Psychological Distress among Students During COVID-19: Sleep Quality and Cognitive Emotion Regulation as Correlates.

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2020

I certify that the research work contained in this thesis entitled **"Psychological Distress among students during COVID-19: Sleep Quality and Cognitive Emotion Regulation as Correlates**" has been carried out and completed by **Ms. Ruhma Syed,** Student ID**: SP17-BPY-005:** student of BS Psychology, session 2017-2021, under my supervision. This research is an independent research work and carried out under given instructions and considerations.

Dated: _____

_____   _____

Dr. Shameem Fatima   External Examiner

    (Supervisor)

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Declaration

I, Ms. Ruhma Syed, Student ID: SP17-BPY-005, Student of BS Psychology of session 2017-2021, hereby declare that the matter printed in the thesis entitled **"Psychological Distress among students during COVID-19: Sleep Quality and Cognitive Emotion Regulation as correlates."** is my own work and has not been printed, published and submitted as research work thesis or publication in any form in any university, research institution etc. in Pakistan or abroad.

Dated: _____   _____

                                                              Signature of Declarer

Dedication

This thesis is dedicated to my beloved parents; Syed Tahir Ikhlaq and Sofia Naqvi,

my brother; Hamza Syed; my sister Simal Syed, and my mentor and my supervisor

Dr. Shameem Fatima for their love, care, support and encouragement in completing

my thesis.

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Abstract

The main objectives of the current study were to assess the association between sleep quality and psychological distress and to assess whether cognitive emotion regulation strategies mediate the link between sleep quality and psychological distress. To approach the study objectives, psychological distress was assessed from stress, anxiety, and depression; and emotion regulation was assessed from two cognitive emotion regulation strategies, putting into perspective and catastrophizing. It was hypothesized that there would be positive associations of poor sleep quality with anxiety, depression, and stress. A secondary hypothesis was that the selected cognitive emotion regulation would mediate the association of sleep quality with anxiety, depression, and stress. A sample of 202 college and university students in age range 16-30 (M=21.64, SD= 2.32; Men= 65, Women=137) was selected through an online survey to conduct the study. Convenient sampling strategy was used to approach participants and collect data. Pittsburgh Sleep Quality Index (Buysse, 1989), Depression, anxiety and stress scale-21 (Lovibond, 1995) and Cognitive Emotion Regulation Questionnaire (Garnefski & Kraaij, 2007) were used to assess the sleep quality, psychological distress variables and the cognitive emotion regulation respectively. Pearson product-moment correlation and mediation analysis were used to test study hypotheses. The findings of the study revealed that poor sleep quality was a positive correlate of stress, anxiety, and depression. Findings from mediation analysis indicated that only one of the two cognitive emotion regulation strategies; catastrophizing significantly mediated the association of sleep quality with stress, anxiety, and depression. Limitations, implications and future directions of the current study were also discussed.

Keywords: *Sleep Quality, Psychological Distress, Catastrophizing and Putting into Perspective.*

Chapter 1

Introduction

The world has seen a pandemic in the last few months, which has put a serious impact on living conditions of almost everyone. The feeling of fear, anxiety, depression has increased since the onset of Covid 19. Newer feelings of isolations, loneliness, academic stress, poor sleep habits have come forward during the whole quarantine phase in students. During the pandemic, feelings of worry and fear for loved ones' life has increased. With quarantine, the social activities have been restricted ultimately putting strain on mental health of many people around the world including Pakistan. Feelings of frustration boredom and stress have prevailed for a very long time now.

Psychological distress is a state in which a person experiences mental suffering due to various reasons. His ability to behave or respond normally is disturbed and he finds it difficult to cope with his everyday life and routine. Sleep quality is a person's feeling of relaxation or satisfaction with his or her sleep. A good quality sleep is determined by the factors like undisturbed sleep; a good maintained sleep and feeling fresh upon waking up. It is a measure of how well a person sleeps. Catastrophizing is thinking of an event in negative light only. Imagining only the worst-case scenarios is one way to put catastrophizing. Fear and an intense feeling about something cause catastrophizing. Putting things into perspective means to see things from an objective point of view. It could also mean to compare something with something similar to help one get a better and clearer view of something.

Association between Sleep Quality and Psychological Distress

A sound sleep is the definition of a quality sleep. The importance of sleep quality has increased in students since the beginning of the pandemic. Covid 19 has

seriously affected the quality of sleep in almost everyone to a great extent (Zimmermann et al., 2020). The lifestyle of a person including influence of environment and psychological factors, greatly affects a person's sleep quality. This has been seriously affected in the past few months due to the pandemic. It is found to be accompanied by psychological issues mainly stress, anxiety, depression and insomnia. Sleep plays a great role in our life. It maintains our senses and affects our physiology. If the sleep is healthy, our brain functions healthily, which ultimately controls all of our bodily functions. Disturbance in a peaceful sleep routine leads to sleep related issues in our body, which can cause fatigue, mental health issues and physical issues. Considering the pandemic, the sleep routine of many has been affected especially students. Studies have shown symptoms of psychological distress including depression, low satisfaction in life in the students due to disrupted sleep quality. Sleep quality is linked with psychological distress to a great extent. Lack of sleep is linked to depression, anxiety and stress. People with insomnia are found to have symptoms of OCD, panic, phobias, and psychological and psychic distress (Taylor et al., 2020).

The literature shows that students with low levels of sleep faced daytime troubles in their functions. Low sleepers had higher levels of physical and psychological problems (Lund et al., 2020). Poor sleep quality results in high levels of mental dysfunction. Particularly university students are at a greater risk of mental issues (Zhao et al., 2020). Researches have shown symptoms of depression and anxiety, are now common among university and college students who are poor sleepers. An overall low level of life satisfaction has also been reported which is leading to significant distress in the lives of students.

Traumatizing events like a pandemic generate severe amounts of generalized anxiety, depression, and stress. This can even culminate the onset of post traumatic stress disorder Further research indicates that covid 19 has disrupted many lives and routines with its affect on sleep, mood, mental health etc. in students specially; the negative consequences are prevalent on a very large scale. Psychological distress has increased among students considering online education and the stress that accompanies it. With the rise of the coronavirus disease (COVID-19) outbreak, the psychological impact cannot be ignored which has taken the masses into its strict hold (Torales et al., 2020). Research has found evidence that contagious diseases like SARS and now Covid 19, can cause PTSD, stress, anxiety and depression in both the infected and non-infected people. Literature shows that there is a negative effect on the mental health of people. A traumatic event like the pandemic can cause significant amount of psychological distress along with great effect on ones sleep quality. Previous studies from European literature also found links of low sleep to psychological distress due to home confinement (Omran, 2011).

Also, the evidence from the existing literature demonstrates that participants with sleep related issues were found to have high levels of depression, anxiety, and stress (Cellini et al., 2020). Insomnia has risen to a very great extent since the onset of covid 19. It was further revealed that time spent in bed and total sleep time has increased but a sound and efficient sleep quality significantly decreased. Stress has been found to be the leading cause of insomnia in students. The level of motivation has vastly decreased in masses along with the ability to pay attention, concentration in terms of online education. Most of the issues contributing to mental health burden need to be addressed and measures should be taken to help mitigate the situation prevailing among student masses (Li et al., 2020).

Association between Cognitive Emotion Regulation and Psychological Distress

Evidence from existing literature shows that cognitive emotion regulation plays a significant role in many different psychological issues (Chen, 2016; Garnefski et al., 2002). Different cognitive approaches have stated a link between emotions and their effect on a person's everyday life. Emotions are usually caused when reasoning, attention or memory influences one's daily life. Cognitive emotion regulation is the regulation of emotions through mental strategies in different stressful and emotionally arousing circumstances.

The model that describes the role of nervous system in relating or controlling of the emotions is the cognitive emotion regulation strategies model. According to the model, there are several cognitive processes that control a person's emotion arousal. (Duarte & Marques, 2015; Chen, 2016). The 9 strategies described in the model are self-blame, rumination, other-blame, catastrophizing, positive refocusing, putting into perspective, positive reappraisal, planning and acceptance (Tull et al., 2007). This model has been found to be a fundamental process in management of many psychosomatic illnesses and psychological disorders (Garnefski & Spinhoven, 2002). A disaster like a pandemic can induce extremely negative thoughts and emotions in the people including emotions like hopelessness, fear, frustration and similar psychological distress. To tackle this destructive behaviour, the person needs to adopt certain cognitive emotion regulating strategies otherwise it can have seriously long lasting severe psychological illnesses in the person (Amstadter &Vernon, 2008).

An unexpected catastrophe like the covid 19 outbreak can put the mental health of many at risk and can trigger extreme emotional arousal in people. After that a sense of control over the emotions becomes important (Mennin, 2005). Literature also shows that symptoms of depression and anxiety from mild to severe are

increasing in the masses, which are accounting for feelings of uncertainty and health related fears (Wang et al., 2020).

According to previous studies, almost 25% of their population had anxiety symptoms in terms of academic concerns, along with a impact on daily life and their sleep quality (Cao et al., 2020). Another survey reported that most of the youngsters admitted that the pandemic has worsened their pre-existing psychological issues because of closure of universities, colleges and due to loss of routine and limited outdoor and social activities (YoungMinds, 2020).

Various previous researches have highlighted various factors that are contributing to an increase in stress in the students during the pandemic. To help lower these issues like academic delay stress, disturbed educational progress, effect on sleep quality, psychological distress etc., different techniques are suggested including coping strategies, stress management. While experiencing traumatic situation, general population behave differently. Reaction of some people is positive and other respond negatively. There is evidence to support that coping strategies during traumatic situations influence the quality of life of general population (Sliter &Yuan, 2014). Due to insufficient learning during the pandemic both students and teachers have faced many challenges and problems along with significant amount of psychological distress (Alam & Bao, 2020). Ever since the pandemic, online education has set its foot in. due to which there is not enough social activity and people have been confined to their homes. This has led to negative thoughts and has led to serious psychological distress in students (Rohman & Nurhadi, 2020).

Anxiety, stress and depression are increasing in students because of lack of enjoyment at classroom (Dewaele & Magdalena, 2019). A survey by (Cao et al., 2020) has revealed that out of a sample of 7143 students around 25% are facing

severe anxiety due to the virus outbreak and its consequences. Previous studies show that around 26% of students haven't been able to receive mental health support since the pandemic begun. Quarantine and isolation from people are challenging to our general mental wellbeing (Brooks et al., 2020) and are causing distress ins many people (Shankar et al., 2013). In our daily life we are exposed to many stress giving factors, which vary in their intensity and duration (De Kloet et al., 2005; Ellis & Del Giudice, 2019).

Psychological distress exists in different ranges in the population, from a temporary and adaptive response to stressors, to those at the extreme end, which may be at higher risk of developing a psychological disorder. (Kessler et al., 2010). Psychological distress results in several mental health problems and also increases the mortality rate (Barry & Phillips 2020). Exposure to life threatening situations and catastrophes can result in poor sleep quality, increased sleep latency and many more complaints regarding sleep and mental health. Besides the fears of contracting the virus, various sources of stress are increasing during the pandemic (Holmes et al., 2020). Psychological well-being is at stake since the feelings of loneliness, general anxiety forced changes in routines and a restriction to social activities are prevalent now. Emotional regulation is also lowered since activities like exercising and working out have reduced. People are mostly in a state of grief over loss of life, loss of jobs, a feeling of hopelessness and not being able to achieve milestones in life. Emerging empirical studies show rise in mental issues as a result of the pandemic (Lei et al.,2020; Wang et al., 2020).

Anxiety and depression is on the rise in many populations especially at the beginning of the pandemic (Lasevoli et al., 2020). The experiences of anxiety, frustration, hopelessness are prevailing which are likely to heavily effect people with

pre existing symptoms of mental health issues (Liu et al., 2020; Mazza et al., 2020). Individuals with various psychological conditions are likely to have poor sleep quality as shown by research. Stress leads to disrupted sleep (Huang & Zhao, 2020). Access to mental health support is limited during the quarantine due to which overall psychological distress is increasing (Chatterjee et al., 2020).

Association between Sleep Quality and Cognitive Emotion Regulation

Poor sleep quality results in an individual's ability to engage in regulation of negative emotions (Muass et al., 2012). People often report that irregular or disturbed sleep pattern leads to mood instabilities and irritability (Horne et al., 1985). Poor sleep quality leads to mood instability and disorders (Walker & Van Der Helm, 2009). Disturbed sleep results in impairment in higher cognitive functions (Goel & Dinges, 2009). Disturbed sleep results in an impairment of emotion regulation, which ultimately results in symptoms of depression (O'Leary et al., 2016). Disturbed sleep is strongly associated with depression (e.g. Goldstein & Walker, 2014). Moreover it results in difficulty in regulation of emotions (Baglioni & Riemann, 2010). Many factors play an important role in determining the quality of a good sleep. Emotion regulation strategies are one of them. Sleep effects a person's functioning to a critical level. Insufficient sleep seriously impacts normal neurocognitive functioning. However, the effect of inadequate sleep on mental health is the most significant (Pilcher & Huffcutt, 2018). A disturbed sleep can cause depression. There are different mechanisms that explain the fact that poor sleep quality leads to depression in individuals. One of these mechanisms is the sleep-induced change in an individual's physiology (Novati et al., 2008). Literature shows strong evidence that insomnia is associated with mood irritabilities including a negative mood (Xia & Zhou, 2010).

Chapter 2

Literature review

Abdelkerim et al., (2020) assessed the effect of Covid 19 on sleep quality and mental health in the Moroccan population. Dysfunctional Beliefs and Attitudes about Sleep Scale, Athens Insomnia Scale, Epworth Sleepiness Scale, Hamilton Anxiety Rating Scale and Beck Depression Inventory was used to measure the quality of sleep and other psychological illnesses. The results showed that throughout the pandemic sleep disorders, anxiety and depression significantly increased.

Wenjen et al., (2020) studies a sample of college students in which they wanted to see the psychological effect of covid 19 in China was used to assess the anxiety. The results showed that anxiety increased during the pandemic in students. Another study conducted by Yeen et al., (2020) showed the mental health burden in people of China. Generalized anxiety disorder assessment scale was used to assess depressive symptoms and sleep quality was assessed which showed that younger people have been facing more depression than adults. The results also showed that younger people tend to overthink the whole situation of pandemic more than old people, which ultimately increases their mental burden.

A research by Wenning Fu et al., (2020) revealed that the sleep quality, mental health significantly became poor after the pandemic in Wuhan's residents as compared to before the pandemic. This was assessed through generalized anxiety disorder assessment scale, patient health questionnaire and Athens insomnia scale. Another study

Salman et al., (2020) showed the psychological effect of covid 19 pandemic in university students of Pakistan through generalized anxiety disorder assessment scale for measuring anxiety, patient health questionnaire for depression, sources of distress

(14-items) and brief-COPE. Around 1134 students participated in the study and the results showed severe negative effect of the pandemic on the mental wellbeing of students. A study conducted on Turkish society by Özdin et al., (2020) revealed that mental health of Turkish people, with sample of adults, has significantly deteriorated during the pandemic. The effect was assessed through hospital anxiety and depression scale and health anxiety inventory. The results showed that women were more affected in terms of their mental health along with people who had previous mental illnesses.

Ravi et al., (2020) showed that sleep disorders significantly increased during the pandemic in Indian society. The research was conducted using the insomnia severity index, perceived stress scale for measuring stress, anxiety and depressive symptoms and patient health questionnaire. The study revealed that sleep disorders, including insomnia have relatively increased since the pandemic took start. Maria et al., (2020) revealed the drastic adverse effect on mental health of people in Italy since the beginning of the pandemic. The research was conducted using patient health questionnaire, generalized anxiety disorder assessment scale and insomnia severity index. The results indicated that sleep disturbances were more prevalent in women in Italy along with people with chronic illnesses.

A research by Hakime et al., (2020) showed that stress levels greatly increased during the covid 19 pandemic in nursing students in Turkey. The stress level along with other psychological problems was assessed using the DASS 21 scale, which showed an increase in psychological distress among nursing students. The sample consisted of 300 nursing students.

Another study by Marelli et al., (2020) showed that sleep disturbances have been prevailing more than ever now in the students of Italy. The results showed that although students are sleeping more during the pandemic, overall sleep quality was worse during lockdown as measured by Pittsburgh sleep quality index. According to a research by Josue et al., (2020) revealed that nearly 70% of the population experiences at least one sleeping disturbance during the lockdown period in covid 19 as measured through Jenkins sleep scale.

A study by Simon et al., (2020) revealed that cognitive emotion regulation strategies are significant during the entire pandemic since lower ability to regulate emotions will lead to significant increase in problems associated with the mental wellbeing of a person. Higher ability to use catastrophizing and rumination strategies for example resulted in significant increase in psychological distress among people including stress and depression. A research by Panayiotou et al., (2020) conducted in Cyprus showed changes in quality of sleep, life and the effect of cognitive emotion regulation strategies using the cognitive emotion regulation scale questionnaire showed that lower emotion regulation strategies decreases the quality of life with an overall lower ability to regulate emotions.

Keshky et al., (2020) showed the increase in anxiety, depression and personal stress during the quarantine using the emotion regulation scale and hospital anxiety and depression scale. The results concluded that stress, anxiety and depression immensely increased specially in younger people in Saudi Arabia. Moreover it was revealed that females were more likely to be anxious. Another latest study by Kontoangelos et al., (2002) has revealed that children face more symptoms of anxiety and depression while the symptoms are even worse for people with severe chronic conditions.

A research by Cruz et al., (2020) revealed using the cognitive emotion regulation questionnaire for emotion regulation strategies that catastrophizing subscale appears to be the most used strategy by students during the gloomy situation that has been prevailing in the pandemic.

Fitzpatrick et al., (2020) revealed an increase in depressive symptoms along with anxiety symptoms in the United States throughout the pandemic using the centre for epidemiologic studies depression scale. The study consisted of 300 health care workers working in a local hospital. Symptoms of depression, stress and anxiety have prevailed more in the United Stated since the period of lockdown.

A study conducted in Spain by Sanguino et al., (2020) revealed the presence of depression, anxiety and post-traumatic stress disorder and its increasing levels with the onset of covid 19 among students. The sample was of 200 students in a university in Spain. Torales et al., (2020) showed in their research an increase in depression, anxiety, sleep problems, insomnia, anger and denial in people during the global pandemic in students aged 19-25. Salehinejad et al., (2020) revealed the negative consequence of covid 19 on sleep quality among healthy individuals who were in quarantine since the beginning of the pandemic. 160 people partook in the study and Pittsburgh sleep quality index was used to assess the sleep quality among the participants.

Peltz et al., (2020) revealed in their research that sleep quality and overall energy lowered during the covid 19. It also found links with higher health stress. The study sample was of people doing jobs. Higher stress level and severe anxiety was also noted in the employees as assessed using the generalized anxiety disorder assessment scale. A research by Korkmaz et al., (2020) showed that covid 19

significantly increased anxiety levels and significantly reduced sleep quality in health care workers.

Jiang et al., (2020) showed that mental wellbeing of students drastically dropped during the pandemic in China. The results were gathered using general information questionnaire and the symptom checklist questionnaire, which showed that anxiety, phobic anxiety, insomnia increased during covid 19.

Li et al., (2020) showed in their research that acute signs of anxiety, stress and depression prevailed in China on the onset of the pandemic. Less social support, limited outdoor exposure resulted in significant increase in psychological illnesses in a sample of adolescents in China as measured using the generalized anxiety disorder assessment scale for anxiety and Beck's depression inventory for depression symptoms.

A large-scale study conducted by Chen et al., (2020) showed that 7.7% students in college showed depressive symptoms and low emotional regulation ability. Changes in routines led to even more sleep disturbances. A research by Yang et al., (2020) showed that mental stability was found to be negatively related with the psychological trauma caused by covid 19 in Wuhan. It also showed that cognitive emotion regulation impacted the mental heath directly. Cognitive emotion regulation was found to be a mediator.

Salari et al., (2020) revealed in their study the occurrence of stress, anxiety, and depression among the general population during the COVID-19. Giannopoulou et al., (2020) showed that students in Greece are facing more symptoms of anxiety and stress specially the students who are ready to take their national university entrance exams during covid 19. Generalized anxiety disorder assessment scale and patient health questionnaire were used to assess anxiety and patient health respectively.

Tang et al., (2020) showed that depressive symptoms and symptoms of posttraumatic stress disorder began a month later the lockdown was put in students who were quarantined in China. The survey was conducted online using the posttraumatic stress disorder checklist civilian version and the 9-item patient health questionnaires along with sleep duration data throughout the beginning of the pandemic.

An international research by Mandelkorn et al., (2020) showed sleep quality has significantly deteriorated since the pandemic began. The sleep disturbances were assessed using a validated sleep disturbances questionnaire along with the consumption of sleeping pills in adults ever since the pandemic began. Werneck et al., (2020) showed that lower physical activity and an increased sedentary lifestyle during the pandemic has resulted in more mental health problems. Sleep quality was also found to be worsened during the situation.

Jungman et al., (2020) revealed the symptoms of anxiety along with health anxiety and fears of virus in their first ever study. It was found that high levels of anxiety are now dominant in people. A low ability to apply cognitive emotion regulation strategies resulted in more symptoms of anxiety.

A study by Husky et al., (2020) showed an increase in stress levels in the university students of France. More than half of the population was found to having faced anxiety along with stress as measured through the 21 itemed depression, anxiety, stress scale during the pandemic with the other half facing symptoms of mild depression and future anxiety.

Cooke et al., (2020) showed in their study that high levels of posttraumatic stress were noted among the population after the start of coronavirus. The study consisted of 200 medical students studying online since the pandemic began.

Symptoms of depression, anxiety and stress were assessed using the depression, anxiety, stress scale and generalized anxiety disorder assessment scale.

Liu et al., (2020) showed that psychological state of college students in China has worsened after the pandemic began. The sample was of 509 participants that was assessed using self rating anxiety scale and centre for epidemiological studies depression scale for depression.

Arshad et al., (2020) showed in their research conducted on Pakistani health care workers that symptoms of depression, stress and anxiety are now common in them ever since the pandemic started. The study was conducted on 276 health care workers. The symptoms were assessed using the depression, anxiety, and stress scale.

Changes in the mental well-being were revealed with particularly increased levels of anxiety, stress and depression in Bangladeshi quarantined population as measured through the depression, anxiety, stress scale in a study by Khan et al., (2020). A study conducted by Qureshi et al., (2020) in KPK, Pakistan revealed an increased generalized anxiety disorder in about 501 people that participated in the study as assessed by generalized anxiety disorder assessment scale.

A study conducted with Napalese Residents showed significant increase in sleep disturbances as assessed through the insomnia severity index and self-administered questionnaires. Islam et al., (2020) showed that in Bangladeshi students the levels of stress, anxiety and depression have significantly increased in the pandemic.

A recent study by Mumtaz et al., (2020) showed symptoms of panic, insecurity, stress, and depression in a Pakistani population after the quarantine set in. Sample consisted of 350 students that studied in an online education system in Pakistan. Psychological distress in the students was evaluated using the generalized

anxiety disorder assessment scale and the 21 itemed brief depression, anxiety, and stress scale.

A research by Dhahri et al., (2020) showed that covid 19 had significant effect on the psychological health of medical students in Pakistan. The study was conducted using a 20-item survey assessing the students' psychological symptoms etc. The results revealed that majority of participants were females and had significant depressive symptoms. Along with that as sleep quality has become poor and the level of psychological distress has significantly increased.

Salman et al., (2020) showed in their research on psychological issues and coping mechanisms during COVID-19 pandemic that students had symptoms of depression, anxiety and stress that were noted to be far more amid the females as compared to men. The research was conducted using the generalized anxiety disorder assessment scale, patient health questionnaire and brief- COPE.

Problem Statement

The goal of the research was to explore differential mediating role of cognitive emotion regulation in association between sleep quality and psychological distress among college and university students.

Rationale of the Study

The objectives of the study were to assess the association between sleep quality and psychological distress and to assess whether cognitive emotion regulation strategies mediate the link between sleep quality and psychological distress. Assessing sleep quality and psychological distress in university and college students is of particular significance during current COVID situation, when all academic activities have been switched from regular physical mode to online mode. This sudden and drastic change may likely reduce sleep quality and psychological distress. The significance of the study has increased in the prevailing condition of COVID-19, as we know sleep quality is becoming poor and psychological distress is on rise in students. Additionally, the study is important in the cultural context of Pakistan in that technologically, Pakistan is not as much developed, as are other western developed countries. Adapting to online mode of learning has become significantly challenging to majority of college and university students who have limited access to Internet availability and advanced technology gadgets. In Pakistan, major proportion of student population suffered from this challenging situation. Adapting to such challenging situation may in turn lead to sleep disturbances and psychological distress. Lastly, assessing the mediating role of Cognitive emotion regulation strategies is important for two reasons. First, literature is lacking on the mediating role of emotion regulation in association between sleep qualities particularly from the cultural context of Pakistan. Also, there is a literature gap on the mediating role of

emotion regulation related to COVID situation. Second, during the adaptation process in challenging situation of COVID, it is important to assess whether personal regulatory abilities may play role to mediate the psychological distress. Therefore, it is assumed that catastrophizing would strongly explain the poor sleep quality-psychological distress link and putting into perspective would weakly explain the link. In addition to that, literature also lacks evidence on the use of emotion regulation strategies to help cope with the situation especially in students in Pakistan.

Objectives

1. To find out the direct association between sleep quality and psychological distress assessed in terms of anxiety, depression, and stress.

2. To find out the mediating role of cognitive emotion regulation in association between sleep quality and psychological distress assessed in terms of anxiety, depression, and stress.

Hypothesis

1. There would be a positive association of poor sleep quality with anxiety, depression, and stress.

2. The two cognitive emotion regulation strategies (catastrophizing and putting into perspective) would mediate the association of sleep quality with anxiety, depression, and stress.

Methodology

Research Design

To assess the objectives of this study, correlational research design was used.

Sampling Strategy

Participants were selected through convenient sampling technique. The data was collected online through Google forms and the selected population was students of colleges and universities.

Inclusion Criteria

Inclusion criteria included being college and university students, both genders, currently involved in online learning to be part of the study.

Exclusion Criteria

People with any psychological or physical illness were excluded from the study.

Sample

The sample was 202 college and university students who participated in the study. There were 10% adolescents in age range 16-18 and 90% emerging adults in age range 19-30. The mean age of whole sample was 21.64 (SD= 2.32). There were 65 boys and men and 137 girls and women in the sample. The demographics of the sample are presented in Table 1.

Table 1

Descriptive Statistics of Demographic Variables (N=202)

Variables	Mean	SD	Frequency	Range
Age	21.64	2.323	15-18=21(10%)	15-30
			19-30=181(90%)	
Education	14.97	1.961	202	11-20
Gender	-	-	M=65	-
			F=137	
Family system	-	-	Joint=64	1-2
			Nuclear=138	
Financial status	-	-	Independent=43	1-2
			Dependent=159	

Instruments

Participants responded on a demographic form along with measures of sleep quality, cognitive emotion regulation and the psychological distress. Demographics included the gender, age, earning status, education, and overall physical health.

Pittsburgh Sleep Quality Index

The sleep quality was assessed using the Pittsburgh sleep quality index. It is a self-report questionnaire that measures sleep quality of a person in the time frame of one month. The questionnaire consists of 19 items and takes about 10 minutes to complete. PSQI was developed by researchers at the University of Pittsburgh. It is used to assess sleep quality in people and is being used by a diverse population. It gives the researchers and the clinicians a measure of any sleep disorders that a person may be have. It is a reliable and a valid scale with a reliability coefficient of .55

(Backhaus et al., 2002) On the scale the participants had to rate their sleeping problems in the last month on a scale ranging from 0-4 with 0 being 'Not during the past month' to 4 being 'Three or more times a week'. Component 1 on the scale measures subjective sleep quality (item 9), component 2 is for sleep latency (item 2 and item 5a), component 3 measures sleep duration (item 4), component 4 measures sleep efficiency (items 1,3 and 4), component 5 measures sleep disturbances (items 5b-5j), component 6 assesses medication use for sleeping (item 6), and component 7 measures daytime dysfunction (items 7 and 8). Adding scores on 7 components calculates the composite score. The composite score ranges from 0 to 21 with a higher representing poor sleep quality. A global score of 5 or more indicates poor sleep quality.

Cognitive Emotion Regulation Questionnaire

The cognitive emotion regulation in the students was assessed using the cognitive emotion regulation questionnaire. It is a multidimensional questionnaire created to measure the cognitive emotion regulation strategies that a person uses after facing a negative event or situation. The cognitive emotion regulation questionnaire is a self-report questionnaire consisting 36 items. It measures nine different cognitive coping strategies. The current study used 2 subscales out of 9 subscales namely 'putting into perspective' and 'catastrophizing'. Both of these subscales have been assessed from 4 items each. The participants have to rate the items on a 1 to 5 point scale ranging from 1 'almost never' to 5 'almost always.' The scores are obtained by calculating the mean scores belonging to a particular subscale. The reliability of the putting into perspective subscale was shown to be .63 while that of catastrophizing subscale was .79. An example item from the catastrophizing scale is ' I continually think how horrible the situation has been.' An example from putting into perceptive

scale is 'I think that it all could have been much worse'. Higher subscale scores indicate greater use of a specific cognitive strategy.

Depression Anxiety Stress Brief 21 Scale

The psychological distress during the Covid 19 situation was measured through Depression Anxiety Stress scale-Brief 21. The DASS is a set of three self-report scales build to assess the three negative mental states of depression, anxiety, and stress. Each of the three subscales is assessed from 7 items. The depression scale assesses dysphoria, hopelessness, devaluation of life etc. The anxiety scale assesses situational anxiety, general anxiety and subjective experience of feeling the anxiety. The stress scale assesses difficulties in relaxing, irritability, state of being easily agitated, irritable and impatient. Subjects are required to respond to all items on a 4-point response format to rate the extent to which they have experienced each state over the past week. The score ranges from 0-3 with 0 being 'Did not apply to me at all' to 3 being 'Applied to me very much or most of the time'. The reliability coefficients were .88 for stress subscale, .87 for depression subscale, and.84 for anxiety subscale. Composite scores on each of these subscales were calculated by adding the scores on items comprising each subscale. Higher scores on each subscale showed higher level of psychological distress.

Procedure

First of all, permission was taken from the respective authorities. The participants were selected through convenient sampling method. Data was collected using Google forms. Initially, informed consent was taken. Participants were assured of their privacy and confidentiality. After signing the consent, the participants were able to open the form. Written instructions were provided in the questionnaire. All the important information regarding the whole research and method to fill the

questionnaire was provided in the form. They were asked to fill in the entire questionnaire honestly. They responded to three scales including the Pittsburgh sleep quality index, cognitive emotion regulation questionnaire and the depression, anxiety and stress scale in addition to demographics.

Ethical considerations

All the ethical considerations were taken into account. Permission of research review committee was obtained first. Then, informed consent of all participants was taken. They were assured of their privacy and it was made sure that no physical or psychological harm came to any participant.

Chapter 4

Data Analysis and Results

Data Analysis Plan

Data was analysed using SPSS version 26. Descriptive statistics of mean and standard deviation were calculated for demographic variables and study variables. coefficient alpha values were calculated to assess the internal consistencies of the scales in the given study. To analyse the study objectives, inferential data analyses were calculated. For this purpose, psychological distress was assessed from anxiety, depression, and stress in the current study. Initially, correlations between variables were calculated. Next, mediation models were analysed using process software (Model 4) to assess direct and indirect associations of sleep quality and cognitive emotion regulation strategies (catastrophizing and putting into perspective) with psychological distress variables (anxiety, depression, and stress). The significance of indirect effect was also assessed from sobel Z test.

Results

Table 2

Descriptive Statistics of Study Variables (N=202)

Variables	Mean	Std. Deviation	Alpha	Range
Sleep Quality[a]	8.55	3.41	.55	2-16
Putting into perspective	12.74	3.06	.63	4-20
Catastrophizing	10.02	3.94	.79	4-20
Stress	7.91	5.27	.88	0-21
Anxiety	6.43	4.99	.84	0-21
Depression	7.86	5.72	.87	0-21

Note. PIP=Putting into Perspective; a= higher scores show poor sleep quality

Range, Mean, Standard Deviation and Internal Consistency for all the scales and subscales were calculated as shown in Table 2. Alpha reliability coefficients for five scales were calculated to assess the internal consistency of the scales. Alpha reliability for all the depression, anxiety, and stress subscales were shown to be very good. The alpha coefficients for cognitive emotion regulation subscales are also good. For global sleep quality index the alpha reliability was also shown to be acceptable.

Table 3

Correlation between Sleep Quality, Cognitive Emotion Regulation Strategies, and Psychological Distress Variables

	Variables	2	3	4	5	6
1	Sleep Quality[a]	.22**	.20**	.41**	.39**	.36**
2	Putting into perspective	1	.19**	.02	.08	.061
3	Catastrophizing		1	.30**	.35**	.32**
4	Stress			1	.73**	.79**
5	Anxiety				1	.68**
6	Depression					1

Note: * = p<.05, ** = p<.01, *** = p<.001; a= higher scores shower poor sleep quality

Correlation between sleep quality, cognitive emotion regulation strategies, and psychological distress was calculated as shown in Table 3. Results from Table 3 showed that poor sleep quality was positively correlated with stress, anxiety, and depression. Which means students who have poor sleep quality face significant psychological distress. Poor sleep quality was also positively correlated with both

emotion regulation strategies. Of the two cognitive emotion regulation strategies, only catastrophizing was positively correlated with psychological distress subscales. It is explained that the participants who use catastrophizing emotion regulation strategy are more likely to experience feelings of psychological distress in terms of stress, anxiety, and depression. As only catastrophizing was a significant correlate of three psychological distress subscales, therefore, only this cognitive emotion regulation strategy was assessed as a mediator of sleep quality-psychological distress link in further analyses.

Table 4

Mediation Model Showing Mediating Role of Catastrophizing in Relation between

Sleep Quality and Stress

Predictors	Outcome (Stress)			
	Model 2		Model 3	
	B	SE	B	SE
Sleep Quality	.42***	.06	.37***	.06
Catastrophizing	-	-	.23***	.06
R2	.17		.23	
Model fit F(df)	40.90***(1,197)		28.45***(2,196)	
Total effect	.42(.06)			
Direct effect	.37(.06)			
Indirect effect	.05(.02), Sobel z =2.27*			

In Model 1 when Catastrophizing was predicted from Sleep Quality, it resulted in a significant

regression weight (B=.21, SE=.07, P<0.01, F=9.00, df=1,197) accounting for 4% variance

explained.

Note. * = <.05; ** = <.01, *** = <.001

The mediation role of catastrophizing in relation between sleep quality and

stress was calculated in process (see Table 4). Results from Table 4 showed that in

model 1, when catastrophizing was regressed onto sleep quality, it resulted in a

significant regression weight confirming that sleep quality was a significant predictor

of catastrophizing. Results also showed that sleep quality was a positive predictor of

stress in model 2. As higher score on sleep quality variable showed poor sleep quality,

so poor sleep quality was linked with higher stress level in the participants. In model

3, when stress was regressed simultaneously onto both sleep quality and catastrophizing, results showed catastrophizing to be the significant predictor of stress while controlling the effect of sleep quality. It is evident from results that the original correlation between sleep quality and stress was reduced from .42 to .37 after inclusion of catastrophizing in the third model. Moreover, significant Sobel Z value also showed that the indirect effect of catastrophizing was significant.

Table 5

Mediation Model Showing Mediating Role of Catastrophizing in Relation between Sleep Quality and Anxiety

Predictors	Outcome (Anxiety)			
	Model 2		Model 3	
	B	SE	B	SE
Sleep Quality	.40***	.07	.34***	.06
Catastrophizing	-	-	.28***	.06
R2	.16		.24	
Model fit F(df)	37.26***(1,197)		30.23***(2,196)	
Total effect	.40(.07)			
Direct effect	.34(.06)			
Indirect effect	.08(.03), Sobel z =2.44*			

In Model 1 when Catastrophizing was predicted from Sleep Quality, it resulted in a significant regression weight (B=.21, SE=.07, P<0.01, F=9.00, df=1,197) accounting for 4% variance explained.

Note. * = <.05; ** = <.01, *** = <.001

The mediation role of catastrophizing in relation between sleep quality and anxiety was calculated in process (see Table 4). Results from Table 5 showed that in model 1 catastrophizing was significantly predicted from sleep quality. Also, it was found that sleep quality was a positive predictor of anxiety in model 2. As higher score on sleep quality variable showed poor sleep quality, so poor sleep quality was associated with higher anxiety level in the participants. In model 3, when anxiety was regressed simultaneously onto both sleep quality and catastrophizing, results showed catastrophizing to be the significant predictor of anxiety while controlling the effect of sleep quality. It is evident from results that the original correlation between sleep quality and anxiety was reduced from .40 to .34 after inclusion of catastrophizing in the third model. Moreover, significant Sobel Z value also showed that the indirect effect of catastrophizing was significant.

Table 6

Mediation Model Showing Mediating Role of Catastrophizing in Relation between

Sleep Quality and Depression

Predictors	Outcome (Depression)			
	Model 2		Model 3	
	B	SE	B	SE
Sleep Quality Index	.36***	.07	.31***	.07
Catastrophizing	-	-	.26***	.06
R2	.13		.20	
Model fit F(df)	29.99***(1,197)		24.16***(2,196)	
Total effect	.36(.07)			
Direct effect	.31(.07)			
Indirect effect	.05(.03), Sobel z =2.35*			

In Model 1 when Catastrophizing was predicted from Sleep Quality, it resulted in a significant

regression weight (B=.21, SE=.07, P<0.01, F=9.00, df=1,197) accounting for 4% variance

explained.

Note. * = <.05; ** = <.01, *** = <.001

The mediation role of catastrophizing in relation between sleep quality and

stress was calculated in process (see Table 4). Results from Table 6 showed that in

model 1, sleep quality significantly predicted catastrophizing. Results also showed

that sleep quality was a positive predictor of depression in model 2. As higher score

on sleep quality variable showed poor sleep quality, so poor sleep quality was

associated with higher depression level in the participants. In model 3, when

depression was regressed simultaneously onto both sleep quality and catastrophizing,

results showed catastrophizing to be the significant predictor of depression while controlling the effect of sleep quality. It is evident from results that the original correlation between sleep quality and depression was reduced from .36 to .31 after inclusion of catastrophizing in the third model. Moreover, significant Sobel Z value also showed that the indirect effect of catastrophizing was significant.

Chapter 5

Discussion

It is evident that entire learning system has been switched from physical learning to online mode of learning. With no set time patterns in online mode of learning, it is likely that increased screen exposure may have disturbed their sleep patterns and sleep quality. Also, the drastic changes in life style and sleep patterns may also likely to be associated increased psychological distress. According to Taylor (2020), psychological distress has increased to a great extent since the pandemic began. Therefore, the current study was aimed at predicting psychological distress from sleep quality in college and university students during the Covid 19 pandemic. A secondary aim was to assess whether two cognitive emotion regulation strategies (putting into perspective and catastrophizing) mediate the link between sleep quality and psychological distress. For this purpose, psychological distress was assessed from anxiety, depression, and stress in the present study. The findings from the correlation and mediation analyses showed that i) poor sleep quality was positively associated with increased psychological anxiety, depression, and stress in the study sample; and ii) only catastrophizing out of two cognitive emotion regulation strategies mediated the association of poor sleep quality with anxiety, depression, and stress. However, Putting into Perspective was not correlated with any of the psychological distress variable.

Direct Associations between Sleep Quality, Cognitive Emotion Regulation and Psychological Distress:

The first hypothesis of the current study was to assess whether sleep quality is positively associated with psychological distress variables. Lining up with this, it was found that poor sleep quality was a positive correlate of anxiety, depression, and

stress. Evidence from previous literature shows findings similar to ours. An example from Western literature is the research conducted by Wenjen et al., (2020) on college students in China. The results showed that anxiety increased during the pandemic in students. Similarly, a research conducted in Pakistan by Dhahri et al., (2020) revealed the psychological distress has increased as sleep quality worsened during the pandemic. Besides these researches, other studies justify our results such as; a study in China showed that poor sleep quality results in high levels of mental dysfunction. Particularly university students are at a greater risk of mental issues (Zhao et al., 2020). Studies have shown that symptoms of depression and anxiety are now common among university and college students who are poor sleepers.

A justification for these results can be the fact that online education system is relatively a newer concept for students in our culture. Hence, difficulties rose in terms of familiarizing themselves with the entire online classes system and the associated technology use. It took the students a lot of time to adjust and adapt to this method of studying. This rise in problems is one of the reasons we saw an increase in worsening of sleep quality among students along with the psychological distress that accompanied. It is very much evident from the facts and our results that sleep quality plays a significant role in determining the psychological distress in a student's life. Our findings showed that sleep quality and psychological distress are positive correlates of each other. Hence, if the sleep quality of a student is poor, the psychological distress will increase in terms of depression, anxiety and stress.

Moreover pertaining to first hypothesis, poor sleep quality was positively correlated with cognitive emotion regulation strategies i.e. catastrophizing and putting into perspective. Results showed the positive association of poor sleep quality with catastrophizing. This is not a surprising finding because it is likely that a student that

has poor sleep quality will involve in negative emotion regulation strategies by being disturbed emotionally. Concurrently, our findings from the correlation showed that first hypothesis is justified i.e. sleep quality and psychological distress are positively correlated with each other and sleep quality is a positive correlate of catastrophizing as well. It is observed in various studies, similarly with our study that students have faced significant level of psychological distress along with worsening sleep quality. For example, Lund (2020) revealed that sleeping disorders including insomnia have prevailed in students since the Covid 19 started. It is only obvious that when our sleep quality will be poor, our normal body functioning will be disturbed along with a significant impact on our well being and our psychological health hence increasing the psychological distress. Along with this, it will also disturb our emotion regulation abilities, which gets proven as our second hypothesis in our results.

Related to first hypothesis, association of cognitive emotion regulation strategies was calculated with anxiety, stress, and depression. Results showed that only catastrophizing was found to be a positive correlate of stress, anxiety and depression. On the other hand, putting into perspective was not found to be a significant correlate of psychological distress variables. The reason for this is the fact that over thinking in negative light only, over exaggeration of things and viewing them negatively will only account for an increase in psychological distress in a person in terms of stress, anxiety and depression. A student that uses catastrophizing as an emotion regulation strategy will have higher levels of psychological distress since catastrophizing is thinking of an event in negative light only. Imagining only the worst-case scenarios is one way to put catastrophizing. So therefore, thinking negatively and over thinking will ultimately lead to psychological distress.

On the other hand, putting into perspective was not found to be a significant correlate of psychological distress variable because putting into perspective is relatively a positive emotion regulation strategy, which provides a sense of control over a negative situation like the pandemic itself.

Hence, sleep quality was a predictor of cognitive emotion regulation with catastrophizing being the significant variable. Previous studies show that as the sleep quality becomes poorer, the use of catastrophizing strategy also increases. Poor sleep quality results in an individual's ability to engage in regulation of negative emotions (Muass et al., 2012). People often report that irregular or disturbed sleep pattern leads to mood instabilities and irritability (Horne et al., 1985).

To summarize, our findings revealed that sleep quality is a significant predictor of catastrophizing. Along with that, the findings showed that students who practiced catastrophizing as an emotion regulation strategy are found to have higher symptoms of stress, depression and anxiety. It can be said that students that faced sleeping problems and had poor sleep quality were found to have significant psychological distress as well in terms of stress, anxiety and depression. These findings are also mirroring previous findings that used similar samples (e.g. Salman et al., 2020).

It was found from the results that out of both the cognitive emotion regulation strategies only catastrophizing positively correlated with psychological distress. The psychological distress faced was assessed using the DASS 21 scale; the sleep quality was assessed using the Pittsburgh sleep quality index, while the cognitive emotion regulation was measured using the cognitive emotion regulation questionnaire. Along with this, descriptive analyses were carried out to see the trends in demographics of the sample in present research.

Mediated Association between Psychological Distress, Sleep Quality and Cognitive Emotion Regulation Strategies

A secondary hypothesis was formulated to assess the mediating role of cognitive emotion regulation strategies in association between sleep quality and psychological distress variables. As only catastrophizing from the two cognitive emotion regulation strategies was a significant correlate of stress, anxiety and depression, therefore, only catastrophizing was evaluated as a mediator of the sleep quality-psychological distress link. Findings from the mediation model showed that catastrophizing significantly mediated the positive link between poor sleep quality and stress, anxiety and depression. Catastrophizing acted as a mediator so it also controlled the effect of sleep quality that it had on psychological distress. It therefore, reduced the direct association of sleep quality and psychological distress. The finding is supported from the previous literature. For example, Cruz et., (2020) showed in their study that catastrophizing is the most widely used cognitive emotion regulation strategy during the pandemic.

Independent mediations were carried out for each of the subscales of psychological distress to assess the mediating relations of sleep quality with stress, anxiety, and depression. Our analysis revealed that after our mediator catastrophizing was added, the association between sleep quality and stress reduced. A higher score on sleep quality variable meant worse sleep quality, which positively correlated with stress. Hence when catastrophizing was added, it mediated this association. Similarly, independent mediation for anxiety scale was also calculated. The results showed that poor sleep quality of participants significantly increased their anxiety. When the mediator catastrophizing was added, it controlled the effect of sleep quality and hence the correlation reduced from .40 to .34. Along with that a significant Sobel Z value

showed that the indirect effect of catastrophizing was also significant. Lastly, when mediation for depression scale was calculated, the results were concurrent. Participants with poor sleep quality, experienced symptoms of depression as sleep quality positively correlated with psychological distress. After the addition of mediator i.e. catastrophizing, the original correlation between sleep quality and depression significantly reduced. The mediating role is justified in that, poor sleep quality may make the students more vulnerable to use negative emotion regulation such as catastrophizing during the susceptible and challenges circumstances during COVID, which may likely lead to psychological distress. Concurrent with our results, Danielson et al., (2013) showed that disturbed sleep results in extremely lower ability to regulate emotions. According to the research disturbed or poor sleep leads to catastrophic worry and depressive symptoms. Another study by Mauss et al., (2014) showed that poor sleep quality is linked with emotional dysregulation.

Limitations, Strengths and Future Direction

The study is unique in specific ways. First, to the best of our knowledge, none of the previous studies has assessed Sleep quality, psychological distress and cognitive emotion regulation associations on students studying in online system during the pandemic. The present study provides evidence for a unique pattern in which catastrophizing mediates the association between sleep quality and psychological distress. The present study is also unique in terms that catastrophizing played a significant role in the research which shows how this cognitive emotion regulation strategy has increased in the students since the global pandemic.

However there are certain limitations to this study while interpreting findings, which also provide direction for future research. First of all our sample was students studying in an online environment. The findings could vary when other samples are

studied including adults and people that are working during the pandemic. Secondly, our study was conducted taking into account only the Pakistani students. The results could vary when considering other cultures i.e. either the Western or Arab cultures etc. This also provides a suggestion for future research with different samples and different cultures. Additionally, future studies can be conducted using different age groups, specific gender, different areas etc.

The findings have implications for counsellors and psychologists that have to deal with students facing psychological distress along with worsening sleep quality. The study may assist the psychologists in determining what factors play a role in an increase in psychological distress in terms of their sleep quality and emotion regulation ability.

Conclusion

Taken together, this study shows that (i) poor sleep quality positively predicts psychological distress among students; (ii) Poor sleep quality positively predicts cognitive emotion regulation strategies including catastrophizing; iii) catastrophizing explains the association between poor sleep quality and psychological distress.

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APPENDIX A

CONSENT FORM

Introduction to Participants and Informed Consent Form

I_____am willingly participating in the research project conducted by Ruhma Syed of BS (Hons.) Semester VIII, Department of Humanities, COMSATS university Islamabad, Lahore campus, under the supervision of Dr. Shameem Fatima. I understand that I am participating in psychological research; my identity will not be linked with my data and that all the information I provide will remain confidential; I have been briefed about the nature of the research and I have the right to quit the research work at any point in time without claiming for any physical, emotional and physiological harms.

_____   _____
  Participant's Signature   Supervisor's Signature

APPENDIX B

DEMOGRAPHIC INFORMATION DATA

Demographics

Gender: Male/Female

Age: _____

Education: _____

Family system:

- o   Joint
- o   Nuclear

Financial status:

- o   Earning
- o   Dependent

Physical health:

- o   Very weak
- o   Weak
- o   Normal
- o   Good
- o   Very good

APPENDIX C

THE PITTSBURGH SLEEP QUALITY INDEX

INSTRUCTIONS: The following questions relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the past month. Please answer all questions.

1. During the past month, when have you usually gone to bed at night?

USUAL BEDTIME

_____

2. During the past month, how long (in minutes) has it usually take you to fall asleep each night?

NUMBER OF MINUTES

_____

3. During the past month, when have you usually gotten up in the morning?

USUAL GETTING UP TIME

_____

4. During the past month, how many hours of actual sleep did you get at night? (This may be different than the number of hours you spend in bed.)

HOURS OF SLEEP PER NIGHT

_____

INSTRUCTIONS: For each of the remaining questions, check the one best response. Please answer all questions.

5. During the past month, how often have you had trouble sleeping because you...

	Not during the past month	Less than once a week	Once or twice a week	Three or more times a week
a) ...cannot get to sleep within 30 minutes	☐	☐	☐	☐
b) ...wake up in the middle of the night or early morning	☐	☐	☐	☐
c) ...have to get up to use the bathroom	☐	☐	☐	☐
d) ...cannot breathe comfortably	☐	☐	☐	☐
e) ...cough or snore loudly	☐	☐	☐	☐
f) ...feel too cold	☐	☐	☐	☐
g) ...feel too hot	☐	☐	☐	☐
h) …had bad dreams	☐	☐	☐	☐
i) ...have pain	☐	☐	☐	☐
j) Other reason(s), please describe	☐	☐	☐	☐
How often during the past month have you had trouble sleeping because of this?	☐	☐	☐	☐

6. During the past month, how would you rate your sleep quality overall?

Very good   Fairly good   Fairly bad   Very bad

7. During the past month, how often have you taken medicine (prescribed or

"over the counter") to help you sleep?

**(Not during the past month)   (Less than once a week)   (Once or twice a week)
(Three or more times a week)**

8. During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?

**(Not during the past month)   (Less than once a week)   (Once or twice a week)
(Three or more times a week)**

9. During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?

**(No problem at all)   (Only a very slight problem)   (Somewhat of a problem)
(A very big problem)**

10. During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?

**(No bed partner/roommate)   (Partner or roommate in other room)
(Partner in same room, but not same bed)   (Partner in same bed)**

If you have a roommate or bed partner, ask him/her how often in the past month you have had…

	Not during the past month	Less than once a week	Once or twice a week	Three or more times a week
a) ...loud snoring				
b) ...long pauses between breaths while asleep				
c) ...legs twitching or jerking while you sleep				
d) ...episodes of disorientation or confusion during sleep				
e) Other restlessness while you sleep; please describe				

_____

_____

APPENDIX D

THE COGNITIVE EMOTION REGULATION QUESTIONNAIRE

Instructions: State how often you think in the following manner when experiencing strong threatening or stressful life events.

Statements	Almost Never	Seldom	Sometimes	Often	Almost always
1. I think that it all could have been much worse					
2. I think that other people go through much worse experiences					
3. I think that it hasn't been too bad compared to other things					
4. I tell myself that there are worse things in life					
5. Catastrophizing I often think that what I have experienced is much worse than what others have experienced					
6. I keep thinking about how terrible it is what I have experienced					
7. I often think that what I have experienced is the worst that can happen to a person					
8. I continually think how horrible the situation has been					

APPENDIX E

DEPRESSION, ANXIETY AND STRESS SCALE-21

Please read each statement and circle a number 0, 1, 2 or 3, which indicates how much the statement applied to you **over the past week**. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all

1 Applied to me to some degree, or some of the time

2 Applied to me to a considerable degree or a good part of time

3 Applied to me very much or most of the time

Statements	0	1	2	3
1. I found it hard to wind down				
2. I was aware of dryness of my mouth				
3. I couldn't seem to experience any positive feeling at all				
4. I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)				
5. I found it difficult to work up the initiative to do things				
6. I tended to over-react to situations				
7. I experienced trembling (e.g., in the hands)				
8. I felt that I was using a lot of nervous energy				
9. I was worried about situations in which I might panic and make a fool of myself				
10. I felt that I had nothing to look forward to				
11. I found myself getting agitated				
12. I found it difficult to relax				
13. I felt downhearted and blue				

14. I was intolerant of anything that kept me from getting on with what I was doing				
15. I felt I was close to panic				
16. I was unable to become enthusiastic about anything				
17. I felt I wasn't worth much as a person				
18. I felt that I was rather touchy				
19. I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)				
20. I felt scared without any good reason				
21. I felt that life was meaningless				

TURNITIN Originality Report

Title	**Psychological Distress among Students During Covid 19: Sleep Quality and Cognitive Emotion Regulation as Correlates**

Author	**Ruhma Syed**

Submission Date	08-Jan-2021 03:04PM (UTC+0500)
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