

## Knowledge and attitudes of primary health care workers about cervical cancer and HPV vaccine.

*Birinci basamak sağlık çalışanlarının serviks kanseri ve HPV aşısı konusundaki bilgi düzeyleri ve tutumları*

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### Abstract

**Purpose:** To assess family doctors and primary health care personnels' (nurses and midwives) knowledge and attitudes about cervical cancer (risk factors, screening, prevention) and the HPV vaccine.

**Material and Methods:** This descriptive study was conducted in Family Health Centers in a province in Turkey. No sample was selected. All family physicians and nurses and midwives working in all the Family Health Centers in this province were planned to include in the study. Data were collected with a questionnaire.

**Results:** This study revealed that only 28.4% of the physicians and 35.3% of the nurses and midwives stated they had enough knowledge about cervical cancer. Knowledge rates about when to initiate screening for cervical cancer was higher, but knowledge about when to discontinue was lower. Only 15% of the physicians and 35% of the nurses and midwives cited postmenopausal bleeding as a possible symptom of cervical cancer and only 18% of the physicians and 25% of the nurses and midwives knew that the HPV vaccine is suitable for both girls and boys. Although 84% of the physicians and 88% of the nurses and midwives were aware of the protective role of the HPV vaccine and 83% and 79% of them, respectively, stated to recommend their patients vaccination, lower rates were reported in case of a vaccination of their own daughters (65% and 52%, respectively). Reasons against vaccination were stated as not believing that it protects against the virus and lack of knowledge about its side effects.

**Conclusion:** Lack of knowledge and conflicting attitudes about cervical cancer, HPV and HPV vaccination are existing among primary care workers.

**Key Words:** Cervical cancer, primary care, health workers, attitude, knowledge levels.

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### Özet

**Amaç:** Aile hekimleri ve aile sağlığı elemanlarının (hemşire ve ebeler) serviks kanseri (risk faktörleri, tarama, önleme) ve HPV aşısı hakkındaki bilgi ve tutumlarını değerlendirmek.

**Gereç ve yöntem:** Bu tanımlayıcı tipteki çalışma, Türkiye'de bir ilde Aile Sağlığı Merkezlerinde yapılmıştır. Örneklem seçilmemiştir. Bu ildeki Aile Sağlığı Merkezlerinde çalışan tüm aile hekimleri ve hemşire/ebelerin çalışmaya dahil edilmesi planlanmıştır. Veriler anket formu ile toplanmıştır.

**Bulgular:** Bu çalışmada hekimlerin sadece %28,4'ü ve hemşire/ebelerin %35,3'ü serviks kanseri hakkındaki bilgilerinin yeterli olduğunu belirtti. Serviks kanseri taramasının ne zaman başlayacağına ilişkin bilgi oranları daha yüksekti, ancak taramanın ne zaman kesileceği konusundaki bilgi daha düşüktü. Hekimlerin sadece %15'i ve hemşire/ebelerin %35'i serviks kanserinin olası bir belirtisi olarak menapoz sonrası kanamayı doğru bilirken hekimlerin sadece %18'i ve hemşire/ebelerin %25'i HPV aşısının hem kız hem de erkek çocuklar için uygun olduğunu biliyordu. Hekimlerin %84'ünün ve hemşire/ebelerin %88'inin HPV aşısının koruyucu rolünün farkında olmasına karşın sırasıyla %83'ü ve %79'u hastalarına HPV aşısını önerdiklerini, kendi kızlarına ise daha düşük oranlarda önereceklerini bildirdiler (sırasıyla %65 ve %52). Aşıya karşı olma nedenleri olarak en sık aşının virüse karşı koruduğuna inanmama ve yan etkileri hakkında bilgi sahibi olmama gerekçe gösterildi.

**Sonuç:** Birinci basamak sağlık çalışanları arasında serviks kanseri, HPV ve aşı önerileri konusunda bilgi eksikliği ve çelişkili tutumlar mevcuttur.

**Anahtar Kelimeler:** Serviks kanseri, birinci basamak, sağlık çalışanları, tutum, bilgi düzeyleri.

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## Introduction

Cervical cancer is the fourth most common type of cancer affecting women worldwide after breast, colorectal, and lung cancers. In 2018, 569,847 new cervical cancer cases were diagnosed worldwide, and 84% of them (478, 671) were in underdeveloped countries. It is the eighth most common type of cancer in Turkey [1, 2].

Since cervical cancer has a long carcinogenic process, pre-invasive stage and screening program, and thus patients can be diagnosed at an early stage and treated effectively, it should be carefully dealt with in "primary health care institutions [3].

Human Papilloma Virus (HPV) infections are the most common genital infections worldwide and the most important risk factor for cervical cancer. Some other risk factors for cervical cancer are having the first sexual intercourse at an early age (<16 years), having multiple sex partners and having sexually transmitted diseases, having a mother or sister with cervical cancer history, getting pregnant under the age of 20, having given birth to 3 or more children, low socioeconomic status, smoking, alcohol use, lack of physical activity, being overweight or obese, using oral contraceptives (OCPs) more than 5 years [4, 5].

The Cervical Pap smear is the most widely used screening method today for early detection. It is cheap, easy to apply and can easily be accepted by patients if appropriately explained. With the Pap smear test, cervical cancer can be diagnosed at an early stage, and its morbidity and mortality can be prevented [6].

In Turkey, preventive health services are provided by health staff working in primary care. Primary care physicians and N/Ms who are knowledgeable about risk factors, screening, prevention and treatment of cervical cancer can accurately enlighten people about it and provide guidance to them. Preventive health services are rendered in Family Health Centers (FHC) and Community Health Centers (CHC). These centers are based on Family Health Units consisting of one family physician and one nurse or midwife (N/Ms).

This study aims to investigate whether family doctors and N/Ms who work in primary care and

whose main task is providing preventive health services are knowledgeable of cervical cancer (risk factors, screening, and prevention) and the HPV vaccine.

## Materials and method

This cross-sectional study was conducted in 47 Family Health Centers in Denizli, a province in Western Turkey.

No sample was selected. Although 154 family physicians and 154 nurses and midwives (N/Ms) working in all the FHCs in Denizli were planned to include in the study, 87.0% of the physicians and 88.3% of the N/Ms were included. Since the whole population was included in the sample, no power calculations were made. Physicians and primary health care persons who did not want to participate in the study were excluded from this study.

Data were collected with a questionnaire including 35 items. Most of the items were closed-ended, the rest were open-ended and Likert-type. The questionnaires were handed out to physicians and nurses and collected in sealed envelopes.

Before the study, Pamukkale University Medical Ethics Committee's approval was obtained.

Statistical analysis was performed with the SPSS software. Continuous variables were expressed as mean  $\pm$  standard deviation, categorical variables were expressed as numbers and percentages. To compare independent groups, Mann-Whitney U test was used, and to compare qualitative variables, the chi-square test was used.  $p < 0.05$  was considered statistically significant.

## Results

This study was conducted among health personnel with a mean age of  $42.2 \pm 6.5$  years and a mean of work experience of  $19.4 \pm 5.9$  years. Socio-demographic characteristics of the participants are shown in Table 1.

Of the physicians, 56.7% stated their knowledge was average and 28.4% stated they had enough knowledge about cervical cancer. Among the N/Ms these percentages were 42.6% and 35.3%, respectively. While 88.1% of the physicians gained knowledge about cervical

**Table 1.** Socio-demographic characteristics of family physicians and nurses.

Socio-demographic Parameters	Physicians		N/Ms	
	n	%	n	%
<b>Gender</b>				
Female	40	29.9	131	96.3
Male	94	70.1	5	3.7
<b>Total</b>	<b>134</b>	<b>100.0</b>	<b>136</b>	<b>100.0</b>
<b>Age, years</b>				
25-34	3	2.2	16	11.8
35-44	48	35.8	104	76.5
45-54	71	53.0	15	11.0
≥55	12	9.0	1	0.7
<b>Total</b>	<b>134</b>	<b>100.0</b>	<b>136</b>	<b>100.0</b>
<b>Marital Status</b>				
Married	125	93.3	123	90.5
Single	3	2.2	7	5.1
Widow	2	1.5	3	2.2
Divorced	4	3.0	3	2.2
<b>Total</b>	<b>134</b>	<b>100.0</b>	<b>136</b>	<b>100.0</b>
<b>Monthly Income Status</b>				
Income less than expenses	5	3.7	27	19.9
Income equal to expenses	59	44.0	91	66.9
Income more than expenses	70	52.3	18	13.2
<b>Total</b>	<b>134</b>	<b>100.0</b>	<b>136</b>	<b>100.0</b>
<b>Length of service</b>				
≤ 10 years	4	3.0	16	11.8
11-20 years	58	43.3	81	59.5
21-30 years	67	50.0	37	27.2
≥ 31 years	5	3.7	2	1.5
<b>Total</b>	<b>134</b>	<b>100.0</b>	<b>136</b>	<b>100.0</b>

\* Mean of the age 42.2±6.5.

\*\* Mean of the length of service 19.4±5.9.

cancer during medical education, 69.8% of the N/Ms acquired it during post-graduate training. According to 91.8% of the physicians and 92.6% of the N/Ms, cervical cancer could be prevented. In the study, 37.3% of the physicians and 33.8% of the N/Ms correctly knew which age group was more prone to cervical cancer.

The rates of the participants knowing the risk factors are shown in Table 2. HPV was questioned separately from other risk factors. While 94.8% of the physicians and 82.4% of the N/Ms stated that HPV could lead to cancer in genital organs, 70.9% of the physicians and 61.8% of the N/Ms said that HPV could be transmitted only through skin contact in the genital area without having a full sexual intercourse.

Measures to be taken to prevent cervical cancer are shown in Table 3. The mean values among the physicians and nurses were 56.9%±21.9% and 56.2%±19.8% respectively ( $p>0.05$ ).

The rates of being aware of the signs of cervical cancer among the participating physicians and N/Ms are given in Table 4. The mean values among the physicians and N/Ms were 29.3%±16.6% and 29.4%±5.2% respectively ( $p>0.05$ ).

While 95.5% of the physicians and 91.9% of the N/Ms correctly knew what the most commonly used cervical cancer screening test. While 52.2% of the physicians knew what the

**Table 2.** Family physicians and nurses' knowledge about cervical cancer risk factors.

<b>Risk Factors*</b>	<b>Physicians</b>		<b>N/Ms</b>	
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
Sexual intercourse at an early age	104	77.6	107	78.7
Having multiple sexual partners	126	90.0	119	87.5
High socioeconomic level **	12	8.9	7	5.1
Mother/sister with a history of cervical cancer	97	72.4	116	85.3
The age at first birth is ≤20	46	34.3	47	34.6
Early menarche	24	17.9	12	8.8
Not having regular health checks	62	46.2	57	41.9
Living with someone with multiple sex partners	113	84.3	108	79.4
Smoking	97	72.4	96	70.6
Becoming pregnant before the age 20	39	29.1	36	26.5
Late menarche**	16	11.9	10	7.4
Having sex at an advanced age **	9	6.7	5	3.7
Giving birth 3 or more times	34	25.4	18	13.2
Diet poor in vegetables and fruits	37	27.6	25	18.4
Low socioeconomic level	52	38.8	46	33.8
Using oral contraceptives more than 5 years	30	22.4	25	18.4
Having sexually transmitted diseases	86	64.2	98	72.1

\* More than one risk factor was expressed by the participants.

\*\* Wrong answers to the question.

**Table 3.** Family physicians and nurses' knowledge about how to prevent cervical cancer.

<b>Measures to be taken *</b>	<b>Physicians</b>		<b>N/Ms</b>	
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
Quitting smoking	84	62.7	86	63.2
Avoiding sexual intercourse at a young age	75	55.9	75	55.1
Using condoms during sexual intercourse	96	71.6	93	68.4
Having fewer sexual partners	110	82.1	93	68.4
Getting vaccinated	112	83.6	119	87.5
Paying attention to hygiene	80	59.7	94	69.1
Giving birth 3 or more times**	11	8.2	6	4.4
Having regular Pap smear	119	88.8	127	93.4
Losing weight	29	21.6	21	15.4
Avoiding sexual intercourse at an advanced age **	6	4.5	5	3.7
Having a balanced diet	52	38.8	55	40.4
Using oral contraceptives	12	8.9	10	7.4
I do not know	3	2.2	1	0.7

\* More than one measure was expressed by the participants.

\*\* Wrong answers to the question.

**Table 4.** Family physicians and nurses' knowledge about the symptoms of cervical cancer.

<b>Symptoms*</b>	<b>Physicians</b>		<b>N/Ms</b>	
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
No symptom	8	5.9	20	14.7
Intermenstrual bleeding	43	32.1	62	45.6
Postcoital bleeding	64	47.8	54	39.7
Postmenopausal bleeding	20	14.9	48	35.3
Foul-smelling vaginal discharge	38	28.4	50	36.8
Thigh pain	22	16.4	21	15.4
Rectal bleeding	3	2.2	3	2.2
Uremia	4	2.9	1	0.7
Edema in the extremities	7	5.2	7	5.1
Weight loss	25	18.7	39	28.7
All of the above	11	8.2	12	8.8
Not knowledgeable	1	0.7	5	3.7

\* More than one symptom was expressed by the participants.

best time to conduct the screening test was, the rate was 82.4% among the N/Ms. The N/Ms knowledge on this topic was better (Table 5).

The physicians' and N/Ms knowledge levels about the HPV vaccine is shown in Table 6. While 88.1% of the physicians knew that HPV vaccine would not treat the disease which already developed, the rate was 76.5% among the N/Ms.

When they were asked whether they would suggest their daughters to receive the HPV vaccine 64.9% of the family physicians and 52.2% of the N/Ms responded as "probably yes" whereas 17.9% of the physicians and 19.9% of the N/Ms said "no". However, 82.8% of the family physicians and 78.7% of the N/Ms stated that they would recommend their patients to receive the HPV vaccine.

Some of the participants stated that they are not recommending their patients to receive the HPV vaccine due to the following reasons: they do not believe the vaccine protects against HPV; they do not know the effects and side effects of the vaccine; the vaccine is expensive (Table 7).

## Discussion

While the physicians gained knowledge about cervical cancer during medical education, the N/Ms acquired it during post-graduate

training. In Turkey, neither the Ministry of Health, nor universities nor the Turkish Medical Association has conducted a scheduled, regular postgraduate training for physicians. This is a very important issue for the primary care. However, N/Ms are trained by the Provincial Health Directorates supervised by the Ministry of Health from time to time [7].

Cervical cancer has a pre-invasive stage and thus it can be treated if diagnosed early, and its development can be prevented if risk factors are avoided. In our study, 91.8% of the physicians and 92.6% of the N/Ms had the opinion that cervical cancer could be prevented. Similar results have been obtained in other studies conducted in Turkey and other countries [8, 9].

The most important risk factor for cervical cancer is HPV [5]. The risk is particularly high in those who started to have sex at an age close to menarche [10]. The majority of the physicians and N/Ms noted that HPV could cause cancer in the reproductive organs. Studies conducted in other countries found similar results [8, 11].

Low socioeconomic level, not having regular health checks, getting pregnant under the age of 20, having given birth to 3 or more children and using oral contraceptives (OCPs) more than 5 years were the least mentioned risk factors by the participants in both groups in

**Table 5.** Family physicians and nurses' knowledge about the age to start having screening tests, best time to have screening tests and age to discontinue screening tests.

Screening Test Parameters	Physicians		N/Ms	
	n	%	n	%
<b>Age to Begin Cervical Screening</b>				
20 years of age	18	13.4	41	30.2
30 years of age *	81	60.5	77	56.6
40 years of age	29	21.7	12	8.8
50 years of age	1	0.7	0	0.0
60 years of age	0	0.0	1	0.7
I do not know	5	3.7	5	3.7
<b>Total</b>	<b>134</b>	<b>100.0</b>	<b>136</b>	<b>100.0</b>
<b>Best Time to Have the Test</b>				
Within the first 3 days of menstruation	11	8.2	4	2.9
Between the 10 <sup>th</sup> and 18 <sup>th</sup> days after the onset of the last menstruation *	70	52.2	112	82.4
As soon as the menstruation is over	27	20.2	9	6.6
Anytime	6	14.9	1	0.7
I do not know	20	4.5	10	7.4
<b>Total</b>	<b>134</b>	<b>100.0</b>	<b>136</b>	<b>100.0</b>
<b>Age to Discontinue the Screening program</b>				
**60 years of age	51	38.1	30	22.1
**65 years of age *	60	44.8	56	41.2
**70 years of age	9	6.7	36	26.4
I do not know	14	10.4	14	10.3
<b>Total</b>	<b>134</b>	<b>100.0</b>	<b>136</b>	<b>100.0</b>

\* Correct answer to the question.

\*\*Those whose last test results are negative.

**Table 6.** Family physicians and nurses' knowledge about gender, age range, number of doses for HPV vaccine.

Parameters related to HPV vaccine	Physicians		N/Ms	
	n	%	n	%
<b>Gender to receive HPV vaccine</b>				
Female	103	76.9	92	67.7
Male	2	1.5	3	2.2
Female and male*	24	17.9	34	25.0
I do not know	5	3.7	7	5.1
<b>Total</b>	<b>134</b>	<b>100.0</b>	<b>136</b>	<b>100.0</b>
<b>Age range for the vaccine</b>				
8-12 years of age	16	11.9	9	6.6
11-18 years of age	22	16.4	22	16.2
12-25 years of age	38	28.4	32	23.5
9-26 years of age *	39	29.1	46	33.8
Immediately after delivery	0	0.0	2	1.5
I do not know	19	14.2	25	18.4
<b>Total</b>	<b>134</b>	<b>100.0</b>	<b>136</b>	<b>100.0</b>
<b>Number of doses of HPV vaccine</b>				
1 dose	5	3.7	6	4.4
2 doses	39	29.1	34	25.0
3 doses*	54	40.3	61	44.9
I do not know	36	26.9	35	25.7
<b>Total</b>	<b>134</b>	<b>100.0</b>	<b>136</b>	<b>100.0</b>

\* Correct answer to the question.

**Table 7.** Reasons the physicians and nurses do not recommend HPV vaccine.

Reasons not to Recommend Vaccination	n	%
Expensive	6	17.6
Not believing that it protects	11	32.4
Not knowing its effects and side effects	10	29.4
Not in the national immunization program	2	5.9
Not having any knowledge about the vaccine	4	11.8
Turkish societal issues	1	2.9
<b>Total</b>	<b>34</b>	<b>100.0</b>

our study, which indicates that the participants lacked knowledge about cervical cancer. Similar results have been found in other studies [9, 12].

Of the measures to be taken to avoid cervical cancer, the most important one is to avoid risk factors. Having regular Pap smears, being vaccinated, paying attention to hygiene and using condoms play an important role in the prevention of cervical cancer. Condoms which can prevent sexually transmitted diseases cannot be sufficiently effective in the prevention of cervical cancer because HPV can be transmitted through skin contact in the genital area without having a full sexual intercourse [13]. Anyway, the importance of condom use should not be underestimated, because it can reduce the risk of developing HPV infection and HPV-related diseases such as cervical cancer and genital warts [14]. In our study, 71.6% of the physicians and 68.4% of the N/ Ms believed that condom use during sexual intercourse would be important in the prevention of cervical cancer. This rate is consistent with the ones in the literature [8, 9]. However, we still believe that health workers' knowledge about this issue is not enough.

During the pre-invasive period of cervical cancer, usually there are no symptoms. The symptoms are observed when abnormal cervical cells turn into cancer and invade nearby tissues [15]. In our study, more than half of the physicians and N/ Ms stated that cervical cancer would exhibit symptoms during the pre-cancer period.

The most common symptom of cervical cancer is postcoital and irregular bleedings [13]. In our study, the symptom mentioned most by both groups was postcoital bleeding. The rate of the participants in our study who mentioned intermenstrual bleeding and foul-smelling

vaginal discharge as the common symptoms of cervical cancer was lower than 50%. That the rates in two other studies conducted in Turkey were higher than that in our study indicates that the participants' knowledge about the issue in our study was significantly low [9, 16].

The great majority of the physicians and N/ Ms indicated the Pap smear test as the most commonly used cervical cancer screening test. The results of other studies are similar to these results [8, 16].

In our country, Pap smear test is repeated every five years [18]. However, in our study, the majority of the participants in both groups indicated that the screening test was repeated once a year. This is probably due to the fact that the American Cancer Society recommends that Pap smear should be repeated every year in high-risk groups and that most of the health workers did not know the Ministry of Health in Turkey proposed that Pap smear tests should be repeated every five years [15, 17].

Development of invasive cervical cancer is slow and spreads over a period of 10-20 years. Cervical cancer is rare before the age of 30. When deciding on the target age group and frequency of screening, these points defined by the WHO for screening should be taken into account. Screening in young women will lead to the identification of many lesions which will never develop into cancer and is not cost effective. What is more, three-year screenings are almost as effective as annual screenings. If resources are limited, one screening between 35 and 45 years of age and a routine screening every 5-10 years in other cases will significantly reduce cancer mortality [18].

Considering the conditions of Turkey, the target in Pap smear is to carry out a community-

based screening including 30-65 years-old women [17]. In our study, the number of the participants in both groups who knew at what age women should start and terminate having Pap smear was lower than expected. Similar results were found in another study [12].

According to the National Cervical Cancer Screening Program Standards published by the Ministry of Health of the Republic of Turkey, Pap smear screening should be discontinued in women over 65 years old whose last two HPV test or Pap smear results were negative [17]. In our study, about half of the participants in both groups knew that women at age 65 or more whose last two screening test results were negative could be removed from screening programs.

In this study, 52.2% of the physicians and 82.4% of the N/Ms correctly knew what the best time to have a screening test is. The reason why more nurses were knowledgeable on this issue is probably due to the fact that Pap smear was performed by them and that primary care physicians lacked training on the issue after graduation. Similar results were found in another study conducted in Turkey [19].

HPV is mainly transmitted through sexual contact. In addition, since HPV is resistant to inactivation by physical and chemical agents, it is known to infect through contaminated surfaces and items (towels, etc.) and skin contact without having a full sexual intercourse [20]. Approximately two-thirds of the participants knew that HPV could be transmitted through skin contact in the genital area without having a full sexual intercourse. Various studies have found different results on this subject [12-21]. If the physicians and N/Ms know that HPV can be transmitted through skin contact in the genital area without having a full sexual intercourse, they can better educate their patients on this issue.

In our study, the number of the participants in both groups who knew how many kinds of HPV vaccine were available, and at what age and in how many doses it should be given was low. In the literature, there are different results on this issue [22, 23].

Depending on the prevalence of oncogenic types of HPV in the community, the vaccine has been proven to prevent HPV infection rate by

65-76%. On the other hand, the vaccine is 100% effective in the prevention of precancerous cervical lesions caused by HPV types 16 and 18. The vaccine does not treat the existing disease [24, 25].

In our study, 64.9% of the physicians and 52.2% of the N/Ms said they would have their daughters receive HPV vaccination. However, more of them recommended their patients to receive HPV vaccination.

Of the participants who did not recommend HPV vaccine, the majority gave the following reasons: they do not believe the vaccine protect against HPV, they do not know the effects and side effects of the vaccine, the vaccine is expensive, they knew nothing about the vaccine, and the vaccine is not in the vaccination program. Our study results on this topic are consistent with those in the literature [25].

Due to the high cost of HPV vaccines in Turkey, the Ministry of Health does not include them in the national immunization program, and the social security institutions do not bear the cost [17].

In conclusion, lack of knowledge and conflicting attitudes about cervical cancer, HPV and vaccination recommendation are existing among primary care workers. The majority of the participants declared the level of their knowledge as average or adequate. However, the results of the study revealed that their knowledge was insufficient. It is worrisome that both groups were unaware of their lack of knowledge because they will not be in an effort to close the gap.

### Limitations

In this study, the fact that HPV vaccine was questioned only for girls is an important limitation of the study.

### Recommendations

We believe that if health workers are educated about and the aforementioned vaccine-related concerns are eliminated, more people will be vaccinated against HPV. In addition, inclusion of HPV vaccine in routine immunization programs will reduce reluctance to recommend or receive it due to its high cost.



**Conflict of Interest:** No conflict of interest was declared by the authors.

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