International Journal of Arts and Humanities; Vol. 9 No.1; June 2023
ISSN 2415-122X (Online), ISSN 2415-1491 (Print)
Published by Center for Global Research Development

Factors Affecting Sleep Quality of Adults and Older Adults during the COVID-19 Pandemic in the United States

Luz Hernandez, MSW*

Janaki Santhiveeran, Ph.D.

Professor, School of Social Work
California State University, Long Beach
Long Beach, Ca. 90840, USA

Abstract

This study used a community sample of 3,200 adults over the age of 50 who lived in the USA during the pandemic. This study retrieved data from the 2020 American National Election Studies. Being a female, being a White, living in the western region, and having tested positive for COVID were positively associated with sleep disturbances. Age, being married, having good health, and having a family member tested positive for COVID were negatively associated with sleep disturbances. All these eight predictors accounted for 11.6% of the variance in sleep disturbance. Having good health emerged as the most influential predictor.

Keywords: Sleep disturbance, multiple regression, COVID, women

Introduction

The Center for Disease Control (CDC) announced that COVID-19 is a highly contagious respiratory disease caused by the SARS-CoV-2 virus (CDC, 2021). SARS- CoV-2 spreads from person to person through droplets from an infected person (CDC, 2021). The most common signs and symptoms are fever, cough, and trouble breathing. Fatigue, muscle pain, chills, headache, sore throat, runny nose, nausea or vomiting, diarrhea, and loss of taste or smell may occur. Signs and symptoms may be mild or severe and usually appear 2-14 days after exposure to SARS-CoV-2 (CDC, 2021). In the U.S. alone, an estimated 43,000,000 cases and 677,086 deaths of COVID-19 were reported (CDC, 2021) during the early years of the pandemic. The World Health Organization (WHO) declared COVID-19 a worldwide pandemic in 2020 (WHO, 2021).

More significant COVID-19 worry was associated with worsening sleep disturbances (Gao & Scullin, 2020). Researchers found an increase in the number of individuals with sleep disturbances during the COVID-19 (50%) pandemic than before (36.5%) (E.g., Kivi et al., 2020). The most concerning sleep disturbances (over 30%) reported were a general worry, mind wandering, and fear (Shillington et al., 2021). Some researchers found that sleep quality had worsened since the onset of the pandemic (Gao & Scullin, 2020; Knell et al., 2020). Sleep disturbance has impacted various age groups. In a study of 40 years and older, the researchers found that 64.9% of the respondents experienced a change in their sleep patterns (Perez-Carbonell et al., 2020). One commonly reported sleep problem in a study was disrupted sleep (Perez-Carbonell et al., 2020). Understanding sleep disturbance is important to avoid numerous mental and physical issues including cardiovascular disease, cancer, diabetes, anxiety, and depression (Grandner, 2017; Heron, 2018). Furthermore, social workers are beginning to implement interventions to address the epidemic of sleep disturbances (Foulk et al., 2014) and developing guidelines to address the long-term impact of COVID-19 (Banks et al., 2020; Dorado Barbé et al., 2021; Ferguson, Kelly, & Pink, 2022).

Sleep disorder is a burden for individuals and their family members. Therefore, there is a need for studies on the impact of COVID on sleep disturbances. Therefore, this study examines the factors associated with sleep disturbances during COVID-19 in adults and the elderly. This study examined various predictors, including sociodemographic, place of residence, COVID symptoms, and general health in predicting sleep disturbances among adults older than 50 years of age. This research answered the following questions: How are various groups ranked in sleep disturbances? What are the predictors of sleep disturbances among adults over 50? For this study, sleep disturbance encompasses trouble initiating and maintaining sleep, partial arousals, and dysfunctions about sleep or sleep stages (Cormier, 2021).

Prior Research

Very few social workers have examined sleep health and sleep disturbances (Sullivan-Tibbs et al., 2019; Kanel, 2015). Existing studies focusing on sleep and social work recently were on veterans (Kanel, 2015), individuals with mental health issues (Sullivan-Tibbs et al., 2019), or discussing sleep (Wolfson & German, 2019). Research on sleep behaviors comes from other allied disciplines. Existing research on sleep disturbances established a gender variation in sleep disturbances during COVID (Costi et al., 2021; Lima et al., 2021; Lin et al., 2020). For example, Lin et al. (2020) found that insomnia is more severe in females. Likewise, Lima et al. (2021) found that 82% of women in their sample reported experiencing sleep disturbances. Being a male was associated with better sleep quality (Costi et al., 2021). Some researchers found a relationship between age and sleep disturbances (Lin et al., 2020; Salfi et al., 2021). Being older contributed to sleep disturbances in several studies during the pandemic (Ingegnoli et al., 2021; Salfi et al., 2021). Unlike other studies, Yuksel et al. (2020) found that older age was associated with better sleep health. In another study, adults younger than 60 had more significant sleep disturbances than those 60 and older in insomnia symptoms during the pandemic (Hisler & Twenge, 2021). The middle age group (36-50) had higher insomnia (Lahiri et al., 2021). Similarly, an inverse relationship between age and sleep disturbances was found among women. The authors found less sleep disturbance (1.72) among women aged 50-59 years than among 18-29 years old (3.14) (Lima et al., 2021).

Some researchers found an association between respondents' educational level and sleep disturbances (Costi et al., 2021; Marzo et al., 2021). The impact on sleep quality was seen among those with low education, and higher education was associated with better sleep quality (Costi et al., 2021). Similarly, researchers found that adults with post-secondary education were less likely to have sleep disorders (Marzo et al., 2021). Although several researchers found an association between occupation types and sleep disturbances (Conroy et al., 2021; Kim-Godwin et al., 2021; McCall et al., 2020), only a few found an increased risk of sleep disorders was associated with unemployment (Marzo et al., 2021). In another study, employed respondents working from home (N=388) reported that their sleep patterns had changed, from going to bed later and waking up later (Conroy et al., 2021).

Marzo et al. (2021) found that married respondents were less likely to have sleep disorders than single. Other researchers found that being single, divorced, or widowed was associated with lower overall sleep quality (Marzo et al., 2021; Werner et al., 2020), and having a partner was associated with better sleep (Yuksel et al., 2020). Adults who lived alone accounted for higher risks of sleep disturbances (Morin et al., 2021). Several other researchers found an association between income and sleep disturbances (Costi et al., 2021; Kaur et al., 2021; Lima et al., 2021). Lower monthly income per capita was associated with sleep disorders in high percentages (Marzo et al., 2021). The worsening of sleep disorders was also higher in people whose income significantly decreased or who were without income during the pandemic (Lima et al., 2021). More financial strain or lower-income, or low socioeconomic standing contributed to sleep disturbances (Lima et al., 2021; Marzo et al., 2021; Polenick et al., 2020).

Researchers studied sleep disturbances in several states and regions in the USA (Heid et al., 2021; Hisler & Twenge, 2021; Peterson et al., 2021). An increase in sleep disruptions following the first Washington State stay-at-home order was reported by scholars (Peterson et al., 2021). Hisler and Twenge (2021) compared data from the 2018 National Health Interview Survey (NHIS) with the 2020 Luc. id, a survey of U.S. adults (N=2059). The study found that people from the Southern states experienced more difficulties falling asleep during the pandemic than participants from other states (Hisler & Twenge, 2021). One study found an association between living in rural/urban areas and sleep disturbances (Batool-Anwar et al., 2021). Batool-Anwar et al. (2021) conducted an online survey asking participants (N=5,175) if their sleep increased or decreased during the peak of the COVID-19 pandemic. The results found that living in a rural area (55%) appeared to have a sizeable protective factor on sleep duration, and respondents living in urban and suburban regions slept fewer hours (Batool-Anwar et al., 2021).

Several studies found that health status was directly associated with sleep disturbances (Ahorsu et al., 2020; Ingegnoli et al., 2021; Kivi et al., 2020; Perez-Carbonell et al., 2020; Vezina-Im et al., 2021). The researchers found that the health status of an adult (N=413) was related to their insomnia severity (Ahorsu et al., 2020). In a study of 215 nurses, the authors found that lower perceived physical health was associated with poor sleep quality (Kim-Godwin et al., 2021). Also, adults living with diabetes (Vezina-Im et al., 2021) and chronic rheumatic disease (Ingegnoli et al., 2021) experienced sleep disturbances. Existing research has established how the COVID-19 pandemic has impacted sleep quality (Casagrande et al., 2021; Gao & Scullin, 2020; Knell et al., 2020; Perez-Carbonell et al., 2021; Sella et al., 2021; Shillington et al., 2021). A different study found that health status was directly associated with insomnia severity (Ahorsu et al., 2020). Having COVID infection was a predictive factor for insomnia (Ingegnoli et al., 2021).

Insomnia was more prevalent among females than males (Costi et al., 2021; Lima et al., 2021). Being older accounted for higher degrees of sleep disturbances (Lahiri et al., 2021; Lin et al., 2020). Several studies included only a small number (2%) of the elderly (E.g., Lin et al., 2020). In several studies, higher education contributed to better sleep (Costi et al., 2021; Marzo et al., 2021). One study found that unemployment accounted for a higher risk of sleep disturbance (Marzo et al., 2021). In some studies, being married accounted for better sleep quality (Marzo et al., 2021; Werner et al., 2020). Adults with a lower income were found to experience higher sleep disturbances (Lima et al., 2021). Moreover, living in rural areas accounted for better sleep, whereas living in urban and suburban residential areas was associated with less sleep (Batool-Anwar et al., 2021). Some of these studies were conducted outside the United States (Costi et al., 2021; Kaur et al., 2021; Lahiri et al., 2021; Lima et al., 2021; Marzo et al., 2021). Most of the studies utilized the Pittsburgh Sleep Quality Index (PSQI) to assess the participant's sleep quality (Casagrande et al., 2021; Knell et al., 2020; Sella et al., 2021).

Methods

The data for this quantitative, cross-sectional study was obtained from the American National Election Studies 2020 Time Series Study (ANES) (ANES, 2021). The study utilized a non-probability, purposive sampling procedure to sample 3,200 adults over 50 from the 2020 ANES Survey to examine sleep disturbances of adults and the elderly during the COVID 19 epidemic (ANES, 2021).

The ANES collected data from adults who lived in various states in the USA. The ANES survey aims to serve social scientists, teachers, students, policymakers, and journalists (ANES, 2021). Social scientists have widely used the ANES from various disciplines due to the richness of health and health outcome variables. The ANES (2021) participants were randomly selected using the USPS computerized delivery sequence file (C-DSF). The ANES sent out letters to recruit one household member using monetary incentives. Participants were then contacted by an interviewer via phone, internet, or video call, based on each participant's choice. The data available to the public did not include any identifying markers that identify the participants, ensuring study participants' anonymity.

Sleep disturbance was measured using an ANES (2021) item asking participants to rate their restless sleep in the past week and scored by this item: "In the past week, how often has your sleep been restless?" The participants responded to the question using five response options. The options were (1) all the time, (2) often, (3) sometimes, (4) rarely, and (5) never. This item was reverse coded using 0 to 4; a higher score indicates higher sleep disturbance. This item is also used to examine what percentages of various groups experienced sleep disturbances.

The following independent variables were selected from the ANES 2020 survey database: sociodemographic characteristics (gender, age, education level, employment status, race, marital status, and family income), place of residence (region and rural/urban), and health condition (general health and COVID symptoms).

The researcher used descriptive statistics to describe sample characteristics. Several groups were subjected to descriptive statistics to rank who had the most and the least sleep disturbance. Predictors of sleep disturbances were assessed by subjecting independent variables to a multiple regression model.

Results

Descriptive Statistics

The sociodemographic factors are presented in Table (1). This study included 3,200 individuals who lived in the USA at the beginning of the COVID epidemic. The study sample included 1,502 women (46.9%) and 1,698 (53.1%) men and adults aged 50 through 65 (52.2%) and 66 and older (47.8%). Most of the sample had some college (34.3%), bachelor's degree (24.9%), a graduate degree (21%), less than high school (3.7%), and a high school diploma (16.2%). Most of the sample were employed (46.8%), and the rest were retired (45.7%) and unemployed (7.50%). Most of the study subjects (84.8%) were White, non-Hispanic, 7.4% were

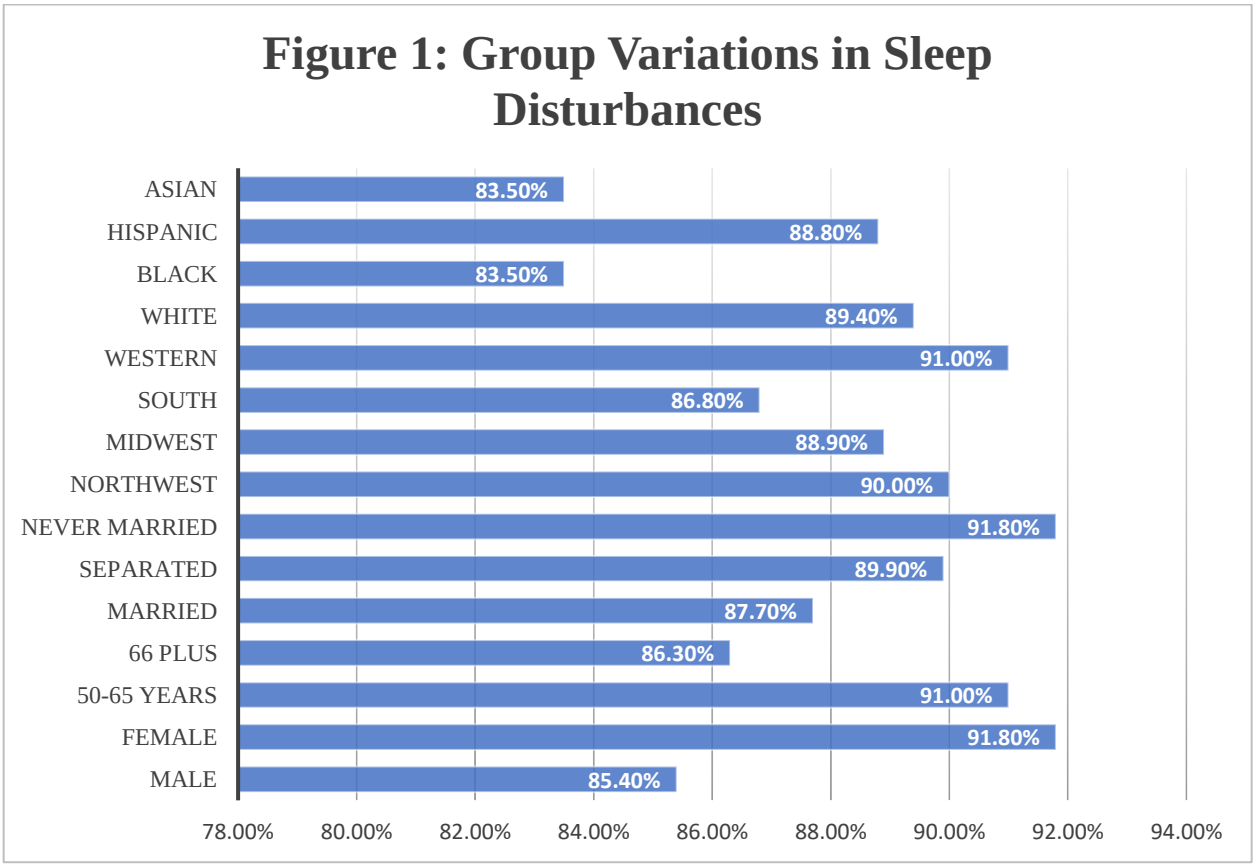
Table 1: Sociodemographic Characteristics, *N=3,200*

Variables		***f***	***%***
Gender	Male	1,502	46.9
	Female	1,698	53.1
Age	50 to 65	1,669	52.2
	>65	1,531	47.8
Education	<High School	117	3.7
	High School Diploma	517	16.2
	Some College	1,097	34.3
	Bachelor's Degree	797	24.9
	Graduate Degree	672	21
Employment Status	Employed	1,499	46.8
	Unemployed	239	7.5
	Retired	1,462	45.7
Ethnicity	White, Non-Hispanic	2,715	84.8
	Black, Non-Hispanic	236	7.4
	Hispanic	170	5.3
	Asian	79	2.5
Marital Status	Married	1,870	58.4
	Separated	1,698	53.1
	Never Married	280	8.8
Family Income	Low Income	924	28.9
	Middle Income	1,565	48.9
	High Income	711	22.2
Rural/Urban	Rural	519	16.2
	Small Town	842	26.3
	Suburban	990	30.9
	Urban	849	26.5
Region	Northeast	570	17.8
	Midwest	764	23.9
	South	1,163	36.3
	Western	703	22

Black, non-Hispanic, 5.3% were Hispanic, and only 2.5% were Asians. The sample included married (58.4%), separated (32.8%), and never married (8.8%). The income levels of the sample included low-income (28.9%), middle income (48.9%), and high income (22.2.%) adults. The study subjects mainly lived in suburban (30.9%), urban (26.5%), and small towns (26.3%). Only 16.2% lived in rural areas. More than a third of study subjects lived in the states from the South (36.3%), 23.9% lived in Midwest, 22% lived in Western states, and 17.8% lived in Northeast states.

Group Variations in Sleep Disturbances

Groups with significant associations are further analyzed to examine what percentage of people in each group experienced sleep disturbances (Figure 1). Sleep Disturbances were



experienced by the most by never married (91.80%), women (91.8%), adults between 50 and 65 (91%), and people who lived in the western region (91%). Among the groups presented, Asians (83.5%), Blacks (83.5%), and men (85.4%) were ranked low in their experience with sleep disturbances.

Multiple Regression

Among the independent variables used in a multiple regression model, being a female ($\beta = .139$; $p<.001$), being a White ($\beta = .062$; $p<.001$), living in the western region ($\beta = .05$; $p<.003$),

Table 2: Predictors of Sleep Disturbance, *N=3,200*

Predictors	***B***	***SE***	***β***	***t***	***p***
(Constant)	3.452	0.176		19.61	0.001
Female	0.288	0.035	0.139	8.122	0.001
Age	-0.018	0.002	-0.150	-7.72	0.001
Education	-0.005	0.017	-0.005	-0.26	0.792
Employed	0.018	0.041	0.009	0.438	0.661
White	0.178	0.05	0.062	3.571	0.001
Married	-0.077	0.039	-0.036	-1.98	0.048
Income	-0.002	0.003	-0.013	-0.65	0.519
Urban	0.022	0.036	0.010	0.598	0.550
Western Region	0.126	0.042	0.050	2.98	0.003
Health Condition	-0.244	0.018	-0.240	-13.5	0.001
Tested Positive by a Family Member	-0.241	0.119	-0.036	-2.02	0.044
Tested Positive by Self	0.319	0.065	0.090	4.908	0.001
F[12,3187]=35.879; p<.001					
Adj R Square = .116					

Dependent Variable: Sleep disturbance

and having tested positive for the COVID (β = .09; p<.001) were positively associated with sleep disturbances (Table 2). Other predictors including age (β = -.15; p<.001), being married (β = -.036; p<.048), having good health (β = -.24; p<.001) and having a family member tested positive for the COVID (β = -.036; p<.044) were negatively associated with sleep disturbances. Good health emerged as the most influential predictor, and testing positive for COVID by a family member is the least influential predictor. All these eight factors accounted for 11.6% of the variance in sleep disturbance (F[12, 3187]=35.879; p<.001). The other four variables, educational status, employment, income level, and living in urban/suburban regions, did not emerge as significant predictors.

Discussion

Summary

The study examined sleep disturbances experienced by various groups and identified the predictors of sleep disturbances. Sleep disturbances were experienced the most by never-married women, adults between 50 and 65, and people who lived in the western region. Asians, Blacks, and men were ranked low in their experience with sleep disturbances. This study examined how sociodemographic characteristics (gender, age, education level, employment status, race, marital status, and family income), place of residence (region and rural/urban), and health condition (general health and COVID symptoms) are associated with sleep disturbances of adults and older adults. The study found several significant predictors of sleep disturbance when these factors were used in a multi regression model. The study found that women, White, living in the western part of the country are more likely to experience sleep disturbances.

On the other hand, men, nonwhites, and people from the Northeast, South, and Midwest experienced minimal sleep disturbance. Younger people tend to experience more sleep disturbances than older since there is an inverse relationship between age and sleep disturbance. Married subjects experienced fewer disruptions than never married, divorced, and separated individuals. Having good health emerged as the most influential, significant protective factor as having good health increased the chances of less sleep disturbance. Interestingly, having a family member test positive for COVID decreased the likelihood of sleep disturbance. On the contrary, individuals who tested positive for COVID are more likely to have sleep disturbances.

Comparison of Study Findings with Prior Research

Previous research found a gender variation in sleep disturbances. Women were found to have more severe insomnia (Costi et al., 2021; Lima et al., 2021; Lin et al., 2020), and males had better sleep quality (Costi et al., 2021). Also, gender emerged as a significant predictor in the present study. Previous researchers had found conflicting results in age variations. Some researchers found that being older contributed to sleep disturbances (2020; Ingegnoli et al., 2021, Lin et al., 2020; Salfi et al., 2021), while other studies found that adults younger than 60 had a higher degree of insomnia (Hisler & Twenge, 2021; Lahiri et al., 2021). The present study found an inverse relationship between age and sleep disturbance, aligning with Yuksel et al. (2020). One study found that being unemployed increased the risk of sleep disorders (Marzo et al., 2021). Also, previous research found that education (Costi et al., 2021; Marzo et al., 2021) was associated with sleep disturbance. The present study found no statistically significant association between employment and education when these variables were subjected to regression analysis.

Previous research found conflicting results between marital status and sleep disturbances. Several studies found that being single, divorced, or widowed was associated with lower sleep quality (Lahiri et al., 2021; Werner et al., 2020), while one study found that sleeping more was related to being single, divorced, or separated (Marzo et al., 2021). Being married or having a partner was associated with better sleep (Marzo et al., 2021, Yuksel et al., 2020). However, one study found that married participants had more frequent sleep disturbances (Kaur et al., 2021). The present study found that adults and older adults who were married had fewer sleep disturbances than never married, divorced, and separated individuals.

Additionally, several researchers found an association between income level and sleep disturbances (Kaur et al., 2021; Lima et al., 2021; Marzo et al., 2021; Polenick et al., 2020). Previous research found an association between rural/urban areas and sleep disturbances (Batool-Anwar et al., 2021, Hisler & Twenge, 2021). However, income and living in urban and suburban neighborhoods did not emerge as significant predictors.

Previous research has found that people who lived in Southern states and the state of Washington reported sleep disturbances (Hisler & Twenge, 2021, Peterson et al., 2021). The present study found that adults and older adults living in the West experienced greater sleep disturbances than those living in the Northeast, the Midwest, and the South. Like previous research (Ahorsu et al., 2020), the present study found a statistically significant inverse relationship between overall health and sleep disturbances. Like Ingegnoli et al. (2021), having had a COVID infection increased the chances of sleep disturbances.

Implications, Limitations, and Future Directions

There is a need for social workers to explore sleep behaviors and interventions. Our findings further underscore the critical role of social workers in discussing and addressing sleep behaviors that encourage both adults and older adults to give importance to sleep and its consequences on mental and emotional functioning. Ultimately, effective mental health promotion initiatives focusing on sleep health are needed, specifically for adults and women. Our research findings showed an inverse correlation between age and sleep disturbances and a direct association between being a woman and sleep disturbance. In addition to this research, several researchers have confirmed the adverse impact of COVID on sleep difficulties (Casagrande et al., 2021; Gao & Scullin, 2020; Knell et al., 2020; Perez-Carbonell et al., 2020). COVID-19 is considered a public emergency, and aging adults are at higher risk. According to the NASW (2021) Code of Ethics, social workers are expected to provide specialized services in public emergencies. It is vital to have the right resources to address the lasting effects COVID-19 has on public health.

Interestingly, some social work scholars are studying COVID and its impact on older adults and others (Berg-Weger & Morley, 2020; Cox, 2020; Dorado Barbé et al., 2021). Furthermore, social workers and aging organizations need to educate the aging population on sleep quality and interventions to address the adverse effects. There is a growing demand for behavioral sleep practitioners (Foulk et al., 2014) in various settings, including hospitals, long-term care facilities, private practice, and social service agencies.

Consequently, social workers can fill the gap by setting their foot in sleep promotion interventions by 1) making sleep health information available to the public and the clients who struggle with sleep difficulties; 2) incorporating sleep assessments across social work settings (Mellor et al., 2022; Zendels, Moore-Harrison, & Gaultney, 2022); 3) providing psychoeducation on the importance of sleep and the consequences of insufficient sleep (Moukhtarian et al., 2022; Arnold, 2022); 4) fostering social support through community agencies and programs; 5) embracing behavioral sleep interventions such as MCBT (Ahn et al., 2022; Baron et al., 2021; Foulk et al., 2014); 6) training social workers to incorporate the issue of sleep health in their practice.

Such vetted social work intervention approaches and outreach efforts will help them recognize sleep difficulties and their physical and mental health impacts and the available help to mitigate or address sleep health issues promptly. Specifically, social work interventions should consider the challenges associated with outreaching adults and older adults in community settings to assist them in developing coping skills and understanding sleeping difficulties to promote their mental and physical well-being. Such efforts will advance sleep quality and promote quality of life. In addition, social workers should advocate for policies that protect vulnerable populations.

There are some limitations to the study. Its cross-sectional design limited our ability to control for extraneous factors. Although the researchers several sociodemographic, health status, and the region as predictors of sleep health, the future research should add other factors by employing quasi-experimental design to identify stronger predictors of sleep disturbance among healthy adults and older adults. Existing research has established causal relationships between these variables (Ahorsu et al., 2020; Lin et al., 2020; Marzo et al., 2021; Werner et al., 2020; Yuksel et al., 2020).

There remain various unanswered issues that could advance the findings. For instance, dividing groups based on gender, ethnicity, and ethnicity will provide more embedded explanations of the study findings highlighting how various predictors impact diverse groups. Another limitation is the self-reported data collected by 2020 ANES, which might have resulted in over-reporting of the sleep disturbances. The rank ordering of sleep experiences of diverse groups stayed high with over 80%. Such high percentages might be due to the pandemic period, at which the dependent variable, sleep disturbance, was measured. Some researchers have pointed out changes in sleep disturbances during COVID (Gao & Scullin, 2020; Kivi et al., 2020; Knell et al., 2020). Future research on sleep health is essential to broaden the study findings by including diverse population groups. The ANES data is primarily used to study political views by political scientists. Very few researchers have used the ANES for healthcare-related research. The contribution of this study is in line with social workers' call to join sleep promotion (Wolfson & German, 2019) as sleep behavior needs better understanding to make needed modifications to advance understanding of sleep disturbances and develop sleep behavior interventions.

References

Ahn, J. S., Bang, Y. R., Jeon, H. J., & Yoon, I. Y. (2022). Effects of subjective-objective sleep discrepancy on the response to cognitive behavior therapy for insomnia. *Journal of psychosomatic research*, *152*, 110682.

Ahorsu, D. K., Lin, C.-Y., & Pakpour, A. H. (2020). The Association Between Health Status and Insomnia, Mental Health, and Preventive Behaviors: The Mediating Role of Fear of COVID-19. *Gerontology and Geriatric Medicine*, *6*, 1-9.

Arnold, M. J. (2022). Behavioral and Psychological Treatments for Chronic Insomnia Disorder: Updated Guidelines from the American Academy of Sleep Medicine. *American family physician*, *105*(1), 97-98.

American National Election Studies (ANES) (2021). American National Election Studies. https://electionstudies.org/about-us/

Banks, S., Cai, T., De Jonge, E., Shears, J., Shum, M., Sobočan, A. M., ... & Weinberg, M. (2020). Practicing ethically during COVID-19: Social work challenges and responses. *International Social Work*, *63*(5), 569-583.

Baron, K. G., Duffecy, J., Reutrakul, S., Levenson, J. C., McFarland, M. M., Lee, S., & Qeadan, F. (2021). Behavioral interventions to extend sleep duration: A systematic review and meta-analysis. *Sleep medicine reviews*, *60*, 101532.

Batool-Anwar, S., Robbins, R., Ali, S. H., Capasso, A., Foreman, J., Jones, A. M., Tozan, Y., DiClemente, R. J., & Quan, S. F. (2021). Examining Changes in Sleep Duration Association with the Onset of the COVID-19 Pandemic: Who is Sleeping and Not? *Behavioral Medicine*. https://doi.org/10.1080/08964289.2021.2002800

Berg-Weger, M., & Morley, J. E. (2020). Loneliness and social isolation in older adults during the COVID-19 pandemic: Implications for gerontological social work. *The journal of nutrition, health & aging*, *24*(5), 456-458.

Casagrande, M., Forte, G., Tambelli, R., & Faviero, F. (2021). The Coronavirus Pandemic: A possible model of the direct and indirect impact of the pandemic on quality in Italians. *Nature and Science of Sleep*, *13*, 191-199.

Center for Disease Control (2021). Coronavirus Disease 2019. Center for Disease Control and Prevention. https://www.cdc.gov/dotw/covid-19/index.html

Conroy, D. A., Hadler, N. L., Cho, E., Moreira, A., MacKenzie, C., Swanson, L. M., Burgess, H. J., Arnedt, T., & Goldstein, C. A. (2021). The effects of COVID-19 stay-at-home order on sleep, health, and working patterns: a survey study of US health care workers. *Journal of Clinical Sleep Medicine*, *17*(2), 185-191.

Cormier, R. E. (2021, September 22). *NCBI*. Retrieved from NCBI Website : https://www.ncbi.nlm.nih.gov/books/NBK401/

Costi, S., Paltrinieri, S., Bressi, B., Fugazzaro, S., Rossi, P. G., & Mazzini, E. (2021). Poor Sleep during the First Peak of the SARS-CoV-2 Pandemic: A Cross-Sectional Study. *International Journal of Environmental Research and Public Health*, *18*(306), 1-14.

Cox, C. (2020). Older adults and Covid 19: Social justice, disparities, and social work practice. *Journal of gerontological social work*, *63*(6-7), 611-624.

Dorado Barbé, A., Pérez Viejo, J. M., Rodríguez-Brioso, M. D. M., & Gallardo-Peralta, L. P. (2021). Emotional well-being and resilience during the COVID-19 pandemic: Guidelines for social work practice. *International Social Work*, *64*(2), 279-284.

Ferguson, H., Kelly, L., & Pink, S. (2022). Social work and child protection for a post-pandemic world: the re-making of practice during COVID-19 and its renewal beyond it. *Journal of Social Work Practice*, *36*(1), 5-24.

Foulk, M. A., Ingersoll-Dayton, B., Kavanagh, J., Robinson, E., & Kales, H. C. (2014). Mindfulness-based cognitive therapy with older adults: an exploratory study. *Journal of gerontological social work*, *57*(5), 498-520.

Gao, G., & Scullin, M. K. (2020). Sleep health early in the coronavirus disease 2019 (COVID-19) outbreak in the United States: integrating longitudinal, cross-sectional, and retrospective recall data. *Sleep Medicine*, *73*, 1-10.

Heid, A. R., Cartwright, F., Wilson-Genderson, M., & Pruchno, R. (2021). Challenges Experienced by Older People During the Initial Months of the COVID-19 Pandemic. *The Gerontologist*, *61*(1), 48-58.

Hisler, G. C., & Twenge, J. M. (2021). Sleep characteristics of U.S. adults before and during the COVID-19 pandemic. *Social Science and Medicine*, *276*.

Ingegnoli, F., Buoli, M., Posio, C., Taranto, R. D., Musico, A. L., Cumbo, E., Ostuzzi, S., & Caporali, R. (2021). COVID-19 related poor mental health and sleep disorders in rheumatic patients: a citizen science project. *BMC Psychiatry*, *21*(385), 1-9.

Kanel, K. L. (2015). Veterans' mental health: Challenges and issues of college enrolled OIF and OEF veterans. *Social Work in Mental Health*, *13*(2), 95-107.

Kaur, T., Ranjan, P., Chakrawarty, A., Kasi, K., Berry, P., Suryansh, S., Mazunder, A., Khan, M., Upadhyay, A. D., Kaloiya, G., Sarkar, S., & Prasad, V. B. (2021). Association of Sociodemographic Parameters with Depression, Anxiety, Stress, Sleep Quality, Psychological Trauma, Mental Well-Being, and Resilience During the Second Wave of COVID-19 Pandemic: A Cross-Sectional Survey from India. *Cureus*, *13*(7), 1-10.

Kim-Godwin, Y. S., Lee, M. H., Logan, J. G., & Liu, X. (2021). Factors Influencing Sleep Quality among Female Staff Nurses during the Early COVID-19 Pandemic in the United States. *International Journal of Environmental Research and Public Health*, *18*(9), 1-10.

Kivi, M., Hansson, I., & Bjalkebring, P. (2021). Up and About: Older Adults' Well-being During the COVID-19 Pandemic in a Swedish Longitudinal Study. *Journal of Gerontology: Psychological Sciences*, *76*(2), 4-9.

Knell, G., Robertson, M. C., Dooley, E. E., Burford, K., & Mendez, K. S. (2020). Health Behavior Changes During COVID-19 Pandemic and Subsequent "Stay-at-Home" Orders. *International Journal of Environmental Research and Public Health*, *17*(17), 1-16.

Lahiri, A., Jha, S. S., Acharya, R., Dey, A., & Chakraborty, A. (2021). Correlates of insomnia among the adults during COVID19 pandemic: evidence from an online survey in India. *Sleep Medicine*, *77*, 66-73.

Lima, M. G., Berti de Azevedo Barros, M., Szwarcwald, C. L., Malta, D. C., Romero, D. E., Werneck, A. O., & Borges De Souza Junior, P. R. (2021). Association of social and economic conditions with the incidence of sleep disorders during the COVID-19 pandemic. *Reports in Public Health*, *37*(3), 1-10.

Lin, L.-Y., Wang, J., Ou-Yang, X.-Y., Miao, Q., Chen, R., Liang, F.-X., Zhang, Y.-P., Tang, Q., & Wang, T. (2021). The immediate impact of the 2019 novel coronavirus (COVID-19) outbreak on subjective sleep status. *Sleep Medicine, 77*, 348-354.

Marzo, R. R., Shekhawat, K. S., Chauhan, S., Patel, R., Kyaw, T. M., Amran, B. B., Isyraff bin Mat, M. A., Rajendiran, V. A., Mohd Noor, M. A. b., Acharya, S., & Shrestha, S. (2021). Sleep Disorder During the Third Wave of COVID-19 Pandemic among Malaysian Adults. *Research Square*, 1-20.

McCall, W. V., Mensah-Bonsu, D., Withers, A. E., & Gibson, R. W. (2021). Short-term insomnia disorder in health care workers in an academic medical center before and during COVID-19: rates and predictive factors. *Journal of Clinical Sleep Medicine, 17*(4), 749-755.

Mellor, A., Kavaliotis, E., Mascaro, L., & Drummond, S. P. (2022). Approaches to assessing adherence to CBT-I, predictors of adherence, and the association of adherence to outcomes: A systematic review. *Sleep Medicine Reviews*, 101620.

Morin, C. M., Bjorvatn, B., Chung, F., Holzinger, B., Partinen, M., Penzel, T., Ivers, H., Wing, Y. K., Chan, N. Y., Merikanto, L., Mota-Rolim, S., Macedo, T., De Gennaro, L., Leger, D., Dauvilliers, Y., Plazzi, G., Nadorff, M. R., Bolstad, C. J., Sieminski, M., … Espie, C. A. (2021). Insomnia, anxiety, and depression during the COVID-19 pandemic: an international collaborative study. *Sleep Medicine, 87*, 38-45.

Moukhtarian, T., Patel, K., Toro, C., Russel, S., Daly, G., Walasek, L., ... & Meyer, C. (2022). Effects of a hybrid digital Cognitive Behavioural Therapy for Insomnia and Emotion Regulation in the workplace (SLEEP).

National Association of Social Workers. (2021). NASW Code of Ethics. Retrieved from https://www.socialworkers.org/About/Ethics/Code-of-Ethics/Codeof-Ethics-English

Perez-Carbonell, L., Meurling, I. J., Wassermann, D., Gnoni, V., Leschziner, G., Weighall, A., Ellis, J., Durrant, S., Hare, A., & Steier, J. (2020). Impact of the novel coronavirus (COVID-19) pandemic on sleep. *Journal of Thoracic Disease, 12*(2), 163-175.

Peterson, M., Lundholm, K., Skeiky, L., Dongen, H. V., & Hansen, D. (2021). Impact of Washington State COVID-19 Lockdown on Sleep. *Sleep, 44*, 283-284.

Salfi, F., Lauriola, M., D'Atri, A., Amicucci, G., Viselli, L., Tempesta, D., & Ferrara, M. (2021). Demographic, psychological, chronobiological, and work-related predictors of sleep disturbances during the COVID-19 lockdown in Italy. *Scientific Reports, 11*, 1-12.

Sella, E., Carbone, E., Toffalini, E., & Borella, E. (2021). Self-reported sleep quality and dysfunctional sleep-related beliefs in young and older adults: changes in times of COVID-19 lockdown. *Sleep Medicine, 81*, 127-135.

Shillington, K. J., Vanderloo, L. M., Burke, S. M., Ng, V., Tucker, P., & Irwin, J. D. (2021). Not so sweet dreams: adults' quantity, quality, and sleep disruptions during the initial stages of the COVID-19 pandemic. *Sleep Medicine, 21*, 1-7.

Sullivan-Tibbs, M. A., Thompson, P., Nugent, W., & Baker, J. (2019). Sleep disturbances and suicide—New battles for veterans of US wars in Afghanistan and Iraq: A retrospective review. *Social Work in Mental Health, 17*(2), 222-236.

Vezina-Im, L.-A., Morin, C. M., & Desroches, S. (2021). Sleep, Diet and Physical Activity Among Adults Living with Type 1 and Type 2 Diabetes. *Canadian Journal of Diabetes, 45*(7), 659-665.

Werner, A., Kater, M.-J., Schlarb, A. A., & Lohaus, A. (2021). Sleep and stress in times of the COVID-19 pandemic: The role of personal resources. *Applied Psychology: Health and Well-Being, 13*(4), 935-951.

World Health Organization (2021). World Health Organization. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/donors-and-partners/funding

Wolfson, M., & Germain, A. (2019). We Snooze, Clients Lose: Time for Social Workers to Join Sleep Promotion Efforts. *Social Work, 64*(3), 270-272.

Yuksel, D., McKee, G. B., Perrin, P. B., Alzueta, E., Caffarra, S., Ramos-Usuga, D., Arango-Lasprilla, J. C., & Baker, F. C. (2021). Sleeping when the world locks down: Correlates sleep health during the COVID-19 pandemic across 59 countries. *Sleep Health, 7*(2), 134-142.

Zendels, P., Moore-Harrison, T. L., & Gaultney, J. F. (2022). Sleep and Risk for Metabolic Syndrome, Hypertension, Diabetes and Obesity Among Community-Dwelling Older Adults. *International Journal of Exercise Science, 15*(3), 88-102.