Attitudes and Beliefs of Parents About Human Papilloma Virus Vaccination in Their Daughters During COVID-19 Pandemic: A Cross Sectional Study

Ebeveynlerin COVİD-19 Pandemisi Sırasında Kız Çocuklarına İnsan Papilloma Virüs Aşısı Yaptırılmasına İlişkin Tutum ve İnançları: Kesitsel Bir Çalışma

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ABSTRACT

Objective: This study aimed to determine parents' current attitudes and beliefs using a standardised scale towards Human Papilloma Virus and its vaccine during COVID-19 Pandemic.

Material and Methods: This is a descriptive cross sectional study including a total of 303 parents who applied to a training and research hospital pediatric clinic with a daughter aged 9-18 years old. A demographic variable questionnaire and The Turkish version of the Carolina Human Papilloma Virus Immunization Attitudes Scale (CHIAS) were assessed.

Results: The Turkish version of the Carolina Human Papilloma Virus Immunization Attitudes Scale mean± SD scores of harms/barriers/effectiveness/uncertainty factors subgroup were calculated as 2.2±0.6, 2.5±0.7, 2.3±0.7, 2.9±0.8, respectively. 19.8% of parents were aware of Human Papilloma Virus and 22.5% of them declared to be willing to vaccinate their daughters against the infection. Human Papilloma Virus acceptance rate was still modest and lower than for vaccines in general during COVID-19 Pandemic.

Conclusion: According to the result of this study, during COVID-19 Pandemic, the both female and male awareness and intention to vaccinate their daughters against Human Papilloma Virus is low. This is the first study analyzing parents' current attitudes and beliefs using a standardised scale towards Human Papilloma Virus in Turkey and also is the first analyzing this subject during COVID-19 pandemic in the literature. Health education programs given by family doctors, pediatricians and community health professionals to parents is critically important in accepting this vaccine.

Key Words: Awareness, COVID-19, Human Papilloma Virus, Parents, Vaccination

ÖZ

Amaç: Bu çalışma, COVİD-19 Pandemisi sırasında ebeveynlerin Human Papilloma Virüsü ve aşısına yönelik standart bir ölçek kullanarak mevcut tutum ve inançlarını belirlemeyi amaçlamıştır.

Gereç ve Yöntemler: Bu çalışma, bir eğitim ve araştırma hastanesi çocuk kliniğine 9-18 yaşlarında kız çocuğu ile başvuran toplam 303 ebeveynin dahil edildiği tanımlayıcı kesitsel bir çalışmadır. Bir demografik veri anketi ve Carolina Human Papilloma Virüsü Bağışıklama Tutumları Ölçeğinin (CHIAS) Türkçe versiyonu ile değerlendirme yapılmıştır.

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Bulgular: Zararlar/engeller/etkililik/belirsizlik faktörleri alt grubunun Carolina Human Papilloma Virüsü Bağışıklama Tutumları Ölçeği'nin ortalama±SS puanları sırasıyla 2.2±0.6, 2.5±0.7, 2.3±0.7, 2.9±0.8 olarak hesaplandı. Ebeveynlerin %19.8'i Human Papilloma Virüsün'den haberdardı ve %22.5'i kızlarını enfeksiyona karşı aşılamak istediğini bildirdi. Human Papilloma Virüsü kabulü, COVİD-19 Pandemisi sırasında hala yetersiz ve rutinde uygulanan aşılardan daha düşüktü.

Sonuç: Bu çalışmanın sonucuna göre, COVİD-19 Pandemisi sırasında hem kadınların hem de erkeklerin kız çocuklarını Human Papilloma Virüsü'ne karşı aşılama konusundaki farkındalıkları ve istekleri düşüktür. Bu çalışma, Türkiye'de ebeveynlerin Human Papilloma Virüsü'ne yönelik mevcut tutum ve inançlarını standart bir ölçek kullanarak analiz eden ilk çalışmadır ve aynı zamanda literatürde bu konuyu COVİD-19 Pandemisi sırasında analiz eden ilk çalışmadır. Aile hekimleri, çocuk doktorları ve toplum sağlığı uzmanları tarafından ebeveynlere verilen sağlık eğitim programları, bu aşının kabul edilmesinde kritik öneme sahiptir.

Anahtar Sözcükler: Farkındalık, COVİD-19, İnsan Papilloma Virüsü, Ebeveynler, Aşılama

INTRODUCTION

Human Papilloma Virus (HPV) is one of the most common sexually transmitted infections. To date, more than 200 HPV genotypes were identified some of which mainly infect cutaneous tissues and induce warts. Other types which are known as oncogenic is related with cervical, anal, neck and head cancers (1). By the age of 45 years, more than 80% of sexually active women and men are expected to be infected (2). With 549.847 cases (13.1% of all cancer in women) and 311.365 deaths (6.9% of all cancer deaths in women), cervical cancer was accepted to be the third most common cancer among women worldwide in 2018 (3). All cases of cervical cancer are estimated to be attributable to an HPV infection, therefore cervical cancer is the most preventable cancer globally (4).

The priority target audience of HPV vaccination are the 9-14 aged girls according to World Health Organization (WHO) (5). Centers for Disease Control and Prevention (CDC) has recommended routine HPV vaccination for both boys and girls at age 11 or 12 years but it can also be started from 9 years old. According to CDC estimates, by the use of vaccines, most HPV cancers and genital warts associated with different HPV types have diminished 71% among adolescent girls and 61% among young adult women (6). When vaccination rate is achieved more than >80% in girls, the risk of HPV infection decreases in boys. For increasing vaccine uptake, the importance of health care providers' clear recommendation has been established by previous research (7). General communication principles must include information about the benefits of vaccination and cancer prevention, but also avoid expressions of vaccine urgency when addressing parents' questions or concerns (8).

There are three forms of HPV vaccine currently. Bivalent form targets genotypes 16 and 18 which is accepted as high risk. Quadrivalent form includes also genotypes HPV 6 and 11, which is accepted as low-risk causing generally genital warts. Ninevalent vaccine which is the last form is effective on HPV 6,11,16,18,31,33,45,52,58 genotypes (7).

Parents' consent is essential for the vaccination of children and adolescents, therefore, parental attitude and belief is very important for vaccination success. Previous studies that examine socio-demographic features and religious beliefs show that there were associations between parents' knowledge, beliefs, and acceptance of the HPV vaccination for their daughters (9-11). Mothers are the most effective people for their daughter's vaccination decision and fathers have less information about HPV and its importance (10,11).

In systematic reviews analysing community-based studies regarding HPV vaccine attitudes of parents, it was also mentioned that there is a limitation in the studies in terms of using standard measurement instruments in Turkey (12). As in many countries, in Turkey, because of the parents' vaccine refusal, there has been an increase in the incidence of vaccine preventable diseases (13). In 2017, reported number of parents who signed vaccine rejection form reached 23.000 (which was 183 in 2011 and 12.000 in 2016 respectively) according to the Ministry of Health's public health data by The Turkish Medical Association (14).

During the COVID-19 Pandemic, lack of access to routine healthcare resulted in missed HPV vaccinations and leave children unprotected (15). There is no study regarding the parents' attitudes and beliefs about HPV vaccine during pandemic. The aim of this study was to analyze parents' current attitudes and beliefs using a standardised scale towards HPV and its vaccine in Turkey and to bring out whether this burden had changed awareness in Turkey.

MATERIALS and METHODS

A total of 303 parents with a daughter aged 9-18 years old who applied to a training and research hospital pediatric clinic for her children were included in the study. The study was conducted in the adolescent health, social pediatrics and general pediatrics outpatient clinics between June and October 2021. It was designed according to the ethical rules of Declaration of Helsinki. All participants were given detailed information before signing the consent form. The participants were informed that participation was on voluntary basis and that they could withdraw from the study at any time. The study was conducted after the approval from the Ethical Committee of Ankara Training and Research Hospital (Approval Number: 241).

A descriptive cross sectional study method was used to gather information on parents' knowledge, attitudes about HPV, and

decision-making process regarding HPV vaccination. After detailed literature review, a demographic variable questionnaire was performed by authors including mothers age, educational level, marital and employment status, children's age and number of children, household income, parents' employment status, and also child's vaccine status. Vaccine status were evaluated with the following questions: 1. Does your child have a vaccination card? 2. Do you regularly vaccinate your child? 3. Can you get your child an annual flu vaccine? 4. Have you had your child vaccinated for a fee other than the Ministry of Health Vaccination Schedule?

All of the parents were informed about the aim and the methodology of the study by the researchers. Three questions regarding HPV were also asked to mothers: 1. Have you ever heard HPV vaccine? 2. Do you know what causes cervical cancer/genital warts? 3.Do you have any idea about human papilloma viruses? After answering the questions, an information brochure about HPV vaccine was given to each parent.

The Carolina HPV Immunization Attitudes and Beliefs Scale (CHIAS) was created by McRee et al. (16) to investigate HPV vaccine decision making in a region where cervical cancer is high in women. It enables the researchers compact, standard measurement of parents' attitudes and beliefs about HPV vaccine. It includes 16 questions about HPV vaccine attitude and belief items and has 4 factors (harms, barriers, effects and uncertainty). Factor 1: "Harms" consists of six items related to perceived potential harms from the vaccine, including health problems, and an increased likelihood of girls being sexually active. Factor 2: "Barriers" consists of five items about perceived barriers to HPV vaccination including cost and access to a healthcare provider. Factor 3: "Effects" includes two items related to the perceived effectiveness of the HPV vaccine in protecting against genital warts and cervical cancer. Factor 4: "Uncertainty" consists of three items to evaluate whether it contains sufficient information about the HPV vaccine and the perception of community vaccination norms. The Turkish version of CHIAS developed by Sunar and et al. (17) is a valid and reliable measurement tool for Turkish society (Cronbach alfa is 0.62). CHIAS was applied to each parent finally. STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) Statement recommendations were followed during this cross-sectional study (18).

Statistical Analyses

Statistical Package for the Social Sciences version 19.0 were used when performing all statistical analysis. The distribution of continuous numeric variables was examined by Kolmogorov Smirnov test. Descriptive statistics were shown in the mean or median form for the continuous variables and in the percentage form for the categorical variables. The Independent Samples T Test, One-Way Anova was used when researching the importance of the difference in terms of mean values between the groups. The Chi-Square test was used when evaluating the categorical variables. p value< 0.050 was considered to be statistically significant.

RESULTS

A total of 303 parents with a daughter aged 9-18 (median=14) years old were included in the study. The study group's demographic variables are seen in Table I.

Means and factor loadings of parents' CHIAS HPV Vaccine Attitude and Belief are seen in Table II.

The mean±SD of harms/barriers/effectiveness/uncertainty factors subgroup were calculated as 2.2±0.6, 2.5±0.7, 2.3±0.7, 2.9±0.8, respectively. In the harms subgroup, the highest

Table I: Demographic Variables of the Study Group

Demographic Variables of the Study Group (n=303)	
Parent's gender*	
Women	292 (96.4)
Men	11 (3.6)
Parent's age (years)†	40 (28-60)
Child's age (years)†	14 (9-18)
Marital status*	
Married	285 (94.1)
Divorced/widow	18 (5.9)
Family type*	
Core family	233 (76.9)
Extended family	70 (23.1)
Number of children*	
One	21 (6.9)
Two	122 (40.3)
≥ Three	160 (52.8)
Household income*	
Below minimum wage	102 (33.7)
Minimum wage	157 (51.8)
Above minimum wage	44 (14.5)
Parent educational status*	
Primary school and below	107 (35.3)
Secondary school	71 (23.4)
High school and above	125 (41.3)
Parent's working status*	
Mother	
Unemployed	22 (7.6)
Housewife	212 (70.0)
Working	69 (22.8)
Father	
Unemployed	51 (16.8)
Working	227 (74.9)
Retired	25 (8.3)
Information about the child's vaccination (Yes)*	
Have you had your child vaccinated regularly?	283 (93.4)
Is there a vaccination card available?	188 (62.0)
Dou you get the annual flu vaccine?	26 (8.6)
Have you had any vaccinations other than the Ministry of Health vaccination schedule?	41 (13.5)

** n (%), † median (min- max)*

Table II: The Carolina HPV Immunization Attitudes Scale HPV Vaccine Attitude and Belief Means and Factor Loadings

	Mean±SD	Median (Min-Max)
Harms		
The HPV vaccine might cause short term problems, like fever or discomfort	2.6±0.9	3 (1-4)
The HPV vaccine is being pushed to make money for drug companies.	2.0±0.9	2 (1-4)
The HPV vaccine might cause lasting health problems.	2.2±0.9	2 (1-4)
If a teenage girl gets the HPV vaccine, she may be more likely to have sex.	2.4±0.9	2.5 (1-4)
I think the HPV vaccine is unsafe.	2.3±0.9	2.5 (1-4)
Child's name is too young to get a vaccine for a sexually transmitted infection like HPV.	2.8±1.2	3 (1-4)
Barriers		
How hard do you think it would be to find a provider or clinic where you can afford the vaccine?	2.5±0.9	2.5 (1-4)
How hard do you think it would be to find a provider or clinic that is easy to get to?	2.4±0.9	2.5 (1-4)
How hard do you think it would be to find a provider or clinic that has the vaccine available?	2.4±0.9	2.5 (1-4)
I am concerned that the HPV vaccine costs more than I can pay.	2.8±1.0	3 (1-4)
How hard do you think it would be to find a provider or clinic where you don't have to wait long to get an appointment?	2.5±0.90	2.5 (1-4)
Effectiveness		
How effective do you think the HPV vaccine is in preventing genital warts?	2.2±0.7	2 (1-4)
How effective do you think the HPV vaccine is in preventing cervical cancer?	2.3±0.80	2 (1-4)
Uncertainty		
I don't have enough information about the HPV vaccine to decide whether to give it to child's name.	2.9±1.1	3 (1-4)
The HPV vaccine is so new that I want to wait a while before deciding if my daughter should get it.	3.2±1.0	4 (1-4)
Other parents in my community are getting their daughters the HPV vaccine.	2.5±1.2	2 (1-4)

Table III: Participant's Responses to HPV-Related Questions

	n (%)
Do you know what Human Papilloma Virus is?	60 (19.8)
Do you know what causes cervical cancer/genital warts?	63 (20.8)
Have you heard of the cervical cancer/genital warts vaccine?	116 (38.3)
Are you considering getting your child vaccinated against Human Papilloma Virus?	68 (22.5)

mean score (2.8±1.2) was received for the answer given to the question "I think my daughter is too young to be vaccinated against a sexually transmitted infection such as HPV". In the barriers subgroup, the highest mean score (2.8±1.0) was received for the answer given to the question "I am concerned that the HPV vaccine costs more than I can pay". Also, in the effectiveness subgroup, the highest mean score (2.3±0.8) was received for the answer given to the question "How effective do you think the HPV vaccine is in preventing cervical cancer?". As the last in the uncertainty subgroup, the highest mean score (3.2±1.0) was received for the answer given to the question "The HPV vaccine is so new that I want to wait a while before deciding if my daughter should get it".

Only 19.8% of the participants stated that they knew what HPV was (Table III). The rate of those who thought to have their child vaccinated with HPV was only 22.5%. Also, 21.2% of mothers and 9.1% of fathers stated that they knew what HPV was (p=0.322). The percentage of parents who had heard HPV vaccination was 38.4% in mothers and 36.4% in fathers group (p=0.893).

No correlation was found between parent-child age and factor score means (p=0.085). The means of the harms and barrier factor scores of the parents whose children had a vaccination card were 2.2±0.6 and 2.5±0.7, and the means of harm and barrier factor scores of the parents whose children did not have a vaccination card were 2.3±0.6 and 2.6±0.7; this difference was statistically significant (p= 0.032; 0.045, respectively)

The means of harms factor scores of parents who have their children vaccinated outside of the Ministry of Health's vaccination schedule was 2.1±0.6, the barriers factor score mean was 2.3±0.6; the mean of the harms factor scores of parents who do not have their child vaccinated outside the vaccination schedule was 2.3±0.6, the mean of the barriers factor score was determined as 2.6±0.7 (p= 0.034; 0.020, respectively).

There was no relationship between the child's having a vaccination card and the parents' vaccinating their child that is not included in the Ministry of Health vaccination schedule and the effectiveness and uncertainty factor mean scores (p=0.072).

The means of harms factor scores of parents of those who earn above the minimum wage were found to be lower than

Table IV: The Relationship Between the Socioeconomic Variables of the Study Group and the Factor Score Means

	Harms		Barriers		Effectiveness		Uncertainty	
	mean±SD	p	mean±SD	p	mean±SD	p	mean±SD	p
Parent's gender		p=0.295		p=0.117		p=0.801		p=0.993
Women	2.2±0.6		2.5±0.7		2.5±0.7		2.9±0.8	
Men	2.4±0.6		2.9±0.7		2.2±0.6		2.9±0.9	
Marital Status		p=0.546		p=0.008		p=0.213		p=0.127
Married	2.2±0.6		2.6±0.6		2.3±0.7		2.9±0.8	
Divorced/widow	2.2±0.6		2.1±0.6		2.5±0.8		3.1±0.7	
Family Type		p=0.590		p=0.796		p=0.759		p=0.852
Nuclear	2.2±0.6		2.5±0.7		2.3±0.7		2.9±0.8	
Extended	2.3±0.6		2.6±0.7		2.3±0.7		2.9±0.8	
Number of Children		p=0.052		p=0.167		p=0.796		p=0.435
One	2.0±0.7		2.6±0.7		2.3±0.6		2.7±0.9	
Two	2.2±0.6		2.5±0.7		2.2±0.7		2.9±0.7	
≥Three	2.3±0.6		2.6±0.7		2.3±0.7		2.9±0.8	
Family Income		p=0.006		p=0.052		p=0.797		p=0.353
Under Minimum Wage	2.3±0.6		2.7±0.7		2.3±0.7		2.9±0.7	
Minimum Wage	2.2±0.6		2.5±0.7		2.3±0.7		2.9±0.8	
Above Minimum Wage	1.9±0.6		2.4±0.8		2.3±0.7		2.7±0.8	
Parent Education Level		p=0.072		p=0.074		p=0.505		p=0.783
Primary Education and below	2.3±0.6		2.6±0.6		2.2±0.6		2.9±0.8	
Secondary Education	2.2±0.6		2.6±0.7		2.3±0.7		2.9±0.8	
High School and over	2.2±0.6		2.4±0.7		2.3±0.7		2.9±0.8	
Working Status		p=0.031		p=0.110		p=0.175		p=0.763
Mother Unemployed	2.2±0.6		2.5±0.8		2.2±0.8		2.8±0.6	
Housewife	2.3±0.6		2.6±0.7		2.2±0.7		2.9±0.8	
Working	2.1±0.6		2.4±0.7		2.4±0.7		2.8±0.8	
Father								
Unemployed	2.2±0.5	p=0.677	2.5±0.6	p=0.558	2.3±0.7	p=0.266	2.8±0.7	p=0.616
Working	2.6±0.6		2.6±0.7		2.3±0.7		2.9±0.8	
Retired	2.2±0.6		2.4±0.7		2.5±0.8		2.7±0.9	

Table V: The Relationship Between the Participant's Responses to HPV*-Related Questions and the Factor Score Means

	Harms		Barriers		Effectiveness		Uncertainty	
	mean±SD	p	mean±SD	p	mean±SD	p	mean±SD	p
Do you know what Human Papilloma Virus is?		p=0.059		p=0.024		p=0.001		p=0.003
Yes	2.1±0.6		2.4±0.8		2.5±0.7		2.6±0.8	
No	2.3±0.6		2.6±0.7		2.2±0.7		2.9±0.8	
Do you know what causes cervical cancer/genital warts?		p=0.001		p=0.036		p=0.147		p=0.001
Yes								
No	2.0±0.6		2.4±0.7		2.4±0.7		2.5±0.8	
	2.3±0.6		2.6±0.7		2.2±0.7		2.9±0.8	
Have you heard of the cervical cancer/genital warts vaccine?		p=0.004		p=0.090		p=0.005		p=0.025
Yes								
No	2.1±0.6		2.5±0.7		2.4±0.8		2.8±0.8	
	2.3±0.6		2.6±0.7		2.2±0.6		2.9±0.8	
Are you considering getting your child vaccinated against Human Papilloma Virus?		p=0.001		p=0.181		p=0.001		p=0.002
Yes	1.9±0.6		2.4±0.7		2.6±0.7		2.6±0.8	
No	2.3±0.6		2.6±0.7		2.2±0.7		2.9±0.7	

***HPV:** Human Papilloma Virus*

those who received the minimum wage and those below the minimum wage (p= 0.003;0.005, respectively) (Table IV).

Housewives' means of harms factor scores were found higher than those of working women (p=0.009).

The relationship between the participant's responses to HPV-related questions and the means of factor scores are shown in Table V.

DISCUSSION

In the present study, we aimed to determine the parents of 9-18 aged girls beliefs and attitudes towards HPV vaccine using for the first time a standard scale in Turkey and to compare whether they had changed or not during pandemic. 19.8% of parents were aware of Human Papilloma Virus and 22.5% of them declared to be willing to vaccinate their daughters against the infection. Despite an extraordinary natural event like COVID -19, we observed that the percentage of parents who heard about the HPV vaccine and their desire to have their children vaccinated did not change compared to the previous period. The percentages of HPV vaccine acceptance were still lower than other childhood vaccines in general during COVID-19 Pandemic.

In a different study designed in Turkey before pandemic, Seven et al. showed that only 26.9% of mothers and 25.0% of fathers had claimed to be aware of HPV(19). In the same study, 14.4% of mothers and 15.5% of fathers also reported that they would have been willing to vaccinate their daughter if the vaccine had been available in Turkey. Kılıç et al. (20) in their descriptive study, designed to identify the opinions of Turkish adolescent girls and their parents about HPV vaccination and the consistency, found that 44.9% of fathers and also 45.5% of mothers wanted their daughters to be vaccinated against HPV. Similar to these results, in different European countries before COVID-19 Pandemic, it was shown that HPV knowledge and vaccine acceptance vary between studies and are also still modest. In systematic literature reviews, it was reported that 64.4% of parents (range 1.7 to 99.3) had known about HPV infection (21). In our study 20.2% of mothers and 9.1% of fathers had known about HPV infection. These different findings may be due to different methodological approaches in different study populations. The hospital region where the study was conducted consists of a low socioeconomic population. Contrary to our expectations for increased HPV vaccine acceptance, our results were lower than HPV vaccine acceptance data of pre-pandemic parents. This decline can be explained by COVID-19 vaccines being on the agenda, HPV vaccine information's being remained in the background and due to the impact of ongoing vaccine refusal.

In this study, the harm factor scores of parents were significantly lower in high in-come families and in families with a mother's occupation. Also, the harm factor scores were also significantly lower in the group who had known cervical cancer, heard about the HPV vaccine and thought to have their child vaccinated. In a different study in Thailand, one of the countries with the highest cervical cancer prevalence in the world, using a theoretical framework called Health Belief Model, similar to our results it was shown that HPV and cervical cancer knowledge were significantly higher in participants coming from high-income level (9).

Most studies published in Turkey reported that awareness, knowledge, and positive attitude on HPV and vaccine increased as the mother's education level increased (11). Contrary to the results of many previous studies, we did not find any factor score differences according to parents' gender and education level. Zhu et al. (22) also designed a study in Chinese-American parents to examine factors associated with willingness to vaccinate their children. Similar to our results, they found that parents generally lacked knowledge on HPV and the HPV vaccine but education level and gender were not related to parental intention of HPV vaccination for their children.

In this study, barrier scores of parents were significantly lower in the group knowing HPV and its associated morbidities. Liebermann et al. (23) using Thematic Content Analysis designed a study in the Dominican Republic where cervical cancer is the second most common cause of cancer death in women. They observed, like our results, that one of the barriers of HPV vaccination implementation were low to moderate knowledge of HPV and cervical cancer, especially in the rural and suburban groups. Although two studies were representing diverse geographic settings, similar socioeconomic groups may clarify these similar study data. Our study's mean barrier scores were also higher than studies designed in different countries (16).

We could not find any significant differences in effectiveness scores of parents according to family income, but Grandahl et al. reported that in contrast to their hypothesis, parents who had a lower income, perceived more benefits compared to parents having a higher income (9) . Authors attributed it to the difficulty of almost 40% of the participating mothers accessing basic health services such as cervical cancer screening tests. In Turkey, health services are available to many individuals and are provided free of charge.

This study has some limitations. The participants were selected only from one hospital and its results cannot be generalized to Turkey. Studies that include different socioeconomic and cultural group of parents could have yielded more reliable results to the literature. Due to the negative social influence of the pandemic, and as a result of the decrease in admission to hospitals due to fear of contamination we were able to reach such a population. Also, it was not conducted on parents' attitudes towards vaccination on their boys. Another restriction of the study was that, data collection was made self-report, not by interview. Due to the fact that physicians had to work in different positions in hospitals during the pandemic, the parents could have not been informed or educated face-to-face by a physician. If approximately for 10 minutes information had been

provided instead of giving an information form, different results could be reached in the study. Despite these limitations, in this study the assessments were made by a valid and reliable instrument for the first time in Turkey. It is the first study providing important results about attitudes and beliefs of parents about HPV vaccination during COVID-19 Pandemic.

CONCLUSION

The awareness and be willing to vaccinate their daughters of parents against HPV infection is still low in Turkey during COVID-19 Pandemic. To the best of our knowledge, this study is the first analyzing parents' current attitudes and beliefs using a standardised scales towards HPV and its vaccine during COVID-19 Pandemic. We would have hoped that the concern of being infected by a novel fatal virus would increase the parents' desire to have their child vaccinated against other vaccine-preventable diseases. The fact that COVID-19 vaccines are more on the agenda and the vaccine refusal may have caused these results. Provider-oriented public health interventions from physicians and other healthcare providers, including family doctors, pediatricians and community health professionals is very important towards vaccination. Effective answers about safety and emphasizing benefits such as cancer prevention must be given as a brief message when giving information about HPV vaccination. Health education programs aiming at both sexes and including both mothers/fathers would increase knowledge and awareness on HPV and HPV vaccine. In countries where HPV vaccines is not included in national vaccination schedules, inclusion of HPV vaccines in their immunization programs would reduce indecision. Future studies must be designed paying attention to these informational techniques by the health worker.

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