The International Journal of Indian Psychology
ISSN 2348-5396 (Online) | ISSN: 2349-3429 (Print)
Volume 9, Issue 2, April- June, 2021
DIP: 18.01.071.20210902, DOI: 10.25215.0902.071
http://www.ijip.in

Research Paper

Impact of COVID-19 Pandemic on Sleep Cycle Pattern

Pravesh Charan Isai[1]*

ABSTRACT

The imprisonment throughout the recent COVID-19 pandemic has resulted in a very modified fashion for several people. These changes were largely restrictive in terms of social interaction, creativity, opportunities, and positive relationships. The restriction was additionally extended to physical activity, mobility, and availability of food as well. In effect, these have non-continuous chronobiological rhythms as these are influenced by not solely the sunshine however additionally alternative zeitgebers like a meal, social interaction, and physical activity. Thus, a structured routine will facilitate in rising sleep period and quality through multiple intrinsic and external factors. To mitigate the unfold of the pandemic coronavirus infection (COVID 19), governments across the world have adopted lockdowns that have confined several people to their homes. This disrupts traditional life routines, parts of that are the necessary unit of time cues. The pandemic is additionally related to new stressors, altered roles, and uncertainties regarding health and economic security, which also are doubtless to affect sleep. This review article principally focuses on the sleep expertise, routines, physical activity, and symptoms of tension and depression, to check the alterations related to the imprisonment. the current COVID-19 epidemic could be a rare scenario wherever a large population is confined to the house and doesn't seem to be compelled to follow a structured routine.

Keywords: *COVID-19, Lockdown, Sleep Experience, Coronavirus Infection, Chronobiological Rhythms.*

As the coronavirus spreads across the world, many subtle and not-so-subtle effects of the pandemic are showing up in humans. One such change is often seen in our sleep cycles. Our sleep patterns seem to have been affected instantly as our work schedules have had to adjust to the universal "work from home" policy. Without the exhaustion that comes from visiting an office, people are restless and listless at their homes. per experts, if you still kip and rouse late regularly, your body clock will get disturbed, leaving you lethargic throughout the day. "It doesn't matter if you sleep for 10 hours or six hours; if you're sleeping late, your body clock will eventually get disturbed which is why one has to sleep on time. Being under a lockdown can cause stress, with no fixed schedule to stick to, and cooped up in your house with the looming uncertainty of the longer term. Then there's binge-watching, and binge eating, and gazing at a screen for hours without stopping

[1]Student, M.Sc. Forensic Psychology, School of Behavioral Sciences (National Forensic Sciences University) Mainpuri, Uttar Pradesh, India
*Corresponding Author

Received: March 25, 2021; Revision Received: May 01, 2021; Accepted: May 19, 2021

may disturb your sleep cycle, slowly turning you into a nocturnal being. The financial uncertainty of losing one's job may remove the calm of your night.

Sleep is an extremely preserved behaviour that happens in animals starting from fruit flies to humans. In the 20th Century, there was a revolution in understanding the physiology of sleep, the importance of the role of sleep, and its quality influencing numerous different medical conditions. Sleep disruptions are passing downside or signs of an additional serious underlying medical condition. A periodic state of rest amid variable degrees of state of mind and relative inactivity is referred to as sleep, in other words, it would be a state within which a personal lack acutely awareness of atmosphere surroundings, however, is simply aroused. Sleep is important to human health and serves critically in neurobehavioral, psychological features and protective performance, memory consolidation, nociception further appetence regulation, immune and secretion functions. Therefore, as result, a considerable fraction of human life is spent during this mysterious state. Throughout the Lockdown happened, most of the folks were confined to their homes. This confinement is disagreeable in itself as people are sharing the restricted house for a protracted amount with few shut contacts. Additionally, the expertise a scarcity of novel stimuli, disruptions of routine activity, accumulated parenting responsibilities, particularly for girls, and altered productivity expectations for those engaged in skilled duties from home. Additionally, to the ever-gift concern of getting COVID-19 because it spreads across the country, uncertainty regarding jobs, economic scenario, and also the health and safety of favourite ones. The pandemic has additionally been represented as an info epidemic, as the majority have constant access to news regarding negative consequences, abundant of it through electronic media and ensuant increase in "screen time." In short, lockdown resulted in home confinement throughout prevailing anxiety and reduction of positive stimuli. Stress, in general, however not forever, has an inverse relationship with sleep. The result of stress on sleep quality, timing, and period is influenced by sleep reactivity. Persons with high reactivity develop sleep disorder throughout disagreeable things whereas those while don't. Thus, home confinement ensuing from lockdown will increase the probabilities of disturbed sleep and sleep disorder through stress.

Sleep-Wake Cycle

The sleep-wake cycle is a neurobiological phenomenon that shows intervals of activity alternating with restfulness that appears with a periodicity approximating the 24-hour day-night cycle. The sleep-wake cycle is governed by several neuroanatomical and neurochemical processes, including monoaminergic, cholinergic, and adenosine systems, among others. Additionally, neuroanatomical centres are linked to sleep promotion, like the hypothalamus, projection to the neural structure, subcortical relays, and brainstem. Also, the sleep-wake cycle has been associated with aberrant features called sleep disorders. Initiation and maintenance of the sleep-wake cycle are explained by two process models, whereby circadian factors and homeostatic factors interact constantly to induce and maintain sleep. This model posits that thanks to circadian factors, humans have higher chances to go to sleep at night time as we are designed to behave as a diurnal species naturally. The homeostatic factor, which is proportional to the time awake, is represented by sleep pressure. In other words, the longer the time awake, the higher the sleep pressure, and the better the possibilities of falling asleep. Being a diurnal species, humans stay awake during the day and accumulate sleep pressure, which reaches a maximum at night time, where it interacts with circadian factors to induce sleep. Home confinement can disrupt circadian rhythms yet as a homeostatic process (reduced sleep pressure) thanks to opportunities for extending sleep within the morning and taking naps during the day. The COVID-19 pandemic & few of the

sooner have assessed that the effect of confinement on sleep is drained astronauts preparing for Mars mission, incarcerated women, and seafarers. However, the results of those studies can't be extrapolated to home confinement during COVID 19 lockdown because the nature of confinement is different.

Consequences of Insufficient Sleep

Insufficient sleep may be a significant issue with health consequences. During a survey prevalence of insomnia in the Indian population, the resultant was found to be 9% while, 30% of the population reported occasional insomnia. Insomnia is characterized by difficulty falling asleep, difficulty staying asleep, awakening too early or complaints of wakening feeling unrefreshed. COVID-19 pandemic has gripped and halted the planet. The exponential rise in numbers of infected cases has lingered the lockdown, so has increased joblessness, mental stress, and then on and then forth. According to a survey of 1,500 respondents in India on the effects of COVID-19 and the lockdown that interrupted sleep patterns, 67 percent of respondents who worked from home had changed their sleep schedule, 50 percent believed their sleep routine had been disrupted, and 81 percent believed their sleep schedule would return after the lockdown. There are clear reciprocal dependencies between sleep duration, quality and therefore the immune responses against viral, bacterial, and parasitic pathogens, the latter altering successively sleep patterns, the improved sleep quality, and duration within the population may mitigate the propagation and severity of disease induced by SASRS-Cov-2 infection.

Sleep Cycle & Its Relation with Neuroimmune Interactions

Bidirectional contact exists between the CNS's sleep regulatory networks and the system's cells and tissues. Sleep is vital for the correct functioning of the system. To grasp the link between the CNS and also the immune system, certain neuroimmune interactions supported specific anatomical and physiological conditions: -

- ✓ Hormones, neurotransmitters and modulators, cytokines, and chemokines are all intercellular signals shared between neurons and immune cells.
- ✓ Immune cells travel to all parts of the body and come into close contact with nerve endings and the brain, and some of these mutual signals will cross the blood-brain barrier in both directions.
- ✓ Sympathetic and partially sensory nerves innervate lymphatic tissues (both primary (thymus and bone marrow) and secondary (spleen, lymph nodes).
- ✓ Immune function is regulated directly by the endocrine and autonomous nervous systems by hormones and neural intervention, as well as indirectly by effects on blood flow, blood pressure, and lymph flow.
- ✓ Hormones, neurotransmitters, cytokines, and chemokines have blurred and multi-functional conceptual boundaries (e.g., norepinephrine is a hormone released from the adrenal glands and a neurotransmitter in the central nervous system).

The Pandemic Factor that Affecting our Sleep Cycle & Physical Health

Not only is the pandemic a giant stressor for many people but it has also created a new level of uncertainty for many individuals and this has caused a lot of upheaval to our daily routines. Being stuck in our own houses can also cause serious complications in our sleep pattern. As spending more time in our own home can disrupt the light-based cues for wakefulness. While sunlight & light exposure help keeps our circadian rhythm on schedule. And with many of us experiencing new work from situations, some of the individuals might have different hours of sleep. But that’s not necessarily a positive thing overall because it can a little bit more difficult falling asleep the next night & it may also lead to the vicious

cycle that includes insomnia. In addition to that addition brought on by the COVID-19 crisis, social distancing and quarantine have led to more isolation and depression which can ultimately cause significant sleep issues. On the other side, taking our physical health into the consideration, all of this stress & lack of sleep has created a big negative impact on our overall health condition. When someone is chronically sleep-deprived, they tend to have a lowered immunity level that makes our susceptibility to viruses higher. A lack of sleep also has some bit of a negative impact on our Emotional Regulation as well as mood. The fact is, when we are getting a healthy amount of sleep, we tend to have a better cognitive function so that things like memory & decisions making can be impacted by poor sleep. Chronic sleep deprivation may have negative consequences for the rest of the body, including worsening cardiovascular and metabolic conditions, as well as an increased risk of weight gain, diabetes, and high blood pressure.

Importance of Adequate Sleep for Healthy Brain Function: Sleep & Brain Health

Sleep is crucial for the correct functioning of the human body. It helps ensure optimum energy levels the following day required to perform daily activities effectively. it's also essential for your health in several ways. From digestion to your mood, you would like enough sleep for several reasons. A sufficient amount of sleep is also needed for your brain to function properly. For a healthy brain, you would like to consume a healthy diet, exercise regularly, reduce stress, ensure proper sleep, and far more. If you're hooked to your mobile phones before visiting bed and sleeping but you must, you need to give some thought to the adverse effect on your brain. Timely sleep (at least 6-8 hours) is one every of the foremost important factors to keep the body and mind healthy. During sleep, various changes are occurring within the brain wave activities including breathing, regulating pulse, and maintaining temperature. While many consider it to be a natural organic process that goes on, but in actual it's important to know the role of sound sleep in maintaining the varied processes within the functional state which is controlled by the brain. Moreover, the brain functions of a sleep-deprived person won't work as efficiently during their working hours. Forgetfulness, lack of concentration, mood swings are a number of the foremost common features when the brain doesn't get enough sleep. Sleep disturbances have been related to an increase in discord in your mental, social, emotional, and physical health. other than mood swings, anxiety, and other mental complications, improper sleep has also been linked with physical traits which will include disorders like obesity, loss of appetite, hormonal changes, and increased risk of heart problems, hypertension, and diabetes among various others. a correct sleep cycle of 6-8 hours is thus necessary to stay disorders trapped and maintain a healthy lifestyle. Sleep deprivation results in the secretion of the strain hormone cortisol also cause the collagen to interrupt down causing skin problems. This hormonal secretion which could be a function of the brain is additionally affected resulting inconsequential outcomes. More often, the body's system is severely affected when the brain becomes too tired thanks to improper sleep, making the person highly susceptible to catching a cold, flu, or any infectious ailments. This makes it harder for the brain to recover and heal back to normal as well.

Nightmares

A nightmare can even be nothing over a nasty dream, with isolated and ugly imagery and no emotional reaction from the dreamer. A nightmare, on the other hand, can cause feelings of fear, panic, and anxiety, arousing the person and causing a distressing emotional response, such as insomnia, other sleep cycle difficulties, or possibly daytime discomfort. Fever, ill health, or poor diet can also cause nightmares. Normally, people dream over two hours a night, and a nightmare usually happens within the later hours of rapid eye movement, or

rapid eye movement sleep. The dreamer often awakens from a nightmare with a good recollection of the imagery and content. Some researchers call negative dreams "threat rehearsals," where we rehearse the possible threats we encounter in real life; other researchers say that people are working through upsetting events of the day. Most garden variety nightmares are stress-related. However, if nightmares become so regular that they cause dysfunction, the individual is diagnosed with Nightmare Disorder (formerly Dream Anxiety Disorder). Nightmares are more common in girls than in boys, with incidents beginning before the age of ten. Children and teenagers are more likely to be affected, while adults are less likely to be affected. About half the adult population experiences nightmares every so often. From light sleep to paradoxical sleep, the body cycles through various stages of sleep. Sleep happens through signals from the pons, which are found at the underside of the brain. This is where signals for rapid eye movement originate and where signals to the funiculus shut off. this could be why the body doesn't move during deep sleep; but if the pons doesn't clean up these signals, the individual may act out the dream physically called rapid eye movement behaviour disorder. If the individual is running within the nightmare, as an example, he may start running literally.

Short Term & Long-Term Sleep Patterns

A Short-Term Sleep pattern is that exact sort of sleep cycle pattern which is characterized by sleeping for fewer than six hours each night. Most adults need seven or more hours of sleep each night to feel rested within the morning. But those that have short-term sleep cycle patterns can function normally throughout the day despite less sleep. They don't take naps or sleep quite normally to live through lack of sleep. These individuals are different from those short sleepers who prefer to limit their sleep. On the opposite side, long-run sleep patterns might put you in danger of great medical conditions, including obesity, a heart condition, and diabetes – and it shortens your anticipation. It's now clear that a solid night's sleep is important for a protracted and healthy life. in an exceedingly study it was found that Sleepers who get but six hours or have unstable patterns are significantly related to increased risk of cardiovascular issues. Our habitual sleep period changes as we age, particularly after 65, emphasizing a potentially shorter duration that has been linked to an increased risk of obesity and hypertension– no matter apnea (stop breathing) interruptions. "A laboratory study indicated that a repeating pattern of insufficient sleep may lead to long-term metabolic changes that can't be effectively mitigated by weekend recovery sleep," in keeping with the research, Association of Longitudinal Patterns of Habitual Sleep Duration with Risk of Cardiovascular Events and All-Cause Mortality, was published in April 2020 in JAMA Network Open.

CONCLUSION

Sleep disturbances have affected a considerable proportion of the overall population during the COVID-19 pandemic lockdown. These are significantly related to a self-assessed impact on psychological state, but may additionally be associated with suspected COVID-19 status, changes in habits, and self-isolation. The country has been under a lockdown for nearly three months because of the outbreak of the coronavirus pandemic. Even after the removal of the lockdown, people are still doing their work from home which ultimately results in the disturbance of their sleep cycle. Lack of sleep itself may have further knock-on effects on people's capacity to be resilient within the pandemic phase & there are signs that it should be having a disproportionate impact on particulars groups like women, younger people, and people facing financial hardship. All of those facts and causes have resulted in a high level of hypersomnia which ends up in the association with the depressive symptoms which are known for some time and again there's a complex two-way relationship between the two,

which implies they'll create a self-perpetuating cycle. Changes within the sleep pattern & sleep quality during the COVID-19 lockdown were related to the poor sleep quality, shift in sleep cycle to delayed phase sleep deprivation supported night-time sleep, and depressive symptoms during a sizable number of populations. Hence, sleep is that the vital component of each person's overall health & well-being because it enables the body to repair and be ft and prepared for one more day. Getting adequate rest might also help prevent excess weight gain, a heart condition, and increased illness duration further.

REFERENCES

Almeida-Leite, C.M., Stuginski-Barbosa, J. and Conti, P.C.R., 2020. How psychosocial and economic impacts of COVID-19 pandemic can interfere on bruxism and temporomandibular disorders? *Journal of Applied Oral Science*, *28*.

Altena, E., Baglioni, C., Espie, C.A., Ellis, J., Gavriloff, D., Holzinger, B., Schlarb, A., Frase, L., Jernelöv, S. and Riemann, D., 2020. Dealing with sleep problems during home confinement due to the COVID-19 outbreak: Practical recommendations from a task force of the European CBT-I Academy. *Journal of Sleep Research*, *29*(4), p.e13052.

Cardinali, D.P., Brown, G.M., Reiter, R.J. and Pandi-Perumal, S.R., 2020. Elderly as a high-risk group during COVID-19 pandemic: effect of circadian misalignment, sleep dysregulation and melatonin administration. *Sleep and Vigilance*, pp.1-7.

Driggin, E., Madhavan, M.V., Bikdeli, B., Chuich, T., Laracy, J., Biondi-Zoccai, G., Brown, T.S., Der Nigoghossian, C., Zidar, D.A., Haythe, J. and Brodie, D., 2020. Cardiovascular considerations for patients, health care workers, and health systems during the COVID-19 pandemic. *Journal of the American College of Cardiology*, *75*(18), pp.2352-2371.

Franceschini, C., Musetti, A., Zenesini, C., Palagini, L., Scarpelli, S., Quattropani, M.C., Lenzo, V., Freda, M.F., Lemmo, D., Vegni, E. and Borghi, L., 2020. Poor sleep quality and its consequences on mental health during the COVID-19 lockdown in Italy. *Frontiers in psychology*, *11*, p.3072.

Galea, S., Merchant, R.M. and Lurie, N., 2020. The mental health consequences of COVID-19 and physical distancing: the need for prevention and early intervention. *JAMA internal medicine*, *180*(6), pp.817-818.

Holmes, E.A., O'Connor, R.C., Perry, V.H., Tracey, I., Wessely, S., Arseneault, L., Ballard, C., Christensen, H., Silver, R.C., Everall, I. and Ford, T., 2020. Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *The Lancet Psychiatry*.

Kilani, H.A., Bataineh, M.A.F., Al-Nawayseh, A., Atiyat, K., Obeid, O., Abu-Hilal, M.M., Mansi, T., Al-Kilani, M., Al-Kitani, M., El-Saleh, M. and Jaber, R.M., 2020. Healthy lifestyle behaviors are major predictors of mental wellbeing during COVID-19 pandemic confinement: A study on adult Arabs in higher educational institutions. *Plos one*, *15*(12), p.e0243524.

King, A.J., Burke, L.M., Halson, S.L. and Hawley, J.A., 2020. The challenge of maintaining metabolic health during a global pandemic. *Sports Medicine*, *50*, pp.1233-1241.

Kumar Swain, R., Minz, S., Parganiha, A., Diwan, A. and Pati, A.K., 2020. Circadian rhythm in the pattern of online usage of Facebook messenger during the COVID-19-triggered lockdown: a sequel to the pre-pandemic study. *Biological Rhythm Research*, pp.1-11.

Leone, M.J., Sigman, M. and Golombek, D., 2020. Effects of social isolation on human sleep and chronotype during the COVID-19 pandemic. *CURRENT-BIOLOGY-D-20-01055*.

Leone, M.J., Sigman, M. and Golombek, D.A., 2020. Effects of lockdown on human sleep and chronotype during the COVID-19 pandemic. *Current Biology*, *30*(16), pp. R930-R931.

Morin, C.M. and Carrier, J., 2020. The acute effects of the COVID-19 pandemic on insomnia and psychological symptoms. *Sleep medicine*.

Ono, B.H.V.S. and Souza, J.C., 2020. Sleep and immunity in times of COVID-19. *Revista da Associação Médica Brasileira*, *66*, pp.143-147.

Pérez-Carbonell, L., Meurling, I.J., Wassermann, D., Gnoni, V., Leschziner, G., Weighall, A., Ellis, J., Durrant, S., Hare, A. and Steier, J., 2020. Impact of the novel coronavirus (COVID-19) pandemic on sleep. *Journal of thoracic disease*, *12*(Suppl 2), p.S163.

Roy, D., Ghosh, R., Dubey, S., Dubey, M.J., Benito-León, J. and Ray, B.K., 2020. Neurological and neuropsychiatric impacts of COVID-19 pandemic. *Canadian Journal of Neurological Sciences*, pp.1-16.

Xiong, J., Lipsitz, O., Nasri, F., Lui, L.M., Gill, H., Phan, L., Chen-Li, D., Iacobucci, M., Ho, R., Majeed, A. and McIntyre, R.S., 2020. Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of affective disorders*.

Acknowledgement

The author(s) appreciates all those who participated in the study and helped to facilitate the research process.

Conflict of Interest

The author(s) declared no conflict of interest.

How to cite this article: Isai P. C. (2021). Impact of COVID -19 Pandemic on Sleep Cycle Pattern. *International Journal of Indian Psychology*, *9*(2), 671-677. DIP:18.01.071.20210902, DOI:10.25215.0902.071