

Cervical Cancer Early Diagnosis Behavior: The Important Role of Electronic Health Literacy

ABSTRACT

Background and Objectives: Cervical cancer screening behavior is more prevalent among individuals with a strong grasp of electronic health literacy. This study aimed to determine the relationship between electronic health literacy and attitudes toward early diagnosis of cervical cancer in women.

Materials and Methods: This descriptive and correlational study was conducted with 300 participants between 25 February and 05 May 2024. The study included participants who applied to a hospital in Siirt province of Turkey through purposive sampling. Data were collected using a descriptive information form, the E-Health Literacy Scale and the Cervical Cancer Early Detection Attitude Scale. Descriptive statistics, compare tests, Pearson correlation analysis, and linear regression were conducted for the analysis.

Results: The mean age of the participants was 28.91 ± 4.98 years, and 42.3% had a high school education or higher. The mean total score of the Cervical Cancer Early Detection Attitude Scale was 100.36 ± 9.38 , and the mean total score of the E-Health Literacy Scale was 38.26 ± 10.05 , which is at a moderate level. A positive and moderately significant correlation exists between the E-Health Literacy Scale and the Cervical Cancer Early Detection Attitude Scale ($r=0.313$, $p<0.05$). The attitudes towards early diagnosis of cervical cancer were higher in those who had pap smear test, whose family/friends were diagnosed with cervical cancer, and those who received education on cervical cancer and wanted education. These variables were significant predictors explaining 17.8% of the total variance of attitude towards early diagnosis of cervical cancer.

Conclusion: Electronic health literacy and cervical cancer-related characteristics positively influence attitudes toward early diagnosis of cervical cancer. This study highlights the importance of considering women's eHealth literacy in interventions to improve cervical cancer early detection behaviours.

Paper Type: Research Article

Keywords: Attitude, Cervical Cancer, Early Diagnosis, E-Health, Women.

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Introduction

Cervical cancer is one of the most common and deadly cancers in women worldwide. Each year, about 500,000 women are diagnosed with cervical cancer, and more than 300,000 die from this disease (1-3). Prevention focuses on vaccination against human papillomavirus (HPV) and early screening and treatment of precancerous lesions (4). Early detection through the pap smear test has proven effective in reducing cervical cancer rates. Regular screenings have lowered mortality rates in some countries (2). However, awareness and knowledge about cervical cancer and HPV vary widely, with some studies showing low awareness and testing rates (5). For instance, a study in Saudi Arabia found that most women were unaware of HPV and the pap smear test. In contrast, a study in the USA reported a lack of awareness about cervical cancer and HPV among women (6, 7). In a study conducted in eastern Turkey, it was reported that the rate of not having a pap smear test was higher in women under the age of 25 and those whose spouses were deceased/divorced (8).

In today's digital world, access to health information and electronic health (e-health) literacy play critical roles in early cervical cancer diagnosis and promoting preventive behaviors. With advancing technology, people can now easily access health information online anytime (6). The internet has significantly influenced how individuals seek health-related information and has proven to be an essential resource, especially for women. Research shows that seeking health information online positively impacts behavioural changes (9, 10). When the effect of cervical cancer on health literacy was

investigated, it was reported that the behaviours of women with inadequate literacy to participate in regular cervical cancer screening and receive counselling services were not at the desired level, increasing the rates of cervical cancer (11). Although the internet is an essential encouraging factor in obtaining information about cervical cancer, this is limited by the lack of sufficient e-health literacy (12, 13). In a recent study, Muturi (2020) discovered that e-health literacy is vital in empowering women to access reliable health information and make informed decisions about cervical cancer (13). Also, another study conducted by Kılınç İşleyen et al. (2024) uncovered a link between lower e-health literacy and reduced health knowledge (14). Research on cervical cancer is conducted on the internet for many reasons, such as searching for physicians or hospitals, getting information about health problems experienced, and sharing advice about people who have received health services before. Studies conducted in Turkey have also revealed that there is an alarming lack of awareness among women about cervical cancer. However, as women's e-health literacy levels have increased, their knowledge and behaviour levels have also changed (14, 15). Also, different studies emphasised a strong need for national and regional planning, implementation, and evaluation within the scope of e-health literacy due to the high importance of women's attitudes towards early screening for cervical cancer (13, 14).

There is increasing interest from local, national, and global stakeholders in integrating cervical cancer control programs into the e-health strategies of almost all

countries worldwide, including deficient- and middle-income countries (16). Indeed, the World Health Organization and the International Telecommunication Union conducted a study in Zambia that launched a mobile phone text messaging campaign to raise awareness of cervical cancer screening. The Peruvian Ministry of Health reported that a national pilot program using text messages to inform women about HPV screening results successfully increased awareness (2). In line with these studies, it is seen that e-health literacy makes the most significant contribution to raising awareness within the scope of combating cervical cancer and developing positive attitudes towards screening. It is crucial to underline that despite the increasing efforts at local, national, and global levels, there still needs to be a significant gap in the evidence of successful implementation and impact. This gap necessitates further research and development of digital strategies for controlling cervical cancer. Moreover, studies have established that conducting additional correlational studies is a key step towards understanding the impact of e-health literacy on participation in cervical cancer screening programs. (10, 15, 17). Therefore, this study aimed to reveal the existing effect of e-health literacy on attitudes towards early diagnosis of cervical cancer.

Based on cervical cancer prevention and reviewed literature on e-health literacy and related elements, the current study is focused on the following research questions:

1. What are women's attitudes towards early diagnosis of cervical cancer?
2. What are women's attitudes towards e-health literacy?

3. Is there a relationship between women's e-health literacy and cervical cancer early diagnosis and attitude?

Materials and Methods

This descriptive correlational study was conducted in a province in the Southeast Anatolian Region of Turkey. The study was carried out from February 25 to May 5, 2024. The study population consisted of women who applied to the obstetrics and gynaecology outpatient clinic in the training and research hospital of Siirt province located in the Southeastern Anatolia region of Turkey and who met the inclusion criteria. The Epi info program calculated the number of individuals to be sampled. It was calculated as 261 with a margin of error of 5% and a 90% confidence interval, assuming 60% of the information on cervical cancer screening (18).

The formula for determining sample size can be used:
$$\text{sample size } (n) = \frac{z^2 \times P(1-P)}{e^2}$$
 where n =sample size Z =Critical value of the desired level of confidence, e =margin of error/desired level of precision, p =probability of distribution $(261 = \frac{1.65^2 \times 0.6(1-0.6)}{0.05^2})$ (19).

Considering the possible loss of data, a total of 300 participants were reached by the purposive sampling method. The hospital has six gynaecology outpatient clinics where the study was conducted. The purposive sampling method expanded the sample and ensured maximum diversity. Participants from each outpatient clinic were included. Participants who came to the standard waiting room of the outpatient clinics were interviewed, and the eligibility criteria for the study were discussed. Women between the ages of 30 and 65 who had sexual experience, were literate, had no communication

problems, did not have a psychiatric illness, and agreed to participate in the study were included in the study. Participants with a history of gynecologic cancer and hysterectomy, which were considered to have the potential for awareness/information about cervical cancer, were excluded from the study to eliminate selection bias.

Data Collection Instruments

The data were collected through face-to-face interviews using an introductory information form prepared by the researchers, the Attitudes Toward Early Diagnosis of Cervical Cancer Scale, and the E-Health Literacy Scale.

The Introductory Information Form

The first part of this form, which the researchers prepared by reviewing the literature (3, 15, 17, 18), included questions about socio-demographic information about the participants' descriptive characteristics (age, marital status, income status, employment status, education status, age at marriage). In contrast, the second part included questions about the participant's knowledge about cervical cancer, diagnosis, and pap smear tests. This form, designed to gather comprehensive participant data, consists of 20 open-ended (period, place and reason for pap smear test etc.) and closed-ended questions (education level, family type, family history of cervical cancer, family history of cervical cancer, and cervical cancer education status etc.).

Scale of Attitudes towards Early Diagnosis of Cervical Cancer (SATEDCC)

The items in the scale developed by Özmen and Özsoy were structured to investigate the four sub-dimensions of the Health Belief Model (3). The scale includes nine items for

the 'Perceived Sensitivity' sub-dimension, eight items for the 'Perceived Seriousness/Caring' sub-dimension, seven items for the 'Perceived Barrier' sub-dimension and six items for the 'Perceived Benefit' sub-dimension. Of the 30 items, 22 were positive and eight were negative (questions numbered 3, 6, 8, 15, 17, 24, 25 and 27). In the five-point Likert-type scale (1=strongly disagree, 2=disagree, 3=undecided, 4=agree, 5=strongly agree), the scoring of negative questions is reversed. The highest score to be obtained from the scale is 150, and the lowest score is 30. A high score on the scale, indicating high attitudes towards early cervical cancer diagnosis, is achieved by selecting the most positive responses. By the end of this study, the Cronbach's Alpha coefficient for the entire scale was 0.88.

E-Health Literacy Scale (eHEALS)

The scale developed by Chiang, Yang, and Hsu (2015) measures an individual's ability to search, find, understand, and evaluate health information from electronic sources and use this information to address and solve a health problem (20,21). The five-point Likert-type scale (1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree) consists of three sub-dimensions and 12 items. The sub-dimensions of the scale are functional sub-dimension (3 items), critical sub-dimension (5 items), and interactive sub-dimension (4 items). A high score on the scale indicates a high level of e-health literacy. By the end of this study, Cronbach's Alpha coefficient for the whole scale is 0.82, which is a satisfactory level (18).

A pre-test with 10 participants was conducted to assess the comprehensibility and usability of the questions in the data collection instruments. When the pre-test was completed, the questions were found to be understandable, and no corrections were made. The face validity of the data collection instruments was good, and no major disclosures were made. The content validity index (CVI) scores for SATEDCC (CVI=0.83) and eHEALS (CVI=0.88) were at acceptable levels (22). The data obtained from the pre-test respondents were not recorded for the research.

Data Collection Methods

The researchers collected data between 25 February and 05 May 2024. Before starting the data collection, the researchers were present in the standard waiting room in the gynaecology outpatient clinics to reach the participants. The incoming participants were interviewed face-to-face, informed about the purpose of the study and their eligibility criteria were evaluated. Participants' consent to participate in the study was obtained. The participants were then directed to the counselling room, where they could feel comfortable and safe to complete the data collection tools, which the hospital authorities deemed appropriate. After the participants individually completed the data collection instruments, they hand-delivered them to the researchers. The participants stated that the average time to fill in the data collection forms was 15-20 minutes.

Data Analysis

The statistical program SPSS 22 (Statistical Package for Social Science) analysed the data. Shapiro-Wilk and skewness-kurtosis normality tests were applied to determine

whether the scale scores were normally distributed according to the descriptive characteristics. In the distribution of all descriptive variables except childbearing status according to scale scores, $p > 0.05$ in the Shapiro-Wilk test and skewness-kurtosis values were between -2 and +2, and it was determined that the data were generally normally distributed (23). The data were analysed using descriptive characteristics such as number, percentage, mean, and standard deviation. To compare the participants' SATEDCC and eHEALS scores in two-category independent variables, the independent sample t-test was used in cases of normal distribution, and the Man Whitney U test was used in cases of non-normal distribution. A one-way ANOVA test was used to compare participants' SATEDCC and eHEALS scores in more than two independent variables. The correlation between participants' SATEDCC and eHEALS scores was evaluated by Pearson correlation analysis. The independent variables whose relationship with the dependent variable, attitude towards early cervical cancer diagnosis, was statistically significant were included in the linear regression analysis with the "enter method". In the regression analysis, the variables of having a pap-smear test, having a history of cervical cancer in the family/friend circle, receiving education about cervical cancer, and requesting education were included in the analysis as dummy variables since they were categorical variables. Total eHEALS and its Critical and Interactive subscales scores were included in the regression model without modification. The percentage of explaining the attitude towards early diagnosis of cervical cancer was

determined. A statistically significant $p < 0.05$ value was accepted.

Results

The mean age of the participants was 42.62 ± 6.43 years; 74.7% were unemployed, and only 64.0% had social security. 45.0% spoke a language other than Turkish, and 77.7% had a nuclear family type. 65.0% of

participants knew about the pap smear test, 10.0% had a family history of cervical cancer, and 7.7% had friends with cervical cancer. 94.7% had not received any education on cervical cancer, and 82.3% wanted to receive education, with 92.2% preferring health professionals as a source of education (Table 1).

Table 1. Distribution of Socio-demographic and Cervical Cancer Related Characteristics of the Participants (N=300)

Socio-demographic Characteristics	N	%	Characteristics of Cervical Cancer	N	%
Education Status			Pap smear hearing status		
Literate	53	17.7	Yes	195	65.0
Primary School	120	40.0	No	105	35.0
High School	49	16.3	Pap smear status		
University	78	26.0	Yes	70	23.3
Perception of income status			No	230	76.7
Less	104	34.7	Reason for testing		
Centre	145	48.3	Own will	33	47.1
More	51	17.0	Health professional recommendation	25	35.7
Employment Status			Medical justification	12	17.2
Yes	76	25.3	Family history		
No	224	74.7	Yes	30	10.0
Social Security			No	270	90.0
Yes	225	75.0	Diagnosed individual in the family		
No	75	25.0	1st degree relative	14	46.7
Marital Status			Other	16	53.3
Married	300	100	Friend history		
Most spoken language			Yes	23	7.7
Turkish	165	55.0	No	277	92.3
Kurdish	111	37.0	Education status		
Arabic	24	8.0	Yes*	16	5.3
Family Type			No	284	94.7
Core	233	77.7	Desire for education		
Wide	67	22.3	Yes	247	82.3
Childbearing status			No	53	17.7
Yes	278	92.7	Source of education (n=247)		
No	22	7.3	Health professional**	240	97.2
			Internet	7	2.8
	Mean±SD			Mean±SD	
Age (years)	42.62±6.43		Duration of pap smear test (years)	4.10±2.16	
Age at marriage (years)	22.77±5.20				
Duration of marriage (years)	19.65±9.14				
Number of children	4.02±2.20				

*All of them stated that they received information from health professionals.

**140 nurses, 100 doctor

The participants' mean total score was 100.36 ± 9.38 . When the sub-dimension mean scores are examined, perceived sensitivity was 32.32 ± 4.37 , perceived seriousness/importance was 26.03 ± 3.59 , perceived obstacle was 23.51 ± 3.85 , and perceived benefit was 17.35 ± 2.90 . The participants' eHEALS total mean score was 38.26 ± 10.05 . When the mean scores of the sub-dimensions are examined, the functional sub-dimension is 8.50 ± 3.32 , the critical sub-dimension is 16.57 ± 5.47 , and the interactive sub-dimension is 13.19 ± 4.24 .

Participants' descriptive characteristics did not significantly affect SATEDCC and eHEALS mean score distribution ($p > 0.05$). When the distribution of the mean scores of the participants according to their characteristics related to cervical cancer was analysed, it was found that the mean scores of the participants who had a pap smear test, who were diagnosed with cervical cancer in their family/friends, who received education about cervical cancer and who wanted education were statistically significantly higher ($p < 0.05$) (Table 2).

When the correlation between the mean scores of the SATEDCC and eHEALS was examined, a positive and moderately significant relationship was found between the total SATEDCC and Total eHEALS ($r = 0.313$) and the functional ($r = 0.340$), critical ($r = 0.420$) and interactive ($r = 0.380$) sub-dimensions ($p < 0.05$) (Table 3).

A single model was created and analysed with linear regression considering the relationships between the variables that were found to be significant in the study (having a pap smear test, having a history of cervical cancer in the family/friend circle,

receiving/requesting education about cervical cancer, total eHEALS, and all its sub-dimensions) and total SATEDCC. According to the results of linear regression analysis, participants who had pap-smear tests had a mean score of 1.02 points ($p = 0.045$) higher than those who did not, participants who had a family history of cervical cancer had a mean score of 2.02 points ($p = 0.030$) higher than those who did not, participants who had a family history of cervical cancer had a mean score of 1.07 points ($p = 0.020$), the mean score of the participants who received education about cervical cancer was 1.07 points ($p = 0.018$) compared to those who did not, and the mean score of the participants who wanted to receive education about cervical cancer was 1.11 points ($p = 0.048$) compared to those who did not. For each one-unit increase in the functional subscale score of the participants, the total score of the SATEDCC was 2.09 points ($p = 0.003$); for each one-unit increase in the critical subscale score, the total score of the SATEDCC was 1.10 points ($p = 0.046$), and for each one-unit increase in the total eHEALS score, the total score of the SATEDCC was 3.16 points ($p = 0.021$) statistically significantly higher. These variables were significant predictors explaining 17.8% of the total attitude variance towards early cervical cancer diagnosis ($R: 0.431$, $AdjR^2: 0.178$, $p = 0.045$) (Table 4).

Discussion

Our study underscores the critical role of e-health literacy and early detection in women's cervical cancer awareness. Specifically, we found that a positive attitude towards early detection, coupled with high e-health literacy in the Southeast Anatolia

Region, significantly aids in the early detection of cervical cancer. Recognising this correlation is pivotal in advocating for early detection and improving women's health outcomes.

In the study, women's cervical cancer early diagnosis attitude and e-health literacy and scale sub-dimensions were determined at a moderate level. Yeşildağ and Yılmaz discovered that cervical cancer awareness was at a moderate level in their study in Turkey, which included 714 women over 18 (24). In the study of 343 women in Turkey, Gözüyeşil et al. found that awareness of cervical cancer was at a moderate level (25). This suggests that there may be opportunities to raise awareness about cervical cancer in the region. Our results are consistent with a previous study that found that among 611 Saudi women over the age of 18, only one in four participants was unaware of cervical cancer, and only 23.6% knew about screening processes (26). According to Muturi's study (2020), the potential of e-health literacy in Kenya, especially in early cervical cancer diagnosis and motivating behaviour change, is not yet sufficient (13). Our study unequivocally demonstrates that women's low e-health literacy may hinder their ability to effectively evaluate and utilise online health information for early detection of cervical cancer. Bitar and Alismail's (2022) qualitative study, which involved 12 women in Saudi Arabia, revealed that the majority had limited awareness of HPV and pap smear tests (6). Similarly, in a focus group interview with 22 young women in the USA, Lee et al. (2019) unequivocally established that women's knowledge levels about cervical cancer and HPV were notably low (7). Our

study finding shows that women's cervical cancer early diagnosis attitude and e-health literacy level are not at the desired level in our country and in the world.

E-health literacy significantly contributes to improving women's health (3-5, 27). In this study, it was determined that there was a moderate positive relationship between the participants' e-health literacy and attitude toward early diagnosis of cervical cancer. According to a study by Bazaz et al. (2019) involving 231 women of reproductive age in Iran, higher e-health literacy about cervical cancer was associated with an increase in the likelihood of these women participating in regular cervical cancer screenings and seeking counselling services (11). In their systematic review based on an analysis of 27 studies, Rossman et al. (2021) found that educating women about cervical cancer control through e-health digital channels increased cancer screening awareness (2). Kılınç İşleyen et al. (2024) reported that as women's e-health literacy levels about cervical cancer increased in Turkey, their knowledge and behavior levels changed, and their attitudes toward early cancer screening increased positively (14). Individuals with low e-health literacy often refrain from seeking medical attention, hold more fatalistic views regarding cancer, exhibit reduced interest in cancer screening, and tend to avoid obtaining information about their health conditions (28). Consequently, they may be less likely to receive an early diagnosis of cervical cancer. This finding is critical as it indicates that efforts to enhance e-health literacy play a pivotal role in improving attitudes towards early cervical cancer diagnosis.

Table 2. Distribution of SATEDCC and eHEALS Mean Scores of the Participants According to Their Socio-demographic and Cervical Cancer Related Characteristics (N=300)

Socio-demographic Characteristics	SATEDCC $\bar{X}\pm SD$	eHEALS $\bar{X}\pm SD$	Characteristics of Cervical cancer	SATEDCC $\bar{X}\pm SD$	eHEALS $\bar{X}\pm SD$
Age					
35-39	100.29±10.24	38.56±9.50	Yes	100.54±9.08	38.59±10.01
40-46	101.14±8.89	38.02±11.00	No	100.02±9.94	37.65±10.14
47 and ↑	99.36±8.63	38.13±9.57			
Test and p	F=0.806 p= 0.447	F=0.089 p=0.915	Test and p	t=0.457 p=0.648	t=0.770 p=0.442
Education status					
Literate	102.13±9.33	38.66±10.82	Yes	100.37±8.39	38.57±10.49
Primary School	100.56±9.49	37.17±9.98			
High School	99.81±8.93	39.73±11.19	No	100.36±9.67	38.17±9.93
University	99.83±9.47	38.75±8.81			
Test and p	F= 1.176 p=0.319	F=0.908 p=0.437	Test and p	t=1.824 p= 0.010	t=1.032 p=0.044
Perception of income status					
Less	100.92±9.74	38.20±10.39	Yes	101.63±7.69	38.20±9.91
Equal	99.82±9.15	38.05±10.42			
More	100.78±9.36	39.00±8.23	No	100.22±9.55	38.27±10.08
Test and p	F= 0.477 p=0.621	F= 0.169 p=0.845	Test and p	t= 1.854 p=0.041	t=1.032 p=0.044
Employment status					
Yes	100.26±9.44	38.08±10.16	Yes	103.47±6.57	38.13±9.93
No	100.65±9.23	38.80±9.76	No	100.10±9.54	38.27±10.07
Test and p	t=-0.313 p= 0.628	t= -0.537 p= 0.690	Test and p	t= 1.054 p=0.033	t=1.233 p=0.001
Social security					
Yes	100.90±9.73	38.47±10.66	Yes	103.06±8.40	42.68±7.66
No	99.40±8.63	37.88±8.90	No	100.21±9.42	38.01±10.12
Test and p	t=1.330 p= 0.265	t= 0.513 p= 0.609	Test and p	t= 1.202 p=0.029	t=2.050 p=0.040
Most spoken language					
Turkish	99.59±9.48	38.35±10.24	Yes	100.83±9.43	38.38±9.95

Socio-demographic Characteristics	SATEDCC \bar{X} ±SD	eHEALS \bar{X} ±SD	Characteristics of Cervical cancer	SATEDCC \bar{X} ±SD	eHEALS \bar{X} ±SD
Kurdish	100.54±8.63	37.00±10.20	No	98.18±8.89	37.71±10.58
Arabic	101.47±9.34	38.40±9.79	Test and p	t= 1.870 p=0.045	t= 1.438 p=0.021
Test and p	F= 1.345 p=0.262	F= 0.207 p=0.813			
Family Type					
Core	100.70±9.53	37.83±9.67	Yes	100.29±9.32	38.10±10.24
Wide	100.27±9.35	38.39±10.17	No	101.27±10.23	40.36±6.99
Test and p	t=0.335 p= 0.895	t= -0.398 p= 0.425	Test and p	Z= -0.423 p= 0.672	Z= 0.931 p= 0.352
Marriage age (years)					
19 and ↓	100.50±10.049	38.86±10.45	15 and ↓	99.77±10.04	38.19±9.72
20-24	101.47±8.15	37.22± 10.42	16-23	100.11±8.65	38.85±9.51
25 and ↑	99.09±9.99	38.92± 9.31	24 and ↑	101.23±9.45	37.73±10.96
Test and p	F= 1.795 p=0.30	F= 0.981 p=0.10	Test and p	F= 0.656 p=0.520	F= 0.312 p=0.732

p=Statistical Significance <0.05

Table 3. The Relationship between the Mean Scores of SATEDCC and eHEALS

Scale and Sub-dimensions	1	2	3	4	5	6	7	8	9
Total SATEDCC	1	0.680**	0.549**	-0.668**	0.390**	0.313*	0.340*	0.420*	0.380*
Perceived Responsiveness		1	0.247**	-0.177**	0.135	0.285*	0.145	0.510	0.310
Perceived seriousness/importance			1	0.195**	0.031	0.017	0.028	0.004	0.051
Perceived Barrier				1	-0.226**	-0.416	-0.012	-0.130	-0.640
Perceived Benefit					1	0.305	0.013	0.131	0.064
Total eHEALS						1	0.506**	0.886**	0.830**
Functional sub-dimension							1	0.200**	0.259**
Critical sub-dimension								1	0.651**
Interactive sub-dimension									1

*p<0.05, **p<0.001

Table 4. Linear Regression Analysis for the Relationship between the Studied Variables and Attitudes towards Early Diagnosis of Cervical Cancer

Variables	Total SATEDCC-95% CI					
	B	SD	β	p	Lower	Upper
Pap smear status (Yes)	0.434	1.334	1.020	0.045	3.060	2.192
Family history (Yes)	0.660	1.911	2.021	0.030	3.101	4.422
Friend history (Yes)	2.729	2.125	1.078	0.020	1.453	6.912
Education status (Yes)	3.295	2.483	1.079	0.018	1.592	5.759
Desire for education (Yes)	2.711	1.423	1.110	0.048	0.090	5.513
Functional sub-dimension	0.027	0.225	2.090	0.003	0.373	0.528
Critical sub-dimension	0.183	0.099	1.107	0.046	0.115	0.378
Interactive sub-dimension	0.153	0.027	0.053	0.251	-0.418	0.355
Total eHEALS	0.151	0.032	3.162	0.021	0.108	0.410

R: 0.431, R²:0.185, Adj. R²: 0.178, p=0.045

B: Coefficient B; SD: Standard deviation; β : Standardized beta coefficient; 95% CI: confidence interval of 95%; R²: R-squared; AdjR²: Adjusted R-squared; Statistical significance was identified if the P-value was lower than 0.05 (p<0.05)

In the study, it was determined that having a pap smear, having a history of cervical cancer in family and friend history, having received education on this subject and requesting education/information, the individual's e-health literacy level, functional and critical sub-dimensions of e-health literacy positively affected the attitude towards early diagnosis of cervical cancer. In a study conducted by Bazaz et al. (2019) in Iran involving 231 women of reproductive age, it was established that women who did not undergo a Pap smear test were significantly more concerned about the importance of early diagnosis of cervical cancer (11). The findings from three separate studies shed light on the positive impact of a history of cancer in the family or close friends with cancer on individuals' attitudes towards early cancer diagnosis and screening. The first study, conducted by Algabr et al. (2022), involved 611 women in Saudi Arabia (26). The second study, led by Ibrahim et al. (2022), included 1085 women in Saudi Arabia (29). The third study, conducted by Tosun Güleröglü (2023), focused on 260 women in Turkey (27). These

studies collectively highlight the influence of personal connections with cancer on individuals' perspectives towards early detection and screening. A family or friend's cervical cancer history may be influential because they may know information about cervical cancer. In the study of 343 women in Turkey, Gözüyeşil et al. (2019) reported that receiving information or education about cervical cancer positively affected women's cervical cancer early diagnosis attitude and behaviour (25). Kiracılar and Koçak's study (2023) in Turkey, which involved 395 women, showed that women with e-health literacy better understand cervical cancer early detection and screening methods compared to those with insufficient e-health literacy (12). This result indicates that when individuals see themselves in the risky group and increase their e-health literacy levels through the internet or media, it facilitates their orientation towards healthy behaviours in general and cervical cancer early diagnosis and screening behaviours in particular.

Study Limitations and Strengths: The data were obtained in a certain period, and the

sample includes women living in the region where the study was conducted, so generalizability to the population is limited. The results are based on women's self-reports. Participants in this study were more likely to be younger and gainfully employed than the general female population, all of whom had at least a literate level of education. It's important to note that the valuable findings may not fully reflect the experiences of women in regional or rural areas, particularly those without access to hospitals. Additionally, the findings may only apply to women in the study population, underscoring the need for further research and understanding. This quantitative research limited our ability to explore individual women's subjective experiences. Despite these limitations, it is thought that the study's results make an essential contribution to the literature since women's cervical cancer early diagnosis attitude and e-health literacy level and the factors affecting them can be determined.

Conclusion

In this study, e-health literacy and cervical cancer-related characteristics were important determinants that positively affect attitudes toward early diagnosis of cervical cancer. These results demonstrate the capacity of digital health campaigns to inform women about the importance of timely cervical cancer diagnosis, evaluate feedback, and encourage them to take action. It is essential to provide information about e-health communication programs, adapt the information provided to cervical cancer, and understand the factors that drive and hinder online communication.

In line with these results, it is imperative to enhance women's knowledge and understanding of cervical cancer. Additionally, it is crucial to identify women who possess inadequate e-health literacy levels and limited knowledge of e-health resources. Once these individuals are identified, it is essential to carefully select educational tools and methods tailored to their specific needs and capabilities. Implementing interventions aimed at enhancing e-health literacy levels is strongly advisable by providing targeted training and consultation activities conducted by healthcare professionals.

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