# The Effect of Women's Health Literacy Status on their Attitudes and Behaviors Towards the Pap Smear Test: A Series In Turkey

## ABSTRACT

**Background and Objective:** Early diagnosis is important for the prevention and treatment of cervical cancer. Pap smear test, which is used for early diagnosis, does not reach about half of women. This low level of use of preventive health services is associated with low health literacy. The aim of this study was to determine the effect of women's knowledge and health literacy status on their attitudes and behaviors towards the Pap smear test.

**Materials and Methods:** This descriptive, cross-sectional study was completed with 260 women. The convenience sampling method was used, and the study data were collected with a personal information form and the Health Literacy Scale at Yozgat Bozok University Research and Application Hospital between June and September 2022.

**Results:** The average age of the women included in the study was 33.5±10.6 years and the total health literacy score was mean 54.52±13.40. The health literacy levels of women aged ≥41 years, who were married, with a primary school level of education, and not working in an income-generating job were lower than those of the others ($p<0.05$). It was determined that only 28.1% of the women had previously had a Pap smear test and were considering having it done again. The health literacy level of the women who did not know the test, had not had one previously, and did not plan to have it, was lower than that of the others ($p<0.05$).

**Conclusion:** The study results demonstrated that health literacy affects women's attitudes and behaviors towards the Pap smear test. The attitudes and behaviors of women with a high health literacy level towards the Pap smear test were seen to be positive.

**Paper Type:** Research Article

**Keywords:** health literacy, pap-smear, women, attitude, behavior

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## Introduction

In many countries cancer is the first or second leading cause of death under the age of 70 years. The increasing incidence of cancer has become an important public health problem worldwide (1). One of the leading causes of death among women is cervical cancer. It was reported that in 2020, an estimated 604,000 women worldwide were diagnosed with cervical cancer with approximately 342,000 deaths. Cervical cancer is the most frequently diagnosed cancer in 23 countries and the leading cause of cancer death in 36 countries (2). According to 2020 data, among all female cancers, cervical cancer ranks fourth in the world with an incidence of 13.3 per 100,000, and it ranks 12th in Turkey with an incidence of 4.8 (3,4).

There are many risk factors for cervical cancer, including a young age, being overweight, a diet poor in vegetables and fruits, low socio-economic status, smoking and alcohol use, a high number of births and pregnancies, history of cervical cancer in mother and sister, having more than one sexual partner, sexually transmitted infection history, HPV, early marriage, early initiation of sexual activity and late diagnosis due to not having a Pap smear test (5). Human Papillomavirus (HPV) is the most important risk factor for cervical cancer and is the second most common sexually transmitted infection throughout the world. Although the prevalence of HPV worldwide differs according to geographical regions, it is reported to be in the range of 2-44% in asymptomatic women. More than 80% of men and women will become infected with at least one type of HPV in their lifetime (5,6).

The determination of risk factors, early diagnosis, and treatment are very important for the prevention and treatment of cervical cancer. Pap smear, which is one of the most important screening tests for the early diagnosis of cervical cancer, is a test based on the examination of normal cells shed from the cervix and vaginal epithelium, and cells that have changed due to the disease. Ensuring that the importance of this test is recognized is an important step for public health and especially for women's health. Pap smear is a unique test because it is inexpensive, easy, acceptable, and can be used in community screening. It is a screening method that can reduce deaths from cervical cancer by approximately 75% (7,8).

Although it is so important, the application rate of the Pap smear test is not at the desired level. The main reasons for this have been reported to be insufficient education and lack of awareness/ knowledge, religious beliefs, cultural problems, economic reasons, misperceptions about cervical cancer and gynecological examination, and other reasons related to psychosocial and demographic characteristics (7). In previous studies, it has been determined that about half of women have not previously had a Pap smear test (9,10). It has been determined that the rate of having a Pap smear test increases with age, duration of marriage, number of births, level of knowledge about Pap smear, and risk perceptions about cervical cancer (9,10).

The expectation of self-responsibility in health care has increased (11). Therefore, individuals may be asked to take on new roles to take responsibility for their own health, understand information, and make health decisions for themselves and others. The basis of all these demands is health literacy (11). Health literacy is related to literacy and helps to improve and maintain the quality of life. It is the knowledge, motivation and competence required to access, understand, evaluate and use health information in order to make decisions and judgments about health services, prevent diseases, and promote health

in daily life (12). Health literacy is increasingly recognized as important to health. Therefore, it is recommended that countries determine their own health literacy levels and produce programs to improve health literacy according to the results. In a study examining the change in the level of health literacy in Turkey, it was reported that the health literacy level of 30.9% of individuals was insufficient. Low health literacy can lead to negative health outcomes, and it has also been associated with low level of use of preventive health services (11,13).

Studies have indicated that low levels of health literacy are associated with low rates of cancer screening (14,15,16). Supporting women's health literacy levels and their positive attitudes towards screening programs is important in terms of protecting and improving women's health. The aim of this study was to determine the effect of women's health literacy status on their attitudes and behaviors towards the Pap smear test.

## Methods

### Setting and Participants

This descriptive, cross-sectional study was conducted to determine the effect of health literacy levels on women's attitudes and behaviors towards the Pap smear test.

The research was conducted in Yozgat Bozok University Research and Application Hospital between 20 June and 20 September 2022. The convenience sampling method was used in the study. The study universe consisted of all women who came to the relevant hospital between the data collection dates. The minimum number of individuals to be included in the sample of the study was determined using the G*Power 3.1.9.4 program. According to the calculation made, based on two variables, 0.05 significance level, 95% power and moderate effect (0.30), the sample size was determined as 134 women. The study was completed with 260 women.

Inclusion criteria were Age18-65 years, Currently or previously sexually active, No verbal or written communication barriers, Agreement to participate in the study and the exclusion criteria were defined as a history of minor or major gynecological surgery, a history of cancer, or the presence of a sexually transmitted disease in a partner or themselves.

### Data collection tools

The data of the study were collected using an Information Form and the Health Literacy Scale.

Information Form: This 13-item form was prepared by the researcher with reference to the literature to determine the participant's sociodemographic, gynecological and obstetric characteristics and their attitudes towards the Pap smear test (9,11,12).

Health Literacy Scale: The Health Literacy Scale was developed by Suka et al. (2013) to measure the health literacy levels of adults. Turkish validity and reliability studies of the scale were conducted by Türkoğlu and Kılıç (2021). The scale consists of three sub-dimensions: Functional Health Literacy (5 items), Interactive Health Literacy (5 items), and Critical Health Literacy (4 items) (17,18).

The Functional Health Literacy Sub-Dimension shows the basic literacy ability of individuals. In respect of health, it explains the health risks or how the health system will be used, and assesses the ability to read basic health education materials. The Interactive Health Literacy Sub-Dimension includes advanced cognitive, literacy and social skills, which evaluate the patient's ability to exhibit independent behaviors, make decisions regarding their own health status, and communicate effectively with healthcare professionals. The Critical Health Literacy Sub-Dimension includes critical analysis of the information obtained in the field of health

and the advanced cognitive and social skills to be used while making health decisions (18). Each item is scored with 5-point Likert-type responses to give a total score in the range of 14 to 70 points, with higher scores indicating a higher level of health literacy. In the validity and reliability study of the Turkish version, the Cronbach's alpha value was found to be 0.85 (18).

### Data Collection

Before starting the research, a pilot study was conducted on 5 participants to evaluate the comprehensibility of the data collection forms. Based on the feedback, any incorrect expressions or incomprehensible questions on the forms were corrected and the questionnaires were given their final form. The data were collected by the researcher in face-to-face interviews. The data form was completed in approximately 10 minutes.

### Statistical Analysis

Data obtained in the study were analyzed statistically using SPSS vn. 22.0 software (Statistical Package for Social Sciences). Conformity of the data to normal distribution was evaluated with the Kolmogorov-Smirnov test. Number and percentage distribution, Independent Sample T-Test, One way Anova tests were used in the evaluation of the data. A value of $p<0.05$ was accepted as the level of statistical significance.

## Results

The functional health literacy score was determined as mean 17.86±6.24, interactive health literacy score as mean 19.95±5.57, critical health literacy score as mean 16.71±4.21 and total health literacy score as mean 54.52±13.40 (Table 1).

**Table 1. Distribution of Women's Health Literacy Scale Mean Scores (n=260)**

| Health Literacy | Min-Max | Mean±SD |
|---|---|---|
| Functional health literacy | 5-25 | 17.86±6.24 |
| Interactive health literacy | 5-25 | 19.95±5.57 |
| Critical health literacy | 4-20 | 16.71±4.21 |
| Total health literacy | 14-70 | 54.52±13.40 |

The sociodemographic characteristics of the women included in the study are given in Table 2. It was determined that 38.4% of the women were aged 21-30 years, 83.1% were married, and 57.4% had an education level of university or higher. The distribution of the health literacy scale mean scores of the women was examined according to sociodemographic characteristics, and it was determined that the functional, interactive, critical and total health literacy mean scores of women aged 41 and over were lower than those of younger women ($p<0.05$).

The total and sub-dimension mean scores of the health literacy scale were examined according to the variables of marital status, education level, working in an income generating job, family type and place of residence. The functional, interactive, critical and total health literacy mean scores of women who were married, primary school graduates, did not work in an income-generating job, and lived in an extended family were determined to be lower than those of the others ($p<0.05$). The average interactive, critical and total health literacy scores of women residing in villages were seen to be lower than the mean scores of women living in towns and cities ($p<0.001$) (Table 2).

**Table 2. Distribution of Health Literacy Scale Scores According to the Sociodemographic Characteristics of the Women in the study (n=260)**

| Variables | | | | Functional health literacy | | Interactive health literacy | | Critical health literacy | | Total health literacy | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | n | % | Mean±SD | | Mean±SD | | Mean±SD | | Mean±SD | |
| Age | 18-30 years | 120 | 38.4 | 19.67±5.0a | p<0.001 F= 16.273 | 19.66±5.1 | p<0.01 F= 12.321 | 16.65±4.2 | p<0.05 F= 12.819 | 55.99±14.4a | p<0.001 F= 15.877 |
| | 31-40 years | 87 | 33.5 | 18.05±5.5a | | 21.29±5.1 | | 17.54±3.7 | | 56.89±12.1a | |
| | ≥41 years | 53 | 20.4 | 13.43±7.5b | | 18.37±6.7 | | 15.50±4.6 | | 47.32±15.0b | |
| Marital Status | Married | 216 | 83.1 | 17.40±6.2 | p=0.008 t= 2.657 | 19.7±5.6 | p= 0.145 t= -1.462 | 16.4±4.3 | p=0.029 t= -2.194 | 53.5±13.3 | p=0.012 t= -2.541 |
| | Single | 44 | 16.9 | 20.11±5.5 | | 21.0±5.0 | | 17.9±3.0 | | 59.1±12.5 | |
| Education level | Primary education | 49 | 18.8 | 11.59±6.1a | p<0.001 F= 57.320 | 14.67±6.1a | p<0.001 F= 59.782 | 12.69±4.3a | p<0.001 F= 52.138 | 38.95±13.4a | p<0.001 F= 99.687 |
| | Secondary education | 62 | 23.8 | 16.41±5.9b | | 18.01±5.9b | | 15.64±4.5b | | 50.08±11.7b | |
| | University | 149 | 57.4 | 20.52±4.5c | | 22.48±3.1c | | 18.48±2.7c | | 61.49±7.8c | |
| Employment status | Working | 129 | 49.6 | 20.19±5.1 | p<0.001 t= 6.429 | 22.04±4.0 | p<0.001 t= 6.473 | 17.90±3.6 | p<0.001 t= 4.702 | 60.14±10.34 | p<0.001 t= 7.365 |
| | Not working | 131 | 50.4 | 15.56±6.3 | | 17.88±6.0 | | 15.54±4.4 | | 48.99±13.80 | |
| Income level | High | 67 | 25.8 | 17.74±7.1 | p=0.110 F= 2.223 | 20.38±5.6a | p=0.022 F= 3.856 | 16.88±4.1 | p=0.152 F= 1.895 | 55.01±14.6a | p=0.026 F= 3.704 |
| | Middle | 170 | 65.4 | 18.24±5.6 | | 20.18±5.3a | | 16.87±4.0 | | 55.30±12.0a | |
| | Low | 23 | 8.8 | 15.34±7.3 | | 16.91±6.6b | | 15.08±5.2 | | 47.34±17.0b | |
| Family type | Nuclear | 213 | 81.9 | 18.81±5.5 | p<0.001 t= -5.519 | 20.70±4.9 | p<0.001 t= 4.872 | 17.19±3.8 | p<0.001 t= 4.036 | 56.71±11.5 | p<0.001 t= 5.975 |
| | Extended | 47 | 18.1 | 13.55±7.5 | | 16.51±6.8 | | 14.53±5.2 | | 44.59±16.5 | |
| Place of residence | Rural area | 11 | 4.2 | 15.36±7.9 | p=0.061 F= 2.830 | 13.72±8.4a | p<0.001 F= 11.533 | 12.81±6.4a | p=0.001 F= 7.582 | 41.90±21.0a | p<0.001 F= 9.225 |
| | Town | 54 | 20.8 | 16.51±6.2 | | 18.44±6.2b | | 15.79±4.7a,b | | 50.75±14.5b | |
| | City | 195 | 75.0 | 18.37±6.0 | | 20.71±4.8c | | 17.18±3.7b | | 56.28±11.9c | |

**Table 3. Distribution of Women's Health Literacy Scale Scores According to Gynecological and Obstetric Variables (n=260)**

| Variables | | n | % | Functional health literacy Mean±SD | Functional health literacy | Interactive health literacy Mean±SD | Interactive health literacy | Critical health literacy Mean±SD | Critical health literacy | Total health literacy Mean±SD | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chronic disease | Yes | 56 | 21.5 | 15.91±7.1 | p<0.05 t= -2.672 | 19.42±6.1 | p=0.431 t= -.789 | 16.16±4.3 | p=0.267 t= -1.112 | 51.50±15.3 | p=0.056 t= -1.917 |
| | No | 204 | 78.5 | 18.39±5.8 | | 20.09±5.4 | | 16.86±4.1 | | 55.35±12.7 | |
| Number of births | Nulliparous | 72 | 72.7 | 20.98±3.6a | p<0.001 F= 34.893 | 21.47±4.0a | p<0.001 F= 10.695 | 18.05±3.2a | p<0.001 F= 8.338 | 60.51±9.1a | p<0.001 F= 25.408 |
| | 1-3 | 138 | 15.8 | 18.17±5.8b | | 20.23±5.3a | | 16.64±4.2a | | 55.05±12.9b | |
| | ≥4 | 50 | 11.5 | 12.50±6.8c | | 16.98±6.9b | | 14.98±4.6b | | 44.46±14.3c | |
| Knowledge about cervical cancer | Yes | 145 | 55.8 | 19.54±5.5 | p<0.001 t= 5.116 | 22.41±3.7 | p<0.001 t= 9.201 | 18.11±3.0 | p<0.001 t= 6.478 | 60.07±9.5 | p<0.001 t= 8.451 |
| | No | 115 | 44.2 | 15.73±6.3 | | 16.84±5.9 | | 14.94±4.7 | | 47.50±14.3 | |
| Knowledge about the Pap Smear test | Yes | 152 | 58.5 | 19.57±5.4a | p<0.001 F=15.801 | 22.22±3.9a | p<0.001 F= 41.472 | 18.15±3.0a | p<0.001 F=27.610 | 59.96±9.7a | p<0.001 F=39.382 |
| | No | 96 | 36.9 | 15.61±6.3b | | 16.45±5.9b | | 14.43±4.8b | | 46.51±14.1b | |
| | Partially | 12 | 4.6 | 14.08±7.6b | | 19.08±5.7a,b | | 16.66±3.8a,b | | 49.83±14.1b | |
| Knowledge, experience and thought of having the Pap Smear test | Does not know the test, did not have it previously | 99 | 38.1 | 15.61±6.2a | p<0.001 F= 6.931 | 16.50±5.9a | p<0.001 F=20.422 | 14.43±4.8a | p<0.001 F=14.603 | 46.55±14.2a | p<0.001 F=19.076 |
| | Did not have the test, not considering having it | 18 | 6.9 | 17.94±6.5a,b | | 21.83±4.5b | | 17.50±2.3b | | 57.27±11.0b | |
| | Did not have the test, considering having it | 61 | 23.4 | 19.42±5.8b | | 22.44±3.2b | | 18.59±2.3b | | 60.45±9.0b | |
| | Had the test, not considering having it again | 9 | 3.5 | 15.55±7.7a | | 19.77±3.3a,b | | 17.44±3.2b | | 52.77±12.7a,b | |
| | Had the test, will have it again | 73 | 28.1 | 19.86±5.2b | | 22.09±4.6b | | 17.95±3.5b | | 59.91±10.2b | |

It was determined that 72.7% of the women had never been pregnant, and 11.5% had experienced 4 or more pregnancies. The total and sub-dimension mean scores of the women with ≥ 4 pregnancies were statistically significantly lower than those of the others ($p<0.001$). The functional health literacy and total score averages were seen to be different between all the groups, and the mean scores increased as the number of pregnancies increased (Table 3). It was determined that the functional, interactive, critical and total health literacy score averages of the women (55.8%) who stated that they had knowledge about cervical cancer and that they knew about the Pap smear test (58.5%) were statistically significantly higher than those of the others ($p<0.001$) (Table 3).

When the women's attitudes and behaviors towards the Pap smear test were examined, it was determined that 38.1% did not know about the test and had not had a test, and 6.9% had not had the test previously and did not plan to have it, even though they knew about it. Only 28.1% of the women had had the test previously and were considering having it again. The functional health literacy subscale and total health literacy mean scores of women who did not know about the Pap smear test and did not plan to have it, those who knew about the test but had not had it previously and did not plan to have it, and those who had had a test previously but did not plan to have it again, were similar and lower than the mean scores of women who had previously had the test and were considering having it again.

## Discussion

Despite the positive effects of health literacy on health behaviors, a report by the Ministry of Health in Turkey stated that approximately 7 out of 10 people have insufficient or limited health literacy (19). When the mean health literacy scale scores of the women in this study were examined, it was seen that they scored above the average in all sub-dimensions and in total (Table 1). Thus, it can be said that the health literacy status of women is above the average. These findings are consistent with the results of a previous study using the same scale (20).

According to the study findings, the age variable affects the health literacy of women. The functional, interactive, critical and total health literacy levels of the women aged ≥41 years were seen to be low (Table 2). Similarly, in a previous study evaluating the health literacy of adult women aged 20-59 years, it was found that as age increased, health literacy decreased (21). There are other studies in literature that have evaluated the relationship between health literacy and age which support these results (19,22,23).

The health literacy levels of the women in the current study who had only a primary school level of education and did not work in an income-generating job were observed to be lower (Table 2). Ayaz and Ozturk (2021) also reported lower levels of health literacy in women with primary school level education who did not work in an income-generating job (24). There are other studies with similar results (26-29). As education is important in developing employment opportunities and improving working conditions, it is a factor affecting the rate and type of employment. Education allows women to seize opportunities, leave traditional roles, and change their lives. A good level of education is a key determinant of health, because a higher education level enables increased health knowledge, increased access to healthcare services, better health behaviors and greater autonomy (30). The current study results showed that as the level of education

increases, the health literacy levels of women in all dimensions increase.

The health literacy levels of the women in this study were evaluated according to their place of residence. It was seen that women living in villages had lower interactive and critical health literacy levels than women living in towns and cities. This was also valid for functional health literacy levels, which are defined as the most basic level of health literacy (Table 2). In a previous study that included both men and women, the health literacy levels of those living in villages were determined to be lower (25). This is thought to be due to the fact that women living in villages in Turkey have a lower education level and are more disadvantaged than town and city dwellers in terms of access to healthcare services and health information.

The health literacy levels of the women in thşs study were seen to vary according to the number of births (Table 3). The levels of functional, interactive, critical, and general health literacy werre determined to be highest in the women with no history of pregnancy. As the number of pregnancies increased, so the level of health literacy decreased. In another study examining the health literacy level of pregnant women, it was determined that the health literacy level of women who had more than one birth was lower (27). The results of other studies in the literature support these findings (25,28). The reason for this was thought to be the low socioeconomic status and older age of women with a large number of children. Furthermore, a greater number of living children may increase the responsibility of the woman within the family, causing her to prioritize the health of the children or to neglect her own health. Evidence obtained from future qualitative studies to determine the relationship between female health literacy and the number of children will be able to contribute further to the science.

More than half of the women in the current study had some knowledge about cervical cancer and the Pap smear test. As expected, the health literacy levels of the women with knowledge were higher than those of the others (Table 3). Similar to these results, Yılmazel (2019) also found that women with poor health literacy also had poor knowledge and practices in respect of cervical cancer (31).

In the global strategy for the eradication of cervical cancer, the World Health Organisation (WHO) stated that 70% of women worldwide should be regularly screened for cervical disease until 2030 (32). In countries with effective cytology-based cervical cancer screening and treatment programs, the rates of death from cervical cancer have been reported to have decreased 5-fold in the last 50 years (32). The results of the current study showed that while 38% of the women indicated that they did not know about the Pap smear test and had never had one, 6.9% reported that they had not had the test even though they knew about it and would not have one in the future. Only 28.1% of the women had previously had the test and were willing to have it again. In different studies conducted in Turkey, the rate of women having Pap smear tests has been found to be between 24.8% and 54.1% (33-35).

The health literacy levels of women who did not know about the Pap smear test, or knew about it but had not had it, and those who were not considering having it again although they had had a previous test, were determined to be lower compared to women who were considering have the test in the future (Table 3). People with low health literacy are known to be more likely to use healthcare services less (36) and have lower cancer screening rates (14,15). Other than cervical cancer screening, Pagan et al. (2012) examined mammography, which is

one of the breast cancer screening programs, and demonstrated a relationship between inadequate functional health literacy and lower mammography screening rates (16). Women with low health literacy scores have been reported to be less likely to have a Pap smear test compared to women with high health literacy scores (37). In another study that evaluated the results of studies examining the relationship between health literacy and cervical cancer screening, there was stated to be a positive correlation between health literacy and having a Pap smear test (38), which is consistent with the current study findings.

Limitations: The results of this study relate only to the study group and cannot be generalized for the whole population.

## Conclusion

As a result of this study, it was seen that sociodemographic characteristics such as an older age, low education level, not working in an income-generating job, and living in a rural area were associated with low levels of health literacy in women. According to the study data, approximately four out of ten women did not know about the Pap smear test, and one had not had the test even though she knew about it and did not plan to have it. The fact that only three out of ten women had the test regularly shows that there is insufficient awareness in women about cervical cancer and screening programs and that these programs are not reaching enough women.

Health literacy in this study was related to the level of knowledge about the Pap smear and the status of having the test. While women with a high level of health literacy were seen to have a positive attitude and behavior towards the Pap smear test, women with low health literacy may even lack theoretical knowledge about the Pap smear test. In conclusion, health literacy affects women's attitudes and behaviors towards cervical cancer screening.

Based on this conclusion, the development of materials and interventions primarily aimed at low-literacy populations will be an important first step towards improving cancer screening rates. The identification and implementation of effective intervention strategies to increase women's health literacy levels will be able to make an important contribution towards achieving the WHO targeted cancer screening rates.

All healthcare professionals, primarily public health specialists, have a responsibility to raise the level of health literacy in society. In this context, it can be recommended that effective and long-term training programs to be held jointly by health professionals working in healthcare institutions and academia are implemented. In the modern world where distance education and online courses are commonplace, this would be an easily accessible means of presenting health literacy education which would benefit the whole population. Further studies and experimental studies on health literacy and cervical cancer screening using quantitative and qualitative research methods together can also be recommended.

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was obtained from the institution where the data would be collected. Written informed consent was obtained from all the study participants.

**Author contributions:** Study design, data collection, data analysis and writing manuscript: Funda TOSUN GÜLEROĞLU.

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