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Does Fatalism Affect Cancer Screenings?

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ABSTRACT Objective: This study aimed to identify the effect of fatalist beliefs on the attitude toward cancer screening. **Material and Methods:** This cross-sectional study design had a research population comprising individuals residing in Türkiye and aged ≥18 years; the research sample comprised 1,516 individuals who satisfied the inclusion criteria of this study. We used the personal information form, the Fatalism Scale, and the Attitude Scale for Cancer Screening-Short Form for this study. **Results:** The results revealed statistically significant differences in the means of the participants' Fatalism Scale scores for the following variables: education level, income level, place of residence, profession, and perceived state of health ($p<0.05$). Statistically significant differences were observed in the means of the scores obtained by the participants from the Attitude Scale for Cancer Screening-Short Form for the following variables: gender, education level, income level, and cigarette smoking status ($p<0.05$). These findings showed that fatalism had a statistically significant negative relationship with the cancer screening attitude ($t=-2.171$, $p<0.05$). **Conclusion:** It was ascertained that the participants had a positive attitude toward cancer screening and medium-level fatalism perception, and increased levels of fatalism perception negatively affected the attitude toward cancer screening.

Keywords: Cancer; cancer screening; fatalism

Cancer is one of the most important causes of morbidity and mortality across the world.[1] The World Health Organization stated that >19.3 million people were diagnosed with cancer and >10 million people lost their lives due to cancer worldwide in 2020.[2] Cancer should be diagnosed at the early stage using screening programs at individual and societal levels to minimize the number of deaths.[3] The individuals diagnosed with cancer at an early stage had a higher likelihood of full recovery, whereas those diagnosed at an advanced stage had a lower chance of survival.[4] Cancer screening involves clinical tests and examinations that are performed before the emergence of signs and symptoms, primarily for individuals at risk.[5] The purpose of cancer screening is to obtain an early cancer diagnosis or identify precancerous lesions either prior to the appearance of symptoms or before it reaches the advanced stage to initiate early intervention. The participation of individuals in cancer screening will contribute to the enhancement of treatment effectiveness and reduction of incidence and mortality. Numerous countries conduct screening programs for cervical, breast, and colorectal cancers.[6] A study states that cervical, breast and colorectal cancer screenings reduce cancer death rates and are effective in identifying new cancer cases.[7]

An individual's physical, spiritual, and social health; disease perception; social support; and cultural factors, such as religious and fatalist attitude level, affect the use of early diagnosis services.[8] Fatalism is defined as the belief that fate determines all events and particularly, the acts and situations that form an individual's life. Fatalism, in the area of health, is expressed as the negative or pessimistic attitude toward protective health services and disease outcomes. Therefore, fatalism is identified as a potential psychosocial barrier to the prevention and early diagnosis of cancer. This belief can lead to the infrequent use of early diagnosis services.[9] This study

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aimed to identify the effect of fatalist beliefs on the attitude toward cancer screening.

MATERIAL AND METHODS

RESEARCH TYPE AND PERIOD

This research was a cross-sectional study design that was conducted from April to June 2021.

RESEARCH POPULATION AND SAMPLE

The research population comprised of individuals living in Türkiye and aged ≥18 years. No sample selection method was used for the research, and hence, a total of 1,516 individuals aged ≥18 years with no history of cancer, adept in using social media, and comfortable answering questions (cognitive, visual, and orthopedic disorders) were included in the research sample. The sample of the study was determined using post hoc power analysis as it was impossible to determine the number of the population. The power analysis revealed that the research had 99% power at a confidence interval of 95% and a significance level of 5%.[10]

DATA COLLECTION

The data collection forms used in the research were posted online using Google form (Google, America). The research used the personal information form, the Fatalism Scale, and the Attitude Scale for Cancer Screening-Short Form as data collection tools.

Personal Information Form

The form prepared by the researchers comprised questions addressing the individuals' descriptive characteristics (age, gender, education level, profession, marital status, place of residence, income level, statuses of having a child, cigarette smoking, possessing a chronic disease, and perceived health).

Fatalism Scale

The validity and reliability studies for the Fatalism Scale developed by Shen et al. in 2009 were performed in Türkiye by Kızılarslan and Yıldız in 2020.[11,12] It was designed as a five-point Likert-type scale and included 20 items. The scale comprised three subscale, namely predetermination, luck, and pessimism. The total score obtained from all items was divided by the number of items, and the resulting score was used for evaluation. Thus, the minimum and maximum scores obtained from the scale were successively 1 and 5 points, and a high score indicated a high level fatalism in the respondent. The Cronbach's alpha (α) coefficient of the scale was 0.84 for the whole Fatalism Scale, 0.70 for the predetermination subscale, 0.90 for the luck subscale, and 0.77 for the pessimism subscale.[12] In this study, Cronbach's α coefficient was 0.86 for the whole Fatalism Scale, 0.80 for the predetermination subscale, 0.87 for the luck subscale, and 0.79 for the pessimism subscale.

Attitude Scale for Cancer Screening-Short Form

Yıldırım Öztürk et al. developed the scale in 2020 and designed it as a five-point Likert-type scale, with 15 items and no subscale. The overall score was calculated by reverse coding six negatively-worded items. No cutoff point was specified for the scale, and the minimum and maximum scores to be obtained from the scale were 15 and 75 points, respectively. The respondent has a negative attitude toward cancer screening if the score was closer to 15, and the respondent has a positive attitude toward cancer screening if the score was closer to 75. The Cronbach's α value of the scale was 0.97, and it was 0.83 in this study.[13]

DATA ANALYSIS

The research data were analyzed with the IBM SPSS Statistics for Windows, Version 25.0 (Armonk, New York: IBM Corp). Data were presented as numbers, percentages, minimum and maximum values, arithmetic means, and standard deviations. The independent samples t-test, one-way analysis of variance, and the simple linear regression model were utilized for the normally distributed data. The least significant difference (LSD) test was employed for advanced analysis. The coefficients of skewness and kurtosis were used to evaluate the normal distribution of the data. A p value <0.05 was considered statistically significant.

ETHICAL ASPECT OF THE RESEARCH

The research was approved by the ethics committee of a Erzincan Binali Yıldırım University Health and Sports Sciences Ethics Committee in Türkiye (date:

March 31, 2021, no: 04/38). Informed consent was obtained from all participants, and the privacy and confidentiality of the participants were maintained throughout the study. The study was conducted according to the principles of the Declaration of Helsinki.

RESULTS

Table 1 shows that 44.7% of the participants were aged 18-28 years, 71.4% were women, 52.5% were single, 73.3% were university graduates, 52.5% had no children, and 31.8% were students. Furthermore, most participants indicated that their income was equaling their expenses; they resided in the province center, were nonsmokers, had no chronic disease, and perceived themselves as extremely healthy.

The significance levels of the participants according to the age variable for the Fatalism Scale (p=0.218) and its three subscales, i.e., predetermination (p=0.016), luck (p=0.021), and pessimism (p=0.002); Attitude Scale for Cancer Screening-Short Form (p=0.559) were determined. LSD analysis showed that compared with the participants aged ≥51 years, those aged 18-28, 29-39, and 40-50 years had a higher mean score in the predetermination subscale. Those aged ≥51 years had a higher average score in luck than those in the other groups. The average score of participants between the ages of 18-28 years had a higher score for the pessimism subscale than those in the other groups (Table 1).

For the gender variable, there were significant differences in the Attitude Scale for Cancer Screening-Short Form (p=0.001) and predetermination subscale of the Fatalism Scale (p=0.007), with women obtaining higher mean scores than men (Table 1).

For the marital status variable, the single participants obtained a higher mean score than the married participants on the pessimism subscale of the Fatalism Scale (p=0.000) (Table 1).

For education level, participants who were just literate (A person who has not studied in any educational institution and can only read and write) obtained higher mean scores from the overall Fatalism Scale (p=0.000) and all its subscales, i.e., predetermination (p=0.010), luck (p=0.000), and pessimism (p=0.000), and the participants who were university graduates obtained a higher mean score from the Attitude Scale for Cancer Screening-Short Form (p=0.005) (Table 1).

For the place of residence variable, participants living in rural areas obtained a significantly higher mean score from the overall Fatalism Scale (p=0.048) and the pessimism subscale (p=0.001) (Table 1).

For the income level variable, participants with income equaling expenses and those with income below expenses obtained higher mean scores from the overall Fatalism Scale (p=0.000), the luck (p=0.000) and pessimism subscales (p=0.000), and lower mean scores from the Attitude Scale for Cancer Screening-Short Form (p=0.014) (Table 1).

For the profession variable, housewives and civil servants obtained significantly higher mean scores from the overall Fatalism Scale (p=0.000), including its three subscales: predetermination (p=0.000), luck (p=0.031), and pessimism (p=0.000) (Table 1).

The participants with children obtained a higher mean score from the luck subscale (p=0.034), and the participants with no children obtained a higher mean score from the pessimism subscale (p=0.00) (Table 1).

For the smoking variable, compared with smokers, nonsmokers had higher mean scores from the Attitude Scale for Cancer Screening-Short Form (p=0.045). Participants who quit smoking had higher mean scores in the luck subscale of the Fatalism Scale (p=0.026) than those who were smokers (Table 1).

The participants who suffered from chronic diseases had higher mean scores in the luck (p=0.036) and pessimism (p=0.006) subscales of the Fatality Scale (Table 1).

For the perceived health status variable, participants who perceived themselves as moderately healthy or unhealthy got higher scores from the Fatalism Scale (p=0.000) and all three subscales: predetermination (p=0.021), luck (p=0.000), and pessimism (p=0.000) (Table 1).

The mean scores obtained by the participants from the Attitude Scale for Cancer Screening-Short Form and the overall Fatalism Scale were 62.68±10.77 and

TABLE 1: Distribution of the breakdown of the mean scores obtained by the participants from the Attitude Scale for Cancer Screening-Short Form and the Fatalism Scale and all its subscales based on personal characteristics.

			Attitude Scale for Cancer Screening-Short Form	Fatalism Scale			
				Predetermination	Luck	Pessimism	Overall scale
	n	%	X±SD	X±SD	X±SD	X±SD	X±SD
Age*							
18-28 years	678	44.7	62.92±10.30	2.69±0.72	1.71±0.80	2.57±0.81	2.46±0.59
29-39 years	391	25.8	66.88±10.78	2.69±0.78	1.76±0.81	2.39±0.80	2.41±0.63
40-50 years	283	18.7	62.43±11.51	2.72±0.81	1.80±0.75	2.46±0.77	2.46±0.64
51 years or above	164	10.8	61.67±11.34	2.50±0.72	1.92±0.86	2.43±0.81	2.36±0.62
Test and statistical significance			F=0.688	F=3.437	F=3.248	F=5.075	F=1.480
			p=0.559	**p=0.016**	**p=0.021**	**p=0.002**	p=0.218
Gender							
Female	1082	71.4	63.27±10.43	2.71±0.71	1.76±0.76	2.50±0.78	2.46±0.57
Male	434	28.6	61.21±11.44	2.59±0.85	1.78±0.89	2.46±0.87	2.39±0.71
Test and statistical significance			t=-3.387	t=2.685	t=-0.589	t=0.988	t=1.891
			p=0.001	**p=0.007**	p=0.556	p=0.323	p=0.059
Marital status							
Married	751	47.5	62.60±10.89	2.69±0.77	1.80±0.80	2.39±0.79	2.42±0.62
Single	765	52.5	62.76±10.66	2.67±0.74	1.73±0.80	2.59±0.81	2.46±0.60
Test and statistical significance			t=-0.289	t=0.548	t=1.604	t=-4.881	t=-1.150
			p=0.772	p=0.584	p=0.109	**p=0.000**	p=0.250
Education level*							
Literate	26	1.7	57.50±12.66	3.05±0.87	2.34±1.11	3.28±0.79	2.98±0.72
Primary school	85	5.6	60.22±11.17	2.64±0.74	2.00±0.80	2.56±0.77	2.49±0.61
High school	295	19.4	62.25±10.97	2.59±0.79	1.76±0.79	2.48±0.79	2.39±0.62
University	1110	73.3	63.11±10.59	2.70±0.74	1.73±0.79	2.47±0.80	2.43±0.60
Test and statistical significance			F=4.257	F=3.791	F=7.622	F=8.861	F=7.526
			p=0.005	**p=0.010**	**p=0.000**	**p=0.000**	**p=0.000**
Place of residence*							
Village	143	9.4	61.75±10.97	2.74±0.68	1.84±0.93	2.71±0.78	2.55±0.56
District	379	25.0	62.39±10.80	2.68±0.75	1.77±0.82	2.52±0.78	2.45±0.60
Province center	994	65.6	62.93±10.73	2.67±0.77	1.75±0.77	2.45±0.81	2.42±0.62
Test and statistical significance			F=0.925	F=0.696	F=0.619	F=7.028	F=3.042
			p=0.397	p=0.539	p=0.499	**p=0.001**	**p=0.048**
Income level*							
Income above expenses	362	23.9	63.25±10.77	2.65±0.79	1.70±0.81	2.29±0.78	2.35±0.62
Income equaling expenses	1057	69.7	62.76±10.52	2.69±0.75	1.76±0.76	2.52±0.79	2.45±0.60
Income below expenses	97	6.4	59.71±12.92	2.67±0.71	2.09±1.10	2.89±0.85	2.62±0.62
Test and statistical significance			F=4.248	F=0.452	F=9.026	F=24.547	F=8.199
			p=0.014	p=0.636	**p=0.000**	**p=0.000**	**p=0.000**

TABLE 1: Distribution of the breakdown of the mean scores obtained by the participants from the Attitude Scale for Cancer Screening-Short Form and the Fatalism Scale and all its subscales based on personal characteristics *(continued)*.

			Attitude Scale for Cancer Screening-Short Form	Fatalism Scale			
				Predetermination	Luck	Pessimism	Overall scale
	n	%	X±SD	X±SD	X±SD	X±SD	X±SD
Profession*							
Housewife	201	13.3	62.66±10.68	2.74±0.70	1.88±0.80	2.58±0.80	2.52±0.57
Civil servant	480	31.7	63.03±10.59	2.77±0.74	1.78±0.80	2.39±0.78	2.46±0.60
Worker	146	9.6	61.28±11.48	2.48±0.88	1.77±0.87	2.38±0.83	2.31±0.70
Retired	84	5.5	61.47±12.16	2.46±0.62	1.78±0.71	2.27±0.69	2.27±0.52
Self-employed	123	8.1	62.31±11.05	2.48±0.87	1.57±0.74	2.38±0.89	2.27±0.73
Student	482	31.8	63.08±10.43	2.71±0.72	1.74±0.80	2.65±0.79	2.50±0.57
Test and statistical significance			F=0.962	F=7.065	F=2.461	F=7.916	F=6.259
			p=0.440	**p=0.000**	**p=0.031**	**p=0.000**	**p=0.000**
Having any child							
Yes	720	47.5	62.44±11.05	2.69±0.77	1.81±0.80	2.41±0.78	2.43±0.62
No	796	52.5	62.90±10.50	2.66±0.75	1.72±0.80	2.56±0.82	2.44±0.61
Test and statistical significance			t=-0.837	t=0.822	t=2.124	t=-3.550	t=-0.331
			p=0.403	p=0.404	**p=0.034**	**p=0.000**	p=0.741
Cigarette smoking*							
No	925	61.1	63.12±10.31	2.71±0.74	1.72±0.76	2.47±0.76	2.44±0.58
I gave up smoking	228	15.0	62.84±11.18	2.63±0.77	1.86±0.88	2.56±0.83	2.45±0.67
Yes	363	23.9	61.47±11.55	2.63±0.80	1.81±0.83	2.49±0.89	2.42±0.66
Test and statistical significance			F=3.111	F=2.095	F=3.657	F=1.095	F=0.214
			p=0.045	p=0.123	**p=0.026**	p=0.335	p=0.807
Having any chronic disease							
Yes	266	17.5	63.13±11.16	2.68±0.77	1.86±0.79	2.61±0.85	2.50±0.62
No	1250	82.5	62.59±10.68	2.68±0.75	1.74±0.80	2.46±0.79	2.43±0.61
Test and statistical significance			t=0.754	t=0.177	t=2.099	t=2.732	t=1.731
			p=0.451	p=0.860	**p=0.036**	**p=0.006**	p=0.084
Perceived state of health*							
Highly healthy	770	50.8	62.44±10.99	2.63±0.75	1.69±0.77	2.34±0.76	2.36±0.59
Moderately healthy	716	47.2	62.97±10.50	2.71±0.75	1.83±0.81	2.63±0.80	2.51±0.61
Unhealthy	30	2.0	61.90±11.29	2.95±1.08	2.12±1.16	3.04±1.04	2.81±0.96
Test and statistical significance			F=0.527	F=3.880	F=8.746	F=33.428	F=17.801
			p=0.590	**p=0.021**	**p=0.000**	**p=0.000**	**p=0.000**

* It indicates statistically significant differences in the group using the analysis of variance test; F: One-way analysis of variance; t: Independent samples t-test, p<0.05; SD: Standard deviation.

TABLE 2: Mean scores obtained by the participants from the Attitude Scale for Cancer Screening-Short Form and the Fatalism Scale and all its subscales.

	Minimum-maximum	X±SD
Attitude Scale for Cancer Screening-Short Form	24-74	62.68±10.77
Fatalism Scale and its dimensions		
Predetermination dimension	1-5	2.68±0.76
Luck dimension	1-5	1.76±0.80
Pessimism dimension	1-5	2.49±0.80
Overall scale	1-4.95	2.44±0.61

SD: Standard deviation.

2.44±0.61 points, respectively. Moreover, the mean scores obtained by the participants from the predetermination, luck, and pessimism subscales of the Fatalism Scale were 2.68±0.76, 1.76±0.80, and 2.49±0.80 points, respectively (Table 2).

Upon examining the p value corresponding to the F value, it is observed that the simple linear regression model developed under the research was statistically significant (F=4.712; p<0.05). Upon reviewing the beta coefficient, t value, and the significance level for the independent variable, it is ascertained that fatalism had a statistically significant effect on the Attitude Scale for Cancer Screening-Short Form (t=-2.171, p<0.05). An increase of one unit in the variable of fatalism is associated with a decrease of 0.974 units in the cancer screening attitude (β=-0.974). The Durbin Watson (DW) statistic had a value between 1.5 and 2.5 (DW=1.820), indicating positive autocorrelation in the linear regression model (Table 3).

DISCUSSION

It is emphasized that fatalism can affect attitudes and behaviors toward early diagnosis.[14] We aimed to identify the effect of fatalist beliefs on the attitude toward cancer screening in Turkish society. Initially, our research showed that participants exhibited a positive attitude toward cancer screening and had medium-level fatalism perception, corroborating with other studies.[13,15-17]

We observed that the increase in the fatalism perception negatively affected the attitude toward cancer screening, consistent with numerous other studies.[9,14,18] It has been proposed that fatalist individuals exhibit a negative attitude toward screening tests due to the belief that health problems, which may develop in association with cancer, cannot be prevented with screening or treatment.[19] Age had no statistically significant relationship between fatalism and the attitude toward cancer screening, similar to previous studies.[16,18,20] In contrast, some studies revealed that age affected the attitude toward cancer screening.[13,15] We believe that this research result was owing to the age of the participants in the range of 18-28 years, and cancer screening tests are usually conducted on individuals aged ≥30 years in Türkiye.

Women exhibited a more positive attitude toward cancer screening; a similar observation was noted in a study where women participated more in cancer screening; however, certain studies demonstrated that men exhibited a more positive attitude toward cancer screening.[13,15,21] Our study revealed no statistically significant difference in the fatalism perception based on gender. Some studies have shown that gender does affect fatalism perception, with women possessing higher levels of fatalism perception.[17,22]

Participants with low-level education had higher levels of fatalism perception and, thus, a negative attitude toward cancer screening, consistent with previous studies.[9,17,20] A systematic review showed that less educated participants showed decreased participation in cancer screening programs.[21]

TABLE 3: Simple linear regression analysis to determine the relationship between the Attitude Scale for Cancer Screening-Short Form and the Fatalism Scale.

	Beta	Standard error	Standard beta	t value	p value
Constant	65.065	1.130	-	57.582	**0.000**
Fatalism Scale	-0.974	0.448	-0.56	-2.171	**0.030**

F=4.712; p=0.030; R2=0.003.

Participants who resided in rural areas had higher levels of fatalism perception. A study demonstrated that the place of residence had no statistically significant relationship with fatalism perception, and individuals residing in rural areas had higher levels of fatalism perception.[23] Furthermore, we observed that the place of residence had no statistically significant difference in the attitude toward cancer screening; however, participants living in the province center exhibited a more positive attitude toward cancer screening. Another study also identified that participants living in the province center actively participated in the cancer screening programs.[15] A relevant study indicated that individuals living in rural areas lack adequate access to health services compared with province centers, which could have contributed to this attitude toward cancer screening.[24]

Participants with income equaling expenses and those with income below expenses had higher levels of fatalism perception and a more negative attitude toward cancer screening. Numerous studies have proposed that individuals with low socioeconomic status had higher levels of fatalism perception.[9,17] Similarly, a systematic review showed that individuals with low-level income participated less in the cancer screening.[21]

Our study revealed that housewives and civil servants had higher levels of fatalism perception. A study revealed no statistically significant difference in the fatalism perception based on profession, and the individuals who did not work had higher levels of fatalism perception.[25]

Participants who were nonsmokers and those who quit smoking had a more positive attitude toward cancer screening. A systematic review revealed that individuals who quit smoking actively participated in cancer screening programs.[21] In contrast, another study showed that smokers participated more frequently in cancer screening programs.[13,15]

The presence of a chronic disease had no statistically significant difference in fatalism perception and attitude toward cancer screening. Similarly, another study revealed no statistically significant relationship between comorbidities and fatalism.[17] However, another study emphasized that individuals with chronic diseases possessed highly statistically significant levels of fatalism perception.[25] A study conducted on cancer screening revealed that chronic diseases did not affect the attitude toward cancer screening.[13]

We observed that participants who perceived themselves as unhealthy and those who perceived themselves as moderately healthy had higher levels of fatalism perception. In contrast to this finding, another study revealed that individuals who had a fatalism perception had higher levels of subjective well-being than those who did not believe in fate.[26]

CONCLUSION

It was identified that the participants had a positive attitude toward cancer screening and medium-level fatalism perception, and an increase in fatalism perception level negatively impacted the attitude toward cancer screening. To ensure that healthcare professionals can improve the attitude of society toward cancer screening and minimize the level of fatalism perception, education programs should be organized. It is also important to follow up to ensure individuals develop a positive change in attitude and behavior following the education program. The education programs should be implemented for individuals of advanced age, women, those with low levels of education and income, rural area residents, and those who perceive themselves as unhealthy.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

All authors contributed equally while this study preparing.

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