pandemic situation has increased the public panic and mental health stress. The mental health issues cannot be ignored, when controlling the COVID-19 outbreak. Globally, as of August 2020, there have been 21 294 845 confirmed cases of COVID-19, which includes 761 779 deaths (WHO) (11). The current pandemic COVID-19 situation, has imposed an unprecedented threat to physical and mental health of health care providers and COVID-19 positive patients. Earlier studies showed that depression, Anxiety and stress are the common, however persistent mental illness in several chronic illness (12, 13), cancer (14) and other major illness. All these researches highlighted that the patients with mental illness, such as depression, Anxiety and stress might have difficulty in symptom control and impaired quality of life. The recent literatures on the psychological impact on COVID-19 are majorly concentrated on the health care workers (15,16) and general public (17), who were at risk of infection and requires protective measures, which leads to psychological distress. Few studies highlighted that the pandemic situation like this affects their mental health (18). A study conducted in china showed the prevalence of depression (50.4%) and Anxiety (44.6%) among the health care workers (19). There is a paucity of data in Indian literature, to fill this gap, present study was planned to explore the prevalence and factors associated with mental health condition (depression, anxiety and stress) and social support among hospitalized COVID-19 patients during the lockdown

## METHODS

This descriptive quantitative cross-sectional, observational study was carried out among COVID-19 positive patients in Chennai. The study included 158 COVID 19 positive confirmed patients who were admitted from June - August 2020 in Chennai Nation Hospital. All patients were diagnosed with COVID-19 according to World Health Organization interim guidance. Informed consent was provided by subjects before study commencement. All participants completed the questionnaires during admission in the hospital. The questionnaire consist of three sections: the first section includes demographic details which included age, gender, marital status, educational qualification, oxygen saturation percentage, and comorbidities of COVID positive patients. The second section includes DASS-21 which is a self-assessment questionnaire based on three sub scales of depression, anxiety and stress, each sub-scale consist of 7 questions each and rated as normal, mild, moderate, and extremely severe (20). Each item is scored in a self-rated Likert scale from 0 (didn't apply to me at all) to 3 (much or mostly applied to me) in the past 1 week. Third section, includes 12-item Perceived Social Support Scale (PSSS) and has been widely adopted to measures perceived support from family, friends and other ways in general population (21). Total scores range from 0 to 84, with higher scores implying greater level of perceived social support. Means and proportions of the given data for each variable were calculated. For the comparison between groups *t*-test was used for continuous variables and Chi-square tests were used for

categorical variables or one-way analysis of variance (ANOVA). Multivariate regression was used to identify the factors associated with psychological distress and social support. Statistical significant was determined at  $p < 0.05$ . SPSS software version 20 (IBM corp.) was used to assess the data

## RESULTS

**Demographic characteristics:** Of 158 patients enrolled in the study, 102 were male and 56 were females. The study participants had a mean age of 49.08 ( $\pm 14.33$ ) years and ranged from 21 to 88 years. About 53.79 % of the patients were greater than 50 years of age. Majority of the study patients were married (93.04%), and were well educated (38.61 % graduate). Oxygen saturation is a key clinical index for evaluation the severity of patients with COVID-19. In the present study about 28.48 % of the patients had oxygen saturation point less than or equal to 93% at rest and were severe disease. Further majority of the patients had Type 2 Diabetes Mellitus (T2DM) with Hypertension (32.91%), followed by, T2DM alone (21.52), coexistence of T2DM with HTN, with or without CAD or CKD (17.72 %) and Hypertension alone (17.72). The demographic characteristics of the study patients was presented in Table 1.

**Psychosocial characteristics:** Depression anxiety and stress sub scale of Covid 19 patients was 25.16  $\pm$  5.35, 23.69  $\pm$  4.70 and 22.98  $\pm$  5.13 respectively. The mean Total score of DASS scale was 71.84. With reference to DASS scale, nearly all patients show the symptoms of Depression, anxiety and stress. Majority of the patients were in severe level (41.77%) of depression and extremely severe level (88.60) of anxiety condition. When considering the Stress level 13.29 % were in mildly stressed, 54.43 % and 27.21 % was in moderate, severe level of stress. (Table 2).

**Correlations among depression, anxiety, stress and social support in COVID-19 patients:** There is a growing evidence that social support plays a major role in mental health (11). The low social support (2.54  $\pm$  0.46) was observed for all patients, further average score of sub scales family (2.51  $\pm$  0.51), friends (3.01  $\pm$  0.62) and other supports (2.11  $\pm$  0.47) showed low to moderate social support. The bivariate correlation analysis highlighted that low social support was significantly correlated with anxiety ( $r = -0.166$ ,  $p < 0.05$ ) stress ( $r = -0.238$ ,  $p < 0.01$ ), perhaps it is not correlated with depression ( $r = 0.011$ ). Further Family ( $r = -0.050$ ,  $p < 0.05$ ) was negatively correlated with Depression. Whereas Family ( $r = -0.213$ ,  $p < 0.01$ ) and Friends ( $r = -0.094$ ,  $p < 0.05$ ) support are negatively correlated with anxiety. Likewise, Family ( $r = -0.242$ ,  $p < 0.01$ ), Friends ( $r = -0.178$ ,  $p < 0.05$ ) and other ( $r = -0.199$ ,  $p < 0.05$ ) support were significantly negatively correlation was with stress (Table 3).

**Factors associated with depression, anxiety and stress among patients with COVID-19:** The major factors contributes towards depression, anxiety and stress among COVID 19 patients were compared between different groups as shown in. Depression, anxiety and stress scores were significantly higher among patients with older age group ( $> 50$ ). Anxiety and Stress score was significantly higher among females, further patients with low oxygen saturation had higher anxiety scores and getting less social support had higher depression, anxiety and stress score.

**Table 1: Demographic and clinical characteristic of the study subjects**

| Variables                 |                          | n = 158 | %     |
|---------------------------|--------------------------|---------|-------|
| Gender                    | Male                     | 102     | 64.55 |
|                           | Female                   | 56      | 35.44 |
| Age                       | ≤ 50                     | 85      | 53.79 |
|                           | >50                      | 73      | 46.20 |
| Marital status            | Single                   | 5       | 3.16  |
|                           | Married                  | 147     | 93.04 |
|                           | Divorced                 | 1       | 0.63  |
|                           | widowed                  | 5       | 3.16  |
| Educational status        | High school              | 45      | 28.48 |
|                           | Graduate                 | 61      | 38.61 |
|                           | Post Graduate            | 52      | 32.91 |
| Oxygen saturation at rest | ≤ 93%                    | 45      | 28.48 |
|                           | >93%                     | 113     | 71.51 |
| Occupation                | Student                  | 4       | 2.53  |
|                           | Business                 | 64      | 40.55 |
|                           | employed                 | 30      | 18.98 |
|                           | Home maker               | 44      | 27.84 |
|                           | Retired                  | 16      | 10.13 |
| Comorbidities             | HTN only                 | 28      | 17.72 |
|                           | T2DM only                | 34      | 21.52 |
|                           | HTN + T2DM               | 52      | 32.91 |
|                           | T2DM + HTN with CAD/ CKD | 28      | 17.72 |
|                           | None                     | 16      | 10.12 |

**Table 2. Severity of depression, anxiety, and stress symptoms among the study subjects**

| Variables  | Normal<br>n (%) | Mild<br>n (%) | Moderate<br>n (%) | Severe<br>n (%) | Extremely Severe<br>n (%) |
|------------|-----------------|---------------|-------------------|-----------------|---------------------------|
| Depression | 0 (0)           | 2 (1.26)      | 31 (19.62)        | 66 (41.77)      | 59 (37.34)                |
| Anxiety    | 1 (0.63)        | 0 (0)         | 5 (3.16)          | 12 (7.59)       | 140 (88.60)               |
| Stress     | 6 (3.79)        | 21 (13.29)    | 86 (54.43)        | 43 (27.21)      | 2 (1.26)                  |

**Table 3. Association between depression, anxiety, Stress and social support**

| Variables       | Depression | Anxiety | Stress  | Social support | Family Support | Friends Support | Others Support |
|-----------------|------------|---------|---------|----------------|----------------|-----------------|----------------|
| Depression      | 1          | 0.601** | 0.377** | 0.011          | -.050*         | .023            | .058           |
| Anxiety         |            | 1       | 0.413** | -.166*         | -.213**        | -.094*          | -.129          |
| Stress          |            |         | 1       | -0.238**       | -.242**        | -.178*          | -.199*         |
| Social support  |            |         |         | 1              | .881**         | 0.897**         | 0.787**        |
| Family Support  |            |         |         |                | 1              | .711**          | .549**         |
| Friends Support |            |         |         |                |                | 1               | .535**         |
| Others Support  |            |         |         |                |                |                 | 1              |

\*p<0.05; \*\*p<0.01

**Table 4. Comparison of anxiety and depression scores on different variable**

|                           |                 | Depression Score<br>(mean ± SD) | P       | Anxiety Score<br>(mean ± SD) | P       | Stress Score<br>(mean ± SD) | P       |
|---------------------------|-----------------|---------------------------------|---------|------------------------------|---------|-----------------------------|---------|
| Gender                    | Male            | 24.98±5.51                      | 0.48    | 21.59±4.03                   | 0.01*   | 22.00±4.49                  | 0.000** |
|                           | Female          | 25.65±5.08                      |         | 23.45±4.23                   |         | 25.41±3.80                  |         |
| Age                       | ≤ 50            | 25.47±4.84                      | 0.000** | 24.82±3.38                   | 0.002*  | 25.47±5.88                  | 0.013*  |
|                           | >50             | 20.92±5.77                      |         | 22.49±4.99                   |         | 22.30±4.29                  |         |
| Marital status            | Single          | 25.23±5.42                      | 0.40    | 23.71±4.78                   | 0.80    | 23.02±5.20                  | 0.60    |
|                           | Married         | 23.20±2.28                      |         | 23.20±1.10                   |         | 22.00±1.41                  |         |
| Educational status        | High school     | 24.96±5.47                      | 0.90    | 23.55±4.42                   | 0.08    | 23.27±5.44                  | 0.05    |
|                           | Graduate        | 25.65±5.08                      |         | 24.04±5.37                   |         | 22.30±4.23                  |         |
|                           | Post Graduate   | 24.89±5.77                      |         | 23.72±4.99                   |         | 22.31±4.29                  |         |
| Oxygen saturation at rest | ≤ 93%           | 25.34±5.64                      | 0.420   | 24.39±4.82                   | 0.002*  | 22.34±4.40                  | 0.331   |
|                           | >93%            | 23.69±5.34                      |         | 22.40±4.75                   |         | 23.27±5.46                  |         |
| Social Support            | Low             | 24.71±5.16                      | 0.004** | 23.86± 4.54                  | 0.001** | 23.31±6.02                  | 0.004** |
|                           | Moderate - High | 22.20 ± 5.59                    |         | 21.52±4.20                   |         | 20.87±4.47                  |         |

\*p<0.05; \*\*p<0.01

**Table 5. Multivariate regression analysis of factors associated with depression, anxiety and stress**

| Variables                 | β      | SE    | t      | p       |
|---------------------------|--------|-------|--------|---------|
| <b>Depression</b>         |        |       |        |         |
| Social support            | -1.524 | 0.045 | -1.028 | 0.044*  |
| <b>Anxiety</b>            |        |       |        |         |
| Oxygen Saturation at Rest | 0.374  | 0.152 | 2.018  | 0.043*  |
| Social Support            | -1.714 | 0.845 | -2.028 | 0.044*  |
| <b>Stress</b>             |        |       |        |         |
| Oxygen                    | 0.363  | 0.178 | 2.038  | 0.043*  |
| Age                       | 0.072  | 0.035 | 2.044  | 0.043*  |
| Social Support            | -2.589 | 0.890 | -2.908 | 0.004** |

\*p<0.05; \*\*p<0.01

The multiple linear regression analysis (Table 5) showed that social support ( $\beta = -1.524$ ,  $p = 0.044$ ) is associated with Depression for COVID-19 patients. Oxygen saturation ( $\beta = 0.374$ ,  $p = 0.043$ ), and social support ( $\beta = -1.714$ ,  $p = 0.044$ ) were associated with anxiety for COVID-19 patients. This shows that patients with less social support and lower oxygen saturation presents more anxiety symptoms. Moreover, oxygen saturation ( $\beta = 0.363$ ,  $p = 0.043$ ), age ( $\beta = 0.072$ ,  $p = 0.043$ ), and social support ( $\beta = -2.259$ ,  $p = 0.004$ ) were the factors associated with stress. The finding highlighted that patients with older age, lower oxygen saturation and less social support were more likely to be stressed (Table 5).

## DISCUSSION

Number of studies have showed the depression, anxiety and stress of the patients with various diseases. The current study reported the prevalence of depression, anxiety and stress in patients with COVID-19 during this pandemic situation. The finding of the present study showed that nearly all patients with COVID-19 had symptoms of depression, anxiety and stress. Social support is one of the major factor for depression, anxiety, and stress of COVID patients (Table 5). When the patient lacks social support or less support, symptoms of depression, anxiety and stress symptoms are increased (Table 3). When the patient is in diseased condition, patient expects more social support in the form of physical and psychological assistance from family and friends to overcome the situation (22). Further evidences showed that social isolation and loneliness are the factors which is linked with worsening of mental health outcomes (23). In this COVID pandemic situation, patients were advised to quarantine themselves in house in some cases and quarantined in hospitals, in such situations they were left helpless and lonely due to lack of accompany ship of their family and friends. In above said circumstances medical workers plays a major role and provide peer support to overcome the situation. In clinical setup, health care workers should keep a tract of the patients and provide psychological support to help quarantined patients to rebuilt confidence. In China they encouraged Tai chi practice (24), singing and dancing as physical relaxation, in supervision and guided by health care staffs. This kind of doctor-patient interaction might encourage patients to stay positive mindset.

Moreover, factors such as increased age and lower oxygen saturation might also be considered for anxiety of the patient. As earlier studies showed that elderly patients are at high risk with severe COVID-19 symptoms leads to death (25). Further, oxygen saturation is a major index to assess the severity of patients with COVID-19. According to WHO interim guidance for COVID-19 (26), patients whose oxygen saturation was  $\leq 93\%$  at rest was defined as severe type patients. In the current study, 28.48% of participants were with low oxygen saturation. The study findings emphasized that the patients with severe illness are likely to be anxious. Further psychological care and health attention should be provided to these critically ill patients. Present study finding is in line with the earlier reports, which focused on the psychological responses in general population during the COVID-19 pandemic (27), females tend to develop high level of anxiety and stress as shown in the current study. Education status is also associated with the mental distress in COVID patients. In several diseases, depression, anxiety and stress, are related with prolonged hospital stay and non-adherence of the treatment (28-30).

It is of prime important that early attention is required to prevent mental health problems and provide good clinical outcome and improved quality of life. As the epidemic situation continues, study findings helps to develop a psychological support strategy for hospitalized patients with COVID-19 in India and other areas affected by the epidemic. The current study has several implications, the studies conducted throughout the pandemic situation would benefit if COVID-19 related fear assessment has been included, not only as an outcome measures, perhaps potential explanatory factor related to potential vulnerability or, alternatively, resilience. Further, by recognizing the level of specific fear among different population and its association with the demographic characteristic such as gender, socioeconomic status, pre-existing conditions, etc., could assist in locating potential risk groups. These findings might help in the decision makers, health care workers and clinicians to screen patients who are prone to fear during Covid-19 pandemic and foster the development of educational interventions, while targeting the relevant groups.

## Study Limitation

Even though the study has several strengths, like sample size, relatively heterogeneous samples of general population, several limitation should also be noted. As the present study was a single-centered, the findings cannot be generalized for all population, thus further multi-centered study is required to generalize the study finding. The study data was collected during the hospital stay of the patients, hence the findings doesn't allow to derive the conclusion as the findings may tend to change over the time. As present study is a cross sectional study which is not robust enough to determine the casual relationship between mental health and socio-demographic and clinical variables.

## Conclusion

Patients with COVID 19 experienced depression, anxiety and stress. The timely psychological intervention is also required for patients along with the treatment regimen of COVID 19 during the epidemics. There is a need for more research data from other vulnerable population. As the COVID-19 pandemic situation continues, the present study finding helps in planning a comprehensive support psychological strategy in the health care sector. To conclude, the study findings shows that long term study should be encouraged along with the specific screening strategies for the psychological care for COVID patients. An inclusive psychological support strategy can be planned and developed based on the study finding during this epidemic situation in developing country like India.

**Funding:** None

**Conflict of Interest:** The authors have not declared any conflict of interest.

## REFERENCES

1. C.S. Ho, C.Y. Chee, R.C. Ho. Mental health strategies to combat the psychological impact of COVID-19 beyond paranoia and panic *Ann. Acad. Med. Singapore*, 49 (2020), pp. 1-3
2. Eurosurveillance Editorial Team. Note from the editors: World Health Organization declares novel coronavirus

- (2019-nCoV) sixth public health emergency of international concern. *Eurosurveillance* 2020;25:200131e.
3. World Health Organization. Coronavirus Disease 2019 (COVID-19) Situation Report-64. World Health Organization; 2020. Available from: [https://www.who.int/docs/default-source/coronavirus/situation-reports/20200324-sitrep-64-covid-19.pdf?sfvrsn=703b2c40\\_2](https://www.who.int/docs/default-source/coronavirus/situation-reports/20200324-sitrep-64-covid-19.pdf?sfvrsn=703b2c40_2).
  4. World Health Organization. WHO Director-General's Remarks at the Media Briefing on COVID-2019 Outbreak. World Health Organization;2020. Available from: <https://www.who.int/dg/speeches/detail/whodirectorgeneral-s-remarks-at-the-media-briefing-on-covid2019-outbreak-on-14-february-2020>.
  5. Bloch E.M., Shoham S., Casadevall A., Sachais B.S., Shaz B., Winters J.L., Pekosz A. Deployment of convalescent plasma for the prevention and treatment of COVID-19. *J. Clin. Invest.* 2020 doi: 10.1172/JCI138745.
  6. Dong L., Hu S., Gao J. Discovering drugs to treat coronavirus disease 2019 (COVID-19) *Drug. Discov. Ther.* 2020;14:58–60.
  7. Shi Y., Wang Y., Shao C., Huang J., Gan J., Huang X., Melino G. COVID-19 infection: the perspectives on immune responses. *Cell. Death Differ.* 2020;27:1451–1454.
  8. Omell F., Schuch J.B., Sordi A.O., Kessler F.H.P. Pandemic fear” and COVID-19: mental health burden and strategies. *Braz. J. Psychiatry.* 2020 doi: 10.1590/1516-4446-2020-0008.
  9. Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., Zheng, J., 2020. The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Res.*, 112934
  10. Colizzi, M., Bortoletto, R., Silvestri, M., Mondini, F., Puttini, E., Cainelli, C., Zoccante, L., 2020. Medically unexplained symptoms in the times of Covid-19 pandemic: a casereport. *Brain Behav. Immun.*, 100073
  11. Coronavirus disease 2019 (COVID-19) Situation Report – 209. Volume 2020: World Health Organization: [https://www.who.int/docs/default-source/coronavirus/situation-reports/20200816-covid-19-sitrep-209.pdf?sfvrsn=5dde1ca2\\_2](https://www.who.int/docs/default-source/coronavirus/situation-reports/20200816-covid-19-sitrep-209.pdf?sfvrsn=5dde1ca2_2)
  12. Polikandrioti M, Goudevenos J, Michalis LK, et al. Factors associated with depression and anxiety of hospitalized patients with heart failure. *Hellenic J Cardiol* 2015;56:26-35.
  13. Natale P, Palmer SC, Ruospo M, et al. Psychosocial interventions for preventing and treating depression in dialysis patients. *Cochrane Database Syst Rev* 2019;12:CD004542.
  14. Hopwood P, Stephens RJ. Depression in patients with lung cancer: prevalence and risk factors derived from quality-of-life data. *J Clin Oncol* 2000;18:893 – 903
  15. Dai Y, Hu G, Xiong H, et al. Psychological impact of the coronavirus disease 2019 (COVID-19) outbreak on healthcare workers in China. *bioRxiv* 2020.
  16. Zhu Z, Xu S, Wang H, et al. COVID-19 in Wuhan Immediate Psychological Impact on 5062 Health Workers. *bioRxiv* 2020.
  17. Wang C, Pan R, Wan X, et al. Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 CoronavirusDisease (COVID-19) Epidemic among the General Population in China. *Int J Environ Res Public Health* 2020;17.
  18. Um DH, Kim JS, Lee HW, Lee SH. Psychological effects on medical doctors from the Middle East Respiratory Syndrome (MERS) outbreak: A comparison of whether they worked at the MERS occurred hospital or not, and whether they participated in MERS diagnosis and treatment. *J Korean Neuropsychiat Assoc* 2017;56:28-34
  19. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors associated with mental health outcomes among health care workers exposed to Coronavirus disease 2019. *JAMA Network Open* 2020;3:e203976.
  20. Lovibond PF, Lovibond SH. The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behav Res Ther* 1995;33:335- 43.
  21. Qin HY, Zheng MC, Wen YS, et al. [Affecting factors of quality of life of colostomy patients]. *Ai Zheng* 2004;23:1589 - 92
  22. Ozbay F, Johnson DC, Dimoulas E, et al. Social support and resilience to stress: from neurobiology to clinical practice. *Psychiatry (Edgmont)* 2007;4:35-40
  23. Leigh-Hunt N, Bagguley D, Bash K, et al. An overview of systematic reviews on the public health consequences of social isolation and loneliness. *Public Health* 2017;152:157-171.
  24. Zhu S, Shi K, Yan J, et al. A modified 6-form Tai Chi for patients with COPD. *Complement Ther Med* 2018;39:36-42
  25. Yang X, Yu Y, Xu J, et al. Clinical course and outcomes of critically ill patients with SARS-CoV-2 pneumonia in Wuhan, China: a single-centered, retrospective, observational study. *Lancet Respir Med* 2020.
  26. World Health Organisation. Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected. 2020. Available at: [https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected).
  27. Wang C, Pan R, Wan X, et al. Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 CoronavirusDisease (COVID-19) Epidemic among the General Population in China. *Int J Environ Res Public Health* 2020;17.
  28. Shoar S, Naderan M, Aghajani M, et al. Prevalence and Determinants of Depression and Anxiety Symptoms in Surgical Patients. *Oman Med J* 2016;31:176-81
  29. DiMatteo MR, Lepper HS, Croghan TW. Depression is a risk factor for noncompliance with medical treatment: meta-analysis of the effects of anxiety and depression on patient adherence. *Arch Intern Med* 2000;160:2101-7.
  30. Bautista LE, Vera-Cala LM, Colombo C, et al. Symptoms of depression and anxiety and adherence to antihypertensive medication. *Am J Hypertens* 2012;25:505-11.

\*\*\*\*\*