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## Stigma and health literacy in individuals with COPD – a cross-sectional research

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### ABSTRACT

**Introduction and aim.** This study was conducted to evaluate the stigma and health literacy levels of individuals with COPD and to determine the relationship between stigma and health literacy.

**Material and methods.** This study was conducted with 310 individuals with COPD between September 10, 2021 and March 10, 2022. Data were collected using the Patient Information Form, Health Literacy Scale and The Chronic Illness Anticipated Stigma Scale.

**Results.** The average score of individuals on the Health Literacy Scale is  $36.8 \pm 12.8$ , and the average score on the chronic illness anticipated stigma scale is  $30.4 \pm 8.5$ . Health literacy scores are low in individuals over 65 years of age, female, married, unemployed, and secondhand smoke ( $p < 0.05$ ). Stigma score is high in individuals who are over 65 years old, male, single, and are not working due to illness ( $p < 0.05$ ). There is a significant relationship between the Health Literacy Scale and The Chronic Illness Anticipated Stigma Scale ( $p < 0.05$ ).

**Conclusion.** It has been determined that age, gender, marital status and employment status affect both stigma and health literacy. It is recommended that the health literacy levels of individuals with COPD be evaluated and supported to increase their health literacy levels.

**Keywords.** COPD, health literacy, nursing, stigma

## **Introduction**

COPD is a completely irreversible, preventable and treatable disease characterized by airflow limitation in the bronchi.<sup>1</sup> Studies on COPD; It shows that the morbidity, mortality and prevalence of COPD are quite high all over the world.<sup>1,2</sup> COPD affects nearly 300 million individuals in the world and causes the death of 3.2 million individuals every year. The prevalence of COPD in Turkey is 19.2%. According to studies evaluating the disease burden by the World Health Organization (WHO), COPD ranks 13th among the diseases that most frequently cause morbidity in the world and 11th in our country. In addition, COPD ranks 4th among the diseases that cause mortality most frequently in the world and 3rd in Turkey.<sup>3</sup> Increasing COPD cases cause a global psycho-socio-economic burden.<sup>2,4</sup>

Due to the low awareness of the disease in individuals with COPD, the severity of the disease increases, the duration of hospitalization is prolonged and the quality of life decreases.<sup>5,6</sup> Like all individuals with chronic diseases, individuals with COPD need information to be aware of their disease and improve their quality of life. The concept of health literacy is of great importance in ensuring that this information is accurate and effective.<sup>5-7</sup> Health literacy is which individuals have the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others.<sup>7-10</sup>

Individuals with COPD experience not only the physiological and psycho-social effects of the disease but also its socio-cultural effects. One of the most important psycho-socio-cultural effects of COPD is stigma.<sup>5,9,10</sup> The concept of stigma is defined by Goffman as "*stigmatizing, discriminating against, or embarrassing a person.*"<sup>10</sup> Stigma, which arises especially from prejudices in society, refers to society's attitude towards a certain person or some patient groups and behaviors that lead to exclusion from society.<sup>11,12</sup>

In case of illness, low health literacy in individuals and the emergence of stigma cause individuals to experience reluctance, non-compliance and problems in accepting diagnosis, treatment, other supportive services and requesting health care assistance.<sup>12</sup> Evaluating patients in terms of health literacy and stigma perception is important in terms of detecting possible problems in advance and preventing them.<sup>9,11</sup> The concept of health literacy and stigma is important for nurses who take an active role in patients' access to health services, protecting and maintaining their health, and planning their education.<sup>11</sup>

While there are separate studies on health literacy and stigma in individuals with COPD in the national and international literature, no study has been found examining health literacy and stigma together in individuals with COPD.<sup>13,14</sup>

## **Aim**

The purpose of this study; To evaluate the levels of stigma and health literacy in individuals with COPD and to determine the relationship between stigma and health literacy.

### ***Hypotheses of the research***

H<sub>1</sub>: What is the health literacy level of individuals with COPD?

H<sub>2</sub>: What is the level of stigma in individuals with COPD?

H<sub>3</sub>: Is there a relationship between health literacy and stigma in individuals with COPD?

### **Material and methods**

#### ***Study design and sample size***

The research was conducted as a cross-sectional study to evaluate the stigma and health literacy levels of individuals with COPD and to determine the relationship between stigma and health literacy. The research was conducted between September 2021 and March 2022 at Nevşehir State Hospital Chest Diseases Service and Chest Diseases Polyclinic. The sample of the research; It consisted of individuals diagnosed with COPD who agreed to participate in the study and met the inclusion criteria (n: 310).

Inclusion criteria;<sup>4,6,11,14,15</sup>

- Being diagnosed with COPD at least 2 months ago,
- Being able to communicate verbally,
- Agreeing to participate in the research.

G Power (v3.1.7) analysis was used to calculate the sample number of the study. In the calculation made based on Türe's study on <sup>14</sup> COPD patients, it was aimed to reach 300 patients. During data collection, 316 individuals with COPD were reached. 6 individuals included in the sample were excluded from the study because they did not have time and did not complete the survey questions. According to the Post-Hoc Power analysis result; The total number of patients required is 310, with a 95% confidence interval (1-  $\alpha$ ) and a 5% margin of error. The power of the test was obtained as 99%.

Exclusion criteria; individuals with a COPD diagnosis of less than 2 months and individuals with COPD exacerbations were not included in the study.

#### ***Instrument***

Research data were collected using the Patient Information Form, Anticipated Stigma Scale in Chronic Diseases and Health Literacy Scale. Research data was collected using face-to-face interview technique in 15 minutes. The data were collected by the researcher in clinics and outpatient clinics using the question-answer technique.

#### ***Patient Introduction Form***

Patient introduction form prepared by the researchers by scanning the literature; It consists of a total of 22 questions that include individuals' socio-demographic (age, gender, marital status, education level, living

place, vocation, etc.) and information about their diseases (when COPD was diagnosed, smoking status, knowledge about the disease, etc.).<sup>3-6,11,14,15</sup>

#### *Health Literacy Scale (HLS-14)*

The health literacy scale was developed in Japan in 2010 by Suka et al. (2013) to measure the level of health literacy in adults.<sup>16</sup> The validity and reliability of the scale in our country was conducted by Türkoğlu in 2021.<sup>17</sup> Scale; It has three subscales: Functional Health Literacy (5 items), Interactive Health Literacy (5 items), and Critical Health Literacy (4 items). Each item of the original scale is a 5-point Likert type ranging from “strongly disagree” (1 point) to “strongly agree” (5 points). A total score between "14-70" is received from the scale. An increase in the total score indicates a higher level of health literacy. In the study conducted by Türkoğlu, Cronbach's alpha value was found to be 0.85.<sup>17</sup> Cronbach's alpha value in this study is 0.91. Functional Health Literacy Subscale Cronbach's alpha (0.71), Interactive Health Literacy Subscale Cronbach's alpha (0.86), Critical Health Literacy Subscale Cronbach's alpha (0.86).

#### *The Chronic Illness Anticipated Stigma Scale in Chronic Diseases (CIASS)*

The scale was developed by Earnshaw et al. in 2012 in order to measure the stigma that individuals with chronic diseases expect from the people around them.<sup>18</sup> The Turkish validity and reliability of the scale was conducted by Tünerir in 2019.<sup>15</sup> It consists of three subscales to be used to evaluate the stigma expected from family and friends, individuals at work, and healthcare professionals. There are 12 items on the Likert type scale and scores are given between "1-5".<sup>15</sup> The total score obtained from the scale is between "12-60". An increase in the total score indicates that the stigma perceived by the individual is high.<sup>15</sup> The Cronbach alpha value of the scale is 0.95, and in this study the Cronbach alpha value is 0.71. Family/Friend Subscale Cronbach's alpha (0.70), Employer/Co-workers Subscale Cronbach's alpha (0.92), Healthcare Workers Subscale Cronbach's alpha (0.85).

#### ***Ethical approval***

Ethics committee approval was obtained from Amasya University Non-Interventional Ethics Committee (Date: 3.06.2021; Decision No: 91), and institutional permission was obtained from the hospital where the research was conducted. After the individuals were informed about the study and the purpose of the research was explained, the Informed Volunteer Consent Form was signed to conduct the research. Compliance with the World Medical Association Declaration of Helsinki was observed at all stages of the study.

#### ***Data analysis***

The data used in the research were analyzed using SPSS (Statistical Pack Age for Social Sciences) and Windows 25.0 program. Mean, standard deviation, median, frequency and percentage values were used in

the descriptive statistics of the data. The distribution of variables was measured with the Kolmogorov Smirnov test. Kruskal-Wallis and Mann-Whitney U tests were applied to analyze quantitative independent data. Spearman correlation analysis method was applied in the correlation analysis and Cronbach alpha was used in the reliability of the scales. In the study,  $p < 0.05$  was considered significant.

## Results

The average age of individuals with COPD is  $70.5 \pm 11$ , 58.7% are male, 77.1% are primary school graduates or below, 60% are married, 69% are not working. It was determined that 34.2% were retired, 92.3% lived at home with a large family, and 50.3% used a stove to at heating system home (Table 1).

**Table 1.** Socio-demographic characteristics of individuals with COPD (n=310)

Variables	Average	
	Number	Percent (%)
<b>Age (Mean±SD)</b>	70.5±11	
<b>Gender</b>		
Female	128	41.3
Male	182	58.7
<b>Marital status</b>		
Married	186	60
Single	124	40
<b>Living place</b>		
City	104	33.5
County	95	30.7
Village/Town	111	35.8
<b>Educational level</b>		
≤Primary school	239	77.1
≥Middle school	71	22.9
<b>Working status</b>		
Working	96	31
Not working	214	69
<b>Vocation</b>		
Retired	106	34.2
Farmer	94	30.4
Housewife	57	18.4
Worker	30	9.7

Self-employed	15	4.7
Officer	8	2.6
<b>Living with person/people</b>		
Alone	24	7.7
Large family	296	92.3
<b>Heating system</b>		
Radiator	154	49.7
Stove	156	50.3

It was determined that 61% of individuals with COPD did not have COPD in their family, 80.6% did not go to regular health checks for COPD, 42.9% gave up smoking and 29% were exposed to secondhand smoke. 63.5% of the individuals had additional chronic diseases and the most common chronic disease was hypertension with 41.9%, 64.5% were informed by the doctor and 11.9% were informed by the nurses. It was determined that 69% of the population had knowledge about COPD symptoms, 69% did not know what to do when COPD got worse, 52.6% applied it immediately when they learned new information, and 56.0% were in Stage II according to GOLD's COPD stage (Table 2).

**Table 2.** Disease-specific characteristics of individuals with COPD (n=310)<sup>a</sup>

<b>Variables</b>	<b>Number (n)</b>	<b>Percent%</b>
<b>COPD patient in family</b>		
There is	121	39
None	189	61
<b>Regular health checks for COPD</b>		
Yes	60	19.4
No	250	80.6
<b>Smoking status</b>		
Never smoked	124	40
Gave up smoking	133	42.9
Still smoking	53	17.1
<b>Duration of COPD (years)</b>		
2 months–11 months	60	19.4
1 year–4 years	112	36.4

5 years–9 years	76	24.2
10 years–19 years	44	14.2
20 years and above	18	5.8
<b>Information about secondhand smoke</b>		
Yes	184	59.4
No	126	40.6
<b>Secondhand smoke*</b>		
There is	90	29
None	94	30.3
<b>Chronic disease**</b>		
None	113	36.5
There is	197	63.5
Hypertension	130	41.9
Diabetes mellitus	86	27.7
Heart failure	44	14.2
Asthma	18	5.8
Chronic renal failure	17	5.5
Prostate	11	3.5
Coronary artery disease	5	1.4
<b>Getting information from the doctor about COPD</b>		
Yes	200	64.5
No	110	35.5
<b>Getting information from the nurse about COPD</b>		
Yes	37	11.9
No	273	88.1
<b>Information about COPD</b>		
There is	180	58.1
None	130	41.9
<b>Knowing what to do when COPD gets worse</b>		
Yes	96	31
No	214	69



<b>Application when you learn new information about COPD</b>	
Yes	52.6
No	47.4
<b>COPD classification***</b>	
Stage I	15.2
Stage II	56.1
Stage III	27.4
Stage IV	1.3

<sup>a</sup> \* – percentages are calculated based on n, \*\* – multiple answers provided, \*\*\* – classification information was taken from the patient file

According to the HLS-14 sub-dimensions of individuals with COPD; Functional Health Literacy mean score is 13.5±4.6, Interactive Health Literacy mean score is 12.2±5.1, Critical Health Literacy mean score is 11.1±4.4, total Health Literacy mean score is 36.8±12.8. According to the CIASS sub-dimensions, the mean score of Family/Friends is 14.9±5.3, the mean score of Employers/Co-workers is 7.8±4.6, the mean score of healthcare workers is 7.7±3.9, and the total mean score of the CIASS is 30.4±8.5 (Table 3).

**Table 3.** HLS-14 and CIASS average scores of individuals with COPD (n=310)\*

<b>Scales</b>	<b>Min–Max</b>	<b>Median</b>	<b>Mean±SD</b>
<b>HLS-14</b>			
Functional Health Literacy	5–25	13	13.5±4.6
Interactive Health Literacy	5–25	13	12.2±5.1
Critical Health Literacy	4–20	12	11.1±4.4
Total	14–70	37	36.8±12.8
<b>CIASS</b>			
Family/Friend	4–20	16.5	14.9±5.3
Employer/Co-workers	4–20	5	7.8±4.6
Healthcare workers	4–20	6	7.7±3.9
Total	12–60	31	30.4±8.5

\* HLS-14 – Health Literacy Scale, CIASS – The Chronic Illness Anticipated Stigma Scale

It was determined that the HLS-14 total score was high in individuals aged 65 and under, male, single, employed, and with an education level of secondary school or above ( $p < 0.05$ ). According to the CIASS

total score averages of individuals with COPD; It was determined that CIASS was significantly high in individuals over 65 years of age, male, unemployed, single, and educated in secondary school or above ( $p<0.05$ , Table 4).

**Table 4.** HLS-14 and CIASS mean scores of individuals with COPD according to socio-demographic characteristics (n=310)\*

	HLS-14			CIASS		
	Mean±SD	Median	Min–Max	Mean±SD	Media n	Min–Max
<b>Age</b>						
≤65	42.8±10.3	44	18–70	28.8±8.1	29	12–60
>65	33.8±12.9	33	14–63	32.5±10.1	33	14–60
Test and p value	p<0.001	Z=-5.798		p<0.001	Z=-5.499	
<b>Gender</b>						
Female	32.1±12.2	31	14–70	24.7±6.5	25	12–39
Male	40.2±12.2	41	14–43	34.4±7.4	34	14–60
Test and p value	p<0.001	Z=-5.521		p<0.001	Z=-10.460	
<b>Marital status</b>						
Married	30.9±12.5	29	14–39	28.3±8.8	28	13–56
Single	40.8±11.4	42	14–70	31.8±8.1	32	12–60
Test and p value	p<0.001	Z=-6.668		p<0.001	Z=-3.623	
<b>Educational level</b>						
≤ Primary school	34.3±12.5	34.0	14.0–70.0	29.5±8.7	29.0	12–60
≥ Secondary school	45.3±10.0	49.0	21.0–38.0	33.3±7.2	33.0	14–49
Test and p value	p<0.001	Z=-6.354		p<0.001	Z=-3.735	
<b>Working Status</b>						
Working	40.8±10.6	42.0	14.0–59.0	34.4±8.1	34.0	17–60
Not working	34.4±13.6	33.0	14.0–63.0	27.6±7.6	28.0	12–49
Test and p value	p=0.001	X <sup>2</sup> =15,103		p<0.001	X <sup>2</sup> =40.201	
<b>Living with person/people</b>						
Alone	34.4±12.7	32.5	15–39	32.0±10.2	33.5	14–56
Large family	37.0±12.8	37.5	14–	30.3±8.4	30	12–60
Test and p value	p=0.352	Z=-0.931		p=0.323	Z=-0.989	

<b>Living place</b>						
City	38.2±12.9	39.5	14–60	30.4±7.9	30.5	13–49
County	37.9±12.7	38	14–63	31.5±8.7	32.0	14–56
Village–Town	34.6±12.6	35	14–59	29.4±8.9	30.0	12–60
Test and p value	p=0.074	X <sup>2</sup> =5.211		p=0.208	X <sup>2</sup> =3.140	
<b>Heating system</b>						
Radiator	38.6±12.6	40	14–43	30.3±8.1	29.5	13–56
Stove	35.1±12.8	35	14–70	30.5±8.9	31	12–60
Test and p value	p=0.019	Z=-2.338		p=0.849	Z=-0.191	

\*<sup>K</sup> – Kruskal-Wallis, <sup>m</sup> – Mann-Whitney U, HLS-14 – Health Literacy Scale, CIASS – The Chronic Illness Anticipated Stigma Scale

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In individuals who have a family history of COPD, who receive information after the diagnosis of COPD and receive this information from the doctor, who know what to do when COPD worsens, who apply it immediately when they read new information about the disease, who go for regular health checks for COPD, and who gave up smoking, the total score of COPD is significantly high. It was determined to be high ( $p<0.05$ ). In individuals who are exposed to secondhand smoking, have a chronic disease in addition to COPD, and have a more advanced COPD stage, the HLS-14 total score is significantly lower ( $p<0.05$ , Table 5).

**Table 5.** HLS-14 and CIASS mean scores of individuals with COPD according to disease-specific characteristics (n=310)\*

	HLS-14			CIASS		
	Mean±SD	Media n	Min-Max	Mean±SD	Media n	Min-Max
<b>COPD patient in family</b>						
There is	41.3±12	43	14-70	30.1±8	31	12-49
None	34±12.5	33	14-43	30.6±8.9	31	13-60
Test and p value	p<0.001	Z=-4.983		p=0.718	Z=-0.363	
<b>Smoking status</b>						
Never smoked	32±12.5	30.5	14-59	24.7±6.6	26	12-39
Gave up smoking	41.7±11.7	42.0	15-63	33.2±7.4	33	14-70
Still smoking	35.9±11.8	36.0	14-55	36.7±7.1	37	15-50
Test and p value	p<0.001	X <sup>2</sup> =37.760		p<0.001	X <sup>2</sup> =108.834	
<b>Information about secondhand smoke</b>						
Yes	41.7±11.3	43	14-70	30.1±8.2	30	13-56
No	29.8±11.6	27	14-39	30.8±8.9	31	12-60
Test and p value	p<0.001	Z=-7.995		p=0.579	Z=-0.555	
<b>Secondhand smoke</b>						
Yes	40.1±11.1	41	16-70	27.6±7.6	28	13.44
No	43.1±11.4	45	14-43	32.5±8.2	33	14-56
Test and p value	p=0.043	Z=-2.023		p<0.001	Z=-4.145	
<b>Chronic disease</b>						
None	42.6±9.7	42	20-39	32.5±8.9	32	14-60

There is	33.5±13.2	32	14–70	29.2±8.1	29	12–50
Test and p value	p<0.001		Z=-5.877	p=0.002		Z=-3.15
<b>COPD stage</b>						
Stage I	43.7±9.8	47	20.0–59	29.5±7.8	31	14–45
Stage II	37.0±12.5	37.5	14–60	30.4±9	29	13–60
Stage III–IV	32.9±13.3	32	14–63	30.9±7.9	32	12–56
Test and p value	p<0.001		X <sup>2</sup> =22.261	p=0.647		X <sup>2</sup> =0.871
<b>Information about COPD</b>						
There is	40.7±12	42	14–43	31.4±8.4	31	12–60
None	29.7±11	27.5	14–70	28.6±8.4	28	13–49
Test and p value	p<0.001		Z=-7.242	p=0.015		Z=-2.424
<b>Getting information from the doctor about COPD</b>						
Yes	40.7±12	42	14–43	31.4±8.4	31	12–60
No	29.7±11	27.5	14–70	28.6±8.4	28	13–49
Test and p value	p<0.001		Z=-7.242	p=0.015		Z=-2.424
<b>Getting information from the doctor about COPD</b>						
Yes	38.7±12.6	40	14–39	30.5±8.3	29	14–56
No	36.6±12.8	36	14–70	30.4±8.6	3	12–60
Test and p value	p=0.336		Z=-0.962	p=0.955		Z=-0.057

\*<sup>K</sup> – Kruskal-Wallis, <sup>m</sup> – Mann-Whitney U

It was found that the CIASS total score was significantly low in individuals who were exposed to secondhand smoking and had chronic diseases in addition to COPD ( $p<0.05$ ). It was determined that the total score of the CIASS scale was significantly high in individuals who received information after the diagnosis of COPD, who received information about COPD from the doctor, who knew what to do when the symptoms of COPD worsened, who were knowledgeable about the symptoms of COPD and who still to smoke ( $p<0.05$ , Table 5).

**Table 5.** HLS-14 and CIASS mean scores of individuals with COPD according to disease-specific characteristics (n=310) (Continued)\*

	HLS-14			CIASS		
	Mean±SD	Median	Min–Max	Mean±SD	Median	Min–Max
<b>Information About COPD</b>						
<b>Symptoms</b>						
There is	42.6±10.7	44.5	16–39	31.3±8.2	32	12–56
None	28.9±11.1	27	14–70	29.1±8.8	28.5	13–60
Test and p value	p<0.001	Z=-9.273		p=0.009	Z=-2.631	
<b>Knowing what to do when COPD gets worse</b>						
Yes	43.5±11.2	45.5	16–39	31.8±7.6	32	14–56
No	33.8±12.3	33	14–70	29.7±8.8	29	12–60
Test and p value	p<0.001	Z=-6.218		p=0.023	Z=-2.273	
<b>Application when you learn new information about COPD</b>						
Yes	34.5±12.2	34	14–39	30.3±8.9	31	12–60
No	39.4±13	42	14–70	30.5±8	30	14–56
Test and p value	p=0.001	Z=-3.472		p=0.971	Z=-0.037	
<b>Regular health checks for COPD</b>						
Yes	40.2±11.5	41.5	15–63	30.4±9.2	31	14–56
No	32.2±12.7	30	14–59	31.3±8.7	31	14–60
Test and p value	p<0.001	X <sup>2</sup> =15.650		p=0.782	X <sup>2</sup> =0.492	

\*<sup>K</sup> – Kruskal-Wallis, <sup>m</sup> – Mann-Whitney U, HLS-14 – Health Literacy Scale, CIASS – The Chronic Illness Anticipated Stigma Scale

A significant positive, low-level relationship was observed between the HLS-14 functional health literacy sub-dimension and the CIASS family/friends, healthcare workers sub-dimension scores, and between the HLS-14 interactive health sub-dimension and the CIASS total family/friends, employers/colleagues and healthcare workers sub-dimension scores (p<0.05). A significant positive, low-level relationship was found between the HLS-14 total score and the CIASS family/friends, employers/colleagues total scores (p<0.05).

A significant negative, low-level relationship was detected between the HLS-14 critical health subscale and the CIASS family/friends, employers/colleagues, healthcare professionals total score ( $p < 0.05$ , Table 6).

**Table 6.** The relationship between HLS-14 and CIASS total scores in individuals with COPD ( $n=310$ )\*

		HLS-14			
		Functional health	Interactive health	Critical health	Total score
<b>CIASS</b>					
<b>Family/Friend</b>	r	0.121	0.410	-0.315	0.148
	p	0.034	0.000	0.000	0.009
<b>Employer/Co-workers</b>	r	0.047	0.444	-0.261	0.139
	p	0.405	0.000	0.000	0.014
<b>Health workers</b>	r	0.122	0.335	-0.298	0.077
	p	0.032	0.000	0.000	0.175
<b>Total Score</b>	r	0.110	0.446	-0.322	0.142
	p	0.053	0.000	0.000	0.013

\* HLS-14 – Health Literacy Scale, CIASS – The Chronic Illness Anticipated Stigma Scale

## Discussion

With aging, physical and psychological changes occur in individuals. Problems such as posture-related changes in elderly individuals, an increase in chronic diseases and the need for more care can cause stigma, which is the situation of different behavior towards the individual by caregiver.<sup>11</sup> In the study, the stigma level of individuals with COPD over the age of 65 is higher.

In studies involving different patient groups to evaluate stigma, it has been found that women have a higher level of stigma.<sup>19,20</sup> In the study, the stigma level of men with COPD was higher. This difference in the results of the study may be associated with the higher number of men in the study. It is thought that the difference will be seen better as studies on stigma in individuals with COPD are carried out.

When the marital status of individuals with COPD was examined in the study. The majority (60%) are married individuals, and the stigma level of single individuals is higher. Similar to previous studies, it has been concluded that single individuals experience more stigma.<sup>21,22</sup> The reason why stigma is higher in single individuals may be due to the fact that singleness is perceived negatively on a social basis and single individuals are more exposed to negative behavior in the public sphere.

The study found that the health literacy level of men was higher than that of women. In studies examining the relationship between health literacy and gender, it has been concluded that health literacy is higher in

men, similar to the study.<sup>19,20</sup> It is thought that health literacy in men is high due to higher literacy and education levels in men in society.

In the study, singles have higher health literacy. A study found that there was no relationship between marital status and health literacy.<sup>23</sup> The reason why health literacy was found to be high among singles in this study may be related to the fact that singles are younger and have higher education levels.

In COPD, the education level of individuals is important for the prognosis of the disease. Individuals who are informed about the disease participate more effectively in the treatment of the disease and plan the care process better.<sup>1,6</sup> According to the literature, as the education level of individuals increases, the level of health literacy increases.<sup>7,15,23,24</sup> In a study that supports the literature, it was determined that individuals with an education level of secondary school or above have better health literacy.

When studies on health literacy in the literature are examined; It appears that working status affects individuals' health literacy.<sup>23-25</sup> In the study, it was determined that the health literacy of individuals who were not employed was lower. Mollakhani's study also stated that the health literacy level of those who are not actively involved in any profession is low.<sup>25</sup> The study supports the literature.

In a study by Puente-Maestu, it was found that health literacy was lower in smokers and those exposed to secondhand smoking.<sup>26</sup> In the study, the health literacy score is lower in individuals who are knowledgeable about secondhand smoking and who are exposed to and continue to be exposed to secondhand smoking. This may be due to the fact that individuals with COPD do not fully know the harms of smoking and receive inadequate education on this subject.

In the study, it was determined that the health literacy level of individuals decreased as the duration of COPD diagnosis increased. Similar results were obtained in studies examining the health literacy and related factors of individuals with chronic diseases.<sup>9,27</sup> In line with the literature, this can be interpreted as a decrease in health literacy due to the longer the duration of the disease and the more complicated treatments received. Another reason is that when the disease is first diagnosed, more research is done because there is a curiosity about the disease, but this curiosity decreases as we live with the disease.

In the study, the lowest score in the CIASS is in the healthcare worker's sub-dimension. While this situation may be due to the successful attitude of healthcare professionals, it may also occur because individuals do not seek healthcare services out of fear that they may be stigmatized.

Individuals with COPD need education about the disease in order to continue their daily lives, go to regular health checks and apply their treatments correctly.<sup>28</sup> Individuals with COPD and their caregivers must have a certain level of health literacy in order to follow the diagnosis, treatment and progressing processes.<sup>29,30</sup> It was determined that the health literacy of the individuals participating in the study was low (according to the scale score average). Studies conducted to evaluate health literacy in individuals with COPD have also found that health literacy is low.<sup>29,30</sup> The study is similar to the literature.



In the study, a positive, low-level significant relationship was found between individuals' stigma level and health literacy. When examined in the literature; While no relationship was found between stigma and health literacy in the studies conducted by Crowe, Cheng and Mackert, in the study conducted by Corrigan, a positive relationship was determined between stigma and health literacy, similar to the study.<sup>31-34</sup> By increasing the health literacy level of individuals, their awareness will increase and the formation of stigma will be prevented.

### ***Study limitations***

The results of this study are limited only to individuals with COPD who applied to the institution where the research was conducted, and cannot be generalized to all individuals with COPD.

### **Conclusion**

As a result of the research, stigma and health literacy scores of individuals with COPD are low, health literacy is low in individuals over 65 years of age, female, married, unemployed, exposed to passive smoking, and whose education level is primary school or below; It was determined that the stigma score was high in individuals who were over 65 years of age, male, single, had at least a secondary school education, and were not working due to illness. In order to increase the health literacy level of individuals with COPD and further reduce the current perception of stigma, providing more information and implementing initiatives by a multidisciplinary (physician-nurse) team, similar studies to evaluate stigma and health literacy in individuals with COPD should be conducted in different regions and outside hospitals. It is recommended to repeat it with larger sample groups, including individuals with COPD.

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#### ***Author contributions***

Conceptualization, N.D.; Methodology, N.D.; Formal Analysis, N.D. and E.A.; Data Curation, N.D. and E.A.; Writing – Original Draft Preparation, E.A.; Writing – Review & Editing, N.D.; Supervision, N.D.

#### ***Conflicts of interest***

No potential conflict of interest was reported by the authors.

### ***Data availability***

The data sets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

### ***Ethics approval***

Ethics committee approval was obtained from Amasya University Non-Interventional Ethics Committee (Date: 3.06.2021; Decision No: 91), and institutional permission was obtained from the hospital where the research was conducted.

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