



# Sleep Health: A Prominent Public Health Concern in the Time of COVID-19 Pandemic

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## Abstract

The psychological impact of COVID-19 pandemic is presented. Results from studies conducted from diverse geographical regions present the escalation of symptomatology in patient with mental health diagnoses and the new onset of disturbance with first responders. The importance of including the diagnosis and treatment of sleep disturbance is identified. A public health concern for substantive, significant interventions to the COVID-19 pandemic will increase in viability with the inclusion of sleep health considerations.

**Keywords:** Sleep health; Sleep quality; Sleep hygiene; COVID-19

## Sleep Health

A prominent public health concern in the time of COVID-19 pandemic.

Since announcements in March, the human population has been managing themselves and loved ones in ways to keep safe from COVID-19. Brooks examined the impact of the quarantine with a database analysis. The results from this study represent the beginning of studies in this area. The results of quarantine, while an essential public health measure to provide for herd immunity, imposes psychological reactions. Brooks et al. [1] provided the context of the current worldwide emergency with historical use of quarantine with citywide quarantine imposed in areas of China and Canada during 2003 outbreak of Severe Acute Respiratory Syndrome (SARS) and entire villages in west African countries during 2014 Ebola outbreak. While the benefits of quarantine to create herd immunity are essential the psychological costs produced must also be addressed. Brooks et al. [1] related that key message of rapid, clear information about the quarantine and the altruistic choice of self-isolating (as opposed to see it as restriction of liberty). In studies of psychological impact following the SARS and Ebola quarantines revealed cases of Acute Stress Disorder, Post-Traumatic Stress Disorder, and high prevalence of symptoms of psychological distress and disorders (e.g. depression, low mood, irritability, insomnia, anger and emotional exhaustion).

The participants in the studies were first responders-medical staff, students and residents. Brooks et al. [1] found that the review of studies also identified post-quarantine responses of anxiety, depression and general concentration difficulties as a direct result of their first responder work. Table 1 lists the primary stressors identified during quarantine.

Krompinger [2] commented on the potential for quarantine to exacerbate symptomatology in patients already challenged with psychiatric symptoms. They pointed out the worsening of OCD symptoms in patients and the challenge to determine reasonable, safe response prevention tasks. Shields [3] conducted a meta-analysis of 56 unique randomized clinical trial and some 4000 participants and reported improvement of an 18% (95% CI, 7.26-28.8%) decrease in harmful immune system function over time. Pennycook [4] provided evidence for the problems of inaccuracies in social media that impacts individuals functioning and understanding of COVID-19. The researchers report that reductions in basic scientific knowledge contributed to participants' understanding of COVID 19. The researchers pointed out the need to develop interventions to fight misinformation. The suggestions of social media companies asking for ratings of perceived accuracy of the reporting was one suggestion. In Figure 1, the psychological impacts of COVID-19 pandemic are displayed.

Shuster reported the struggle of treating COVID-19 patients in his article spanning one month of care to COVID-19 patients in a New York hospital April to May 2020.

Van Bavel et al. commented on the volume of people, worldwide, who are at great risk for the

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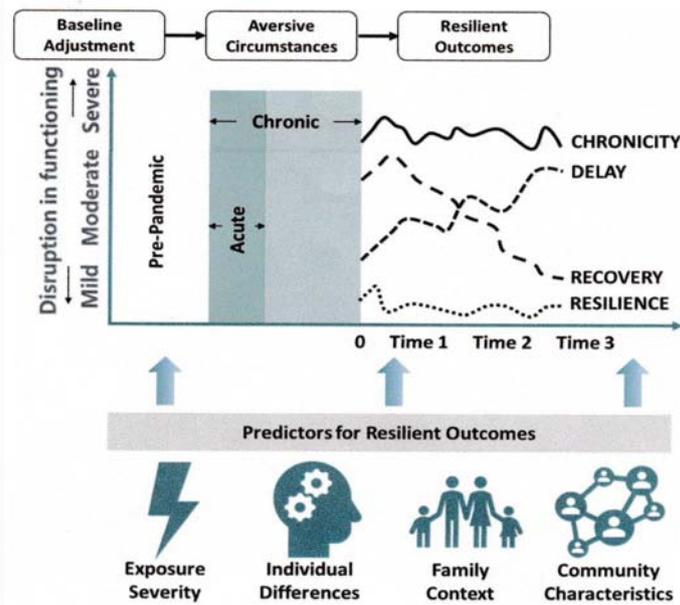
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**Figure 1:** The temporal elements of psychological resilience. From “Loss, Trauma, and Human Resilience: Have we underestimated the human capacity to thrive after extremely aversive events?” By Bonanno GA, 2004, American Psychologist, 59, p. 21. Copyright 2004 by the American Psychological Association. Adapted with permission. See the online article for the color version of this figure.

COVID-19 virus and due to their social/economic depravity and the lack the capacity to keep themselves safe. The authors recommend safe means of social connection and providing for healthy mindsets with public health information distributed at general health level. It is communication about health and well-being that will mitigate the ignorance of the COVID-19 risks, isolation effects from quarantine; the need to align individual and collective interests. Telehealth can provide a way to treat isolation effects, and threat perception of COVID-19 [5-15].

Table 2 represents the summarization of key findings of recent publications presenting results of interventions during and following COVID-19 infection.

**Sleep Health.** Recently published research focused on tracking sleep identified substantial changes in sleep duration and quality [16]. The specific finding indicated increases in sleep duration and reduced ratings of sleep quality. In the United States and four European countries polled, negative sleep quality [16] the isolation from quarantine, unemployment and subsequent financial stress and psychological distress from quarantine (e.g. depression, anxiety). Further, increased number of dreams and more vivid dream content recall about aspects of the pandemic. This unfortunate set of sleep circumstances parallels a laboratory technique/intervention to address poor sleep secondary to long standing fragmented, restrictive sleep. Roehrs [17] interpreted the increased sleep duration following restricted sleep eventually moves toward the individual’s typical sleep time. And of sleep extension continues following the sleep restriction times subs? Sleep continuity and fragmented sleep results. The increased of fragmented sleep provides more opportunities for dream recall. Additionally, the frequent awakenings and subsequent more common dream recall episodes prohibits consolidation of dream content and the more “vivid” bizarre like qualities that have been reported by pandemic sleepers. However, many researchers feel this need to be studied more closely.

Beck, Leger, Fressard & Peretle-Water [18] reported the shelter-

**Table 1:** Primary Stressors Identified from Quarantine.

|        |                         |        |
|--------|-------------------------|--------|
| During | Duration of quarantine  |        |
|        | Fear of infection       |        |
|        | Frustration and boredom |        |
|        | Inadequate supplies     |        |
| Post   | Finances                | Stigma |

in-place conditions increases the proximity of the sleeper to other residents’ sleep-wake schedules with the result being distress time. Kutana & Lau [19] identified heightened anxiety and limited social support as triggers to the poor sleep quality measured from survey responses. Kaslow et al. [20] reported the necessity for immediate access to intervention services such as support groups and direct health care to health care professionals. The researchers indicated that the comprehensive nature of the health care to include sleep health is essential. Beck et al. [19] sampling of French residents identified severe sleep disturbances. The surveys also revealed increased use of sleeping medications. In China, Yin, Sun, Lia, Ni, Jia, Shang, Zhou and Lieu [9] reported findings from Pittsburgh Sleep Quality Index Scores in the severe range as co-occurring with increases in exposure to COVID-19 rates (Hazard ratio of 22.136, 95% CI = 1.388-3.286). Individualized treatment of sleep disturbances was thought to contribute to mental recovery from COVID-19 [9]. Ballesio, Lombardo, Lucidia & Violani [21] studied health care providers/first responders in Italy’s hospital system. Poor sleep has been associated with cognitive impairment, somatic disorders, altered immune system and medical errors [21].

The World Health Organization announced the need to provide mental health and counseling for health professionals involved in COVID-19. We provide a start to this important initiative with the following recommendations:

1. Continued provision of Sleep Health information disseminated by Health Care professionals in the form of brochures, handouts and reference to electronic resources. These materials can be found from

**Table 2:** Representative Studies Examining Public Health Concerns of COVID-19.

| Study                                | Focus  | Participants                                      | Results   |
|--------------------------------------|--|---|---|
| Alonzi et al. [5]                    | Psychological impact of COVID-19   | Young adults 18-35<br>Sampling was?               | Resources needed for those identified with emotional distress   |
| Jobes et al. [6]                     | Distributions of mental health services  |   | Worldwide use encouraged for science-focused and evidence-based intervention Collaborative assessment and management of suicidality in telepsychology modality    |
| Saltzman et al. [7]                  | Review of previous tragedies in terms of protective role social support  | Review article                                    | COVID-19 unrepresented compared to previous crises; larger resources needed to address isolation and intervention. Technology may buffer loneliness and isolation |
| Estes & Thompson, 2020               | Accuracy of data reported and manner in which indicated ad?? their perceived?? Level                           | Review  | Continuous stress and uncertainty of COVID-19 has negative ?? mental and physical health.   |
| Henry et al. [8]                     | Examining opioid use disorder as COVID-19  | Review  | New policies in public health needed to guide technology and interventions for addiction and mental health.   |
| Holman & Grisham, 2020               | Time perception in content of Stress ??? of COVID-19   | Review article                                    | Implications for physical health in terms of time and future ?? varies with impoverished (poverty) patients most at risk  |
| Gonzalez et al. 2020                 | Mental health initiatives in ??at academic medical center  | Medical center personnel                          | Use updated guidelines to promote rest, nourishment and safety to workers.  |
| Pertuccio & Runion, 2020             | Examine mental health issues resulting from COVID-19   | Review article                                    | Role of grief in mental health utilization of uncertainty distress model  |
| Kanzler & Ogbeidt, 2020              | Examining need for increased cases of PTSD resulting from CoVID-19   | Review  | Integration of primary care to treat post-traumatic stress disorder using evidence based protocol   |
| Rettie & Daniels, 2020               | Examine distress level in terms of degree of uncertainty and coping response                                   | Survey to participants in lockdown                | Maladjusted coping mediates tolerance level of uncertainty and psychological distress from COVID-19   |
| Yin et al. [9]                       | Mental health survey to determine risk factors of mental disorder  | 11,800 participants in outpatient sample – China  | Methodology of survey sampling detailed; epidemiological data of demographics and psychiatric   |
| Torres-Pagan & Terepka, 2020         | Health care services to youth and their families   | Review article                                    | Intervention using healthcare center in school setting  |
| Lennon [10]                          | Ongoing rise in rates of suicide and COVID-19  | Review article<br>401634                          | Perspective on the increase in the number of suicides   |
| Carballea & Rivera [11]              | Examine the need for digital mental health services  | Review<br>325039                                  | Use of online platforms to provide mental health resources  |
| Rosen et al. [12]                    | Telepsychology use in intervention   | Review article                                    | The levels of intervention to address PTSD symptoms using telepsychology  |
| Stewart et al. [13]                  | Childhood trauma addressed using telehealth  | Patients in schools and homes??<br>Telepsychology | Clinically meaningful symptom change post-treatment   |
| Galiatsatos et al. [14]              | Measurement of compliance with public health message for hand washing and social distancing                    | Phone survey                                      | Determined strategies to solve problems and difficulties responders brought up on phone call  |
| Banerjee & Bhattacharya, 2020        | Assess public resources and determine  | Review of resources in India                      | Called for reform in the Pandemic Act of 1897with economic policies sufficient to address scope of COVID-19   |
| Price [15]                           | Examine the impact of COVID-19 psychological distress in terms of increased substance use and financial stress | Survey study                                      | Incidence and prevalence of gambling since COVID-19   |
| Salerno, Williams & Gattamorta, 2020 |  | Review article                                    | Challenges to LGBTQ population in the context of COVID-19 identified  |

the American Association for Sleep Medicine, World Sleep Society, and National Sleep Foundation.

2. Integration of Sleep Health assessment questions into the medical assessment (e.g., How many hours in bed? How many hours asleep? How long before falling asleep? How many wake-ups after falling asleep and for how many minutes? Loud snoring? Restless legs?) [22].

3. Continue and accelerate the number of referrals to Cognitive Behavior Sleep Medicine Specialists for diagnosis, assessment and treatment of sleep disruptive behaviors.

4. Additional promotion of the ongoing Public Health work of education, provision of health information and promotion of pro-health behaviors to facilitate good quality sleep health.

We feel that all four recommendations are essential [23]. Sleep health impacts individuals of all ages, it impacts first responders, and thus, attention to managing one’s sleep is fundamental to good health recognized by Public Health professionals.

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