

SLEEP IN COVID 19 PERIOD

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Abstract

Sleep is and remains an important feature in difficult times as: wars, bankrupt, stress periods but also in pandemic times. COVID 19 is changing our life. Sleep is analysed by the authors looking at all the potential effects on human organism, population, authorities, health workers and patients with sleep disturbances. Finally there are also described some treatment options for people suffering from coronavirus infections.

Keywords: sleep, COVID 19

Rezumat

Somnul este și rămâne o caracteristică importantă în momente dificile precum: războaie, faliment, perioade de stres, dar și în perioadele de pandemie. COVID 19 este în curs de a ne schimba viața. Somnul este analizat de către autori în perspectiva potențialelor efecte asupra organismului uman, populației, autorităților, lucrătorilor din sănătate și pacienților cu tulburări de somn. În final, sunt descrise câteva soluții de tratament pentru persoanele care suferă de infecții cu coronavirus.

Cuvinte cheie: somn, COVID 19.

COVID19 with its pandemic evolution determine important changes in our current and future lifestyle. The novel coronavirus SARS-CoV-2 killed tens of thousands of people around the world since it first emerged in China (Wuhan-Hubei province) in December 2019. One important feature disrupted in this period by the virus is sleep.

COVID19 and sleep: populations and nations

This traumatic event came with many changes in the emotional state, somatic responses, sleep quality, and behavior. The first impact was reported in Chinese population from Hubei Province. A comparison of Hubei Province with



INTERNAL MEDICINE

General Reviews

non-endemic provinces in China during two weeks in February 2020 based on the Stress Response Questionnaire (SRQ) and the Pittsburgh Sleep Quality Index (PSQI)⁽¹⁾ showed that the emotional state and behavior of participants in Hubei improved, but the quality of sleep didn't. Health workers and businesspeople became increasingly anxious, but other professionals became less anxious. A similar result was found by another Chinese study⁽²⁾ on 7,236 self-selected participants looking and measuring anxiety symptoms, depressive symptoms, and sleep quality. They used also PSQI including subjective sleep quality, sleep duration, sleep latency, habitual sleep efficiency, use of sleep medications, sleep disturbance, and daytime dysfunction, and the score for each component ranging from 0 to 3 points.

The prevalence was:

- anxiety symptoms 35.1%
- depressive symptoms 20.1%
- poor sleep quality 18.2%

meaning that one in five Chinese people in this study had depressive symptoms and sleep problems.

People aged <35 years reported a higher prevalence of anxiety and depressive symptoms than people aged ≥ 35 years⁽²⁾. Also for the Indian population the anxiety levels had been high⁽³⁾. The Indian authors found sleep difficulties, paranoia about acquiring COVID-19 infection and distress related social media in

12.5 %, 37.8 %, and 36.4 % of the studied sample. In this study more than 28% of people had sleep difficulties.

Another source of disturbances is self-isolation at home for 14 days⁽⁴⁾. Again, the Chinese experience seems important. In an inquiry made on 170 individuals based on a Personal Social Capital Scale 16 (PSCI-16) questionnaire, a Self-Rating Anxiety Scale (SAS) questionnaire, a Stanford Acute Stress Reaction (SASR) questionnaire, and sleep quality assessed by the Pittsburgh Sleep Quality Index (PSQI) questionnaire, the authors found interesting correlations.

Low levels of social capital were associated with increased levels of anxiety and stress. In the same time increased levels of social capital were positively associated with increased quality of sleep. Anxiety was recognized to be associated with stress and reduced sleep quality, and the combination of anxiety and stress reduced the positive effects of social capital on sleep quality⁽⁴⁾.

There are also two characteristics of relation of stress with sleep. On one hand stress is associated with sleep quality⁽⁵⁾ and the another hand if they often feel physical tension and mental pressure, they are more sensitive to the sleeping environment, or they focus on sleep too much; unfortunately it is with a reduced quality of sleep⁽⁶⁾.

Staying at home for long time, loneliness and this experience of social and physical

distances is with an important impact also on sleep⁽⁷⁾. This is more evident in young females, having negative self-perceptions about aging, more time exposed to news about COVID-19, with lower contact with relatives, higher self-perception as a burden, fewer positive emotions and lower resources for entertaining oneself. Another stress related developed sleep problems is chronic insomnia⁽⁸⁾.

In Chinese health care workers insomnia was present at 34% of the participants to this study⁽⁹⁾; there are differences between the level of exposure. Insomnia Severity Index scores among frontline vs second-line workers was 6.0 [2.0-11.0] vs 4.0 [1.0-8.0]; $P < .001$. Also if they are engaged in direct diagnosis, treatment, and care of patients with COVID-19 they have higher risk of symptoms (for insomnia-OR, 2.97; 95%CI, 1.92-4.60; $P < .001$).

For children the negative influence on sleep of long isolation in this period of the COVID 19 epidemic is evident.

The Chinese researchers⁽¹⁰⁾ used a questionnaire, which was completed by the parents, incorporating the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria commonly used for a cross-cultural assessment of anxiety disorders, including depression. They found poor sleep including nightmares, poor appetite, physical discomfort, agitation and lack of attention, clinginess and separation problems. For parents, some lessons were important; they should pay attention to sleep difficulties and nightmares, to prevent increased daytime sleep and suggest sleep hygiene and relaxation methods, to reduce stress, and divert attention to more productive and positive directions.

Also, for some psychiatric diseases sleep disturbance in the COVID19 period are evident. Patients with depression, bipolar

disorder, etc. should particularly pay attention to maintaining routines during this period in order to maintain a stable mood⁽¹¹⁾. Self-management strategies are needed to strengthen the biological clock every day and also tips for day and night combined with some specific advice for this context, to limit stress exposure and to improve its management⁽¹²⁾.

Sleep remains a predictive factor for higher risk of COVID infections in the homeless. Experts say that homeless sleeping in shelters or on the streets already have lower life expectancy, suffer from addiction, and have underlying health conditions that put them at greater risk should they develop the virus⁽¹³⁾.

Patients with COVID 19 and their relatives - post-recovery

Stigmatization of patients and healthcare is one problem⁽¹⁴⁾. Another possible sequela of COVID-19 is Post-Traumatic Stress Disorder (PTSD) following traumatic occurrences outside the range of common human experience; it's characterized by a typical symptom pattern of intrusions, persistence of trauma, relevant stimuli avoidance, emotional numbing and *physiological hyper-arousal*. After Severe Acute Respiratory Syndrome (SARS) induced by H1N1, 40% of SARS survivors had experienced PTSS at one time during the outbreak⁽¹⁵⁾. The prevalence of PTSS in China hardest-hit areas a month after the COVID-19 outbreak was 7 % (higher reported for women)⁽¹⁶⁾. Also it was a lower PTSS for participants with better sleep quality or less frequency of early awakenings.

Healthcare workers have the highest rate of poor sleep (23.6%) compared to other occupations⁽²⁾. The psychological impact of COVID-19 was important.

The prevalence of anxiety symptoms, depressive symptoms, and poor sleep quality



INTERNAL MEDICINE

General Reviews

was significantly higher in healthcare workers who spent a high amount of time (≥ 3 hours/day) in the COVID-19 ward than in those who spent less time (< 1 hours/day and 1–2 hours/day) on work related to the outbreak ($P < 0.05$)⁽²⁾. When the pressure on the medical staff is growing the wellbeing of doctors is important⁽¹⁷⁾. They must think and be prepared “for a marathon, not for a sprint “. One temptation is to consider sleep a luxury. For the immune system sleep is and remains crucial.

Diagnosis of sleep disturbances

Sleep studies can be realized according to the local epidemic situation⁽¹⁸⁾. In high epidemic area sleep studies are suspended, with one exception: emergency cases. In regions with sporadic cases it could be advisable to continue doing home studies or auto adjusting PAP (positive airway pressure). Ruling out suspicion of COVID is mandatory for a polygraph or polysomnography registration in the sleep lab. Protection of personal disinfection, cleaning of equipment and using remote control multimodal ventilator are three important conditions.

Treatment considerations

Patients with sleep disturbances

Oral and maxillofacial surgery in a period like this is correlated with a high risk of SARS-CoV-2

transmission. There are some recommendations in this period, such as: schedule interventions depending on their priority; no elective surgery should be performed. When this intervention must be performed, adequate personal protective equipment is crucial and negative pressure in the operating room must be achieved. Also, aerosol formation must be reduced to a minimum⁽¹⁹⁾.

Melatonin is one option for the treatment of sleep problems induced by COVID19; even if it's not viricidal, it has indirect anti-viral actions due⁽²²⁾ to its anti-inflammation, anti-oxidation and immune enhancing features. With its good safety profile⁽²³⁾ melatonin acts reducing vessel permeability, anxiety and improving sleeping.

Patients with lung failure

Concerning CPAP and noninvasive ventilation (NIV) (BiPAP) in hospital, the experts recommend the following for all patients with lung failure (not only sleep apnea syndrome patients)⁽²⁰⁾:

- an attempt of 1 hour, if no substantial improvement is observed, switch to invasive ventilation
- the safest interface (to avoid the risk of nebulization of infected material) must be a helmet or a mask with double circuit and expiratory valve and if there is a need of mask with a single circuit, a combination of integrated exhalation port with antimicrobial and antiviral filter

- another well-known finding is concerning the PEEP. The exhaled breath particles are at a smaller concentration at a low PEEP (under 5cm H₂O)⁽²¹⁾.

PTSD

A treatment for PTSD symptoms and for milder forms of stress is also recommended; this is possible using physical exercise, cognitive interventions, relaxation techniques or a combination of those (Rosenbaum et al., 2015)⁽²⁴⁾.

Prevention

This coronavirus is very contagious because most people have a lack of immunity against it. Enhancing immunity is very important as a prevention method. Healthy lifestyle, balanced nutrition, regular exercise together with a good quality of sleep can boost the immune system⁽²⁵⁾.

Conclusions

Health education should be combined with psychological counseling for vulnerable individuals⁽¹⁾.

More measures are necessary to improve the social capital and mental health status of isolated people during an epidemic of infectious disease and for health workers to provide online health education to reduce uncertainty and panic caused by a lack of knowledge of new infections and diseases⁽⁴⁾. For authorities it is important “to protect the protectors” and also it is vital that governments see workers not simply as pawns to be deployed, but as human individuals⁽²⁶⁾.

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