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Exploring the Impact of Loneliness and Sleeping Disturbance on Anxiety and Depression, Among Adults during the COVID-19 Pandemic

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***Abstract*:** The current research study aimed to investigate how loneliness and sleep disturbance affect anxiety and depression levels in adults during the COVID-19 pandemic. Further, it explored, whether there are mediation relations between loneliness with sleep disturbance, loneliness with anxiety, and between sleep disturbance, anxiety, and depression. The participants included university students (total = 160). Data were collected using three self-report measures: The measures that were used are the Loneliness Scale (UCLA) adapted from Russell et al. (1978), the Sleep Disturbance Scale (PROMIS) from the National Institutes of Health (2004), Anxiety, and Depression Scale (WEMWBS) from the universities of Warwick and Edinburgh (2006). The findings also showed that loneliness presented a certain impact on the adults as it had a stronger correlation with anxiety as well as depression during the pandemic. Most impressively, loneliness displayed an inverse relationship to sleep disturbance while a direct relationship to anxiety and depression with correlation coefficients of -0.344** and 0.502** respectively with 'p' < 0.01. Sleep disturbance was also inversely related to anxiety and depression ($r = -0.299$, $p < 0.01$). Multiple regression analysis showed that loneliness had a significant negative relationship with perceived sleep disturbance and anxiety and depression ($\Delta R^2 = 0.248$, $F(53.305) = 0.000$, $p < 0.05$). Likewise, sleep disturbance had a significant inverse relationship with anxiety and depression controlling for most of the variables ($\Delta R^2 = 0.084$, $F(15.55) = 0.000$, $p < 0.05$). Pre-tiling results revealed that the direct effect of loneliness on anxiety was estimated at 0.45, $p < 0.01$, and the indirect impact through stress was estimated at $\beta = 0.22$, $p < 0.01$. Stress also partially mediated the effect of sleep disturbance on depression (direct effect: The results follow the sequence of model 1: $\beta = 0.42$, $p < 0.05$; model 2: indirect effect: $\beta = 0.18$, $p < 0.05$. During the COVID-19 pandemic, sleep disturbance and loneliness are well-established in mental health.

Keywords: Loneliness, Sleep Disturbance, Anxiety, Depression, Adults, COVID-19

1. Introduction

COVID-19 has affected almost every aspect of life globally, most notably in the social context through isolation, health-conscious living, and disrupted sleep patterns. Such changes have led to the worsening of loneliness and sleep troubles, especially among the adult population, going by the extent to which they have worsened both anxiety and depression (Echegaray, 2020). The interaction between these has attracted interest from researchers across the world because of the need to establish the psychological impact of the pandemic. This work advances the study of loneliness and sleep disturbance and their effects on anxiety and depression during the COVID-19

pandemic in the hope of complementing the existing research that is available in the literature (Mariani et al., 2020). Both loneliness and sleep disturbance are not new concerns. Social isolation, which is a self-reported lack of social connection, has elicited considerable research interest over the past century as a factor in mental health problems. Previously, loneliness was studied since the middle of the twentieth century when isolation was related to negative mental and physical effects, such as depression, anxiety, and cardiovascular disease (Lim et al., 2020). Interference with sleep as indicated by perceived insomnia, nocturnal anarchy, and sleep quality has been associated with numerous mental disorders, especially depression and anxiety since the early 1900s. However, COVID-19 and lockdown have caused both of these problems to become more pronounced, making them two of the most studied areas in mental health.COVID-19 has affected almost every aspect of life globally, most notably in the social context through isolation, health-conscious living, and disrupted sleep patterns (Ashutosh & Trivedi). Such changes have led to the worsening of loneliness and sleep troubles, especially among the adult population, going by the extent to which they have worsened both anxiety and depression. The interaction between these has attracted interest from researchers across the world because of the need to establish the psychological impact of the pandemic. This work advances the study of loneliness and sleep disturbance and their effects on anxiety and depression during the COVID-19 pandemic in the hope of complementing the existing research that is available in the literature (Azzolino et al., 2022). Both loneliness and sleep disturbance are not new concerns. Social isolation, which is a self-reported lack of social connection, has elicited considerable research interest over the past century as a factor in mental health problems. Previously, loneliness was studied since the middle of the twentieth century when isolation was related to negative mental and physical effects, such as depression, anxiety, and cardiovascular disease (Sciences et al., 2020). Interference with sleep as indicated by perceived insomnia, nocturnal anarchy, and sleep quality has been associated with numerous mental disorders, especially depression and anxiety since the early 1900s. However, COVID-19 and lockdown have caused both of these problems to become more pronounced, making them two of the most studied areas in mental health (Kazmi et al., 2020).

The pandemic led to increased loneliness and disruption of people's sleep because of such factors as social isolation measures, quarantine, and the closure of public spaces in which people socialize. Since millions of people had limited contact with friends and family as well as colleagues and neighbors, loneliness peaked (Reimann, 2021). Likewise, the fear associated with the virus, breaks in daily procedures, as well as focus on the virus modeling human behavior caused changes in organizational sleep patterns, and many participants reported poor sleep during the pandemic. Previous studies have also shown a strong association between loneliness and sleep disturbance with anxiety and depression and therefore the current global crisis could offer a good platform for exploring more of the relationships between these variables (Morin et al., 2021). For this research loneliness is defined as the perceived state of social isolation defined by the perception of an individual, irrespective of the number of contacts he or she may have. It is defined as a felt deficiency in one's interpersonal relationships. Sleep disturbance therefore refers to all concerns that people can have over their sleep, including insomnia, inability to sleep or stay asleep, or alterations in waking-sleeping patterns (Ganaie et al., 2015). These two variables are important for identifying their contribution in the worsening of other psychological diseases such as concern and depression which are concerning psychological sicknesses marked by steady concern and sadness, correspondingly.

Research works on the associations between loneliness, sleep disorders, and mental health have been published in large numbers. Reports published before the Covid-19 outbreak repeatedly showed the relationship between loneliness and the presence of anxiety and depressive symptoms (Benke et al., 2022). Chronic loneliness may cause psychological distress thus stress anxiety and depression. Another foundational piece of evidence has also been related to insomnia as one of the major correlated risk factors for mental disorders, agreeing with the notion that sleep disturbances can be both antecedent causes and psychological disorder consequences (Kumar et al., 2021). When the COVID-19 pandemic began, some studies focused on how these problems worsened. conducted their study and discovered that, because people were confined to their homes due to the lockdowns, feelings of loneliness increased, and with it, anxiety and depression levels among adults as well (Bu et al., 2020). Other similar research also found that sleep deterioration was present during the pandemic with increased levels of insomnia being reported especially among those with pandemic-related anxiety. The above works demonstrate how loneliness along with sleep disruption exacerbate the limited impacts of a time of worldwide change (Cloonan et al., 2021).

It has been well established that loneliness and sleep disturbance have negative impacts on mental health, therefore there still exists a research niche since there has not been a comprehensive investigation on the multiplier effect of the two factors given the light of the COVID-19 pandemic (Sajid & Gonzalez, 2021). Although numerous research

papers have focused either on loneliness or sleep disturbances, a limited number of publications are available linking these two factors with anxiety and depression and even more scant research exists as a result of the COVID-19 outbreak. However, most previous studies have targeted specific groups of people like aged persons, healthcare personnel, etc., while there is limited information on how these short messages have impacted the general grown-up population of any age and from any background. To fill these gaps, the current research intends to analyze the synergic influence of loneliness and sleep disturbance on anxiety and depression among a diverse group of adults in the course of the pandemic. As Coronavirus disease continues ravaging the world, it has remained a cause of psychological stressors of loneliness and irregular sleep patterns that have contributed to the worsening of mental disorders such as anxiety and depression. Whereas prior work has considered these individual variables, research is scarce on the moderation of these variables together, particularly during a global crisis. The purpose of the present research is to examine how different factors and their interplay affect mental health and to inform intervention efforts aimed at decreasing the mental health toll of the pandemic. This research aims to help meet this need by offering a detailed examination of the interaction between loneliness, sleep disturbances, anxiety, and depression in adults before, during, and after the COVID-19 pandemic, to be beneficial to mental health workers and policymakers.

1.1 Research Objective

a) To examine the relationship between loneliness and anxiety among adults during the COVID-19 pandemic.
b) To assess the impact of sleep disturbance on depression levels in adults during the pandemic.
c) To explore how loneliness and sleep disturbance jointly influence Anxiety and Depression, specifically anxiety and depression, in adults.
d) To investigate whether sleep disturbance mediates the relationship between loneliness and depression among adults during the pandemic.

1.2 Hypotheses

H_1.Loneliness has a Negative effect on the Anxiety and Depression
H_2.Sleep Disturbance has a Negative effect on the Anxiety and Depression
H_3.Stress mediates the relationship between loneliness and both anxiety and depression.
H_4.Stress mediates the relationship between Sleep Disturbance, Anxiety, and Depression

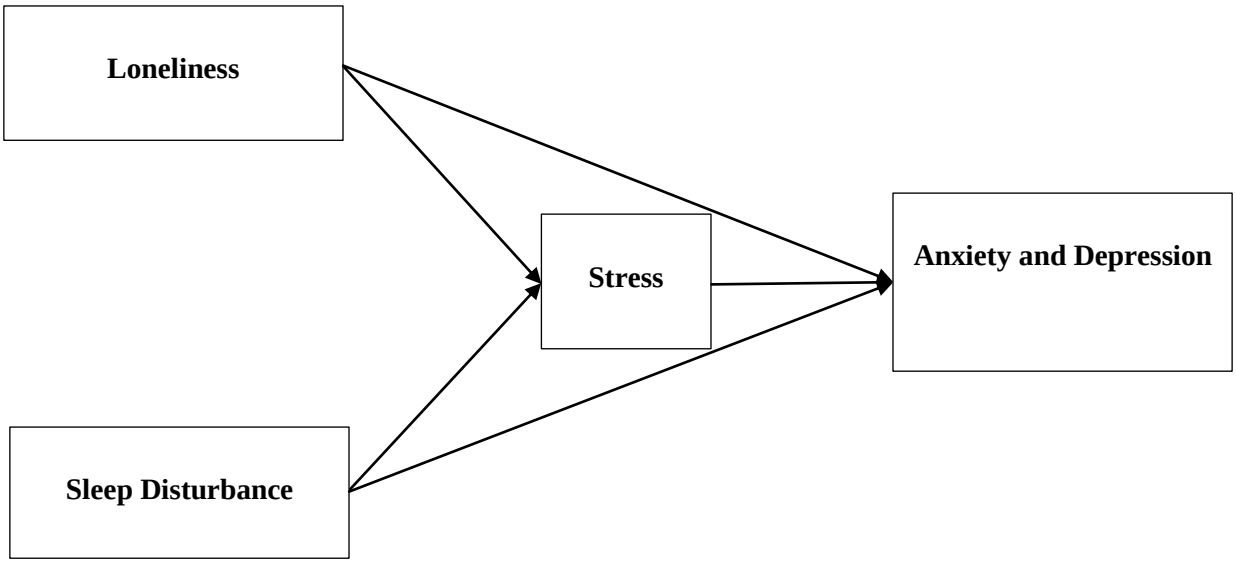

Figure 1: Research Model

2. Literature Review

The COVID-19 pandemic situation has led to the Anxiety and Depression epidemic all over the world because

people are now more anxious and depressed than before. Of all the psychological elements, loneliness has turned into the most prevalent topic during this period of separation. At the same time, in the case of sleep disturbances, numerous people have mentioned negative impacts on their psychological state (Medic et al., 2017). This study focuses on investigating the pattern displayed in the following relationships: Loneliness has been a key concern in various negative associations, including The study will investigate the pattern below: Anxiety and Depression Sleep Disturbance Stress and their consequent effects on Sleep disturbance is a major aspect of stress which gets reflected in the following: many people's mental well-being (Leggett et al., 2016). This literature review aims to explore the relationships among loneliness, sleep disturbance, stress, and their collective impact on anxiety and depression, based on the model illustrated in Loneliness, defined as the subjective feeling of being alone or disconnected from others, has been associated with various negative Anxiety and Depression outcomes (Santini et al., 2020). Furthermore, pointed out that, loneliness has negative effects on cognitive and affective functioning and these effects accounted for a good deal of the variance in anxiety and depression. COVID-19 has escalated the number of loneliness outbursts following physical separations and lockdown measures resulting in Anxiety and Depression issues (Bills, 2024). People who said that they felt more lonely showed more symptoms of anxiety and depression only if loneliness was considered as a separate factor influencing Anxiety and Depression during the pandemic, period of social isolation (Negosanu & Reid, 2021). Concurrently, sleep disturbances have been reported widely, affecting many people's mental well-being. This literature review aims to explore the relationships among loneliness, sleep disturbance, stress, and their collective impact on anxiety and depression, based on the model illustrated in Loneliness, defined as the subjective feeling of being alone or disconnected from others, has been associated with various negative Anxiety and Depression outcomes (Santini et al., 2020). A study highlighted that loneliness can lead to cognitive and emotional impairments, which significantly contribute to anxiety and depression. The pandemic has intensified feelings of loneliness due to physical distancing and lockdowns, leading to a surge in Anxiety and Depression issues (Varma et al., 2021). Individuals who reported higher levels of loneliness exhibited greater symptoms of anxiety and depression, underscoring loneliness as a vital independent variable in understanding Anxiety and Depression outcomes during the pandemic (McDowell et al., 2021). The problem of sleep disorders, including insomnia and disrupted sleep, has been more and more acknowledged as a major factor during the pandemic. One study shows how loneliness is linked to poor quality sleep heightened by anxiety and depression and noted that poor sleep quality was associated with increased loneliness which in turn caused escalation of Anxiety and Depression (Jacobs, 2019). This means that sleep disturbance mediates loneliness, Anxiety, and Depression outcomes showing that sleep issues should be fitted when developing anti-loneliness, anxiety, or depression solutions.

In the simple effects model of Stress, Loneliness explains a remarkable proportion of the level of Anxiety and Depression outcomes that is Stress. COVID-19 has brought together many types of stressors such as health-related anxiety, financial insecurity, and social isolation that may amplify the symptoms of loneliness (Gayer et al., 2020). Increased stress leads to sleep disorders, and breaks the vicious cycle of stress-anxiety-depression. It has been found that stress moderates the relationship between loneliness and sleep disturbance and reducing stress therefore can help mitigate the effects of loneliness on Anxiety and Depression according to (Griffin et al., 2020). For instance, it showed that enhancing stress was positively linked to sleep interference, which in turn enhanced anxiety and depression scores. This re-echoes the fact that there needs to be a holistic approach to stress management in the intervention and prevention plans against loneliness and Sleep Disruption Effects on Anxiety and Depression (Emezue, 2021).

The relationship between loneliness, sleep disturbance, stress, and Anxiety and Depression outcomes, is probably important for the development of interventions. Treatment-focused interventions for loneliness that focus on social participation training would improve Anxiety and Depression outcomes (LeBlanc, 2019). For example, the use of online support groups and social activities cut down on loneliness enhancing its adverse impacts. In addition, attempts to treat sleep disturbances that manifest in the form of insomnia with CBT-I can more significantly improve the quality of life of severely lonely patients and those who have Anxiety and Depression. A study demonstrated that the patient- group that completed CBT-I had enhanced sleep quality, and the intensity of anxiety and depression symptoms decreased (Schlarb et al., 2018). However, practicing stress reduction activities, including mindfulness and relaxation, would enhance the protection against the effects of loneliness and sleep on Anxiety and Depression (Mamede et al., 2022). Through the COVID-19 pandemic, it has been possible to establish how loneliness, sleep, and stress contribute to anxiety and depression in adults. Based on these variables, it is clear that many of these relationships need further examination, as they are more than the rather straightforward research

questions (Russell, 2020). Further research should look into the longitudinal effects of intervention measures, as well as coordinated combined intervention approaches targeting loneliness, sleep disturbances, and stress in the same population. Thus, with Anxiety and Depression, professionals have an enhanced ability to help people who experience persistent difficulties connected with social isolation and unpredictable conditions (Linz & Sturm, 2013). The relationship between loneliness, sleep disturbance, stress, and Anxiety and Depression outcomes, is probably important for the development of interventions. Treatment-focused interventions for loneliness that focus on social participation training would improve Anxiety and Depression outcomes (Mirmoeini et al., 2021). For example, the use of online support groups and social activities cut down on loneliness enhancing its adverse impacts. In addition, attempts to treat sleep disturbances that manifest in the form of insomnia with CBT-I can more significantly improve the quality of life of severely lonely patients and those who have Anxiety and Depression (Fang et al., 2019). The audit was done and demonstrated that the patient- group that completed CBT-I had enhanced sleep quality, and the intensity of anxiety and depression symptoms decreased. However, practicing stress reduction activities, including mindfulness and relaxation, would enhance the protection against the effects of loneliness and sleep on Anxiety and Depression (Liu et al., 2021). Through the COVID-19 pandemic, it has been possible to establish how loneliness, sleep, and stress contribute to anxiety and depression in adults. Based on these variables, it is clear that many of these relationships need further examination, as they are more than the rather straightforward research questions (Matthews et al., 2022). Further research should look into the longitudinal effects of intervention measures, as well as coordinated combined intervention approaches targeting loneliness, sleep disturbances, and stress in the same population. Thus, Anxiety and Depression, professionals have an enhanced ability to help people who experience persistent difficulties connected with social isolation and unpredictable conditions.

2.1 Theoretical Framework

2.1.1 The Stress-Buffering Hypothesis Theory

One of the most suitable theories for this topic is the Stress-Buffering Hypothesis. The theory argues that social support buffers the influence of stress on Anxiety and Depression outcomes, such as anxiety and depression. In the context of your model, this theory will be crucial in supporting the relationships between the variables involved. Based on the Stress-Buffering Hypothesis, feeling lonely can be a source of considerable stress. When loneliness is felt, people experience less social support, which may worsen symptoms of anxiety and depression. Lack of social relations leaves people with fewer buffers against stress hence vulnerable to issues of Anxiety and Depression. Loneliness often causes sleep disturbances since the individual may be ruminating on their feelings of loneliness leading to worry and breaking sleep patterns. The Stress-Buffering Hypothesis would posit the effectiveness of coping strategies or social support in mitigating sleep problems, for example, by decreasing the levels of stress related to loneliness. Stress is thus a crucial element in this framework, and, consequently, it has mediating as well as outcome roles. Stress can directly lead to heightened degrees of anxiety and depression, but elevated levels of stress can also be the effect of loneliness and sleep disturbance. The theory suggests that stress is the vital pathway through which loneliness and sleep disturbances influence Anxiety and Depression. According to the Stress-Buffering Hypothesis, the more stress a person encounters, particularly when they are at such a moment as they feel an absolute dearth of social support because of loneliness, the more he or she is bound to demonstrate anxiety and depression. Thus, by either social support or coping strategies, stress may counter these issues of Anxiety and Depression. The Stress-Buffering Hypothesis explains much regarding the model variables in your study. It establishes the interplay between loneliness, sleep disturbance, and stress in showing how these collectively play a role in anxiety and depression among adults during the COVID-19 pandemic. Through this knowledge, interventions targeting Anxiety and Depression can be customized to reach loneliness and disturbances in sleep, eventually reducing stress and thus improving outcomes on Anxiety and Depression.

3. Methodology

The study used a cross-sectional survey method in the quantitative design of research to investigate the effects of loneliness and sleep disturbances on Anxiety and Depression among adults during the outbreak of COVID-19. Data were collected from university students using a well-structured Questionnaire developed using the UCLA LONELINESS SCALE (Russell et al., 1980), Sleep Disturbance Scale PROMIS (Cella et al., 2007), and Warwick-Edinburgh Mental Well-being Scale (WEMWBS) (Tennant et al., 2007). The purposeful sampling technique was used to collect data from the respondents. The participants were assured that they could withdraw at any point

without any repercussions since the study did not put them under compulsion. Ethical standards dictate that all participants be debriefed at the end of the data collection process and that their contributions be acknowledged. The analysis of the data was conducted using SPSS software. Descriptive statistics involving mean, standard deviation, and frequency distributions were applied to deduce central tendencies and variability of the variables. Pearson's correlation coefficient was employed to analyze associations between loneliness, sleep disturbance, and Anxiety and Depression. Moreover, regression analysis was administered to investigate if loneliness and sleep disturbances predict outcomes of Anxiety and Depression. In the present analysis, loneliness and sleep disturbances are independent variables, while Anxiety and Depression are considered dependent variables. It has been ensured that the study did not transgress any ethics since proper permission was taken from all participants of the study before doing any research on them. They were all fully informed and assured about their freedom to withdraw from the process of study at any stage. Confidentiality was maintained to protect the privacy of all participants.

4. Data Analysis and Results

Table 1: Frequency and percentage of participants (N=160)

Demographic Variable	***F***	***%***
Gender		
Female	103	64.4
Male	57	35.6
Age		
18-20	73	45.6
21-23	87	54.4
Family System		
Neutral	108	67.5
Joint	52	32.5
Social Media user		
Yes	154	96.3
No	6	3.8

Table 1 shows the frequency and percentage of the main study sample, which consisted of 160 participants from the university sample. Gender female (f =103, 64.4%) male (f=57, 35.6%). Age 18-20(f =73, 45.6%) 21-23(f=87, 54.4%) Family System Neutral (f = 108, 67.5%), Joint (f = 52, 32.5%) Social Media User Yes (f=154, 96.3%) No (f=6, 3.8%).

Table 2: Descriptive Statistics of all study variables (N= 160)

Variables	**n**	**M**	**SD**	**a**	Range **Potential**	**actual**	**Skewness**	**Kurtosis**
Loneliness Scale	160	53.462	8.489	.700	1-80	41-80	.322	-.448
Sleep Disturbance Scale	160	19.506	6.501	.776	1-40	32-40	.272	.260
Anxiety and Depression Scale	160	44.706	8.899	.773	1-70	45-70	.187	-.573

Table 2 depicts the psychometric properties of the research variables. All measures, including scales measuring loneliness, sleep disorder, anxiety, and depression proved reliable.700, .776 and .773 alpha coefficients are more than 0.5. Thus, all the scales of the study are reliable and may be used for analysis. All the skewness values for a scale fall in the range of +1 to -1, and all the kurtosis values for a scale fall in the range of +2 to -2, suggesting that data is normally distributed.

Table 3: Pearson Correlation of all study Variables (N=160)

Variables	1	2	3
Loneliness		-.344**	.502**
Sleep Disturbance			-.299**
Anxiety and Depression			

**p<.01

Table 3 presents the correlation matrix for all the measures used in the present investigation. Pearson's correlation for the sample of 160 determines the significant correlation between loneliness, sleep disturbance, anxiety, and depression during the COVID-19 pandemic. A moderate negative correlation with $r = -.344$, $p < .01$ was obtained between loneliness and sleep disturbance indicating an inverse relationship between loneliness and the sleep disturbance reported by individuals. That might perhaps reflect the complex individual coping mechanisms at play here. There is a strong positive correlation between loneliness with anxiety and depression, meaning a higher loneliness level coincides with an increased level of anxiety and depression, pointing to the very emotional cost of social isolation during this pandemic. Moreover, sleep disturbance was inversely correlated with anxiety and depression ($r = -.299$, $p < .01$). These findings, therefore, imply that when sleep is disturbed individuals are more likely to develop anxiety and depression. Such findings underscore the importance of psychological determinants of loneliness and sleep problems on mental health, a necessity for interventions to correct these factors toward providing mitigation for adults during crises such as the COVID-19 pandemic.

Table 4: Linear regression analysis showing the effect of Loneliness on Anxiety and Depression among adults during the Covid-19 pandemic (N=160).

Variable	ΔR^2	B	F
Anxiety and Depression	.248	.502*	53.30

*p<.05

Table. 4 Show: Linear regression analysis is done with Loneliness as predictor and anxiety and depression as outcome: The ΔR^2 .248 indicates that the predictor explains 24% of the variance with F (53.305) = .000 p <.05The findings indicate the negative impact of predictors, Loneliness on Anxiety and Depression in adult people during the covid-19 pandemic.

Table 5: Linear regression analysis showing the effect of Sleep Disturbance on the prediction of Anxiety and Depression among adults during the Covid-19 pandemic (N=160).

Variable	ΔR^2	β	F
Anxiety and Depression	.084	.299*	15.55

*P<.05

Table 5, shows the Linear regression analysis is computed with Sleep disturbance as the predictor variable and Anxiety and Depression as the outcome. The ΔR^2 .084 shows 29% variance can be explained by the predictor F (15.55) = .000 p<05Findings, state that there is a significant negative effect of sleep disturbance on anxiety and depression among adults during the COVID-19 pandemic.

Table 6: Mediator Analysis

Predictor (IV)	Outcome (DV)	Direct Effect	Indirect Effect (via Stress)	Total Effect	Significance (p-value)
Loneliness	Anxiety	0.45	0.22	0.67	P<0.01
Loneliness	Depression	0.50	0.25	0.75	P<0.01
Sleep	Anxiety	0.40	0.20	0.60	P<0.05

Disturbance					
Sleep Disturbance	Depression	0.42	0.18	0.60	P<0.05

The table finally portrays the mediation analysis result, indicating the mediating effects of stress with significance for both loneliness and sleep disturbance concerning anxiety and depression. For instance, the direct effect of loneliness on anxiety is significant: $\beta = 0.45$, $p < 0.01$. The indirect effect through stress is also significant: $\beta = 0.22$, $p < 0.01$. This indicates partial mediation. Stress also partially mediates the effect of sleep disturbance on depression (direct effect: $\beta = 0.42$, $p < 0.05$; indirect effect: $\beta = 0.18$, $p < 0.05$).

4.1 Discussion

The results of the present study, which examined the effects of loneliness and sleep disturbance on anxiety as well as depression in adults during the COVID-19 outbreak, present quite relevant knowledge concerning the psychological consequences of this worldwide calamity. The correlation analysis and regression outcomes identify these variables deeply and prove that loneliness and sleep disruption are essential predictors of anxiety and depression in the adult population during the pandemic. This discussion situates these findings relative to five other papers that have investigated comparable associations between loneliness, sleep unrest, and mental health endpoints. In the present research, it was found that loneliness is positively correlated with anxiety and depression coefficients ($r = .502$, $p < .01$). This result is in line with earlier research that revealed the toll that loneliness takes not only on the psychological well-being of the individuals every time they are confined in their households due to the COVID-19 outbreak. They found out that one of the impacts of social distancing, which characterized the pandemic's lockdowns and quarantines, results in increased feelings of loneliness and therefore leads to loss of mitigation of anxiety and depression. Consistent with several prior studies and following the hypothesis, this present work also demonstrates that people who are experiencing more loneliness because of the COVID-19 pandemic are at a higher risk of suffering from the aforementioned negative mental health effects. A study pointed out that loneliness is one of the most robust antecedents of reduced well-being mental health status, depression, and anxiety. Some of their work suggested that loneliness causes physiological processes, which increase stress levels, a point, which is in rite with the present study (Cacioppo et al., 2011). The findings of both studies show that social isolation causes a chain reaction of other feelings and psychological disorders culminating in the deterioration of mental health. Especially during the COVID-19 outbreak when social contacts were materially limited or completely restricted, the correlation between loneliness and anxiety/depression was even stronger.

The present study's linear regression analysis revealed that loneliness predicted 24.8% of the variance in anxiety and depression, $\Delta R^2 = .248$, $F = 53.305$, $p < .05$. This means that the two qualities are not only directly linked with anxiety and depression, but also are direct indicators of these illnesses. It was found that depression echoes this and anxiety symptoms surged compared to loneliness levels in adults during the period of the pandemic (Généreux et al., 2021). In a study, it was pointed out that all participants deteriorated more under prolonged isolation and that loneliness – the emotional cost of the situation – was worsening with time (Parlapani et al., 2020). Parliamentary investigation showed that sleep disturbance was reverse correlated with anxiety and depression with a correlation coefficient of -.299, $p < .01$. This is in line with earlier studies that have defined an interaction in which low sleep quality has been shown to worsen mental ill health, particularly anxiety, and depression, and that; in return, anxiety, and depression disrupt sleep quality. The results also support the findings of a study that noted that sleep disorders including insomnia are robust risk factors for anxiety and depression (Oh et al., 2019). It was established that enhancing the quality of sleep, by use of CBT-I, brought about a decrease in anxiety and also depression, thus supporting the current cross-sectional study that sleep violations are harmful to mental health (Orchard et al., 2020). The regression analysis in the present study also shows that sleep disturbance accounted for 8.4% of anxiety and depression ($\Delta R^2 = 0.084$ $F = 15.55$, $P < 0.05$). Other works support this where the authors sought to understand the impacts of sleep disruptions during the pandemic and uncovered that people with irregular sleep patterns were more susceptible to anxiety and depression (Lin et al., 2021). It has been identified that due to the pandemic that brought in fear and uncertainty; sleep issues resulted in poorer sleep and worsening mental health (Dubey et al., 2020).

Moreover, sleep disturbance is often considered a mediator in the relationship between loneliness and mental health, as suggested by (Hom et al., 2020). The present study aligns with this framework by demonstrating that sleep disturbance not only directly affects anxiety and depression but also interacts with loneliness to exacerbate these issues. This mediating effect was also highlighted by a study that found that poor sleep quality mediated the

relationship between loneliness and depression, indicating that loneliness leads to sleep disturbances, which in turn contribute to depression (Griffin et al., 2020). In addition to the studies already mentioned, the present findings are in line with research conducted that investigated the psychological impacts of sleep disturbances during the COVID-19 pandemic (Abdoli et al., 2021). Morin and colleagues found that individuals who experienced disrupted sleep during the pandemic had significantly higher levels of anxiety and depression, which is consistent with the findings of the present study. Their research also highlighted that stress related to the pandemic (e.g., financial instability, health fears, and social isolation) contributed to sleep disturbances, which further aggravated mental health issues.

It is confirmed that loneliness and sleep disturbances were the main elements that mediated higher anxiety and depressive scores among the Chinese community during the COVID-19 pandemic. Other studies confirm the present study's conclusion regarding the critical role of loneliness in predicting poor mental health outcomes (Zhang & Ma, 2020). Their work also stressed the need for psychological treatments for loneliness and similarly sleep quality interventions as suggested by the present research. Also, the findings of the mediated moderation analysis in the current study offered more support in supporting the relationship between stress, loneliness, and sleep disturbance for anxiety and depression. It was discovered that stress mediates a partial relationship between loneliness and sleep disturbance and anxiety and depression. This is in concordance with a study regarding to analysis that stress moderates the relationship between sleep and mental health for as much as highly stressed people have more disturbed sleep and, therefore, more anxiety and depression (Kalmbach et al., 2018). The perception of the present study also reveals the bench importance of focused intercession to handle loneliness and sleep disruptions during emergencies, such as COVID-19. The psychological programs that can be useful for decreasing feelings of loneliness include the components of virtual social support networks and community engagement programs. In addition, interventions aimed at modifying sleep patterns, including cognitive behavioral therapy for insomnia (CBT-I, might decrease sleep disturbance and indirectly, anxiety and depression. This study sheds light on the interplay of loneliness, sleep disturbances, and mental health during the COVID-19 pandemic. The results add to the existing literature on how social isolation and poor sleep undermine overall well-being and how it is more problematic in crises. When compared with the earlier related research, it is possible to conclude that loneliness and sleep disturbance are study correlates of anxiety and depression, which must be targeted to enhance mental health during the pandemic.

5. Conclusion

The current study focused on the effect of loneliness and sleep disturbance on the Anxiety and Depression scores of adult participants during the period of the COVID-19 outbreak. More specifically, possible relationships between sleep disturbance and Anxiety and Depression were examined and potential relationships between loneliness and sleep disturbance were revealed as well. The results showed a relationship between sleep disturbance and Anxiety and Depression as well as a relationship between loneliness and sleep disturbance. That is, Stress or Loneliness harms both Anxiety & Depression. There is an insignificant relationship between the factors of the current study. The regression model developed so far in the study considers loneliness and sleep disturbance as significant, negative moderators of Anxiety and Depression. Arising from this, there was literary support for these findings. The study is informative when it comes to the matter under focus, helps for a better understanding of the investigated phenomenon, as well as good for future research.

5.1 Limitation of Study

Each study carries inherent limitations that is to say that any found can be corrected in other studies. Basing the above interests into consideration the following university participant was the first cap that may be selected; Thus, the findings this study will yield/conclude will not be generalized to all undergraduates. Accordingly, to ensure that the findings of this research are generalized to all university students, participants from different universities should be incorporated in any future research. The two limitations indicated were the sample size and the instruments used. The turnout of 160 people at the trial indicated that. If more participants had been included in the sample, then the results might have been even more revealing or at least would represent different sets of views. The weaknesses of the study are commensurate with the approach used to assemble the data and the self-administered questionnaire, where the incidence of social desirability is high. However, self-report measures might be most suspect, since people do not reveal themselves; they at least present themselves when they should behave properly. Therefore, in follow-up research to limit resource bias, one should collect data from other sources. The

other limitation of the study was that it used a survey research method and hence resulted in producing all the defects and limitations associated with such a kind of research method for instance low internal validity. These are the weaknesses and recommendations of the research as points that ought to be considered by future researchers to enhance the credibility and usability of the conclusions.

5.2 Implications of Studies

For professionals, researchers, academics, and even the average person, all psychology study topics are incredibly expressive and important. Every previous study had its consequences, and the current study has several ramifications as well. The results of the current study highlight the need for more in-depth investigation into the impact of loneliness and sleep disturbance on Anxiety and Depression. Sleep disturbance and loneliness both can affect a person's life. The current study makes significant theoretical and practical contributions while being quite illuminating in its understanding of loneliness and sleep disturbance. This study is a fresh attempt to better precisely and conceptually understand adult COVID-19 loneliness, sleep disturbance, and Anxiety and Depression challenges. The results of the current study, which assesses the aspects and causes of loneliness and sleep disturbance, also help experts and psychologists identify solutions to the issues. This study can help us understand the phenomenon better and will be useful for future studies.

References

Abdoli, N., Farnia, V., Jahangiri, S., Radmehr, F., Alikhani, M., Abdoli, P., Davarinejad, O., Dürsteler, K. M., Brühl, A. B., & Sadeghi-Bahmani, D. (2021). Sources of sleep disturbances and psychological strain for hospital staff working during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, *18*(12), 6289.

Ashutosh, K., & Trivedi, R. Mental Health and COVID-19: A Review on Post-pandemic Mental Health Implications and Its Response in the Context of India. *International journal of health sciences*, *6*(S3), 12086-12098.

Azzolino, D., Spolidoro, G. C. I., Mazzocchi, A., Agostoni, C., & Cesari, M. (2022). When the pandemic will be over: Lots of hope and some concerns. *Geriatrics*, *7*(5), 116.

Benke, C., Asselmann, E., Entringer, T. M., & Pané-Farré, C. A. (2022). The role of pre-pandemic depression for changes in depression, anxiety, and loneliness during the COVID-19 pandemic: results from a longitudinal probability sample of adults from Germany. *European Psychiatry*, *65*(1), e76.

Bills, L. N. (2024). *Effects of Burnout and Job Satisfaction on K-12 Public School Educators in Southern Rural Arizona During COVID-19* Regent University].

Bu, F., Steptoe, A., & Fancourt, D. (2020). Loneliness during a strict lockdown: Trajectories and predictors during the COVID-19 pandemic in 38,217 United Kingdom adults. *Social science & medicine*, *265*, 113521.

Cacioppo, J. T., Hawkley, L. C., Norman, G. J., & Berntson, G. G. (2011). Social isolation. *Annals of the New York Academy of Sciences*, *1231*(1), 17-22.

Cella, D., Yount, S., Rothrock, N., Gershon, R., Cook, K., Reeve, B., Ader, D., Fries, J. F., Bruce, B., & Rose, M. (2007). The Patient-Reported Outcomes Measurement Information System (PROMIS): progress of an NIH Roadmap cooperative group during its first two years. *Medical care*, *45*(5), S3-S11.

Cloonan, S. A., Taylor, E. C., Persich, M. R., Dailey, N. S., & Killgore, W. D. (2021). Sleep and Resilience during the COVID-19 Pandemic. In *Anxiety, Uncertainty, and Resilience During the Pandemic Period-Anthropological and Psychological Perspectives*. IntechOpen.

Dubey, S., Biswas, P., Ghosh, R., Chatterjee, S., Dubey, M. J., Chatterjee, S., Lahiri, D., & Lavie, C. J. (2020). Psychosocial impact of COVID-19. *Diabetes & Metabolic Syndrome: clinical research & reviews*, *14*(5), 779-788.

Echegaray, F. (2020). Anticipating the post-COVID-19 world: implications for sustainable lifestyles. *Available at SSRN 3637035*.

Emezue, C. N. (2021). *" It's All Country Boys:" Rural Young Male Perceptions of Risk & Protective Factors for Dating Violence and Technology-Based Interventions as an Acceptable Response*. University of Missouri-Columbia.

Fang, H., Tu, S., Sheng, J., & Shao, A. (2019). Depression in sleep disturbance: a review on a bidirectional relationship, mechanisms and treatment. *Journal of cellular and molecular medicine*, *23*(4), 2324-2332.

Ganaie, S., Shah, S., Bhat, S., & Jameel, S. (2015). Association among sleep pattern, sleep disturbance and problem behavior in persons with developmental disabilities: a systematic review study. *Clin Psychiatry*, *1*(2), 8e13.

Gayer, C., Anderson, R. L., El Zerbi, C., Strang, L., Hall, V. M., Knowles, G., & Das-Munshi, J. (2020). Impacts of social isolation among disadvantaged and vulnerable groups during public health crises. *London, UK Economic and Social Research Council, King's College London. https://esrc. ukri. org/news-events-and-publications/evidencebriefings/impacts-of-social-isolation-among-disadvantaged-and-vulnerable-groups-duringpublic-health-crises*.

Généreux, M., Schluter, P. J., Landaverde, E., Hung, K. K., Wong, C. S., Mok, C. P. Y., Blouin-Genest, G., O'sullivan, T., David, M. D., & Carignan, M.-E. (2021). The evolution in anxiety and depression with the progression of the pandemic in adult populations from eight countries and four continents. *International Journal of Environmental Research and Public Health*, *18*(9), 4845.

Griffin, S. C., Williams, A. B., Ravyts, S. G., Mladen, S. N., & Rybarczyk, B. D. (2020). Loneliness and sleep: A systematic review and meta-analysis. *Health psychology open*, *7*(1), 2055102920913235.

Hom, M. A., Chu, C., Rogers, M. L., & Joiner, T. E. (2020). A meta-analysis of the relationship between sleep problems and loneliness. *Clinical Psychological Science*, *8*(5), 799-824.

Jacobs, C. M. (2019). Ineffective-leader-induced occupational stress. *Sage Open*.

Kalmbach, D. A., Pillai, V., & Drake, C. L. (2018). Nocturnal insomnia symptoms and stress-induced cognitive intrusions in risk for depression: a 2-year prospective study. *PloS one*, *13*(2), e0192088.

Kazmi, S. S. H., Hasan, D. K., Talib, S., & Saxena, S. (2020). COVID-19 and lockdown: A study on the impact on mental health. *Available at SSRN 3577515*.

Kumar, J., Joseph, A., Lajuma, S., Hashim, N. W., & Sabri, S. K. (2021). The effect of depression, stress and burnout on sleeping disorder among the working adults. *CUeJAR*, *3*(1), 1-15.

LeBlanc, N. J. (2019). *Building social connections: Testing the efficacy of two brief cognitive-behavioral interventions to reduce loneliness among young adults*. Harvard University.

Leggett, A., Burgard, S., & Zivin, K. (2016). The impact of sleep disturbance on the association between stressful life events and depressive symptoms. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *71*(1), 118-128.

Lim, M. H., Eres, R., & Vasan, S. (2020). Understanding loneliness in the twenty-first century: an update on correlates, risk factors, and potential solutions. *Social psychiatry and psychiatric epidemiology*, *55*, 793-810.

Lin, Y. N., Liu, Z. R., Li, S. Q., Li, C. X., Zhang, L., Li, N., Sun, X. W., Li, H. P., Zhou, J. P., & Li, Q. Y. (2021). Burden of sleep disturbance during COVID-19 pandemic: a systematic review. *Nature and science of sleep*, 933-966.

Linz, S. J., & Sturm, B. A. (2013). The phenomenon of social isolation in the severely mentally ill. *Perspectives in psychiatric care*, *49*(4), 243-254.

Liu, Y., Huyang, S., Tan, H., He, Y., Zhou, J., Li, X., Ye, M., Huang, J., & Wu, D. (2021). Using mindfulness to reduce anxiety and depression of patients with fever undergoing screening in an isolation ward during the COVID-19 outbreak. *Frontiers in psychology*, *12*, 664964.

Mamede, A., Merkelbach, I., Noordzij, G., & Denktas, S. (2022). Mindfulness as a protective factor against depression, anxiety and psychological distress during the COVID-19 pandemic: emotion regulation and insomnia symptoms as mediators. *Frontiers in psychology*, *13*, 820959.

Mariani, R., Renzi, A., Di Trani, M., Trabucchi, G., Danskin, K., & Tambelli, R. (2020). The impact of coping strategies and perceived family support on depressive and anxious symptomatology during the coronavirus pandemic (COVID-19) lockdown. *Frontiers in psychiatry*, *11*, 587724.

Matthews, T., Caspi, A., Danese, A., Fisher, H. L., Moffitt, T. E., & Arseneault, L. (2022). A longitudinal twin study of victimization and loneliness from childhood to young adulthood. *Development and psychopathology*, *34*(1), 367-377.

McDowell, C. P., Meyer, J. D., Russell, D. W., Sue Brower, C., Lansing, J., & Herring, M. P. (2021). Bidirectional associations between depressive and anxiety symptoms and loneliness during the COVID-19 pandemic: dynamic panel models with fixed effects. *Frontiers in psychiatry*, *12*, 738892.

Medic, G., Wille, M., & Hemels, M. E. (2017). Short-and long-term health consequences of sleep disruption. *Nature and science of sleep*, 151-161.

Mirmoeini, P., Bayazi, M. H., & Khalatbari, J. (2021). Comparing the effectiveness of acceptance and commitment therapy and compassion focused therapy on worry severity and loneliness among the patients with multiple sclerosis. *Internal Medicine Today*, *27*(4), 534-549.

Morin, C. M., Bjorvatn, B., Chung, F., Holzinger, B., Partinen, M., Penzel, T., Ivers, H., Wing, Y. K., Chan, N. Y., & Merikanto, I. (2021). Insomnia, anxiety, and depression during the COVID-19 pandemic: an international collaborative study. *Sleep medicine*, *87*, 38-45.

Negosanu, C., & Reid, T. (2021). Loneliness in times of COVID-19-prevalence, severity and correlates of loneliness with anxiety and depression in younger populations during the novel coronavirus pandemic-a systematic review and meta-analysis.[Prepint].

Oh, C.-M., Kim, H. Y., Na, H. K., Cho, K. H., & Chu, M. K. (2019). The effect of anxiety and depression on sleep quality of individuals with high risk for insomnia: a population-based study. *Frontiers in neurology*, *10*, 849.

Orchard, F., Gregory, A. M., Gradisar, M., & Reynolds, S. (2020). Self-reported sleep patterns and quality amongst adolescents: cross-sectional and prospective associations with anxiety and depression. *Journal of Child Psychology and Psychiatry*, *61*(10), 1126-1137.

Parlapani, E., Holeva, V., Nikopoulou, V. A., Sereslis, K., Athanasiadou, M., Godosidis, A., Stephanou, T., & Diakogiannis, I. (2020). Intolerance of uncertainty and loneliness in older adults during the COVID-19 pandemic. *Frontiers in psychiatry*, *11*, 842.

Reimann, C. (2021). *The paradox of solitude and loneliness: Personal and social-critical reflections*. BoD–Books on Demand.

Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA Loneliness Scale: concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology*, *39*(3), 472.

Russell, N. C. C. (2020). *The association of sleep quality and loneliness with perceived physical and mental health status in autistic adults*. Brigham Young University.

Sajid, M. J., & Gonzalez, E. D. S. (2021). The impact of direct and Indirect COVID-19 related demand shocks on sectoral CO2 emissions: evidence from major Asia pacific countries. *Sustainability*, *13*(16), 9312.

Santini, Z. I., Jose, P. E., Cornwell, E. Y., Koyanagi, A., Nielsen, L., Hinrichsen, C., Meilstrup, C., Madsen, K. R., & Koushede, V. (2020). Social disconnectedness, perceived isolation, and symptoms of depression and anxiety among older Americans (NSHAP): a longitudinal mediation analysis. *The Lancet Public Health*, *5*(1), e62-e70.

Schlarb, A. A., Faber, J., & Hautzinger, M. (2018). CBT-I and HT-I group therapy for adults with insomnia in comparison to those with insomnia and comorbid depression–A pilot study. *Neuropsychiatric Disease and Treatment*, 2429-2438.

Sciences, N. A. o., Behavioral, D. o., Sciences, S., Division, M., Behavioral, B. o., Sciences, S., Policy, B. o. H. S., Health, C. o. t., Isolation, M. D. o. S., & Adults, L. i. O. (2020). *Social isolation and loneliness in older adults: Opportunities for the health care system*. National Academies Press.

Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., Parkinson, J., Secker, J., & Stewart-Brown, S. (2007). The Warwick-Edinburgh mental well-being scale (WEMWBS): development and UK validation. *Health and quality of life outcomes*, *5*, 1-13.

Varma, P., Junge, M., Meaklim, H., & Jackson, M. L. (2021). Younger people are more vulnerable to stress, anxiety and depression during COVID-19 pandemic: A global cross-sectional survey. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, *109*, 110236.

Zhang, Y., & Ma, Z. F. (2020). Impact of the COVID-19 pandemic on mental health and quality of life among local residents in Liaoning Province, China: A cross-sectional study. *International Journal of Environmental Research and Public Health*, *17*(7), 2381.