

## **Abstract**

### *Background*

*The outbreak of coronavirus disease 2019 (COVID-19) is associated with significant fear and extreme anxiety in patients; this can lead to a strong emotional state that can negatively impact their mental health and immune system. While the nature and effect of COVID-19 on mental health status are yet to be determined, existing literature offers some clues to understand what to expect in dealing with COVID-19 anxiety. The aim of this study is to evaluate the effects of anxiety and coping with anxiety in COVID-19 patients*

### *Method*

*This is a narrative review of existing literature relevant to the COVID-19 pandemic via PubMed, EMBASE, and GOOGLE SCHOLAR database on anxiety in patients with COVID-19 and represented in a search flow. Articles search with the use of keywords in various permutations and combinations.*

### *Results*

*A total number of 73 articles were identified, following deduplication and exclusion of non-relevant studies two major articles, observational and randomized controlled trials were identified with broad themes specifically on the effect of anxiety on COVID-19 patients. These two publications were written in English and from Chinese centers.*

### *Conclusion*

*Current evidence revealed that increased social capital will improve sleep quality by reducing anxiety and stress of patients in self-isolation, also progressive muscle relaxation has a positive effect on improving sleep quality and reducing anxiety in patients with COVID-19. These findings have some serious clinical and public health implications hence this is a call for further research*

*Keywords: COVID-19; Coronavirus; Anxiety; mental health; Psychological stress; public health*

## **Introduction**

There has been a spread of coronavirus disease 2019(COVID-19) from Wuhan in central China where it began in late December 2019[1], this outbreak was recognized by the World Health Organisation (WHO) as a Public Health Emergency of International Concern (PHEIC) that significantly put international public health as high risk [2]

Anxiety is a prominent response to stressful conditions and pandemics can lead to an increased level of stress which ultimately will culminate in a heightened anxiety state. The outbreak of COVID-19 is associated with significant fear and extreme anxiety in symptomatic and non-symptomatic patients this can lead to overwhelming emotion fuelling strong emotional state which in the long run can negatively impact their mental health; this

may be missed or overlooked while caring for clinical state of these patients which may be stressful for people. Anxiety and depression have been shown from previous studies to be synonymous with chronic diseases [3, 4] like cancer [5]. The heightened anxiety and worries to a variable degree are affecting everyone worldwide likely due to the novelty of coronavirus. Current evidence shows that there are significant distresses including anxiety, post-traumatic stress features, anger, and confusion associated with isolation and quarantine of patients [6]

The current epidemiology of this pandemic can be manifested in an incubation period of one to fourteen days especially three to seven days including fever, dry cough, and fatigue [7]. Significant anxiety can trigger persistent psychological stress which can lead to the decline of immunity which will further worsen the patient's clinical state [8]. The success of public health strategies is a result of the vital role of psychological factors at play including risk communication, social distancing, and hygiene practices. The success or failure of these strategies can be influenced by health anxiety [9]

While the nature and effect of COVID-19 on mental health status are yet to be determined, existing literature offers some clues to understand what to expect in dealing with COVID-19 anxiety. There are some articles on the impact of COVID-19 anxiety on the public, health workers but currently few focused on patients. The impact of psychological stress on COVID-19 patients can be very intense which may adversely affect their mental health hence this study attempted to evaluate the effect of anxiety and coping with anxiety in COVID-19 patients.

## **Methodology**

This is a narrative review of existing literature on anxiety in patients with COVID-19. A systematic literature search was conducted using electronic databases including PUBMED, EMBASE, and GOOGLE SCHOLAR from December 2019 to August 2021. Search keywords were used individually and or in combination to identify relevant papers, keywords search included are "coronavirus", "Covid-19", anxiety, "mental health", "psychological stress". Inclusion Criteria are literature searches limited to the current period of COVID-19 pandemic. Studies on only adult human patients, only papers published in English but editorials, comments, correspondences were excluded.

## **Results**

Following a detailed database search including PUBMED, EMBASE, and GOOGLE SCHOLAR, about 73 studies in total were isolated on anxiety in the COVID-19 patients, after removal of duplication eight relevant studies were identified while 68 studies were excluded on account of commentaries and correspondence. The further analysis produced two current papers specifically dealing with anxiety in the COVID-19 patient [Figure 1], one observational, cross-sectional study design with a self-rated questionnaire involving 170 patients, and the second paper is a randomized control trial involving 51 patients. Both articles are written in English and from Chinese centers

## **Review of Related Studies**

*Xiao et al* [10] performed a cross-sectional study in Wuhan, central China on about 170 individuals who were in self-isolation at home for 14 days in January 2020 during the Covid-

19 outbreak, the aim of the study is to evaluate the effects of social capital on sleep quality and the mechanisms involved in individuals who self-isolated using self-rated anxiety scale questionnaire, stress was assessed using the Stanford Acute Stress Reaction (SASR) questionnaire, and sleep was assessed using the Pittsburgh Sleep Quality Index (PSQI) questionnaire. The result showed a mean anxiety score  $55.4 \pm 14.3$ , anxiety positively correlated with stress and negative correlation with the quality of sleep and social capital, furthermore social capital showed positive correlation with sleep quality ( $p < 0.05$ ). Hence self – the isolation period of individuals during COVID-19 virus outbreak in central China showed increased social capital more likely to improve sleep quality by reducing anxiety and stress and further enhancing the better outcomes of these individuals. The study is limited by the small sample size and also by the cross-sectional study design lacking the ability to identify other possible relationship and associations between social capital and sleep. In addition, this study devoid of any form of randomization and silent on the effect of pre or co-morbid factors, cultural and environmental factors on anxiety. Also, social capital was measured using the PSCI-16 questionnaire, and the data depended on the individual's ability to interpret the questions and provide accurate responses, but these responses were not verified objectively

However, the findings have some serious and significant public health implications in the final outcome of Covid-19 patients in self-isolation or on the ward. The overall mental health of an individual can be improved by improving social capital.

*Liu et al [11]* performed randomized controlled trials on a total of 51 patients who were confirmed Covid-19 were admitted to Hainan General Hospital in Wuhan China from January 1 to February 16 and subsequently divided into two groups including experimental ( $n = 25$ ) and control ( $n = 26$ ). This study aims to investigate the effect of progressive muscle relaxation on anxiety and sleep quality of COVID-19. “Some sleep-promoting drugs may have respiratory depression, and the new coronary virus mainly affects lung tissue, and the use of drugs may increase respiratory depression. Therefore, we use asymptotic muscle relaxation training to alleviate the anxiety and improve sleep quality of patients with COVID-19.”[11]

The experimental group was instructed on how to relax using Jacobson's relaxation techniques (progressive muscle relaxation and deep breathing), and after determining that they had learned how to relax, the patients performed this within 20–30 min each day, training for 5 consecutive days.

The result of the study showed that the average score of anxiety after the intervention was statistically significant ( $P < 0.05$ ), furthermore in comparison with the control group, the experimental group had reduced anxiety levels and improved sleep quality hence progressive muscle relaxation has a positive effect on improving sleep quality and reducing anxiety in patients with COVID-19. The well-designed but limited the small sample size and effect of environmental and psychological factors on individuals were not reflected in this study.

### **Contribution of study to Knowledge**

Currently, there are essentially two studies [10, 11] that enumerated how COVID-19 patients can cope with anxiety as an inpatient or in self-isolation. Xiao et al[10] recommend some measures aimed at improving social capital and mental health of individual in self-isolation

during the pandemic including the provision of online health education portals to decrease the level of panic, uncertainty, and uneasiness promoted by lack of adequate knowledge of new infections like covid-19, online help, and support to be provided by social workers and psychotherapist through use of telehealth devices like phone or internet device to provide encouragement and channels of communication with relatives, friends and loved ones during self-isolation duration. Studies have shown that measures aimed at improving mental health and sleep may also improve immune function, which may ultimately promote the ability to resist infectious disease [12, 13].

The second study by Liu et al recommends that progressive muscle relaxation should be taught to care staff s and done by the patients because it has positive effect on improving sleep quality and reduction of anxiety in Covid-19 patients, positive results were noticed after five days of practicing the technique. Similarly, studies have shown that progressive muscle relaxation has a positive outcome on anxiety level in patients with early cancer [14], prenatal anxiety [15]. This evidence has also showed an easy relaxation method which is also a non-invasive way for doctors, nurses, and other caregivers can offer to help their patients sleep. These techniques can also be practiced and carried out at home by patients or individual in self-isolation, and do not require face-to-face contact by doctors or nurses, or other healthcare staff.

Contemporary cognitive-behavioral models showed that health anxiety occurs through continuous phenomena varying from high to low levels as opposed to varying in quality [16]. Furthermore, these models also showed that health anxiety high level are marked majorly by catastrophic misinterpretation of bodily changes and sensations, dysfunctional beliefs about health and illness and maladaptive coping behaviors [16]. Screen –and-treat approaches for coronaphobia could be implemented in the community by General practitioners in conjunction with community-based interventions [9] for COVID-19 anxiety but how ready is the current healthcare services in dealing with the sudden surge of *worried well* remains a question to be answered in the day to come during and following this pandemic.

COVID-19 patients with pre-existing psychiatric conditions coupled with current anxiety may need prolong prescription (if started on any) after discharge for stable outpatients ones and possible teleconsultation for unstable one still on the wards and those still in self-isolation [17].

## **Conclusion**

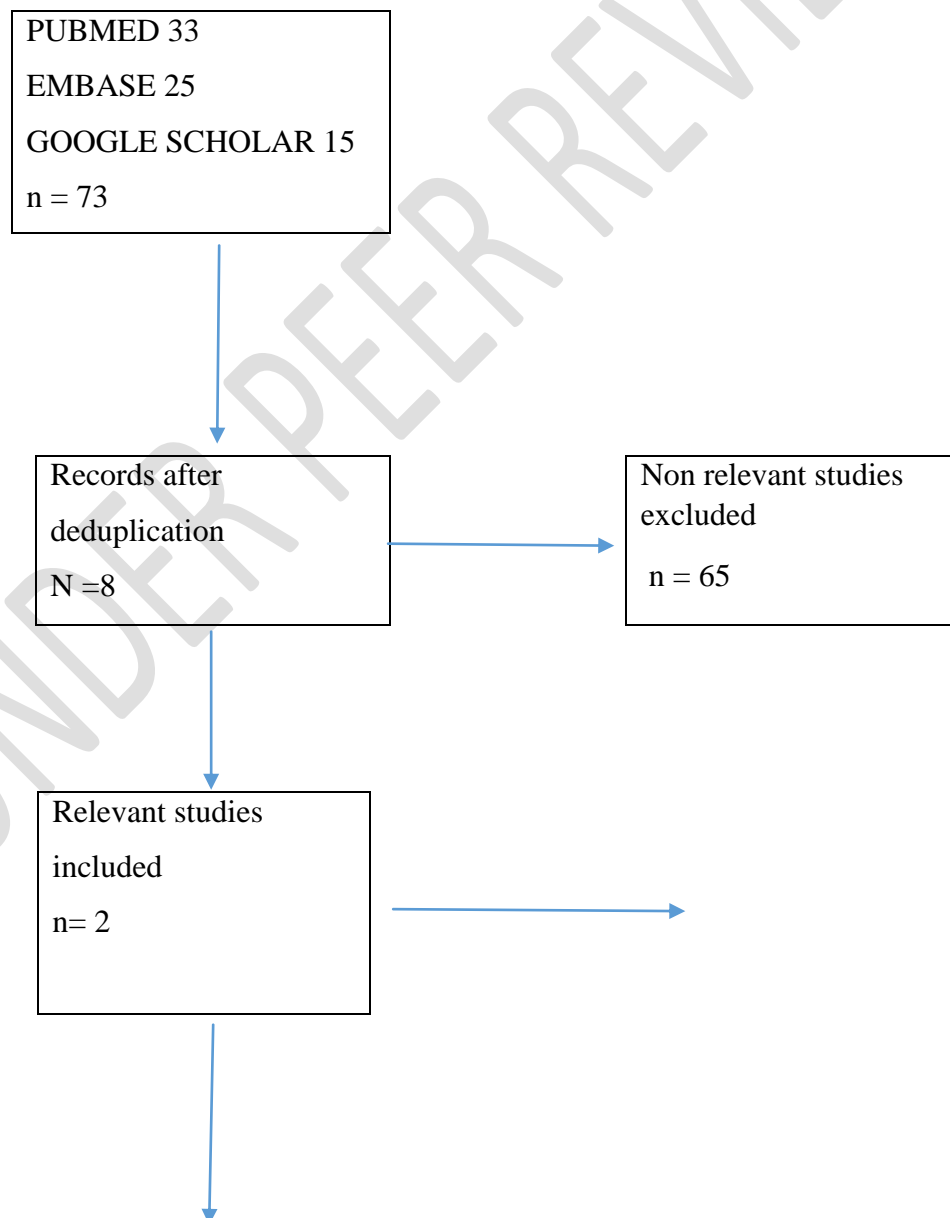
The current COVID-19 pandemic is associated with a significant levels of anxiety, worries and apprehension not only on the general population and health workers but most essentially the patients too on the ward or in self-isolation, there is dearth of studies addressing anxiety and coping with anxiety in patients with COVID-19, currently this is the only review to date that evaluated the anxiety perspective of COVID-19 patients. Improving social capital and the use of progressive muscle relaxation will improve sleep quality and reduce the level of anxiety of COVID-19 patients.

The second wave of COVID-19 may largely be mental health-related cases hence this is a prompt need to intensify strategies and interventions to deal with mental health problems especially those as a result COVID-19 pandemic.

## References

1. World Health Organisation (WHO) Coronavirus disease (COVID-19) technical guidance. 2020. Available at [URL]: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance>.
2. World Health Organisation (WHO) International Health Regulations (IHR) on procedures concerning Public Health Emergencies of International Concern (PHEIC) 2005. Available at [URL]: <https://www.who.int/ihr/procedures/pheic/en/>
3. 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.
4. 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.
5. 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.
6. Brooks SK, Webster RK, LE Smith, Woodland L, Wesley S, Greenberg N, Rubin GJ. The psychological impact of quarantine and how to reduce it: a rapid review of evidence. *Lancet* 2020.
7. Lu H, Stratton CW, Tang YW. Outbreak of pneumonia of unknown aetiology in Wuhan China: the mystery and the miracle. *J Med Virol* (2020, published online Jan 16.
8. Rajeswari S, SanjeevaReddy N. Efficacy of progressive muscle relaxation on pregnancy outcome among anxious Indian primi mothers. *Iran. J. Nurs. Midwifery Res.*, 25 (2019), pp. 23-30.
9. Taylor S. *The Psychology of pandemics: preparing for the next global outbreak of infectious disease*. Cambridge Scholars Publishing, Newcastle upon Tyne 2019.
10. Xiao, H., Zhang, Y., Kong, D., Li, S., & Yang, N. (2020). Social capital and sleep quality in individuals who self-isolated for 14 days during the coronavirus disease 2019 (COVID-19) outbreak in January 2020 in China. *Medical Science Monitor*, 26.
11. Liu, K., Chen, Y., Wu, D., Lin, R., Wang, Z., & Pan, L. (2020). Effects of progressive muscle relaxation on anxiety and sleep quality in patients with COVID-19. *Complementary Therapies in Clinical Practice*, 39.
12. Kurien PA, Chong SY, Ptáček LJ, et al. Sick and tired: how molecular regulators of human sleep schedules and duration impact immune function. *Curr Opin Neurobiol.* 2013; 23(5):873–79.
13. Hulett JM, Armer JM. A systematic review of spiritually based interventions and psychoneuroimmunological outcomes in breast cancer survivorship. *Integr Cancer Ther.* 2016; 15 (4):405-407.
14. Gok Metin Z, Karadas C, Izgu N, et al. Effects of progressive muscle relaxation and mindfulness meditation on fatigue, coping styles, and quality of life in early breast

- cancer patients: an assessor blinded, three-arm, randomized controlled trial. *Eur. J. Oncol. Nurs.* 2019; 42: 116-125.
15. Rajeswari S, SanjeevaReddy N. Efficacy of progressive muscle relaxation on pregnancy outcome among anxious Indian primi mothers. *Iran. J. Nurs. Midwifery Res.* 2019; 25: 23-30, 10.4103/ijnmr.IJNMR\_207\_18.
16. Asmundson GJG, Taylor S. Coronaphobia: Fear and the 2019-nCoV outbreak. *J Anxiety Disord.* 2020;**70**:102196.
17. Zhu Y, Chen L, Ji H, Xi M, Fang Y, Li Y. The risk and prevention of novel Coronavirus pneumonia infections among inpatients in psychiatric hospitals. *Neurosci Bull.* 2020;**36**(3):299-302.



Further studies

excluded

n = 6

Studies included

1 Observational

1 Randomised

Controlled Trial

n= 2

**Figure 1: Search flow**