Determination of Anxiety, Health Literacy and Belief Levels of Medication Use of Individuals with Chronic Diseases During The Covid-19 Pandemic Process

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Abstract
This study was conducted to determine the state-trait anxiety, health belief, and health literacy levels of individuals with chronic diseases during the COVID-19 pandemic. The study, which is a descriptive and relational type, was conducted with 207 chronic patients between July and September 2020. Data were collected with a personal information form, the Trait-State Anxiety Scale, the Health Literacy Scale, and the Health Belief Scale. The levels of trait and state anxiety, health belief, and health literacy are higher in females, university or higher education, single, good-income, comorbid disease, COVID-19 infected patients (p<.05). Participants aged 65 and over had the most elevated anxiety, lowest health belief, and health literacy mean scores (p<.05). In the study, a weak positive correlation was determined between the scales (p<.001). When the scores obtained from the trait anxiety, state anxiety, health belief, and health literacy scales were evaluated according to sociodemographic characteristics. Determining the anxiety, health literacy, and belief levels of individuals with chronic diseases and their influencing factors in extraordinary situations such as pandemics can provide effective management of the process and nursing care.

Keywords: Anxiety, Covid-19, health belief, health literacy

1. Introduction

A new type of corona virus (Covid-19) has been included in the high risk group due to its treatment methods and negative effects on the immune system (Di Guarda, 2020; WHO, 2023). According to December 2022 data, 72% of the deaths from Covid-19 in the world and 65% in our country of them are those with chronic diseases (Bıyıklı and Lotfi, 2022; WHO, 2023). The restrictions imposed to prevent transmission, on the one hand, protect chronic patients against the virus, on the other hand, they paved the way for them to be in a more complex and anxious situation such as social isolation, problems in accessing health services and inability to manage their ongoing treatments (Kaçan et al., 2021; Roy et al., 2020; Xiong et al., 2020). In studies assessing the psychological effects of Covid-19 worldwide, it has been determined that the general population experiences high levels of stress, anxiety, depression, and post-traumatic stress disorder. Moreover, it has been found that women, individuals with chronic illnesses, and those frequently exposed to Covid-19 news constitute a vulnerable group from a psychological perspective (Kaye et al., 2020; Özdin and Bayrak, 2020). Continuing treatment of chronic patients in cases such as pandemics or natural disasters is an element that cannot be ignored regarding public health (Bıyıklı and Lotfi, 2022; WHO, 2023). It is stated in studies that anxiety caused by Covid-19 increases compliance with treatment in individuals with chronic diseases (De Keyser et al., 2020; Kaye et al., 2020). It was determined that the compliance of asthma and COPD patients with their treatments during the Covid-19 pandemic period increased by 14.5% compared to the pre-pandemic period.[9] Adherence to treatment or the attitude of chronic patients towards the use of drugs is seen as an important step for public health during the pandemic (Özer and İncesazlı, 2021; Volpato et al., 2021). Another important element that emerges in this process is accurate health information. The concept that gathers the ability to find, understand and apply health-related information under the same roof is Health Literacy (HL). Considering these difficulties, a critical HL level requirement has emerged as chronic patients have difficulties integrating the new knowledge pool into their individual behaviors with the pandemic (Nguyen et al., 2020). It has been determined that chronic patients with high HL values develop positive attitudes toward their drugs and diseases (Uğurlu and Akgün, 2019; Van der Heide et al., 2021). It is thought that nurses' knowledge of chronic patients' anxiety, belief in drugs, and HL levels in processes such as pandemics or natural disasters can play an active role in managing diseases. No studies were found that evaluated the anxiety, health literacy, and health belief levels of chronic patients during the pandemic process. Therefore, this study is the first of its kind.

2. Materials and Methods

To conduct the research, institutional permissions were obtained, and ethical approval was obtained from the Sivas Cumhuriyet University Ethical Committee (Date: Number: 17.06.2020, Decision No:2020-06/42). After informing the participating patients about the research, written and verbal consent was obtained from those who voluntarily wished to participate. Throughout the research, the principles of the Helsinki Declaration on Human Rights were followed. This descriptive and relational study was conducted in a university hospital in Turkey between July and September 2020. While all chronic patients who applied to the hospital where the study was conducted constituted the population of the study, the sample size; was determined as 164 with 95% power, 0.03 margin of error, and 0.05 significance level (Wahl et al., 2021). Two of the participants who volunteered to participate in the study in July-September 2020 did not live in Turkey, and five were not included in the study because they were diagnosed with a chronic disease for less

than six months. Reached 207 people. Sampling inclusion criteria; Being able to answer all of the questions, not having a serious mental illness, not having a verbal communication disability, being literate, being diagnosed with a chronic disease at least 6 months ago, being 18 years old and over, agreeing to participate in the research. Exclusion criteria from the sample are; Those with chronic cognitive and psychiatric diseases did not want to participate in the study.

2.1. Data collection tools

The study data were collected with the Personal Information Form, the Trait Anxiety Scale, the Turkish Health Literacy Scale, and the Health Belief Scale on Drug Use. Personal Information Form: The form was developed by researchers using the literature to obtain sociodemographic and disease data of patients (Kaye et al., 2020; Özdin and Bayrak, 2020; WHO, 2023). State-Trait Anxiety Scale: It was developed by Spielberger et al. (1970). The scale consists of two parts: State and Trait Anxiety Inventory. State anxiety is about the expressed feelings or behaviors, while trait anxiety is the evaluation of feelings, thoughts, or behaviors. The total score obtained from both scales varies between 20 and 80. The scale indicates that scores between 0-19 mean no anxiety, while scores between 60-79 indicate severe anxiety and individuals with a score of 60 and above require professional help (Taşdelen and Zaybak,2013). The Cronbach α value for this study has been calculated as 0.82. Health Literacy Scale (HL-32): The Cronbach α reliability coefficient of the scale was found to be 0.92. HL level was evaluated in four categories according to the score obtained: (0-25) score: insufficient health literacy, (>25-33) score: problematic – limited health literacy, (>33-42) score: adequate health literacy, (> 42-50) score: excellent health literacy (Kadığlu,2012). The Cronbach α reliability coefficient for this study was 0.81. Health Belief

Regarding Drug Use: The Cronbach α reliability coefficient of the scale developed by Çiçek was found to be 0.91. The lowest score that can be obtained from the scale is 59, and the highest score is 151. Higher scores indicate higher health beliefs about conscious and prescription drug use (Kırılmaz and Doğanyiğit,2021). In this study, the Cronbach α reliability coefficient was 0.92.

2.2. Data Collection

After obtaining the consent of the patients who met the research criteria to participate in the study, the patients answered the questionnaire and scale questions in an average of 15-20 minutes.

2.3. Statistical Analysis

The data obtained from our study were evaluated with the SPSS 23.0 program. The normality of the data was checked with the Kolmogorov-Smirnov test. Data were analyzed by Student's t-test for two parametric independent groups and by F-test (ANOVA) for more than two groups. Cronbach's alpha coefficients were calculated to test the validity and reliability of the scales. As descriptive statistics, X±SD was given for numerical variables, and number and percentage values were given for categorical variables. Pearson method was used in parametric data to calculate the correlation between continuous variables, and multiple linear regression analysis was used to determine independent predictors of anxiety. The statistical significance level was accepted as $p<0.05$.

3. Results

According to Table 1, the mean age of the participants was 62.88±15.16 years, the majority (45.4%) was 65 years and older, (61.4%) were female, (54%) were primary school graduates, (66.1%) were married, (45.4%) were middle-income, 25.1% had coronary artery disease, 71.5% had at least one comorbid disease, and 55.1% were infected with Covid-19.

Table 1. Sociodemographic characteristics of the participants (N=207)

Sociodemographic characteristics of the participants	n	(%)
Age		
26-45	54	26.1
46-64	59	28.5
≥65	94	45.4
Age mean (X±SD) (Min-Max)	62.88±15.16	26-87
Gender		
Female	127	61.4
Male	80	38.6
Education status		
Literacy	30	14.4
Primary school	52	25.2
Middle school	30	14.4
High school	52	25.2
University and above	43	20.8
Marital status		
Married	137	66.1
Single	70	33.9
Level of income		
Low	59	28.5
Middle	94	45.4
High	54	26.1
Type of chronic illness		
Coronary Artery Disease	52	25.1
Diabetes	47	22.7
Chronic Obstructive Pulmonary Disease	43	20.8
Rheumatoid Arthritis	33	15.9
Other	32	15.5
Presence of comorbid chronic illness		
Yes	148	71.5
No	59	28.5
COVID-19 infection status		
Yes	114	55.1
No	93	44.9

According to Table 1, the mean age of the participants was 62.88±15.16 years, the majority (45.4%) was 65 years and older, (61.4%) were female, (54%) were primary school graduates, (66.1%) were married, (45.4%) were middle-income, 25.1% had coronary artery disease, 71.5% had at least one comorbid disease, and 55.1% were infected with COVID-19.

Table 2. Comparison of the sociodemographic characteristics of the participants and the mean score of the scale

Sociodemographic	Trait Anxiety	State Anxiety	HL-32	Health Belief
Age				
18-45	54.69±8.61	54.44± 9.02	32.74±9.00	145.16±12.36
46-64	57.37±9.62	57.03±10.38	29.05±9.81	140.94±14.96
≥65	59.92±8.07	60.31±8.56	24.98±9.07	137.56±15.22
p* test	**F:6.254 p=0.002**	**F:6.254 p=0.002**	**F:12.207 p<0.001**	**F:4.778 p=0.009**
Gender				
Female	62.53±4.90	62.98±4.96	33.84±8.04	146.70±8.58
Male	47.75±6.09	46.76±6.05	23.02±8.49	130.68±16.98
p test**	**t:19.194 p<0.001**	**t:21.006 p<0.001**	**t:9.221 p<0.001**	**t:8.969 p<0.001**
Education status				
Literacy	55.90±9.29	55.63±9.55	27.65±10.45	138.07±11.74
Primary school	56.13±8.60	56.10±9.19	25.83±9.30	134.46±20.61
Middle school	57.57±9.56	57.26±10.37	28.90±10.00	141.23±12.95
High school	53.59±8.70	53.28±9.03	32.22±9.14	142.23±16.56
University and above	60.93±7.20	61.37±7.80	34.07±7.68	145.60±12.09
p* test	**F=4.392 p=0.002**	**F=4.684 p=0.001**	**F=4.812 p=0.001**	**F=3.167 p=0.015**
Marital status				
Married	48.85±6.93	47.77±7.15	23.80±8.67	132.21±17.85
Singel	60.89±7.00	61.28±7.13	32.66±8.89	144.75±10.63
p test**	**t:11.732 p<0.001**	**t:12.879 p<0.001**	**t:6.836 p<0.001**	**t:6.320 p<0.001**
Level of income				
Low	56.82±9.00	54.44±9.02	24.98±9.07	137.56±15.22
Middle	57.37±9.62	57.00±10.38	29.05±9.81	140.94±14.96
High	59.92±8.07	60.31±8.56	32.74.±9.00	145.16±12.36
p* test	**F=6.254 p<0.001**	**F=5.844 p=0.001**	**F=12.207p<0.001**	**F=4.778 p=0.009**
Presence of comorbid chronic illness				
Yes	60.46±7.33	60.83±7.53	32.48±8.81	144.42±11.98
No	47.67±5.70	46.38±5.54	22.60±8.35	130.69±16.40
p test**	**t:12.012 p<0.001**	**t:13.350 p<0.001**	**t:7.386 p<0.001**	**t:6.665 p<0.001**
COVID-19 infection status				
Yes	62.16±5.30	62.66±5.39	33.39±8.33	145.40±13.02
No	50.26±8.25	49.41±8.49	25.10±9.45	134.51±14.52
p test**	**t:12.541 p<0.001**	**t:13.623 p<0.001**	**t:6.698 p<0.001**	**t:5.679 p<0.001**

*One-way ANOVA test, **Student t test.

According to Table 2, trait anxiety, state anxiety, health belief, and HL-32 levels of patients who are female, have a university education level or higher, are single, have a good income, have comorbid diseases, and are infected with COVID-19 are higher than the others (p<0.05). At the same time, patients aged 65 and over have the highest anxiety (p<0.05), lowest health belief, and HL-32 mean scores (p<0.001) compared to other age ranges.

Table 3. Mean scores obtained from the scales

Scales	X±SD
Trait anxiety	56.82±9.00
State anxiety	56.71±9.58
HL-32	29.66±9.75
Health Belief	140.51±14.72

HL-32: Health Literacy

According to Table 3, the mean trait anxiety score of the participants was 56.82±9.00, the mean state anxiety score was 56.71±9.58, the mean health belief score was 140.51±14.72, and the mean HL-32 score was found 29.66±9.75 and this score is problematic/limited. According to Table 4, between the trait anxiety level and the state anxiety level, there was a positive strong (r=0.979 p<0.001), HL-32 (r=0.382 p<0.001), and Health Belief (r=0.427 p<0.001) has been found between a positive weak correlation. Similarly, a weak positive correlation was found between state anxiety and HL-32 (r=0.398 p<0.001) and Health Belief (r=0.445 p<0.001). On the other hand, a weak positive correlation (r=0.236, p<0.001) was determined between Health Belief and HL-32.

Table 4. Relationship Between Anxiety, Health Literacy, And Belief Levels About Medications

Scales	Trait anxiety	State anxiety	Health Belief	HL-32
Trait anxiety	1	0.979**	0.427**	0.382**
State anxiety	0.979**	1	0.445**	0.398**
Health Belief	0.427**	0.445**	1	0.236**
HL-32	0.382**	0.398**	0.236**	1

HL-32: Health Literacy,* * Pearson Correlation coefficient p<0.05, *** Pearson Correlation coefficient p<0.001

According to Table 4, between the trait anxiety level and the state anxiety level, there was a positive strong (r=0.979 p<0.001), HL-32 (r=0.382 p<0.001), and Health Belief (r=0.427 p<0.001) has been found between a positive weak correlation. Similarly, a weak positive correlation was found between state anxiety and HL-32 (r=0.398 p<0.001) and Health Belief (r=0.445 p<0.001). On the other hand, a weak positive correlation (r=0.236, p<0.001) was determined between Health Belief and HL-32.

Table 5. The predictive effect of gender on anxiety, health belief, and HL-32

	Scales	β	SD	p*	t	Adjusted R²	F
Gender	Trait anxiety	-0.784	1.947	**<0.001**	-7.427	0.648	52.367
	State anxiety	-0.711	1.940	**<0.001**	-7.193	0.691	63.698
	Health Belief	-0.718	4.399	**<0.001**	-4.924	0.328	13.880
	HL-32	-0.623	2.963	**<0.001**	-4.203	0.513	20.656

HL-32: Health Literacy

According to Table 5, when the scores obtained from the trait anxiety, state anxiety, health belief, and HL-32 scales were evaluated according to sociodemographic characteristics, only gender was found to be a significant predictor. In the regression analysis, it was calculated that gender had a significant effect on trait anxiety by 64%, state anxiety by 69%, health belief by 32%, and HL-32 by 51% (p<0.001). In addition, women's trait anxiety, state anxiety, health belief and HL-32 mean scores are higher than men.

4. Discussion

According to this study, participants were found to have problematic/limited levels of HL, moderate levels of anxiety (both trait and state), and moderate levels of health belief. Participants with high levels

of anxiety, HL, and low levels of health belief were found to be female, unmarried, have a university degree or higher education, good income levels, comorbidities, and had been infected with Covid-19 (p<0.05). These sociodemographic data are consistent with the literatüre (Ekici, 2020; Yılmaz et al., 2020). However, in the study, elderly patients had the highest level of anxiety and the lowest level of HL and health belief. Similarly, in the US, one in three elderly people (34%) were found to be anxious during the pandemic (Applegate et al., 2020). Studies have shown that education level, access to health information, and access to health services are among the factors that increase health literacy and trust in medication (Temel et al.,2017; Yakar et al.,2019). The fact that only 20.8% of the participants in this study had a university degree or higher education, the study was conducted during the pandemic, and the limited access to healthcare due to the geographical location of the study site may explain the high level of anxiety, low HL, and low health belief among elderly individuals. At this point, it is important for nurses to evaluate care processes considering that elderly individuals with chronic diseases may have high levels of anxiety during the pandemic and may experience adherence problems to their medication, as well as having limited/ problematic HL. In this study, it was found that as the anxiety and limited HL of chronic patients increased during the pandemic, their health belief also increased positively. Studies in the literature support these research findings (Yakar et al., 2019; Yılmaz et al., 2020). Chronic patients have experienced more anxiety during the Covid-19 pandemic than before due to uncertainty, limited access to healthcare services, social isolation, and insufficient coping methods (Nguyen et al., 2020; Rajkumar,, 2020; Roy et al., 2020). This situation can be interpreted as increasing anxiety levels during the pandemic positively affecting accessing and researching health-related

information and increasing faith in medication usage. This study provides an opportunity for nursing to turn the crisis into an opportunity by acknowledging that chronic patients' increased anxiety levels during the pandemic indicate their need for health information and the possibility of increasing their faith in medication. Therefore, the data we presented can shed light on how nurses can effectively manage such opportunities during pandemic processes. In this study, it was determined that women had higher levels of anxiety, health locus of control, and medication beliefs than men. Studies conducted in Turkey and China that evaluated the effect of gender on anxiety during the Covid-19 pandemic determined that women had higher levels of anxiety than men (Göksu and Kumcağız, 2020; Saygın et al., 2021; Wang et al.,2020). This can be attributed to the negative impact of stress and anxiety on women due to their roles and responsibilities in society during the pandemic, and their efforts to access accurate health information and maintain their faith in medication. Nurses can support the goal of increasing the social health level, particularly with women, through education that emphasizes positive medication beliefs and health locus of control during situations such as pandemics and natural disasters.

5. Conclusion

The leading factors that affect chronic patients' anxiety, beliefs about medications, and health literacy during the pandemic are gender, age, education level, marital status, income level, comorbid disease, and Covid-19 infection status. It was revealed that the leading predictor that affects anxiety, health literacy, and beliefs about medications is gender, with women being more affected. Nurses can effectively manage time to promote public health by being aware that women with chronic diseases are more anxious during the pandemic but more willing to receive health information and adhere to their medications. Additionally, the information

that increased levels of anxiety indicate a greater need for health literacy and an increase in beliefs about medications can be interpreted as an opportunity for nursing to turn the crisis into an opportunity. Therefore, the data we have presented can shed light on nurses' ability to manage such opportunities effectively and rationally during pandemic processes.

5.1. Limitations

Due to the restrictions imposed to prevent transmission during the pandemic, which caused a decrease in chronic patients' visits to the outpatient clinic, this situation constitutes a limitation of the study.

Ethical Committee Approval

To conduct the research, institutional permissions were obtained, and ethical approval was obtained from the Sivas Cumhuriyet University Ethical Committee (Date: Number: 17.06.2020, Decision No:2020-06/42). After informing the participating patients about the research, written and verbal consent was obtained from those who voluntarily wished to participate. Throughout the research, the principles of the Helsinki Declaration on Human Rights were followed.

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