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RESEARCH ARTICLE

KNOWLEDGE, ATTITUDE, AND PRACTICE OF HUMAN PAPILLOMA VIRUS VACCINATION AMONG PRIMARY HEALTH CARE PHYSICIANS IN AL AHASA, SAUDI ARABIA

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Abstract

Introduction: Human papillomavirus (HPV) has been linked to a variety of cancers in both men and women. HPV is a DNA virus that causes warts on the skin and mucous membranes. Some HPV strains can cause cancers such as anal, vulvar, vaginal, penile, and cervical cancer. All of these cancers are preventable if the vaccine is used correctly. In Saudi Arabia, two types of HPV vaccine are available: bivalent vaccine (Cervarix) and quadrivalent vaccine (Gardasil). The purpose of this study was to assess Saudi physicians' knowledge, attitude, and practice regarding HPV vaccine.

Method:A cross-sectional study was conducted in Saudi Arabia by 2022, with the study's target population being physicians working in primary health care settings in the Ministry of Health. The study included 385, however only 289 participants who worked in primary health care under the Ministry of Health, AlAhsa have responded. The Ethics Committee has approved the research.

Results: Total 289 doctors working in AlAhhsa primary health care centers were included in the study, with 136 females (47.06%) and 153 male (52.94%). The majority of the participants, 259(89.62%), were Saudi, and almost half (49.83%) had less than 5 years of experience. Family medicine consultants and specialist had higher level of knowledge about HPV vaccine than family medicine residents and GP; with mean(SD) of 4.19(1.27), 4.71(1.40), 3.81(1.45) and 3.50(1.33) respectively. There was a significant correlation between level of knowledge with practice and attitude towards HPV vaccine (p=0.001).

Conclusion: Primary health care physicians working in PHC inAlAhasa ,Saudi Arabia have basic knowledge about HPV vaccine with a preference for consultants with a higher percentage, then specialists, and lastly residents.

Introduction:

The most common organism transmitted through sexual intercourse is human papillomavirus (HPV). It is a small non enveloped DNA virus that most commonly leads to skin or mucus membrane growth which is called wart. the viral genome of HPV is circular and double-stranded, with a length of approximately 8 kilobytes. there are almost

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100 types of HPV, 13 of them at least can cause cancer. It causes cervical, vaginal, and vulvar disease in women, penile disease in men, anal and oropharyngeal cancer in both men and women. [1] It has several types, and each type is divided according to oncogenicity. High oncogenic risk includes HPV type 16 and type 18. Whereas, low oncogenic risk includes HPV type 6 and type 11, which can cause genital warts. [1-2]Cervical cancer is the second most prevalent malignancy among women worldwide, with an estimated 570,000 new cases diagnosed each year. More than 99 percent of cervical malignancies have been linked to infection with kinds of the Human Papillomavirus (HPV). [3] However, cervical cancer is one of the most successfully treated cancers if it is detected early and adequately handled. Late-stage cancers can potentially be controlled with the right treatment and palliative care. (4)In comparison to diseases caused by non-infectious factors, infectious diseases are frequently easier to prevent or treat. As an oncogenic virus causes cervical cancer, vaccinationis the primary prevention from HPV diseases in addition to using condoms. [3]

There are three types of vaccines licensed in the United States, which are Bivalent HPV vaccine, Quadrivalent and 9-valent HPV vaccines. In 2016, the Food and Drug Administration (FDA) Approved 9-valent HPV vaccines (9vHPV) to be used as three doses or two doses, depending on the age of receiving the first dose of vaccine. [5]According to Advisory Committee on Immunisation Practices (ACIP), boys and girls who started the HPV vaccination before the age of fifteen are recommended to take 2 doses vaccine with 6–12 months interval. On the other hand, for boys and girls who took the vaccine after the age of fifteen, they are recommended to take 3 doses with 1–2 months interval between the first dose and second, and 6-months interval between first dose and third dose. [5]

A study was conducted on 639 Polish resident doctors to assess their knowledge and attitude towards HPV infection and HPV vaccine. The study was done on residents in different specialities including obstetrics and gynaecology, dermatology, venereology, and paediatrics. The study found that the knowledge about HPV and HPV vaccination was very low in the study group, and there was no significant difference between different specialities, gender, and age group. With regards to the attitude of doctors towards HPV vaccine, doctors with higher knowledge towards HPV and HPV vaccine are more likely to encourage their patients and relatives to receive the vaccine. However, doctors who scored lower on the knowledge questions are less likely to recommend the vaccine. [6] A study about vaccination Knowledge, practice, and attitude towards HPV vaccination among college students was conducted in China showed how the doctors have an important role in taking HPV vaccine. Result of study showed that students who have relation with doctors or sexually active before have knowledge about HPV disease and HPV vaccine. ($P< 0.05$) There is a statistically significant association between female students who are vaccinated and relationships with doctors. ($P<0.01$) [7] Another study was published in Turkey 2013 to assess the family physicians' awareness, knowledge, and attitudes about the HPV vaccine**.** The study showed a statistically significant effect of the family physicians' attitudes with higher knowledge level among female residents ($p=0.028$). [8]

In 2018, a study conducted in Vietnam found that participants aged 20-29 were the most willing to pay for the vaccine's cost. Thiswas explained as sexual health topics are not discussed inside school or between family members and some thinks that sexual relationship is not allowed for adolescent addition, those with higher education levels in comparison to those with only high school education were willing to pay for vaccines at lower cost. [9]A cross sectional study in Egypt found that there was a significant. association of physicians' attitude and knowledge toward pap smear test and HPV vaccine with age, professional level, work experience and place of work. Also, there is a significant association between the recommendation of pap smear test and older age, number of years of experience of physician. In addition, there is a significant association between HPV vaccine prescription and young age, less years of experience, low professional, and education level of physicians. [10] The importance of cervical cancer screening is high, as it is a type of cancer that can be prevented effectively following up these methods. In Sudan a study done at 2010 suggested using an acetic acid (VIA), as an alternative to pap smear screening in primary health care settings and compared to it, it is found with higher sensitivity but lower specificity. [11]

In Saudi Arabia, eighty nine percent of cervical cancer cases were related to HPV, and more than seventy percent of these cases were specifically related to HPV type 16 and HPV type 18. [12] As a prevention from different types of HPV that might lead either to cervical cancer, or genital warts, a couple of different types of HPV vaccination Saudi Arabia have been accessible as bivalent vaccine (Cervarix), and quadrivalent vaccine (Gardasil). [13] A study conducted by Almazrou S, Saddik B, and Jradi H in 2018 in Saudi Arabia found that practising medicine for more than 10 years has significant relation with knowledge of cervical cancer,HPV disease and HPV vaccine ($p=0.041$). [3]

To get answers is there an effect of continuing medical education on primary health care providers' knowledge, attitude, and practice of HPV vaccination what are the factors influence HPV vaccine knowledge, attitude, and practice among primary care providers.

Materials &Methods:

A cross-sectional study was conducted from August 2022 to February 2023 in AlAhasa city. Enrolled participants were, General practitioners, family medicine residents, specialists, and consultants, Saudi and non-Saudi, of different ages and both genders. Medical students, interns, different specialties, and other healthcare providers were excluded. The number of physicians working in AlAhasa city is (385) working in different positions (resident, specialist, consultant, and GP) all of the primary care physicians were included in sample size. A predesigned self-administered, validated questionnaire was collected. The questionnaire consists of 19 questions distributed in 4 parts. The first part is for demographic data, the second part assesses the knowledge of the HPV vaccine (7 items), the third part assesses the attitudes toward the HPV vaccine (7 items), last assesses the practices of HPV vaccine in AlAhasa city (5 items).

The response to the question was yes, no, or do not know with one point assigned to each correct answer. Statistical analysis was performed by using SPSS, an independent T-test was used to compare two variables like gender, and ONE WAY ANOVA test for comparing between three or more variables. Ethical approval was obtained from the Research Ethics Committee, informed consent was obtained from the participants to utilize their data for research purposes. Privacy and confidentiality were protected for each participant. This study carries no risks for participants.

Result:

This survey was completed by 289 physicians out of 385 total, for a 75% response rate. The majority (52.94%) were men, and nearly 90% were Saudi. The mean age 32.56±15.65 years was calculated among all pariticpants. The age group of 20-30 years constituted almost forty four percent of the population followed by those (40.48%) with age group of 31-40 years of age and those with 41-50 years of age (10.38%), The age group of 51-60 years constituted only 5.19% of the participants.The majority of the participants were General Physician (38.4%) followed by resident family physicians (32.18%) and family physician specialist (20.05%). Less than ten percent of the participants were consultant family physician. Majority of the participants (49.83%) had less than 5 years of practice experience while 28.72% were having experience of 5-10 years and 18.69% with 11-15 years and only 2.77% with more than 15 years. The details of socio demographic characteristics of the participants is shown in table1.

Table 1:- Socio demographic information of the participants. (n=289).

Variables	Frequency (%)
Age	
Mean age 32.56 years ± 15.65. (Range 20-60 years).	
20-30 years	127 (43.94)
31-40 years	117 (40.48)
41-50 years	30 (10.38)
51-60 years	15 (5.19)
Sex	
Male	153 (52.94)
Female	136 (47.06)
Nationality	
Saudi	259 (89.62)
Non-Saudi	30 (10.38)
Specialty	
General physician	111(38.41)
Resident Family physician	93 (32.18)
Specialist family physician	58 (9.34)
Consultant family physician	27 (20.07)
Years of practice	
<5 years	144 (49.83)

5-10 years	83 (28.72)
11-20 years	54 (18.69)
> 20 years	8 (2.77)

Table 2 depicts that on the statement that cervical cancer is caused by an infectious agent, majority of the participants (74.39%) answered yes while 19.72% of the participant answered no and only 5.88% of the participants did not know the answer. When asked about the knowledge of the existence of HPV,the vast majority of the participants affirmed that they had knowledge about the HPV (85.12%) while 3.46% of the participants did not have the knowledge about HPV and 11.42% of the participants answered that they did not know about this. HPV subtypes 16 and 18 are associated with cervical cancer. Regarding the type of HPV vaccine most often used in KSA, majority of the participants(64.71%) did not know while 17.3% of them answered quadrivalent followed by those (12.8%) whose response was bivalent and 5.91% answered 9 valent . On the doses of the HPV vaccine to be administered, almost fifty percent (49.48%) of the participants responded that it should be 2 or 3 doses depending on the type of vaccine.

Table 2:- Responses of the questions on knowledge questions on HPV vaccination (n=289).

Questions	**Frequency (%)**
1. Cervical cancer is normally caused by an infectious agent	
Yes	215 (74.39)
No	57 (19.72)
I don't know	17 (5.88)
2. Do you have Knowledge of the existence of HPV	
Yes	246 (85.12)
No	10 (3.46)
I don't know	33 (11.42)
3. HPV subtypes 16 and 18 are associated with cervical cancer	
Yes	246 (85.12)
No	7 (12.46)
I don't know	36 (2.42)
4. Gender recommended taking vaccine	
Male	1 (0.35)
Female	206 (71.28)
Both	82 (28.37)
5. Type of vaccine is most often used in KSA?	
9 valent	15 (5.19)
Bivalent	37 (17.3)
Quadrivalent	50 (64.71)
I don't know	187 (12.8)
6. How many doses of the HPV vaccine should be administered?	
2 or 3 doses depending on the type of vaccine	143 (49.48
4 doses for 9valent or 1 dose for Bivalent	5 (1.73)
Always 2 doses regardless of the type of vaccine	62 (21.45)
Always 3 doses regardless of the type of vaccine	9 (3.11)
I don't know	70 (24.22)
7. The scientifically proven complications of HPV vaccination include	
Pain at the site of vaccination	144 (49.83)
An anaphylactic reaction in children all	22 (7.61)
Autism, ADHD, and other central nervous system	1 (0.35)
All of the above	44 (15.22)
None of the above	78 (26.99)

Regarding attitude, table 3 shows the vast majority of them (87.89%) considered HPV infection a significant public health problem,while 9.34% did not consider it as a significant health problem and 2.77% did not have any idea about it. More than eighty-eight (88.58%) of the participants were of the opinion that they will encourage families and relatives to vaccinate their daughters against HPV and 11.42% will not. The positive attitude of the participants

was reflected by the agreement of 91.35% of the participants in acknowledging that it was important for women to receive the HPV vaccination while minority of them (8.65%) were neutral in their opinion. On the question that would the participants allow their own daughters to be vaccinated by HPV vaccine, 87.89% agreed but 4.84% and 7.27% disagreed and did not know respectively.

Table 3:- Responses on attitude of the participants towards HPV vaccination. (n=289).

Questions	Agree Frequency(%)	Disagree Frequency(%)	Neutral Frequency(%)
HPV infection is a significant public health problem	8 (2.77)	27 (9.34)	254 (87.8)
Could vaccination against a sexually transmitted disease encourage the early initiation of sexual activity	70 (24.22)	131 (45.33)	88 (30.45)
Encourage your relatives (family/friends) to vaccinate their daughters against HPV	256 (88.58)	33 (11.42)	00
I do not have the confidence on the safety of HPV vaccine	21(7.27)	190 (65.74)	78 (26.99)
It is important for the women to receive the HPV vaccine	264 (91.35)	00	25 (8.65)
Would you allow your daughters to be vaccinated by HPV vaccine	25487.89	217.27	144.84
Do you believe that most patients are not at risk of HPV infection?	33 (11.42)	158 (54.67)	98 (33.91)
Do you support HPV vaccination?	263 (91.0)	5 (1.73)	21 (7.27)
Should you discuss your patients 'sexual behavior prior to recommending HPV vaccination?	128 (44.29)	62 (21.45)	99(34.49)

More than seventy seven percent (77.5%) of the participants supported that HPV vaccination should be recommended for girls aged 12–15 years and (22.49%) are not recommending this age. More than Eighty percent 81.66% of the participants were in favor of recommending of HPV vaccination for girls aged 16–21 years while (18.34%) are not recommending this age group. Likewise, 69.9% of the participants wished to recommend HPV vaccination for women aged 21–26 years, and (30.1%) against vaccination in this age group. However,69.2% of the participants were against the recommendation of HPV vaccination to male but 30.8% were with male vaccinations demonstrated in table 4.

Table 4:- Showing the responses on the practice questionnaires (n=289).

Questions	Yes Frequency(%)	No Frequency(%)
Do you recommend HPV vaccination for girls aged 12–15 years?	224 (77.51)	65 (22.49)
Do you recommend HPV vaccination for girls aged 16–21 years?	236 (81.66)	53 (18.34)
Do you recommend HPV vaccination for women aged 21–26 years?	202 (69.9)	87(30.1)
Do you recommend HPV vaccination for your male patient?	89 (30.8)	200 (69.2)

The good knowledge about the HPV vaccination was more among the age group of 31-40 years of the participants than those 20-30 years, 41-50 years and 51 – 60 years but it was not statistically significant (44.27% vs. 37.8% vs.36.67% vs.40.0%,P= 0.54).However the knowledge about the HPV vaccination was significantly higher among the male participants than the female participants(47.1% vs.36.76% , P=0.048). Similarly the knowledge of the Saudi participants was significantly higher than their Non Saudi counterparts ((52.12% vs. 30%,P=0.034).Consultant family physician had significantly higher knowledge than those of specialist family physician, resident family physician and the general physician (44.44% vs. 41.37% vs.39.78% vs. 37.83%, p= 0.001). As years of practice increased the knowledge of the participants also increased but it was not statistically significant(37.5% for less than 5 years vs. 40.96 for 6-10 years vs. 44.44% for 11-15 years and vs. 50% for more than 15 years,P=0.26).The details of the association of knowledge score about HPV vaccination with the sociodemographic characteristics of the participants is shown in table 5.

Table 5:- Association of knowledge score about HPV vaccination with the sociodemographic characteristics of the participants. (n=289).

Variables	Good knowledge Frequency (%)	Poor knowledge Frequency (%)	P value
Age groups	48 (37.8)		0.54
20-30 years	55(44.27)	79(62.2)	
31-40 years	11(36.67)	68(55.28)	
41-50 years	6(40.0)	19(63.33)	
51-60 years		9(60.0)	
Sex			0.048
Male	72(47.1)	81(52.9)	
Female	50(36.76)	86(63.24)	
Nationality			0.034
Saudi	135(52.12)	124(47.88)	
Non Saudi	9(30.0)	21(70.0)	
Specialty			0.001
General physician	42(37.83)	69(62.17)	
Resident Family physician	37(39.78)	56(60.22)	
Specialist family physician	24(41.37)	34(58.63)	
Consult6ant family physician	12 (44.44)	15(55.56)	
Years of practice			0.26
<5 years	54(37.5)	90 (62.5)	
5-10 years	34(40.96)	49(59.04)	
11-20 years	24(44.44)	30(55.60)	
> 20 years	4(50.0)	4(50.0)	

The positive attitude towards the HPV vaccination was more among the participants with age group of 41-50 years and 51-60 years than those with 31-40 years and those with 20-30 years (53.33% vs.53.33% vs.45.26% vs.48.17%,P= 0.473).Likewise the positive attitude of the female participants was higher than their male counterpart but it was not statistically significant (53.33% vs. 50.98%, P=0.733). So also it was more among the non Saudi than the Saudi participants which was statistically insignificant(953.33% vs.50.96%,P=0.175).The positive attitude of the participants increased as the position increased.The family physician consultant had significantly higher positive attitude towards HPV vaccination as compared to those who were family physician specialist ,family physician resident and general physician (59.65% vs.51,47% vs.48,38% vs.48.64%,P=0.036).Similarly as the years of practice increased the good attitude of the participants towards the HPV vaccination also increased (41.65% vs.45.78% vs 59.52% vs.62.5%, P= 0.016)..The details of the association of attitude of the participants with their socio demographic charactericsare shown in table 6:

Table 6:- Association of socio demographic characteristics with the attitude of the participants towards HPV vaccination.(n=289).

Variables	Positive attitude Frequency (%)	Negative attitude Frequency(%)	P value
Age groups			0.473
20-30 years	66(48.17)	61(51.83)	
31-40 years	62(45.26)	55(54.74)	
41-50 years	16(53.33)	14(46.67)	
51-60 yerars	8(53.33)	7(46.67)	
Sex			0.733
Male	78(50.98)71(52.50)	75(49.04)	
Female		65(47.50)	
Nationality			0.175
Saudi	132(50.96)	127(49.04)	
Non Saudi	16(53.33)	14(46.67)	
Speciality			0.036

General physician	54(48.64)	57(51.36)	
Resident Family physician	45(48.38)	48(51.62)	
Specialist family physician	35(51.47)	33(48.53)	
Consult6ant family physician	16(59.65)	11(40.35)	
Years of practice			0.016
<5 years	60(41.66)	84(58.34	
5-10 years	38(45.78)	45(54.22)	
11-20 years	25(59.52)	17(40.48)	
> 20 years	5(62.5)	3(37.5)	

As age increased, the good practice towards HPV vaccination increased but it was not statistically significant. (39.06% vs.51.26% vs.66.66%,P= 0.962).Good practice towards the HPV vaccination was significantly more among the female participants than their male counterpart (55.14% vs.49.01%,P= 0.03).Similarly the good practice towards HPV vaccination was more prevalent among the Saudi than the non Saudi (54.83% vs. 50.0% ,P=0.018).The good practice towards HPV vaccination was also significantly increased as the position of the participants increased. The family physician consultant had better practice than the family physician specialist, family physician resident and general practitioner (66.66% Vs. 66.17 Vs.51.28% vs. 39.06, P=0.043). The participants who had higher years of experience had better practice towards HPV vaccination as the experience increased the practice was better (34.72% vs. 50.24% Vs. 60.24% Vs.75%,P=0.018).The details of the association between the socio demographic characteristics of the participants with the practice towards HPV vaccination is shown in table 7.

Table 7:- Association between the socio demographic characteristics of the participants with the practice towards HPV vaccination.(n=289).

Variables	**Good practice Frequency (%)**	**Poor practice Frequency (%)**	**P value**
Age groups			0.962
20-30 years	50(39.06)	78 (60.94)	
31-40 years	60 (51.28)	57 (48.72)	
41-50 years	20(66.66)	10(33.34)	
51-60 yerars	10(66.66)	5(33.34)	
Sex			0.03
Male	75(49.01)	78(50.99)	
Female	75(55.14)	61(44.86)	
Nationality			0.018
Saudi	142(54.83)	117(45.17)	
Non Saudi	15(50.0)	15(50.0)	
Specialty			0.043
General physician	50(44.64)	62(55.36)	
Resident Family physician	50(48.54)	53(51.46)	
Specialist family physician	45(66.17)	23(33.83)	
Consult6ant family physician	18(66.66)	9(33.34)	
Years of practice			0.018
<5 years	50 (34.72)	94 (65.28)	
5-10 years	50(60.24)	33(39.76)	
11-20 years	40(74.04)	14(25.96)	
> 20 years	6(75.0)	2(25.0)	

Discussion:

The purpose of this study was to assess health workers' knowledge and attitudes toward HPV vaccination in primary care in AlAhasa, as well as their relationship with participant socio-demographic characteristics. With 289 participants, the repose rate was greater than 75%. Years of practice was one of the elements that previous studies did not mention or assess, so we investigatethe effect of participants' years of practice on knowledge, practice, and attitude in our study.

Our study found that the majority of family physicians working in primary health care in Al Ahsa, Saudi Arabia, have an excellent level of knowledge with 246 (85.12%). When comparing male to female participants, our study found that the knowledge about the HPV vaccination was significantly higher among the male participants than the female participants(47.1% vs.36.76% , P=0.048). Coming to Agegroup there is no statistically difference in their score, with p value (0.54) . Significant difference was noticed between knowledge of family physician level ,Consultant family physician had significantly higher knowledge than those of specialist family physician, resident family physician and the general physician (44.44% vs. 41.37% vs.39.78% vs. 37.83%, p= 0.001).

Relevant cross sectional study done by N.Anfinan in Saudi Arabia,62% of participants with high knowledge about HPV vaccine , and there was relationship with age ,nationality(OR1.51 P value 0.003), level of practice (junior OR 1.67,P value 0.002 , resident OR 3.53 ,P value <0.001) .[1]J G pereira and his collages did a study in 2019 at western Amazon, found the corrected answer about knowledge of HPV vaccine is range from 83% to 91.7%, and there was no statistically difference between knowledge with age and gender (p value 0.08).[5]

An assessment of Italian health care workers knowledge[14], Median knowledge score was 69.2%, And higher knowledge scores for physician (P value <0.0001) , GP and pediatrician(P value 0.0002).(21) Another finding in cross sectional study (M Mohamed and her colleges) about 45% of health care providers have poor to fair knowledge about HPV vaccine. [10]

The attitude of physicians in our study towards HPV-vaccine was unlike a similar study that was done in Egypt. The study in Egypt showed a correlation between age and professional level with attitude and knowledge toward Pap smear test and HPV vaccine [10]. In our current study, attitude towards HPV- vaccine was not significantly different among different age groups, nationality and genders.

As found in the previous study in Egypt, our study showed that years of experience significantly affected the attitude towards HPV vaccine.[10] In our current study ,As the years of practice increased the good attitude of the participants towards the HPV vaccination also increased (41.65% vs.45.78% vs 59.52% vs.62.5%, P= 0.016)..

In our study, most of the physicians support HPV-vaccine, and (91.35%) believe that it is important for women to receive the HPV vaccine. As regards to HPV-vaccine recommendation to physicians' daughters, similarly to a relevant study done in Turkey [15], our study showed that the majority of physicians (87%) would allow their daughters to be given the vaccine. Both studies are coming from areas with Islamic background, which might make dealing with a topic related to sexual health more sensitive and challenging.

In our study, there is no significant differences in practice in relation to age. However, there is a significant difference between Saudi and non-Saudi regarding HPV vaccine practice. In addition, we found there is a significant relationship between attitude and practice. In addition to, there is a strong relation between knowledge and practice, which means physicians with higher knowledge perform better practice regarding the HPV vaccine. However, a study conducted by Almazrou S, Saddik B and Jradi H in 2018 among Saudi physicians found that there is a significant relationship between years of practice and knowledge. [3]

The participants completed an online questionnaire as part of this study. As a result, we received a poor response because we were unable to reach the target sample size. Furthermore, only physicians working in government-run PHCs were included in this study, while those working in other sectors were excluded. This study has further limitation due to it did not include other health care providers in PHC. Furthermore, it only includes primary health care physicians who work in Saudi Arabia's AlAhasa region; those who work in other parts of the country were excluded. In addition, the questionnaire used in this study covers only simple basic knowledge about the HPV vaccine, which disables the ability to differentiate between the level of knowledge between the participants.

Conclusion:

Primary health care physicians working in PHC in AlAhasa, Saudi Arabia have basic knowledge of the HPV vaccine, with a preference for consultants, followed by specialists, and finally residents. Improving physicians' knowledge will have a significant impact on their attitudes and practices regarding the HPV vaccine. As a result, patients will be more aware of the HPV vaccine. As a result, the number of people who have been vaccinated against HPV will rise.

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