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Sleep quality and social support in people over 65 years old who have had a quarantine process due to Covid-19

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ABSTRACT

Background and Aim: We aimed to investigate the effects of anxiety or social support on sleep quality in patients with Covid-19 who were older than 65 years of age and undergoing quarantine process.

Material and Method: The study included the patients ≥65 years of age who had a quarantine process for 14 days during the Covid-19 outbreak. The sociodemographic features and comorbidities were recorded in all patients. Geriatric anxiety scale (GAS), multidimensional perceived social support scale (SS), and Pittsburgh sleep quality index (PSQI) questionnaires were applied.

Results: Totally 198 patients (123 male and 75 female) were included in the study. Among patients, 115 (58.1%) patients were living in a nursing home. All GAS scores and the total PSQI were significantly higher and all SS scores were significantly lower in PCR positive patients compared with the negative ones (p=0.001). Moreover, all GAS scores and the total PSQI were significantly higher and all SS scores were significantly lower in patients living in nursing homes compared with the others (p=0.001).

Conclusion: In elderly patients faced with the Covid-19, social support was negatively associated with the sleep disturbances. We suggest that, increasing social support is important in elderly patients in the clash against Covid-19.

Keyword: Anxiety, Covid-19, elderly people, social support, sleep quality

INTRODUCTION

The coronavirus disease 2019 (Covid-19) was first recognized in Wuhan, China, in December 2019. It rapidly spread across mainland China and became a global threat. As of January 2021, the causative pathogen, namely severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has infected millions of people and caused thousands of deaths globally.

Unfortunately, the coronavirus disease 19 (Covid-19) pandemic affected all over the world within a short period. Even though Covid-19 infection may be severe in all age groups, older adults (65-year-old or older) may experience a higher mortality rate (1,2). Exposure to chronic and daily stressors such as quarantine or life-threatening conditions can affect the emotional experience of the patients. With many unknowns and leading to long quarantine periods, Covid-19 may cause an emotional burden to the patients. With higher mortality rates, elderly patients constitute a special group in this pandemia period, requiring special attention (3,4). Covid-19 can cause various mental disorders and worsening of existing mental symptoms. Anxiety, panic attacks, and depression are some of these symptoms. Sleep is another area where problems may occur in relation to these symptoms.

It is noteworthy that sleep disturbances are prevalent especially in individuals who are forced to medical isolation due to infection or exposure to SARS-CoV-2, demonstrating features of difficulty to fall asleep and early wake-up. In addition to sleep loss, there are people who experience other sleep disturbances, of which SDB is one of the most frequently encountered, and poses a significant burden not only for the affected patients but also for the patient's close contacts. Along those lines, various associations and scientists have recommended activities and exercises that can be applied at home to protect individuals who were separated in their homes from isolation due to the epidemic from mental illnesses such as depression, anxiety and sleep disorders. Sleep

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disturbances are associated with anxiety and depression and should be defined and treated as soon as possible (5,6). In fact, in many studies conducted both in our country and around the world, the relationship between covid 19 pandemic and sleep has been investigated in many ways; reported a high incidence of sleep disturbance, lifestyle change, satisfaction, and increased anxiety, regardless of gender and current employment status (7,8).

The aim of the study is to investigate the effects of anxiety or social support on sleep quality in patients with Covid-19 who were older than 65 years of age and undergoing quarantine process. To the best of our knowledge, this is the first study in the literature evaluating the effects of quarantine period due to Covid-19 on anxiety level and sleep quality in geriatric patients.

MATERIAL AND METHOD

All patients who agreed to participate in the study were included in the study. The study was approved by Turkish Ministry of Health and Bezmialem Vakıf Üniversitesi non-interventional research ethics committee with the number of 2011-KAEK-42 2018703-01. All procedures were performed adhered to the ethical rules and the Helsinki Declaration of Principles.

The study was conducted in 198 patients who applied to two different health centers in Izmir between 15 March 2020 and 30 May 2020 and had a quarantine process for 14 days during the Covid-19 outbreak. The study included patients ≥65 years of age who were treated at hospital due to Covid-19 disease and quarantine was recommended at home after discharge, or who were under quarantine at home for suspected infection or suspicious contact.

The sociodemographic features and comorbidities were recorded in all patients. Geriatric Anxiety Scale, Multidimensional Perceived Social Support Scale, and Pittsburgh Sleep Quality Index questionnaire were applied in all patients face to-face or on the internet.

Geriatric Anxiety Scale includes 23 self-report items used for scoring and 5 additional items to define the common topical concerns of anxiety among older adults. The total score is calculated as well as the 3 subscale scores, measuring cognitive, affective, and somatic symptoms. The patients were asked for the symptoms of anxiety by indicating how often they have experienced each symptom during the past week on a Likert-type scale that ranges from 0 (not at all) to 3 (all the time). The total score ranges from 0 to 75, with higher scores representing the existence of more severe anxiety (9,10).

Multidimensional Perceived Social Support Scale is a 12-item scale designed to determine the perceived social support from three sources: Family, Friends, and a Significant Other (for example, dating, engaged, verbal, relative, neighbor, doctor ...) (11). Higher scores represent better social support presence.

The Pittsburgh Sleep Quality Index (PSQI) is a 19-item survey that defines the global sleep quality in the past month. The Responses are calculated on a four-point, Likert-type scale ranging from 0 to 3. PSQI includes seven components (sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, sleep medication use, daytime dysfunction) and the component scores are summed to form a global score (12). The total PSQI score ≥5 was defined as the presence of sleep disturbances.

Statistical Analyses

In statistical analysis, demographic definitions regarding the individuals participating in the survey were given in Frequency (n) and Percentage (%). The mean and Standard Deviation (SD) values related to the questions in the scales were given in the tables. Kolmogorov-Smirnov test was applied to determine the suitability of the data for normal distribution. The relationship between the questionnaire scales was analyzed with the Pearson Correlation Coefficient because the variables showed normal distribution. Two group comparisons were performed with the student's t-test. IBM SPSS Amos 21 Statistical Package Program was used for statistical analysis. For statistical significance, $p < 0.05$ was used.

RESULTS

Totally 198 patients (123 male and 75 female) were included in the study. Polymerase chain reaction (PCR) test for Coronovirus-19 was obtained in 152 of the patients and it was positive in 123 of them. Among patients, 183 (92.4) were married and 15 (7.6%) were single. 115 (58.1%) patients were living in a nursing home. Clinically, fever, cough, and dyspnea were determined in 121 (61.1%) patients and the remaining 77 (38.9%) patients were asymptomatic. Thorax CT was obtained at admission in all patients and tomographical features of the Covid-19 was present in half of the patients (n:99). The demographic, educational, and social features of the patients are summarized in **Table 1**.

The results of Geriatric Anxiety Scale, Multidimensional Perceived Social Support Scale, and Pittsburgh Sleep Quality Index questionnaire are summarized in **Tables 2, 3 and 4**, respectively. Regarding the total PSQI score, 96.9% of the participants were having sleep disturbances.

The correlation analysis was performed between the total PSQI and the findings of other surveys performed (**Table 5**). Regarding these findings, there were significant positive correlations between total GAS, GAS-somatic, GAS-cognitive and GAS-affective and total PSQI (p=0.001), while there were significant negative correlations between SS-total, SS- family, SS- friend and SS- significant other and the total PSQI (p=0.001).

We compared the overall findings of the surveys between PCR positive and negative subjects to determine the effects of PCR positivity on these parameters **(Table 6).** Regarding these findings, total GAS, GAS-somatic, GAS-cognitive, GAS-affective and the total PSQI were significantly higher and SS-total, SS- family, SS- friend and SS- significant other were significantly lower in PCR positive patients compared with the negative ones (p=0.001).

Table 1. Demographic, educational and social features of the patients

Feature	Number of patients (%)
Age groups (years)	
65-70	45 (22.7)
71-75	26 (13.1)
76-80	79 (39.9)
>80	48 (24.2)
Treatment modality	
Quarantine was proposed at home without swab sampling	46 (23.2)
A swab sample was taken and quarantine was proposed at home	40 (20.2)
Hospitalized in wards	88 (44.5)
Hospitalized in ICU	24 (12.1)
Living place	
Urban	157 (79.3)
Rural	41 (20.7)
Alcohol	
Never drunk	177 (89.4%)
Stopped	21 (10.6%)
Smoking	
Never smoked	75 (37.9)
Quitted	71 (35.9)
Daily one package or less	45 (22.7)
Daily more than one package	7 (3.5)
Living with	
A nurse or care-giver	112 (56.6)
Family	62 (31.4)
Single	24 (12.1)
Educational level	
Primary school	35 (17.7)
High school	152 (76.8)
University	11(5.6)
Daily Routines are performed	
With the help of care-giver or family members	25 (12.6)
With the help of tools such as walker	105 (53)
Without help	68 (34.3)
Comorbidities	
Asthma-COPD	46 (23.2)
Diabetes mellitus type 2	82 (41.4)
Hypertension	151 (76.2)
Cardiovascular diseases	81 (40.9)
Osteoporosis	47 (23.7)
Osteoarthritis	41(20.7)

ICU: Intensive care unit, COPD: Chronic obstructive pulmonary disease

Table 2. The results of Geriatric Anxiety Scale

	Mean±SD	Median	Minimum-Maximum
Somatic	11.72±4.32	12.00	4.00 -20.00
Cognitive	10.31±3.78	10.00	5.00-20.00
Affective	10.97±4.58	12.00	3.00-22.00
Total GAS*	33.02±11.96	36.00	12.00-60.00

*GAS: Geriatric Anxiety Scale

Table 3. The results of multidimensional perceived social support scale

	Mean±SD	Median	Minimum-Maximum
*SS-family	17.56±9.21	17.00	4.00-28.00
SS-friends	18.07±6.25	20.00	4.00-28.00
SS-significant other	17.56±7.02	20.00	4.00-27.00
SS-total	53.20±21.24	57.50	12.00- 80.00

*SS: Social Support

Table 4. The results of PSQI

		Frequency
Sleep Quality	0	10 (5.1)
	1	58 (29.3)
	2	99 (50.0)
	3	31 (15.7)
Sleep Latency	0	6 (3.0)
	1	59 (29.8)
	2	97 (48.9)
	3	36 (18.2)
Sleep Duration	0	63 (31.8)
	1	93 (47.0)
	2	30 (15.2)
	3	12 (6.1)
Sleep Efficiency	0	30 (15.2)
	1	82 (41.4)
	2	78 (39.4)
	3	8 (4.0)
Sleep Disturbances	0	97 (49.0)
	1	82 (41.4)
	2	19 (9.6)
Sleep Medication Use	0	95 (48.0)
	1	63 (31.8)
	2	32 (16.2)
	3	8 (4.0)
Daytime Dysfunction	0	11 (5.6)
	1	87 (43.9)
	2	74 (37.4)
	3	26 (13.1)
Total Score	<5	6 (3.1)
	≥5	192 (96.9)

Table 5. Correlation Analysis performed between the other parameters and the total PSQI

	r	p
Total GAS	0.773	0.001
*GAS-somatic	0.757	0.001
GAS-cognitive	0.681	0.001
GAS-affective	0.742	0.001
**SS-total	-0.765	0.001
SS- family	-0.822	0.001
SS- friend	-0.651	0.001
SS- significant other	-0.655	0.001

*GAS: Geriatric Anxiety Scale, **SS: Social Support

Table 6. Comparison of the survey results between PCR positive and negative subjects

	PCR positive (n: 123)	PCR negative (n:29)	p
Total GAS	39.50±8.91	22.93±5.55	0.001
*GAS-somatic	13.87±3.49	8.65±1.81	0.001
GAS-cognitive5	12.14±3.36	7.31±1.64	0.001
GAS-affective	13.47±3.18	6.96±3.08	0.001
**SS-total	45.01±12.32	67.62±12.24	0.001
SS- family	14.39±6.60	23.72±4.92	0.001
SS- friend	17.30±5.13	21.82±4.16	0.001
SS- significant other	15.31±5.13	22.06±3.93	0.001
Total PSQI***	23.29±7.69	9.62±5.39	0.001

*GAS: Geriatric Anxiety Scale, **SS: Social Support, ***PSQI: Pittsburgh Sleep Quality Index

We compared the overall findings of the surveys between the patients living in nursing homes and the others to determine the effects of living in nursing homes on these parameters (**Table 7**). Regarding these findings, total GAS, GAS-somatic, GAS-cognitive, GAS-affective, and total PSQI were significantly higher and SS-total, SS- family, SS- friend, and SS- significant other were significantly lower in patients living in nursing homes compared with the others (p=0.001).

Table 7. Comparison of the survey results between the patients living in nursing homes and the others

	Patients living in nursing homes (n:115)	Patients living with their families (n:83)	p
Total GAS	39.05±10.30	24.66±8.63	0.001
GAS-somatic	13.92±3.61	8.68±3.27	0.001
GAS-cognitive	12.28±3.38	7.57±2.31	0.001
GAS-affective	12.84±4.19	8.39±3.80	0.001
SS-total	43.24±18.55	67.00±16.54	0.001
SS- family	12.16±6.74	25.04±6.58	0.001
SS- friend	15.86±6.23	21.13±4.86	0.001
SS- significant other	15.20±6.80	20.81±5.96	0.001
Total PSQI	21.46±8.98	14.38±7.75	0.001

*GAS: Geriatric Anxiety Scale, **SS: Social Support, ***PSQI: Pittsburgh Sleep Quality Index

DISCUSSION

In this study, we determined that, in patients older than 65 years of age who faced with the quarantine process due to Covid-19 pandemic with some reasons; 1. Sleep quality was disturbed in 96.9% of the participants; 2. Total and subscale anxiety scores were positively correlated with the sleep disturbances, while increased social support was associated with a decreased sleep disturbance; 3. PCR positivity increased the anxiety scores and sleep disturbances with a decrease in social support; 4. Living in a nursing home increased the anxiety scores and sleep disturbances with a decrease in social support.

In this study, we analyzed a special group of patients who were ≥65 years of age and who were faced with a quarantine process of 14 days due to Covid-19. More than 60% of our patients were male and about 40% of the patients were aged between 76-80 years. Most of our patients were living an urban areas and about 25% of the participants were still smoking. The most common comorbidity was hypertension.

In a retrospective case series of 1591 patients with laboratory-confirmed Covid-19 referred for ICU admission, the median age was 63 (56-70) and 82% of the patients were male and approximately half of the patients were hypertensive (13). However, Wang et al reported that, among 339 patients with Covid-19 with a mean age of 71±8 years; 51% were female and hypertension was still the most common comorbidity (14).

The data regarding the anxiety level of the patients due to Covid-19 is limited. In 1210 people from different cities of China, Wang et al reported that 53.8% of the respondents rated the psychological impact of the outbreak as moderate or severe; and 28.8% reported moderate to severe anxiety symptoms (15). In a study performed on medical college students, Cao et al reported that, among 7,143 responses, 0.9% were experiencing severe anxiety, 2.7% moderate anxiety, and 21.3% mild anxiety and they also reported that social support was negatively correlated with the level of anxiety (16). Lei et al compared the prevalence and associated factors of anxiety and depression among the public, people affected by quarantine and those unaffected and reported that in the affected group, the prevalence of anxiety and depression was significantly higher than that of the unaffected people and having no psychological support was significantly associated with higher anxiety and depression scores (19). In another study from our country, 45.1% of the participants scored above the cut-off point for anxiety (20). Similar with our results, Xiao et al investigated 170 individuals who were self-isolated at home for 14 days with self-reported

questionnaires and determined that low levels of social relationships were associated with increased levels of anxiety and stress and decreased sleep quality (19).

Sleep disturbances may affect the whole mental health. We defined that more than 96% of patients older than 65 years of age who met with Covid-19, reported some level of sleep disturbances. Using a web-based cross-sectional survey, Huang et al reported the rate of sleep disturbances as 18.2% during Covid-19 outbreak (20). However, our patients were compromising the most risky group and all were met with the disease previously. Those factors may be the reason of such high sleep disturbance rates.

Sleep disturbances showed a negative correlation with the social support. With an increase in social support, increased sleep quality and decreased degree of anxiety and stress were reported in medical staff during the Covid-19 pandemia (21). Similarly, we also determined a negative correlation between sleep disturbances and social support.

Viral nucleic acid test by RT-PCR assay plays an essential role in determining hospitalization and isolation for individual patients. However, many factors may affect the results of RT-PCR assay such as sampling operations and timing, and its positivity was defined as 30-60% at initial presentation of patients with Covid-19 (22). For the first time in literature we determined that PCR positivity increased the anxiety scores and sleep disturbances with a decrease in social support in elderly patients. Though it is not a highly sensitive test, we can suggest that PCR positivity may be thought as the main factor proving the disease prevalence and infectivity; and patients getting this test result reported higher anxiety levels with decreased social support.

We also determined that living in a nursing home was associated with increased anxiety scores and sleep disturbances with a decrease in social support. Recently, increased risk for COVID-19 infections was reported for both community-dwelling older persons as well as those residing in nursing homes (23). The high prevalence of functional and cognitive impairment and behavioral symptoms may also increase the risk posed to nursing home residents. Moreover, high transmission rate for infectious diseases due to sharing some common areas also increase the risk of infection (24,25).

There are some limitations of the study that should be mentioned. First are that this is a cross-sectional study without any follow-ups. We do not analyze the effects of these factors on outcomes, which may be the topic of another study. Secondly, this is a survey-based study, carrying the bias of self-reported surveys.

CONCLUSION

In conclusion, we determined sleep disturbances as high as 96% of elderly patients who met with Covid-19. It should also be highlighted that social support was negatively associated with the sleep disturbances. PCR positivity and living in nursing homes were associated with increased sleep disturbances, anxiety level, and decreased social support. Since elderly patients are compromising a special group with increased mortality rates, high rates of sleep disturbances should be taken into account during management and the effects of these factors on outcomes should be investigated in further studies. We suggest that increasing social support is important in elderly patients in the clash against Covid-19, which may improve the outcomes with improving sleep disturbances.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was approved by Turkish Ministry of Health and Bezmialem Vakıf Üniversitesi non-interventional research ethics committee with the number of 2011-KAEK-42 2018703-01.

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

Data available statement: The data that support the findings of this study are available from the corresponding author [G.D.I.], upon reasonable request.

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