

Knowledge, behaviours and attitudes for human papillomavirus (HPV) prevention among educators and health professionals in Greece

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Abstract. – **OBJECTIVE:** Globally, human papillomavirus (HPV) is one of the most common sexually transmitted diseases in both men and women. The objective of this study was to investigate the knowledge, attitudes, and behaviour of educators and health professionals regarding the prevention of HPV infection in Greece. The analysis of the results shows that most of the participants (44.7%) had good knowledge about the human papillomavirus, regardless of occupation.

PATIENTS AND METHODS: A cross-sectional survey was carried out with seven hundred and fifty participants. The participants completed a thirty-one-item questionnaire regarding their knowledge, attitude and behaviour towards the prevention of HPV.

RESULTS: Knowledge scores were calculated with a grading system which was designed for accurate knowledge assessment. The Score was adjusted on a scale from 0 to 100 and was divided into five levels, from Excellent to Very Bad level of total knowledge. Of all the participants, 26.4% had excellent knowledge, 44.7% had good, 23.6% had moderate, 4.7% had bad, and 4.7% had a very bad level of total knowledge. Specifically, physicians of different specialties had 80.32%, and educators 65.31 % excellent level of knowledge, respectively. Also, participants had a high degree of awareness regarding prevention and adherence to the annual Papanicolaou test (65.8%) and gynaecological exam. Despite the positive response (94.1%) in terms of vaccination of boys, and girls, as well as information on HPV vaccination, many participants themselves were not vaccinated (74.8%), nor were their children (19.7%).

CONCLUSIONS: The present study showed good level of knowledge for HPV prevention regardless of occupation and is characterized by a high degree of awareness of the usefulness of prevention in adhering to the annual

Pap smear test and gynaecological examination. The study shows the need for more information workshops for healthcare professionals, because physicians and midwives had high levels of knowledge, but not excellent as expected and required due to health-related profession.

Key Words:

Prevention, Human papillomavirus, HPV infection, Vaccines, Cervical cancer, Public health

Introduction

Worldwide, human papillomavirus (HPV) infection is recognised as one of the leading causes of infection-related cancers, as well as a causal agent in other diseases¹. Walboomers et al² have led to the identification of human papillomavirus-HPV as a causative agent, in over 99.7% of cervical cancer cases. However, HPV infection is not necessarily the only factor in the development of cervical cancer³. Cervical cancer is the third most commonly occurring cancer in women and the fourth leading cause of cancer-related deaths in women worldwide^{4,5}. In Greece, from a study performed from 2003 to 2006, with the participation of 1,636 women aged between 18-48 years, with normal and abnormal Pap test results, HPV was detected in 56.3%⁶. Also, a study conducted in Northern Greece from March 2000 to April 2001, with a sample of 1,296 women attending outpatient clinics at six gynaecological clinics, the prevalence of HPV was shown to be at 2.5%⁷.

Primary (vaccination) or secondary (cervical screening) prevention programs are crucial in preventing the infection and cancer. Vaccination,

as an expression of primary prevention, prevents infection but does not cover all types of the virus. For this reason, preventive annual gynaecological screening and Pap smear testing are just as important 3 years after sexual intercourse but not later than 21 years of age, as it is the HPV DNA test between 30-65 years of age every 3-5 years in combination with a Pap smear⁸.

The World Health Organization has so far developed and approved 3 vaccines for the prevention of HPV infection⁹. Despite the development of vaccines against the dominant strains of human papillomavirus and the expected reduction in the incidence of several neoplasms, vaccination rates in the US remain low¹⁰. From a 2015 study, it was found that 63% of girls ages 13-17 had received at least one dose of the HPV vaccine and 42% had received all three doses¹¹.

Patients and Methods

A cross-sectional study was conducted at the Faculty of Medicine of the University of Patras, Greece, between 2017-2018. In this study, the convenience sampling method was performed, and our research tool was a questionnaire. The inclusion criteria for the study were males and females, educators or health professionals.

The research team designed the questionnaire of this study after a thorough review of the literature. The questionnaire consisted of 31 items, divided into two sections. The first section (items 1-8) consisted of the demographic data (gender, age, country of birth, place of residence, education, occupation, number and sex of the children of the research participants). The second section (items 9-20) was related to the knowledge, attitude and behaviour concerning the prevention of HPV. Most of the questions required a single answer, while a few questions potentially multiple answers.

Firstly, a pilot study was conducted. Ten health professionals and ten educators completed the questionnaire, and their comments were used from the research team to correct and rephrase ambiguities and difficult questions. After that, the questionnaire was formatted for an online survey through Google and was also posted online on a social media site (Facebook) with a one-month collection of replied questionnaires. After obtaining permission from the administrator of each page, the questionnaire was posted on pages relating to the professions surveyed by this study.

The participants were adequately informed about the purpose of the research and that their data would remain anonymous and confidential. The Scientific Committee of the University of Patras approved the protocol for this study.

Statistical Analysis

Apart from the descriptive statistics for each variable, knowledge scores were calculated with a grading system which was designed for accurate knowledge assessment. The Score was adjusted from a scale of 0 to 100%. The system was divided into five levels based on the percentage of questions answered correctly. Levels were divided by percentage as follows: Excellent: >80%, Good: 60-80%, Moderate: 40-59%, Bad: 20-39% and Very Bad: <20%. The questions of knowledge who were contained in the questionnaire were 13. Each completed correct answer was scored with 1 point. In the questions that had more than 1 correct choice, 1 point was divided into the number of correct answers. A detailed table is shown below with the results of the knowledge scoring in general, but also concerning the profession of each participant (Table I). All the statistical analysis was performed using the IBM SPSS 23 Statistics statistical package (SPSS Inc., Armonk, NY, USA).

Results

A total of 781 questionnaires were completed for the survey, which involved adult men, women, educators, health professionals, and other professions from various cities in Greece and Cyprus. From the total 781 questionnaires that were distributed, only the fully completed 750 questionnaires were used to conduct this study and the demographics are shown in Table II. The frequencies of answers concerning the knowledge, behaviours and attitudes towards the prevention of HPV are shown in Table III.

Table I. Knowledge score on HPV.

	N	%
Excellent	198	26.4
Good	336	44.7
Moderate	177	23.6
Bad	35	4.7
Very Bad	5	0.7

Table II. Characteristics of the study population (n=750).

	N	(%)
A1. Gender		
Male	71	(9.5)
Female	679	(90.5)
A2. Age in years		
< 19	11	(1.5)
20-29	283	(37.7)
30-39	266	(35.5)
40-49	138	(18.4)
50-59	47	(6.3)
> 60	5	(0.7)
A3. Country of birth		
Greece	726	(96.8)
Other	24	(3.2)
A4. Place of residence		
Athens	109	(24.8)
Patras	65	(14.8)
Thessaloniki	82	(18.7)
Heraklion	17	(3.9)
Nafpaktos	3	(0.7)
Agrinio	18	(4.1)
Zante	6	(1.4)
Rodos	4	(0.9)
Cyprus	11	(2.5)
Other	124	(28.2)
A5. Education		
Primary education	5	(0.7)
Secondary education	162	(21.6)
Tertiary education	389	(51.9)
MSc and/or Ph.D	194	(25.9)
Educator	177	(23.6)
A6. Occupation		
Physician	59	(7.9)
Midwife	112	(14.9)
Nurse	93	(12.4)
Other Health Professions	201	(26.8)
A7. Number of children		
None	412	(54.9)
One (1)	142	(18.9)
Two (2)	152	(20.3)
Three (3)	35	(4.7)
> Three (3)	9	(1.2)
A8. Gender of their children		
No children	412	(54.9)
Female/females	121	(16.1)
Male/Males	107	(14.3)
Both Genders	110	(14.7)

26.4% of the participants had an excellent level of total knowledge, 44.7% had good, 23.6% moderate, 4.7% bad and 4.7% very bad (Table 1). Remarkably, participants between 20-29 years old had a knowledge score of up to 60%. The research has shown an excellent level of knowledge among physicians (80.31%) in contrast to good level of the educators (65.3%) (Figure 1).

Regarding behaviours for HPV prevention, the study has shown that the probability of a woman

being tested for Pap smear on a yearly basis increased by 1.7% with each increase of the knowledge score by one degree (Figure 2).

Regarding vaccines for HPV prevention, 94.1% had a positive attitude to HPV vaccination in both boys and girls, and 90.4% responded that they would like to get more information about the vaccine. Also, this study has shown that despite the increased vaccination rates at younger ages (48.2% between 20-29 years old), it was observed that many young women remained unvaccinated (86.6% between 30-39 years old) against HPV (Figure 3). An important parameter is age because women younger than 40 had 28.5 times higher possibility to be vaccinated than women over 40 years old (Table IV).

Discussion

In this study, the knowledge, attitudes and behaviours for the prevention of the Human papillomavirus in health professionals, educators and people of different professions were researched.

Physicians of different specialities in this study had excellent level of knowledge by 80.31%. In a 2014 study conducted in Italy regarding the knowledge and attitudes of General Practitioners' concerning HPV infection and vaccination, some physicians had a valid confusion of information on the association of Human Papillomavirus and what it ultimately causes. More specifically, 98% responded to cervical cancer, 42% to cancer of the vulva and vagina, 39% to cancer of the rectum, 38% to penile and oral cancer, 35% to cancer. For specific cervical cancer, only 3% responded to genital warts and 2% to sexually transmitted diseases. Also, 15% of GPs who participated in this study attended a training seminar on HPV¹².

90.4% of respondents in this study would like to have more information about the vaccine. 9.2% of the parents had not vaccinated their children because they have fear of the potential vaccine side effects and also 9.2% because they do not have sufficient information about the vaccine. In a national survey in Canada in 2019, 38% of the respondents declared not being vaccinated because they have not discussed HPV vaccination with their doctor, 35% have not considered it at all and 30% did not know enough about this vaccination¹³. Grigore et al¹⁴ in Romanian women at 2018, show that only 50.7% had a positive attitude toward HPV

Table III. Frequencies of answers concerning knowledge, behaviours and attitudes.

	Yes n (%)	No n (%)	Don't know n (%)
B4. Is there a link between HPV and cancer?	661 (88.1)	16 (2.1)	73 (9.7)
B5. Is there any treatment for lesions caused by HPV?	564 (75.2)	48 (6.4)	138 (18.4)
B6. Is there an HPV cure?	290 (39.3)	316 (42.8)	132 (17.9)
B12. Have you ever had a test pap?	639 (94.1)	40 (5.9)	
B14. Can Test pap show abnormal findings at any age?	632 (84.3)	28 (3.7)	90 (12.0)
B16. Do you think they should be vaccinated against HPV besides girls and the boys?	520 (69.3)	59 (7.9)	171 (22.8)
B18. Have you been vaccinated against HPV?	177 (23.6)	561 (74.8)	12 (1.6)
B19. Would you like to know more about HPV?	678 (90.4)	61 (8.1)	11 (1.5)
	N	(%)	
B1. What is HPV?			
Bacteria	11	(1.5)	
Virus	689	(91.9)	
Type of Cancer	30	(4.0)	
Don't know/no opinion	19	(2.5)	
Other	1	(0.1)	
B2. HPV is transmitted:			
By sexual intercourse	713	(95.1)	
By contaminated objects	255	(34.0)	
By blood transfusion	140	(18.7)	
During natural birth from mother to child	155	(20.7)	
By skin to skin contact	165	(22.0)	
Don't know/no opinion	12	(1.6)	
B3. HPV infection:			
Always has symptoms	76	(10.1)	
Sometimes has symptoms	561	(74.8)	
Never has symptoms	41	(5.5)	
Don't know/no opinion	72	(9.6)	
B4.1 If so what are the types of cancer linked?			
Endometrial cancer	124	(16.5)	
Cervical cancer	712	(94.8)	
Mouth cancer	163	(21.7)	
Pharyngeal cancer	148	(19.7)	
Laryngeal cancer	128	(17)	
Anal cancer	212	(28.2)	
Ovarian Cancer	81	(10.8)	
Skin cancer	57	(7.2)	
Penile Cancer	165	(22)	
Vulvar Cancer	123	(16.4)	
B7. How can HPV be diagnosed?			
Vaginal culture test	153	(20.4)	
HPV DNA Test	367	(48.9)	
Colposcopy	356	(34.1)	
Blood tests	83	(11.1)	
Test Pap	501	(66.8)	
Other	55	(7.5)	
Don't know/no opinion	56	(7.3)	
B8. HPV preventive measures are:			
Monogamous relationship	175	(36.7)	
Vaccination	447	(59.6)	
Use of Contraceptive pills	10	(1.3)	
Use of condom	650	(86.7)	
Other	6	(0.8)	

Continued

Table III (Continued). Frequencies of answers concerning knowledge, behaviours and attitudes.

	Yes n (%)	No n (%)	Don't know n (%)
B9. How often do you visit gynecologist?			
Once per year	437	(64.4)	
Twice per year	147	(21.6)	
Rarely, when needed	70	(10.3)	
I have never been to gynecologist	15	(2.2)	
Other	10	(1.5)	
B10. When was the last time you have visit gynecologist?			
Less than a year	447	(65.8)	
A year ago	161	(23.7)	
More than two (2) years ago	55	(8.1)	
I have never been to gynaecologist	16	(2.4)	
B11. What is a test pap?			
Microscopic detection of sexually transmitted diseases	135	(18)	
Microscopic control that detects cellular changes	551	(73.5)	
Blood test who can detect cancer	18	(2.4)	
Preventive measure of cervical cancer	316	(42.1)	
Other	3	(0.4)	
B12.1 If so, how often do you have a test pap?			
Every year	524	(82.0)	
Every two (2) years	72	(11.3)	
More than three (3) years	15	(2.3)	
Less often	24	(3.8)	
Other	4	(0.6)	
B13. A woman need to get her first pap test:			
Immediately after starting sexual activity	683	(91.1)	
20-29 years old	51	(6.8)	
30-39 years old	6	(0.8)	
40-49 years old	3	(0.4)	
>60 years old	1	(0.1)	
Don't know/no opinion	6	(0.8)	
B17.1 If not, what reasons do you have?			
I have children <12 years old	188	(55.6)	
Haven't been tested enough	14	(4.1)	
I'm afraid of possible side effects	31	(9.2)	
I think it is not effective	7	(2.1)	
There are more effective ways of prevention	2	(0.6)	
I do not have proper information about vaccination	31	(9.2)	
The cost of the vaccine	5	(0.7)	
Did not occur	19	(5.6)	
Other	14	(4.1)	
B20. Who do you consider to be the main carrier for informing your children?			
School	259	(34.5)	
Family	147	(19.6)	
Physicians	128	(17.1)	
Mass media	58	(7.7)	
Special departments of the Ministry of Health	36	(4.8)	
Other	3	(0.4)	
Don't know/no opinion	260	(34.7)	

vaccine and the main barriers to vaccination were the fear of side effects and the financial concerns.

This study has shown that 69.3% of the participants believe that in addition to the girls, the boys should also be vaccinated against HPV infection

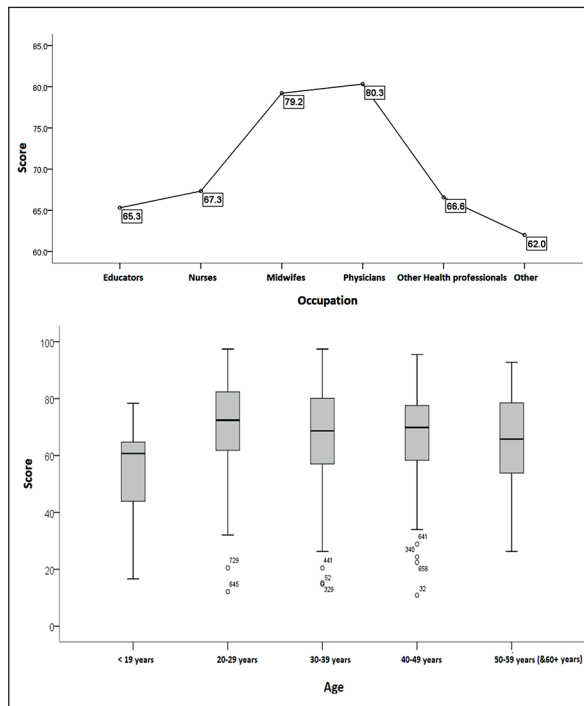


Figure 1. Knowledge scores by age group. The 75% of respondents aged 20-29 achieved a performance higher than 60%. Media chart. Illustration of the average score rating by the professional teams in question. Box-plot for different age groups. The 75% of respondents aged 20-29 achieved a performance higher than 60%.

should be vaccinated toward HPV. In a study which was conducted in parents of teenage boys

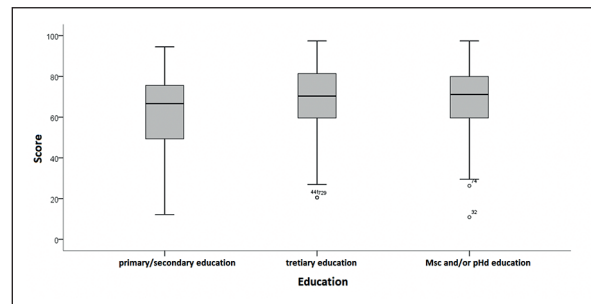


Figure 2. Knowledge scores by educational level..

in the UK, 49.0% would be “definitely willing” for their son to receive the HPV vaccination if it was available for boys, 30.4% would be “probably willing”, whereas 4.9% would be “definitely not willing”, 1.0% “probably not willing” and 14.7% were not sure about this¹⁵. As we can see as in Greece so that in the UK participants had a positive attitude toward HPV vaccination in boys. Consequently, a considerable amount of studies has been published demonstrating that the lack of information and the financial concerns are main barriers that the people do not make the vaccine.

The strategic role of GPs in health systems all over the world, is to implement mass immunization programs and more generally, to implement effective communication and health education strategies^{16,17}. Multiple studies conducted in Europe, North Africa, Australia and Canada have re-

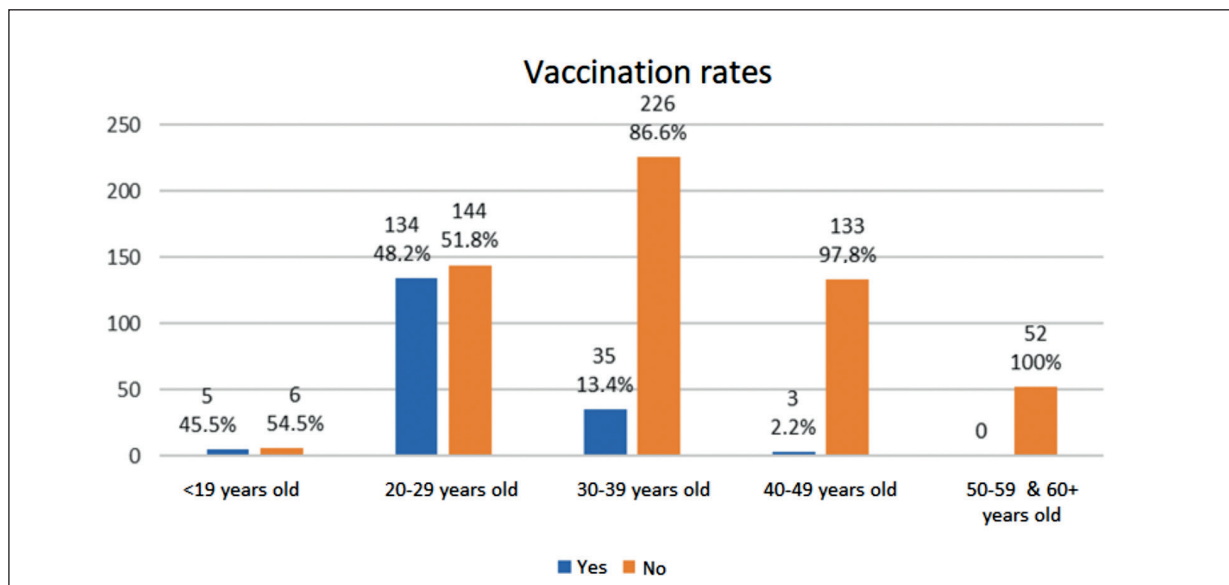


Figure 3. HPV vaccination rates in the study population by age.

Table IV. Health behaviors regarding HPV concerns in association to various demographic parameters and HPV knowledge.

	Demographics				Knowledge score** x + 1
	Gender* W = 1	Age* < 40 = 1	Number of children* < 3 = 1	Studies* Max = 1	
Annual Test PAP (Yes = 1)	–	1.222 (0.8-1.832)	1.937 (0.985-3.809)	1.323 (0.875-2.001)	1.018† (1.015-1.021)
Annual gynaecological exam (Yes = 1)	–	1.199 (0.731-1.969)	2.173 (1.025-4.608)	1.597† (0.989-2.567)	1.027† (1.024-1.031)
Vaccination rates on their own (Yes = 1)	23.065† (3.177-167.461)	28.534† (8.993-64.559)	14.243† (1.946-104.247)	0.942 (0.628-1.413)	0.985 (0.983-0.988)

*Odds ratio unadjusted – for all demographic variables. **Binary Logistic Regression; †p-value <0.05.

cently explored the role, attitudes, knowledge and practices of physicians in relation to HPV infection and prevention strategies. Also, a study conducted in Morocco in 2013 among physicians has also identified information gaps, inadequate participation in screening programs and the need to implement general family physician training programs. A similar study in Canada comparing the level of knowledge among nurses and physicians showed a reduced participation in training and updating programs for new data on infection¹⁸⁻²³.

Conclusions

The present study showed good level of knowledge for HPV prevention regardless of occupation. Physicians and midwives had high levels of knowledge in this study, but not excellent as expected and required due to health-related profession. Health professionals even in our days are confused about HPV information, which demonstrates the need for more relevant seminars and similar events, with the aim of providing more complete and comprehensive information to the medical community, and the general public on health prevention issues.

It is very satisfying from this study that the number of women who have never had a Pap smear is very low and the frequency of women visiting the gynaecologist and performing the annual Pap smear test is very high. Surprisingly, in the results of the annual Pap smear test, it appeared that physicians had lower rates than the other groups we examined.

Conflict of Interest

The Authors declare that they have no conflict of interests.

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