A Survey on Parents' Health Literacy on Childhood Human Papilloma Virus Vaccination

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Abstract

Objective The aim of this study is to determine parents' knowledge levels and attitudes about childhood human papillomavirus (HPV) vaccination and reveal the differences between parents who are health care workers and nonhealth care workers. The HPV vaccine can potentially prevent initial HPV infection and HPV-related genital and anal precancerous disorders and cancers.

Methods Questions and attitudes toward childhood HPV vaccination were asked to 564 parents who agreed to participate in the study.

Results In our study, the rate of health care worker parents considering having their children vaccinated against HPV (63.1%) was higher than that of nonhealth care worker parents (11.4%). Only 5% of parents had their children previously vaccinated against HPV; however, there was no difference between parents who were health care workers and those who were not. In addition, this rate was relatively low compared to other paid vaccines (49.8, 35.3, and 18.8%, respectively). Parents who had not previously vaccinated their children against HPV were considering getting their children vaccinated, especially if a pediatrician recommended it.

Conclusion The parents' high level of health literacy may not be effective in deciding to vaccinate their children against HPV. Therefore, adequate information and awareness should be provided to all parents about HPV vaccination as early as possible for all children of appropriate age. Pediatricians should be given important roles in raising the awareness of parents about childhood HPV vaccination by health authorities.

Keywords
- HPV
- vaccination
- parents
- health literacy
- health care workers

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Introduction

Human papillomavirus (HPV) infection can be transmitted sexually and nonsexually in childhood. It can cause warts, premalignant and malignant lesions on the skin, oropharyngeal region, anal region, and genital organs. The most effective way to prevent these HPV-related health problems seems to be vaccination. The earlier the vaccination is administered, the greater the expected benefit. Other factors, such as parental health literacy and the advice of health care workers, may also influence parents' decisions to vaccinate their children against HPV.

Sexual activity is one of the main transmission routes of HPV. It is estimated that at least 80% of sexually active individuals have been exposed to HPV once in their lifetime.[1] HPV can cause various health problems, especially cervical and vaginal, vulvar, anal or penile squamous intraepithelial lesions and carcinomas.[2] While HPV 16 and HPV 18 are

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responsible for approximately 70% of cervical cancers, HPV 6 and HPV 11 are responsible for approximately 90% of genital warts.[3,4]

A recent study showed a high cutaneous HPV rate of 92% in cutaneous warts samples from children. Moreover, HPVs are detected in commensal cutaneous flora of more than 50% of healthy individuals, especially in children by 4 years of age. In addition, HPVs are detected in the commensal cutaneous flora of more than 50% of healthy individuals, particularly in children as young as 4 years old. The presence of anogenital warts in children is also associated with nonsexual HPV transmission,[5,6] mainly by hand carriage and from mother to child.[7]

The life cycle of HPV begins with the virus entering a wound and infecting the basal cells. The basal and intermediate layers contain low levels of viral E1, E2, E4, E5, E6, and E7, whereas the upper differentiated layers contain E4 and the capsid proteins L1 and L2. The virus is shed by the terminally differentiated cells.[8] Most HPV infections (including carcinogenic HPV genotypes) usually resolve within 12 months.[9] Studies have shown that cytologically detected precancerous cervical lesions occur approximately 10 years after the first sexual activity.[10]

The HPV vaccine can potentially prevent initial HPV infection and HPV-related malignancies. Vaccines that have been developed for HPV are bivalent (HPV 16 and 18), quadrivalent (HPV 6, 11, 16, and 18), and nine-valent (HPV 6, 11, 16, 18, 31, 33, 45, 52, and 58). Bivalent vaccines provide protection against these two strains, which cause cervical carcinomas, anal cancers, and a significant cause of vulvar, vaginal, and oropharyngeal cancers. Quadrivalent and nine-valent vaccines provide a high level of protection against carcinomas as well as anogenital warts. It is known that the appearance of precancerous cervical lesions begins 10 years after the first sexual activity. While vaccines have the highest protection in people not previously infected with HPV, the protection rate in those infected with HPV decreases as time progresses. In this regard, starting HPV vaccination as early as possible in childhood is very important.[11]

Vaccination recommendations for HPV should consider the Advisory Committee on Vaccination Practices recommendations. Those who are started between the ages of 9 and 15 should receive two doses of the HPV vaccine, and those who are started at the age of 15 and later should receive three doses.[12]

Even in highly developed countries, HPV vaccine hesitancy can dramatically affect public health and vaccine implementation, as observed in Japan.[13] There are multiple reasons for vaccine hesitancy. Parents who refused HPV vaccination in the literature differ; some pointed to fear of promiscuity resulting from the vaccination,[14] whereas some did not consider their daughters at risk for HPV infection.[15] There are also some concepts regarding concerns, fears, or misconceptions about the HPV vaccination,[16] especially in female adolescents and potential (immune-mediated) side effects.[17]

In Türkiye, the National Immunization Program (NIP) does not cover HPV vaccination. Therefore, the first step in developing an effective program for HPV vaccination is understanding the attitudes of parents toward HPV vaccination. This study aimed to determine parents' knowledge and attitudes toward the childhood HPV vaccine, the differences between parents who are health care and nonhealth care workers, and the role of parents' health literacy, which will help to understand vaccine hesitancy.

Materials and Methods

Parents whose children were being followed-up in Ankara City Hospital—Children's Hospital and health care worker parents at Ankara City Hospital were included in the study. Initially, 824 parents were invited to the study. Of the parents who agreed to participate in the study and completed the survey questions, 564 were included. The supplementary material summarizes it in the study map (►**Fig. 1**).

It was designed as a survey study consisting of 25 multiple-choice questions directed to parents (given as supplemental material at the end of the article). The questionnaire included questions about the general vaccination of parents, paid vaccinations, questions about HPV, and questions about HPV vaccination.

Informed consent was obtained face to face from the parents whose children were followed up at Ankara City Hospital—Children's Hospital, who were nonhealth care workers and from parents working as health care workers at Ankara City Hospital via e-mail. Before the survey, all parents were informed that for the HPV vaccine efficiency, children aged 9 to 15 should receive two doses, while three doses if over the age of 15 years. In addition, the parents were informed that the cost of a single dose of the vaccine was

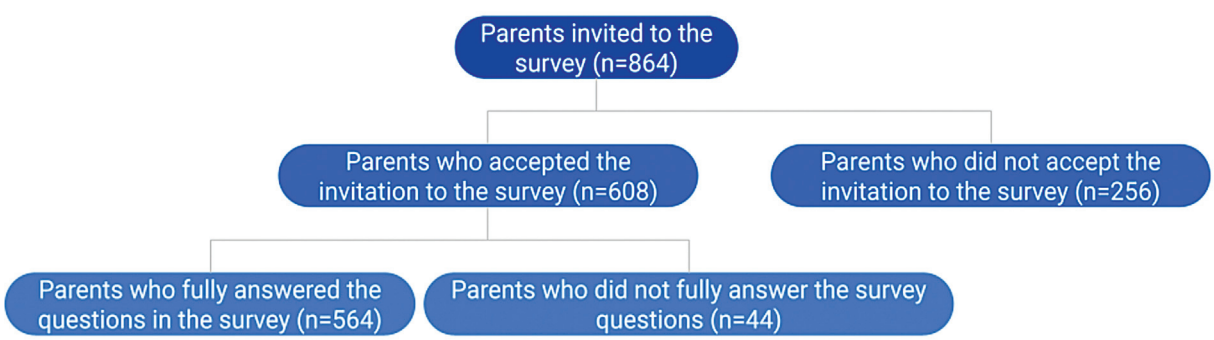


Fig. 1 The study map (flowchart).

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about 50 dollars and the state did not cover it. Questionnaires were administered to parents who were health care workers who agreed to participate in the study via e-mail and to parents who were nonhealth care workers face to face. Survey data were obtained by collecting the answers given.

In the questionnaire, parents were asked about their sociodemographic characteristics, their views on childhood national and paid vaccines, their knowledge about childhood HPV vaccination, and the reasons that affected their decisions related to HPV vaccination. An analysis was also carried out on whether being a health care worker affected the responses.

The IBM SPSS Statistics 22 (IBM SPSS, Türkiye) program was used for the statistical analyses. In the analysis of the data, in addition to descriptive statistical methods in comparing qualitative data, the chi-square test was used to determine whether there is a difference between independent variables. Fisher's exact test, Fisher–Freeman–Halton test, and Yates continuity correction were used in cases where the expected value assumption could not be met in the chi-square test. The level of statistical significance was evaluated as $p < 0.05$. p-Values were two-sided.

This study was approved by the Ankara City Hospital Ethics Committee (E2-21-129).

Results

Of the 564 volunteers participating in the study, 187 (33.1%) were male and 377 (66.9%) were female. The mean age of the participants was 39.7 ± 10.7 years, and the median age was 38. The genders of the children of the participants were 41.4% boys and 58.6% girls. Children of 56.9% of the participants were between the ages of 0 and 8, 19.9% were 9 and 11, 10.4% were 12 and 14, and 12.9% were 15 and 17. ►**Table 1** summarizes the sociodemographic characteristics of the participants. The rates of having a university degree (96.1%) and having a household income of 1,000 USD or more per month (74.7%) were higher among health care workers than nonhealth care workers (40.4 and 21.6%, respectively). Likewise, the rate of having three or more children in the group of health care workers (9.4%) was lower than in the group of nonhealth care workers (35.7%). There was no significant difference between these two groups regarding other sociodemographic parameters.

The rate of thinking vaccines were beneficial among health care workers (96.1%) was higher than among nonhealth care workers (87.3%). The rate of having all age-appropriate vaccinations in the current vaccination calendar in our country among the children of health care workers (100%) was significantly higher than that for the nonhealth care workers (98.2%).

Compared to paid vaccines such as meningococcal serotype ACYW vaccines (35.3%), meningococcal serotype B vaccine (18.8%), rotavirus vaccines (49.8%), HPV vaccine was the one that all parents gave their children at the lowest rate (5%). However, there was no statistically significant difference between the health care workers (6.5%) and nonhealth care workers (2.6%) in terms of the rates of having their children vaccinated against HPV before (►**Fig. 2**).

Only 66% of the participants were aware of HPV, 19.9% were not aware of this virus, and 14.2% were not sure whether they were aware of it. While 72.3% of the participants were aware of the diseases caused by HPV, 27.7% stated that they were not. Regarding the answers of the participants who were aware of HPV-related diseases, 66.5% of the participants thought that it causes cervical cancer, genital region cancer, anal region cancers, and precancer disorders, 37.9% thought that it causes genital region cancers, anal cancers, and precancer disorders, whereas 53% thought it causes warts.

The rate of being aware of HPV and the diseases caused by HPV (94.6 and 95.5%, respectively) was higher in health care workers than in nonhealth care workers (23.7 and 38.2%, respectively).

While only 66.1% of the participants knew about HPV vaccines, 75.4% thought it was protective against HPV-related diseases. When the participants were asked about which group of diseases they thought HPV vaccines would be protective against, 68.3% of them responded as genital area cancers and precancerous disorders, 47.6% responded as anal region cancers and precancerous disorders, 34.6% responded as precancer diseases, and 32.8% answered that it is protective against warts. Among the participants, 51.1% stated that both girls and boys should be vaccinated, 24.3% said only girls should be vaccinated, and 0.2% thought only boys should be vaccinated. On the contrary, 22.5% of the participants stated that HPV vaccination should not be given to girls or boys at all. While 28.7% of the participants did not know which age group HPV vaccines could be administered to, 71.3% did. Among those who answered the question positively, 91.4% thought it could be applied to those aged nine and above, and 8.6% thought it could be applied to those younger than nine.

They had a high level of awareness about HPV vaccines in general (91.6 and 28.5%, respectively) and protective against HPV-related diseases: these were cervical and precancerous disorders (90.1 and 36.1%, respectively), genital area cancers and precancerous disorders (66.2 and 20.3%, respectively), against anal region cancers and precancerous disorders (50.6 and 11%, respectively), and warts (45.8 and 13.7%, respectively). Rates of knowing that the HPV vaccine was given to children aged 9-13 (63.3% and 13.7%, respectively), children aged 14-18 (60.8% and 15.6%, respectively) and rates of knowing that it was given to both boys and girls (67.8% and 13.7%, respectively) health worker parents were higher than non-health worker parents.

As the participants' ages, education levels, and household income levels increased, their rates of considering HPV vaccination became higher, while this rate decreased significantly as the number of their children increased ($p = 0.000$; $p < 0.05$). The rate of considering HPV vaccination for one's children was found to be higher in the working parents (50.6%) compared to the nonworking parents (13.4%), and in the health care worker parents (61.6%) compared to the nonhealth care workers (13.6%). Again, this rate is between the ages of 26 and 45 years compared to between 20 and 25 years (10%), university graduates (53.5%) compared to those with other education levels, health care workers

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Table 1 Sociodemographic characteristics of the participants ($n = 564$)

		n	%
Gender	Male	187	33.1
	Female	377	66.9
Age	20–25 yr old	20	3.5
	26–30 yr old	40	7.1
	31–35 yr old	131	23.2
	36–40 yr old	183	32.5
	41 yr old or older	190	33.7
Educational status	Illiterate	1	0.2
	Literate with no formal degree	8	1.4
	Primary school graduate	23	4.1
	Secondary school graduate	31	5.5
	High school graduate	86	15.2
	University graduate	415	73.6
Employment status	Unemployed	127	22.5
	Employed	437	77.5
Field of work	Health care worker	336	59.6
	Nonhealth care worker	228	40.4
Household total income (monthly)	Lower than 250 USD	48	8.5
	Between 250 and 500 USD	102	18.1
	Between 500 and 1,000 USD	114	20.2
	1,000 USD or higher	300	53.2
Number of children	1	208	36.9
	2	244	43.2
	3	95	16.9
	4 or more	17	3.0
Child's age	0–8 yr old	322	57.1
	9–11 yr old	112	19.9
	12–14 yr old	58	10.2
	15–17 yr old	72	12.8
Child's sex	Male	233	41.4
	Female	331	58.6

Abbreviation: HPV, human papillomavirus.

(61.6%) compared to nonhealth care workers (13.6%), those with a household income of 1,000 USD (62.3%) and above compared to other monthly household income groups, those with one child (55.7%) compared to those with a higher number of children was higher. In addition, it was higher in parents with daughters (48.2%) than in those with sons (33.5%) (►**Table 2**).

Of all parents considering vaccinating their children, 43.4% received a recommendation. When parents were asked from whom and where they received advice, the highest rate of answers was from pediatricians (65.3%), followed by obstetricians (34.7%) and family physicians (28.6%) from TV-social media (11.4%) and acquaintances (5.3%). There was no significant difference between health care worker and nonhealth care worker parents regarding receiving a recommendation from a pediatrician, an obstetrician, and a family physician. In addition, there was no difference in the rate of those with or without a recommendation by a pediatrician or other health care professionals (►**Table 3**).

Participants were asked whether they would consider vaccinating their children if the state provided the HPV vaccine free of charge or at a reasonable price. Most parents (73.8%) thought they would vaccinate their children if provided free of charge by the state. However, this rate was lower for health care worker parents (63.7%) than for nonhealth care worker parents (80.1%). About one-fifth (19.7%) of the participants thought about vaccinating their children with HPV if the price was reasonable. The rate of considering HPV

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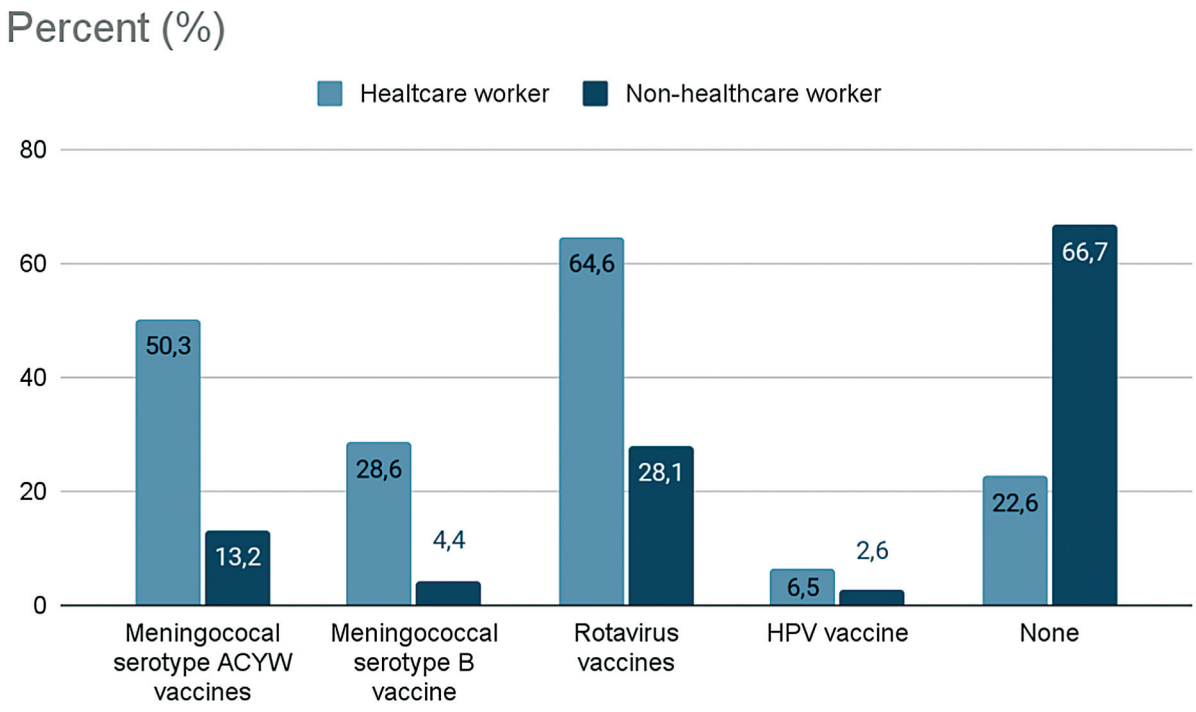


Fig. 2 Paid vaccinations for the child (status of being a health care worker).

vaccination for their child for a reasonable fee was 30.6% in health care workers compared to nonhealth care workers (12.9%; ►**Table 3**).

Discussion

Among parents who had not yet had their children vaccinated against HPV, health care worker parents were more likely to consider vaccinating their children than nonhealth care workers. In our study, the HPV vaccine was the vaccine that all parents gave their children at the lowest rate among the paid childhood vaccines in our country. In our study, the level of awareness about childhood HPV vaccines was found to be higher in health care worker parents compared to other parents. However, there was no difference in the rates of HPV vaccination to their children between the two parent groups. In addition, one of the most important factors in the decision of parents to vaccinate their children in our study was the pediatrician's recommendation.

Studies conducted in Türkiye have observed that the age of first sexual intercourse is between 16 and 23.[18,19] The age of first sexual intercourse in adolescents decreases further, and the prevalence of HPV infection increases. In this case, it is even more important to start childhood HPV vaccination as early as possible in our country to prevent HPV-related malignancies.[10,11]

The FDA approved the HPV vaccine in 2006 to prevent cervical cancer and other HPV-related diseases. Subsequently, the implementation of adult and school-based HPV vaccination programs was initiated in many countries.[20,21] However, in most countries, the HPV vaccine is provided at a price, as the vaccine is not covered by the government or individuals' health insurance. It is also known that the coverage rate is lower in paid vaccination compared to school-based vaccination programs.[20,21]

Among the facilitating factors for HPV vaccination, parental acceptance, state or health insurance coverage, and the doctor's advice come to the fore. The main barriers to HPV vaccination are the cost of the vaccine, parental lack of knowledge, and parental concerns (vaccine safety, the idea that the vaccine will encourage sexual activity).[22–25]

Among the barriers to childhood HPV vaccination, the lack of knowledge of parents plays a very important role.[26] In a survey study conducted by Altınel-Açoğlu et al[27] with 203 parents, 70% of the parents did not have sufficient knowledge about HPV vaccination, and 67% did not know that cervical cancer is a preventable disease. Among the parents, 62% agreed to vaccinate their daughters against HPV after being informed. In the survey conducted by Celik on 762 parents, 26.9% of the parents had heard/read about HPV infection, and 20.7% had heard/read about HPV vaccines.[28] In the survey conducted by Görkem et al on 187 health care worker parents, it was determined that 87.5% of the participants knew about the relationship between cancer and this virus and 86.5% had accurate knowledge about the causes of cervical cancer. Of those who knew about HPV, 90.3% also knew about the HPV vaccine.[29] In our study, per the literature, the awareness level of childhood HPV and HPV vaccination in health care worker parents (94.6 and 91.6%, respectively) was higher than in nonhealth care workers (23.7 and 28.5%, respectively). The difference in knowledge levels can be explained by the higher level of general and HPV-related health literacy among health care workers.

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Table 2 Evaluation of parents' thinking of getting HPV vaccine to their children according to sociodemographic characteristics

		Parents' thinking about getting their children vaccinated against HPV			*p*-Value
		Yes	No	Undecided	
		n (%)	*n* (%)	*n* (%)	
Gender	Male	72 (39.1)	14 (7.6%)	98 (53.3%)	**0.462**
	Female	163 (43.2)	34 (9%)	180 (47.7%)	
Age	20–25 yr old	2 (10)	2 (10%)	16 (80%)	**0.019**[a]
	26–30 yr old	15 (37.5)	5 (12.5%)	20 (50%)	
	31–35 yr old	54 (41.2)	11 (8.4%)	66 (50.4%)	
	36–40 yr old	80 (43.7)	8 (4.4%)	95 (51.9%)	
	41–45 yr old	87 (45.8)	22 (11.6%)	81 (42.6%)	
Educational status	Illiterate	0 (0)	0 (0)	1 (100)	**0.000**[a]
	Literate with no formal degree	0 (0)	3 (37.5)	5 (62.5)	
	Primary school graduate	4 (17.4)	5 (21.7)	14 (60.9)	
	Secondary school graduate	1 (3.2)	6 (19.4)	24 (77.4)	
	High school graduate	11 (12.8)	3 (3.5)	72 (83.7)	
	University graduate	222 (53.5)	31 (7.5)	162 (39)	
Employment status	Unemployee	17 (13.4)	15 (11.8)	95 (74.8)	**0.000**[a]
	Employee	221 (50.6)	33 (7.6)	183 (41.9)	
Status of being a health care worker	Health care worker	207 (61.6)	26 (7.7)	103 (30.7)	**0.000**[a]
	Nonhealth care worker	31 (13.6)	22 (9.6)	175 (76.8)	
Household total income (monthly)	Lower than 250 USD	2 (4.2)	8 (16.7)	38 (79.2)	**0.000**[a]
	Between 250 and 500 USD	11 (10.9)	10 (9.9)	80 (79.2)	
	Between 500 and 1,000 USD	37 (32.5)	10 (8.8)	67 (58.8)	
	1,000 USD or higher	187 (62.3)	20 (6.7)	93 (31)	
Number of children	1	112 (55.7)	9 (4.5)	80 (39.8)	**0.000**[a]
	2	102 (41.8)	22 (9)	120 (49.2)	
	3	20 (21.1)	12 (12.6)	63 (66.3)	
	4 and more	2 (11.8)	5 (29.4)	10 (58,8)	
Child's age	0–8 yr old	136 (42.8)	23 (7.2)	159 (50)	**0.009**[a]
	9–11 yr old	38 (34.2)	6 (5.4)	67 (60.4)	
	12–14 yr old	27 (46.6)	10 (17.2)	21 (36.2)	
	15–17 yr old	36 (50)	8 (11.1)	28 (38.9)	
Child's gender	Male	78 (33.5)	24 (10.3)	131 (56.2)	**0.002**[a]
	Female	159 (48.2)	24 (7.3)	147 (44.5)	

Abbreviation: HPV, human papillomavirus.
Chi-square test [a]$p < 0.05$

The gender of the child also appears to be an important factor in the acceptance of the HPV vaccine. Studies have shown that parents of girls are more likely to consider vaccinating their children than parents of boys.[22] In the survey by Doner-Guner et al[30] on HPV vaccination to physician mothers, parents thought of only giving HPV vaccination to their daughters. The same answer was given in the questionnaire applied to pediatrician parents by Ozsurekci et al.[31] In the survey conducted by Altinel-Acoglu et al[27] with 203 parents, it was determined that approximately two-thirds of the parents were not aware of the HPV vaccine and the diseases that could be prevented with the HPV vaccine. However, the study stated that these parents thought to have their children vaccinated after the pediatricians gave adequate information. In a survey conducted with 203 parents by Altınel-Acoglu et al[27], it was determined that approximately two-thirds of the parents did not know about the HPV vaccine and diseases that the HPV vaccine can prevent, but these parents were only informed after adequate information about this vaccine by pediatricians. It was determined

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Table 3 Attitudes about HPV vaccination according to status of being a health care worker

		Status of being a health care worker		*p*-Value
		Health care worker	Nonhealth care worker	
		n (%)	*n* (%)	
Who is considering this on the recommendation of those who are considering getting their child vaccinated against HPV? ($n = 245$)	With the recommendation of the pediatrician	137 (64.9%)	23 (67.6%)	[a]0.909
	With the recommendation of the family physician	55 (26.1%)	15 (44.1%)	[a]0.055
	With the recommendation of the obstetrician and gynecologist	74 (35.1%)	11 (32.4%)	[a]0.909
	With the proposal of television-internet-social media	28 (13.3%)	0 (0%)	[b]**0.012**[c]
	With the recommendation of acquaintances	12 (5.7%)	1 (2.9%)	[b]0.438
In order for the HPV vaccine to be effective, it must be administered 2–3 times in 6 mo. The price of the HPV vaccine ranges from $50 and is not covered by the state. In the light of this information, would you consider having your child vaccinated against HPV?	Yes, I would consider doing it anyway	212 (63.1%)	26 (11.4%)	[b]**0.000**[c]
	No, I would not consider doing it under any circumstances.	12 (3.6%)	18 (7.9%)	
	I'm undecided/don't know	112 (3.3%)	184 (80.7%)	
If you answered no or undecided/don't know to the previous question, in which situation would you consider giving your child the HPV vaccine?	If the HPV vaccine is provided free of charge by the state, I would consider having my child vaccinated	79 (63.7%)	161 (80.1%)	[b]**0.000**[c]
	I would consider it if the price was reasonably lower	38 (30.6%)	26 (12.9%)	
	I would never consider vaccinating my child	7 (5.6%)	14 (7%)	

Abbreviation: HPV, human papillomavirus.
[a]Fisher's exact test
[b]Ki-Kare test
[c]$p < 0.05$

that two-thirds of the parents agreed to vaccinate their daughters against HPV. Half of the participants in our study (51.1%) knew that the HPV vaccine was given to both boys and girls. However, the rate of answering this question correctly (67.8%) was higher in health care worker parents than in nonhealth care workers (13.7%). In addition, the rate of those who did not want their children to be vaccinated with HPV but thought to have their daughters do it (48.2%) was higher than those who thought to have their sons do it (33.5%). This finding was pleasing in favor of boys. Although the American Academy of Pediatrics has recommended HPV vaccination to all children of both genders at the appropriate age since 2012, there were findings in our study consistent with the literature suggesting that having a daughter may be a facilitating factor for parents to accept childhood HPV vaccination.

As reported in the survey conducted by Altınel-Açoğlu et al[27] above, when the necessary information is given to parents with insufficient knowledge by health care professionals, the vaccination acceptance rate of parents may increase. Contrary to the abovementioned survey, in our study, parents with boys also considered HPV vaccination for their children as much as parents with girls. This may be promising for increasing awareness that the vaccine can be administered to girls and children of both sexes. In addition, in our study, as the parents' age, education level, and income level increased, the rate of considering the HPV vaccine increased significantly. On the contrary, this rate decreased significantly as the number of children increased. The rate of considering HPV vaccination was found to be significantly higher in working parents than in nonworking parents. This suggests that employment, being a health care worker, education, and high income may facilitate vaccine acceptance. On the contrary, our study suggests that having more children may be an important obstacle for parents to consider vaccinating their children due to the high cost of vaccination.

Information resources (television, internet, and social media) and advice from trained health care professionals are among the factors that facilitate parents to consider vaccinating their children against HPV.[22] In Celik's study,[28] the media ranked second in the list of sources of information on vaccine acceptance among parents, followed by doctors, while pediatricians and family physicians were prominent

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among physicians. Ozsurekci et al[31] stated that 75% of Turkish pediatricians recommend the HPV vaccine to girls, think that HPV vaccines should be added to NIP, and stated their financial concerns (the cost of the vaccine). In Yıldırım et al[32] study, 91.1% of pediatricians recommend that parents give HPV vaccine to their children, especially girls in the 10 to 12 age group. In our study, first physicians and then the media were the most influential for parents to have HPV vaccine for their children. Among physicians, pediatricians (65.3%) came first, followed by obstetricians (34.7%) and family physicians (28.6%). Although parents especially consider the recommendation of pediatricians in making their vaccination decision and that most pediatricians in our country recommend HPV vaccination to children, we think pediatricians should take a major and active role in childhood HPV vaccination in our country and all over the world.

In our country, the HPV vaccine is not covered by NIP. The HPV vaccine is more expensive than other paid vaccines (rotavirus and meningococcal vaccines). In other studies conducted in our country, it was reported that the rate of parents vaccinating their children against HPV was relatively low (0.2–0.7%).[28,33] In our study, this rate was relatively low (5%) compared to other paid vaccines. However, it was also considerably higher than the rates reported above. This can be explained by the higher awareness of parents about other paid vaccines, and the higher single-dose cost of the HPV vaccine compared to other paid vaccines.

While one of the important financial barriers to vaccine acceptance is the cost of the vaccine, the coverage of the vaccine cost by the government or health insurance is among the facilitating financial factors.[34–37] It is known that the vaccine coverage in school-based free HPV vaccination is higher than that in individually paid vaccination. In our study, the majority of the participants (73.8%) stated that they would consider vaccinating their children if the state provided them with free vaccines. Conversely, the rate of those who thought of having their children vaccinated for a reasonable price was quite low (19.7%). Additionally, as the number of children in the family increased, the cost of vaccination would increase proportionally, so the rate of parents considering vaccination decreased. This can be interpreted as parents wanting the HPV vaccine for their children to be included in NIP by the state even more than wanting it to be provided for a reasonable fee.

In our study, unfortunately, the small sample size and information bias could have affected the accuracy of the results. Also, a laboratory study was lacking in our study. Furthermore, the findings captured data may cause challenges in the generalization of the results to the entire population but still provides valuable baseline information that can be used to strengthen the NIP.

In our study, the health literacy level of health care worker parents about childhood HPV vaccine was high. However, there was no difference between nonhealth care workers and parents regarding HPV vaccination rates for their children. We think that parents' high level of health literacy may not be effective in deciding to have their children vaccinated against HPV. We think that being a working parent, being a health care worker, the education level, monthly income level of the household, coverage of the vaccine by the state, reasonable cost of the vaccine, and having a daughter can positively affect the acceptance of the vaccine among the parents. On the contrary, having many children can negatively affect the acceptance of the vaccine. Adequate information and awareness should be provided to all parents about HPV vaccination as early as possible for all children of appropriate age. Health authorities should also give an important role to pediatricians in this regard. There is a need for more comprehensive studies on the factors affecting parental HPV vaccine acceptance in our country.

Conflict of Interest
None declared.

Ethical Committee Approval
The approval was obtained from Ankara City Hospital Ethics Committee (E2-21129).

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