Original Article

ANXIETY AND SLEEP QUALITY OF COVID-19 PATIENTS TREATED IN DEDICATED COVID HOSPITALS

Md. Shahin[1], Irin Hossain[2]

ABSTRACT

Background: COVID-19 pandemic in 2020 is associated with a high rate of anxiety and poor sleep quality among COVID-19 patients. The study aimed to assess the level of anxiety and sleep quality of COVID-19 patients treated in dedicated COVID hospitals.

Methods: This multi-center cross-sectional study was conducted in Dhaka during the period of January to December 2020, in three dedicated COVID hospitals of Dhaka. A total of 306 COVID-19 patients were selected purposively from these hospitals according to their bed ratio. Coronavirus Anxiety Scale (CAS) and the Pittsburgh Sleep Quality Index (PSQI) were used to assess anxiety and sleep quality.

Results: Among the participants, almost 87.0% were male and the majority were within 51 to 60 years of age. About 88.6% patients stayed in hospital for 1-10 days. Half of the participants had some kind of chronic disease. Among them, 31.0% participants had DM and 29.7% had HTN. 80.6% participants had no smoking history. About 38.2% participants had COVID-19 associated dysfunctional anxiety and 87.9% participants were associated with poor sleep quality. Almost 90.6% participants, those who had good sleep quality had COVID-19 dysfunctional anxiety and only 9.4% those who had good sleep quality had COVID-19 dysfunctional anxiety.

Conclusion: This study suggests that there is a wide range of the Bangladeshi residents who are at higher risk of anxiety and poor sleep quality during COVID-19 pandemic. Policymakers and mental healthcare provider are advised to provide continuous monitoring of the psychological consequences during pandemic, and provide mental support.

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1. *Upazila Health and Family Planning Officer, Mongla Upazila Health Complex, Bagerhat, Bangladesh*
2. *Assistant Professor, Department of Occupational and Environmental Health, NIPSOM, Dhaka*

Correspondence: *Md. Shahin. E-mail: mohammadshahin2021@gmail.com*

INTRODUCTION

The mortality rate of people of all ages and of all countries has decreased significantly with the unprecedented success of medical science but still, global health and well-being is being embroiled by viral epidemics. In the end of December 2019, an outbreak of a new viral disease, novel coronavirus, another virus from Corona family like SARS and MERS, was reported in Wuhan, the capital of Hubei Province, China and subsequently gets the global attention as it turned into pestilence rapidly.[1] Although the outbreak is likely to have started from a zoonotic transmission event it soon became clear that efficient person-to-person transmission was also occurring.[2] On March 11, 2020, WHO has declared the situation as pandemic and this is the first pandemic caused by a virus from the corona family.[3] As the death rate of COVID-19 rises fast across the world, the unpredictability of the virus' nature creates ongoing stress, increasing the risk of people developing psychological disorders.[4]

Bangladesh is home to nearly 170 million people and no stranger to crises. Bangladesh initially dodged the bullet by strategically avoiding the importation of COVID-19. Once the virus went global, it hit Bangladesh too. As soon as the cases started popping up, Bangladesh opted for nationwide lockdown. The awareness campaign message was clear and succinct- awareness, not panic. Although these first-line emergency responses are designed to reduce the spread of the infectious disease, many people who are quarantined may develop feelings of loneliness, boredom, physical inactivity, and insecurities about food and finance.[5] According to the Anxiety and Depression Association of America,[6] the current outbreak of the coronavirus has caused increased anxiety levels among many in the public community.[7] A sudden outbreak of a disease always poses threat to the mental health of affected people and their close contacts.[8] Anxiety and related disorders involve excessive worry and fear, often triggered by specific situations without actual danger. These conditions hinder workplace performance, incurring significant

economic costs and elevating the risk of cardiovascular issues.[9,10] Factors relating to anxiety and stress are one of the most important concomitants of sleep complaints, and insomnia associated with psychiatric disorders is the most prevalent type of insomnia seen in sleep disorders centers. Furthermore, sleep quality disturbances are frequently reported in essentially all psychiatric disorders.

A cross-sectional study was therefore conducted to assess the impacts of the COVID-19 pandemic on anxiety and sleep quality to explore the level of anxiety and sleep quality of COVID-19 patients treated in dedicated COVID-19 hospitals in Dhaka, Bangladesh along with associated factors. The findings of this study can be utilized by healthcare professionals and policy makers to identify individuals who are vulnerable to anxiety and sleep impairments during a pandemic. This will make possible taking of preemptive action to reduce the impacts of COVID-19 pandemic on public's mental health in future.

METHODS

A cross-sectional study was conducted on 306 RT-PCR confirmed COVID-19 patients treated in dedicated COVID hospitals, namely Mugda Medical College Hospital (MuMCH), Dhaka Medical College Hospital (DMCH), and Kurmitola General Hospital (KGH) in Dhaka, from January 1 to December 31, 2020. These three government tertiary level hospitals have been dedicated to the care of COVID-19 patients since the beginning of the epidemic, following national admission standards (version 7.0). Using a purposive sampling technique, 306 laboratory-confirmed COVID-19 patients, irrespective of clinical signs and symptoms established by a positive RT-PCR test, were selected from these hospitals. Participants aged 18 and above, admitted for at least three days, and willing to join the research, met the inclusion criteria. Based on the bed capacities of the designated hospitals, 153 samples were taken from DMCH, 92 from MuMCH, and 61 from KGH in a ratio of 5:3:2, following a proportion estimation formula with a 95% confidence level and a 5% margin of error to anticipate the prevalence of anxiety and sleep quality among COVID-19 patients. Data were gathered through in-person interviews using a pre-tested semi-structured questionnaire, which included socio-demographic details and factors associated with anxiety and sleep quality. Anxiety and sleep quality were measured using the Coronavirus Anxiety Scale (CAS) and the Pittsburgh Sleep Quality Index (PSQI) scale, respectively. The CAS is a self-report mental health screener of dysfunctional anxiety associated with the coronavirus crisis, containing five questions rated on a 5-point scale, with a total score ≥9 indicating probable dysfunctional coronavirus-related anxiety. The PSQI is a self-rating instrument to measure the quality and patterns of sleep, with a global sum of "5" or greater indicating a "poor" sleeper. Data were analyzed using IBM SPSS v25 software, with descriptive statistics applied to socio-demographic factors and Chi-square tests to find associations between anxiety levels and sleep quality. Participants received a clear explanation of the research objectives and significance, with informed consent obtained in writing. Confidentiality was strictly upheld, and the research was reviewed and approved by NIPSOM's Institutional Review Board (IRB), ensuring ethical conduct and maintaining participants' privacy throughout the study.

RESULTS

Among the 306 participants, maximum (25.2%) was between 51 and 60 years of age, with a mean age of 46.86 (±14.5) years. The cohort was predominantly male (87%) and Muslim (88%). Most respondents (32.4%) did not know their blood group, the majority were married (77.1%), and 27.8% had a graduate degree. Service holders made up 32.7% of the group, and the most common family size was four members (25.2%) [Table-1].

Table 1. Socio-demographic characteristics of the respondents

Variables		f (%)	Variables		f (%)
Age	≤ 20 years	9(2.9)	Education	Illiterate	35(11.4)
	21-30 years	42(13.7)		Primary	42(13.7)
	31-40 years	59(19.3)		Secondary	37(12.1)
	41-50 years	65(21.2)		Higher secondary	84(27.5)
	51-60 years	77(25.2)		Graduate	85(27.8)
	61-70 years	42(13.7)		Masters	23(7.5)
	≥71 years	12(3.9)	Marital status	Married	236(77.1)
Gender	Male	266(87)		unmarried	44 (14.4)
	Female	40(13)		widow/widower	23(7.5)
Religion	Muslim	270 (88.2)		divorced	3(1)
	Hindu	32(10.5)	Occupation	Service-holder	100(32.7)
	Christian	4(1.3)		Business	63(20.6)

Blood Group	Unknown	99(32.4)		Housewife	23(7.5)
	A-	6(2.0)		Students	17(5.6)
	A+	77(25.2)		Garments workers	4(1.3)
	AB-	3(1.0)		Doctor	7(2.3)
	AB+	10(3.3)		Nurse	10(3.3)
	B-	1(.3)		Other HCW	5(1.6)
	B+	39(12.7)		Media worker, police, day labor.	17(5.6)
	O-	3(1.0)	Number of family members	≤5	177(57.8)
	O+	68(22.2)		>5	129(42.2)

According to Table 2, about 33.0% of participants did not feel dizzy, lightheaded, or faint when they read or listened to news about the coronavirus. Approximately 27.1% had trouble falling or staying asleep for less than a day or two due to thinking about the coronavirus, while 66.7% did not feel paralyzed or frozen when exposed to coronavirus information. About 33.0% lost interest in eating for several days when exposed to information about the coronavirus, and 43.1% did not feel nauseous or have stomach problems for less than a day or two under the same circumstances. According to the Coronavirus Anxiety Scale (CAS), 38.2% of participants had dysfunctional anxiety related to the COVID-19 crisis (Table-3).

Table 2. Distribution of participants according to their coronavirus anxiety

Topics	Responses	Frequency	Percent
I felt dizzy, lightheaded, or faint, when I read or listened to news about the coronavirus.	Not at all	101	33.0
	Rare, less than a day or two	72	23.5
	Several days	64	20.9
	More than seven days	40	13.1
	Nearly every day over last two weeks	29	9.5
I had trouble falling or staying asleep because I was thinking about the coronavirus	Not at all	53	17.3
	Rare, less than a day or two	83	27.1
	Several days	82	26.8
	More than seven days	57	18.6
	Nearly every day over last two weeks	31	10.1
I felt paralyzed or frozen when I thought about or was exposed to information about the coronavirus	Not at all	204	66.7
	Rare, less than a day or two	81	26.5
	Several days	13	4.2
	More than seven days	4	1.3
	Nearly every day over last two weeks	4	1.3
I lost interest in eating when I thought about or was exposed to information about the coronavirus	Not at all	36	11.8
	Rare, less than a day or two	76	24.8
	Several days	101	33.0
	More than seven days	81	26.5
	Nearly every day over last two weeks	12	3.9
I felt nauseous or had stomach problems when I thought about or was exposed to information about the coronavirus	Not at all	61	19.9
	Rare, less than a day or two	132	43.1
	Several days	76	24.8
	More than seven days	32	10.5
	Nearly every day over last two weeks	5	1.6
Scoring of Coronavirus Anxiety Scale (CAS)			
COVID-19 associated dysfunctional anxiety	Yes	117	38.2
	No	189	61.8
	Total	306	100.0
	Mean CAS Score (SD) 6.80 (.216)		

Table 3. Association between anxieties with sleep quality among COVID-19 patients

COVID-19 associated dysfunctional anxiety	Sleep quality		Total
	Good sleep quality	Poor sleep quality	
Yes	11 (9.4%)	106 (90.6%)	117
No	26 (13.8%)	163 (86.2%)	189
Total	37	269	306

Regarding sleep quality, 35% of participants could not fall asleep within 30 minutes once or twice a week. During the past month, 37.6% did not wake up in the middle of the night or early morning, 34% did not need to get up to use the bathroom, 84% breathed comfortably, 62.1% did not cough or snore loudly, and 90.8% and 67% did not feel too cold or too hot, respectively. Additionally, 60.1% did not have bad dreams, and 70.9% did not experience pain. The Pittsburgh Sleep Quality Index (PSQI) results showed that 87.9% of participants had poor sleep quality, while only 12.1% had good sleep quality. Table 4 indicates that 90.6% of participants with poor sleep quality had COVID-19-related dysfunctional anxiety, whereas only 9.4% of those with good sleep quality experienced the same anxiety

Table 4. Distribution of participants according to their sleep quality

Topics	Responses	Frequency	Percent
Cannot get to sleep within 30 minutes	Not during the past month	60	19.6
	Less than once a week	63	20.6
	Once or twice a week	107	35.0
	Three or more times week	76	24.8
Wake up in the middle of the night or early morning	Not during the past month	115	37.6
	Less than once a week	73	23.9
	Once or twice a week	66	21.6
	Three or more times week	52	17.0
Have to get up to use the bathroom	Not during the past month	104	34.0
	Less than once a week	50	16.3
	Once or twice a week	81	26.5
	Three or more times week	71	23.2
Cannot breathe comfortably	Not during the past month	257	84.0
	Less than once a week	30	9.8
	Once or twice a week	10	3.3
	Three or more times week	8	2.6
Cough or snore loudly	Not during the past month	190	62.1
	Less than once a week	38	12.4
	Once or twice a week	52	17.0
	Three or more times week	26	8.5
Feel too cold	Not during the past month	278	90.8
	Less than once a week	14	4.6
	Once or twice a week	10	3.3
	Three or more times week	4	1.3
Feel too hot	Not during the past month	205	67.0
	Less than once a week	35	11.4
	Once or twice a week	46	15.0
	Three or more times week	20	6.5
Have bad dreams	Not during the past month	184	60.1
	Less than once a week	50	16.3
	Once or twice a week	43	14.1
	Three or more times week	29	9.5
Have pain	Not during the past month	217	70.9
	Less than once a week	44	14.4
	Once or twice a week	28	9.2
	Three or more times week	17	5.6
	Not during the past month	287	93.8

Other reason(s), please describe, including how often you have had trouble sleeping because of this reason(s)	Less than once a week	13	4.2
	Once or twice a week	3	1.0
	Three or more times week	3	1.0
During the past month, how often have you taken medicine (prescribed or "over the counter") to help you sleep?	Not during the past month	240	78.4
	Less than once a week	19	6.2
	Once or twice a week	27	8.8
	Three or more times week	20	6.5
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	266	86.9
	Less than once a week	27	8.8
	Once or twice a week	11	3.6
	Three or more times week	2	.7
During the past month, how much of a problem has it been for you to keep up enthusiasm to get things done	There is no problem	116	37.9
	There was very little problem	101	33.0
	There was a little problem	81	26.5
	There was a problem too	8	2.6
Scoring of Pittsburgh Sleep Quality Index (PSQI)			
Quality of sleep	Good sleep quality	37	12.1
	Poor sleep quality	269	87.9
	Total	306	100.0

DISCUSSION

The present cross-sectional study shed light on the factors associated with anxiety and sleep quality of COVID-19 patients, the level of anxiety and sleep quality of COVID-19 patients treated in dedicated COVID hospitals, association of anxiety with sleep quality among COVID-19 patients and their socio-demographic characteristics. In present study, time lapse between symptoms appears and hospital admission, majority (63.7%) took 6-10 days for hospital admission after appearing of symptoms where Mean ± SD = 7.01 ± 2.682. According to Mondol et al. the patients admitted in hospital average 5 ± 3.922 days after onset of symptoms and 86% patients admitted in Government hospital. In a study in Bangladesh, on an average hospital stay duration was 9.2 days.[11] In present study, majority (54.2%) were moderately ill. 25.2% and 20.6% were severely ill and mild ill respectively. Major co-morbidities included DM (31.0%) and HTN (29.7%). In a study in Bangladesh Islam MZ et al. found that more than one third (33.9%) patients had at least one co-morbidity, major co-morbidities included DM (35.0%) and in China found that nearly half of the patients had co-morbidity where HTN was the most common followed by DM and CHD.[12] Majority (80.4%) had no habit of smoking or other kind of addiction and only 19.6% had habit of smoking or other kind of addiction. In a scientific brief of WHO, found that smokers constituted 1.4 to 18.5% of hospitalized adults.[12-13]

In this study, more than one third of the respondents (38.2%, n=117) were found to have COVID-19 related anxiety. This is comparable to prevalence of COVID-19 related anxiety that was found among general population (31.9%).[14]Genesis Chorwe-Sungan (2020) found that COVID-19 related anxiety was 25.5% among nurses in Malawi. But it differs from Srivastava et al study in India, where prevalence of anxiety from COVID-19 was found 3.29% (n=66; score≥9).[15] In current study, according to scoring of Pittsburgh Sleep Quality Index (PSQI), majority (87.9%) participants were associated with poor sleep quality. Only 12.1% were associated with good sleep quality with cut off value of 5. According to Zhou et al. the first study to examine sleep quality among front line health professionals using the PSQI during the outbreak of the COVID-19 in China, using the cut-off value of 7, the prevalence of poor sleep quality was 18.4% (95%CI=16.6%–20.11%)[16] A systematic review and meta-analysis found that the pooled prevalence of sleep disturbances among Chinese healthcare professionals was 39.2% (95%CI=36.0%–42.7%), using the PSQI.[17] Xiao and collaborators (2020) also reported an association between anxiety and poor sleep quality assessed by the Pittsburgh Sleep Quality Index (PSQI) scale.[18]

In this study, the association between anxieties with sleep quality among COVID-19 patients, majority (90.6%) participants those who were associated with poor sleep quality having dysfunctional anxiety associated with the COVID-19 crisis. Only 9.4% those who were associated with good sleep quality having dysfunctional anxiety associated with the COVID-19 crisis. This study suggested that prevalence of COVID-19 related anxiety is high among COVID-19 patients in Bangladesh. The sleep quality became poor may be due to long stay-at-hospital, not getting proper service in the hospital, and deprived lifestyle.

CONCLUSION

The study indicates that COVID-19 has heightened anxiety levels among patients in Bangladesh, with a significant portion experiencing dysfunctional anxiety. Utilizing the Coronavirus Anxiety Scale (CAS) and Pittsburgh Sleep Quality Index (PSQI), the research underscores the prevalence of COVID-19-related anxiety. About one fourth of the patients experienced dysfunctional anxiety because of COVID-19. Furthermore, this study has confirmed that the CAS is a valid instrument which is effective in detecting COVID-19 related anxiety among COVID-19 patients. With the increasing number of cases, the psychiatric profession in Bangladesh faces both challenges and opportunities. Addressing identified barriers is crucial, but there is also an opportunity to implement feasible recommendations at a local or regional level. Managing the long-term impact of COVID-19-induced anxiety and sleep problems requires collaborative efforts not only from psychiatrists but from the broader healthcare system.[19-20]

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