

Araştırma Makalesi/ Research Article

# Health Beliefs of Academician Nurses Regarding HPV Infection and HPV Vaccine and the Factors Influencing These Beliefs

## Akademisyen Hemşirelerin HPV Enfeksiyonu ve Aşılmasına İlişkin Sağlık İnancı ve Etkileyen Faktörler

Yeşim Doğan Koca<sup>1</sup>  Kerime Derya Beydağ<sup>1</sup> 

<sup>1</sup>Tuzla Family Health Center, İstanbul, TÜRKİYE

<sup>2</sup> İstanbul Gedik University Faculty of Health Sciences Department of Nursing, İstanbul, TÜRKİYE

Geliş tarihi/ Date of receipt: 13/06/2022

Kabul tarihi/ Date of acceptance: 15/09/2022

© Ordu University Faculty of Health Sciences, Department of Nursing, Türkiye, Published online: 31/10/2023

### ABSTRACT

**Objective:** This study is carried out to determine the health beliefs of academician nurses regarding HPV (human papillomavirus) infection and HPV vaccine and the factors influencing these beliefs.

**Methods:** This study, which has a descriptive and cross-sectional research design, was conducted with 201 academician nurses who have been actively working at universities in Turkey between August and October 2020. The research data were obtained using the Personal Information Form and the Health Belief Model Scale on the Human Papillomavirus Infection and Vaccination.

**Results:** The “perceived susceptibility” of the participants, who were vaccinated with the HPV vaccine, was found to be high, whereas their “perceived barriers” were found to be low. Additionally, the “perceived susceptibility” of those, who stated that they did not get vaccinated with the HPV vaccine since they were not in the risk group, was found to be low, whereas the “perceived barriers” of those, who stated that they did not get vaccinated with the HPV vaccine since it is expensive, was found to be high. On the other hand, the “perceived benefits” of those, who stated that they would get vaccinated with the HPV vaccine if the vaccine were free of charge, were found to be high, whereas the “perceived susceptibility” of those, who stated that they would get vaccinated with the HPV vaccine if a considerable number of people get vaccinated, was found to be low.

**Conclusion:** It has been concluded as a result of the study that strengthening the health beliefs of academician nurses about HPV vaccine would be effective in raising awareness about vaccination with the HPV vaccine.

**Keywords:** HPV vaccine, nurse, academician, health belief

### ÖZ

**Amaç:** Bu araştırma, akademisyen hemşirelerin HPV enfeksiyonu ve aşısına ilişkin sağlık inancını ve etkileyen faktörleri belirlemek amacıyla gerçekleştirilmiştir.

**Yöntem:** Tanımlayıcı ve kesitsel nitelikteki araştırma, Ağustos-Ekim 2020 tarihleri arasında Türkiye’deki üniversitelerde aktif çalışan 201 akademisyen hemşire ile gerçekleştirilmiştir. Araştırma verileri, kişisel veri formu ve Human Papilloma Virüs Enfeksiyonu ve Aşılmasına İlişkin Sağlık İnanç Modeli Ölçeği ile elde edilmiştir.

**Bulgular:** Katılımcılardan HPV aşısı yaptıranların “duyarlılık algısı” yüksek iken, “engel algısı” düşük bulunmuştur. Risk grubunda olmadığı için aşı yaptırmadığını belirtenlerin “duyarlılık algısı” düşük iken, aşı pahalı olduğu için yaptırmadığını söyleyenlerin “engel algısı” yüksektir. Aşı ücretsiz olması durumunda yaptıracığını belirtenlerin “yarar algısı” yüksek iken, fazla kişinin aşı yaptırmaması durumunda aşı yaptıracığını belirtenlerin “duyarlılık algısı” düşük çıkmıştır.

**Sonuç:** Akademisyen hemşirelerin, HPV aşısına yönelik sağlık inançlarının artırılmasının aşılama ile ilgili farkındalığı arttırmada etkili olacağı düşünülmektedir.

**Anahtar Kelimeler:** HPV aşısı, hemşire, akademisyen, sağlık inancı

**ORCID IDs of the authors:** YD: 0000-0002-0530-9950; KDB: 0000-0002-7251-4882

**Sorumlu yazar/Corresponding author:** Kerime Derya Beydağ

İstanbul Gedik University Faculty of Health Sciences Department of Nursing, İstanbul, TURKEY

**e-posta/e-mail:** kderyabeydag@gmail.com

\*This study was accepted as a master's thesis in 2021 by Istanbul Okan University, Institute of Health Sciences, Nursing Department.

**Atf/Citation:** Doğan Y, Beydağ KD. (2024). Health beliefs of academician nurses regarding HPV infection and HPV vaccine and the factors influencing these beliefs. Ordu Üniversitesi Hemşirelik Çalışmaları Dergisi, 7(1), 127-137. DOI:10.38108/ouhcd.1130007



Content of this journal is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

### Introduction

Cervical cancer is a late outcome of HPV, which is a sexually transmitted infection, is one of the few malignancies that can be prevented by vaccination and screening, is the only preventable type of cancer, and is an important women's health and public health problem (Erbaydar et al., 2016; Bray et al., 2018). According to GLOBOCAN (Global Burden of Cancer Study) 2020 data, cervical cancer ranks fourth worldwide and twelfth in Turkey among women's cancers (Globocan, 2020).

The fact that HPV-related diseases have become a public health problem and that HPV was determined as an absolute risk factor in the formation of cervical cancer has contributed to the development of HPV screening and HPV vaccines in the prevention of cervical cancer. To prevent cervical cancer, the quadrivalent HPV vaccine, which is effective against cervical cancer types 6, 11, 16, and 18, was developed in 2006, the bivalent HPV vaccine, which is effective against cervical cancer types 16 and 18, was developed in 2009, and 3 types of HPV vaccines, which are effective against the cervical cancer types of 6, 11, 16, 18, 31, 33, 45, 52 and 58, were developed in 2014 (Markowitz et al., 2014). The 9-valent HPV vaccine protects more than 99% of HPV diseases associated with genotypes 6, 11, 16, and 18 and up to 96.7% for HPV diseases associated with genotypes 31, 33, 45, 52, and 58, 26. This includes preventing cervical, vaginal, vulvar, and anal diseases caused by HPV types. The HPV vaccine is a prophylactic vaccine used to prevent disease (Petrosky et al., 2015). HPV vaccine is widely used in many Western countries, but to date, it is not included in the Turkish national vaccine program and the social security reimbursement program (Satılmışoğlu et al., 2018). The World Health Organization (WHO) issued a recommendation for the use of the HPV vaccine in the prevention of cervical cancer cases in 2009 (WHO, 2009). The Advisory Committee on Immunization Practices (ACIP) of the US routinely recommends that girls be vaccinated around the age of 11-12 and even lowering this limit down to the age of 9, and also recommends that all women and girls between the ages of 13-26 in the target age group be vaccinated within the scope of a "catch-up vaccination" regardless of their previous disease and vaccination status (Markowitz et al., 2014).

According to the modern understanding of public health, it is important to make appropriate use of practices for the protection and improvement of health and to ensure that people adopt positive

health behaviors so that they can make a habit of these behaviors (Champion and Skinner, 2008). The value attached by an individual to his/her health is influenced by his/her health-related behaviors and his/her beliefs about the diseases and the consequences of the diseases. First, people's beliefs, knowledge, values and only then it can be ensured that they will adopt positive health behaviors (Gözüm and Çapık, 2014).

Health beliefs about the HPV vaccine affect people's attitudes towards getting vaccinated with it. Improving people's health beliefs can contribute to higher immunization rates. Despite the recent developments in the HPV vaccine, the awareness level of society is still not sufficient in terms of the change in knowledge and attitude about protection and vaccination (Görkem et al., 2015; Ersin et al., 2016; Güvenç et al., 2016).

The knowledge, professional practices, and approaches of healthcare professionals, especially nurses, are very important in the development of positive health behaviors in society. Nurses, who have sufficient knowledge and competency about the HPV vaccine can identify and monitor the risk factors of cervical cancer about the people they serve, they may provide consultations, training, and guidance in respect thereof (Duval et al., 2009). The personal characteristics of healthcare professionals, the education they received, their knowledge about HPV, and their beliefs in respect of the HPV vaccine are key factors in the adoption of the vaccine by society (Topçu et al., 2018).

The information that academician nurses will provide to nursing students about HPV infection and HPV vaccine is important for both the health of the nursing students and the public health. Nursing students, as the nurses of the future, constitute an important group in explaining the HPV vaccine to society and ensuring its acceptance in the future. On the other hand, academician nurses, who have an important role in healthcare services, have responsibilities in terms of guidance, research, teaching, and management (Güllü and Tümer, 2022).

In view of the foregoing, the determination of the beliefs of academician nurses, who set an example with their attitudes and behaviors for society, has been deemed important in terms of increasing the desired and positive health behaviors as well as the participation in primary prevention programs. Accordingly, this study aims to determine the health beliefs of academician nurses, who currently serve as educators of nursing students that will assume an

important role in healthcare services in the future, regarding HPV infection and HPV vaccine and the factors influencing these beliefs.

## Method

### Type and location of the research

This study, which has a descriptive and cross-sectional research design, was conducted with academician nurses who have been actively working at any state or foundation university in Turkey between August 1st, 2020 and October 1st, 2020.

### Universe and sample of the research

The research data were collected via electronic mail sent to the academician nurses. The e-mail addresses of the nurse academicians were obtained from the web pages of the universities providing nursing education. The survey link was sent to the academic nurses after an explanation was made about the purpose of the research. According to the data in the nursing undergraduate workshop, the number of nurse academicians in Turkey is 1562. According to the Raosoft sample size calculator, the sample size was determined as 149 people, according to 80% confidence interval and 5% margin of error. The research was completed with 201 academic nurses who answered the survey via e-mail. Participants were asked to indicate their e-mail addresses to avoid repetitive responses. Participants were asked to confirm that they voluntarily participated in the study before answering the research questions.

### Data collection tools

The research data were obtained using the Personal Information Form and the Health Belief Model Scale on the Human Papillomavirus Infection and Vaccination (HBMS-HPVIV).

Health Belief Model Scale on the Human Papillomavirus Infection and Vaccination (HBMS-HPVIV): The original HBMS-HPVIV scale was developed by Kim as the "Human Papillomavirus Infection Knowledge Scale (HPV-KS)" in 2012, and its validity and reliability studies in Turkey were conducted by Güvenç et al. (2016). The Turkish version of HPV-KS consists of 14 items and 4 subscales. These subscales are; *perceived benefits* (items 1 to 3), *perceived susceptibility* (items 4 to 5), *perceived severity* (items 6 to 9), and *perceived barriers* (items 10 to 14). The items related to the perceived severity addressed HPV as a serious disease with negative consequences. The perceived barriers subscale explains the factors such as effectiveness, costs, and side effects that might prevent individuals from taking the vaccine. The

perceived benefits subscale, which explained the advantages and benefits of the HPV vaccine and, the perceived risk of acquiring HPV and its consequences. The items are answered from among four choices of "not at all", "a little", "quite", and "very much", which are assigned 1 point and 2, 3 and 4 points, respectively. There is no Cronbach value for the overall scale, instead each subscale has a Cronbach value. Higher HBMS- HPVIV scores indicate stronger belief in HPV infection and HPV vaccine. All subscales except the "perceived barriers" subscale are positively associated with vaccination. Cronbach  $\alpha$  reliability values of the subscales were calculated to be between 0.71 and 0.78. The overall scale scores are not calculated, instead each subscale is evaluated separately (Güvenç et al., 2016). In this study, the Cronbach  $\alpha$  reliability values of the subscales were calculated to be between 0.74 and 0.81.

### Evaluation of Data

The research data were analyzed using the SPSS 22.0 (Statistical Package for Social Sciences for Windows Version 22.0) software package. Descriptive statistics were expressed as numbers, percentages, mean and standard deviation values. Whether the research variables show normal distribution Kolmogorov-Smirnov test was applied to determine whether Normal quantitative continuous data between two independent groups with no distribution independent t-test between more than two independent groups Kruskal-Wallis test was used to compare quantitative continuous data. The resulting findings were evaluated at 95% confidence interval and 5% significance level.

### Ethical Considerations

Before the data collection process, the study was approved by the Ethics Committee of Istanbul Okan University (Approval number:124/14 Date: 22/07/2020). Subsequently, the said committee granted the ethics committee approval on 22.07.2020. The academician nurses included in the study were first provided with the necessary information about the research in the e-mail sent, and only the academician nurses, who have provided their consent, were sent the link to the questionnaire. Principles of the Helsinki Declaration were observed throughout the research. The participants were informed that they were free to participate in the research and that they can quit at any stage of the research. The participants were also informed that the results of the research can be published for scientific purposes without revealing any identities.

**Results**

It was observed that 90.5% of the academician nurses participating in the study did not get vaccinated with an HPV vaccine, that 40.8% did not get vaccinated with an HPV vaccine due to not being in the appropriate age range, and that 49.3% stated that they would get vaccinated with an HPV vaccine were they to be in the risk group. 37.8% of the

participants stated that they wanted to have the HPV vaccine, whereas 69.7% of the participants stated that they have been recommending the HPV vaccine to their friends and relatives and 68.7% of the participants stated that they have been recommending the HPV vaccine to their nursing students (Table 1).

**Table 1.** Distribution of the participants' thoughts and actions on the HPV vaccine and of their reasons

Variables		n	%
<b>Status of having been vaccinated with the HPV vaccine</b>	I had the HPV vaccine	19	9.5
	I did not have the HPV vaccine	182	90.5
<b>The reason put forward for not having been vaccinated with the HPV vaccine</b>	I already had the HPV vaccine	19	9.5
	High cost of the HPV vaccine	10	5.0
	Not knowing the side effects of the HPV vaccine	46	22.9
	Not being in the risk group	43	21.4
	Not being in the appropriate age group	82	40.8
<b>The conditions that were put forward as the conditions which, if met, would serve as a predisposition to getting vaccinated with the HPV vaccine</b>	I already had the HPV vaccine	19	9.5
	I would have the HPV vaccine if it were free of charge	19	9.5
	I would have the HPV vaccine if I were in the risk group	99	49.3
	I would have the HPV vaccine if a considerable number of people get vaccinated	44	21.9
	I would/will have the HPV vaccine if I were/when I will be in the appropriate age range	20	10.0
<b>Status of willingness to get vaccinated with the HPV vaccine</b>	I already had the HPV vaccine	19	9.5
	I am willing to have the HPV vaccine	76	37.8
	I am not willing to have the HPV vaccine	37	18.4
	I am not certain about whether to have the HPV vaccine or not	69	34.3
<b>Status of having been recommending the HPV vaccine to friends and relatives</b>	I have been recommending the HPV vaccine to my friends and relatives	140	69.7
	I have not been recommending the HPV vaccine to my friends and relatives	61	30.3
<b>Status of having been recommending the HPV vaccine to nursing students</b>	I have been recommending the HPV vaccine to my nursing students	138	68.7
	I have not been recommending the HPV vaccine to my nursing students	63	31.3
<b>Total</b>		<b>201</b>	<b>100.0</b>

The mean scores participants obtained from the “perceived benefits”, “perceived susceptibility”, “perceived severity”, and “perceived barriers” subscales were calculated as  $9.05 \pm 2.01$ ,  $5.45 \pm 1.49$ ,

$12.14 \pm 2.68$ , and  $10.48 \pm 2.83$ , respectively (Table 2).

The “perceived susceptibility” and “perceived barriers” of the participants, who were vaccinated with the HPV vaccine, were found to be high.

Additionally, the “perceived susceptibility” of those, who stated that they were not get vaccinated since they were not in the risk group, was found to be low, whereas the “perceived barriers” of those, who stated that they were not vaccinated since the vaccine was expensive, was found to be low. On the other hand, the “perceived benefits” of those, who stated that they would get vaccinated if the vaccine were free of charge, were found to be high, whereas the “perceived susceptibility” of those, who stated that they would get vaccinated if a considerable number of people get vaccinated, was found to be low. Furthermore, the “perceived benefits” and “perceived susceptibility” of those, who stated that they wanted to be vaccinated with the HPV vaccine, were found to be high, whereas their “perceived barriers” were found to be low. Finally, the “perceived benefits” and “perceived susceptibility”

of those, who stated to have been recommending the HPV vaccine to their friends and relatives and to the nursing students, were found to be high, whereas their “perceived barriers” were found to be low (Tablo 3).

**Table 2.** Descriptive statistics about the Health Belief Model Scale on the Human Papillomavirus Infection and Vaccination (HBMS- HPVIV)

Subscales and Overall Scale	Min.	Max.	Mean	SD
Perceived Benefits	3	12	9.05	2.01
Perceived Susceptibility	2	8	5.45	1.49
Perceived Severity	4	16	12.14	2.68
Perceived Barriers	5	19	10.48	2.83

**Table 3.** Comparison of the HPVIV-HBMS subscale mean scores of the participants according to their thoughts, actions and reasons about the HPV vaccine

Variables		Perceived Benefits	Perceived Susceptibility	Perceived Severity	Perceived Barriers
		Mean±Sd	Mean±Sd	Mean±Sd	Mean±Sd
Status of having been vaccinated with the HPV vaccine	I had the HPV vaccine	8.96±2.01	6.52±1.26	12.03±2.67	10.65±2.66
	I did not have the HPV vaccine	9.89±1.91	5.34±1.47	13.21±2.63	8.78±3.79
	<b>Test*</b> <b>p</b>	t: -1.922 p: 0.056	<b>t: -3.354</b> <b>p: 0.001</b>	t: -1.820 p: 0.070	<b>t: 2.784</b> <b>p: 0.006</b>
The reason put forward for not having been vaccinated with the HPV vaccine	I already had the HPV vaccine <sup>a</sup>	9.85±1.87	6.40±1.35	12.95±2.81	9.00±3.81
	High cost of the HPV vaccine <sup>b</sup>	10.00±1.85	5.80±1.47	12.50±3.34	9.40±1.50
	Not knowing the side effects of the HPV vaccine <sup>c</sup>	8.60±1.78	5.43±1.45	11.69±2.75	11.91±2.08
	Not being in the risk group <sup>d</sup>	8.83±1.92	5.00±1.30	12.18±2.51	10.76±2.05
	Not being in the appropriate age group <sup>e</sup>	9.10±2.17	5.43±1.56	12.14±2.62	10.02±3.07
	<b>Test*</b> <b>p</b>	KW: 9.231 p: 0.056	<b>KW: 13.065</b> <b>p: 0.011</b> <b>d&lt;b.c.d</b>	KW: 3.167 p: 0.530	<b>KW: 28.077</b> <b>p: 0.001</b> <b>b&lt;c.d</b>
The conditions that were put forward as the conditions which. if met. would serve as a predisposition to getting vaccinated with the HPV vaccine	I already had the HPV vaccine <sup>a</sup>	9.73±1.85	6.31±1.33	12.94±2.89	9.10±3.88
	I would have the HPV vaccine if it were free of charge <sup>b</sup>	10.15±2.08	5.89±1.32	12.73±2.86	10.63±2.65
	I would have the HPV vaccine if I were in the risk group <sup>c</sup>	8.93±1.78	5.35±1.47	12.16±2.37	10.72±2.55
	I would have the HPV vaccine if a considerable number of people get vaccinated <sup>d</sup>	8.65±1.95	5.11±1.40	11.47±2.92	10.77±2.54
	I would/will have the HPV vaccine if I were/when I will be in the appropriate age range <sup>e</sup>	8.80±2.83	5.50±1.82	12.25±3.14	9.80±3.51
	<b>Test*</b> <b>p</b>	<b>KW: 11.150</b> <b>p: 0.011</b> <b>b&gt;a.c</b>	<b>KW: 10.185</b> <b>p: 0.017</b> <b>d&lt;c.d</b>	KW: 5.183 p: 0.159	KW: 6.354 p: 0.096

**Table 3.** (continue) Comparison of the HPVIV-HBMS subscale mean scores of the participants according to their thoughts, actions and reasons about the HPV vaccine

Variables		Perceived Benefits	Perceived Susceptibility	Perceived Severity	Perceived Barriers
		Mean±Sd	Mean± Sd	Mean±Sd	Mean±Sd
Status of willingness to get vaccinated with the HPV vaccine	I already had the HPV vaccine <sup>a</sup>	9.71±1.85	6.31±1.33	12.94±2.89	9.85±3.88
	I am willing to have the HPV vaccine <sup>b</sup>	9.73±1.88	6.76±1.35	12.22±2.89	9.10±2.54
	I am not willing to have the HPV vaccine <sup>c</sup>	8.59±2.19	5.24±1.58	11.59±2.42	11.51±3.18
	I am not certain about whether to have the HPV vaccine or not <sup>d</sup>	8.39±1.84	5.00±1.48	12.14±2.51	11.00±2.29
	<b>Test*</b> <b>p</b>	<b>KW: 20.225</b> <b>p: 0.001 b&gt;c.d</b>	<b>KW: 16.334</b> <b>p: 0.001</b> <b>b&gt;c.d</b>	KW: 3.670 p: 0.299	<b>KW: 15.560</b> <b>p: 0.001</b> <b>b&lt;c.d</b>
Status of having been recommending the HPV vaccine to friends and relatives	I have been recommending the HPV vaccine to my friends and relatives	9.45±1.83	5.85±1.37	12.28±2.59	9.92±2.78
	I have not been recommending the HPV vaccine to my friends and relatives	8.13±2.11	4.55±1.38	11.83±2.87	11.75±2.53
	<b>Test*</b> <b>p</b>	<b>t: 4.489</b> <b>p: 0.001</b>	<b>t: 6.122</b> <b>p: 0.001</b>	t: 1.091 p: 0.276	<b>t: -4.389</b> <b>p: 0.001</b>
Status of having been recommending the HPV vaccine to nursing students	I have been recommending the HPV vaccine to my nursing students	9.44±1.82	5.81±1.41	12.33±2.58	10.05±2.81
	I have not been recommending the HPV vaccine to my nursing students	8.20±2.16	4.66±1.37	11.74±2.87	11.42±2.64
	<b>Test*</b> <b>p</b>	<b>t: 4.196</b> <b>p: 0.001</b>	<b>t: 5.410</b> <b>p: 0.001</b>	t: 1.442 p: 0.151	<b>t: -3.277</b> <b>p: 0.001</b>

\*t: t-test. KW : Kruskal Wallis test, Sd:Standard deviation

### Discussion

In undeveloped or underdeveloped countries, the burden of HPV-related diseases and cancer is one of the major public health problems. Research on HPV in nursing academicians is limited. Examining the health beliefs of nurse academicians towards HPV vaccination, recognizing the gaps in the field, and directing new studies important to give.

In this study, it was determined that only 9.5% of the participants had HPV vaccine (Table 1). This finding may be attributed to the fact that the participants included in the study were not in the recommended age range to get vaccinated with the HPV vaccine and that the vaccine is not included in the national vaccination program. In comparison, the rates of vaccination with the HPV vaccine in comparable study groups were found 1% in Görkem et al.'s study (2015) among the auxiliary healthcare personnel (Görkem et al., 2015); 6.5% in the Özçam et al.'s study (2014) among the female healthcare personnel (Özçam et al., 2014); 3.6% in the Tonguç et al.'s study (2013) among female patients who

applied to the outpatient clinic (Tonguç et al., 2013). When the literature is examined, HPV It is said that the rate of vaccination against infection is not at the desired level. (Hirth, 2019; Won Kim et al., 2018; Yılmaz et al., 2021). The reasons for the low rate of vaccination by focusing on this issue with research is important to identify the obstacles.

It was determined that 49.3% of the participants stated that they would get vaccinated were they to be in the risk group (Table 1). This finding indicated that the participants did not see themselves at risk for HPV. It was thought that the fact that the age range of the majority of the participants was not in the appropriate age range for vaccination may also have affected the result. In the study of Makwe and Anorlu (2011), it was found that the participants did not consider to getting vaccinated with the HPV vaccine as they did not see themselves at risk for the HPV (Makwe and Anorlu, 2011). Additionally, in another study that was conducted with physicians, the physicians stated that they did not want to have HPV vaccine because of the low risk of HPV transmission (Topçu et al., 2018).

Additionally, in this study, 37.8% of the participants stated that they wanted to have the HPV vaccine (Table 1). In comparison, the results of different studies available in the literature on the desire for HPV vaccination vary. Tonguç et al. (2013) reported that 40.2% of the patients included in their study stated that they wanted to have the HPV vaccine (Tonguç et al., 2013), whereas Bowyer et al. (2014) reported that 67.2% of female participants between the ages of 16-17 included in their study stated that they wanted to have the HPV vaccine (Bowyer et al., 2014). It was thought that the fact that the participants were not in the appropriate age range for vaccination may have affected the result.

Furthermore, in this research, 69.7% of the participants stated that they have been recommending the HPV vaccine to their friends and relatives and 68.7% of the participants stated that they have been recommending the HPV vaccine to their nursing students (Table 1), a result that suggests an increase in the vaccination rates in the future. This result shows that nurse academicians have high health beliefs about the HPV vaccine and encourage young people to be vaccinated. Çeşmeci et al. (2015) reported that 89.4% of the intern doctors stated that they would be recommending HPV vaccine to their friends and relatives in the appropriate age group (Çeşmeci et al., 2015); Esposito et al. (2007) reported that 84.8% of the healthcare professionals stated that they have been recommending HPV vaccine (Esposito et al., 2007); in another study it was reported that 85% of the obstetricians and 78% of the pediatricians-primary care physicians stated that they have been recommending HPV vaccine (Topçu et al., 2018). Realization of health protection and promotion behaviors and Individuals' beliefs are very important in maintaining.

There are limited studies in the literature on women's beliefs about HPV infection and HPV vaccine. In this context, the analysis of the mean scores obtained by the academician nurses participated in this study from the subscales of HBMS- HPVIV revealed a high mean "perceived benefits" subscale score ( $9.05 \pm 2.01$ ) (max:12), a moderate mean "perceived susceptibility" subscale score ( $5.45 \pm 1.49$ ) (max:8), a high mean "perceived severity" subscale score ( $12.14 \pm 2.68$ ) (max:16), and a low mean "perceived barriers" subscale score ( $10.48 \pm 2.83$ ) (max:19) (Table 2). The finding of low "perceived barriers" and high "perceived benefits" are also considered important parameters

that would positively affect the HPV vaccination process. However, the mean "perceived susceptibility" subscale score was found to be lower than what would have been expected. Güvenç et al. (2016) reported that the highest mean score was obtained from the "perceived severity" subscale, followed by the mean scores of the "perceived benefits", "perceived susceptibility" and "perceived barriers" subscales in descending order (Güvenç et al., 2016); in another study conducted with female healthcare professionals, the mean "perceived susceptibility" subscale score of women was found to be similar to the mean "perceived susceptibility" subscale score determined in this study (Ersin et al., 2016).

In this study, the "perceived susceptibility" and "perceived barriers" of the participants who were vaccinated with the HPV vaccine were found to be high (Table 3). It has been demonstrated in the literature that an increase in the perceived susceptibility of the individual decreases the tendency to exhibit risky behaviors and increases the probability of exhibiting the behaviors towards decreasing the risk (Çiftçi and Kadioğlu, 2020). Consequentially, it can be said that individuals with a high perceived susceptibility would exhibit protective health behaviors. Therefore, it could be predicted that people who had the HPV vaccine would have high perceived susceptibility and "perceived barriers" levels. Perceived susceptibility demonstrates the extent to which an individual deems likely the possibility of himself/herself getting sick. It has been demonstrated that perceived susceptibility is a harbinger of certain health protection behaviors. The Health Belief Model stipulates that it is necessary for the individual to perceive the obstacles and benefits related to his/her behaviors for him/her to take action. Individual's attitudes towards health and the importance he/she attaches to his/her health are influenced by his/her beliefs about the disease and its consequences (Gözüm and Çapık, 2014). Kim (2012) reported that perceived benefits and perceived susceptibility were found to be more important than other factors in agreeing to get vaccinated with the HPV vaccine (Kim, 2012). In parallel, Tsagkas et al. (2019) reported that perceived benefits and perceived susceptibility were found to be positively associated with the willingness to have the HPV vaccine, contrary to the deterrence perception, which was found to be negatively associated with the willingness to have the HPV vaccine (Tsagkas et al., 2019). In the study conducted by Marlow et al.

(2009), those who planned to be vaccinated were found to have low perceived barriers levels, with high levels of perceived benefits, perceived susceptibility, and perceived severity (Marlow et al., 2009). In light of the results of this study as well as the results of the studies available in the literature related there, it can be concluded that the high levels of perceived susceptibility predispose individuals with high perceived susceptibility to exhibit protective health behaviors.

In this study, those who stated that they did not get vaccinated with the HPV vaccine as they were not in the risk group were found to have low levels of “perceived susceptibility” (Table 3). Perceived susceptibility is one of the strong factors that predispose individuals to adopt healthy behaviors. Accordingly, an increase in the perceived susceptibility of the individual would lead to a decrease in his/her tendency to exhibit risky behaviors. In other words, protective health behaviors would be exhibited only if perceived susceptibility, severity, and benefit outweigh the perceived deterrence (Çiftçi and Kadioğlu, 2020). In this study, a low rate of vaccination with the HPV vaccine was found among those who stated that they did not get vaccinated with the HPV vaccine as they were not in the risk group compatible with their low perceived susceptibility levels.

Analysis of the reasons put forward by the participants included in this study for not getting vaccinated with the HPV vaccine revealed that the perceived barriers levels of those who stated they did not get vaccinated with the HPV vaccine because the vaccine was expensive, were low, whereas the “perceived benefits” levels of those who stated that they would get vaccinated with the HPV vaccine if the vaccine were free of charge, were high (Table 3). The fact that the HPV vaccine is not free is an important factor that prevents vaccination with the HPV vaccine from becoming widespread. Hence, since the cost of the HPV vaccine seems to play a determinative role in the adoption of the behavior of getting vaccinated with the HPV vaccine, it can be speculated that the vaccination rate with the HPV vaccine would be higher if the vaccine were free of charge.

In particular, perceived benefits and barriers are extremely important in modification of the health behaviors and in gaining new health behaviors. The most important factor that prevents the adoption of preventive health behaviors is the presence of comparable levels of perceived benefit and perceived barriers (Çiftçi and Kadioğlu, 2020).

Accordingly, in a review conducted in the US, the high cost of the HPV vaccine was reported as the most important factor of barriers in relation to adolescents not getting vaccinated with the HPV vaccine (Holman et al, 2014). Similarly, in another study, the rate of those who stated that they did not get vaccinated with the HPV vaccine due to the high cost of the vaccine was found to be 41.8% (Çeşmeci et al., 2015). In another study, it was reported that 44% of obstetricians and 28.7% of pediatricians-primary care physicians stated that they are not willing to get vaccinated with the HPV vaccine due to its high cost (Topçu et al., 2018). As a result, the respective result obtained in this study is comparable with the relevant results reported in the studies available in the literature, suggesting that the fact that the HPV vaccine is paid for is one of the major reasons that prevents vaccination with the HPV vaccine from becoming widespread. All these findings indicate that the cost of the HPV vaccine and income status play a determinative role in the behavior of not getting vaccinated with the HPV vaccine.

In this study, the “perceived susceptibility” of those who stated that they would get vaccinated with the HPV vaccine if a considerable number of people get vaccinated, was found to be low (Table 3). Individuals' health-related beliefs and behaviors significantly affect their health. Health belief refers to the thoughts and behaviors of the individual about his/her health or the illnesses he/she has. In this context, perceived susceptibility reflects the disease threat perceived by the individual and the possibility of him/her performing the relevant health behavior (Abolfotouh et al., 2015). The respective finding of this study indicates that the individuals are affected by their friends and relatives in deciding to get vaccinated with the HPV vaccine, whereas a comparable finding reported in the literature indicated that the presence of a relative or friend that was vaccinated with HPV vaccine predisposes the individual to agree to get vaccinated with HPV vaccine 2.8 times more than others who do not have any relative or friend that was vaccinated with HPV vaccine (Tonguç et al., 2013).

In this study, the “perceived benefits” and the “perceived susceptibility” levels of the participants, who stated that they would like to get vaccinated with the HPV vaccine were found to be high, whereas their “perceived barriers” levels were found to be low (Table 3). As the individual's perceived benefits outweigh his/her perceived barriers, his/her probability of exhibiting the relevant preventive



health behaviors increases, and vice versa. The finding of high benefits and perceived susceptibility and low perceived barriers in those who want to have the vaccine is a positive result. In comparison, in the study of Wheldon et al. (2011), a positive relationship was observed between the perceived benefits and the intention to get vaccinated (Wheldon et al., 2011). Additionally, in the study of Tsagkas et al. (2019), it was found that sensitivity and perceived benefits were positively related to the willingness to get vaccinated with the HPV vaccine and were negatively related to the perceived barriers (Tsagkas et al., 2019). Furthermore, in the study conducted by Marlow et al. (2009), it was found that those who planned to be vaccinated had a low perceived barriers, with high sensitivity, severity, and perceived benefits (Marlow et al., 2009). Yet in another study, the intention of getting vaccinated with the HPV vaccine was found to be higher in individuals with high sensitivity and severity perception towards the HPV infection and high perceived benefits towards the HPV vaccine (Choi and Parl, 2016). Hence, the respective results of this study are similar to the relevant results reported in the literature, since the benefit and perceived susceptibility s were found as high and the perceived barriers were found as low.

In this study, “perceived benefits” and “perceived susceptibility” were found to be high, and “perceived barriers” were found to be low among the participants, who stated to have been recommending the HPV vaccine to their friends and relatives and their nursing students (Table 3). Individuals weigh up the positive and negative consequences of any behavior. Accordingly, a desired health behavior would be exhibited only if perceived sensitivity, severity, and benefit outweigh the perceived deterrence, or in other words, if the perceived sensitivity, severity, and benefit dampen the effect of perceived deterrence. Similarly, it was stated in the literature that a preventive health behavior would not be adopted if the perceived benefit does not outweigh the perceived deterrence (Çiftçi and Kadioğlu, 2020). In this context, a high perceived benefit would indicate that the individual deems the HPV vaccine to be beneficial, whereas a high perceived susceptibility would indicate that his/her level of sensitivity on the issue is significant. Accordingly, the finding of high perceived benefits and perceived susceptibility and low perceived barriers scores in this study in relation to the participants who stated to have been recommending the HPV vaccine to their friends and relatives and to

their nursing students has been a desirable result. In comparison, in a study conducted in Brazil, it was determined that healthcare professionals predominantly accept the benefits of the HPV vaccine and thought of recommending the HPV vaccine to their patients (De Carvalho et al., 2009). Additionally, in the study of Önsüz et al. (2011), in which the knowledge levels of the medical faculty students about cervical cancer and HPV vaccination were investigated, most of the students (95.8%) stated that they were likely to recommend the HPV vaccine to their patients in the future (Önsüz et al., 2011). Accordingly, the respective results of this study as well as the relevant results reported in the literature suggest that the fact that healthcare professionals have been recommending or are likely to recommend the HPV vaccine to their friends and relatives and to their nursing students will contribute to increase the rate of vaccination with the HPV vaccine in the future.

### Conclusion and Recommendations

As a result of the results obtained from this study, it is concluded that inclusion of the HPV vaccine in the national vaccination program so that everyone would have access to it free of charge, organization of health education programs for nursing students on HPV infection, and the HPV vaccine, and increasing the frequency of informational activities about cervical cancer screening programs may give rise to a change in the health beliefs investigated in this study in the positive direction. In addition, it should also be ensured that the HPV vaccine is recommended by community leaders and through public service announcements.

### Limitations of the Study

The study is based on the reports of the participants. Insufficient response to e-mails sent via e-mail in the study has been one of the difficulties of the work.

### Acknowledgments

The authors would like to thank all participants.

**Ethics Committee Approval:** Before the data collection process, the study was approved by the Ethics Committee of Istanbul Okan University (Approval Number:124/14 Date: 22/07/2020).

**Peer-review:** External referee evaluation.

**Author Contributions:** Concept: KDB, YD; Design: KDB, YD; Supervision: KDB, YD; Data Collection: KDB; Data Processing: KDB; Analysis and Interpretation: KDB, YD; Resource: KDB, YD;

Literature Search: KDB, YD; Materials: KDB, YD; Preparation of the manuscript: KDB, YD; Critical Reviews: KDB, YD.

**Conflict of interest:** The authors declare that they have no conflict of interest.

**Financial Disclosure:** No financial support has been received for this research.

#### What did the study add to the literature?

- The “perceived susceptibility” of the participants, who were vaccinated with the HPV vaccine, was found to be high, whereas their “perceived barriers” was found to be low.
- The “perceived benefits” of those, who stated that they would get vaccinated if the vaccine were free of charge, was found to be high, whereas the “perceived susceptibility” of those, who stated that they would get vaccinated if a considerable number of people get vaccinated, was found to be low.
- The “perceived benefits” and “perceived susceptibility” of those, who stated that they wanted to be vaccinated with the HPV vaccine, were found to be high, whereas their “perceived barriers” was found to be low.
- The “perceived benefits” and “perceived susceptibility” of those, who stated to have been recommending the HPV vaccine to their friends and relatives and to the nursing students, were found to be high, whereas their “perceived barriers” was found to be low.

#### References

- Abolfotouh M, Ala'a A, Mahfouz A, Al-Assiri M, Al-Juhani A, Alaskar A. (2015). Using the health belief model to predict breast self-examination among Saudi women. *BMC Public Health*, 15(1), 1163-1170.
- Bowyer HL, Forster AS, Marlow LA, Waller JO. (2014). Predicting human papillomavirus vaccination behaviour among adolescent girls in England results from a prospective survey. *Journal of Family Planning Reproductive Health Care*, 40(1), 14-22.
- Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. (2018). Global cancer statistics 2018: Globocan estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer Journal of Clinicians*, 68(6), 394-424.
- Champion VL, Skinner CS. (2008). Health behavior and health education: Theory, research, and practice”, Glanz K, Rimer BK, Viswanath K, editörs. *The Health Belief Model*, 4nd ed., San Francisco: Jossey-Bass, 45-62.
- Choi JS, Park S. (2016). A Study on the predictors of Korean male students' intention to receive human papillomavirus vaccination. *Journal of Clinical Nursing*, 25(21-22), 3354-3362.
- Çeşmeci Y, Köylü B, Sulaiman J, Sancak E, Şenel S, Baki HE, Karataş K, Zık S. (2015). İnternlerin gözünden HPV enfeksiyonları ve HPV aşısı. *Türk Jinekoloji Onkoloji Dergisi*, (3), 85-92.
- Çiftçi N, Kadioğlu H. (2020). Türkiye’de sağlık inanç modeline dayalı geliştirilen ve Türkçe’ye uyarlanan ölçekler. *Anemon Muş Alparslan Üniversitesi Sosyal Bilimler Dergisi*, 8(6), 2015–2021.
- De Carvalho NS, Teixeira LM, Pradel EM, Gabardo J, Joly C, Urbanetz AA. (2009). Vaccinating against hpv: physicians’ and medical students’ point of view. *Vaccine*, 27(20), 2637-2640.
- Duval B, Gilca V, Boulianne N, Pielak K, Halperin B, Simpson MA, Sauvageau C, Ouakki M, Dube E, Lavoie F. (2009). Cervical cancer prevention by vaccination: Nurses’ knowledge, attitudes and intentions. *Journal of Advanced Nursing*, 65(3), 499-508.
- Erbaydar N, Çilingiroğlu N, Keskin C, Altunbaş M, Arslanoğlu E, Aydın O, Çetin E, Gündüz GG. (2016). Human papilloma virüs aşısı bir üniversite hastanesi hemşireleri için ne ifade ediyor? *Hacettepe Üniversitesi Hemşirelik Fakültesi Dergisi*, 3(3), 16–27.
- Ersin F, Kıssal A, Polat P, Koca B, Erdoğan M. (2016). Kadın sağlık personelinin servikal kansere yönelik algıları ve bunu etkileyen faktörler. *Hemşirelikte Araştırma Geliştirme Dergisi*, 18(2-3), 31-43.
- Esposito S, Bosis S, Pelucchi C, et al. (2007). Pediatrician knowledge and attitudes regarding human papillomavirus disease and its prevention. *Vaccine*, 25(35), 6437-6446.
- Globocan (2020). *Cancer Today*. Erişim Tarihi: 30.09.2020, <https://gco.iarc.fr/today/data/factsheets/cancers/39-All-cancers-fact-sheet.pdf>
- Görkem Ü, Toğrul C, İnal HA, Salman Özgü B, Güngör T. (2015). Üniversite hastanesinde çalışan yardımcı sağlık personelinin human papilloma virüs ve aşısı hakkında bilgi düzeyleri ve tutumları. *Türk Hijyen ve Deneysel Biyoloji Dergisi*, 72(4), 303-310.
- Gözüm S, Çapık C. (2014). Sağlık davranışlarının geliştirilmesinde bir rehber: Sağlık inanç modeli. *Dokuz Eylül Üniversitesi Hemşirelik Yüksekokulu Elektronik Dergisi*, 7(3), 230-237.
- Güllü FN, Tümer A. (2022). Türkiye’de son 10 yılda hemşirelik alanında yapılan human papilloma virus konulu makalelerin incelenmesi. *Izmir Democracy University Health Sciences Journal*, 5(1), 72-86.
- Güvenç G, Akyuz A, Seven M. (2016). Health belief model scale for human papillomavirus and its vaccination: adaptation and psychometric testing. *Journal of Pediatric and Adolescent Gynecology*, 29(3), 252-258.
- Hirth J. (2019). Disparities in HPV vaccination rates and HPV prevalence in the United States: A review of the literature. *Human Vaccines & Immunotherapeutics*, 15(1), 146–155.
- Holman DM, Benard V, Roland KB, Watson M, Liddon N, Stokley S. (2014). Barriers to human papillomavirus vaccination among us adolescents: A systematic review of the literature. *JAMA Pediatrics*, 168(1), 76-82.

- Kim HW. (2012). Knowledge about human papillomavirus (Hpv), and health beliefs and intention to recommend HPV vaccination for girls and boys among Korean health teachers. *Vaccine*, 30(36), 5327-5334.
- Makwe CC, Anorlu RI. (2011). Knowledge of and attitude toward human papillomavirus infection and vaccines among female nurses at a tertiary hospital in Nigeria. *International Journal of Women's Health*, 3, 313-317.
- Marlow LA, Waller J, Evans RE, Wardle J. (2009). Predictors of interest in HPV vaccination: a study of British adolescents. *Vaccine*, 27(18), 2483-2488.
- Markowitz LE, Dunne EF, Saraiya M, Chesson HW, Curtis CR, Gee J, Bocchini JA Jr, Unger ER. (2014). Human papillomavirus vaccination: recommendations of the advisory committee on immunization practices (ACIP). *Morbidity and Mortality Weekly Report*, 63, 1-30.
- Özçam H, Çimen G, Uzunçakmak C, Aydın S, Özcan T, Boran B. (2014). Kadın sağlık çalışanlarının meme kanseri, serviks kanseri ve rutin tarama testlerini yaptırmaya ilişkin bilgi tutum ve davranışlarının değerlendirilmesi. *İstanbul Tıp Dergisi*, 15(3), 154-160.
- Önsüz MF, Topuzoğlu A, Bilgi Z, Yılmaz M, Amuk N, Fahridin F. (2011). Bir tıp fakültesinde kadın hastalıkları ve doğum stajını yapmış öğrencilerin hpv aşısı hakkında bilgi düzeyleri ve tutumlarının değerlendirilmesi. *TAF Preventive Medicine Bulletin*, 10(5), 557-564.
- Petrosky E, Bocchini JA, Hariri S, Chesson H, Curtis CR, Saraiya M., . . . Markowitz LE. (2015). Use of 9-valent human papillomavirus (HPV) vaccine: Updated HPV vaccination recommendations of the advisory committee on immunization practices. *Morbidity and Mortality Weekly Report*, 64 (11), 300-304.
- Satılmışoğlu ZZ, Özer Aslan İ, Can N, Gülcivan G, Yıldız T, Şentürk M. (2018). Kız çocuk ebeveyni hemşire annelerin HPV aşısı hakkında bilgi düzeyi: Namık Kemal Üniversitesi Sağlık Uygulama ve Araştırma Merkezi anket çalışması. *Namık Kemal Tıp Dergisi*, 6(3), 104-108.
- Tonguç E, Gungor T, Var T, Kavak E, Yucel M, Uzunlar O. (2013). Knowledge about HPV, relation between HPV and cervix cancer and acceptance of HPV vaccine in women in eastern region of Turkey. *Journal of Gynecologic Oncology*, 24(1), 7-13.
- Topçu S, Ulukol B, Sezgin Emüler D, Topçu H, Ceyhun Peker G, Dökmeci F, Başkan S. (2018). Hekimlerin human papillomavirus enfeksiyonu ve aşısı ile ilgili farkındalıkları ve yaklaşımları. *Cukurova Medical Journal*, 43(2), 326-331.
- Tsagkas N, Sifaka V, Tzallas A, Zerzi C, Zografou M, Bilirakis E, Paraskevaïd M, Kyrgiou M, Paraskevaïdis E. (2019). Knowledge and beliefs about Hpv infection and the relevant vaccination in Greek young population. *European Journal of Gynaecological Oncology*, 40(4), 557-562.
- Wheldon CW, Daley EM, Buhi ER, Nyitray AG, Giuliano AR. (2011). Health beliefs and attitudes associated with HPV vaccine intention among young gay and bisexual men in the South Eastern United States. *Vaccine*, 29(45), 8060-8065.
- Won Kim H, Hee Kim D, Kim Y. (2018). Men's awareness of cervical cancer: a qualitative study. *BMC Women's Health*, 18(1), 155-165.
- World Health Organization (2009). WHO Position on HPV Vaccines. Erişim tarihi: 01.09.2020, [https://apps.who.int/iris/bitstream/handle/10665/241310/WER8415\\_118131.PDF?sequence=1&isAllowed=y](https://apps.who.int/iris/bitstream/handle/10665/241310/WER8415_118131.PDF?sequence=1&isAllowed=y)
- Yalaki Z, Taşar MA, Ünsal Saç R, Göçmen S, Karadağlı S, Akbaş N, Dallar YB. (2016). Lisede okuyan öğrencilerin insan papilloma virüs enfeksiyonu hakkındaki bilgi düzeyleri. *Çocuk Enfeksiyon Dergisi*, 10(3), 86-92.
- Yılmaz B, Hat B, Yürekli Y, Oskay Ü. (2021). Genç erişkinlerin Human Papilloma Virüs (HPV) ve HPV aşısına ilişkin bilgi ve görüşleri: Kesitsel bir çalışma. *Kocaeli Üniversitesi Sağlık Bilimleri Dergisi*, 7 (2) , 138-148.