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ORIGINAL ARTICLE

Knowledge of Medical and Dental Iranian Students about the Infection and Vaccination of Human Papilloma Virus

Maryam Alsadat Hashemipour[1], Molouk Torabi Parizi[2], Yasaman Modares[3], Sepehr Pourmonajem Zadeh[4]

[1]Social Determinants on Oral Health Research Center, Kerman University of Medical Sciences, Kerman, Iran. 0000-0002-1075-4020
[2]Social Determinants on Oral Health Research Center, Kerman University of Medical Sciences, Kerman, Iran. 0000-0002-6030-3164
[3]Kerman Dental School, Kerman University of Medical Sciences, Kerman, Iran. 0000-0002-4643-4221
[4]Kerman Dental School, Kerman University of Medical Sciences, Kerman, Iran. 0000-0002-9477-188X

Author to whom correspondence should be addressed: Molouk Torabi Parizi, Department of Oral Pathology, School of Dentistry, Kerman University of Medical Sciences, Kerman, Iran. Phone: +98 3412118074. E-mail: m.torabi.p@gmail.com.

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Abstract

Objective: To evaluate awareness of medical and dental students of Kerman University of medical science about the infection and vaccination of the human papilloma virus. **Material and Methods:** This descriptive cross-sectional study was conducted on 290 medical and dental students. The data were collected using a questionnaire, which consisted of demographic data, and awareness-raising questions whose validity and reliability were confirmed. Mann-Whitney U and linear regression test were used for statistical analysis, and significance level of 0.05% was measured. **Results:** From 290 participants, 44.5% were male, 69.7% were single, 51.7% were medical students and 92.4% of individuals had awareness about HPV. The most common source of information (83.7%) was textbook. 39.9% of respondents were not familiar with the HPV vaccine and 62.1% tended to be vaccinated. Most of individuals (69.4%) were willing to pay a vaccination fee of less than $10. Most of respondents were not aware of HPV vaccination in Iran (68.3%). The mean score of knowledge was 6.1 ± 2.4. There was a statistically significant relationship between gender, field of study and marital status with mean score of knowledge ($p<0.05$). **Conclusion:** The students' knowledge was moderate. The awareness of men and women about HPV was poor. Further studies are recommended on other community groups, especially young people. Risk groups should be identified and referred to the relevant organs for vaccination.

Keywords: Papillomaviridae; Papillomavirus Infections; Vaccines.

Introduction

The human papilloma virus (HPV) consists of a large group of double-stranded DNA viruses that exhibit tendency towards squamous epithelium and may cause skin and mucosal infections. Mucosal infections may occur in the anogenital area, respiratory tract and upper parts of gastrointestinal tract [1].

Most of infected individuals are asymptomatic and don't exhibit clinical evidence of the disease [1,2]. It has been shown that HPV is responsible for 91% of anal cancers, 75% of vaginal cancers and 60% of oropharyngeal cancers in the United States. About 80% of women who are sexually active are at risk of developing and HPV infection and the peak of incidence of this disease is among young women [3,4]. Some authors have evaluated socio-economic differences and their impact on incidence of oral and oropharyngeal squamossal cell carcinoma and demonstrated that oropharyngeal carcinoma had a strong correlation with HPV [4-6].

The results of a study that was conducted in Belgium in order to evaluate awareness of students about HPV infection showed that, 95% of medical students were aware of HPV and 92% were aware of vaccinations and immunity against this virus, while only 46% knew that HPV could cause anogenital cancer [6]. Chinese researchers assessing student's awareness and acceptance to receive HPV vaccine, showed that 70.8% of students were accepting vaccination, 14.3% of the people had heard about HPV and the most important source of information was public speeches. Majority of respondents had positive idea about HPV vaccination [7]. Among Saudi Arabia female students 95.7% were poorly informed about HPV. In this study, medical students and senior students were more aware of HPV [8]. In Southern China, 48.8% of medical students believed that cervical cancer was preventable by HPV vaccination, and 60.2% were interested in receiving the vaccine [9]. A study developed in the USA showed that most individuals knew about HPV, but in general the awareness of black population was lower. Only 18% knew that the Food and Drug Administration of America (FDA) recommended the HPV vaccine to prevent genital warts and cervical cancer [10].

It was showed that the knowledge of individuals participated about HPV and its vaccination was not sufficient, while there has been an increase in knowledge and willingness of individuals to vaccinate after trainings and workshops in this area [11]. Two types of vaccine are available for HPV. In most of developed countries such as Australia, Hungary and United Kingdom, HPV vaccination is a part of their national vaccination program [12]. After epidemic increase of HPV infection in 2014, vaccination against HPV became a part of national vaccination and immunization program in 84 countries [13]. The FDA has introduced the Gardasil vaccine for strains 6,11,18,16 of HPV and Cervarix for strains 16 and 18, which is recommended for prevention of HPV infection in 11-12 years old individuals [14].

Therefore, the aim of this study was to evaluate awareness of medical and dental students about the infection and vaccination of the human papilloma virus.

Material and Methods

Study Design

This study was cross-sectional, descriptive and analytic, that was carried out on 290 medical and dental students of Kerman University of Medical Science in 2017.

Data Collection

The data were collected by a trained researcher after obtaining oral consent and explaining about the questionnaires and how to complete it. The questionnaires were distributed and tried to be collected at the same meeting. At the end of the study, the researcher returned and presented the correct answers.

The data collection tool was the questionnaire including personal data (age, gender, field and years of study, marital status, resource of information and questions about vaccination and 13 questions about HPV). The questions of assessment of knowledge were designed based on true, false and no idea. The correct answer was given grade 1 and the wrong answer was graded zero. The questions of the questionnaire were laid out based on studies, books and related literatures.

To determine validity of the questions, related faculty members and experts of Kerman University of Medical Science were chosen and the questionnaires were provided for them and coefficient validity was 0.93 that was computed using Cronbach's alpha coefficient. To determine reliability of the questionnaire, 20 students were selected and the questionnaires were distributed among students, after two weeks same questionnaires were distributed among formerly selected students. The reliability coefficient of the data collected from questionnaires of two series of data collection was 0.89.

Data Analysis

Data were analyzed using IBM SPSS Statistics for Windows Software, version 21 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to calculate the absolute and relative frequencies, mean and standard deviation. Mann-whitney U test and linear regression were used, with significance level set at 5%.

Ethical Aspects

This research was approved by the committee of ethics of Kerman University of Medical Science (Approval Code: IR.KMU.REC.1395.208).

Results

With regard to demographic variables, 44.5% were male, 69.7% were single, 51.7% were medical students and 92.4% of individuals had awareness about HPV. The largest source of information of students, were textbooks (83.7%). Table 1 shows the frequency distribution of demographic variables.

Table 1. Distribution of individuals according to demographic variables.

Variables	Frequency	
	N	%
Gender		
Male	129	44.5
Female	161	55.5
Marital Status		
Single	202	69.7
Married	78	30.3
Field of Study		
Medical	150	51.7
Dental	140	48.3
Awareness of HPV Infection		
Yes	268	92.4
No	22	7.6
Source of Information		
Text Book	257	83.7
Internet	33	10.8
Seminars	17	5.5

A percentage of 39.9% of respondents were not familiar with the HPV vaccine and 62.1% tended to be vaccinated. Most of individuals (69.4%) were willing to pay a vaccination fee of less than $10. Most of respondents were not aware of HPV vaccination in Iran (68.3%) (Table 2).

Table 2. Distribution of respondents regarding HPV questions.

Variables	Frequency	
	N	%
Awareness of Vaccination		
Yes	114	39.3
No	176	60.7
Relevance of Age and Vaccination		
For Females	237	81.7
For Males	53	18.3
Awareness of Vaccination in Iran		
Yes	92	31.7
No	198	68.3
Willing to Have Vaccination		
Yes	180	62.1
No	110	37.9
Desirable Fee for Vaccination (USD)		
>$10	201	69.4
$10-20	74	25.4
$21-30	5	1.7
$31-40	10	3.5
Vaccination		
Medical Doctors	26	9.0
Healthcare Centers	213	73.4
Healthcare Organizations of Medical Schools	51	17.6

We had the highest number of true answers to “HPV incidence in women 20-30 is higher than other age groups” (87.9%) and the lowest number of true answers to, ”both men and women can be infected with HPV” (26.6%) (Table 3). The question that was answered correctly more than other questions, was “The incidence of HPV infection was higher in women between 20-30 years old that other age groups”.

Table 3. Distribution of the sample according to HPV knowledge.

Questions	Yes		No	
	N	%	N	%
HPV infection is relatively uncommon	218	75.2	72	24.8
HPV infection is not a sexually transmitted disease	108	37.2	182	62.8
HPV is the causative factor of cervical cancer	99	34.1	191	65.9
HPV is the causative agent of oral squamous cell carcinoma	145	50.0	145	50.0
HPV is the causative factor of squamous cell carcinoma of oropharynx	151	52.0	139	48.0
Both males and females can be infected with HPV	77	26.6	213	73.4
The incidence of HPV infection was higher in women between 20-30 years old that other age groups	255	87.9	35	12.1
HPV is the causative agent of genital warts	80	27.6	210	72.4
Genital warts are caused by the same HPV subtype that causes cervical cancer	161	55.5	129	44.5
HPV infection is curable	130	44.8	160	55.2
HPV vaccine is highly suggested for individuals that have been never infected to HPV	202	69.7	88	30.3
The HPV vaccine has been approved to protect genital warts and most cases of cervical cancer	186	64.1	104	35.9
The women that are vaccinated against HPV do not need to have an annual screening for cervical cancer with papsmear test	187	64.5	103	35.5

The average and standard deviation of student's knowledge score was 6.1 ± 2.4 out of 13. The relationship between gender, marital status, field of study and the score of knowledge of students is shown in Table 4.

Table 4. Relationship between gender, marital status and field of study with knowledge.

Variables	Mean	SD	p-value
Gender			
Male	5.6	2.5	0.05
Female	6.4	2.6	
Marital Status			
Single	6.1	2.4	0.01*
Married	5.9	2.8	
Field of Study			
Medical	5.9	2.5	0.04*
Dental	6.3	2.3	

*Statistically Significant.

There was a significant difference between the knowledge score of males of different majors (p= 0.018). In men, there was no significant relevance between demographic variables and knowledge. Married women were significantly more knowledgeable (p= 0.016) (Table 5).

Table 5. Relationship between knowledge scores and demographic variables.

Gender	Category	p-value	t	Standard Factor (Beta)	Standard Error
Male	Marital Status	0.257	-1.138	-0.104	0.533
	Field of Study	0.018	-2.398	-0.219	0.487
Female	Marital Status	0.016	0.439	-0.195	0.447
	Field of Study	0.836	-0.207	-0.017	0.383

Discussion

In this study 92.4% of the respondents were aware of HPV infection. Among US citizens, 38% of women had heard about HPV [15], while among Vietnamese mothers less than 50% of

women had heard about HPV [16]. In other countries, 57% of Pakistani students [13] and 10.3% of students in China [17] had heard about HPV that is lower in the current study. The reason for this difference is that, participants in the current study were medical and dental students, which have more knowledge due to studying in medicine and dentistry. Among Muslim women, 56% of participants had not heard about HPV (18), while the majority of Americans had heard about HPV [10].

This research has been conducted on the general population of people and the rate of awareness of individuals was reported higher than 90% in different cities [10]. In the current study, 64.2% of individuals believed that HPV vaccination was approved for prevention cervical cancer. In a study 48.8% of Chinese medical students believed that HPV vaccine could be effective in preventing cervical cancer [9].

The present study was conducted in senior students, while another in junior students, this could be the cause of difference in results. In the current study, 62.1% of the patients were willing to receive HPV vaccination. Among Chinese students, 60.2% of respondents were willing to receive the vaccinations that the result was mostly consistent with our study [9]. Chinese researchers that 70% of students tended to vaccinate [7]. A percentage of 77.5% of Nepali mothers were willing to have HPV vaccination for their children [19].

The tendency of Chinese mothers for receiving HPV vaccine reported lower [20]. In the current study, the most comprehensive source of information about HPV was textbooks, while among Japanese students, 97% of the sources of information were physicians, 89% of newspapers and magazines, 79% the government and 78% internet [21]. The reason for the difference between our study and the Japanese research is that, the research in Japan was conducted on mothers and the daughters [21].

In this study, 50% and 52% of answers to the questions "HPV was the causative factor for oral carcinoma, oropharynx and cervix cancer" respectively was correct. Given that this research was done in the last year of medical and dental students, it can be said that knowledge of individuals is not enough. In other study, 90% of Brussels students were aware of the relationship between HPV and cervical cancer [6]. Squamous cell carcinoma of the erythropoiesis region is more related to HPV than oral squamous cell carcinoma [5]. Prevention of this is possible with vaccination and awareness of the general public.

In the study, 35.2% of the patients were aware of screening for cervical cancer. The HPV vaccine prevents the infection from the virus, but it is still recommended for screening for cervical cancer. Pap smear is still recommended. Vaccination in 70% of the cervical condensate has a supportive effect. The factor of 30% is other types of high-risk-HPV [22-24].

In the current study, 75.2% of people believed that HPV infection was common. Among Malaysian students, 64.9% considered HPV as a common infection [25]. In the current study, 26.6% were aware that HPV infection was seen in men and women, while 78.5% of Malaysian medical students were aware of HPV infection in men and women [25], which is more than ours. Perhaps the reason for this is the difference in the population of the studied.

Another finding of this research was 75.7% were aware that the HPV infection was caused by sexual contact, which was consistent with previous studies carried out in Malaysia [25] and Scotland [26]. There was no significant difference between the two genders regarding HPV awareness. The results are consistent with the study conducted in Malaysia [27]. The reason for this difference can be in the population studied. Usually female students are paying more attention to their lessons.

In the current study there was a significant relationship between major of students and score of awareness of them. Dental students were more knowledgeable. The reason for this difference is that they would be familiarized with the HPV virus in different dentistry classes, as well as with benign oral HPV infections in various clinical cases.

In this study, 36.7% were willing to receive vaccination for the cost of less than $10. In a study on Malaysian pre-university students, 56% inhibiting factors for vaccination was the high cost of vaccination [27]. Reducing vaccine prices and informing about the benefits of using it can be effective in reducing HPV infection and cancers caused by that, particularly cervical carcinoma.

The FDA has introduced the Gardasil® vaccine for HPV types 6,18,11,16, and Cervarix for type 16 and 18, which are being routinely recommended to prevent HPV infection in 11- to 12-year-olds [14]. The vaccination programs for women in 2007 and for men since 2013 have been launched in Australia with a four-dose vaccine [28]. In Iran, the price of each vaccine is 290,000 tomans (29 USD), sold in the Red Crescent and academic pharmacies. Gardasil® is the only vaccine that is available in Iran for prevention of HPV infection. The suggestions of this study was holding training courses on HPV infection in various medical fields, hold training courses on HPV vaccination and the importance of doing it and the high risk groups, including dermatologists, ENT, oral and dental disease specialists, and other high-risk groups, are identified and introduced to corresponding medical centers for vaccination

The major limitation of this study was the lack of cooperation of a number of people to fill in the questionnaire.

Conclusion

The knowledge of medical and dental students in this study is moderate. The knowledge of students was not sufficient regarding presence of Human Papilloma Virus infection among women and men, and the HPV vaccine has been approved to be effective for those individuals that have never been infected with HPV. Married female students were significantly more aware than others. Dental students were more knowledgeable than medical students.

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Conflict of Interest: The authors declare no conflicts of interest.

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