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Investigation of coronavirus anxiety, health anxiety, and anxiety symptom levels in vertigo patients during COVID-19 pandemic

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HIGHLIGHTS

- The COVID-19 pandemic has increased the rate of vertigo and exacerbated it.
- Health anxiety levels are higher in vertigo patients.
- There is a causal/trigger relationship between the current pandemic and coronavirus anxiety.
- Vertigo patients have a high rate of anxiety disorder.

Abstract

Objectives: The COVID-19 pandemic adversely affects the mental health of vertigo patients. Thus, this study aimed to investigate the effects of coronavirus anxiety, health anxiety, anxiety symptom levels, and demographic variables on vertigo and its severity in vertigo patients during the pandemic.

Methods: This cross-sectional study was conducted from May 15 to November 15, 2021. In total, 118 patients with vertigo and 82 healthy controls participated in the study. Besides demographic and clinical data, Coronavirus Anxiety Scale (CAS), Hospital Anxiety Depression Scale-Anxiety Subscale

(HAD-A), and Short Health Anxiety Inventory (SHAI) were applied to all participants. Additionally, Vertigo Symptom Scale-Short Form (VSS-SF) was administered to vertigo patients.

Results: According to the findings, vertigo patients experienced higher levels of coronavirus anxiety, health anxiety, and anxiety disorder compared to the healthy controls. In vertigo patients, the rate of coronavirus anxiety was 20.3%, and the rate of anxiety disorder was 32.2%. Majority of the patients (80.5%) were found to have severe-level vertigo. Additionally, most of the patients (82.1%) reported that the severity of vertigo during the pandemic was higher than before the pandemic.

Conclusions: The COVID-19 pandemic causes serious mental health problems in vertigo patients, and pathological levels of these problems increase the discomfort of vertigo. Therefore, psychological assessment should be considered in these patients, and required psychological support and guidance services should be provided.

KEYWORDS

Anxiety;

Coronavirus anxiety;

COVID-19;

Health anxiety;

Vertigo

Introduction

The Coronavirus Disease-19 (COVID-19) emerged in China and rapidly spread to almost all the countries worldwide. The World Health Organization (WHO) declared the COVID-19 pandemic on March 11th, 2020 and this pandemic continues to exert its effects as a global health problem.[1] COVID-19 is an infectious and potentially fatal respiratory disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2).

Vertigo can be defined as spatial orientation and motion perception disturbance, including rotational illusion or a sense of imbalance.[2] Additionally, it is a hallucination of motion, and the patient supposes the motion of themselves or their surroundings. Vertigo is a major health problem that affects approximately 20%–30% of the general population,[3-5] and is associated with severe loss of functionality and workforce.[6] Pathologies with symptoms of vertigo are divided into the following two groups in general which those caused by the peripheral nervous system (peripheral vertigo) and those caused by the central nervous system (central vertigo).[7,8] Vertigo associated with peripheral vestibular causes (benign paroxysmal positional vertigo, vestibular neuritis, Ménière's disease, and others) accounts for the majority of vertigo cases in total. In contrast, central vertigo (vestibular

migraine, cerebrovascular diseases, tumors, multiple sclerosis, and others) is less prevalent (approximately 10%).[4,8,9]

Psychiatric disorders are common in patients with vertigo. The rate of patients with vertigo, in whom the psychological factors are considered to influence the etiology, is approximately 30%–50%.[10-12] Patients with anxiety are the most comprehensively studied and most important group of patients, who experience vertigo. High levels of anxiety are common in vertigo patients. Relevant studies reported anxiety disorders prevalence rates that ranged from 15% to 76%.[11,13-16] Furthermore, it is well-established that the severity of anxiety is higher in patients with peripheral vertigo compared to patients with central vertigo.[17]

Contracting a new disease during pandemics increases the sources of fear and anxiety across the general population. Increased levels of anxiety may affect the mental health of individuals and trigger several psychological problems.[18,19] Health anxiety is described as the excessive misinterpretation of the usual bodily sensations, although there is no organic bodily disease.[20] There are two main components of health anxiety; the preconception that one has a serious disease and that the supposedly serious disease would lead to adverse consequences.[21] Health anxiety is defined as the anxious form of hypochondriasis. A significant concern about having a serious medical condition, the concern persists despite assurances from medical professionals that there is no medical threat, preoccupation with health causes significant impairment in functioning, and for at least 6-months persistence is known as hypochondriasis.[20] The fact that health anxiety is defined as a condition separate from hypochondriasis is based on the suggestion that it is a disorder primarily associated with anxiety. Nevertheless, hypochondriasis includes a much wider range of symptoms, including depressive and psychotic symptoms.[22]

Coronavirus anxiety was defined to determine the dysfunctional anxiety and anxiety symptom levels related to the COVID-19 pandemic.[23] Concerns such as catching the virus, transmitting the virus to others, and dying due to COVID-19 increase the coronavirus anxiety in the population. High levels of coronavirus anxiety can cause psychological problems.[24]

Although there have been many studies in the literature reporting that increased stress and anxiety due to the current pandemic cause psychiatric problems or an increase in existing symptoms in the general population,[25,26] the number of studies on patients with vertigo is limited. To the best of our knowledge, the present study is the first to investigate health anxiety, which may be associated with a significant loss in psychosocial functionality in patients with vertigo, and coronavirus anxiety, a specific type of anxiety associated with the current outbreak. We included patients diagnosed with peripheral vertigo owing to the fact that peripheral vertigo was more prevalent in the general

population and that the effect of anxiety on the course of the disease was more prominent in patients with peripheral vertigo.

In summary, we aimed to evaluate anxiety symptom levels, coronavirus anxiety, and health anxiety in patients with vertigo during the COVID-19 pandemic, and to examine the effects of anxiety levels and demographic variables on vertigo and the severity of vertigo in this study.

Methods

The study was designed as an observational cross-sectional study. The study population included patients, who presented to the Ear, Nose, and Throat (ENT) clinic of Antalya Training and Research Hospital between May 15th and November 15th in 2021, with vertigo complaint and recruited by simple random sampling method. 118 patients were included in the study after diagnosed with peripheral vertigo upon detailed audiological examination, neurological examination (cranial, cerebellar, and postural tests), vestibulo-ocular and vestibulo-spinal tests, balance tests (Romberg test, Fukuda test, tandem stance test and tandem walking), position tests (Dix-Hallpike maneuver), and caloric tests and required differential diagnostic evaluations by ENT specialists with field experience. Among the 118 patients with peripheral vertigo in the patient group, 41 had Benign Paroxysmal Positional Vertigo (BPPV), 34 had Ménière's disease, 14 had Vestibular Neuritis (VN), and 29 had other forms of peripheral vertigo. The control group consisted of 82 healthy volunteers who were similar to the patient group in terms of age and gender, did not have a history or complaint of vertigo, and did not have a psychiatric disease. The relevant psychiatric examinations were performed by a psychiatric clinician with field expertise. Sociodemographic data form and vertigo survey form were filled with all individuals who agreed to participate in the study. The participants were administered the Coronavirus Anxiety Scale (CAS), Hospital Anxiety Depression Scale-Anxiety Subscale (HAD-A), and Short Health Anxiety Inventory (SHAI). Furthermore, Vertigo Symptom Scale- Short Form (VSS-SF) was applied to the patient group to assess the severity of the vertigo symptoms.

Criteria for inclusion in the study as follows; aged over 18-years old, mentally capable of reading comprehension, complaint of vertigo for at least 1-month, and consent to participate in the study. Exclusion criteria as follows; examination findings supporting central vertigo diagnosis and/or a history of certain diseases (central nervous system disease, vestibular migraine, cerebrovascular diseases, tumors, demyelinating diseases such as multiple sclerosis, and history of a trauma), regular drug intake affecting Central Nervous System (CNS), ongoing neuropsychiatric treatment, serious ear pathology (perforation, surgery, and infection), serious neuro-psychiatric disorders (dementia, schizophrenia, psychosis, substance addiction or abuse, etc.), chronic diseases (hypertension, diabetes mellitus, etc.), and having received psychiatric treatment within the last 3-months. This study was

conducted according to the principles of the Helsinki Declaration and approved by the Ethics Committee of Antalya Training and Research Hospital (Approval Number: 2021–118).

Assessment tools

Vertigo survey form

This form is including items about the COVID-19 history in the participants, COVID-19 history in their family member, thoughts on whether vertigo is a symptom of a serious illness, and the comparison of the severity of current vertigo in participants with a pre-pandemic history of vertigo.

Vertigo Symptom Scale-Short Form (VSS-SF)

The VSS-SF is a 15-item shortened version of the original Vertigo Symptom Scale,[27] which was developed to assess the frequency and severity of vertigo.[16] Each item is scored between 0 and 4 and the scores of all items are added to obtain the severity score. The total scale score ranges from 0 to 60 and higher scores indicate more serious complaints with vertigo. A total scale score of 12 or above indicates severe level of vertigo.[28] The scale is composed of two subscales, including the VSS-Vertigo (VSS-V), which assesses the symptoms related to the vestibular system, and the VSS-Anxiety (VSS-A), which assesses the symptoms related to the autonomic system and anxiety symptoms. A validity and reliability study of the scale for the Turkish language was performed.[29] In the assessment of vertigo severity, this scale was preferred in our study because it is not contaminated with anxiety-related symptoms and can therefore be used instead of vestibular test results.

Coronavirus Anxiety Scale (CAS)

It is a self-report scale composed of 5 items and designed as unidimensional, 5-point Likert scale to identify likely cases of dysfunctional anxiety associated with the COVID-19 pandemic.[23] The optimized cut-off score of CAS valid for the general population is ≥5.[30] Cases above the cut-off score indicate that further assessment is required. The validity and reliability study of the scale for the Turkish language was performed.[31]

Hospital Anxiety and Depression Scale (HAD) – Anxiety Subscale (HAD-A)

The HAD scale was developed as a practical screening tool for assessing the symptoms of anxiety or depression in patients presenting to non-psychiatric hospital outpatient departments.[32] The scale comprises two subscales, including Anxiety (HAD-A) and Depression (HAD-D). HAD-A includes 7-

items and is designed as a 4-item Likert scale (0–3). The severity of anxiety increases as the total score from the scale increases. The cut-off score for HAD-A was found as 10. Scores above the cut-off score are associated with high risk for anxiety disorder. A validity and reliability study of the scale for the Turkish language was conducted.[33] This scale was preferred in the present study as it minimized the effect of physical symptoms on total score in the assessment of anxiety level.

Short Health Anxiety Inventory (SHAI)

The SHAI is a self-report scale that assesses the health anxiety regardless of physical health condition. It allows the assessment of health concerns, awareness of bodily sensations or changes, and the fearful consequences of contracting a disease. Salkovskis et al. (2002) identified two factors corresponding to the likelihood of contracting a feared disease and the feared negative consequences of getting sick.[34] The 4-item Likert-type scale consists of 18-items. The items are scored between 0 and 3, and higher scores are associated with more severe levels of health anxiety. The total score ranged between 0 and 54. A validity and reliability study of the scale for the Turkish language was conducted.[35]

Statistical analysis

Variables are presented as mean, standard deviation, and frequency. In independent samples, *t*-test was used for normally distributed data and Mann-Whitney *U* test for abnormally distributed data to determine the differences between groups. The Chi-square (χ^2) test was used to assess the relationships between categorical variables. Spearman correlation analysis was used to evaluate the relationship between independent variables with abnormal distribution. All tests were two-tailed, and the level of significance was $p < 0.05$. The IBM Statistical Package for the Social Sciences (SPSS) v.21.0 Windows software was used for the statistical analyses.

Results

The mean ages of the patient and control groups were 45.88 ± 16.43 years (between aged of 18–72) and 42.51 ± 13.75 (between aged of 19–70), respectively. There were 55 men (46.6%) and 63 women (53.4%) in the patient group and 39 men (47.6%) and 43 women (52.4%) in the control group. No significant difference between the groups in terms of the distribution of age ($p = 0.68$) and sex ($p = 0.85$) ($p > 0.05$). Sociodemographic data of participants are shown in Table 1. In the patient group, 59.3% of the participants were married (n = 70), 38.1% were university graduated (n = 45), 18.6% (n = 22) had history of psychiatric disorder, 16.1% (n = 19) had family history of psychiatric disorder, 14.4% (n = 17) had history of COVID-19, 27.1% (n = 32) had family history of COVID-19, and

15.3% (n = 18) were living alone (Table 1). In the control group, 65.9% of the participants were married (n = 54), 62.2% were university graduated (n = 51), 23.2% (n = 19) had history of psychiatric disorder, 19.5% (n = 16) had family history of psychiatric disorder, 24.4% (n = 20) had history of COVID-19, 42.7% (n = 35) had family history of COVID-19, and 14.6% (n = 12) were living alone (Table 1).

A total of 76.3% (n = 90) of patients reported that the vertigo symptoms emerged during the pandemic. On the other hand, 23.7% (n = 28) of the patients reported that they experienced vertigo before the pandemic, and also 82.1% (23/28) of them reported that the severity of vertigo during the pandemic was higher compared to the pre-pandemic. When asked the thought about whether the vertigo is a symptom of a serious illness, the rates of yes, no, and not sure answers given by the patients were 24.6% (n = 29), 21.2% (n = 25) and 54.2% (n=9), and also were 8.5% (n = 7), 52.4% (n = 43), and 39.1% (n = 32) in the control group, respectively. There was a significant difference between the groups in terms of the responses of 'yes' ($p = 0.001$), 'no' ($p = 0.001$), and 'not sure' ($p = 0.001$).

The mean total score of the CAS was higher in the patient group ($p < 0.05$) (Table 2). Furthermore, the rate of coronavirus anxiety was found to be 20.3% (n = 24) in the patient group, and 5.1% (n = 6) in the control group using the cut-off score of ≥ 5 on the CAS.[30]

The mean total score of the HAD-A was higher in the patient group ($p < 0.05$) (Table 2). Additionally, the rate of anxiety disorder was found to be was 32.2% (n = 38), and 8.5% (n = 7) in the control group using the cut-off score of > 10 on the HAD-A.[32]

The mean total score of the SHAI was higher in the patient group ($p < 0.05$) (Table 2).

The mean total score of the VSS-SF was 23.18 ± 13.21 in the patient group. The majority of patients (n = 95; 80.5%) experienced severe level of vertigo using the cut-off score of ≥ 12 on the VSS-SF.[28] The mean total score was 12.42 ± 7.23 in the VSS-V subscale and 10.72 ± 8.41 in the VSS-A subscale. The comparison of VSS-SF total, VSS-V, and VSS-A scores according to sociodemographic data is demonstrated in Table 3. As a result, there was significant difference in terms of total VSS-SF score and VSS-SF subscales scores in the patients with history of psychiatric disorder, family history of psychiatric disorder, history of COVID-19, and family history of COVID-19 ($p < 0.05$).

The relationship between the scores of the scales which used in the study was examined by Spearman correlation analysis. There was a positive correlation between the VSS-SF score with CAS ($r = 0.531$; $p < 0.05$), SHAI ($r = 0.370$; $p < 0.05$), and HAD-A ($r = 0.665$; $p < 0.05$) scores. Similarly, there was a positive correlation between the CAS score with SHAI ($r = 0.224$; $p < 0.05$) and HAD-A ($r = 0.368$; $p < 0.05$) scores, and also positive correlation between with SHAI score and HAD-A ($r = 0.325$; $p < 0.05$) score (Table 4).

Discussion

The COVID-19 pandemic is a serious public health problem that threatens people's lives. Given the very high rates of COVID-19 cases and the relatively higher mortality rates, individuals with elevated health anxiety and pandemic-related anxiety symptoms are at high risk of psychosocial exposure and loss of functionality. Therefore, the present study investigated vertigo, which could induce significant psychosocial problems, considering the negative effects of the pandemic on physical and mental health. Vertigo is a prevalent symptom that affects about one-third of the general population at a time in their lives.[36,37] Moreover, vertigo may cause serious workforce losses if left untreated.[6] In limited studies reported that the COVID-19 pandemic was associated with an increase in vestibular disorders.[38,39] In a survey study conducted during the pandemic, 63.2% of the respondents reported increased severity of vertigo symptoms.[40] Accordingly, with a higher rate, 82.1% of the patients reported that the severity of vertigo increased compared to the pre-pandemic period in this study. Furthermore, the majority (80.5%) of the patients, who participated in the present study, suffered a severe level of vertigo. These findings are remarkable and indicative of the fact that the pandemic had an adverse effect on the physical health of patients with vertigo. In our study, sociodemographic characteristics of patients with vertigo were compared in order to identify groups at risk for severe vertigo symptoms. Accordingly, there was no significant difference in sex, marital status, and educational status. Nevertheless, the severity of vertigo was significantly higher in the patients with a history of psychiatric disorder, family history of psychiatric disorder, history of COVID-19, and family history of COVID-19. Notably, there was a strongly significant difference in both the anxiety (VSS-A) and Vestibular Symptom (VSS-V) levels, in participants with a history of psychiatric disorder, and a history of COVID-19. Consistent with the finding of this study, Best et al. (2009) found that the severity of vertigo increased in participants with a history of psychiatric disorders.[41] The fact because patients with a history of psychiatric disorders are more susceptible and sensitive to the psychological impact, they are more likely to have high levels of anxiety. Factors such as social isolation, quarantine process, perceived danger, uncertainty, physical discomfort, drug side effects, fear of death, and fear of transmitting the virus to others contribute to the increased rate of anxiety and vestibular symptoms in patients with a history of COVID-19. Consistently with our result, in a survey study by Smith et al., it has been reported that patients infected with the coronavirus have worse symptoms of autonomic anxiety than those who did not have the infection.[39]

The increased anxiety levels due to the current pandemic have adversely affected the mental health and well-being of the general population.[18,26,42,43] Given the causal/triggering relationship between high anxiety levels and vertigo,[44,45] it is crucial to assess the anxiety levels in patients

presenting with complaints of vertigo. It is estimated that the frequency of anxiety is approximately 50% of the psychiatric comorbidities in patients with vertigo.[41,44]

As expected, in a study conducted during the current pandemic on patients with Ménière's disease, it was found that the anxiety levels increased during the pandemic compared to the pre-pandemic period.[46] The present study found that the severity of anxiety was significantly higher in patients with vertigo compared to healthy volunteers. Additionally, the rate of anxiety disorder was found to be 32.2%. Given that the pandemic is still ongoing, these rates are likely to increase even more.

It was reported in one of the limited studies on coronavirus anxiety that excessive COVID-19-related anxiety was associated with impaired psychological function.[47] The results of our study suggested that patients with vertigo had significantly higher levels of coronavirus anxiety. Additionally, there was a remarkable result that 20.3% of the patients had coronavirus anxiety. These results indicate the fact that patients with vertigo experienced higher levels of coronavirus anxiety. It may be suggested that the rate of coronavirus anxiety will increase over time and will be an important mental health problem, considering the uncertainty about the duration of the outbreak. However, no comparison could be made because there was no study with a similar design in the literature. Therefore, further studies are required on the subject of the present study. To the best of our knowledge, this is the first study that has investigated coronavirus anxiety in patients with vertigo.

Health anxiety is a multifaceted phenomenon consisting of obsessive health-related thoughts, physiological arousal, perceived danger, and avoidance behaviors. This type of anxiety significantly increases especially during pandemic periods due to infectious diseases.[48] Health anxiety is an important mental health problem that increasingly becomes more prevalent in society and is associated with greater costs to health services through unnecessary medical contacts.[49,50] Furthermore, individuals with high levels of health anxiety fail to attend their appointments or check-ups out of the fear of COVID-19 infection and thus their treatment is disrupted, even when they have severe symptoms.[51] Both frequent presentation to the hospital out of the fear of disease, and disrupting treatment out of the fear of disease transmission, negatively affect the daily lives and functionality of people. Therefore, an assessment of health anxiety in patients with vertigo is critical for the prognosis of the disease. In the present study, the health anxiety levels were significantly higher in patients with vertigo compared to the healthy volunteers. Otherwise, there were higher levels of health anxiety in this study compared to a study conducted on the general population during the current pandemic.[52,53] In addition, 24.6% of the patients in our study reported that vertigo complaints could be a sign of a serious disease. This rate was remarkably lower in healthy controls (8.5%). The increased anxiety and sensitivity about health issues, fear of contamination, fear of getting the disease, and

exaggerated thoughts about the negative consequences of being sick due to the COVID-19 pandemic may constitute the main factors that increase the levels of health anxiety. To our knowledge, this is the first study to investigate health anxiety in patients with vertigo during the current pandemic.

The present study investigated the vertigo symptom severity with VSS-SF, anxiety symptom levels with HAD-A, coronavirus anxiety with CAS, and health anxiety with SHAI. There was a positive correlation between vertigo symptom severity with anxiety symptom levels, coronavirus anxiety, and health anxiety. This result indicates that vertigo symptom severity may be perceived as more disturbing in patients due to increased anxiety levels as a result of the pandemic. Similarly, there was a positive correlation between coronavirus anxiety with anxiety symptom levels and health anxiety. This finding indicates that the increased levels of anxiety in general also increase the levels of specific types of anxiety, such as health and coronavirus anxiety, with a synergistic interaction.

Our study has some limitations. First, this is a single-center study with a comparatively small sample. Thus, multi-center studies with larger samples are required to determine comprehensively the psychological impact of the pandemic on vertigo patients. Second, as a limitation of the study design, the results only reflect the psychological conditions at a given time, and a longitudinal study is required to provide information on whether the observed impact will last for longer periods. Lastly, due to the limited number of studies with vertigo patients using similar design and evaluation tools as our study, comparisons could not be made adequately. Despite these limitations, there are remarkable findings in this study that will contribute to future studies.

In conclusion, in this study it was found that vertigo patients experienced high levels of anxiety, coronavirus anxiety, and health anxiety during this pandemic. Another remarkable result of our study is that the COVID-19 pandemic has an important role in increasing the severity of vertigo. Considering the psychophysiological negative consequences of high anxiety on vertigo, psychiatric assessment is necessary for vertigo patients. Additionally, psychological counseling and guidance services should be provided to them with psychopathological problems. Lastly, we suggest that a multidisciplinary approach consisting of ENT specialists, psychiatrists, and psychologists will be more effective.

Authors' contributions

Mustafa Altıntaş: Conceptualization; Methodology; Investigation; Software; Visualization; Writing.
Süleyman Korkut: Supervision; Conceptualization; Methodology; Writing-Reviewing and Editing.

Ethical approval

This study approved by the Ethics Committee of Antalya Training and Research Hospital (Approval Number: 2021-118).

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Informed consent

The patient provided written informed consent for publication of this study for scientific purposes.

Conflicts of interest

The authors declare no conflicts of interest.

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Table 1 Sociodemographic characteristics of participants.

		Patient group, n (%)	**Control group, n (%)**
Gender	Female	63 (53.4%)	43 (52.4%)
	Male	55 (46.6%)	39 (47.6%)
Marital status	Married	70 (59.3%)	54 (65.9%)
	Single	48 (40.7%)	28 (34.1%)
Graduated from a university	Yes	45 (38.1%)	51 (62.2%)
	No	73 (61.9%)	31 (37.8%)
Living with at home	Alone	18 (15.3%)	12 (14.6%)
	Not alone	100 (84.7%)	70 (85.4%)
Have history of pyschiatric disorder	Yes	22 (18.6%)	19 (23.2%)
	No	96 (81.4%)	63 (76.8%)
Have family history of pyschiatric disorder	Yes	19 (16.1%)	16 (19.5%)
	No	99 (83.9%)	66 (80.5%)
Have history of COVID-19	Yes	17 (14.4%)	20 (24.4%)
	No	111 (85.6%)	62 (75.6%)
Have family history of COVID-19	Yes	32 (27.1%)	35 (42.7%)
	No	86 (72.9%)	47 (47.3%)

Table 2 Comparisons of the mean scores of CAS, HAD-A, and SHAI between the groups.

	Patient group, (m ± SD)	**Control group (m ± SD)**	***p***
CAS	2.38 ± 3.02	0.61 ± 1.32	0.01
HAD-A	8.48 ± 4.08	4.59 ± 3.32	0.01
SHAI	15.62 ± 6.98	8.42 ± 4.73	0.01

CAS, Coronavirus Anxiety Scale; HAD-A, Hospital Anxiety and Depression Scale (HAD)-Anxiety subscale; SHAI, Short Health Anxiety Inventory; m, mean, SD, Standard Deviation.

Values below 0.01 are specified as 0.01.

Table 3 Comparison of the mean scores of VSS-SF, VSS-V, and VSS-A according to the sociodemographic data of the patients.

		VSS-SF		VSS-V		VSS-A	
		m ± SD	***p***	**m ± SD**	***p***	**m ± SD**	***p***
Gender	Female	24.16±14.21	0.76	13.48±8.22	0.82	10.56±7.94	0.91
	Male	21.85±12.12		11.24±6.12		11.16±8.98	
Marital status	Married	22.12±12.54	0.85	11.35±6.56	0.67	10.15±7.68	0.86
	Single	24.52±15.28		14.12±8.35		11.64±9.45	
Graduated from a university	Yes	21.36±12.21	0.74	11.24±6.24	0.75	9.58±7.68	0.78
	No	24.14±14.06		13.12±7.86		11.28±9.34	
Living with at home	Alone	25.62±16.42	0.71	16.65±9.84	0.16	9.65±9.84	0.64
	Not alone	22.86±12.82		11.66±6.22		11.26±7.14	
Have history of pyschiatric disorder	Yes	35.76±19.78	0.02	20.14±12.54	0.01	16.68±10.65	0.01
	No	19.84±11.56		11.37±6.14		8.22±7.67	
Have family history of pyschiatric disorder	Yes	33.26±18.98	0.03	18.24±11.34	0.02	15.34±9.32	0.02
	No	21.15±11.86		11.72±6.41		9.18±7.26	
Have history of COVID-19	Yes	35.12±20.26	0.02	20.62±13.52	0.01	16.21±10.14	0.01
	No	20.28±11.45		11.54±6.36		8.82±7.68	
Have family history of COVID-19	Yes	32.64±18.52	0.03	18.53±10.52	0.02	15.79±10.12	0.02
	No	20.66±12.28		11.83±6.14		8.66±7.62	

VSS-SF, Vertigo Symptom Scale-Short Form; VSS-V, Vertigo Symptom Scale-Vertigo; VSS-A, Vertigo Symptom Scale-Anxiety; m, mean; SD, Standard Deviation.

Values below 0.01 are specified as 0.01.

Table 4 Correlation between the scores of the VSS-SF, CAS, SHAI, and HAD-A scales.

	VSS-SF	CAS	SHAI	HAD-A
VSS-SF		*r* = 0.531	*r* = 0.370	*r* = 0.665
		p = 0.001	*p* = 0.001	*p* = 0.001
CAS			*r* = 0.224	*r* = 0.368
			p = 0.015	*p* = 0.001
SHAI				*r* = 0.325
				p = 0.001
HAD-A				

VSS-SF, Vertigo Symptom Scale- Short Form; CAS, Coronavirus Anxiety Scale; HAD-A, Hospital Anxiety and Depression Scale (HAD)-Anxiety subscale; SHAI, Short Health Anxiety Inventory; *r*, Correlation Coefficient.

Values below 0.001 are specified as 0.001.