

PHYSICAL AND PSYCHOLOGICAL EFFECTS OF COVID-19 AMONG SURVIVORS IN PUNJAB, PAKISTAN

Zaryab Fatima*

M.Phil. Scholar, Department of Sociology and Criminology, University of Sargodha, Sargodha
zaryabfatima1234@gmail.com

Umair Ahmad

Assistant Professor, Department of Sociology, GC University, Lahore
umair.minhas85@yahoo.com

Rahat Fatima

M.Phil. Scholar, Department of Sociology and Criminology, University of Sargodha, Sargodha
rahatfatima1702@gmail.com

ABSTRACT

Patients with COVID-19 suffer considerable physical and psychological stress not only during the disease crisis but also after the illness. In this regard, the first practical step is to clearly understand the patients physical and psychological problems. Therefore, this study aimed to examine the physical and psychological effects of COVID-19 on survivors. To achieve this goal, a phenomenological study was conducted. Researchers utilized non-probability convenient sampling, and 12 participants were recruited from a cohort of individuals with confirmed COVID-19 infection and experiencing a history of mild to severe symptoms. The collected data was analyzed through themes of Effects on Physical Health, Effects on Psychological Health, and Social Stigma. The study found that contracting and recovering from coronavirus is an experience in which participants oscillate between relief, safety, confinement, and raw fear. A major focus was seen on the physical and psychological aspects of the diseased body. Stigma and financial stress after infection were also expressed. This study provided a better understanding of the physical and mental well-being of COVID-19 survivors after recovery based on real-world experience. Participants experienced their bodies being vulnerable and marked after COVID-19. They wavered between radiant joy in healing and uncertainty in assessing symptoms. Patient's experiences, therefore, help us better understand how people cope with post- illness challenges and guide us to better ways to support them in the future.

Keywords: Stigma, Physical Health, Psychological Health, Patients, Health impact, Post-COVID Syndrome.

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is the severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2; formerly known as 2019-nCoV] (WHO, 2022). It was first identified as a result of an outbreak of respiratory disease cases in Wuhan, Hubei, China (Chen et al., 2021). On December 31, 2019, this epidemic virus was first reported to the World Health Organization (WHO). On 30 January 2020, WHO declared COVID-19 outbreak a global public health emergency (Chen et al., 2021, Tsamakidis et al., 2021). It spread so rapidly that millions of cases were registered worldwide within weeks. The situation has prompted governments to take special measures in all areas to break the chain of the virus. Despite all these preventive strategies, WHO declared COVID-19 a pandemic on 11 March 2020 (WHO, 2022).

Pandemics are linked to significant level of emotional trauma, anxiety, confusion, and humiliation. These symptoms present in all natural disasters and can serve as roadblocks to effective treatment. People who are mentally impacted by discomfort and uncertainties may have a variety of neurological disorder (Noreen et al, 2020). Moreover, extended isolation might cause exhaustion and emotional trauma (Bo et al, 2021). Homebound persons were more likely to endorse social media to gain knowledge about dynamics, and they were more susceptible to incorrect facts and unsubstantiated reports (Ahn et al., 2020).

* Corresponding author

Following the epidemic, many individuals in various nations experience high levels of despair, anxiety, anorexia, sleeplessness, bodily pain, emotional upset, and post-traumatic stress disorder. Physical and psychological stress resulted in a hazy scenario that steadily arose following the epidemic (Einvik et al., 2021). Young individuals, women, comorbidities, and students have greater risk of anxiety and depression during the COVID-19 pandemic (Ahn et al, 2020).

Pakistan, being a moderate economy, has several public health problems not merely during the COVID endemic problem, but also following the virus (Ismael et al, 2022). In terms of monetary costs, illness, and death, the nation has experienced numerous catastrophic repercussions of pandemic on its citizens (Bot al, 2021). The post-COVID-19 epidemic has had severe impacts on financial security, dread, and psychiatric insecurity. With scarce funds, Pakistan has devised tactics to combat this worldwide outbreak (Brooks et al., 2020).

Most past research on infectious epidemics has concentrated on the prevalence and incidence of such infections, modes of dissemination, disease manifestations and severity, associated morbidity, preventative strategies, and randomized to establish vaccine effectiveness (Engel, 1977; Lee et al., 2005). The data publicly known is inadequate to figure out the effect of COVID-19 on Pakistani survivors' physical and mental well-being. (Huang et al., 2021). Because this pandemic is believed to be Pakistan's first large epidemic, no past efforts have been undertaken to investigate and examine COVID-19 physical and psychological health linkages among Pakistani survivors (Ahmad et al., 2022). As a result of the epidemic, the country is in wreckage. Hence, the purpose of this research is to look at the physical and mental aspects of people who survived this alarming situation of COVID-19.

Research Questions

- How COVID-19 effects Physical and mental health of survivors?
- Why Survivors are stigmatized after recovery?

METHODOLOGY

A phenomenological study was conducted on COVID-19 Survivors from Sargodha city. 12 patients between the age range of 20-40 were chosen from a cohort of patients with proven COVID-19 disease and then made a full recovery as evidenced by negative PCR tests using non-probability convenient sampling. Individuals with other deficiencies, persisting cancers, upper/lower impairments, unwillingness to cooperate, and those receiving any form of therapy for their cognitive health were exempted from the research. Written permission was used to obtain data. The collected data was analyzed through themes of Effects on Physical Health, Effects on Psychological Health, and Social Stigma. Demographic characteristics of all respondents are given below:

Sr#	Demographic Characteristics	Frequency
1	Age	
	20-25	1
	26-30	3
	31-35	5
	40 and above	3
	Total	12
2	Gender	
	Male	7
	Female	5
	Total	12
3	Living Area	
	Rural	3
	Urban	9
	Total	12
4	Family Type	
	Nuclear	3
	Joint	1
	Extended	8
	Total	12
5	Income status	
	Employed	9
	Unemployed	3
	Total	12

RESULTS AND DISCUSSIONS

The study found that Coronavirus survivors had physical, mental, and social issues. It is consistent with George L. Engel's biopsychosocial paradigm (1977). In understanding health, sickness, and medication, this paradigm stresses biological, mental, and social elements and their intricate interactions (Engel, 1977). This study highlights the neglected requirements of Coronavirus survivors after they have been discharged from the clinic, highlighting the significance of continued therapy (Colaizzi, 1978).

1. Physical Effects

Those who rehabilitated from Coronavirus faced numerous symptoms such as fatigue, breathing issues, insomnia, and loss of appetite, chest discomfort, and cough, according to the research. These negative consequences might be connected to mental stress or physical harm that has not been completely cured as a result of the encounter (Ahn et al, 2020). This is consistent with a quantitative investigation of Coronavirus side effects, which found that after discharge survivors experienced muscular weariness, acute pain, coughing, and a reduction in desire to eat (Halpin et al, 2021).

The majority of responders experienced exhaustion, sleep disruption, and anorexia; however, some chronic COVID-19 sufferers claimed breathlessness, chest discomfort, and a chest tightness. The most prevalent negative consequences amongst Coronavirus survivors, according to research done in the United Kingdom and Wuhan, were tiredness and insomnia (Halpin et al., 2021; Huang et al., 2021). *R4 (female, age 37): "After the death my mother due to COVID I could not sleep. Even a mild disturbance woke me up and I have to use sleeping pills after that".*

R12 (male, 50): "I continuously facing cough, chest tightness and pain after recovery. Even though my lungs were healthy I become breathless while walking and need breathing therapy".

Survivors had no recourse to medical advice or rehabilitative counseling after release (Bellan et al, 2021). Survivors reported having minimal interaction with healthcare staff after being released from the hospital. They wanted to know what was causing the remaining symptoms and when they would be able to heal, but they didn't know how to contact medical personnel. According to a rigorous survey, the biggest challenges among SARS and MERS survivors were aviation industry route impediment, decreased activity, and unfavorable living conditions, which might linger for up to a year after emergency clinic discharge. (Ahmed et al, 2020). As a result, therapeutic counseling procedures or restorative recommendations are necessary for all Coronavirus survivors upon clinic discharge (Hodgson et al, 2018). The participants were concerned about COVID-19 reinfection. Nevertheless, healthcare teams were unable to analyze chest CT scans or do regular nucleic acid and antibody testing. As a result, patients had no choice but to exercise and eat nutritional meals (Ibid, 2018).

R1 (male, 28 years old): "No medical staff available to guide about physical effects of virus on my body. I felt neglected".

R7 (male, 24 years old): "Many pulmonary fibrosis are still present. Can I able to get rid of them?"

R10 (male, age 49): "No medical facility was available for discussion about changes in body after recovery. My CT scans were not examined by staff and I was worried enough about my health after discharge".

Survivors said that hardly any healthcare provider provided ongoing care or preventive information after they were released. Prior COVID-19, there had been a scarcity of public health professionals. Government resources were scarce during the height of the epidemic (Serafini et al, 2020). A small team of healthcare staff were committed to treating COVID-19 individuals in healthcare facilities, and they were unable to offer necessary corrective / preventive treatment (Huang et al, 2021). Survivors require holistic care after discharge, regardless of whether they have physical or psychological issues (Bellan et al, 2021).

2. Psychological Effects

A majority of patients continued to suffer from numerous health strains, including despair, anxiety, terror, and trauma, even after discharge (Hodgson et al, 2018).

a) Depression

Respondents claimed that the absence of standardized or controlled COVID-19 diagnosis and processes and the scarcity of emergency rooms caused the Sargodha health system to be in disarray initially in the outbreak (Lau et al, 2008). The hospitalization of COVID-19-infected patients and their families has been delayed as a result of these circumstances. Six individuals reported having family members with COVID-19 diagnoses, three of whom had experienced the tragic death of family members and were depressed. Upon their recovery, some survivors said that they frequently wore masks, practiced social isolation, and did their best to stay in quarantine and protect themselves. Regrettably, many who

contracted the disease felt abandoned and despondent as a result of what had occurred to them. After discharged, these emotional disorders continued (Bo et al, 2020).

R9 (female, 37): "I was diagnosed with COVID-19 and after few days the virus transmitted to my husband. Ultimately he can't survive. I felt guilty and depressed till today (Sobbing)".

R12 (male, 50): "I took things very seriously and didn't go out much. I felt that many people were less healthy than me. But they did not get infected with COVID-19 and unfortunately, I did".

Several patients with mild or moderate symptoms had to stay at home for isolation and monitoring because of the rapid rise of COVID-19 cases and the lack of hospital beds (Zhuang et al., 2021). Many other sufferers' ailments quickly worsened as a result of not receiving early care. They had also become sicker by the time they were admitted to the hospital. After leaving the hospital, survivors of acute illness suffered from physical deterioration and mental stress (Huang et al., 2021).

b) Anxiety

The majority of survivors reported feeling anxious both before and after discharge. The primary causes of post-discharge concern among individuals were persistent physical symptoms, an unknown fate, and worry about spreading the illness to family members (Ismael et al, 2022). One of the main sources of anxiety is worry about the prognosis of a condition (Lau et al, 2020). The possible and irrevocable harm COVID-19 may do to their bodies and organs, or a recurrence, worried survivors. Concerns among survivors regarding the outcome of COVID-19 infection are growing as a result of insufficient data to forecast COVID-19 infection, survivors' ongoing symptoms, and inflated information on social media (Lee et al, 2021).

R8 (male, 39 years old): "I'm extremely nervous while listening to the news on social media about COVID-19."

R9 (female, 37): "Is this condition totally curable? Others claim that once infected, the infection persists with in body permanently and there is no treatment for this illness".

R2 (male, 44 years old): "I was isolated at home and afraid to go out eve after recovery".

The majority of responders expressed anxiety that family members would contract the illness despite having taken self-isolation and cleaning precautions after being released from the hospital.

R3 (male, age 38): "My wife and I contracted COVID-19. And I am worried about my child. There are chances that he will be infected too as children are at higher risk of infection".

R5 (female, age 31): "I was pregnant when got infected. I was worried about my newborn health. If he got infected is it possible to quarantine him.

Household isolation made families more susceptible to sickness, which increased the likelihood of family transmission (Lee et al., 2021) and made survivors' psychological anguish and anxiety worse.

c) Fear

Despite the fact that information is now widely available because of technological advances, victims find it difficult to discriminate between real and misleading information because of the chaotic strikes on online material (Song, 2020). Compared to other outbreaks, the public's concern of COVID-19 has increased due to a deluge of false information and fabricated stories (Ahmad et al, 2022). Respondents stated that they preferred to obtain information about diseases from healthcare practitioners as opposed to the Internet because they felt that healthcare professionals had the most systematic knowledge, vast clinical experience, and the most credible information.

R8 (male, 39 years old): "COVID-19 is not universally understood, and researchers and specialists continue to look at it. Unless we have a vaccination, nobody is certain. There are conflicting published claims, even those that claim that the illness disrupts the fertility".

R6 (female, age 41): "I continue to worry even after leaving the hospital because I believe the infection is worse from what I originally thought. Daily news reports feature many points of view. I believe that this illness is rather obscure and communicable compared to any other that I have encountered previously".

Social media's dilemma with inaccurate facts circulating has made victims fearful (Bo et al, 2020). Medical professionals are essential throughout a virus. To clarify misconceptions and help build trust, preventative education is required in alongside the provision of medication, support, continuous monitoring, and counseling to sufferers (Zhuang et al, 2021). Thus, it should be addressed about increasing the capacity of health experts, specifically critical care personnel (Chen et al, 2021). Problem of distorted information spreading through social media instilled fear among survivors (Bo et al, 2020).

d) Psychological trauma

The COVID-19 patients who took part in this study experienced trauma as a result of their experiences. They spoke of their uncomfortable and agonizing recollections of the traumatic experience, their anxiety of dying, and their fear of its repetition. The psychological trauma of survivors was made worse by their close encounters with death and the fact that they witnessed several people expires from that same sickness (Hagenaars et al, 2010).

R7 (male, 24 years old): "I had no strength. While I was very ill, I was unable to take care of myself. I had no other option considering this gradual decline. Around two in the morning, the medical staff was powerless to assist resuscitate the patient who was lying next to me. They could only give the patient oxygen and lifesaving medications because there wasn't anything else they were able to do. He soon stopped sensing the medication, lifted his hands as though to hold things, and passed away".

R9 (female, 37): "I was recovered very soon but if the virus regained strength within my body I probably die".

Insecurity regarding the prognosis and the high hospitalization rates of COVID-19 has made survivors more traumatized and anxious (Halpin et al, 2021). Several patients with mild or moderate symptoms had to stay at home for isolation and monitoring because of the rapid rise of COVID-19 cases and the lack of hospital beds (Zhuang et al., 2021).

3. Social Stigma

Not only have patients been impacted by COVID-19, but also their social interactions and societal prestige. People purposefully avoid COVID-19 survivors due to a widespread fear of transmission (Tsamakis et al, 2021). Patients with COVID illness frequently face stigma, which persists even after the epidemic is ended (Lee et al., 2005; Robertson et al., 2004). COVID-19 has affected not only patients but also their relationships with others and society.

a. Social stigma

The research identified a number of causes for the stigma attached to COVID-19. Inaccurate information, stress, concern about accountability, poor management, and a lack of faith in therapy are some of these causes (Mahmud & Islam, 2021). Others surrounding the respondents claimed to have rejected, ostracized, and mistrusted them. Several participants kept their sickness a secret out of concern about prejudice.

R10 (male, age 49): "I now face a lot of discrimination. They appear to disturb me with an apparently sick individual".

R11 (female, 27 years old): "I desired to see my parents after completing self-quarantine. But when my sister informed me not to come, I started to feel upset. I'm unwell, yet I dare not inform my acquaintances".

R6 (female, age 41): "I felt distant from my family. My mother-in-law forbade me from keeping myself in quarantine at home when I was discharged. She instructed me to go to my mother's house. Surprisingly, my sister refused to let me reside there either. . Everybody there in my vicinity was terrified of me".

Some Appropriate efforts should be done to prevent stigmatization because it may result in more significant issues including poor physical and mental health and difficulty in managing transmission of pathogens (Liu et al., 2020; Mahmud & Islam, 2021; Danhauer et al 2013). For instance, when discussing COVID-19, use inclusive language and steer clear of stigmatizing terminology. Also, gather and spread correct information to lessen stigma caused by ignorance about disease transmission and treatment (Tsamakis et al, 2020). Also, there is a critical need to raise the voices of survivors and highlight to relatives the importance of their assistance and encouragement for survivors' rehabilitation (Xiong et al, 2020).

b. Financial stress

The government has compensated COVID-19 sufferers' medical expenses, easing some of the financial strain (Ahmad et al, 2022). Yet, because of the execution of COVID-19 preventive and control recommendations, survivors were not given sick pay or a rapid return to work after being discharged, and their families were left alone at home (Huang et al, 2021). During the pandemic, low-income individuals were more severely depressed. This is most likely due to the fact that individuals with lower incomes or those on unpaid leave experience the impacts of income loss during and after the epidemic more keenly than those with rising incomes (Brooks et al., 2020; Hawryuck et al., 2004). Several participants claimed that ongoing health issues or social prejudice prevented them from going back to work. Economic demands are significantly more severe, particularly when survivors have co morbid

conditions, are the main providers for their families, and have duties to look after the young and old (Hodgson et al, 2018).

R2 (male, 44 years old): “Even if I don't have a job, I still have expenses to pay. I have to take expensive medications all year long since I have hypertension. This is a major fiscal burden for me”.

R4 (female, age 37): “I am jobless, and my husband passed away from COVID-19. I have to cover all of my expenditures as I reside separately. It bothers me”.

R11 (female, 27 years old): “My husband and I both fell ill. We are employed for a private company and thus don't receive employee benefits. We take care of the young and the old. Our personal life had been devastated”.

The findings indicated that following discharge, survivors had to deal with unemployment and related economic hardship. Poor quality of life, anxiety, and depression are all correlated with unemployment (Hodgson et al., 2021). Health and workplace systems will need to evaluate the unique situations of survivors in the post-COVID-19 period and offer suitable financial and employment counseling to individuals experiencing the severe COVID-19 pandemic consequences (WHO, 2022; Halpin et al, 2021; Serafini et al, 2020).

CONCLUSION

Those who were infected in the early phases of the COVID-19 epidemic participated in this study. Inadequacies in disease management and preventive strategies, including a failure to identify the virus early, congestion in public hospitals, and acute shortages of personal protective equipment and medical personnel, plagued Pakistan's health system at this time. Hospitals and politicians lacked the time necessary to respond to rapid developments. Several people sought treatment at private hospitals due to the inadequate ability of public hospital doctors and the obsolete diagnostic equipment. Hospitals were flooded with sick people because of this situation. Pakistan's healthcare system is being put to the test by COVID-19. The terrible impact of COVID-19 on early-stage survivors persists, despite the government vanquishing the virus by employing cutting-edge and expert tactics in the advanced stages of the disease. The availability of sufficient enduring emergency medical staff, the capacity of public hospitals, and the capability to identify and respond to medical crises are all problems that must be resolved. COVID-19 sufferers immediately require assistance with both mental and physical development, connectedness, and safety from stigmatization. The recollections of COVID-19 sufferers are crucial in initiating strategy for health sector and measures for health promotion management.

LIMITATIONS

Despite its useful findings, this study has significant drawbacks. Firstly, this study exclusively interviewed survivors from Sargodha and excluded survivors from other places, limiting the generalizability of these findings. Secondly because of the limited sample size, the results cannot be extended nationally. Similar quantitative studies can be conducted in the future to expedite generalizability.

REFERENCES

- Ahmed, H., Patel, K., Greenwood, D.C., Halpin, S., Lewthwaite, P., Salawu, A., Eyre, L., Breen, A., O'Connor, R., Jones, A., & Sivan, M. (2022). Long-term clinical outcomes in survivors of severe acute respiratory syndrome and Middle East respiratory syndrome coronavirus outbreaks after hospitalisation or ICU admission: A systematic review and meta-analysis. *Journal of Rehabilitation Medicine*, 52(5), jrm00063. <https://doi.org/10.2340/16501977-2694>
- Ahn, D. G., Shin, H. J., Kim, M. H., Lee, S., Kim, H. S., Myoung, J., Kim, B. T., & Kim, S. J. (2020). Current status of epidemiology, diagnosis, therapeutics, and vaccines for Novel Coronavirus disease 2019 (COVID-19). *Journal of Microbiology and Biotechnology*, 30(3), 313–10. <https://doi.org/10.4014/jmb.2003.03011>
- Bellan, M., Soddu, D., Balbo, P. E., Baricich, A., Zeppegno, P., Avanzi, G. C., Baldon, G., Bartolomei, G., Battaglia, M., Battistini, S., Binda, V., Borg, M., Cantaluppi, V., Castello, L.M., Clivati, E., Cisari, C., Costanzo, M., Croce, A., Cuneo, D., ... Pirisi, M. (2021). Respiratory and psychophysical sequelae among patients with COVID-19 four months after hospital discharge. *JAMA Network Open*, 4(1), e2036142. <https://doi.org/10.1001/jamanetworkopen.2020.36142>

- Bo H-X, Li W, Yang Y, Wang Y, Zhang Q, Cheung T, et al. "Posttraumatic stress symptoms and attitude toward crisis mental health services among clinically stable patients with COVID-19 in China". *Psychol Med.* (2020) 51:1052–3. doi: 10.1017/S0033291720000999
- Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. *Lancet (London, England)*, 395(10227), 912–920. [https://doi.org/10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8)
- Chen Y, Huang X, Zhang C, An Y, Liang Y, Yang Y, et al. (2021), "Prevalence and predictors of posttraumatic stress disorder, depression and anxiety among hospitalized patients with coronavirus disease 2019 in China". *BMC Psychiatry.* 21:80. doi: 10.1186/s12888-021-03076-7
- Colaizzi, P. F. (1978). Psychological research as a phenomenologist views it. In R. S. Valle & M. King (Eds.), *Existential-phenomenological alternatives for psychology* (pp. 48–71). Oxford University Press.
- Danhauer, S. C., Case, L. D., Tedeschi, R., Russell, G., Vishnevsky, T., Triplett, K., Ip, E. H., & Avis, N. E. (2013). Predictors of posttraumatic growth in women with breast cancer. *Psycho-oncology*, 22(12), 2676–2683. <https://doi.org/10.1002/pon.3298>
- Engel, G. L. (1977). The need for a new medical model: A challenge for biomedicine. *Science*, 196(4286), 129–136. <https://doi.org/10.1126/science.847460>
- Hagenaars, M. A., & van Minnen, A. (2010). Posttraumatic growth in exposure therapy for PTSD. *Journal of Traumatic Stress*, 23(4), 504–508. <https://doi.org/10.1002/jts.20551>
- Halpin, S.J., McIvor, C., Whyatt, G., Adams, A., Harvey, O., McLean, L., Walshaw, C., Kemp, S., Corrado, J., Singh, R., Collins, T., O'Connor, R. J., & Sivan, M. (2021). Postdischarge symptoms and rehabilitation needs in survivors of COVID-19 infection: A cross-sectional evaluation. *Journal of Medical Virology*, 93(2), 1013–1022. <https://doi.org/10.1002/jmv.26368>
- Hanley, A.W., Peterson, G. W., Canto, A. I., & Garland, E. L. (2015). The relationship between mindfulness and posttraumatic growth with respect to contemplative practice engagement. *Mindfulness*, 6(3), 1–9. <https://doi.org/10.1007/s12671-014-0302>
- Hawryluck, L., Gold, W. L., Robinson, S., Pogorski, S., Galea, S., & Styra, R. (2004). SARS control and psychological effects of quarantine, Toronto, Canada. *Emerging Infectious Diseases*, 10(7), 1206–1212. <https://doi.org/10.3201/eid1007.030703>
- Hodgson, C. L., Haines, K. J., Bailey, M., Barrett, J., Bellomo, R., Bucknall, T., Gabbe, B. J., Higgins, A. M., Iwashyna, T. J., Hunt-Smith, J., Murray, L. J., Myles, P. S., Ponsford, J., Pilcher, D., Udy, A. A., Walker, C., Young, M., & Jamie Cooper, D. J., & ICU-Recovery Investigators. (2018). Predictors of return to work in survivors of critical illness. *Journal of Critical Care*, 48, 21–25. <https://doi.org/10.1016/j.jcrc.2018.08.005>
- Huang, C., Huang, L., Wang, Y., Li, X., Ren, L., Gu, X., Kang, L., Guo, L., Liu, M., Zhou, X., Luo, J., Huang, Z., Tu, S., Zhao, Y., Chen, L., Xu, D., Li, Y., Li, C., Peng, L., ... Cao, B. (2021). 6-month consequences of COVID-19 in patients discharged from hospital: A cohort study. *Lancet (London, England)*, 397(10270), 220–232. [https://doi.org/10.1016/S0140-6736\(20\)32656-8](https://doi.org/10.1016/S0140-6736(20)32656-8)
- Ismael F, Bizario JCS, Battagin T, Zaramella B, Leal FE, Torales J, et al. "Post-infection depression, anxiety and PTSD: a retrospective cohort study with mild COVID-19 patients. *ProgNeuropsychopharmacolBiol Psychiatry*". (2022) 111:110341.
- Lau, A. L., Chi, I., Cummins, R. A., Lee, T. M., Chou, K. L., & Chung, L. W. (2020). The SARS (Severe Acute Respiratory Syndrome) pandemic in Hong Kong: Effects on the subjective wellbeing of elderly and younger people. *Aging & Mental Health*, 12(6), 746–760. <https://doi.org/10.1080/13607860802380607>
- Lee, S., Chan, L. Y., Chau, A. M., Kwok, K. P., & Kleinman, A. (2021). The experience of SARS-related stigma at Amoy Gardens. *Social Science & Medicine (1982)*, 61(9), 2038–2046. <https://doi.org/10.1016/j.socscimed.2005.04.010>
- Noreen N, Dil S, Niazi SUK, Naveed I, Khan NU, Khan FK, et al. Coronavirus disease (COVID-19) pandemic and Pakistan; limitations and gaps. *Glob Biosecur.* 2020;1(3):1–11.
- Serafini G, Parmigiani B, Amerio A, Aguglia A, Sher L, Amore M. The psychological impact of COVID-19 on the mental health in the general population. *QJM Int J Med.* 2020;113(8):531–7.

- Song M. Psychological stress responses to COVID-19 and adaptive strategies in China. *World Dev.* 2020; 136:105107.
- Tsamakis K, Triantafyllis AS, Tsiptsios D, Spartalis E, Mueller C, Tsamakis C, et al. COVID-19 related stress exacerbates common physical and mental pathologies and affects treatment. *ExpTher Med.* 2020;20(1):159–62.
- Tsamakis K, Tsiptsios D, Ouranidis A, Mueller C, Schizas D, Terniotis C, et al. "COVID-19 and its consequences on mental health (Review)". *ExpTher Med.* (2021) 21:1. doi: 10.1080/09638237.2020.1757052
- World Health Organization [WHO]. WHO Coronavirus (COVID-19) Dashboard. "Health topics: Coronavirus disease (COVID-19)", 2022.
- Xiong J, Lipsitz O, Nasri F, Lui LM, Gill H, Phan L, et al. Impact of COVID-19 pandemic on mental health in the general population: a systematic review. *J Affect Disord.* 2020; 277:55–64.
- Zhuang, Z., Cao, P., Zhao, S., Han, L., He, D., & Yang, L. (2021). The shortage of hospital beds for COVID-19 and non-COVID-19 patients during the lockdown of Wuhan, China. *Annals of Translational Medicine*, 9(3), 200. <https://doi.org/10.21037/atm-20->