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ORIGINAL ARTICLE

Being "HPV positive" in the 7th year of the national cervical screening program: A cross-sectional study in a tertiary hospital in southern Türkiye

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ABSTRACT

Objective: Human papillomavirus (HPV)-based cervical cancer screening program has been conducting in Türkiye since 2014. Because of the sexually transmitted nature of the virus and the risk of developing cancer, HPV screening has challenges arising from the concerns of women who receive positive test results. The primary aim of this study was to assess women's knowledge of being a carrier of HPV at the 7th year of the screening. Second, we measured the anxiety and general distress levels of women, and we sought to describe contributing factors to such feelings.

Material and Methods: This prospective observational study was conducted in a tertiary hospital between January 2021 and August 2021. Participants were women referred to our outpatient clinic because of a positive high risk HPV test result. State-Trait Anxiety Inventory-State (STAI-S), General Health Questionnaire (GHQ-12), and seven-item questionnaire developed by our group were completed by all participants.

Results: There were 115 eligible women for the study. The mean±standard deviation (SD) age was 43±8 years. 71 (61.7%) women reported that they had never heard of the screening program. 67 (58.2%) women stated that they thought they had cervical cancer, and 22 (19.1%) women said they would have cancer in the future. 53 (46.1%) women specified that the family physician provided insufficient information about the results. The mean STAI-S scores of the participants ranged from 48 (SD=6.4), and GHQ scores ranged from 3.2 (SD=3.4). There was no significant difference in these scores regarding patients' age, education level, or working status (p>0.5).

Conclusion: Women with positive screening results who applied to our hospital had low knowledge of HPV and screening program. They also had high levels of anxiety and psychological distress. These unpleasant feelings may negatively affect patients' compliance with screening. Family physicians or nurses working in cervical screening should be aware and well-trained about HPV.

Keywords: Anxiety, cancer screening, human papillomavirus.

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INTRODUCTION

Human papillomavirus (HPV) is a sexually transmitted infection. In most women, the infection clears spontaneously within 2 years.[1] Women persistently infected with high-risk HPV (hrHPV) types are at increased risk of developing precancerous lesions cervical intraepithelial neoplasia (CIN) and cervical cancer.[2] Regular cervical screening aims to detect hrHPV types or cytopathic changes associated with the HPV infection. Although there is currently no treatment for the HPV virus, identifying treatable precursors may prevent the development of cervical cancer and reduce the incidence and mortality.

In 2014, the Ministry of Health launched a 5-yearly HPV-based cervical cancer screening program for women aged 30–65 years in Türkiye. The program involves primary HPV testing followed by reflex cytology for women who test positive for high-risk HPV types. Family physicians perform HPV testing at population-based screening centers such as Kanser Erken Teshis, Tarama ve Egitim Merkezi; Cancer Early Diagnosis, Screening, and Educational Centers. Results on HPV status, HPV genotype, and cytology (when HPV-positive) are sent to the patients' family physician/nurse at primary health-care centers. Women with positive screening results are sent to a reference center for a diagnostic procedure such as a colposcopy. A full description of the primary HPV screening algorithm can be found on the General Directorate of Public Health Türkiye website.[3,4]

Compared to cytology-based screening, primary HPV testing is more effective in detecting high-grade precancerous lesions and is cost-effective. It may also facilitate less frequent screening intervals.[5] Alongside these advantages, receiving positive HPV results and being referred for colposcopic examination may be associated with some adverse psychological consequences, such as concerns about cancer risk, hesitations about revealing the result to relatives due to sexual transmission of the virus, and the fear of being judged and despised. These unpleasant feelings may deter some women from participating in cervical screening or having surveillance.

This study seeks to address knowledge of being a carrier of HPV and awareness of screening results. Second, we sought to evaluate womens' anxiety and distress levels after receiving cervical screening test results and to analyze factors possibly associated with such feelings.

MATERIAL AND METHODS

This prospective observational study was conducted at the Gynecologic Oncology Department of City Training and Research Hospital in Adana between January 2021 and August 2021. Our outpatient department is the main clinic in our region where patients are referred due to positive HPV test results. It provides health-care services to a population of approximately two million and performs an average of thirty colposcopy procedures per week.

This study was conducted following the Helsinki Declaration and was approved by our Adana City Training and Research Hospital Ethical Committee (Research Ethics Committee reference number 2022/1772). Detailed written informed consent was obtained from interested, study-eligible patients. At the time of the study, the national cervical screening program had been in place for 7 years. Participants were women referred to our outpatient clinic for colposcopic examination upon being diagnosed with positive high-risk HPV for the 1st time within 4 weeks. Patients who refused to participate in the study after reading the informed consent form, who were taking any antidepressant medication or diagnosed with a psychiatric disorder, and who gave incomplete or inconsistent responses to self-administered measurements were excluded from the study.

Table 1: Demographic characteristics of participants

	(n=115)	%
Age		
30–39	48	41.7
40–49	41	35.7
50–59	17	14.8
60+	5	4.3
Unknown	4	3.5
Level of education		
Primary school	30	26.1
Middle school	17	14.8
High school	26	22.6
University	29	25.2
Unknown	13	11.3
Employment		
Not working	60	52.2
Working	43	37.4
Unknown	12	10.4

After the sociodemographic and clinical information was recorded, participants completed a self-administered questionnaire which included questions about the general knowledge of HPV (e.g., "Have you ever heard of HPV before you were being tested?"), and their feelings after they received test results (e.g., "What did you think after being informed about your result?"). See Appendix Table 1 for a copy of the survey instrument.

In addition to this survey, an adapted version of Spielberger's STAI-S and General Health Questionnaire (GHQ-12) was used to measure the anxiety and psychological distress of the patients. STAI-S is a reliable and valid test that evaluates anxiety levels at a particular time frame or condition. It has been extensively used in research and clinical practice and validated by Öner and LeCompte[6] for Turkish patients. Total score ranges from a minimum of 20 to a maximum of 80; 20–29 means no anxiety, 30–37 slight anxiety, 38–44 moderate anxiety, and 45–80 serious anxiety. The GHQ-12 is a brief instrument for measuring psychological distress, depression, or anxiety with a clinical cut-off score of 2 (range 1–12). The validity and reliability study of the Turkish version were conducted by Kılıç.[7] A higher rating score indicates poor mental health and well-being.[8]

Statistical analyses were performed using SPSS software (PASW Statistics for Windows, Version 18.0. Chicago: SPSS Inc; 2009). The distribution of the variables was assessed by visual inspection of the sample histograms and the Kolmogorov–Smirnov test. Continuous variables were expressed as mean±SD, and categorical variables were expressed as frequency and percent. The chi-square test or Fisher's exact test was applied for categorical variables. Non-para-

Table 2: Questions of survey

Question	n	% of the respondents
Have you ever heard of HPV or HPV screening before you were being tested?	112	
Yes	41	35.7
No	71	61.7
Why did you have an HPV test?	86	
My family doctor called me to get tested	26	22.6
HPV test was also taken while I went to the family doctor for another reason	17	14.8
I wanted to go to the family doctor because I heard about the HPV test	8	7
My gynecologist recommended I have an HPV test	35	30.4
Do you think your family doctor/nurse has given you enough information about the result of your test?	106	
Yes, she/he gave me detailed information	53	46.1
No, she/he cursorily informed.	53	46.1
What did you think after being informed about your result?	110	
I thought I had cervical cancer.	35	30.4
I thought I would definitely get cervical cancer in the coming years	22	19.1
I thought it was the onset of cancer	32	27.8
I have never been worried about cancer	21	18.3
How worried are you about your result?	113	
I am not worried at all	5	4.3
I am a little worried	9	7.8
I am moderately worried	30	26.1
I am perturbed	68	59.2
How worried are you about your chances of getting cervical cancer in the next 10 years?	111	
I am not worried at all	13	11.3
I am a little worried	40	34.8
I am moderately worried	22	19.1
I am perturbed	36	31.3

HPV: Human papillomavirus.

metric data were analyzed with a two-tailed Mann–Whitney U-test. "p"<0.05 was considered statistically significant. The dataset analyzed during the study is available from the corresponding author on request.

RESULTS

They were divided into four groups to calculate the relationship between age groups and anxiety levels or general health scores. There were 48 women between the age of 30 and 39 (41.7%), 41 women between the age of 40 and 49 (35.7%), 17 women between the age of 50 and 59 (14.8%) and 5 women at the age 60 or more (4.3%). In terms of education levels, 30 (26.1%) of 115 women graduated from primary school, 17 (14.8%) from middle school, 26 (22.6%) from high school, and 29 (25.2%) women had a university degree. 60 (52.2%) were unemployed, and 43 (37.4%) were currently employed (Table 1).

Most women (n=71; 61.7%) had never heard of the HPV screening program. While 26 of 115 women (22.6%) had reported that their family physician invited them to participate in the screening, 35 (30.4%) women declared that their gynecologist advised them to get an HPV test. Eight (7%) women stated that they applied to their family physician for the HPV test request. 43 (37.4%) women said that they had an HPV test when they applied to their family doctor for another reason.

In terms of understanding results, a high proportion, 67 (58.2%) of 115 women stated they thought they had cervical cancer or pre-cancerous lesion after being informed by the health-care provider, while another 22 (19.1%) perceived their results to mean "they will have cancer in the future." 68 (59.2%) of the women reported extremely worrying about their results, and 58 (50.4%) women stated that they were moderately or extremely worried that they would have cancer in 10 years. 53 (46.1%) of women thought that the health-care provider did not adequately discuss the meaning of the result with them. The answers to the questionnaire are presented in Table 2.

Table 3: Comparison between the groups regarding age, educational level, and working status

	Total n	STAI-S Mean	STAI-S p-value	Total n	GHQ-12 Mean	GHQ-12 p-value
Age			0.8			0.3
30–39	42	54.8		41	58.6	
40–49	41	56.9		40	48.2	
50–59	19	50.7		17	50.3	
60+	6	46.9		6	45.8	
Level of education			0.1			0.1
Primary school	30	44.7		27	51.6	
Middle school	16	58.8		15	44.1	
High school	25	57.3		25	39.7	
University	29	45.8		29	55.3	
Employment			0.5			0.6
Not working	59	49.4		41	50.5	
Working	42	53.1		56	47.8	

STAI-S: Spielberger's state-trait anxiety ınventory-state; GHQ12: General health questionnaire-12.

Anxiety and distress were major issues among these participants. The mean STAI-S score was 48±6.4, and the mean GHQ score was 3.2±3.4. There were no statistically significant differences in these scores of patients regarding age, education level, or working status (Table 3).

DISCUSSION

In our country, public understanding of HPV infection and its association with cervical cancer development is still limited.[9] Dursun et al. [10] conducted a study in 2009, before the beginning of the national cervical screening program, that included 1434 women from four different cities, including our city, and 55% of the participants stated they had no knowledge about HPV. At the time of our study, the national cervical screening program had been in place for 7 years, and the number of women who reported not being aware of HPV or the screening program was still 62%. It is noteworthy that despite the passage of 7 years, a significant increase in the level of awareness has yet to be achieved. The study mentioned above was carried out in a private university hospital, and more than half of the subjects live in the capital city of our country or one of the provinces with a high socioeconomic level which is quite different from our patient group. Therefore, making comparisons can be misleading. However, we can conclude that HPV awareness is still not at the desired level in our region. Educating women about HPV, cervical cancer prevention, and the national screening program is essential. In this regard, information leaflets and traditional or social media tools should be used effectively. Opportunistic screening chances should not be missed, and gynecologists and obstetricians should encourage women to be screened for HPV. In addition, the HPV vaccine is not covered by health insurance in Türkiye. We consider that including these vaccines in the child and adolescent immunization schedule will significantly increase HPV awareness.

It is worth mentioning that half of the participants stated that the family physician or nurse provided insufficient information about the test results and one-third of women thought they had cancer already. Hence, the majority (~90%) of newly acquired HPV infections become undetectable within 1–2 years. A minority of HPV infections are persistently detected beyond 12 months, increasing the risk of carcinogenic progression of cervical pre-cancer to cancer if untreated.[11] These possibilities should be considered, and health-care providers must inform women by avoiding convincing them of the worst-case scenario.

Some women paid attention to the sexual transmissibility nature of HPV infection rather than the development of cervical cancer and requested information about the consequences for their partners. After receiving the test result, they search for information from the media, the internet, or other sources and often misinterpret it. Furthermore, some clinicians refer to HPV as the "wart virus"; thus, women are confused about different types of HPV and their relation to cervical cancer development.[12] The content and quality of information are very important, and unclear information can be misleading and unhelpful. Therefore, health-care providers need to be trained on current information about HPV transmission routes, the relationship between the virus and cancer, vaccines, and infection prevention methods.

Our results suggest that despite the very low likelihood of developing cervical cancer, testing positive for high-risk HPV has negative psychological consequences, such as increased anxiety and distress. The mean anxiety levels demonstrated by these women are higher than those seen in surgical patients just before surgery.[13,14]

Some studies have suggested that concerns about the outcome of screening tests are associated with younger age, low-

er educational attainment, being not working, ethnic or religious background, and the clinics where the diagnosis was made (e.g., family health centers vs. gynecology clinics).[15,16] It is impossible to comment on the last two because almost all patients admitted to our clinic are referred from public health centers, and racial or religious belief differences are not diverse to inference. The authors believe that religious and cultural beliefs or social oppression might contribute to high anxiety levels in the study population because positive testing hrHPV implied promiscuity, infidelity, and sexual activity to others, such as one's partner, family, and community.[17] Kahn et al.[18] made recommendations on approaching a patient at the time of HPV test result release. They emphasized that correct information should be sensitive and non-judgmental. Ensuring that all women receive standardized, high-quality information to accompany their test results may help to alleviate some of the distress and anxiety experienced by these women.

Doyle et al.[19] suggested that a lower education level indicates lower health literacy and a greater anticipated psychological burden. In our study, there were no differences in anxiety scores or general health status between women with different levels of education. Adverse psychosocial outcomes may be more prevalent in women who do not understand the potential implications of these results, as most participants reported that they did not receive detailed information about their test results and thought that they were likely to develop cancer in the future. Information about characteristics of HPV, such as its high prevalence, high spontaneous clearance rate by the host immune system, small probability of cervical cancer, and long-time window from pre-invasive lesion to the invasive tumor, and effective treatment of CIN may alleviate patients' anxieties.

We did not find significant differences in patients' anxiety scores regarding working status. Although unemployment can lead to fear of not being able to afford health care in other countries, our health insurance system provides all individuals who live in our country access to health-care services regardless of their economic status.

Women are worried about the presence of a virus that is sexually transmitted and can cause cancer in their bodies. However, McBride et al.[20] show that anxiety and distress associated with an initial HPV-positive result may be reduced with repeated exposure to the result and/or over time. Hence women should be informed about the issues mentioned above, especially in the early period.

Our study has limitations. First, our sample size was smaller than we expected at that time. It is thought that women preferred to postpone their applications to screening centers and our clinic due to the COVID-19 pandemic. However, our clinic is the only public hospital in our province where HPV-positive women are referred for diagnostic procedures. Therefore, we assume that it accurately represents the number of women with a positive screening test within the defined period. Second, the high anxiety scores detected in our patients may be due to the diagnostic procedure to be performed. It is not possible to comment on this issue with the data we have. However, it is not possible for patients to define their negative emotions according to the cause. The fact that high anxiety is due to either a diagnostic test or a positive screening test result does not change the negative experience of the patients.

CONCLUSION

Although 7 years have passed since the beginning of the screening program, women's awareness of HPV is still poor in our region. Cervical cancer can be prevented by effective screening, and womens' compliance is vital. Women may be reluctant to receive HPV screening if it is viewed as an unpleasant emotional experience, such as anxiety and distress. Therefore, health-care professionals should understand the impact of HPV testing on women's psychological well-being and should carefully consider how to address the information needs of women in light of these facts.

Statement

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Ethics Committee Approval: The Adana City Training and Research Hospital Clinical Research Ethics Committee granted approval for this study (date: 10.02.2022, number: 1772).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – SB; Design – SB; Supervision – SB; Resource – SB; Materials – SB; Data Collection and/or Processing – ŞY; Analysis and/or Interpretation – SB; Literature Search – ŞY; Writing – SB; Critical Reviews – SB.

Conflict of Interest: The authors have no conflict of interest to declare.

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Appendix 1: Questionnaire

The questions below aim to measure how you felt during the screening program and your knowledge about the human papillomavirus (HPV) screening. Please tick only one option for each question. There is no right or wrong answer.

Q1: Why did you have an HPV test?
- My family doctor called me to get tested
- HPV test was also taken while I went to the family doctor for another reason
- I wanted to go to the family doctor because I heard about the HPV test
- My gynecologist recommended I have an HPV test
- None.

Q2: Have you ever heard of HPV before you were being tested?
- Yes, I have
- No, I have not.

Q3: If you knew about the test before you had HPV screening, where did you hear about it?
- My family doctor gave me information about the HPV screening
- My gynecologist gave me information about the HPV screening
- I heard from one of my neighbors
- One of my family members told me
- TV, Internet, radio vs
- Other.

Q4: Do you think your family doctor/nurse has given you enough information about the result of your test?
- Yes, she/he gave me detailed information
- No, she/he cursorily informed.

Q5: What did you think after being informed about your result?
- I thought I had cervical cancer
- I thought I would definitely get cervical cancer in the coming years
- I thought it was the onset of cancer
- I have never been worried about cancer.

Q6: How worried are you about your result?
- I am not worried at all
- I am a little worried
- I am moderately worried
- I am perturbed.

Q7: How worried are you about your chances of getting cervical cancer in the next 10 years?
- I am not worried at all
- I am a little worried
- I am moderately worried
- I am perturbed.