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The Relationship Between Fear of Contagion\Transmission and Communicable Disease Risk Awareness and Ways of Prevention in Vocational School Students of the University

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ABSTRACT

Aim: This study aimed to determine students' risk awareness and protection levels regarding communicable diseases as well as their levels of fear of transmission. It aimed to evaluate them as independent variables and investigate their relationship.

Material and Methods: It is a cross-sectional study. The study sample consisted of 509 university students. Data were collected using Communicable Diseases Risk Awareness and Protection and Fear of Contagion/Transmission scales. Data were analyzed using the Student t-test, and Pearson correlation.

Results: The mean scores of the communicable disease risk awareness and prevention scales (145.73± 17.05) and the fear of contagion/transmission scale (89.65±16.58) were above the midpoint. Risk awareness and protection level regarding communicable diseases and fear of contagion/transmission were found to be significantly higher in girls, 2nd grade students, those with chronic diseases and those who stated that they had never had a communicable disease. Age and awareness of communicable disease risk and protection level were positively correlated. There was also a positive correlation between the communicable disease risk awareness and prevention scale and the fear of contagion/ transmission.

Conclusion: The study results reveal the students' awareness of risk and protection against communicable diseases and fear of contagion and transmission. It shows the importance of gender, class, presence of chronic disease and previous communicable disease on risk awareness, protection and fear of communicable diseases.

Keywords: Communicable disease; fear; awareness of risk.

Üniversitenin Meslek Yüksekokulu Öğrencilerinde Bulaşma/Bulaştırma Korkusu ile Bulaşıcı Hastalık Risk Farkındalığı ve Korunma Yolları Arasındaki İlişki

ÖZ

Amaç: Bu çalışmanın amacı öğrencilerin bulaşıcı hastalılarda risk farkındalık ve korunma düzeyleri ile bulaşma\bulaştırma korku düzeylerini belirlemek, bağımsız değişkenler açısından değerlendirmek ve aralarındaki ilişkiyi araştırmaktır.

Gereç ve Yöntemler: Kesitsel tipte bir çalışmadır. Araştırmanın örneklemi 509 üniversite öğrencisi oluşturmaktadır. Veriler Bulaşıcı Hastalıklar Risk Farkındalığı ve Korunma ölçeği, Bulaşma/Bulaştırma Korkusu ölçeği ile toplandı. Verilerin analizi Student t-test ve Pearson korelasyon ile yapıldı.

Bulgular: Bulaşıcı hastalık risk farkındalığı ve korunma ölçeği (145.73± 17.05) ile bulaşma/bulaştırma korkusu ölçeği (89.65±16.58) puan ortalamaları orta noktanın üstünde saptandı. Bulaşıcı hastalıklara ilişkin risk farkındalığı ve korunma düzeyi ile bulaşma/bulaştırma korkusu; kadınlarda, 2. sınıf öğrencilerinde, kronik hastalığı olanlarda ve daha önce bulaşıcı hastalık geçirmediğini söyleyenlerde anlamlı olarak fazla bulundu. Yaş ile bulaşıcı hastalıklarda risk farkındalığı ve korunma düzeyi arasında pozitif yönde ilişki saptandı. Ayrıca bulaşıcı hastalık risk farkındalığı ve korunma ölçeği ile bulaşma/bulaştırma korkusu arasında da pozitif yönde ilişki saptandı.

Sonuç: Araştırma sonuçları öğrencilerin bulaşıcı hastalıklarda risk farkındalık ve korunma düzeyini ile bulaşma ve bulaştırma korku düzeylerini ortaya koymaktadır. Bulaşıcı hastalıklarda risk farkındalığı, korunma ve korku üzerinde cinsiyet, sınıf, kronik hastalık varlığı ve daha önce bulaşıcı hastalık geçirme durumunun önemini göstermektedir.

Anahtar Kelimeler: Bulaşıcı hastalık; korku; risk farkındalığı.

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INTRODUCTION

Despite preventive measures such as screening programs for communicable diseases, safe water, waste management, vaccines and antibiotics, the incidence of communicable diseases is increasing due to factors such as the adaptation of disease agents to new environments and the emergence of new agents, increased international travel, climatic, demographic, technological and behavioral changes. In addition to old communicable diseases, new diseases are emerging and even causing epidemics (1-5). For example, the increasing prevalence of diseases such as AIDS, West Nile and Hanta virus, and the pandemics of influenza and COVID-19 outbreaks cause fear by negatively affecting sociocultural and economic life (6,7). The recent COVID-19 pandemic has caused various fears, including the fear of dying, losing relatives, being unable to access healthcare institutions, experiencing food shortages, and unemployment (8,9). In addition, incomplete, exaggerated and inaccurate information about communicable diseases in mass media and digital platforms has caused fear (10,11). The literature emphasizes that individuals may fear being infected and infecting others due to the impact of communicable diseases (6,12).

In general, fear of contagion is considered to be both a fear of direct or indirect contact with a person or substance thought to be infected and an abstract fear of contagion in thought (13). Research findings reveal that individuals experience significant fear about contracting communicable diseases and transmitting these diseases to others (13-15).

Low levels of fear of contracting and transmitting communicable diseases encourage adherence to protective behaviors that prevent the spreading of communicable diseases, such as social distancing, hygiene and mask use. However, chronic or disproportionate fear can become harmful, leading to the development or worsening of social isolation, anxiety, stress, depression, insomnia, suicide, substance abuse and other psychiatric disorders (13,16-26). At the same time, studies have reported that fear causes negative health behaviors such as delay in seeking health services, alcohol use, increased eating behavior, and decreased physical activity (25,27,28).

Students are essential to communicable diseases due to their social and vital characteristics. This group is very active in social life. The campus environment, shared housing, classrooms, dining areas, public vehicles, and various social activities bring them into contact with more people than other age groups. This increases the risk of the spread of communicable diseases and makes them a priority target group (29,30). All these conditions may lead to increased fear of contagion and transmission in students (6,31). All these factors show that university students are both a risk group and a group with intervention potential. In this context, evaluating the fear of contracting or transmitting communicable diseases in students is crucial in terms of both individual well-being and strategies for public health. Accordingly, interventions to reduce and cope with fear will strengthen preventive health services and contribute to the psychosocial health of students.

Although risk awareness of communicable diseases generally encourages protective behaviors, sometimes increased awareness, inaccurate, incomplete or exaggerated information, and inaccurate interpretation of this information can create a threat perception and increase the fear of transmitting or infecting others (6,32,33). For example, in a study on HIV/AIDS, it was stated that the words of the participants, "You cannot kiss your children, you cannot hug people." Revealed their fears and found that misinformation about the disease's transmission may effectively influence the participants' fears (15). Therefore, it is essential to determine students' risk awareness and protection levels for communicable diseases and to provide appropriate interventions to reduce the fear of contagion/transmission. Planned intervention programs to increase risk awareness and promote preventive health behaviors (e.g., hand hygiene, use of protective equipment) effectively reduce fear of contagion/transmission. Indeed, a study determined that this fear was higher in individuals who did not use protective equipment (34). This finding emphasizes the importance of gaining protective behaviors.

Existing literature has generally evaluated the effects of fear of being infected with or transmitting communicable diseases on psychological health (such as anxiety) or risky behaviors (such as suicide). However, the effects of fear of contagion and transmission on seeking health information, engaging in protective behaviors and increasing risk awareness have not been adequately evaluated. In addition, although the literature points out that risk awareness or protective behaviors towards communicable diseases may be effective in reducing the fear of contagion or transmission, no studies having investigated the relationship between them. In this context, this study investigated the relationship between awareness of communicable disease risk, protection level, and fear of contagion/transmission. This study differs from the studies in the literature by addressing university students' fear, risk awareness and prevention behaviors related to communicable diseases in a holistic manner.

MATERIAL AND METHODS

Population and Sample of the Study

It is a cross-sectional study. The population of the study consists of a total of 1100 Students studying at the Vocational School of Health Services (anesthesia, physiotherapy, first and emergency aid, medical laboratory and elderly care programs) and Pazar Vocational School (organic farming, medicinal and aromatic plants, tea farming and business technology programs) of the relevant university. The Raosoft Sample Size Calculator program was used to determine the sample size in the study. In order to obtain the maximum sample size, the frequency of the event was taken as 50% (p=0.50), the confidence level as 95%, the margin of error as 5%, and the minimum sample size was calculated as 285 people according to these data.

Accordingly, the study was conducted with 509 university students who voluntarily agreed to participate in the study. Participants consisted of students who were present at the school at the time of data collecting and who voluntarily agreed to participate. The number of participants exceeds the minimum sample size and thereby increasing the reliability of the study.

Inclusion criteria: Being over 18 years of age, answering all questions, and volunteering to participate in the study. Exclusion criteria: not answering more than one question in the survey.

Data Collection Process

The data of the study were collected in December 2022 at the relevant vocational schools of the university where the study was conducted. A form prepared by the researcher and scales with validity and reliability in accordance with the purpose of the study were used as data collection tools. The data were collected under observation in the classroom environment using the relevant form, the infectious diseases risk awareness and protection scale and the fear of contagion\transmission scale.

The researcher directly participated in the data collection process; he was present in the classrooms where the questionnaires would be applied and informed the students about the purpose, scope and process of the research. During this information, it was clearly stated that participation was voluntary, the questionnaires would be administered anonymously, and the responses would be kept completely confidential. After the verbal consent of the students who agreed to participate was obtained, the personal information form and measurement tools were distributed. It took an average of 30-35 minutes for the students to fill in the forms and scales.

After all the forms were collected, the forms were checked by the researchers. After the incomplete forms were removed from a total of 515 forms, the study was completed with 509 participants.

Data Collection Tools

The study's data were collected using the "Personal Information Form," "Communicable Diseases Risk Awareness and Protection," and "Fear of Contagion" scales.

Personal Information Form: This form was prepared by the researchers and consists of 7 questions in total. This form evaluates students' gender, age, grade level, program enrolled in, place of residence, chronic disease status, and previous history of communicable diseases.

Communicable Diseases Risk Awareness and Protection Scale (CDRAPS): This scale was developed by Ener and colleagues to assess the levels of general risk awareness, protection behaviors and attitudes towards all communicable diseases rather than towards a specific communicable disease or transmission route (35). The scale for which validity and reliability studies were conducted consists of six sub-dimensions and 36 items. The sub-dimensions are common life risk awareness, self-protection awareness, protection behaviors, hand washing behaviors, social protection awareness and personal contagion awareness. Each item in the scale is a 5-point Likert scale. Awareness items are scored as 'Strongly Disagree (1 point)' and 'Strongly Agree (5 points)'. Behavior items are scored as 'Never (1 point)' and 'Always (5 points)'. There are no reverse-coded items. Scores from the scale range from 36 to 180, with no cut-off point. An increase in the total score obtained from the scale indicates an increase in individuals' general risk awareness and protection levels against communicable diseases. The total Cronbach's α value of the scale is 0.91 (35). In this study, the total Cronbach's α value of the scale is 0.91.

Fear of Contagion/ Transmission Scale (FCTS): This scale was developed by Koç and Bilgehan to assess the fear of contagion/transmission due to diseases and epidemics in society (6). The scale for which validity and reliability studies were conducted consists of four sub-dimensions and 24 items. The sub-dimensions are fear of contact transmission, fear of abstract transmission, fear of social transmission, and fear of healthcare transmission. Each item on the scale is a 5-point Likert scale. The items are scored as 'Strongly Disagree (1 point)' and 'Strongly. Agree (5 points). There are no reverse-coded items. The minimum score is 24, the maximum score is 120, and there is no cut-off point. An increase in the total score obtained from the scale indicates an increase in the fear of contagion /infection. The total Cronbach's α value of the scale is 0.91 (6). In this study, the total Cronbach's α value of the scale is 0.87.

Independent variables of the study: Gender, age, grade level, program enrolled in, place of residence, chronic disease status, and previous communicable disease. Dependent variables: communicable diseases risk awareness and prevention scale, and Contagion/ Transmission fear scale

Statistical Analysis

The SPSS 22 (Statistical Package for the Social Sciences) program was used for the statistical analysis of the data. Descriptive statistics were expressed as mean ± standard deviation for numerical variables and number and percentage for categorical variables. Data are considered to be normally distributed if the kurtosis and skewness coefficients are within ±1 (36). In the statistical analysis of the data, Student's t-test was used to compare paired groups in those with normal distribution and the Mann-Whitney U test was used in those without normal distribution. Pearson correlation analysis was used to examine the relationship between variables. In the correlation analysis, 0-0.19 was considered as no correlation, 0.20-0.39 as a weak correlation, 0.40-0.69 as a moderate correlation, 0.70-0.89 as a strong correlation, and 0.90-1.00 as a robust correlation. The significance value was taken as $p<0.05$ (37).

Ethical Considerations

For the research, Recep Tayyip Erdoğan University Social and Human Sciences Ethics Committee (Date: 14.11.2022, Meeting K. Number 2022\281), permission was obtained by e-mail from the researchers who performed the Turkish validity and reliability of the scales used in the study. It was made clear to the participants that participation in the study was entirely voluntary and that they could withdraw

from the study at any time without giving any reason. It was also emphasized that the data obtained would only be used for scientific purposes and would not be shared with third parties. These explanations were made verbally before each application, and informed voluntary participation of the participants was ensured. The ethical principles and the Declaration of Helsinki were followed throughout the study.

RESULTS

Of the students who participated in the study, 82.7% were female, and the mean age was 22.01±5.94 years. 54.2% of the students were in the first grade, 80% were at the Vocational School of Health Services, and 20.0% were at the Vocational School of Pazar. 32.2% lived with their families. 6.5% of the students had a chronic disease, and 23.2% had previously experienced a communicable disease. No significant difference was found between the students of the departments within the Pazar Vocational School and the Vocational School of Health Services communicable diseases risk awareness and prevention scale and the fear of contagion/transmission scale (p=0.959; p=0.690). When the total and subscale mean scores of the communicable diseases risk awareness and protection scale were examined, it was seen that the participants scored above the midpoint. Fear of contagion total and subscale mean scores were also above the midpoint. Table 1 presents the participants' mean scores on the communicable diseases risk awareness and prevention scale and the fear of contagion/ transmission scale. In terms of gender, the mean scores of communicable diseases risk awareness and prevention scale total (p<0.001), common life risk awareness (p<0.001), self-protection awareness (p<0.001), protection behaviors (p<0.001), social protection awareness (p=0.020), and personal contagion awareness (p<0.001) subscale scores were statistically significantly higher in women (p<0.001). No statistically significant difference was found between the mean scores of hand washing behavior (p=0.234) (Table 2). This result suggests that gender may have an impact on risk awareness and prevention behaviors in infectious diseases.

Table 1. Mean scores of the participants on the communicable diseases risk awareness and protection scale and fear of contagion/transmission scale (n=509)

	N	Minimum	Maximum	Mean± Std. Deviation
CDRAPS Total	509	73	180	145.73±17.05
Common life risk awareness	509	9	45	33.39±6.25
Self-protection awareness	509	14	40	33.94±4.40
Protection behaviours	509	16	40	32.77±4.69
Hand washing behaviours	509	6	15	13.42±1.66
Social protection awareness	509	4	22	14.51±2.93
Personal contagion awareness	509	8	20	17.70±2.30
FCTS Total	509	38	170	89.65±16.58
Fear of contact transmission	509	9	75	20.39±4.26
Fear of abstract contagion	509	6	30	19.07±5.24
Fear of social contagion	509	11	90	32.08± 7.16
Healthcare transmission	509	5	25	18.11±4.55

Regarding grade, the sub-dimensions of common life risk awareness mean score (p=0.035) and personal contagion awareness mean score (p=0.042) were statistically significantly higher in 2nd graders. There was no significant difference in other sub-dimensions (p=0.226; p=0.609; p=0.469; p=0.069) and total scale (p=0.081) (Table 2). This suggests that students' awareness and protective behaviors against risks may increase as they advance in grade.

Regarding where the participants lived, the mean score of protective behaviors (p=0.017) was statistically significantly higher in those who lived with their families, and the mean score of social protection awareness (p=0.022) was statistically significantly higher in those who lived in dormitories or homes away from their families. The place of residence did not make a statistically significant difference in the mean score of the total scale and other sub-dimensions (p=0.297; p=0.503; p=0.174; p=0.082; p=0.914, respectively) (Table 2). This indicates that living conditions may have an impact on risk awareness and protection.

Mean scores of common life risk awareness (p=0.012), self-protection awareness (p=0.037), and scale total score (p=0.038) were statistically significantly higher in patients with chronic diseases. No statistically significant difference was found between the other sub-dimensions mean scores (p=0.256; p=0.269; p=0.895; p=0.183) (Table 2). This suggests that chronic diseases may positively affect students' risk awareness and prevention levels.

Mean scores of common life risk awareness (p=0.007), protection behaviors (p=0.003), social prevention awareness (p=0.003) and total scale score (p=0.005) were found to be statistically significantly higher in those who stated that they had never had a communicable disease. No statistically significant difference was found between the other sub-dimensions mean scores (p=0.424; p=0.330; p=0.180) (Table 2). This suggests that infectious diseases may limit risk awareness and prevention behaviors. Analyses of the independent variables with the infectious diseases risk awareness and prevention scale are presented in Table 2.

When the Contagion/Transmission fear scale and its subdimensions were analyzed, a statistically significant difference was found between gender and mean runk score of fear of contact contagion (p=0.021), mean runk score of fear of social contagion (p=0.004), mean score of fear of

Table 2. Analysis of communicable diseases risk awareness and protection scale and sub-dimensions with some independent variables (n=509)

	n	Common life risk awareness		Self-protection awareness		Protection behaviors		Hand washing behaviors		Social protection		Personal contagion awareness		CDRAPS Total	
		Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Gender															
F	421	34.07	5.775	34.32	4.139	33.1	4.526	13.46	1.644	14.65	2.872	17.93	2.154	147.53	15.939
M	88	30.15	7.382	32.14	5.117	31.17	5.162	13.23	1.714	13.85	3.135	16.6	2.628	137.14	19.49
t\ P		t=5.508	p<0.001	t=4.316	p<0.001	t=3.551	p<0.001	t=1.191	p=0.234	t=2.327	p=0.020	t=4.425	p<0.001	t=5.342	p<0.001
Classroom															
1	276	32.86	6.315	33.73	4.411	33.73	4.411	13.47	1.641	14.29	2.955	17.51	2.408	144.53	17.381
2	233	34.03	6.135	34.20	4.375	34.20	4.375	13.36	1.676	14.77	2.888	17.92	2.138	147.17	16.564
t\ P		t=-2.112	p=0.035	t=-1.211	p=0.226	t=-0.512	p=0.609	t=0.725	p=0.469	t=-1.825	p=0.069	t=-2.041	p=0.042	t=-1.746	p=0.081
Place of residence															
With family	164	33.66	6.130	34.33	4.102	33.49	4.548	13.60	1.529	14.08	2.937	17.71	2.159	146.88	16.605
Dormitory/	345	33.27	6.317	33.76	4.525	32.43	4.731	13.33	1.709	14.72	2.911	17.69	2.361	145.19	17.249
t\ P		t=0.671	p=0.503	t=1.361	p=0.174	t=2.396	p=0.017	t=1.743	p=0.082	t=-2.300	p=0.022	t=0.108	p=0.914	t=1.043	p=0.297
Chronic disease status															
There is	33	36.03	6.912	35.48	4.169	33.67	4.721	13.73	1.485	14.58	3.031	18.21	2.012	151.70	16.210
No	476	33.21	6.172	33.84	4.396	32.71	4.691	13.40	1.667	14.51	2.928	17.66	2.312	145.32	17.042
t\ P		t=2.516	p=0.012	t=2.087	p=0.037	t=1.137	p=0.256	t=1.108	p=0.269	t=0.131	p=0.895	t=1.333	p=0.183	t=2.085	p=0.038
Previous communicable disease status															
There is	118	32.03	6.554	33.66	4.164	31.66	4.645	13.29	1.715	13.81	3.014	17.45	2.493	141.90	16.723
No	391	33.81	6.110	34.03	4.466	33.10	4.664	13.46	1.639	14.72	2.876	17.77	2.231	146.89	16.994
t\ P		t=-2.714	p=0.007	t=-0.800	p=0.424	t=-2.945	p=0.003	t=-0.975	p=0.330	t=-3.007	p=0.003	t=-1.342	p=0.180	t=-2.808	p=0.005

CDRAPS: Communicable Diseases Risk Awareness and Protection Scale

Table 3. Analysis of fear of contagion /transmission scale and sub-dimensions with some independent variables (n=509)

	N	Fear of contact transmission			Fear of abstract contagion			Fear of social contagion			Fear of healthcare transmission			FCTS Total		
		Mean rank	MWU/ Z	*p*	Mean± Std. Deviation	*t*	*p*	Mean rank	MWU/ Z	*p*	Mean± Std. Deviation	*t*	*p*	Mean rank	MWU/ Z	*p*
Gender																
F	421	261.83	15649.5 -2.302	0.021[a]	19.17±5.13	0.929	0.353[b]	263.54	14930.0 -2.871	0.004[a]	18.35±4.42	2.653	0.008[b]	262.60	15325.0 -2.550	0.011[a]
M	88	222.34			18.60±5.73			214.16			16.94±4.97			218.65		
Classroom																
1	276	256.43	31758.5 -.240	0.810[a]	18.73±5.22	-1.625	0.105[b]	240.25	28082.0 -2.469	0.014[a]	17.53±4.62	-3.123	0.002[b]	239.79	27956.5 -2.540	0.011[a]
2	233	253.30			19.48±5.25			272.48			18.79±4.37			273.02		
Place of residence																
With family	164	268.32	26105.5 -1.416	0.157[a]	19.00±5.16	-0.221	0.825[b]	243.81	26454.5 -1.186	0.235[a]	18.41±4.47	1.055	0.292[b]	255.32	28237.0 -0.034	0.973[a]
Dorm\at home	345	248.67			19.11±5.29			260.32			17.96±4.58			254.85		
Chronic disease status																
There is	33	306.61	6551.0 -2.094	0.036[a]	20.79±4.99	1.946	0.052[b]	275.79	7168.0 -0.842	0.400[a]	18.97±4.35	1.128	0.260[b]	292.03	6632.0 -1.496	0.135[a]
No	476	251.42			18.96±5.25			253.56			18.05±4.56			252.43		
Previous communicable disease status																
There is	118	227.62	19838 -2.319	0.020[a]	17.69±4.81	-3.313	0.001[b]	233.67	20552.0 -1.802	0.072[a]	17.26±4.46	-2.308	0.021[b]	214.74	18318.0 -3.394	0.001[a]
No	391	263.26			19.49±5.30			261.44			18.36±4.55			267.15		

Note. FCTS: Fear of Contagion/Transmission Scale. A $p < .05$ was considered statistically significant.
[a]Mann-Whitney U test.
[b]Student's t-test for independent samples

healthcare contagion (p=0.008), and mean runk score of total scale score (p=0.011). The subdimensions were statistically significant, and the Contagion/ Transmission fear was higher in women. No statistically significant difference was found in abstract fear of transmission mean score (p=0.353) (Table 3). This result shows that gender may influence the fear of contracting a communicable disease or fear of infecting others.

Regarding grade, the mean rank score of social contagion fear (p=0.014), mean score of fear of contagion in the health field (p=0.002), and mean rank score of the total scale (p=0.01) were found to be statistically significantly higher in 2nd graders. No statistically significant difference was found between the other sub-dimensions' mean ranks and mean scores (p=0.810; p=0.105) (Table 3). This indicates that students' fear of contagion and transmission of communicable diseases may increase as they advance in grade.

Place of residence did not statistically significantly differ in the total score and subscales (p=0.973; p=0.157; p=0.825; p=0.235; p=0.292). Mean rank scores for fear of contact transmission (p=0.036) were statistically significantly higher in patients with chronic diseases. No statistically significant difference was found between the other sub-dimensions' mean rank scores (p=0.052; p=0.400; p=0.260; p=0.135) (Table 3). This suggests that chronic diseases may negatively affect students' fear of contact transmission of communicable diseases.

Mean runk scores of fear of contact transmission (p=0.020), mean scores of fear of abstract transmission (p=0.001), mean scores of fear of healthcare transmission (p=0.021), and mean scores of total scale (p=0.001) were significantly higher in those who stated that they had never had a communicable disease before. Mean rank scores of fears of social transmission (p=0.072) were not significantly different (Table 3). This suggests that communicable diseases may increase the fear of contracting the disease and infecting others.

The analysis of the independent variables with the fear of contagion\transmission scale in communicable diseases are shown in Table 3.

In the correlation analysis, a positive and low-level statistically significant relationship was found between age and common life risk awareness (r=0.150; p=0.001), self-protection awareness (r=0.126; p=0.004), protection behaviors (r=0.142; p=0.001) sub-dimensions scores and total CDRAPS score (r=0.124; p=0.005) (Table 4).

There was a moderate positive correlation between symbiotic risk awareness and fear of abstract transmission (r=0.50; p<0.001), fear of healthcare transmission (r=0.50; p<0.001) and total FCTS (r=0.542; p<0.001). There was a moderate positive correlation between personal protection awareness, protection behaviors and personal contact awareness and total FCTS (r=0.470, p<0.001; r=0.475, p<0.001; r=0.410, p<0.001). There was a moderate positive correlation between total CDRAPS and fear of contact transmission (r=0.427; p<0.001), fear of abstract transmission (r=0.471; p<0.001), fear of social transmission (r=0.452; p<0.001), fear of healthcare transmission (r=0.489; p<0.001) and total FCTS (r=0.588; p<0.001) (Table 4).

There was a low positive correlation between handwashing behaviors and total FCTS (r=0.350; p<0.001) and all sub-dimensions (r=0.347, p<0.001; r=0.209, p<0.001; r=0.267, p<0.001; r=0.289, p<0.001). There was a low positive correlation between social protection awareness and total FCTS (r=0.281; p<0.001) and all sub-dimensions (r=0.172, p<0.001; r=0.283, p<0.001; r=0.223, p<0.001; r=0.187, p<0.001) (Table 4).

Table 4. Correlation between participants' age communicable diseases risk awareness and protection scale. and fear of contagion /transmission scale (n=509)

		Yas	Fear of contact transmission	Fear of abstract contagion	Fear of social contagion	Fear of healthcare transmission	FCTS Total
Age	*r*	1	0.047	0.029	0.086	0.043	0.070
	p		0.290	0.516	0.052	0.333	0.114
Common life risk awareness	*r*	0.150	0.335	0.50	0.365	0.511	0.542
	p	**0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
Self-protection awareness	*r*	0.126	0.378	0.341	0.376	0.372	0.470
	p	**0.004**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
Protection behaviors	*r*	0.142	0.366	0.357	0.386	0.368	0.475
	p	**0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
Hand washing behaviors	*r*	0.072	0.347	0.209	0.267	0.289	0.350
	p	0.103	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
Social protection awareness	*r*	0.085	0.172	0.283	0.223	0.187	0.281
	p	0.056	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
Personal contagion awareness	*r*	0.036	0.320	0.239	0.376	0.328	0.410
	p	0.412	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**
CDRAPS Total	*r*	0.124	0.427	0.471	0.452	0.489	0.588
	p	**0.005**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**

Note. CDRAPS: Communicable Diseases Risk Awareness and Protection Scale; FCTS: Fear of Contagion/Transmission Scale. Data were analyzed using the Pearson correlation coefficient (*r*). Correlation coefficients shown in bold are statistically significant at $p < .05$.

DISCUSSION

In this study, the independent variables of the students were first discussed with the communicable diseases risk awareness and prevention scale and then with the fear of contagion/transmission scale. The discussion on the independent variables of gender, grade, place of residence, chronic disease, and previous infectious disease status, which yielded significant results in the communicable

diseases risk awareness and prevention scale, is presented below.

In this study, female students' awareness of communicable disease risks and protection attitudes and behaviors were higher than male students. The fact that female students have a higher risk perception, pay more attention to protective practices, and have a higher ability to obtain information may have increased their awareness and protection behaviors, which is consistent with the results of related research (38-41). This situation points to the necessity of developing gender-sensitive intervention programs that raise awareness about communicable diseases and prevention methods for male students. Another important variable affecting risk awareness and prevention behaviors is the grade level of education.

This study found that 2nd-grade students had higher communicable disease risk awareness and protection scores than 1st-grade students. The fact that 2nd-grade students exhibit greater knowledge, experience, and responsibility awareness with increasing age is compelling. Another study finding, the positive correlation between age and awareness of communicable disease risk and protection, supports this assumption. Although there is no significant difference between the departments, this may be explained by the fact that the proportion of students in the health field is higher, and accordingly, the number of students taking health knowledge courses in the second year is higher.

Another important variable affecting the level of communicable disease risk awareness and prevention is where the students live. In this context, in the evaluation made in terms of the place of residence of the participants, it was found that prevention behaviors were higher in those who lived with their families, and social prevention awareness was higher in those who lived in dormitories or homes away from their families. The high-risk awareness and protection behaviors of students living with their families are thought to be due to the responsibilities of family members to each other and their instinct to protect each other. On the other hand, individuals who live in dormitories or at home away from their families are more careful and conscious to protect their health and to ensure the health of the community they live in, and therefore their awareness of social protection is thought to increase. The differences observed in the awareness and prevention behaviors towards communicable diseases among university students living with their families or living in dormitories/homes necessitate the development of different intervention strategies depending on the living conditions of these two groups.

Health status is another important factor affecting the level of communicable disease risk awareness and prevention. This study found that common life risk awareness, self-protection awareness and scale total score were higher in students with chronic diseases. Likely, the fact that students with chronic diseases perceive communicable diseases such as Influenza or COVID-19 as a threat to their health will be effective in increasing their risk awareness, prevention attitudes and behaviors. The literature emphasizes that patients with chronic diseases are more vulnerable to communicable diseases such as COVID-19 (42,43). The finding obtained from this study reveals that the risk perception of individuals without chronic diseases should be improved.

Another remarkable finding is that those who stated that they had never had a communicable disease had higher levels of common life risk awareness, prevention behaviors, social prevention awareness and total scale score. Students' lack of communicable diseases is thought to encourage them to pay more attention to risks and be more cautious in protecting their health. Since the level of risk awareness and prevention is low in people who have had communicable diseases, regular information and training to increase risk awareness should be provided for this group.

In this study, it was observed that the participants' mean total and subscale scores on the communicable diseases risk awareness and prevention scale were above the midpoint. Especially in recent years, global health crises such as the COVID-19 pandemic have influenced university students to develop more awareness about communicable disease risks and prevention methods (38,44). However, this study found a positive relationship between fear of transmission and communicable disease risk awareness and prevention. This finding suggests that students' e-health literacy levels are not sufficient. Low health literacy makes it difficult to access accurate information about communicable diseases, and individuals who cannot access accurate information can be expected to have a high level of fear. Consistent with this interpretation studies show that university students use electronic sources such as digital media and mass media to obtain information about disease (45,46). At the same time, studies also emphasize that many students' e-health literacy levels are insufficient (47,48). When inaccurate contradictory, inadequate or excessive health information in electronic resources is not synthesized and interpreted correctly, in short, when e-health literacy is not sufficient, it may increase threat perception and cause fear of disease transmission or infection (32).

The discussion of the independent variables of gender, class, chronic disease and previous infectious disease status, which were found to be significant in the fear of contagion/transmission scale, is given below.

In this study, female students' fear of contact transmission, fear of social transmission, fear of healthcare transmission, and fear of total transmission were higher than those of male students. Recent studies obtained similar results (13,31). This finding may be related to males' suppressing positive and negative emotions significantly more than females (49). In line with the findings, it can be said that women tend to perceive and internalize health-related threats at a higher level. Considering the high threat perception observed in female individuals, health-related intervention programs should not only be information-oriented but also have a multidimensional structure to manage fear and develop coping strategies. In addition to this gender-related difference, the grade level of the students was also found to be effective on the level of fear of contagion/transmission.

This study found that 2nd-grade students' fear of social transmission, fear of health field transmission, and total scale scores were higher. At the same time, this study found that students' awareness of communicable disease risks increased with age, and their behaviors and attitudes

towards protection from communicable diseases improved. In addition to the age factor, this can be explained by the high number of students in the field of health and the large number of students who enroll in take health information courses when they enter the second year. In addition to individual and educational variables, students' health status also plays a decisive role in their fear of contagion/transmission.

In this context, this study found that students with chronic diseases had a higher fear of contact transmission than students without chronic diseases. In a study conducted with university students, it was similarly found that the fear of contagion /transmission was high among students with chronic diseases (13). This finding is consistent with in the literature, considering that the risk of complications, morbidity and mortality increases in the case of communicable diseases in individuals with chronic diseases. Previous studies support this finding (50-52). For students with chronic diseases, psychological support to cope with fear should be provided on campuses. In addition, these individuals can be assigned roles such as health ambassadors or peer support leaders, taking into account their high-risk awareness. Such responsibilities may allow the individual to transform their fear into constructive behavior.

Another important finding was that the fear of contact transmission, fear of abstract transmission, fear of healthcare transmission and total scale score were higher in students who stated that they had never had an infectious disease before.

In a similar study, it was found that individuals who had not contracted COVID-19 expressed more fear of COVID-19. In the same study, more frequent receipt of information about the COVID-19 outbreak was associated with higher levels of fear (32). In this study, common life risk awareness, prevention behaviors, social prevention awareness, and total scale scores were higher among those who stated that they had not had a communicable disease before. Therefore, it can be said that the higher communicable disease risk awareness and protection attitudes and behaviors of the participants who stated that they had not had a communicable disease before increased their fear of infection.

In this study, it was observed that the total and subscale mean scores of the fear of contagion/transmission scale were above the midpoint. Similar results were found in studies conducted with university students (13,31). In a study conducted in a different group (adults) Contagion/ Transmission fear was found to be above the midpoint (50). This finding shows that the participants were worried about themselves and others. The recent coronavirus pandemic is thought to have significantly impacted this result. The literature reported that people feared dangerous health consequences for themselves and their family and friends during the COVID-19 pandemic (53-55).

Strengths and limitations of the research: This is the first study evaluating the relationship between risk awareness and prevention levels of communicable diseases and the fear of contagion/transmission in university students. The limited number of studies on the subject in literature increases the originality and scientific contribution of this study. In addition, the fact that the study included university students, an age group that can increase social sensitivity against communicable diseases, is important in terms of public health.

However, the study also has some limitations. Since the sample was selected from a limited number of departments of a particular university, the results cannot be generalized to all university students. The self-report method of data collection may bring possible biases such as social desirability or misrepresentation. Finally, the limited literature on fear of contagion limited the interpretation and discussion of the findings in a broader context. Future research could expand the study by including universities in different regions and undergraduate students.

CONCLUSION

This study will provide information on both theoretical knowledge and public health practices by revealing the relationship between risk awareness of communicable diseases, the level of protection and fear of contagion/transmission. The findings showed that the level of awareness and protection was higher, especially in female students, second-year students, students living at home or in a dormitory, students with chronic diseases and students who did not have infectious diseases. At the same time, the fear of contamination was similarly higher in female students, second-grade students, students with chronic diseases and students who did not have infectious diseases.

In the light of these findings, it is recommended that personal experience, health status, and demographic factors be taken into consideration in interventions planned to increase the level of individual risk perception, as well as prevention attitudes and behaviors in communicable diseases. At the same time, it is important to pay attention to the same factors in the interventions to be carried out in order to control and reduce the fears of contracting infectious diseases and infecting others.

The existence of a positive correlation between fear of contagion/transmission and risk awareness and prevention behaviors suggests that interventions in any of these areas may also affect the other. For example, all kinds of interventions, such as public health campaigns and public service announcements to raise awareness about communicable diseases in the community, can also be expected to reduce the level of fear of infectious diseases. For this reason, it should be taken into consideration that the interventions to be made may not only be limited to the targeted area but may also have positive effects on other variables.

The main reasons for including university students in the study are that they are in a period when their health-related behaviors are shaped, they are in a critical transition period with high levels of social interaction, and they are the adult individuals of the future. This age group plays an important role both in controlling the spread of communicable diseases and in spreading prevention behaviors throughout society. Therefore, the findings obtained may provide a scientific basis for planning preventive health services and creating awareness programs for the young population.

In conclusion, this study provides a theoretical contribution by demonstrating how risk awareness and prevention behaviors against infectious diseases interact with the fear of infection and provides guidance in the

development of preventive public health services against infectious diseases.

It is recommended that future research be conducted with participants from different universities with more diverse demographic characteristics to overcome the limitations of this study. Going beyond the cross-sectional design and monitoring changes over time with longitudinal studies will provide a healthier evaluation of causal relationships between variables. In addition, conducting mixed-method studies that use qualitative methods as well as quantitative data, especially addressing how individuals experience the fear of contamination and how this reflects on their awareness, behaviors and attitudes, will contribute to a multidimensional understanding of the issue.

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