



## Research Article

# The Human Papilloma Virus Vaccination: Turkish Mothers' Views

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### Abstract

**Objectives:** This study was conducted in order to analyze the knowledge and opinions of mothers of daughters in Turkey regarding the human papilloma virus (HPV) vaccine.

**Methods:** This descriptive study was conducted at 8 public family health centers at primary health care institutions affiliated with the Ministry of Health located in Ataşehir, in Istanbul province. A total of 252 mothers of daughters participated. A sociodemographic characteristics form and an HPV vaccine evaluation questionnaire were used to collect the data. The data were analyzed using percentage, frequency distribution, a chi-square test, and Fisher's exact test.

**Results:** Most of the participating mothers were between the ages of 28 and 47 years (68.7%), had a high school graduate education or less (82.5%), were not employed (67.9%), and had a low family income (57.6%). The majority (95.6%) had no experience with cervical cancer in their family, 60.7% had never heard of HPV infection, 72.2% did not know that HPV infection is related to cervical cancer, 54.8% had never heard of the HPV vaccine, 89.7% had not been advised to have their daughters vaccinated, and 98.8% had not yet had their daughters vaccinated. Among the factors influencing the mothers' information about HPV infection were age ( $p=0.021$ ), education level ( $p<0.001$ ), work status ( $p<0.001$ ), mothers' marriage age ( $p<0.001$ ) and family income level ( $p=0.009$ ). It was determined that a greater education level positively influenced the mothers' intention to get the HPV vaccine for their daughter ( $p=0.044$ ).

**Conclusion:** This study revealed that the mothers had very limited knowledge of the HPV vaccine and that health professionals do not sufficiently inform parents on this subject. It was also found that the high cost of the vaccine and other influences had a negative impact on intention to pursue obtaining the vaccine.

**Keywords:** Human papillomavirus, human papillomavirus vaccine, mother's knowledge

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The human papilloma virus (HPV) is a virus that causes genital warts and is also known to cause cervical cancer.<sup>[1]</sup> The incidence of cervical cancer has increased throughout the world, and is now a serious public health issue, especially in developing countries.<sup>[2]</sup> According to the US Center for Disease Control and Prevention, there are more than 150 types of HPV. More than 40 types cause genital papillomas,

while other high-risk HPV types cause cervical cancer.<sup>[1]</sup> According to data of the US National Cancer Institute, HPV-16 and HPV-18 are responsible for 70% of cervical cancer cases throughout the world.<sup>[1]</sup>

Approximately 79 million people in the US have been infected with HPV, and this number increases every year with an estimated 14 million new cases.<sup>[1]</sup> According to research

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conducted by the Cancer Department of the Ministry of Health of the Republic of Turkey, cervical cancer ranks number 9 among all cancer types affecting women in the country, and it affects approximately 4.6 females of every 100,000.<sup>[3]</sup>

The HPV vaccine has been used routinely in many countries, such as the US, Canada, Australia, Germany, France, and Israel, since 2008.<sup>[4]</sup> The quadrivalent HPV vaccine was licensed in Turkey in 2007, and the bivalent vaccine was licensed in 2008.<sup>[5]</sup>

Widespread use of the HPV vaccine decreases the incidence and mortality rate of cervical cancer. It also reduces the number of employees needed for HPV diagnostic services, and it reduces treatment costs. Data related to results of the vaccine's level and duration of protection, and implementation in Turkey, however, are not sufficient.<sup>[6]</sup> Since the HPV vaccine is not on the routine vaccine schedule, health professionals do not regularly recommend it. Furthermore, limited media coverage and the high cost of the vaccine exert a negative effect on girls and their parents' decisions to get the vaccine.<sup>[7]</sup>

This study was conducted to determine and analyze the opinions and knowledge of mothers of girls about the HPV vaccine.

## Methods

### Study Setting and Population

This was a descriptive study with a sample of 252 mothers of daughters who received health services from 8 family health centers at public primary health care institutions located in Ataşehir, in Istanbul province, in 2014.

### Data Collection and Analysis

A sociodemographic characteristics form and an HPV vaccine evaluation questionnaire were used to collect the data. Data collection methods were developed following a literature review conducted by researchers.<sup>[8-10]</sup> The Sociodemographic Information Form consisted of 13 questions such as age, education level, work status and marital status. The HPV vaccine evaluation questionnaire consisted of 23 questions that focused on the women's knowledge of the HPV vaccine and cervical cancer, as well as their opinions on being vaccinated. Data were collected through face-to-face interviews, which lasted approximately 10 to 15 minutes. HPV information booklets prepared by researchers were given to all of the participants after the interviews. The dependent variable of this study was the mothers' opinions on the HPV vaccine, and the independent variable was the sociodemographic details of the mothers.

The following formulas were used to analyze the data:

- Percentage and frequency distribution to determine the mothers' prominent sociodemographic features and opinions on the HPV vaccine

- Chi-square and Fisher's exact tests to assess the mothers' prevalent sociodemographic features and their effect on opinions related to the HPV vaccine.

## Ethical Considerations

Official approval to carry out this research was obtained from the Ministry of Health, the Istanbul Public Health Center, and the Acibadem University ethical board (ATADEK 2014-600).

## Results

### Characteristics of Participants

The majority of the participating mothers were between the ages of 28 and 47 years (68.7%), had a high school graduate education or less (82.5%), and were not employed (67.9%). Family characteristics indicated that the majority of the mothers had a low family income (57.6%) and lived with their husbands (93.3%). Most participants' menstruation began after age 12 (82.1%), and they were married between the ages of 19 and 26 years (62.7%). The data revealed that 68.7% of the women did not obtain a regular gynecological examination, 62.7% used family planning methods, 88.9% of the women knew about sexually transmitted diseases, 78.2% of them knew that viruses can cause cancer, and 95.6% had no family history of cervical cancer (Table 1).

The opinions and knowledge expressed by the mothers regarding HPV infection indicated that 60.7% had never heard of it before, and 72.2% of them did not know that HPV infection is related to cervical cancer. The primary information sources for the mothers who knew of HPV infection (n=99) were health professionals (27.3%), the Internet (24.2%), and the media (21.2%) (Table 2).

It was also determined that 54.8% of the mothers had never heard of the HPV vaccine, and that 98.8% had not had their daughters vaccinated. The source of information for the mothers who knew about the vaccine (n=114) was the media (33.3%), health professionals (29.8%), and the Internet (15.8%). Of the study participants, 10.3% of the mothers had been advised to have their daughters vaccinated (n=26). Of those, 38.5% reported that they had received the vaccine recommendation from a doctor, while 34.6% said this advice had come from another health professional. The study results also revealed that 70.6% of participants intended to have their daughters vaccinated, and that the majority, 64.4%, of these mothers (n=177) reported that the primary reason was to protect their daughter against cancer (Table 2).

**Table 1.** Sociodemographic status of the participating mothers

Socio-demographic status (n=252)	Number (n)	Percentage (%)
Age		
18-27	38	15.1
28-37	100	39.7
38-47	73	29.0
48-57	32	12.7
58+	9	3.6
Education Level		
Illiterate	9	3.6
Primary school	95	37.7
Middle school	32	12.7
High school	72	28.6
Undergraduate/graduate	44	17.5
Work Status		
Working	81	32.1
Not working	171	67.9
Family Income Level (TL/month)		
0-1999	145	57.6
2000-3000	69	27.4
3000+	38	15.1
Marital Status		
Married	235	93.3
Divorced	9	3.6
Widowed	7	2.8
Live seperately	1	0.4
Menarche age (years)		
<age 12	45	17.9
>age 12	207	82.1
Marriage age (years)		
15-18	75	29.8
19-22	93	36.9
23-26	65	25.8
27-30	16	6.3
31+	3	1.2
Regular gynecological examination		
Yes	79	31.3
No	173	68.7
Use modern family planning methods		
Yes	158	62.7
No	94	37.3
Know about sexually transmitted diseases		
Yes	224	88.9
No	28	11.1
Any first-degree relative with cervical cancer		
Yes	11	4.4
No	241	95.6
Knowledge that some viruses cause cancer		
Yes	197	78.2
No	55	21.8

The responses mothers gave as to why they had not had their daughters vaccinated (n=75), indicated that 30.7% did not have enough information about the vaccine, 28%

of them did not believe the vaccine would work, and 10.7% thought that their daughter was not mature enough for this vaccine. The majority of mothers (70%) thought that the vaccine should be administered after their daughter become sexually active (Table 2).

The cost of the HPV vaccine also had a negative impact on mothers' opinions about whether to have their daughters vaccinated. Almost half of the participants (49.6%) thought the vaccine was too expensive. However, 60.7% of the participant mothers reported that they would have their daughters vaccinated even if their husband had a different opinion (Table 2).

With respect to the relationship between dependent and independent variables, the education level of the mothers played a significant role in their knowledge of sexually transmitted diseases. The more formal education they had, the more knowledge they had about these diseases ( $p<0.001$ ). Moreover, the mothers' work status ( $p=0.032$ ), their age at the time of marriage ( $p=0.048$ ), and the income level of the family ( $p=0.023$ ) also influenced their level of knowledge regarding sexually transmitted diseases. The mother's age, whether or not she lived with her husband, the number of family members, number of children in the family, and the ages of her children did not have an impact on knowledge about sexually transmitted diseases ( $p>0.05$ ).

Similarities were found between the factors influencing whether or not the mothers had heard of the HPV infection and their knowledge of sexually transmitted diseases. Among these similarities were the mothers' age ( $p=0.021$ ), education level ( $p<0.001$ ), work status ( $p<0.001$ ), mothers' marriage age ( $p<0.001$ ) and family income level ( $p=0.009$ ). (Table 3).

As for the factors that influenced mothers' decisions concerning the HPV vaccine, the only variable was the mother's age at the time of marriage. This study revealed no reliable finding on this item, because only 3 of the participants' daughters had been vaccinated. Nevertheless, it is possible that the mothers' age at the time of marriage had an impact on their decision to have their daughters receive the HPV vaccine. Other independent variables had no impact on mothers' decision to have their daughters vaccinated ( $p>0.05$ ).

The mothers' education level had an impact on decisions regarding the HPV vaccine ( $p=0.044$ ). The greater the education level, the greater the willingness to decide in favor

**Table 2.** Mothers' knowledge and opinions on HPV infection and vaccine

Variables (n=252)	Number (n)	Percentage (%)
Heard of HPV infection		
Yes	99	39.3
No	153	60.7
Knowledge of the relationship between HPV infection and cervical cancer		
Yes	70	27.8
No	182	72.2
Information sources for mothers who have heard of HPV infection (n=99)		
Workplace	10	10.1
Health professionals	27	27.3
Relatives	7	7.1
Friends	10	10.1
Internet	21	24.2
Media (newspapers, magazines, TV etc.)	24	21.2
Heard of HPV vaccine		
Yes	114	45.2
No	138	54.8
Information sources for mothers who have heard of HPV vaccine (n=114)		
Media	38	33.3
Health professionals	34	29.8
Internet	18	15.8
Friends	13	11.4
Been given advice on HPV vaccine		
Yes	26	10.3
No	226	89.7
The person who suggested the HPV vaccine (n=26)		
Doctor	10	38.5
Other health professional	9	34.6
Friend	4	15.4
Sister/daughter	3	11.5
Mother's daughters vaccination status		
Yes	3	1.2
No	249	98.8
Intention of mother to have their daughter vaccinated		
Yes	178	70.6
No	74	29.4
Reason mother intends to have their daughter vaccinated (n=177)		
Belief that the vaccine is necessary	51	28.8
Protection against cancer	114	64.4
Doctor's advice	6	3.4
Cancer cases within the family	6	3.4
Reason mother does not intend to have their daughter vaccinated (n=75)		
Mis information about the vaccine	23	30.7
Disbelief that the vaccine is necessary	21	28
Belief that their daughter is too young for the vaccine	8	10.7
Concerns about the side effects of the vaccine	7	9.3
Husband's approval	5	6.7
Cost	3	4
Belief that the HPV vaccine has to be given before daughter becomes sexually active		
Yes	73	30
No	179	70
Effect of the high cost on the intention to vaccinate		
Yes	125	49.6
No	127	50.4
Intention to get the HPV vaccine even without husband's approval		
Yes	153	60.7
No	99	39.3

of the obtaining the HPV vaccine. In this study, 70.5% of the study participants were high school graduates. None of the independent variables statistically influenced the mothers'

decision concerning the HPV vaccine.

In addition, it was significant that the number of mothers who reported that they would have their daughters vacci-

**Table 3.** Sociodemographic factors that influenced mothers' knowledge of HPV infection

Variables	Have heard		Haven't heard		X <sup>2</sup>	p
	n	%	n	%		
Age (years)					9.772	0.021
18-27	9	(23.7)	29	(76.3)		
28-37	44	(44.0)	56	(56.0)		
38-47	35	(47.9)	38	(52.1)		
48+	11	(26.8)	30	(73.2)		
Education level					31.586	0.001
Illiterate	1	(11.1)	8	(88.9)		
Primary school	23	(24.2)	72	(75.8)		
Middle school	11	(34.4)	21	(65.6)		
High school	33	(45.8)	39	(54.2)		
Undergraduate/Graduate	31	(70.5)	13	(29.5)		
Work status					34.213	0.001
Working	63	(65.4)	28	(34.6)		
Not working	46	(26.9)	125	(73.1)		
Mothers' marriage age					18.152	0.001
15-18	19	(25.3)	56	(74.7)		
19-22	34	(36.6)	59	(63.4)		
23-26	39	(60.0)	26	(40.0)		
27+	7	(36.8)	12	(63.2)		
Family income level (TL/month)					11.585	0.009
<1000	11	(27.5)	29	(72.5)		
1000 -1999	35	(33.3)	70	(66.7)		
2000 - 3000	30	(43.5)	39	(56.5)		
>3000 +	23	(60.5)	15	(39.5)		

nated even though their husband might disagree was larger than the number of mothers who thought otherwise.

## Discussion

After analyzing the results of the current study of mothers' knowledge and opinions of the HPV vaccination, we found that the participants' knowledge of HPV infection was insufficient (60.7%). Dursun et al.<sup>[8]</sup> reported that 55% of participant mothers had never heard of the HPV infection, and 59% did not know that HPV and cervical cancer are related. Ilter et al.<sup>[11]</sup> also stated that 56% of the participants did not know about the HPV infection or the vaccine. Pitts et al.<sup>[12]</sup> found that 69.7% of mothers did not know that HPV is an infection transmitted sexually. Lee et al.<sup>[13]</sup> had a similar result, with the finding that 81.4% of mothers did not know that HPV is a sexually transmitted disease, and Davlin et al.<sup>[14]</sup> found that 61.2% of women had not heard of the HPV infection. Other international and national studies have reported similar results.

At this time, the HPV vaccine is currently on the vaccine schedule of 43 countries worldwide.<sup>[15]</sup> Greater use of the HPV vaccine significantly depends on parents' knowledge and opinions about cervical cancer and the effectiveness of the HPV vaccine. Although the HPV vaccine's effectiveness has been proven by various studies, and it is recog-

nized as the primary protection against cervical cancer, general knowledge within Turkey of the HPV vaccine is still very limited.<sup>[16, 17]</sup> For this reason alone, health professionals are crucial in helping the public make informed decisions on this topic based on correct and up-to-date information. Media coverage regarding the HPV vaccine has been inadequate. It is the responsibility of doctors, nurses, and other health professionals to inform mothers and fathers and the general public about the HPV vaccine. Unfortunately, this study found that mothers had rarely been informed by health professionals about HPV (27.3%).

## Conclusion

This study investigated the HPV vaccine-related knowledge and opinions of mothers of daughters. Our results showed that the participants had insufficient knowledge about HPV infection or the HPV vaccine, that health professionals do not often recommend the HPV vaccine, and that the number of mothers who have their daughters vaccinated is very small. Moreover, the decision to have daughters vaccinated is negatively influenced by aspects such as young age of the daughter and the high cost of the HPV vaccine. The participants' daughters in this study were between the ages of 1 and 7 years.

Clearly, increasing the use of the HPV vaccine in Turkey



will depend on many factors, such as how knowledgeable parents are, what their opinions are on this topic, and how often health professionals recommend the HPV vaccine for the protection of young girls. Since the HPV vaccine is not yet on the vaccine schedule in this country, parents are charged a fee for their daughters to receive this vaccine. In addition to the cost, other negative influences on parents' decision to have their daughters vaccinated include the fear that the vaccine could encourage earlier sexual activity and the fact that the vaccine does not guarantee full protection against the HPV virus. These factors indicate that there are still many issues to be worked on in order to protect the cervical health of our young female population.

### Disclosures

**Ethics Committee Approval:** The study was approved by the Acibadem University ethical board (ATADEK 2014-600).

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** None declared.

**Authorship contributions:** Concept – B.U., G.S., U.K., F.E.A.; Design – B.U., G.S.; Supervision – U.K., F.E.A.; Materials – B.U., G.S.; Data collection &/or processing – B.U., G.S.; Analysis and/or interpretation – B.U., G.S.; Literature search – B.U., G.S.; Writing – B.U., G.S.; Critical review – B.U., G.S., U.K., F.E.A.

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