Sleep Problem in Post COVID-19 Patient, Its Impact on Quality of Life and Current Management: An Evidence-based of Case Report

Hamzah Shatri[1,2], Rizka Zainudin[1], Yanuar Ardani[1], Edward Faisal[1], Rudi Putranto[1]

[1] Division of Psychosomatic and Palliative, Department of Internal Medicine, Faculty of Medicine Universitas Indonesia - Cipto Mangunkusumo National Hospital, Jakarta, Indonesia.
[2] Clinical Epidemiology Unit, Department of Internal Medicine, Faculty of Medicine Universitas Indonesia – Cipto Mangunkusumo National Hospital, Jakarta, Indonesia.

Corresponding Author:
Hamzah Shatri, MD., PhD. Psychosomatic and Palliative Division, Department of Internal Medicine, Faculty Medicine Universitas Indonesia - Cipto Mangunkusumo National Hospital. Jl Diponegoro No. 71, Jakarta 10430, Indonesia. Email: hshatri@yahoo.com; psikosomatik.paliatif@gmail.com.

ABSTRACT

Background: COVID-19 is a global health problem that affects both physical and psychological aspect of patients. Sleep problems were experienced by many patients during the acute phase of after COVID-19 recovery. It affects patient's quality of life and required comprehensive management. This evidence-based case report aims to study the effect of sleep disturbance on quality of life and what is the appropriate management in post COVID-19 patients. Methods: searching were conducted in Pubmed, Cohcrane, EBSCO according to clinical questions. Study was selected based on inclusion and exclusion criteria, then it was critically appraised. Results: high score on the insomnia severity index and the Pittsburgh sleep quality index were found to be associated with quality of life. Cognitive Behavioural Therapy is currently the best evidence-based treatment in patient during and after COVID-19. Conclusion: sleep disturbance is a problem that many post COVID-19 patient face and CBT can improve their quality of life.

Keywords: sleep problem, post COVID-19, quality of life, cognitive behavioural therapy.

INTRODUCTION

COVID-19 pandemic became a worldwide devastating health issue starting in December 2019 in China and then gradually was a global health problem. The World Health Organization (WHO) on March 2020 has declared the novel coronavirus (COVID-19) outbreak a global pandemic and the world should be more aggressive in facing this infection.[1] As of March 2022, globally there have been more than 400 billion confirmed cases of COVID-19, including 6 billion death. In Indonesia there have been more than 5 billion cases and around 150,000 death.[2]

COVID-19 has double weapon on physical and mental domains of health. Along with its high infectivity and fatality rates, COVID-19 has caused universal psychosocial impact by causing mass hysteria, economic burden, and financial losses, social curfew and ambiguity about the future.[3] Furthermore, quarantine leading to emergence of fearful reaction, stressful condition, significant anxiety and sleep disorder among general population.[4] Study showed that mental health problems, such as depression, anxiety, insomnia and post-traumatic stress disorder (PTSD), dramatically increased after COVID-9 pandemic.[4]

Sleep is an important biological mechanism for maintaining homeostasis and quality of life. Sleep problems negatively affected the immune response by their effect on circadian rhythm of the body. PTSD after recovery from COVID-19 have been correlated to sleep problems, high anxiety level and depressive manifestations, also quality of life of front liner workers and patients was extremely burdened during the post recovery period.[4]

CLINICAL QUESTION

A female patient, 40 years old, came to the psychosomatic clinic with complaints of sleeping problem since last month. The patient said that it was difficult to start sleeping and woke up several times during the night. One month ago the patient had a covid-19 infection and was hospitalized because she had oxygen desaturation up to 90% (room air). Since then, the patient was afraid due to her history of shortness of breath and still remembered several times saw other patients died because of COVID-19 when hospitalized. At this time there were no complaints of shortness of breath, cough, and fever. The patient is a housewife and does not have any children. The patient's husband is a bus driver. There was no previous history of psychiatric disorders or sleep disturbances.

METHODS

A comprehensive literature searching was conducted on March 6 th 2022 to answer the question mentioned by exploring several online databases such as Pubmed, Cochrane Library, and EBSCO. The keyword used are "sleep disorder", "sleep problem", insomnia, "post covid", "after covid, and "quality of life" combined with Boolean operator "AND"

and "OR" were used. Articles obtained were screened according to predetermined selection criteria.

The articles were selected based on inclusion and exclusion criteria. The inclusion criteria included: (1) Research articles including meta-analyses, systematic reviews, randomized controlled trials, observational studies, quantitative studies, qualitative studies, and mixed method studies evaluating sleep problem or sleep disorder or insomnia ; (2) post COVID-19 or after COVID-19 population; (3) determining quality of life on different domain. The exclusion criteria are case series, case reports, review articles, and other studies which were reported in language other than English and not relevant to PICO.

After meeting the inclusion and exclusion criteria, every article will be assessed for its validity, importance, and applicability by using the critical appraisal worksheet available from Centre of Evidence-Based Medicine (CEEBM) University of Oxford in accordance to the type of article obtained. Level of evidence of each article would be classified according to the Oxford Central for Evidence-Based Medicine Classification.

There were 5 articles obtained after searching through online data base. The queries are described in **Table 1**.

After screening through titles and abstracts, we filtered one article that suited the formulated clinical question and PICO. Screening and reviewing processes based on the inclusion and exclusion criteria were done. After further full-text reading, there were one article found to be matched to answer the clinical question. Flowchart of the searching strategy is presented in **Figure 1**.

Table 1. Queries used to conduct literature searching in journal databases.

| Journal database	Keywords	Hits	Screened
PubMed/ MEDLINE	(((("sleep disorder") OR ("sleep problem")) OR (insomnia) AND (y_5[Filter])) AND (("post covid") OR ("after covid") AND (y_5[Filter]))) AND ("quality of life")	5	1
Cochrane Library	sleep disorder OR sleep problem OR insomnia AND post covid OR after covid AND quality of life (Word variations have been searched)	0	0
EBSCO	sleep disorder OR sleep problem OR insomnia AND post covid OR after covid AND quality of life	0	0
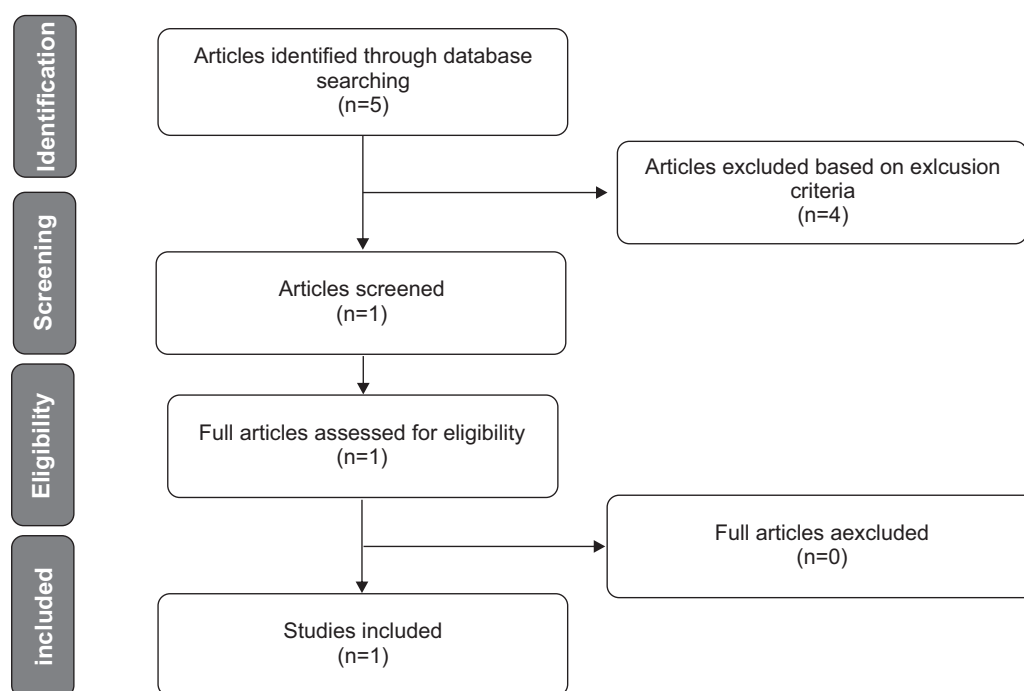
Figure 1. Flow diagram of literature searching.

RESULTS

The study that included to be appraised is a single centre cross sectional observational study by Samir El Sayed et.al.[5] Summary of the article is presented in **Table 2**. Critical appraisal of the study is presented in **Table 3.**

DISCUSSION

Apart from its physical burden, COVID-19 has enormous psychosocial impact. Disease itself multiplied by forced quarantine, "infodemic" spread via different platforms of social media and bad experience in having COVID-19 may cause mental distress such as anxiety, depression, and PTSD.[3,5]

Sleep disorder is one of the psychiatric problems that arise during and post COVID-19 patient[6]. COVID-19 insomnia is manifested by lack of sleep at night, sleepiness during the day and increase needs for naps. It occurs due to disrupted circadian rhythm during isolation and increased cytokine due to infection that interfere both non-REM and REM sleep.[6]

This study found that there were sleep problem in post COVID-19 patient based on ISI and PSQI assessment. Based on ISI, 133 (26%) and 27 (5.4%) subjects had moderate

Table 2. Summary of articles used in this study.

Reference	Study design	Subjects	Determinants	Inclusion criteria	Exclusion criteria	Outcomes	Level of evidence
El Sayed et al.[5]	Cross sectional study	500 subjects	Sleep problem (Insomnia severity index (ISI) And Pittsburgh sleep quality index (PSQI))	(1) age ranged from 18 to 60 years; (2) must have two negative PCR test for COVID 19 within one month after recovery	(1) primary language other than English; (2) patients with well-known psychiatric disorders and under effect of psychotropic medication	Different domains of Quality of Life (QOL)	2c

Table 3. Critical appraisal of cross-sectional study based on criteria by Center of Evidence-Based Medicine.

Article: El Sayed et al.[5]	
1. Did the study address a clearly focused question / issue?	Yes.
2. Is the research method (study design) appropriate for answering the research question?	Yes.
3. Is the method of selection of the subjects (employees, teams, divisions, organizations) clearly described?	Yes.
4. Could the way the sample was obtained introduce (selection) bias?	Yes.
5. Was the sample of subjects representative with regard to the population to which the findings will be referred?	No
6. Was the sample size based on pre-study considerations of statistical power?	Yes
7. Was a satisfactory response rate achieved?	Unclear
8. Are the measurements (questionnaires) likely to be valid and reliable?	Yes
9. Was the statistical significance assessed?	Yes
10. Are confidence intervals given for the main results?	Yes
11. Could there be confounding factors that haven't been accounted for?	Yes
12. Can the results be applied to your organization?	Yes

and severe clinical insomnia. Regarding global PSQI, based on 7 components, sum of this score was 15±4 which indicates a disturbed quality of sleep. Other study also found high score of PSQI in the post COVID-19 patients with persistent anxiety, depressive disorder and sleep quality insufficiency conducted in medical staff. There were also case series that said some patients will have worsening in subjective sleep quality and problems, including sleep latency and daytime function in 85% patient who recovered from COVID-19 and were re-evaluated in 8 weeks after discharge.[4]

There were also association between socio-demographic data and severity of insomnia which there was a significantly positive correlation between age, female gender, single of marital status, days after recovery from COVID 19, Physical functioning, Role limitation due to physical health, Role limitation due to emotional problems, General health and Global PSQI.[4]

This study found a statistically significant positive association between ISI and different domains of QOL scale SF 36 including physical health, role restriction because of physical health, role limitation due to emotional burdens and general wellbeing which in parallel with the result of the study concluded impaired quality of life (QoL) independently related to high anxiety score, severe depressive manifestations, poorer quality of sleep and insomnia problem.[4]

Cognitive Behavioral Therapy is the best evidence-based treatment for patient during and after COVID-19 infection. Medication may be considered for patients with severe depressive or anxiety disorder as well. Multicomponent interventions include a comprehensive history, sleep diary highlighting potential behavioral changes, addressing dysfunctional beliefs, and use of stimulus control, sleep restriction and various relaxation methods based on patient and therapist preference.[7]

The European CBT-I Academy offered to: 1) follow natural sleep rhythm on a set schedule; 2) address worry and stress by using diaries and conversations; 3) use the bed only for sleep (and sex); 4) share feelings via social media; 5) avoid devices in the 1–2 h before bed; 6) engage in safe, enjoyable activities; 6) follow healthy habits such as regular exercise, no eating in the 2–3 h before bed, seek natural light in the morning and then evening dim light; and 7) relax before bedtime, e.g. reading a book, yoga, etc.[7]

However, pharmacological treatment is still preferred and used in non-severe cases because, in some cases, CBT is not effective and not applicable. For acute anxiety in post COVID-19 patients, short acting benzodiazepine could be used. SSRI and SNRI, venlafaxine is the first choice. After remission, the drug should be continued at least several months to prevent relapse. On the other hand, patient post COVID-19 with General Anxiety Disorder (GAD) could use SSRI and SNRIS as the first choice and pregabalin as the second drug choice. Other drug that can be used are buspirone and hydroxyzine.

Benzodiazepine used only for long treatment therapy if the other drugs or CBT were failed.[8,6]

Overall, the use of anti-insomnia drugs in COVID-19 patients must be very careful and need more attention since there were broad spectrum of the symptoms and patient's comorbidity. Caution and close monitoring were needed if anti-insomnia drugs were used together with COVID-19 drugs because of its risk and interaction.[6]

Sleep related strategies of melatonin and sedating psychotropic medications have been suggested as potentially beneficial in infected COVID-19 patients. The use of melatonin in COVID-19 patients is recommended as an adjuvant therapy. Exogenous administration of melatonin up to 10 mg have modestly improved the sleep of ICU patients.[7] Besides its increasing sleep parameters, it also had anti-inflamatory and immunomodulatory effect. The essential role of circadian sleep rhythm in the deterioration of sleep quality during and post COVID-19 and the lack of melatonin on respiratory drive indicate that melatonin has potential effect for sleep disturbance related COVID-19. Melatonin may also increase the efficacy of COVID-19 vaccination. The high safety profile and its anti-SARS-CoV-2 effects make this drugs preferred for treating sleep disturbace in COVID-19 patient.[9]

Benzodiazepine can be used judiciously in anxious patients with COVID-19 to provide symptom relief. The lowest possible dose of alprazolam or lorazepam is recommended up to 4 times daily and should be continued at the lowest daily dose to avoid benzodiazepine withdrawal-induced delirium. Second option include gabapentin, anti-convulsant GABA analogue. With both of these medications, sedation is minimal and there is no major respiratory depression.[10]

CONCLUSION

Management of sleep during and after COVID-19 is challenged and need to be more analyzed to get and effective therapeutic intervention. This EBCR revealed high score of insomnia and sleep disturbances during the recovery period of COVID-19 infection, and these problems have implications in quality of life which must be managed during this critical era of COVID-19.

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