

Impact of covid19 lockdown on sleep quality and acute psychiatric morbidity in medical students in Sudan.

Albashir A. Altayeb

University of Khartoum

Batool A. altayeb

University of Khartoum

Mohammed E. Ibrahim (✉ mohammedelsir12@gmail.com)

University of Khartoum

Amira Siddig Abdalgali

University of Khartoum

Research Article

Keywords: COVID-19, SARS-CoV-2, sleep quality, anxiety

Posted Date: September 17th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-906805/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Introduction: The severe acute respiratory syndrome coronavirus-2 (SARS-COV-2) is an emerging infection causing a widely spread pandemic of Coronavirus disease 2019 (COVID-19). The current COVID-19 pandemic is promoting fear of falling sick, dying, helplessness, and stigma. Urgent and timely understanding of sleep quality and mental health status is needed to help the community. Our investigation designed to assess the degree of sleep disturbance and psychological impact of the lockdown among medical students at university of Khartoum.

Objectives: this study conducted to assess the impact of covid-19 lockdown on sleep quality and acute psychiatric morbidities among medical students at university of Khartoum.

Method: Institutional based cross sectional study was conducted among 326 participants from Khartoum university, faculty of medicine. Study participants were determined by two steps, stratified sampling followed by systematic sampling techniques. Data was collected using standardized questionnaire, entered and analyzed using Statistical Package for Social Science (SPSS) software version 25.

Results: out of the total 326 participants 211(64.7%) were females, and 115(35.35) were males. 92 (28.2%) form the participants were good sleepers and 234 (71.8%) were poor sleepers, the prevalence of moderate to severe anxiety and depression in the participants was found 19.4%, 35.9% respectively. There was correlation between having poor sleep quality and depression among the participants.

Conclusion: This study found that there is negative impact of the covid-19 lockdown on medical students, which we found that two thirds of the participants are poor sleepers with a predominance of the female gender among them, One third of the participants had moderate to severe depression which also affects the female more than the males and the junior students more than the seniors, Fifth of the participants had moderate to severe anxiety which affect both gender equally but it did affect the junior students more than the seniors.

Background Information

Coronavirus disease 2019 (covid19) is a new communicable disease caused by the new strains of severe acute respiratory syndrome coronavirus, SARS-CoV-2[1]. The first outbreak reported was in December 2019 in Wuhan China as pneumonia of unknown etiology linked to a seafood market exposure [2]. On January 30 the World Health Organization (WHO) declared the outbreak as a public health emergency of international concern (PHEIC) and a pandemic on March 11[3].

This pandemic has affected even the most fundamental aspects of our lifestyle, these changes have been caused not so much by the direct effects of infection with the novel coronavirus SARS-CoV-2 as by the widespread implementation of stringent infection control measures including lockdowns, quarantines, social distancing and work from home.

While such measures are essential in containing the spread of covid19 at a community level, they have led to significant changes in exposure to daylight leading to disturbance in biological circadian rhythms and sleep-wake patterns [4,5]. These effects are compounded by the adverse psychological effects produced by fear of infection social isolation and loneliness caused quarantine and disruption in education ,access to health care and economic stability leading to symptoms of anxiety, depression and post traumatic stress in substantial proportion of the general population[6,7].These symptoms of mental distress are often associated with disturbances in the quantity and quality of sleep, though this relationship appears to be bidirectional, with disturbed sleep in turn leading to more severe symptoms of depression and anxiety [8,9].

1.2 Problem statement:

The fast climbing of cases of covid-19 all over the world and the rapid changes in people daily living have left people alarmed and frightened, historically there have been multiple outbreaks over the years, such as SARS epidemic, when moderate to severe post traumatic stress symptoms were reported in the highly affected areas [10].

During the swine flu (influenza A H1N1) outbreak, a study showed that 9.6% and 32.9% of general population were either very or moderately worried about the possibility of being infected, respectively[11]. Ebola,MERS and SARS epidemic all showed an impact on mental health that includes depression and even substance abuse has been reported [12].In the current pandemic a recent study carried out in China concerning COVID19 psychological impact revealed that 53.8% of respondents are showing moderate to severe psychological impact, 16.5% and 28.8% reported moderate to high depressive or anxiety symptoms respectively, and 8.1% moderate to high level of stress were reported [13].

1.3 Justification:

Hence the problem of covid19 lockdown and its impact on sleep quality and its effect on acute psychiatric morbidities is a new area of research and due to the lack of published papers on the topic, my research is intended to provide insight on it and generate new knowledge on the subject

Methodology

2.1- Study design:

Descriptive cross sectional study, institutional based.

2.2- Study area:

University of Khartoum faculty of medicine , located in the western part of Khartoum city near the old Khartoum hospital and it faces stack's laboratory

It is the oldest school of medicine in Sudan; will continue to play its leadership

role as a world-class medical school model for newer and developing medical schools, in addition to its role on the regional & international scene. It is established in February 1924 as Kitchener medical school. In September 1951 the school was linked to Khartoum university college. After independence in 1956 Khartoum university college was upgraded to Khartoum university, the medical school became a faculty of medicine and started offering the MBBS degree. N.B university college was affiliated with university of London which awarded for the graduates its graduation certificate, and contribute in establish of the curriculum & exams regulation.

The duration of teaching program is 6 years. The staff about 201 who teaches in 14 academic departments. The students' intake is about 350 students per year.

2.3- Study population:

the study population is medical students at university of Khartoum from first to sixth year (7 batches because there are two batches in the first year) the total population is 2335 student

2.3.1- Inclusion criteria:

1-Student at faculty of medicine university of Khartoum

2-age is 18 and above

3-both genders

2.3.2- Exclusion criteria:

1-post graduate student

2-students who refuse to participate

2.4- Sampling:

2.4.1- Sample size:

By using the equation: $n = \frac{[(z)^2 \times p \times (1-p)]}{(d)^2}$

N= sample size

Z= level of confidence according to the standard normal distribution (for a level of confidence 95%, z= 1.96)

P= estimated proportion of the population that presents the characteristics (previous prevalence) when unknown we use $p=0.5$

D= tolerated margin of error , 5% in my study

$N = \frac{[1.96 \times 1.96 \times 0.5 \times 0.5]}{0.05 \times 0.05} = 384$ samples

Number of samples from each batch = (total number of students in the batch ÷ number of medical students) × 384

It was taken as follows:

- Samples from the batch 97 (first year)= $337 \div 2335 \times 384 = 55$ students
- Samples from the batch 96 (first year)= $325 \div 2335 \times 384 = 53$ students
- Samples from the batch 95 (second year) = $331 \div 2335 \times 384 = 54$ students
- Samples from the batch 94 (third year)= $357 \div 2335 \times 384 = 60$ students
- Samples from the batch 93 (fourth year)= $349 \div 2335 \times 384 = 58$ students
- Samples from the batch 92 (fifth year)= $311 \div 2335 \times 384 = 51$ students
- Samples from the batch 91 (sixth year)= $325 \div 2335 \times 384 = 53$ students

2.4.2- Sampling techniques:

It was conducted by two steps, stratified sampling followed by systematic sampling techniques.

2.5- Study variables:

2.5.1- Dependent variables:

- Assessment of sleep quality

- Presence of anxiety symptoms
- Presence of depression symptoms

2.5.2- Independent variables:

sociodemographic data such as: age, gender, education level(number of year in college).

Level of exercise (physical status).

Presence of family history of mental illness (mental status).

Loneliness and feeling isolated during the lockdown.

2.6- Data collection:

Adapted standardized questionnaires for sleep quality, anxiety and depression was distributed to the samples by Google form (web based) and the confidentiality was maintained.

2.7- Tools and measurements:

1. The participants were asked to fill out demographic information including age, sex, and level of academic year. In addition, they were requested to answer questions about residency, level of exercise at home and presence of family history of mental illness.
2. Sleep quality scale: consisting of twenty eight items, the SQS evaluates six domains of sleep quality: daytime symptoms, restoration after sleep, problems initiating and maintaining sleep, difficulty walking, and sleep satisfaction. The scale has been validated in individuals aged 18-59 years. An initial psychometric evaluation conducted by Yi and colleagues found an internal consistency of 0.92, a test-retest reliability of 0.81. The SQS is strongly correlated with results obtained on the Pittsburgh sleep quality index. The scoring use a four-point, likert-type scale, respondents indicate how frequently they exhibit certain sleep behaviors (0=few, 1=sometimes, 2=often, 3=almost always), scores in the items belong to factors 2 and 5 (restoration after sleep and satisfaction with sleep) are reversed before being tallied. Total scores can range from 0 to 84. The score of 23 was taken as the cutoff point for the differentiation between the good and poor sleepers, with higher scores demoting more acute sleep problems. At the end of the section there is a question about self awareness of sleep behavioral changes between the times before and during the lockdown.
3. Beck Anxiety Inventory (BAI): contains 21 items, The internal consistency for the BAI = (Cronbach's α = 0.92), Test-retest reliability (1 week) for the BAI= 0.75. Scoring: 0= not at all, 1=mildly but it didn't bother me much, 2=moderately-it wasn't pleasant at times, 3=severely-it bother me a lot. The total score is calculated by the sum of the 21 items. The score of 0 to 21= low anxiety, 22 to 35 moderate

anxiety, 36 and above = potentially concerning levels of anxiety. At the end of the section there is a question about self awareness of any changes in the intensity of the symptoms between the period before and during the lockdown.

4. Patient Depression Questionnaire: for initial diagnosis, it contains nine questions to assess the level of depression after ruling out normal bereavement, a history of a manic episode (Bipolar disorder), and a physical disorder, medication, or other drug as the biological cause of the depressive symptoms, scoring: 0= Not at all, 1= several days, 2=more than half the days, 3= nearly every day, score of 0 to 9 = low depression, 10 to 15= moderate depression, 16 and above = potentially concerning levels of depression. At the end of the section there is a question about self awareness of the changes in the severity of the symptoms between the period before and during the lockdown.

2.8- Data analysis:

2.8.1- Descriptive statistics:

The impaired sleep quality, anxiety, and among students was estimated by proportion

2.8.2- Analytical statistics:

Test of significance was conducted using chi square test at 95% confidence level.

Statistical package for social Sciences (SPSS) version 25 was used for analysis.

2.9- Ethical considerations:

The research was conducted after obtaining ethical clearance from research committee in community medicine department, there was a written consent for every participant, the participant had the right to withdrawal any time before starting data analysis, luckily no one did, the data collected was treated by the highest standards of confidentiality

Results

Socio-demographic characteristics of the participants:

326 medical students were approached to participate in the study. With response rate of 100 % the questionnaire was answered exhaustively. The study population comprise from 211 females (64.7%) and 115 males (35.3%). The females outnumbered males because of the high admission rates in the faculty.

The age of the participants categorized in groups as follows: 18-21 n=194(59.5%), 22-25 n=131(40.2%), 26 and above n=1(0.3%)

The distribution of the participants according to the academic year:

first year (97) n=43(13.2%), first year (96) n=46(14.1%), second year (95) n=52(16.0%), third year (94) n=63(19.3%), fourth year (93) n=28(8.6%), fifth year (92) n=57(17.5%), sixth year(91) n=37(11.3%).

Regarding the residence: 174(53.4%) live with there relatives, 105(32.2%) at university dorms, and 47(14.4%) at private dorms

The level of exercise at home: 156(47.9%) said rarely, 29(8.9%) often, 123(37.7%) sometimes, and 18(5.5%) said they almost always exercise at home.

According to the presence of family history of mental illness: 82(25.2%) said yes, 210(64.4%) said no, and 34(10.4%) don't know

Table (5.1) Sociodemographic characteristics of medical students university of Khartoum 2020

Characteristics	Categories	Number (percentage)
Gender	Male	115 (35.3%)
	Female	211 (64.7%)
Age	18-21	194 (59.5%)
	22-25	131 (40.2%)
	26 and above	1 (0.3%)
Study year	First year 97	43 (13.2%)
	First year 96	46 (14.1%)
	Second year 95	52 (16.0%)
	Third year 94	63 (19.3%)
	Fourth year 93	28 (8.6%)
	Fifth year 92	57 (17.5%)
Residency	Sixth year 91	37 (11.3%)
	With relatives	174 (53.4%)
	University dorms	105 (32.2%)
	Private dorms	47 (14.4%)

The participants were asked about their sleep quality after one month from the lockdown to assess the impact of the social isolation on their sleep (the questionnaire was designed to assess the sleep quality

during the past month) after answering the 28 questions by each participant the results comes as follows: 28.2% (n=92) are good sleepers, 71.8%(n=234) are poor sleepers.

The potential relationship between gender and sleep quality was evaluated using the Pearson's Chi-squared test. The result of the test showed significant association With P-value = 0.001, the majority of the poor sleepers are females 70.5%(n=165),and 29.5%(n=69) are males. The good sleepers divided equally between males and females with 50% each (n=46)

Also there is association between level of study year and sleep quality with p-value =0.043 but the results could be affected by unequal response rate from different batches, so I neglect it.

There is no association found between sleep quality and residency, level of exercise, and history of mental illness in the family.

The results of the self awareness of sleep quality comes as: 19.6%(n=64) said there was improvement of their sleep during the period of the lockdown, while 33.4%(n=109) said their sleep deteriorated during the lockdown, and 46.9% (n=153) said there was no change at all.

Table (5.2) sleep quality frequencies among medical students university of Khartoum 2020

Sleepers	Frequency	Percentage
Good sleepers	92	28.8%
Poor sleepers	234	71.2%

Table(5.3) association between sleep quality and gender, age, and level of study_year of _ medical students university of Khartoum 2020

Categories	Good sleepers	Poor sleepers	P-value
Male	46(50%)	69(29.5%)	0.001
Female	46(50%)	165(70.5%)	
Age 18-21	57(62%)	137(58.5%)	0.224
Age 22-25	34(36.9%)	97(41.5%)	
Age 26 and above	1(1.1%)	0 (0%)	
First year 97	22(23.9%)	21(9%)	0.043
First year 96	14(15.2%)	32(13.7%)	
Second year 95	11(12%)	41(17.5%)	
Third year 94	16(17.4%)	47(20.1%)	
Fourth year 93	7(7.6%)	21(9%)	
Fifth year 92	13(14.1%)	44(18.8%)	
Sixth year 91	9(9.8%)	28(11.9%)	

Association between sleep quality and anxiety and depression:

There is a strong association between having poor sleep quality and depressive symptoms in the participants with P-value =0.000 (93.8%, n=45) of those having potentially concerning level of depression are poor sleepers, and only (6.2% n=3) are good sleepers, (81.2% n=56) of those having moderate depression are poor sleepers while (18.8% n=13) are good sleepers, (63.6% n=133) of those having low derivative symptoms are poor sleepers and (36.4% n=76) are good sleepers.

No significant association between sleep quality and anxiety with P-value =0.062

Table (5.8) association between sleep quality and depressive symptoms in medical students university of Khartoum 2020.

Sleepers	low depression	Moderate depression	Potentially concerning level of depression	P-value
Good sleepers	76(36.4%)	13(18.8%)	3(6.2%)	0.000
Poor sleepers	133(63.6%)	56(81.2%)	45(93.8%)	

Discussion

The study investigate the impact of covid-19 lockdown on sleep quality, anxiety and depression among medical students in Khartoum university, and to examine the relationship between participants characteristics (mainly gender, age, residency and level of academic year) and vulnerability to be affected by the lockdown in term of increasing probability of poor sleep and acute psychiatric morbidities, and to evaluate the possible correlation between sleep quality, depression and anxiety.

326 medical students were approached to participate in the study. With response rate of 100 % The study population comprise from 211 females (64.7%) and 115 males (35.3%). The females were twice the number of males which can be explained by the disproportioned admission rates in the faculty from the first year of college.

The age of the participants categorized in groups as follows: 18-21 n=194(59.5%), 22-25 n=131(40.2%), 26 and above n=1(0.3%) this reflects the age distribution within the range governed by the age on admission which is 18, the length of the study years, and the frequency of university shutdown in the last years.

The distribution of the participants according to the academic year:

first year (97) n=43(13.2%), first year (96) n=46(14.1%), second year (95) n=52(16.0%), third year (94) n=63(19.3%), fourth year (93) n=28(8.6%), fifth year (92) n=57(17.5%), sixth year(91) n=37(11.3%). This distribution reflects the amount of response per academic year students which can be explained by the variation in participant willingness to complete the questionnaire and access to internet, since the proportions of students in each batch are more or less the same.

Regarding the residence: 174(53.4%) live with there relatives in Khartoum state, 105(32.2%) at university dorms, and 47(14.4%) at private dorms. This distribution reflects the interaction of multiple factors that determine the student options and preferences when it comes to where to live during the study period of university years. Like: geographic background, socioeconomic status, favorite place to read, and transportation accessibility.

The level of exercise at home: 156(47.9%) said rarely, 29(8.9%) often, 123(37.7%) sometimes, and 18(5.5%) said they almost always exercise at home. Which indicate the basic habitual level of exercise of the participant before the lockdown but it might also shows the effect of the lockdown on the access for recreational means and facilities.

According to this study the presence of family history of mental illness,which intended to examine the confounder of having susceptibility to mental illness before lockdown, the results showed: 82(25.2%) said yes, 210(64.4%) said no, and 34(10.4%) don't know. Which indicated clearly that nearly quarter of the participants already have higher risk to be affected by lockdown, also this shed a light on a smaller scope upon the hidden statistics of mental illnesses in Sudan.[17],[18].

Sleep quality:

The participants were asked about their sleep quality after one month from the lockdown to assess the impact of the lockdown (social isolation) on their sleep (the questionnaire was designed to assess the sleep quality during the past month) the analysis of the 28 questions that investigate sleep quality during the lockdown revealed that: 28.2% (n=92) are good sleepers, 71.8%(n=234) are poor sleepers, it's nearly the same as a study in Amsterdam that found 33.1%(n=221) of the participants were good sleepers, 34.9%(n=233) had mild sleep complaints and 31.9%(n=213) had clinical insomnia.[19], also according to an Italian study that found there is an increase the prevalence of insomnia from 24% before the lockdown to 40% [14]. This deterioration in sleep quality could be for many reasons: infection fears, frustration, inadequate information and financial loss. As a medical students this deterioration could be explained by the fear of prolongation of their study years and it's effect on their career after graduation,as it will be the first question in the interview; why did you study medicine in nine years.

The potential relationship between gender and sleep quality in this study, was evaluated using the Pearson's Chi-squared test. The result of the test showed significant association With P-value = 0.001, the majority of the poor sleepers are females 70.5%(n=165),and 29.5%(n=69) are males. The good sleepers divided equally between males and females with 50% each (n=46). This percentage was expected because many studies of insomnia support a female predominance,because of the normal physiological periods, including puberty, menstruation, pregnancy, and menopause are associated with alterations in sleep patterns.[20] also society pressure,family pressure and high expectation are more directed towards females in Sudanese culture which can result in more frequent of sleep disturbance than men.

There is no correlation found between sleep quality and age, residency, level of exercise, and history of mental illness in the family. Mostly because the lockdown affected people equally in all strata of the society, geographic areas, sociodemographic characteristics, and spectrum of mental state.

The results of the self awareness of sleep quality comes as: 19.6%(n=64) said there was improvement of their sleep during the period of the lockdown, while 33.4%(n=109) said their sleep deteriorated during the lockdown, and 46.9% (n=153) said there was no change at all. The perception of the participants about their sleep quality doesn't match the actual results because only 33.4% of them aware about their poor

sleepiness while the actual poor sleepers are 71.2% which is two fold the perceptive outcome, this could be dangerous, because half of the poor sleepers are unaware about their problem to seek help solving it, especially the poor sleep is linked to other psychiatric morbidities that can appear on them after a massive deterioration in their sleep [6,7].

Anxiety and depression:

The questionnaire assess the general symptoms of anxiety and depression at the time of the lockdown to estimate its effect on the medical students and the results come as: 80.7%(n=263) have low anxiety , 16% (n=52) have moderate anxiety , and 3.4%(n=11) have potentially concerning levels of anxiety. This percentage is very low compared to Chinese survey which found 37% of the participants were anxious, also in Bangladeshi study they found 33.3% had anxiety [15] another study in Spain found 21% of the students experienced high scores of anxiety [16]. This could be explained by the high rate of spread of the infection in these countries compared to Sudan, that made them more susceptible to be anxious and panicked than Sudanese people which is literally doesn't care about coronavirus spread, unfortunately even at the level of medical students. Also the level of restriction is very high in these countries compared to Sudan which may increase the intensity of the symptoms due to the complete isolation from society.

There is association between anxiety and level of academic year as P-value=0.004, The results: first year 97: 17.3% (n=9), 27.3%(n=3) had moderate and severe level of anxiety respectively, first year 96: 9.6% (n=5), 27.3%(n=3) had moderate and severe level of anxiety respectively, second year 95: 30.8%(n=16), 27.3%(n=3) had moderate and severe level of anxiety respectively, third year 94: 13.5%(n=7), 18.1(n=2) had moderate and severe level of anxiety respectively, fourth year 93: 11.5%(n=6), 0%(n=0) had moderate and severe level of anxiety respectively, fifth year 92: 3.8%(n=2), 0%(n=0) had moderate and severe level of anxiety respectively, sixth year 91: 13.5%(n=7), 9.2%(n=1) had moderate and severe level of anxiety respectively. The more affected batches were the first ones which could be explained by their high expectations of the college period as more stable period, unlike what they found (multiple closures), the old batches experienced that a lot so they develop a coping mechanism and become more indifferent about it.

There is no significant difference or correlation found in the level of the anxiety among the age, gender, level of exercise at home and residency groups. Mostly because the lockdown affected people equally in all strata of the society, geographic areas, sociodemographic characteristics, and spectrum of mental state.

The depression found as: 64.1%(n=209) have low depression, 21.2%(n=69) have moderate depression, 14.7%(n=48) have potentially concerning levels of depression. The level of depression is higher than anxiety levels. The figures of depression can be explained by the fact that most of the students depressed about the multiple closures and the fear of study years prolongation especially knowing that the faculty didn't adapt an online system of learning (at the time of data collection) to help speeding the process of learning. Other studies showed similarly in depression results among the students, in Spanish study they

found 34.2% of the students had moderate to extremely severe depressive symptoms[21],while in Italian one, there was 27.8% of the students had depressive symptoms [14].

There is a correlation between the level of depression and the gender and level of academic year as the P-value = 0.011 and 0.025 respectively. Regarding the gender: 69.2%(n=36) of the moderate depressed participants were females and 30.8%(n=16) were males, while 72.7%(n=8) of the severely depressed participants were females and 27.3%(n=3) were males. It's explainable that the females more depressed because they are nearly twice as likely as men to be diagnosed with depression due to their hormonal changes and premenstrual problems [22], also society pressure, family pressure and high expectation are more directed towards females in Sudanese culture. regarding the level of academic year association with depression as: the first year 97: 10.1%(n=7), 12.5%(n=6) had moderate and severe level of depression respectively, first year 96: 14.5%(n=10), 14.6%(n=7) had moderate and severe level of depression respectively, second year 95: 20.3%(n=14), 22.9%(n=11) had moderate and severe level of depression respectively, third year 94: 29%(n=20), 18.8%(n=9) had moderate and severe level of depression respectively fourth year 93: 8.7%(n=6), 10.4%(n=5) had moderate and severe level of depression respectively, fifth year 92: 10.1%(n=7), 4.1%(n=2) had moderate and severe level of depression respectively, sixth year 91: 7.3%(n=5), 16.7%(n=8) had moderate and severe level of depression respectively. The more affected batches were the first ones which could be explained by their high expectations of the college period as more stable period, unlike what they found (multiple closures), but the old batches experienced that a lot so they develop a coping mechanism and become more indifferent about it, it's noticeable that the last batch (sixth year 91) has a significant level of depression but it could be due to their high academic load that made them vulnerable to be depressed.

The study showed that no significant difference in the level of depression among age, residency, and home exercisers groups. Mostly because the lockdown affected people equally in all strata of the society, geographic areas, sociodemographic characteristics, and spectrum of mental state.

Regarding the self awareness questions 39.6%(n=129), 46.3%(n=151) of the participants said there was an increase in the intensity of the symptoms of anxiety and depression at the period of the lockdown respectively. 6.4%(n=21), 5.8%(n=19) said there was a decrease in expression anxiety and depression symptoms respectively. 54%(n=176), 47.9%(n=156) said they didn't notice any changes regarding anxiety and depression symptoms between the period before and during the lockdown respectively. The study revealed exaggeration in people perception on their anxiousness level which was 39.6% compared to the actual level which was 19.4%. furthermore depression perception among participants was 46.3% which is nearly similar to the actual figure which was 35.9%. it's fairly common and expected to have discrepancies between people perception of the mental illness and the actual figures of the mental illness, in this study participants seemed alerted about their anxiousness but most objective about their depression and either ways the overall level of awareness is directly proportionate with the magnitude of the problem.

Association between sleep quality and anxiety and depression:

There is significant correlation between having poor sleep quality and depressive symptoms in the participants with P-value =0.000 (93.8%, n=45) of those having potentially concerning level of depression are poor sleepers, and only (6.2% n=3) are good sleepers, (81.2% n=56) of those having moderate depression are poor sleepers while (18.8% n=13) are good sleepers, (63.6% n=133) of those having low depressive symptoms are poor sleepers and (36.4% n=76) are good sleepers. This explained by the fact that it's scientifically proven that poor sleep affects people mental health and sanity [8,9].

No significant correlation between sleep quality and anxiety with P-value =0.062. this result contradicts the common knowledge in the literature which indicate a significant correlation between sleep quality and the frequency of anxiety [8,9], but this result can be explained by the fact that the anxiety frequency in this study was low and as a consequence the sample size affected the result.

Conclusion

This study found that there is negative impact of the covid-19 lockdown on medical students, which we found that two thirds of the participants are poor sleepers with a predominance of the female gender among them, and the junior batches affected more severely than the senior ones. There is no correlation between sleep quality and age, residency, level of exercise at home, and history of mental illness groups. One third of the participants had moderate to severe depression which also affects the female more than the males and the junior students more than the seniors. There is no correlation between depression and age, residency, level of exercise at home, and history of mental illness groups. Fifth of the participants had moderate to severe anxiety which affect both gender equally but it did affect the junior students more than the seniors. There is no correlation between anxiety and age, residency, level of exercise at home, and history of mental illness groups. There is correlation between poor sleep quality and depression, unlike anxiety which it doesn't correlate with having poor sleep quality in this study.

Limitations

The study questionnaire was filled through online google form; no face to face interview therefore social desirability bias could be present. Also the survey involves only one college from one university so results cannot be generalized. Lastly many students were busy with their examinations and lab work so collecting data from them was slightly difficult.

Recommendation

Medical students have been described as major risk group for many of the psychological disorders and sleep disturbances; the results of this study with all of its limitations should be taken under the consideration by the university administration, to build a regulatory mechanism and support system for the under risk population.

Descriptive studies have limited capacity to predict the nature of the causality between factors, it's unclear if the anxiety and depression is prequels or sequels of sleep quality deterioration, future studies should consider a better study design.

The need of the hour is to create an awareness campaign to educate the students and to provide help for the potential poor sleepers, anxious, and depressive students.

References

- 1-Wang C hornby Pw Hayden fg gao gf .A noval coronavirus outbreak of global health concern.lancet.2020;395:470-3. [https://doi.org/10.1016/S0140-6736\(20\)30154-9](https://doi.org/10.1016/S0140-6736(20)30154-9).
- 2-Nishiura H ,Jung S Linton NM ,kinoshita R, yang Y,hayashi K,et al. The extent of transmission of novel coronavirus in wuhan, China, 2020.J clin med 2020;9:330. <https://doi.org/10.3390/jcm9020330>.
- 3-situation reportes; 2020 <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports> (accessed April 11,2020)
- 4-Morin CM,Carrier J bastien C, et al . Sleep and circadian rhythms in response to covid-19 pandemic . Can J public Health 2020 Jul 22:1-4. <https://doi.org/10.17269/s41997-020-00382-7>.
- 5- Sinha M,Pande B, Sinha R. Impact of covid19 lockdown on sleep-wake schedule and associated lifestyle related behavior:a national survey. J public health Res 2020;9:1826. <https://doi.org/10.4081/John.2020.1826>.
- 6- salaries N, Hosseinian-far A, Jalali R, et al. Prevalence of stress, anxiety, depression among the general population during the covid19 pandemic: a systemic review and meta analysis. Glob health 2020;16:57. <https://doi.org/10.1186/s12992-020-00589-w>.
- 7- Xiong J, lipstiz O, Nasri F, et al. Impact of covid19 pandemic on mental health in the general population: a systemic review. J affecte Disord 2020;277:55-64. <https://doi.org/10.1016/j.jad2020.08001>.
- 8- Krishnamoorthy Y, Nagarajan R, Saya GK, at al. Prevalence of psychological morbidities among general population, healthcare workers and covid19 patients amidst the covid19 pandemic: a systemic review. Psychiat Res 2020;293:113382. <https://doi.org/10.1016/j.psychres.2020.113382>.
- 9- Idrissi AJ, Lamkaddem A, Benouajjit A, et al. Sleep quality and mental health in the context of covid19 pandemic and lockdown in Morocco, sleep Med 2020;74:248-53. <https://doi.org/10.1016/j.sleep.2020.07.045>.
- 10- Lau JTF, Yang X, Pang E, Tsui HY, Wong E, Yun KW.SARS-related perceptions in Hong Kong. Emerg Infect Dis. 2005;11:417-24. <https://doi.org/10.3201/eid1103.040675>.

- 11- Rubin GJ, Potts HWW, Michie S. The impact of communication about swine flu (influenza H1N1v) on public responses to the outbreak: results from 36 national telephone surveys in the UK. *Health Technol Assess (Rockv)*. 2010;14:183-266. <https://doi.org/10.3310/hta14340-03>.
- 12- Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet*. 2020;395:912-20. [https://doi.org/10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8).
- 13- Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, et al. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (covid19) epidemic among the general population in China. *Int J Environ Res Public Health*. 2020;17. <https://doi.org/10.3390/ijerph17051729>
- 14- Marelli S, Castelnouvo A, Somma A, Castronovo V, Mombelli S, Bottoni D et al. Impact of covid-19 lockdown on sleep quality in university students and administrative staff. *Journal of Neurology*. 2020;268(1):8-15.
- 15- Khan A, Sultan M, Hossein S, Hasan M, Sikder M. The impact of covid-19 pandemic on mental health & wellbeing among home quarantined Bangladeshi students: A cross sectional pilot study. *Journal of Affective disorders*. 2020;277:121-128.
- 16- Guessoum S, Lanchal J, Radjack R, Carretier E, Minassian S, Benoit L et al. Adolescent psychiatric disorders during covid-19 pandemic and lockdown. *Psychiatry research*. 2020;291:113264.
- 17- Ozdin S, Bayrak Ozdin S. Levels and predictors of anxiety, depression and health anxiety during covid-19 pandemic in Turkish society: The importance of gender. *International journal of social psychiatry*. 2020;66(5):504-511.
- 18- Laursen T, Labouriau R, Licht R, Bertelsen A, Munk-Olsen T, Mortensen P. Family history of psychiatric illness as a risk factor for Schizoaffective Disorder. *Archives of General psychiatry*. 2005;62(8):841.
- 19- kocevaska D, Blanken T, Van Someren E, Rosler L. Sleep quality during the covid-19 pandemic: not one size fits all. *Sleep medicine*. 2020;76:86-88.
- 20- Phillips B. Gender related differences in symptoms of patients with suspected breathing disorders in sleep: A Clinical population study using the sleep disorders questionnaire. *Yearbook of Pulmonary Disease*. 2008;2008:255-257.
- 21- Odriozola-Gonzalez P, Planchuelo-Gomez A, Iruiria M, de Luis-Garcia R. Psychological effects of the covid-19 outbreak and lockdown among students and workers of Spanish university. *Psychiatry research*. 2020;290:113108.
- 22- Albert P. Why is depression more prevalent in women?. *Journal of Psychiatry & Neuroscience*. 2015;40(4):219-221