

# Mothers' perspective on human papillomavirus vaccine in Eastern Turkey

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## ABSTRACT

**Objectives:** The rates of vaccination with human papillomavirus (HPV) vaccine, which can prevent many cancers, rank the last place when compared to other childhood vaccination rates. The purpose of the present study was to evaluate the knowledge levels of mothers living in our region about HPV vaccine and their perspectives regarding having the vaccine.

**Methods:** The study was conducted between 15 July and 15 August 2022 in the Department of Obstetrics and Gynecology, Faculty of Medicine, Kafkas University with the mothers of 377 girls. The SPSS 21 program was used and  $p < 0.05$  was accepted as significant.

**Results:** No statistically significant differences were detected between the desire of the mother to have her child vaccinated against HPV and the age of her child ( $p = 0.740$ ), income level of the household ( $p = 0.590$ ) and the working status of the mother ( $p = 0.419$ ). There were statistically significant differences between the desire of the mother to have her daughter vaccinated with HPV, the place where the mother lived ( $p = 0.001$ ), age of the mother ( $p = 0.037$ ), family type ( $p = 0.001$ ), number of people living at home ( $p = 0.027$ ), education year of the mother ( $p = 0.004$ ), father's approval for vaccination ( $p = 0.001$ ), and mother's hearing about the Smear Test ( $p = 0.001$ ).

**Conclusions:** Even if the HPV vaccine is given free of charge, there is resistance in mothers to the vaccine. It is necessary to inform mothers about HPV vaccination for their daughters and to make the vaccination more widespread.

**Keywords:** Human papillomavirus (HPV) vaccine, vaccine hesitancy, cervical cancer, genital wart

Although the Human Papillomavirus (HPV) is a common infection worldwide, it is the most common infection among sexually transmitted infections. It is also the most common known cause of cervical, vulva, anus and penile cancers. It was announced by the Center for Disease Control that more than 75% of the society will face HPV at least once in their sexual lives [1-3]. The incidence of HPV-related infection

was found to be more than 14 million per year. Cervical cancer is the second most common cause of cancer-related mortality in women with more than 528.000 new cases and more than 300.000 deaths on an annual scale [4, 5].

In Turkey, the national HPV screening program was initiated on August 1, 2008. When the results of this program on 10 January 2019 were examined, the



e-ISSN: 2149-3189

Received: September 24, 2022; Accepted: December 30, 2022; Published Online: January 27, 2023

**How to cite this article:** Türker Aras ÜA, Kırat S, Yendur Sezer Ö, Yumru AE. Mothers' perspective on human papillomavirus vaccine in Eastern Turkey. Eur Res J 2023;9(2):264-269. DOI: 10.18621/eurj.1179741

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HPV positivity rate was determined as 187312 (4.3%) in our country [6].

There are multiple HPV types. The most common oncogenic types known are HPV 16, 18, playing active roles in approximately 94% of cervical cancer [7]. HPV vaccines were developed aside from early diagnosis treatment strategies to prevent the extremely common HPV infection and its effects on society [8, 9]. Vaccination provides 75% protection against cervical cancer, but for greater protection, vaccination is recommended by the World Health Organization to apply before the first sexual contact [10, 11]. The most effective factor is parents' attitude towards vaccination in adolescent vaccination [12].

The prevalence of the infections that are preventable with vaccination is decreasing, and many diseases are no longer seen with the vaccination of the entire population. When the literature data were reviewed, the adolescent vaccination rate in the United States was found to be 14% in girls [13, 14]. The rate of parents vaccinating their children is very low despite the very high efficacy of the vaccine.

The rates of vaccination with HPV vaccine, which can prevent many cancers, are in the last place when compared to other childhood vaccination rates. For this reason, the purpose of the present study was to examine the knowledge levels of mothers living in our region about HPV vaccine and their perspectives against having the vaccine.

## METHODS

In Turkey, childhood vaccination rates vary between 64% and 82% according to TDHS 2018 data. In a study that was conducted in the city of Kars, which is located in the Northeast of Turkey, where the study was conducted, in 2020, the knowledge level of mothers about childhood vaccines was found to be 94.9%, and the rate of mothers who knew all vaccines was 27.7%. However, the study only included the vaccines included in the national immunization schedule [15].

### The Type of Study

The study had a hospital-focused cross-sectional design.

### The Population of the Study

The number of women who applied to the Obstetrics and Gynecology Department of the Kafkas University, Faculty of Medicine, in 2021 was used to determine the study population. In this respect, the total number of applicants was 9658 in 2021. Considering that the same number of people would apply in 2021, the study population was determined as 9658.

### The Sample of the Study

The number of mothers of children to be sampled was calculated with the formula " $n = Nt^2 p q/d^2 (N-1) + t^2 p q$ " because the universe of the study was known. Here,  $N$  refers to the number of individuals in the universe,  $n$  is the number of individuals to be sampled;  $p$  is the incidence (probability) of the event under investigation;  $q$  is the frequency (probability) of the event under investigation;  $t$  is the theoretical value in the table  $t$  at a given degree of freedom and detected error level;  $d$  is the desired  $\pm$  deviation according to the prevalence of the event. In this respect, when  $p = 0.80$ ;  $q = 0.20$ ;  $t = 1.96$ ;  $d = 0.05$ , the sample size was determined as 183 mothers [16]. However, the study was continued with 377 mothers to increase its quality.

### Ethics Committee Approval

The study was reviewed by the Ethics Committee of University of Kafkas (approval data and number:28.06.2022/06) and was conducted in accordance with the ethical standards described in an appropriate version of the 1975 Declaration of Helsinki, as revised in 2000. Also, written consent was obtained from the patients who would participate in the study.

### Data Collection

The data of the study were collected by the researcher between 15 July and 15 August 2022 in the Obstetrics and Gynecology Clinic by using face-to-face interview technique. Dependent Variable of the Study: The status of mothers of girls who had HPV vaccination to their children. Independent Variables of the Study: The sociodemographic, biodemographic, and socioeconomic characteristics.

Preliminary Implementation of the Study: It was conducted with the mothers of 11 children who applied to the clinic. Necessary adjustments were made in the data collection form.

### Statistical Analysis

The Chi-Square Analyzes were used for the comparisons of the data that were determined by counting. The variables that were significant in the Chi-Square Analyzes were included in the Logistic Regression Analysis (Backward:LR) and  $p < 0.05$  was considered significant.

## RESULTS

A total of 377 mothers who had adolescent girls participated in the study. The question “*Would you have*

*the HPV vaccine if it were free of charge?*” was asked to these women.

The level of mothers who did not want to have their children vaccinated was found to be 65.0% in the study (Table 1).

Table 1 provides the results of the binary analyzes and logistic regression analysis. When the table is followed, it is seen that no statistically significant differences were found between the mother’s desire to have her child vaccinated against HPV and the age of the child ( $p = 0.740$ ), income level of the household being adequate for living ( $p = 0.590$ ), and working status of

**Table 1. Distribution and logistic regression analysis results of socio demographic characteristics on the mother's desire to have her child vaccinated against HPV**

Independent variables		Request to vaccinate your child		Total	X <sup>2</sup>	p value	OR	CI %95	p value
		Yes	No						
		n (%)*	n (%)*	n (%)**					
Where the woman lives	Town	13 (13.7)	82 (86.3)	95 (25.2)	25.392	0.001	4.057	1.710-9.623	0.001
	City	119 (42.2)	163 (57.8)	282 (74.8)					
Woman's age (years)	40 ≥	52 (29.5)	124 (70.5)	176 (46.7)	4.337	0.037	3.390	1.733-6.633	0.001
	39 ≤	80 (39.8)	121 (60.2)	201 (53.3)					
Child's age (months)	11.50 ≤	72 (34.3)	138 (65.7)	210 (55.7)	0.110	0.740			
	11.51 ≥	60 (35.9)	107 (64.1)	167 (44.3)					
Family type	Extended	9 (9.3)	88 (90.7)	97 (25.7)	38.014	0.001	13.566	5.507-33.422	0.001
	Nuclear	123 (43.9)	157 (56.1)	280 (74.3)					
Number of people living in the house	5 ≥	56 (42.4)	76 (57.6)	132 (35.0)	4.903	0.027	5.749	2.801-11.802	0.001
	4 ≤	76 (31.0)	169 (69.0)	245 (65.0)					
Mother's education year	8 ≤	81 (30.5)	185 (69.5)	266 (70.6)	8.264	0.004	0.497	0.210-1.180	0,113
	9 ≥	51 (45.9)	60 (54.1)	111 (29.4)					
Mother's working status	Working	29 (31.5)	63 (68.5)	92 (24.4)	0.652	0.419			
	Not working	103 (36.1)	182 (74.3)	285 (75.6)					
Father's consent to have his child vaccinated against HPV	Confirms	9 (11.5)	69 (88.5)	78 (20.7)	23.818	0.001	4.615	1.848-11.524	0.001
	Disapproving	123 (41.1)	176 (71.8)	299 (79.3)					
Total income entering the house	It is enough	39 (37.1)	66 (62.9)	105 (27.9)	0.290	0.590			
	It is not enough	93 (34.2)	179 (65.8)	272 (72.1)					
Mother's job	Working	29 (31.5)	63 (68.5)	92 (24.4)	0.652	0.419			
	Not working	103 (36.1)	182 (63.9)	285 (75.6)					
Has the mother heard of the smear test?	No	99 (54.1)	84 (45.9)	183 (48.5)	56.928	0.001	3.898	2.012-7.551	0.001
	Yes	33 (17.0)	161 (83.0)	194 (51.5)					
Total		132 (35.0)	245 (65.0)	377 (100.0)					

\*row percentage, \*\*column percentage, \*\*\*OR = odds ratio, CI = confidence interval

the mother ( $p = 0.419$ ). Also, there was a statistically significant difference between the mother's desire to have her child vaccinated with HPV, place where the mother lived ( $p = 0.001$ ), age of the mother ( $p = 0.037$ ), family type ( $p = 0.001$ ), number of people living at home ( $p = 0.027$ ), education year of the mother ( $p = 0.004$ ), father's approval for vaccination ( $p = 0.001$ ), and mother's hearing about the Smear Test ( $p = 0.001$ ).

On the other hand, when the age group of 39 years and younger was taken as a reference, the status of the mother not being vaccinated was 3.390-fold more (CI: 1.733-6.633) in the group aged 40 and over; when those living in the city were taken as reference, it was 4.057-fold more (CI: 1.710-9.623) in the group living in rural areas; when elementary families were taken as reference, it was 13.566-fold more (CI: 5.507-33.422) in those living in extended families; when the number of people living at home was taken as 4 and below was taken as reference, it was 5.749-fold more (CI: 2.801-11.802) in families with 5 people and above; when those who did not have the father's consent to vaccinate children were taken as reference, it was 4.615-fold more (CI: 1.848-11.524) in those who had consent; and when mothers who had heard of the Smear Test were taken as references, it was 3.898-fold more (CI: 2.012-7.551) in those who had not heard of the Smear Test (Table 1).

## DISCUSSION

It is known in our present day that some infectious diseases can be prevented or even eliminated through vaccination. However, vaccination programs are delayed due to vaccine hesitation and people continue to become sick. Factors that may affect the spread of vaccination must be examined in detail and measures should be taken against these [17].

A total of 65.0% of the mothers participating in the study did not want their children to be vaccinated. In previous studies, the rates of requesting HPV vaccination to their children in Turkey were found to be 51.7%, 62%, 49% and 24.1%, respectively. The fact that there was such a difference between studies was because of the questions asked to the participants of the study. These questions were in the form of "Would you have the vaccine if it were covered by the state?",

or "Would you have it if you paid a fee for the vaccine?" [18]. When a worldwide literature review was conducted, it was found that the willingness to vaccinate was higher if the vaccine was administered free of charge [19, 20].

In the present study, when the age group 39 and below was taken as reference, the rate of mothers not having their children vaccinated was found to be 3.390-fold more (CI: 1.733-6.633) in the group aged 40 and above. When the literature studies are examined, we think that the reason for this is the increased health literacy rates as the mothers come into contact with more sexually transmitted diseases as their age increases, they go to gynecological examinations more, and therefore, they are more informed by the physicians [8].

In the present study, in accordance with the literature data, when those living in the city were taken as a reference, there was a desire to have the vaccine for children by 4.057-fold more (CI: 1.710-9.623) with HPV vaccine in those living in rural areas. In some studies in the literature, it was reported that this is the opposite. In these studies, it was explained that women living in urban areas might want to be vaccinated more because they had easier access to healthcare centers, and therefore, are more informed by physicians [21]. In rural areas, where the present study was conducted, especially the family structure is extended family and the region has a patriarchal structure. For this reason, mothers both receive information about HPV, genital warts, and cervical cancer from their elder relatives at home, and see the problems they experience when they have one of these, and their desire to vaccinate their children increases in this way [22, 23].

When the nuclear family is taken as reference, the desire of mothers to have HPV vaccine increased 13.566-fold (CI: 5.507-33.422) among those living in extended families. Elderly individuals who faced diseases such as HPV-based cancer or pre-cancerous lesions in families knew how dangerous it was and did not want their children to experience the same pain [24-26]. When the number of people living at home is 4 or less, the desire to have the vaccine increased 5.749-fold more (CI: 2.801-11.802) in families with 5 people or more. The reason for this is that mothers want to have their daughters vaccinated for fear of more cervical cancer in line with the literature data [27]. In fact, Texas Children's Hospital prepared a

book containing the stories of those who had cervical cancer in their families, trying to increase the rate of vaccination against HPV through exposure [28].

There is a reverse relationship between the increased education levels of mothers and the desire to have their children vaccinated against HPV, in line with the literature data. The reason for this is that women who have higher education levels want to do more research themselves, instead of receiving information from healthcare professionals. These mothers read wrong information especially on social media and accept this as correct, and therefore, their desire to have their children vaccinated decreases [29].

In the present study, when the father's consent to vaccinate children was taken as reference, it was shown that the desire of the mother to be vaccinated increased 4.615-fold (CI: 1.848-11.524) in those who did, in line with the literature data. This is because of the fact that the structure of the region is more patriarchal [30].

In line with the literature data, when mothers who have heard about the Smear Test are taken as reference, there is a desire to have HPV vaccination 3.898-fold more (CI: 2.012-7.551) in those who have not heard of the Smear Test. The reason for this is that patients are informed about why the test is done and the diseases that may occur as a result before the Smear Test, as well as the methods of protection from these diseases. In this regard, women who have Smear Tests become more knowledgeable about HPV, their risk perception increases, and they tend to have the vaccine to protect their children [27].

### Limitations

The single-center nature of the study was the limitation of the study. The strength of the study was that it contained the first data of the region.

### CONCLUSION

In conclusion, health policies should be developed to provide detailed information on the diseases that HPV might cause in the region where the study was conducted.

### Authors' Contribution

Study Conception: ÜATA, ÖYS; Study Design:

ÜATA, ÖYS, AEY; Supervision: ÜATA, SK, ÖYS, AEY; Funding: ÜATA, SK; Materials: ÜATA, SK, ÖYS; Data Collection and/or Processing: ÜATA, SK; Statistical Analysis and/or Data Interpretation: ÜATA, SK, ÖYS, AEY; Literature Review ÜATA, SK, ÖYS, AEY; Manuscript Preparation: ÜATA, SK, AEY and Critical Review: ÜATA, SK, ÖYS, AEY.

### Conflict of interest

The authors disclosed no conflict of interest during the preparation or publication of this manuscript.

### Financing

The authors disclosed that they did not receive any grant during conduction or writing of this study.

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