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The Relationship Between Breast Cancer Fear and Fatalism Perceptions of Women and Their Breast Cancer Early Detection Behaviours

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ABSTRACT

Introduction: Breast cancer is the most common cancer in women, and early detection is vital for reducing mortality. Psychological and cultural factors like fear and fatalism can limit screening participation.

Objectives: This study examined how women's fear and fatalism levels affect their early detection behaviours and the relationships among these variables.

Methods: A descriptive and cross-sectional design was used. The study was conducted between 1 November 2024 and 25 February 2025, with 433 women registered at Family Health Centres. Data were collected using the 'Personal Information Form', 'Breast Cancer Fear Scale' and 'Breast Cancer Fatalism Scale'. Analyses included descriptive statistics, *t*-test, ANOVA, post hoc (Tukey, LSD), Pearson correlation and linear regression tests.

Results: Among the participants, 52.4% performed breast self-examination, 25.4% had a clinical breast examination and 26.2% of women over 40 had a mammogram. Age, education, marital and employment status, having children and willingness to learn about breast cancer significantly affected fatalism ($p < 0.05$). Employment status, having children and willingness to learn significantly affected fear levels ($p < 0.05$). Early detection practices were not significantly associated with fear or fatalism scores ($p > 0.05$). Regression analysis revealed that fatalism ($B = 0.308$, $p = 0.036$) and willingness to learn ($B = 3.343$, $p < 0.001$) significantly predicted breast cancer fear.

Conclusion: Enhancing knowledge and health literacy, along with improving access to screening, is essential for increasing screening behaviours. Regression analysis revealed that fatalism significantly predicted breast cancer fear. Increasing fatalistic beliefs may intensify fear responses and potentially contribute to avoidance of early detection behaviours. Therefore, addressing fatalistic perceptions may help reduce fear and promote screening participation. Health professionals should actively guide women, with a focus on those experiencing high fear and fatalism, as reducing these factors can support greater participation in early breast cancer detection. Health professionals should actively guide women, with a focus on those experiencing high fear and fatalism, as reducing these factors can support greater participation in early breast cancer detection.

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1 | Introduction

Breast cancer is globally the most commonly diagnosed type of cancer and the type that causes death mostly in women [1]. Recent global estimates continue to show a rising burden of breast cancer, particularly in low- and middle-income countries, where disparities in early detection and access to screening remain significant [2, 3]. These disparities highlight the importance of understanding sociocultural and psychological determinants of screening behaviours. In 2022, 2,296,840 women were diagnosed with breast cancer in the world [4]. In Turkey, the incidence of breast cancer in women was 25.9% and it was the most common type of cancer in women [5].

The development of breast cancer is associated with a large number of risk factors, including genetic and hereditary predisposition [6]. These risk factors include advanced age, female gender, early menarche, late menopause, never having given birth, not breastfeeding, a family history of breast cancer, dense breast tissue, hormone therapy and radiation therapy [7]. Signs and symptoms of breast cancer include breast pain, lump, nipple discharge, breast swelling and abnormalities in the nipple and areola [8].

Although breast cancer is recognised as a significant public health issue, it is possible to reduce the risk through various preventive measures [9–11]. American Cancer Society (ACS) states that primary, secondary and tertiary prevention strategies play a major role in reducing the incidence and mortality of breast cancer [12]. In this context, the development of preventive health services contributes not only to reducing mortality and morbidity rates but also to reducing public health expenditures [13].

In breast cancer, regular screening is of critical importance for early detection, effective treatment planning, reducing morbidity and mortality, improving quality of life, extending life expectancy and preventing potential psychosocial issues [14, 15]. For early detection, women aged 20 and over are recommended to perform a breast self-examination (BSE) every month, women aged 20–40 are recommended to have a clinical breast examination (CBE) every 2 years, and women aged 40 and over are recommended to have a CBE once a year and a mammogram every 2 years [16].

However, although early detection and screening methods make significant contributions to the detection of breast cancer, many women do not undergo regular screening. The main reasons for not following screening recommendations include lack of information, neglect, embarrassment, psychosocial factors, fear and fatalism [17, 18].

It is stated that fear of breast cancer is an important factor influencing screening behaviours of individuals [19]. Fear related to breast cancer screening has been conceptualised as a multi-dimensional construct, including generalised cancer fear, fear of screening components (e.g., pain and radiation) and fear of screening outcomes (e.g., diagnosis and treatment consequences) [20]. These distinct dimensions may differentially influence women's engagement in early detection behaviours. Fear may act as a psychological barrier to health-seeking behaviours or from making the right decisions. The concern that they may be diagnosed with cancer as a result of screening may deter individuals from undergoing this process [21]. Some studies conducted in Turkey have shown that women delay or completely avoid early detection behaviours due to fear [22, 23].

Apart from fear, another important factor influencing screening behaviour is the perception of fatalism. Fatalism reduces the tendency of individuals to seek information and take protective measures [24]. Tsai and Wang (2023) found a significant relationship between breast cancer fatalism and lower cancer screening participation and fewer preventive behaviours [25]. Similarly, a recent study conducted in Türkiye reported that higher breast cancer fatalism was associated with lower participation in early diagnosis behaviours and was significantly related to health belief constructs [26].

Although breast cancer can be diagnosed at an early stage and effectively treated through early detection and screening programmes, fear levels and fatalistic perceptions of women can negatively affect the rate of participation in these practices [16]. Therefore, the present study aims to determine the relationship between women's levels of fear regarding breast cancer and their fatalistic perceptions with early detection behaviours, as well as the relationship between these variables.

The conceptual foundation of this study can be framed within established behavioural theories. Research applying the health belief model (HBM) to breast cancer screening has demonstrated that perceived barriers and emotional responses significantly influence participation in mammography programmes [27]. Similarly, studies conducted in Türkiye using the HBM have identified perceived barriers as the strongest predictors of mammography behaviour and have shown that modifying health beliefs significantly increases screening participation [28]. In addition, behavioural change theories such as the trans-theoretical model emphasise that emotional and cognitive factors play a critical role in facilitating or hindering progression toward preventive health behaviours [29].

Establishing this relationship may contribute to the development of early detection behaviours among women and increase participation in breast cancer screening programmes. A review of the literature showed that there are limited number of studies examining the effects of women's fear of breast cancer and fatalistic beliefs on early detection behaviours for breast cancer. The present study contributes to the limited body of literature examining.

2 | Materials and Methods

2.1 | Type of Research

The present study was designed as a descriptive and cross-sectional study. A cross-sectional design was considered appropriate because it enables the examination of relationships between variables at a single point in time within a defined population. This design is commonly used in public health research to explore associations between psychosocial factors and health behaviours. In the present study, this approach allowed for the simultaneous assessment of women's breast cancer fear levels, fatalism perceptions and early detection behaviours.

2.2 | Place and Time of Research

The present study was conducted at Artukbey and Yenisehir Family Health Centres (FHCs) in the Artuklu district of Mardin province between 1 November 2024 and 28 February 2025. These centres were selected due to their accessibility and provision of

services to a large population with diverse socio-demographic characteristics. According to SEDI (Socioeconomic Development Index) data for 2017, Mardin province ranks at the sixth level of development, while Artuklu district has relatively higher socioeconomic indicators [30]. In this context, the selection of the study area ensured the representation of different socioeconomic groups and increased the generalisability of the results.

Women attending these FHC typically presented for routine primary care services such as vaccination, chronic disease follow-up, reproductive health consultations and general medical examinations. This provided access to women from various age groups and socio-demographic backgrounds. Data collection was conducted during regular working hours of the centres to ensure systematic access to eligible participants. The selection of these centres was also based on feasibility, accessibility and the high patient volume, which facilitated the recruitment of an adequate sample size within the planned timeframe.

2.3 | Population and Sample

Study population consisted of 10,052 women aged 20–69 who were literate, willing to participate in the study and registered at the Artukbey and Yenisehir FHCs in the Artuklu district of Mardin province. The sample size was found to be at least 371 individuals, based on a known population sample calculation with 95% confidence and 5% margin of error. Non-probability sampling methods were used in the study, and the study was completed by collecting data from a total of 433 women. A non-probability sampling approach was preferred due to feasibility considerations and the practical constraints of conducting the study within a limited timeframe. Women who met the inclusion criteria and attended the selected FHC during the data collection period were consecutively invited to participate. This approach is frequently used in cross-sectional public health studies conducted in primary care settings and allows for the recruitment of participants who are readily accessible. In the post hoc *t*-test analysis performed with the G*Power 3.1.9.7 program, a power value of the study was calculated as 100% with an effect size of 0.5, a 5% error level and 433 participants [31]. This result indicates that the sample size was statistically sufficient to detect medium effect sizes at the specified significance level. The high statistical power strengthens the reliability of the findings and reduces the probability of type II error. Therefore, the final sample of 433 participants was considered adequate to examine the relationships between the main study variables.

Inclusion criteria were set as volunteering to participate in the study, presenting to Artukbey and Yenisehir Family Health Centres during the study period, being literate, having no previous diagnosis of cancer and being a woman aged between 20 and 69. Individuals who did not meet these criteria were not included in the study.

2.4 | Data Collection Tools

The data were collected by using ‘Personal Information Form’ including the socio-demographic information of the participants, which was prepared by the researchers, ‘Breast Cancer Fear Scale’ developed by Seçginli in 2012 and ‘Breast Cancer Fatalism Scale’ adapted by Ersin et al. in 2018.

2.4.1 | Personal Information Form

The form consists of a total of 20 questions regarding the participants’ socio-demographic characteristics such as age, educational status, marital status, occupation, income level, number of children, and their BSE, CBE and mammography status [18, 23, 32].

2.4.2 | Breast Cancer Fear Scale

It is an 8-item 5 Likert-type scale developed by Victoria Champion et al. The Cronbach alpha value of the scale is 0.91 [33]. Turkish adaptation and reliability-validity study was conducted by Seçginli [34]. The Cronbach alpha coefficient of the Turkish version is 0.90, with an item-total score correlation of 0.60. The Cronbach alpha coefficient of the present study is 0.81. The score range on the scale is 8–40, with 8–15 points indicating low anxiety, 16–23 points indicating moderate anxiety and 24–40 points indicating high anxiety.

2.4.3 | Breast Cancer Fatalism Scale

It was first developed by Powe in 1999 and later reduced to 11 items by Mayo et al. (2001) [35, 36]. The revised 11-item form was used in the present study. The possible total score of the scale, which is answered as Yes (1 point)/No (0 points), ranges between 0 and 11. A high score indicates a high perception of fatalism. Cronbach’s alpha coefficient of the original scale is 0.89. Turkish adaptation study was conducted by Ersin et al., and Cronbach alpha value was found as 0.79. The Cronbach alpha coefficient of the present study is 0.91 [37].

2.5 | Data Collection Method

During the research process, women who referred to Artukbey and Yenisehir Family Health Centres and met the participation criteria were informed about the purpose and scope of the study. Written informed consent was obtained from all participants prior to data collection. Data were collected through face-to-face interviews conducted in a private room within the Family Health Centres to ensure confidentiality and minimise external distractions.

The researcher personally administered all questionnaires in a standardised order, beginning with the Personal Information Form, followed by the Breast Cancer Fear Scale and the Breast Cancer Fatalism Scale. Conducting the interviews face-to-face allowed clarification of any misunderstood questions and ensured completeness of responses. Each interview lasted approximately 15–20 min. Participants were informed that there were no right or wrong answers and that their responses would remain anonymous in order to reduce social desirability bias.

2.6 | Analysis of Data

The data were analysed by using IBM SPSS Statistics for Windows, Version 22.0 program. Descriptive statistics of frequency, percentage, mean and standard deviation were calculated. Normality distribution was assessed by using Kolmogorov–Smirnov and Shapiro–Wilk tests and kurtosis-skewness values, and the distribution was found to be normal. Therefore, parametric tests were preferred. Chi-squared and Fisher exact tests were used to compare categorical variables, and Pearson correlation and linear regression analyses were used for

the relationships between continuous variables. Independent groups *t*-test, one-way analysis of variance (ANOVA) and post hoc tests (Tukey, LSD) were used to determine the differences between scale scores with respect to descriptive characteristics.

The selection of statistical tests was based on the distribution characteristics of the data and the measurement levels of the variables. Since normality assumptions were met, parametric tests were considered appropriate for group comparisons and correlation analyses.

Variables included in the linear regression model were selected based on their statistical significance in bivariate analyses and theoretical relevance according to the literature. Prior to regression analysis, assumptions of linearity, independence of errors and multicollinearity were evaluated. The Durbin–Watson value (1.886) indicated no significant autocorrelation in the residuals, supporting the appropriateness of the model.

2.7 | Ethical Considerations

Written ethical and institutional permissions were obtained from Dicle University Social and Human Sciences Ethics Committee (Date: 06.08.2024, Decision No: 753989) and Mardin Provincial Health Directorate Public Health Services Directorate (Date: 10.10.2024, Decision No: 2024/6). In addition, written permission was obtained from the authors who conducted the validity and reliability studies of the scales used in Turkish. All participants were informed about the research, and their written consent was obtained.

Participation in the study was entirely voluntary, and participants were informed that they had the right to withdraw from the study at any stage without any consequences. No identifying personal information was recorded in order to ensure anonymity. The collected data were stored securely and were accessible only to the researchers. All procedures were conducted in accordance with the ethical principles outlined in the Declaration of Helsinki.

3 | Results

The mean age of the women who participated in the study was 40.07 ± 11.18 , and their ages were between 21 and 68. It was found that 46.2% of the women were younger than 40 years of age, while 53.8% were older than 40 years of age. In terms of educational status, 48.0% were undergraduates, followed by high school graduates (18.9%). It was also found that 64.0% of the participants were married, almost half (48.7%) were housewives and 51.0% had an income equal to their expenses. Of the women, 65.4% had children and the mean age of children was 3.29 ± 1.70 (Table 1).

Most participants (71.8%) reported that there were no women in their families or immediate environment diagnosed with breast cancer. The rate of women who stated that they had previous knowledge about breast cancer was 70.0%, and it was found that they received this knowledge mostly from healthcare professionals, the internet and written materials. It was found that 77.4% of the participants wanted to have more information about the topic. The rate of those who stated that they knew about early detection methods was 2.5%. While 52.4% of the women stated that they performed BSE, the rate of those who performed BSE

TABLE 1 | Descriptive characteristics of women (n = 433).

Groups	Frequency (n)	Percentage (%)	Mn	Sd
Age			40.07	11.18
< 40	200	46.2		
≥ 40	233	53.8		
Educational status				
Literate	47	10.9		
Elementary	60	13.9		
Secondary	36	8.3		
High school	82	18.9		
University	208	48.0		
Marital status				
Single	156	36.0		
Married	277	64.0		
Occupation				
Housewife	211	48.7		
Teacher	44	10.2		
Officer	57	13.2		
Health professional	55	12.7		
Student	11	2.5		
Small business owner	42	9.7		
Worker	13	3.0		
Income level				
Income < expense	156	36.0		
Income = expense	221	51.0		
Income > expense	56	12.9		
The status of having children				
No	150	34.6		
Yes	283	65.4		

Note: Mn: mean.
Abbreviation: Sd, standard deviation.

regularly every month was 10.2%. The reasons for not having BSE were not knowing about the method, not finding time and fearing negative results. The rate of those who underwent CBEs was 25.4%, while those who never underwent this procedure was found to be 74.6%. The rate of mammography uptake was 26.2%; lack of information, embarrassment and lack of time were the main reasons for not having one (Table 2).

The mean fatalism score of women was 3.21 ± 2.81 , while the mean breast cancer fear score was 26.17 ± 8 . It was found that 66.5% of participants experienced high levels of breast cancer fear, 21.7% experienced moderate levels and 11.8% experienced low levels (Table 3).

As a result of the analyses conducted to find out whether breast cancer fatalism scores and fear scores of women differed in terms of descriptive characteristics, it was found that some of the variables had a significant effect on breast cancer fatalism and fear scores. When the variable of age was examined, fatalism scores of women younger than 40 years of age (2.79 ± 2.36) were found to be significantly lower than those of women older than 40 years of age (3.58 ± 3.10) ($p = 0.003$). This result shows that fatalism increases with the increase in age. However, the variable

TABLE 2 | Knowledge and behaviour of women regarding breast cancer ($n = 433$).

Groups	Frequency (n)	Percentage (%)
Presence of breast cancer diagnosis in the family/relatives		
None	311	71.8
1st degree relative	16	3.7
2nd degree relative	51	11.8
3rd degree relative	37	8.5
Neighbour/relative	18	4.2
The status of getting information about breast cancer		
Yes	303	70.0
No	130	30.0
Where information about breast cancer is received from ($n = 303$)*		
Healthcare Professional	223	73.6
Family	56	18.5
Neighbour/friend	48	15.8
Internet	127	41.9
Television	61	20.1
Book/magazine/newspaper/brochure	84	27.7
Other	12	4.0
Wishing to get information about breast cancer		
Yes	335	77.4
No	98	22.6
Having knowledge of early detection methods		
Yes	314	72.5
No	119	27.5
The status of doing BSE		
Yes	227	52.4
No	206	47.6
BSE frequency		
Never	206	47.6
Occasionally	183	42.3
Regularly every month	44	10.2
Reasons for not having BSE ($n = 206$)*		
I don't know	122	59.2
I don't have time	30	14.6
I'm bored	16	7.8
I don't believe it's necessary	26	12.6
I'm afraid of getting a bad result	29	14.1
I don't think I'll have breast cancer	36	17.5
The status of doing CBE		
Yes	110	25.4
No	323	74.6
CBE frequency		
Never	323	74.6
Sometimes	77	17.8
Regularly every year	33	7.6
Reasons for not having CBE ($n = 323$)*		
I don't know	156	48.3
I don't have time	65	20.1

(Continues)

TABLE 2 | (Continued)

Groups	Frequency (n)	Percentage (%)
I'm embarrassed	58	18.0
I don't believe it's necessary	48	14.9
I'm afraid of getting a bad result	43	13.3
I don't think I'll have breast cancer	48	14.9
I think the examination may harm my health	10	3.1
Status of having mammography previously (n = 233)		
Yes	61	26.2
No	172	73.8
Mammography frequency		
Never	172	73.8
Sometimes	30	12.9
Once every 2 years	31	13.3
Reasons for not having mammography (n = 172)*		
I don't know	76	44.2
I don't have time	33	19.2
I'm embarrassed	42	24.4
I don't believe it's necessary	19	11.0
I'm afraid of getting a bad result	26	15.1
I don't think I'll have breast cancer	18	10.5
I think the mammography may harm my health	21	12.2

*Multiple selected items.

of age was not found to have a significant effect on fear score ($p = 0.482$). A strong relationship was found between the level of education and fatalism ($p < 0.001$); fatalism scores of participants who were literate and primary school graduates (4.46 ± 3.25) were found to be significantly higher when compared with the other education groups (Post hoc: $1 > 2$, $1 > 3$, $2 > 3$). However, the level of education was not found to have a significant effect on the fear of score ($p = 0.058$). In terms of marital status, fatalism scores of married women (3.45 ± 2.84) were found to be significantly higher when compared with those of single women (2.80 ± 2.71) ($p = 0.021$). However, marital status was not found to have a significant effect on fear scores ($p = 0.557$). The fatalism scores of unemployed women (4.12 ± 3.03) were significantly higher than those of employed women (2.27 ± 2.20) ($p < 0.001$). The fear level of unemployed women (27.03 ± 8.30) was found to be higher than that of employed women (25.27 ± 7.97) ($p = 0.026$). The income status variable did not show a significant difference in terms of either fatalism or fear scores

($p > 0.05$). However, having children created a significant difference in both fatalism and fear scores. The fatalism score of women without children (2.35 ± 2.23) was found to be significantly lower than that of women with children (3.67 ± 2.98) ($p \sim 0.001$). Furthermore, the fear score of women with children (26.77 ± 8.23) was significantly higher than that of women without children (25.03 ± 7.96) ($p = 0.035$). In analyses conducted based on whether or not there was a family member or close relative diagnosed with breast cancer, no significant difference was found between fatalism and fear scores ($p > 0.05$). Interestingly, this finding suggests that fear and fatalistic perceptions may not function as direct determinants of screening behaviour. Rather, fear may operate as a generalised background emotional state experienced similarly by both women who participate in screening and those who do not. In this sense, fear may represent an underlying health-related anxiety rather than a direct behavioural trigger. This finding underscores the complex and multi-dimensional nature of emotional influences in preventive health behaviours. However, the fatalism scores of women who wanted to

TABLE 3 | Breast cancer fatalism and fear mean scores and breast cancer fear level (n = 433).

	Mn	Sd	Scale min-max.	Level of fear	Frequency (n)	Percentage (%)
Breast Cancer Fatalism Total	3.21	2.81	0–11			
Breast Cancer Fear Total	26.17	8.17	8–40	Low	51	11.8
				Moderate	94	21.7
				High	288	66.5

Note: Mn: mean, Min: minimum, Max: maximum.
Abbreviation: Sd, standard deviation.

get information about breast cancer (3.033 ± 2.779) were found to be significantly lower than those of women who did not want to get information (3.847 ± 2.855) ($p = 0.012$). In addition, the fear scores of women who did not want to receive information (23.939 ± 8.149) were found to be significantly lower than those of

women who wanted to receive information (26.827 ± 8.080) ($p = 0.002$). Knowledge of early detection methods, performing self-breast examinations, undergoing CBEs, and having mammograms did not show a significant difference in terms of fatalism and fear scores ($p > 0.05$) (Table 4).

TABLE 4 | Differentiation of breast cancer fatalism and fear scores in terms of descriptive characteristics ($n = 433$).

Characteristics	<i>n</i>	Breast cancer fatalism score Mn $\pm$ Sd	Breast cancer fear score Mn $\pm$ Sd
Age			
< 40	200	2.79 $\pm$ 2.36	26.47 $\pm$ 7.76
$\geq$ 40	233	3.58 $\pm$ 3.10	25.91 $\pm$ 8.52
<i>t</i> =		-2.953	0.699
<i>p</i> =		0.003	0.482
Educational status			
Literate and elementary ¹	107	4.46 $\pm$ 3.25	27.50 $\pm$ 7.85
Secondary and high school ²	118	3.51 $\pm$ 2.95	26.57 $\pm$ 8.88
University ³	208	2.41 $\pm$ 2.17	25.26 $\pm$ 7.85
<i>F</i> =		21.365	2.865
<i>p</i> =		0.001	0.058
Posthoc =		1 > 2, 1 > 3, 2 > 3	
Marital status			
Single	156	2.80 $\pm$ 2.71	25.86 $\pm$ 7.77
Married	277	3.45 $\pm$ 2.84	26.34 $\pm$ 8.40
<i>t</i> =		-2.320	-0.587
<i>p</i> =		0.021	0.557
Employment status			
Unemployed	222	4.12 $\pm$ 3.03	27.03 $\pm$ 8.30
Employed	211	2.27 $\pm$ 2.20	25.27 $\pm$ 7.97
<i>t</i> =		7.261	2.239
<i>p</i> =		0.001	0.026
Income level			
Income < expense	156	3.07 $\pm$ 2.65	25.16 $\pm$ 8.52
Income = expense	221	3.34 $\pm$ 2.90	26.67 $\pm$ 8.12
Income > expense	56	3.10 $\pm$ 2.90	27.01 $\pm$ 7.17
<i>F</i> =		0.494	1.896
<i>p</i> =		0.610	0.151
The status of having children			
No	150	2.35 $\pm$ 2.23	25.03 $\pm$ 7.96
Yes	283	3.67 $\pm$ 2.98	26.77 $\pm$ 8.23
<i>t</i> =		-4.766	-2.121
<i>p</i> =		0.001	0.035
Presence of breast cancer diagnosis in family/relatives			
No	311	3.28 $\pm$ 2.98	26.64 $\pm$ 7.77
Yes	122	3.05 $\pm$ 2.34	24.99 $\pm$ 9.06
<i>t</i> =		0.777	1.889
<i>p</i> =		0.389	0.079
Status of getting information about breast cancer			

(Continues)

TABLE 4 | (Continued)

Characteristics	<i>n</i>	Breast cancer fatalism score Mn ± Sd	Breast cancer fear score Mn ± Sd
Yes	303	3.09 ± 2.77	26.10 ± 8.00
No	130	3.50 ± 2.90	26.33 ± 8.59
<i>t</i> =		−1.372	−0.275
<i>p</i> =		0.171	0.783
Wishing to get information about breast cancer			
Yes	335	3.03 ± 2.77	26.82 ± 8.08
No	98	3.84 ± 2.85	23.93 ± 8.14
<i>t</i> =		−2.535	3.106
<i>p</i> =		0.012	0.002
Having knowledge of early detection methods			
Yes	314	3.08 ± 2.76	25.94 ± 8.12
No	119	3.57 ± 2.92	26.79 ± 8.31
<i>T</i> =		−1.616	−0.966
<i>p</i> =		0.107	0.335
Status of doing BSE			
Yes	227	3.14 ± 2.80	25.92 ± 8.39
No	206	3.30 ± 2.82	26.45 ± 7.94
<i>t</i> =		−0.591	−0.674
<i>p</i> =		0.555	0.501
BSE frequency			
Never	206	3.30 ± 2.82	26.45 ± 7.94
Occasionally	183	3.12 ± 2.80	25.67 ± 8.19
Regularly every month	44	3.20 ± 2.84	26.95 ± 9.21
<i>F</i> =		0.188	0.663
<i>p</i> =		0.829	0.516
Status of having CBE			
Yes	110	3.30 ± 2.85	26.59 ± 8.80
No	323	3.18 ± 2.80	26.03 ± 7.96
<i>t</i> =		0.397	0.620
<i>p</i> =		0.692	0.536
CBE frequency			
Never	323	3.18 ± 2.80	26.03 ± 7.96
Sometimes	77	3.29 ± 2.95	26.02 ± 8.64
Regularly every year	33	3.33 ± 2.64	27.90 ± 9.17
<i>F</i> =		0.080	0.804
<i>p</i> =		0.923	0.448
Status of having mammography previously			
Yes	61	3.24 ± 2.44	26.60 ± 8.78
No	172	3.70 ± 3.30	25.67 ± 8.43
<i>t</i> =		−0.989	0.733
<i>p</i> =		0.257	0.464
Mammography frequency			
Never	172	3.70 ± 3.30	25.67 ± 8.43
Sometimes	30	2.60 ± 1.88	27.03 ± 7.90

(Continues)

TABLE 4 | (Continued)

Characteristics	<i>n</i>	Breast cancer fatalism score Mn ± Sd	Breast cancer fear score Mn ± Sd
Once every 2 years	31	3.87 ± 2.77	26.19 ± 9.66
<i>F</i> =		1.778	0.342
<i>p</i> =		0.171	0.711

Note: *n*: number, Mn: mean, *F*: ANOVA test; *t*: independent groups *t*-test, Post hoc: Tukey, LSD. The superscripts (¹, ², ³) indicate statistically significant differences between groups according to post hoc analysis. Bold values denote statistically significant results (*p* < 0.05). Abbreviation: Sd, standard deviation.

According to the results of the correlation analysis, a positive but weakly significant correlation was found between breast cancer fatalism and fear scores (*r* = 0.119, *p* = 0.014) (Table 5).

A linear regression analysis was performed to identify variables that could influence women's levels of fear regarding breast cancer. Variables that showed a significant correlation with the fear score in paired comparisons were included in the model. The fear score was used as the dependent variable, while fatalism score, employment status, parenthood status and wish to receive information about breast cancer were included as independent variables in the model. When the statistical data for the model were evaluated, the model was found to be significant (*F* = 5.724, *p* ~ 0.001). Although the explanatory power of the model was low (*R*² = 0.042), some variables were found to have a significant effect on fear. Of the independent variables, fatalism perception is a significant predictor of breast cancer fear (*B* = 0.308, *p* = 0.036). According to the standardised coefficient (*β* = 0.106), an increase in fatalism is associated with a slight but significant increase in fear scores. The wish to receive information about breast cancer also has a significant effect on levels of fear (*B* = 3.343, *p* < 0.001; *β* = 0.171). Women who were willing to obtain information had higher fear scores than those who were not. Employment status (being employed) and having children did not have a statistically significant effect on fear (*p* = 0.323 and *p* = 0.189, respectively) (Table 6).

4 | Discussion

Fear of breast cancer may cause women to avoid or disregard early detection and screening methods. The perception of fatalism can also be a significant obstacle in the health-related decision-making processes of individuals [38]. Therefore, determining the effects of breast cancer fear and fatalism perception in women on early detection behaviours is of critical importance for the development of public health strategies. This part of the study discusses how women's breast cancer fear and fatalism perceptions affect early detection and screening methods for breast cancer, supported by the literature.

TABLE 5 | Correlation analysis between breast cancer fatalism and fear scores.

Breast cancer fatalism total		
Breast Cancer Fear Total	<i>r</i>	0.119*
	<i>p</i>	0.014

* < 0.05; Pearson correlation analysis.

Breast cancer is the most common type of cancer among women worldwide, and early detection methods significantly reduce mortality. Women's knowledge levels and awareness are key factors that directly influence screening behaviour. Of the women who participated in the study, 28.2% stated that someone in their family or close circle had been diagnosed with breast cancer. The rate of individuals diagnosed with breast cancer in their family or close circle was reported as 6.8% by Kulakçı et al. and 17.4% by Ersin and Havlioğlu [39, 40]. These differences can be explained by the cultural and demographic characteristics of the samples.

In the present study, the majority of participants (70.0%) reported prior knowledge of breast cancer. Among the sources of information, healthcare professionals ranked first, followed by the internet. The findings of Ersin and Havlioğlu support our results [40]. George et al. reported that 92.3% of women had knowledge about breast cancer, while Güzel and Bayraktar reported this rate as 96.7% and noted that the internet (31.1%) and television (30.3%) were the most prominent sources of information [41, 42]. In contrast, the level of knowledge was found to be only 16.1% in Gümüş Şekerci and Sohbət [43]. These differences indicate that socioeconomic factors, health literacy and the level of integration of the community into the health system may play an important role in accessing information.

In the present study, 77.4% of the women stated that they wanted to get more information about breast cancer. Studies in the literature support our findings [42, 44]. This result shows that high levels of demand for information can present an important opportunity in planning health education programmes.

Despite awareness of early detection methods, implementation levels remain low. In the present study, approximately three-quarters of women stated that they were aware of early detection methods. However, only 10.2% regularly performed BSE. Cal et al. (2018) reported the rate of BSE as 61.2% and the rate of those who regularly performed it as 50% [45]. Altıntaş et al. reported the same rates as 59.5% and 45.9%, respectively [46]. However, Demirel Bozkurt et al. found the rate of performing BSE as only 14.7%. These data show that the low rates in this study indicate lack of knowledge and behavioural barriers [19]. The reasons for not performing BSE included 'not knowing how to perform' and 'fearing a negative outcome'. Sohbət and Karasu also reported lack of knowledge and fear as the most frequent two reasons [23].

In the present study, approximately three-fourth of women stated that they did not have CBE. The results of studies in the literature are also similar to the results of the present study [19, 22, 47]. In the present study, the reasons for not having CBE include 'lack of knowledge', 'feeling embarrassed' and 'the thought that it is harmful for health'. The results of Altıntaş et al. are also similar

TABLE 6 | The effect of fatalism and certain variables on breast cancer fear.

Independent variable	Unstandardised coefficients		Standardised coefficients	T	p	95% confidence interval	
	B	SE				Lower	Upper
Fixed	22.245	1.342		16.574	0.001	19.607	24.883
Fatalism total	0.308	0.146	0.106	2.105	0.036	0.020	0.595
Employment status (Ref: Employed)	-0.882	0.891	-0.054	-0.990	0.323	-2.634	0.870
Having children (Ref: None)	1.195	0.908	0.070	1.316	0.189	-0.590	2.980
Wishing to get information about breast cancer (Ref: No)	3.343	0.928	0.171	3.602	0.001	1.518	5.167

Note: Dependent variable = fear total. $R = 0.225$; $R^2 = 0.042$; $F = 5.724$; $p \sim 0.001$; Durbin-Watson value = 1.886. Bold values indicate statistically significant results ($p < 0.05$).

to our results [46]. Sohbet and Karasu reported reasons such as neglect and absence of problems [23].

In the present study, the rate of having mammography was also similarly low. The reasons for not having mammography included 'lack of knowledge', 'feeling ashamed', 'insufficient time' and 'the thought that they may hurt'. These findings are consistent with previous studies [42, 44]. These data show that lack of information and cultural barriers are basic factors in screening behaviours.

In the present study, the mean breast cancer fatalism score was found as 3.21 ± 2.81 similar to the literature [18, 25, 48]. Kulakçi et al. found the fatalism mean score to be lower [39].

In the present study, the fatalism score was found to increase with age. However, Ersin & Kılıç Dedeoğlu did not find a significant relationship between age and fatalism, while Ghahramanian et al. reported higher fatalism perception in women younger than 40 years of age [38, 48]. This shows that fatalism can shape in different directions based on cultural norms.

The present study showed that fatalism level decreased as the level of education increased. Studies conducted in the literature are parallel to these results [32, 48].

In the present study, fatalism scores of married and unemployed women were found to be higher. This result suggests that social roles are also effective in addition to education and knowledge of health. The result that women who did not have children had higher fatalism scores can similarly be explained with the decrease in life control perception.

The low fatalism scores of women who wanted to get information in the present study shows that health literacy may decrease fatalism. AlWaheidi et al. reported that breast cancer fatalism perception was an important cultural barrier that delayed women's decisions to get help about breast symptoms [49].

The mean breast cancer fear score was found as 26.17 ± 8.17 in the present study, and 66.5% of women were found to experience high levels of fear. These results are in parallel with the results of other studies in the literature [19, 21, 50]. The fact that breast cancer is the most common type of cancer in women and that it is frequently discussed in the media may explain high levels of fear.

In the paired analyses conducted, the mean fear levels of unemployed women were found to be significantly higher than those of employed women. However, in the regression analysis, employment status was not found to have a significant effect on fear score. In a study conducted in America by Flores-Luevano et al. (2020), working women's fear scores were found to be higher, unlike the results of the present study [21]. This difference in results may be due to cultural differences, working conditions, differences in the health system and the ways women accessed information about health. In paired analyses, the mean fear scores of women who had children were found to be higher than those of the women who did not have children. However, regression analysis did not show a significant effect for having children on fear scores. In a study conducted in 2022 by Özçelik and Seçginli, cancer fear levels of women who had children were found to be higher and this result shows the increasing effects of regular screening behaviours [51]. This

result also shows that mothers may have higher anxiety due to their responsibilities for themselves and their families. The result that women who wanted to get information about breast cancer had higher fear scores suggests that having information may increase awareness and therefore anxiety, while avoidance behaviours in women who did not want to get information may decrease fear. Regression analysis also showed significant results. In the present study, no significant relationship was found between levels of fear and age, educational status, marital status, income level, presence of breast cancer diagnosis in the family, the status of wanting to be informed about breast cancer, knowing about early detection methods and BSE, CBE and mammography behaviours. Similarly, Polat and Ersin (2017) also reported that fear levels did not determine screening behaviours directly [52]. This suggests that mediating variables such as level of knowledge, health literacy, social support and perceived control are important for breast cancer fear to transform into behavioural results. While high levels of fear may cause avoidance, the optimal level of fear may support early detection motivation. Although the regression model was statistically significant, the explained variance was relatively low ($R^2 = 0.042$), indicating that only 4.2% of the variance in fear scores was accounted for by the variables included in the model. This suggests that additional psychosocial and contextual factors not examined in the present study may play a more substantial role in shaping women's fear of breast cancer. Variables such as health literacy, perceived self-efficacy, perceived control, social support and prior health experiences may significantly contribute to fear levels and should be considered in future research. Therefore, the limited explanatory power of the model represents an important limitation of this study.

A positive correlation was found between breast cancer fear and fatalism in the present study. In addition, fatalism perception was found to be a significant predictor of breast cancer. In addition to studies that support our findings, there are also studies that report that fatalism decreases fear [38]. The perception of fatalism has a significant effect on individuals' health-related decision-making and also plays a role in shaping the perception of illness. Determinism may be perceived as a mechanism for coping with uncertainty and fear rather than a factor that fuels fear in some societies. These differences show that fatalism functions as a coping mechanism that reduces fear in some societies and as a factor that fuels fear in others.

The positive association observed between fatalism and fear warrants further consideration. In some cultural contexts, fatalism has been described as a coping mechanism that may reduce anxiety by attributing health outcomes to destiny or divine will, thereby decreasing perceived personal responsibility. However, in the present study, higher fatalistic beliefs were associated with higher levels of fear. In contexts where perceived control is low, fatalistic beliefs may amplify fear by diminishing self-efficacy and reducing engagement in proactive health behaviours. This finding suggests that, rather than functioning as a protective coping strategy, fatalism may reinforce feelings of helplessness and loss of control in the context of breast cancer. When individuals perceive cancer as unavoidable and predetermined, this belief may intensify fear by reducing perceived agency and increasing uncertainty. Thus, in this sociocultural context, fatalism appears to exacerbate rather than alleviate emotional distress.

4.1 | Implications for Public Health Nursing

The findings of this study provide important implications for public health nursing practice, particularly in the development of culturally sensitive interventions aimed at increasing breast cancer early detection behaviours. Previous studies have emphasised that psychosocial factors such as fear and fatalism significantly influence screening participation [17, 18, 35]. Therefore, addressing these psychological determinants should be considered a priority in community-based nursing interventions.

Firstly, improving health literacy is essential, especially among women with lower educational attainment and those outside the workforce. Research has shown that educational interventions based on structured health promotion models significantly improve breast cancer screening behaviours [40]. Public health nurses can design targeted educational programmes that simplify complex medical information and directly address misconceptions related to screening procedures.

Secondly, the observed association between fatalism and fear highlights the importance of culturally sensitive counselling strategies. Fatalistic beliefs have been identified as cultural barriers that delay help-seeking behaviours [49]. Nurses can implement counselling sessions that reframe fatalistic perceptions by emphasising the effectiveness of early diagnosis and advances in treatment outcomes.

Furthermore, motivational interviewing techniques may be effective in transforming awareness into action. Studies indicate that fear alone does not necessarily translate into screening behaviour unless supported by perceived control and self-efficacy [51]. Training public health nurses in motivational interviewing may enhance women's readiness to participate in regular screening practices.

Community-based outreach programmes, including home visits and peer support initiatives, may also reduce psychological barriers and increase screening uptake. Evidence suggests that nurse-led community interventions improve preventive health behaviours and screening adherence [18, 40]. Such programmes are particularly important in regions with socioeconomic disadvantages.

In conclusion, integrating educational, psychological and behavioural strategies within public health nursing practice is crucial for reducing fatalism, managing fear and promoting early detection behaviours. Evidence-based and culturally tailored nursing interventions may contribute significantly to improving breast cancer screening rates.

4.2 | Limitations and Strengths

The present study has some limitations. First of all, data collection process is limited to adult women who referred to Artukbey and Yenisehir Family Health Centres in the city centre of Mardin between 1 November 2024 and 28 February 2025. This limits the generalisability of the findings, as they only reflect the population of a specific geographical area and healthcare institution. Secondly, the fact that the study was conducted in only one province and that the data were collected through surveys based on self-reports by participants may lead to limitations in terms of data accuracy and representativeness. Thirdly, due to its

cross-sectional design, the study prevents the determination of causality between variables.

Nevertheless, the limited number of studies examining the relationship between breast cancer fear and fatalistic perceptions and early detection behaviours makes this study a significant contribution to the field. Furthermore, the data obtained from women with different socio-demographic characteristics provide a unique perspective to the literature and support existing knowledge.

5 | Conclusion

The present study found that more than half of women performed BSE, a quarter underwent CBE and an average of a quarter of women over the age of 40 had mammography. However, the rates of regular BSE, regular CBE and regular mammography were found to be quite low. This finding is consistent with previous studies indicating that awareness does not necessarily translate into regular screening behaviours [19, 52]. These results suggest that informational knowledge alone may be insufficient to sustain preventive health practices. The most important reason women did not use early detection methods was that they did not have information about these methods.

It was found that women experienced a significant level of fear regarding breast cancer. Similar levels of elevated fear have been reported in previous research [18, 50], suggesting that fear remains a prevalent psychosocial response among women in different cultural contexts. Excessive fear may function as a psychological barrier rather than a motivating factor for screening participation.

Demographic factors such as age, educational status and employment status significantly influenced fatalistic perceptions. Previous studies have similarly reported that lower educational attainment and socioeconomic disadvantage are associated with stronger fatalistic beliefs [29, 48]. These findings reinforce the importance of addressing sociocultural determinants in breast cancer prevention strategies. Employment status, having children and the wish to receive information were also found to have a significant effect on breast cancer fear. However, performing BSE, having CBE and having a mammogram were not found to have a significant effect on fatalism and fear levels. An increase in breast cancer fear levels was observed as fatalism perception increased. This finding aligns with research suggesting that fatalistic beliefs may amplify emotional distress and reduce perceived control over health outcomes [38, 49]. Such interaction between cognitive beliefs and emotional responses highlights the complex psychological mechanisms underlying screening behaviours.

As emphasised in previous studies, structured educational interventions and culturally tailored nursing programmes have demonstrated effectiveness in improving breast cancer screening behaviours [40]. Therefore, developing multifaceted strategies that address both informational deficits and psychological barriers may enhance early detection practices. The findings indicate that women lack knowledge about breast cancer screening methods. Therefore, it is important to organise educational programmes and strengthen existing programmes in order to raise awareness within society. Information campaigns should be

organised through healthcare institutions, schools, workplaces, community centres and social media to increase awareness of breast cancer. It is important to develop strategies that will reduce fatalism and increase the desire to get information, especially for women with low levels of education. In addition, priority interventions should be implemented for high-risk groups with high levels of fear and fatalism.

In addition, context-specific strategies should be considered when designing interventions aimed at reducing fatalistic beliefs. In regions where religious and cultural norms strongly influence health perceptions, programmes addressing fatalism could be developed in collaboration with religious leaders and respected community opinion leaders. Such partnerships may help reframe fatalistic beliefs in ways that support proactive health behaviours rather than passive acceptance. Furthermore, interventions targeting women with lower educational attainment and non-working women should explicitly incorporate components focused on fear management, perceived control and empowerment. Structured group sessions, culturally sensitive counselling and simplified health literacy materials may enhance the effectiveness of these initiatives.

Public health nurses play a critical role in translating awareness into preventive action through individualised counselling, community-based education and home visits. Evidence suggests that nurse-led interventions significantly improve adherence to screening recommendations [18, 40]. Integrating psychological support with health education may be particularly effective in populations with high levels of fear and fatalism.

In conclusion, combating breast cancer requires comprehensive approaches that extend beyond medical recommendations to include cultural, psychological and behavioural dimensions. Addressing fear and fatalism through evidence-based and culturally sensitive strategies may contribute to improved early detection rates and reduced breast cancer-related morbidity and mortality. Future longitudinal and intervention-based research is recommended to further clarify causal pathways and strengthen the evidence base. This way, it may be possible to increase early detection rates and reduce mortality. Furthermore, it is recommended to conduct intervention-based experimental research and plan large-scale studies including different sociocultural groups. The present study contributes to the limited literature in this field.

Author Contributions

All authors meet at least one of the following criteria (recommended by the ICMJE [<http://www.icmje.org/recommendations/>]): substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data and drafting the article or revising it critically for important intellectual content.

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All authors have agreed on the final version.

Ethics Statement

Written ethical and institutional permissions were obtained from the Dicle University Social and Human Sciences Ethics Committee (Date: 06.08.2024, Decision No: 753989) and Mardin Provincial Health Directorate Public Health Services Directorate (Date: 10.10.2024, Decision No: 2024/6). In addition, written permission was obtained from the authors who conducted the validity and reliability studies of the scales used in Turkish. All participants were informed about the research, and their written consent was obtained. The Helsinki Declaration ethical principles were adhered throughout the research process.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request. The data are not publicly available due to privacy and ethical restrictions.

References

1. J. Ferlay, M. Colombet, I. Soerjomataram, et al., "Estimating the Global Cancer Incidence and Mortality in 2018: GLOBOCAN Sources and Methods," *International Journal of Cancer* 144, no. 8 (2019): 1941–1953, <https://doi.org/10.1002/ijc.31937>.
2. H. Sung, J. Ferlay, R. L. Siegel, et al., "Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide," *CA: A Cancer Journal for Clinicians* 71, no. 3 (2021): 209–249, <https://doi.org/10.3322/caac.21660>.
3. World Health Organization (Who), *Breast Cancer* (2025), <https://www.who.int/news-room/fact-sheets/detail/breast-cancer>.
4. Globocan, "Global Cancer Observatory: Cancer Today" (2024).
5. Republic of Türkiye Ministry of Health, *General Directorate of Health Information Systems, Cancer Statistics Yearbook 2022* (2022).
6. R. Hong and B. Xu, "Breast Cancer: an up-to-date Review and Future Perspectives," *Cancer Communications* 42, no. 10 (2022): 913–936, <https://doi.org/10.1002/cac2.12358>.
7. K. P. Traves and S. E. H. Cokenakes, "Breast Cancer Treatment," *American Family Physician* 104, no. 2 (2021): 171–178.
8. A. Ateş and B. T. Dikmen, "Breast Cancer Surgery and Nursing Care: a Review," *Gevher Nesibe Journal of Medical and Health Sciences* 6, no. 10 (2021): 10–15, <https://doi.org/10.46648/gnj.142>.
9. D. Akça Doğan and A. Serpici, "Breast Cancer Prevention Behaviors Among Women: a Cross-Sectional Study," *Artuklu Health* 9 (2024): 21–29, <https://doi.org/10.58252/artukluhealth.1522519>.
10. N. Akyolcu, Y. Özhanlı, and D. Kandemir, "Recent Developments in Breast Cancer," *Archives of Health Science and Research* 6, no. 3 (2020): 583–594, <https://doi.org/10.5152/hsp.2019.440012>.
11. O. C. Lopes, F. C. G. Morelli, and Í. Moraes, "Telerehabilitation Through a Game Platform to Promote Physical Activity for Women with Breast Cancer," *European Journal of Cancer Care* 2025, no. 1 (2025): <https://doi.org/10.1155/ecc/6699494>.
12. American Cancer Society, *Breast Cancer Facts & Figures 2024–2025* (2024).
13. Ş. Çelikkanat, "Importance of Risk Factors and Risk Evaluation in Breast Cancer," *Social Sciences Studies Journal* 4, no. 22 (2018): 4022–4026, <https://doi.org/10.26449/sssj.842>.
14. N. Bakır and C. Demir, "Determination of the Beliefs of Nurses Regarding Breast Cancer, Self Breast Examination and Mammography," *Manisa Celal Bayar University Journal of Institute of Health Sciences* 7, no. 3 (2020): 266–271, <https://doi.org/10.34087/cbusbed.657109>.
15. K. Unger-Saldaña, "Challenges to the Early Diagnosis and Treatment of Breast Cancer in Developing Countries," *World Journal of Clinical Oncology* 5, no. 3 (2014): 465–477, <https://doi.org/10.5306/wjco.v5.i3.465>.
16. Republic of Türkiye Ministry of Health, "General Directorate of Public Health," *Breast Cancer* (2025).
17. A. H. F. Elsaba and S. A. Abd El-Maksoud, "Relationship of Fear and Fatalism with Breast Cancer Screening Among Women Using Health Belief Model," *IJANS* 9, no. 2 (2020): 52–60, <https://doi.org/10.14419/ijans.v9i2.30970>.
18. L. Emami, A. Ghahramanian, A. Rahmani, A. Mirza Aghazadeh, T. C. Onyeka, and A. Nabighadim, "Beliefs, Fear and Awareness of Women About Breast Cancer: Effects on Mammography Screening Practices," *Nursing Open* 8, no. 2 (2021): 890–899, <https://doi.org/10.1002/nop2.696>.
19. Ö. Demirel Bozkurt, S. Hazar, M. Can, and S. Ahsun, "Impact of Health Anxiety and Fear of Breast Cancer In Women on Early Diagnosis Behaviors," *Balıkesir Health Sciences Journal* 10, no. 3 (2021): 348–355, <https://doi.org/10.53424/balikesirsd.959775>.
20. V. Burugu and M. Salvatore, "Exploring Breast Cancer Screening Fear Through a Psychosocial Lens," *European Journal of Cancer Prevention* 34, no. 1 (2024): 76–80, <https://doi.org/10.1097/CEJ.0000000000000895>.
21. S. Flores-Luevano, N. K. Shokar, A. K. Dwivedi, G. S. Shokar, and S. N. Defeu, "Breast Cancer Fear Among Mexican American Women in the United States," *Breast Cancer: Basic and Clinical Research* 14 (2020): <https://doi.org/10.1177/1178223420952745>.
22. E. Öner, S. Girgin, Ö. Uslukaya, et al., "A Survey on the Factors Causing Delayed Diagnosis and Treatment of Breast Cancer in South-eastern Anatolia," *Journal of Clinical and Experimental Investigations* 6, no. 4 (2015): 375–381, <https://doi.org/10.5799/ahinjs.01.2015.04.0552>.
23. R. Sohbət and F. Karasu, "Investigation of the Knowledge, Behavior and Applications of Their Women Towards Breast Cancer," *Gümüşhane University Journal of Health Sciences* 6, no. 4 (2017): 113–121.
24. A. B. Bakan, G. Aslan, and M. Yıldız, "Determination of Breast Cancer Fatalism in Women and the Investigation of the Relationship Between Women's Cervical Cancer and Pap Smear Test Health Beliefs with Religious Orientation and Fatalism," *Journal of Religion and Health* 60, no. 3 (2021): 1856–1876, <https://doi.org/10.1007/s10943-020-01108-2>.
25. W. Tsai and J. H. Wang, "Fatalism and Psychological Distress Among Chinese American Breast Cancer Survivors," *International Journal of Behavioral Medicine* 30, no. 5 (2023): 705–713, <https://doi.org/10.1007/s12529-022-10136-z>.
26. B. Han and H. Yalçınöz Baysal, "Relationship of Women's Breast Cancer Fatalism Perceptions with Health Beliefs and Early Diagnosis Behaviors," *Advances in Women's Studies* 6, no. 2 (2024): 38–47, <https://doi.org/10.51621/aws.1553428>.
27. V. A. Loving, S. Aminololama-Shakeri, and J. W. Leung, "Anxiety and Its Association with Screening Mammography," *Journal of Breast Imaging* 3, no. 3 (2021): 266–272, <https://doi.org/10.1093/jbi/wbab024>.
28. H. Y. Baysal and S. Gozum, "Effects of Health Beliefs About Mammography and Breast Cancer and Telephone Reminders on re-screening in Turkey," *Asian Pacific Journal of Cancer Prevention* 12, no. 6 (2011): 1445–1450.
29. H. Y. Baysal and N. Hacıaloglu, "The Effect of Transtheoretical Model-based Education and follow-up on Providing Overweight Women with Exercise Behavior," *International Journal of Caring Sciences* 10, no. 1 (2017): 225.
30. "Republic of Türkiye Ministry of Industry and Technology" (2025).
31. F. Faul, E. Erdfelder, A. G. Lang, and A. Buchner, "G*Power 3: a Flexible Statistical Power Analysis Program for the Social, Behavioral, and Biomedical Sciences," *Behavior Research Methods* 39, no. 2 (2007): 175–191, <https://doi.org/10.3758/bf03193146>.

32. A. Kissal, F. Ersin, M. Koç, B. Vural, and Ö. Çetin, "Determination of Women's Health Beliefs, Breast Cancer Fears, and Fatalism Associated with Behaviors Regarding the Early Diagnosis of Breast Cancer," *International Journal of Cancer Management* 11, no. 12 (2018): <https://doi.org/10.5812/ijcm.80223>.
33. V. L. Champion, C. S. Skinner, U. Menon, et al., "A Breast Cancer Fear Scale: Psychometric Development," *Journal of Health Psychology* 9, no. 6 (2004): 753–762, <https://doi.org/10.1177/1359105304045383>.
34. S. Secginli, "Mammography Self-Efficacy Scale and Breast Cancer Fear Scale: Psychometric Testing," *Cancer Nursing* 35, no. 5 (2012): 365–373, <https://doi.org/10.1097/NCC.0b013e3182331a9a>.
35. B. D. Powe and S. Weinrich, "An Intervention to Decrease Cancer Fatalism Among Rural Elders," *Oncology Nursing Forum* 26, no. 3 (1999): 583–588.
36. R. M. Mayo, J. R. Ureda, and V. G. Parker, "Importance of Fatalism in Understanding Mammography Screening in Rural Elderly Women," *Journal of Women & Aging* 13, no. 1 (2001): 57–72, https://doi.org/10.1300/J074v13n01_05.
37. F. Ersin, C. Capik, A. Kissal, et al., "Breast Cancer Fatalism Scale: a Validity and Reliability Study in Turkey," *International Journal of Caring Sciences* 11, no. 2 (2018): 783–791.
38. A. Ghahramanian, A. Rahmani, A. M. Aghazadeh, and L. E. Mehr, "Relationships of Fear of Breast Cancer and Fatalism with Screening Behavior," *Asian Pacific Journal of Cancer Prevention* 17, no. 9 (2016): 4427–4432, <https://doi.org/10.7314/APJCP.2016.17.9.4427>.
39. H. Kulakci, T. K. Ayyildiz, N. Yildirim, O. Ozturk, A. K. Topan, and N. Tasdemir, "Effects of Breast Cancer Fatalism on Breast Cancer Awareness Among Nursing Students in Turkey," *Asian Pacific Journal of Cancer Prevention* 16, no. 8 (2015): 3565–3572, <https://doi.org/10.7314/apjcp.2015.16.8.3565>.
40. F. Ersin and S. Havlioğlu, "Effect of Education Based on Health Promotion Model on Healthy Lifestyle Behaviors and Breast Cancer Fatalism Perceptions in Women," *Journal of Lifelong Nursing* 1, no. 1 (2023): 150–165, <https://doi.org/10.29228/lnursing.68940>.
41. T. O. George, T. A. Allo, E. O. Amoo, and O. Olonade, "Knowledge and Attitudes About Breast Cancer Among Women: a Wake-Up Call in Nigeria," *Open Access Macedonian Journal of Medical Sciences* 7, no. 10 (2019): 1700–1705, <https://doi.org/10.3889/oamjms.2019.221>.
42. N. Güzel and N. Bayraktar, "Determination of Women's Awareness and Practices on Early Diagnosis of Breast Cancer," *Journal of Hacettepe University Faculty of Nursing* 6, no. 2 (2019): 101–110.
43. Y. Gümüş Şekerci and R. Sohbət, "The Effect of Education Breast Cancer and Early Diagnosis Methods on the Students' Health Knowledge, Belief and Practice," *Journal of Academic Research in Nursing* 5, no. 3 (2019): 204–212, <https://doi.org/10.5222/jaren.2019.48343>.
44. B. Ceyhan, K. Atakır, and G. Özevci, "Investigation of Women's Awareness of Breast Cancer Screening Methods in Turkey," *Journal of Global Health & Natural Sciences* 5, no. 2 (2022): 123–133, <https://doi.org/10.56728/dustad.1206908>.
45. A. Cal, M. Kabataş Yildiz, and I. Aydın Avci, "Examination of Knowledge and Fear Levels of Breast Cancer with the Spiritual Characteristics of Nurses," *Frontiers in Public Health* 6 (2018): 331, <https://doi.org/10.3389/fpubh.2018.00331>.
46. H. K. Altintas, T. K. Ayyildiz, F. Veren, and A. K. Topan, "The Effect of Breast Cancer Fatalism on Breast Cancer Awareness Among Turkish Women," *Journal of Religion and Health* 56, no. 5 (2017): 1537–1552, <https://doi.org/10.1007/s10943-016-0326-4>.
47. T. Y. Wu and J. Lee, "Promoting Breast Cancer Awareness and Screening Practices for Early Detection in Low-Resource Settings," *European Journal of Breast Health* 15, no. 1 (2018): 18–25, <https://doi.org/10.5152/ejbh.2018.4305>.
48. F. Ersin and G. Kılıç Dedeoğlu, "The Effect of Breast Cancer Fear and Fatalism Perceptions on Breast Cancer Early Diagnosis Behaviors of the Nurses," *Gevher Nesibe Journal of Medical and Health Sciences* 5, no. 9 (2022): 146–153, <https://doi.org/10.46648/gnj.166>.
49. S. AlWaheidi, R. Sullivan, and E. A. Davies, "Breast Cancer in Women in Gaza: Qualitative Study of Women's Expectations and Experiences of Diagnosis and Management," *ecancermedicalscience* 19 (2025): 1889, <https://doi.org/10.3332/ecancer.2025.1889>.
50. Z. Olçar Ece, H. S. Koçak, and Z. Güngörmüş, "A the Effect of Fear Level on Early Diagnosis Behaviors of Women with First Degree Relative with Breast Cancer," *Journal of Nursing Science* 5, no. 1 (2022): 22–29, <https://doi.org/10.54189/hbd.1049877>.
51. E. K. Özçelik and S. Seçginli, "Breast Cancer Screening Behaviors of Women Who Have Family History of Breast Cancer," *STED Journal of Health* 31, no. 3 (2022): 183–192, <https://doi.org/10.17942/sted.897058>.
52. P. Polat and F. Ersin, "The Effect of Breast Cancer Fear Levels of Female Seasonal Agricultural Laborers on Early-Diagnosis Behaviors and Perceptions of Breast Cancer," *Social Work in Public Health* 32, no. 3 (2017): 166–175, <https://doi.org/10.1080/19371918.2015.1137525>.