Mansoura Nursing Journal (MNJ) Vol. 9. No. 2 – 2022
Print ISSN: 2735 – 4121 Online ISSN : 2735 – 413X

Original Article

Assessment of University Student's Attitude towards Human Papilloma Virus Infection, Vaccination and their Vaccine Acceptability

Hanaa El-Sayed El-Rifai Zakzook1, Shaimaa Fouad Mohammed Hegazi2 and Hanan El-Sayed Mohamed El-Sayed3

Nursing Specialist- at Samanood General Hospital 1, Lecturer of Woman's Health and Midwifery Nursing 2,

Professor of Woman's Health and Midwifery Nursing3, Faculty of Nursing, Mansoura University, Egypt

1.ABSTRACT

Background: Most cervical cancers are caused by a long-term infection with high-risk HPV types. HPV infection is one of the most common sexually transmitted infections in the world. HPV vaccines work best when given before HPV infection. **Aim**: The study aimed to assess of university student's attitude towards HPV infection, vaccination and their vaccine acceptability. **Design**: The researchers used a descriptive cross sectional study design. **Setting**: This research was carried out at Mansoura University's faculties in Mansoura, Dakahlia Governorate, Egypt. Mansoura University has 18 faculties .**Sample type**: A convenient sample was utilized. **Study Sample**: This study sample included 323 male & female university students who were chosen from different faculties. **Tools**: Three tools were used; a structured interview questionnaire, student's attitude Modified Likert's Scale about human papilloma virus infection& its vaccination and HPV vaccination acceptability, barriers and causes of refuse. **Results**: Most (93.5%) of students had negative attitude while, (6.5%) of them had a favorable opinion of HPV infection and vaccination, nearly one quarter (23.5%) of them accepted to take the vaccine while, more than three quarters (76.5%) of them refused HPV vaccination. The total attitude score and total acceptability score had a highly statistically significant relationship (p0.001). **Conclusion**: University Students had negative attitude towards HPV infection & vaccination and more than three quarters of them refused HPV vaccination. **Recommendation:** Providing students with health education to improve their attitude and increase their desire to receive the HPV vaccine as well as their knowledge of HPV infection and vaccination.

Keywords: University students, attitude, acceptability, human papilloma virus infection, human papilloma virus vaccination.

2.Introduction:

Cervical cancer is the third leading cause of cancer in women worldwide. Cervical cancer is the leading cause of death in developing countries. The 14th most common cancer in Egyptian women is cervical cancer. Most cervical cancers are caused by a long-term infection with the high-risk HPV **(Drozd, Duszewska, Majewski& Smolarczyk, 2022).** The most common sexually transmitted infection is the human papilloma virus (HPV). There are over 100 different types of HPV, with some causing more complications than others. 15 types are classified as carcinogenic or high risk (16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 68, 73, 82) and 12 types are classified as low risk (6, 11, 40, 42, 43, 44, 54, 61, 70, 72, 81& CP6108) in the epidemiological classification of cervical cancer associated HPV types **(Dean, Fenkl, Garcia, Jeffries, Madhivanan& Mccoy et al., 2021)**.

Low risk human papilloma virus types cannot cause cervical cancer but cause genital warts that are very common and highly infectious. High-risk HPV types are strongly linked to cervical cancer. HPV 16 and HPV 18 are the two most common high-risk HPV types. They are responsible for 70% of all cervical cancer cases worldwide **(Bray, Ferlay, Jemal, Laversanne, Siegel, Soerjomataram& Sung et al., 2021).**

Human papilloma virus vaccines work best when given before HPV exposure. Cervarix (a bivalent vaccine against HPV 6, 11, 16, and 18), Gardasil (a tetravalent vaccine against HPV 16, 11, 16, and 18), and Gardasil 9 are three commercially available prophylactic vaccines (9 valent vaccine against HPV 6, 11, 16, 18, 31, 33, 45, 52 and 58) **(Abd- Elhady, Araby& Atitt-Allah, 2019)**.

It is recommended to have a positive attitude toward HPV infection, vaccination, and its link to cervical cancer through reliable sources. This can be beneficial to students on an individual level, in addition to the potentially positive role they can play in community education. Using proper education and a positive attitude toward HPV infection and vaccination to counter vaccine conspiracy beliefs can help evaluate the role of

HPV vaccines in cancer prevention **(Abdaljaleel, Al-Abbadi, Al-Mahzoum, Areej, Assaf& Eid et al., 2021)**.

Nurses are responsible for providing health education and so play a vital role in avoiding HPV infection and cervical cancer and organizing educational programs and conferences to change attitude and raise awareness about HPV infection and encourage all students to get preventative immunizations, including HPV vaccine. The effectiveness of the human papilloma virus (HPV) vaccine for students is dependent not only on the vaccine's efficacy, but also, to a large extent, on the students' awareness of the virus and acceptance of the vaccine **(Abd-Elhady et al. 2019 ; Bal-Yılmaz, & Koniak-Gri 2018).**

Significance of study

Cervical cancer is the third most common cancer in the female reproductive system. Every year, approximately half a million new cases of cervical cancer are diagnosed worldwide, with an estimated 85% of these cases occurring in developing countries **(Bates, Hicks, Hull, Kibiki, Makhafola& Mbele et al., 2020).** Cervical cancer causes about 500,000 new cases and 250,000 deaths worldwide each year. Human papillomavirus infection causes almost all cervical cancer cases (99 %) **(Cai, Ruan, Zeng& Zhang, 2021).**

Human papilloma virus infection was responsible for 561,200 new cancer cases worldwide (5.2% of all new cancer cases), HPV is now one of the most common cancer causes. Furthermore, developing countries were home to 84 % of new cervical cancer, compared to around 50 % of all new cancers **(Dean et al., 2021).** The human papilloma virus infects 25.76 million Egyptian women aged 15 and up, putting them at risk of cervical cancer. The number of cervical cancer cases at the Oncology Center at Mansoura University was 27 in 2018 **(Kehoe, Kengsakul& Wilailak, 2021).**

Individuals who have not been vaccinated against the HPV face a greater risk of developing malignancies linked to the virus in the future. Vaccination against HPV is an effective way to prevent cervical cancer in its early stages, and in a number of countries, it has the potential to reduce the prevalence of cervical cancer (**Bray et al., 2021).**

Students should be educated before beginning their sexual lives because they are the group most susceptible to HPV infection. For over a decade, two safe and effective vaccines have been used to prevent cervical cancer. As a result, adequate college education and effective practice are required to improve students' attitude toward HPV infection and vaccination. Furthermore, university students could share this information As a result, adequate college education and efficient practice are required to improve student's attitude toward HPV infection and vaccination. **(Armitage, Doroshow, Kastan, Niederhuber& Tepper, 2022).** Because there are few studies on university students' attitudes and acceptability of human papillomavirus infection and vaccination so this study was conducted.

Aim of the Study

The study aimed to assess of university students attitude towards human papilloma virus infection and vaccination and their vaccine acceptability.

Research questions:

- What is the attitude of human papilloma virus infection& vaccination among students at Mansoura University?
- Does Mansoura university students accept human papilloma virus vaccination?

3. SUBJECTS AND METHODSStudy Design:

The study was carried out using a descriptive cross-sectional study design. Descriptive studies are observational studies in which disease patterns are described in relation to variables such as person, location, and time.

Study Setting:

The research was carried out at Mansoura University's faculties. Al Dakahlia Governorate, Egypt, Delta Region, Mansoura University has 18 faculties. University faculties such as (Engineering, Medicine, Agriculture, Science Education, Dentistry, Pharmacy, Commerce, Law, Specific Education, Veterinary, Nursing, Education for Early Childhood, Physical Education, Computer and Information, Tourism and Hotels and Fine Arts).

Sample type:

A convenient sample was used.

Study sample:

This study included 323 male & female university students chosen from different faculties.

Sample size calculation:

Based on data from literature **(Abd- Elhady et al., 2019)** to assess effect of educational

intervention on knowledge and attitudes regarding human papilloma virus infection and its vaccination among nursing students. Considering level of significance of 5% and power of study of 80% the sample size was estimated according to the following: Sample size = $[(Z_{1-\alpha/2})^2.P(1-P)]/d^2$ Where, $Z_{1-\alpha/2}$ = is the standard normal variate, at 5% type 1 error ($p<0.05$) it is 1.96. P = the expected proportion in population based on previous studies. d = absolute error or precision. So, Sample size = $[(1.96)^2.(0.84).(1-0.84]/(0.04)^2$ =322.7 Based on the above formula, the sample size required for the study is 323.

Tools of Data collection:

Three tools were used to collect data

Tool I: Structured interview questionnaire: This tool was developed by the researchers after reviewing the related literatures. It included general characteristics of students: such as age, residence, marital status and faculty name …etc.

Tool II: **Student's attitude Modified Likert's Scale about human papilloma virus infection& its vaccination:** This tool was adopted from **Jeyachelvi, Juwita & Norwati, (2016)** to assess the attitude of the participants in the study toward HPV infection and vaccination , It had 20 statements on a three-point likert scale, such as the Pap smear test is an important tool for detecting HPV and cervical cancer early, Any married woman over the age of 21 should be concerned about cervical cancer, and HPV vaccination is highly effective and safe.....…..etc. Each statement was given a score of 2 for (agree), 1 for (occasionally), and 0 for (disagree). The total attitude score was divided into two categories: positive attitude (25%), and negative attitude (75%).

Tool III: HPV vaccination acceptability, arriers and causes of refusing:

The researchers developed this tool after reviewing the related literature **Artes, Lopez, Panizo & Sanchez, (2020)** to assess university students' acceptability and obstacles to the HPV vaccine. It consisted of 18 questions as willing to receive the HPV vaccine to protect them from infection, agree to pay for the vaccination, vaccine too expensive, too late/already sexually active….etc. The students responsed 1 for (yes) & zero for (no).

Validity of the tools:

The content validity of the tools was reviewed by a panel of three experts in Woman's Health & Midwifery Nursing specialty before using it to ensure that questions were consistently conveyed and carried the anticipated meaning for which they were prepared, with modifications made to simplify meaning and rearrange the question sequence.

Reliability of the tools:

Cronbach alpha coefficients for internal consistency of student's attitude towards human papilloma virus infection& vaccination was (0.893), while it was (0.884) for student's acceptability towards human papilloma virus vaccination, barriers and causes of refuse, hence the questionnaires were discovered to be extremely trustworthy.

Data collection process:

- From the beginning of March 2021 to the end of May 2021, this study was conducted in the above-mentioned setting.
- The research was approved by Mansoura University's Faculty of Nursing's Research Ethics Committee.
- The head of the Woman's Health and Midwifery Nursing department gave his official approval.
- The researchers prepared and designed data collection tools after reviewing relevant literature.
- To perform the study, the researcher created instruments and gathered scientific data.
- The researcher came to the study setting three times a week (Saturday, Monday, and Thursday) from 9:00 a.m. to 1:00 p.m. till the sample size was computed.
- The researcher introduced herself to the students and obtained their oral consent to participate in the study after explaining the study's purpose.
- Students were instructed to fill out the questionnaire in order, beginning with the faculties of Engineering, Medicine, Agriculture, Science Education, Dentistry, Pharmacy, Commerce, Law, Specific Education, Veterinary, Nursing, Education for Early Childhood, Physical Education, Computer and Information, Tourism and Hotels and Fine Arts.
- The researcher gathered socio-demographic information from students and their attitude toward HPV infection and vaccination was assessed, as well as their willingness to accept it.

- The researcher repeated this method until the predetermined sample was completed.
- Statistical program for social sciences (SPSS) version 21 was used to store, categorize, code, computerize, tabulate, and analyze the acquired data.

Ethical Consideration:

The research was approved by Mansoura University's Faculty of Nursing's Research Ethics Committee. After the goal and approach of the study were clarified, every student engaged in the study gave their oral agreement. The confidentiality of the obtained data was promised to all students. In addition, participants were given the option of withdrawing from the study.

Data analysis:

SPSS for Windows version 20.0 was used to conduct all statistical analyses (SPSS, Chicago, IL). The mean and standard deviation of all continuous data were calculated (SD). Numbers and percentages were used to express categorical data. When comparing variables with categorical data, the Chi-square test was used.

Pilot Study:

Prior to collecting data, a pilot study was conducted on 10% of students (33 students) to assess the ease of use, applicability, clarity and applicability of these tools. Based on the pilot study's findings, the necessary adjustments as simplify the meaning of some statement were done. The pilot study was not included in the research sample.

4. RESULTS

Table (1): Demonstrates that more than half of the sample (51%) was over the age of 20 with a mean (20.3±1.0). About (58.8%) of them were females. Less than two thirds of them (61.9%) were from rural settings. The majority (89.8%) of them were not married.

Figure 1. Shows that, (13.9%) of the studied sample heard about HPV infection and its vaccination.

Table (2): Shows that, few percentage (13.9%, 6.8%, 6.2%, 10.8%, 10.8%& 8.7%, respectively) of the studied sample agreed that They'd like to discuss about HPV, The pap smear is a crucial technique for early identification of cervical cancer and lowering the risk of dying from it, Any married woman should get her cervical screening, and one of the reasons why women do not seek it out is fear of the examination's results. Less than half (44.9%& 42.1%, respectively) of them disagreed that cervical screening is not linked to symptoms or issues and a pap smear is a simple procedure that takes only a few minutes and is painless.

Table (3): Shows that, (7.4%& 6.8%, respectively) of the studied sample agreed that HPV vaccination is highly effective and safe, and it will reduce the number of pap smear tests required. More than half (51.1%) of them sometimes agreed that Following vaccination with the HPV vaccine, the number of pap smear tests is reduced. Furthermore, more than half (59.8%, 57.9%, 64.7%, 59.8%& 55.4%, respectively) of them disagreed that Getting the HPV vaccine is preferable to having a pap smear test every year, this vaccine protects against cervical cancer, vaccination should be advocated among adolescents, teens should be provided with education about sex & HPV vaccination is recommended for both males and females. Less than half (45.5%& 40.9%, respectively) of them disagreed with receiving HPV vaccination The HPV vaccine has been shown to enhance risky sexual behaviors in adolescents and early sexual activity beginning should be encouraged.

Figure 2. Shows that, (6.5%) of the studied sample had positive attitude while, most (93.5%) of them had negative attitude towards human papilloma infection & vaccination.

Figure 3. Shows that, nearly one quarter (23.5%) of the studied sample accepted to take the vaccine while, more than three quarters (76.5%) of them refused HPV vaccination.

Table (4): Shows that, around three-quarters of the participants in the study agreed to receive the HPV vaccine, agreed to take the vaccine if it is free, agreed to take it at a certain age (75.0%, 76.3%& 73.7% respectively). Otherwise more than two thirds (67.1%) of them disagreed to pay for the vaccination.

Table (5): Shows that, less than one quarter (18.2%, 16.6%, 15.9%, 14.2%, 12.1%, 12.1%& 12.6% respectively) of the studied sample refused to take the vaccine because it is very expensive, afraid to take it, they thought it increases the risk of cervical cancer, increases the risk of HPV infection, it's too late because they are sexually active, they didn't prefer to have too many vaccines and it is inconvenient for them to have three injections within six months. About (10.1%, 10.1& 9.3% respectively) of them refused to take it because they didn't have time to be vaccinated, not accept any vaccine and thought they are very young.

Table (6): Shows that, less than one quarter (22.4%) of the studied sample who had positive attitude accepted to take the HPV vaccine. The total attitude score and the total acceptability score had a highly statistically significant relationship ($p<0.001$).

Table (1): The study sample was distributed according to their general characteristics

Items	n=323	%
Age (Years)		
≤ 20	156	48.3
>20	167	51.7
Mean ±SD	20.3 ±1.0	
Sex		
Female	190	58.8
Male	133	41.2
Residence		
Rural	200	61.9
Urban	123	38.1
Marital status		
Single	290	89.8
Married	33	10.2

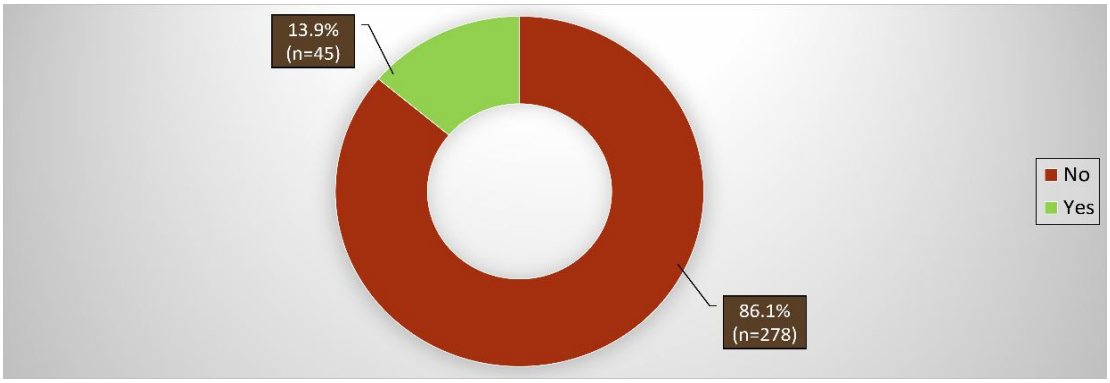

Figure 1. Heard about HPV infection & its vaccination

Table (2): University students' attitude toward HPV infection was distributed across the study sample. (n=323)

Items	Agree		Sometimes		Disagree	
	n	%	n	%	n	%
- University students' like to discuss sexually transmitted infections, such as HPV.	45	13.9	75	23.2	203	62.8
- A Pap smear is a valuable tool for early detection of HPV and cervical cancer.	22	6.8	96	29.7	205	63.5
- Cervical cancer mortality is reduced when Pap smears are performed.	20	6.2	115	35.6	188	58.2
- Because of the lack of early detection, non-Pap smear can result in major health complications.	35	10.8	90	27.9	198	61.3
- Any married woman over the age of 21 should get a cervical screening.	35	10.8	78	24.1	210	65.0
- Cervical screening is unrelated to symptom or problem reports.	85	26.3	93	28.8	145	44.9
- Fear of the examination's results is one of the reasons why women avoid cervical screening.	28	8.7	125	38.7	170	52.6
- A Pap smear is a quick and painless procedure that takes only a few minutes.	63	19.5	124	38.4	136	42.1

Table (3): Frequency distribution of the studied sample their attitude towards HPV vaccination (n=323)

Items	Agree		Sometimes		Disagree	
	n	%	n	%	n	%
- Vaccination against the human papilloma virus is both effective and safe.	24	7.4	93	28.8	206	63.8
- HPV vaccination will lower the number of Pap smear tests required.	22	6.8	165	51.1	136	42.1
- Getting the HPV vaccine is preferable to having a Pap smear examination every year	33	10.2	97	30.0	193	59.8
- Cervical cancer is prevented by HPV vaccination.	20	6.2	116	35.9	187	57.9
- Only if the HPV vaccine meets the Ministry of Health's vaccination schedule. should it be included in immunization programs in Egypt	156	48.3	90	27.9	77	23.8
- HPV vaccine is costly& the Ministry of Health should make it available for free.	134	41.5	99	30.7	90	27.9
- Adolescents should be urged to get HPV vaccines.	33	10.2	81	25.1	209	64.7
- Prior to HPV vaccination, teens should get sex education.	39	12.1	91	28.2	193	59.8
- Despite the paucity of compliance, both male and female should be vaccinated against HPV.	49	15.2	95	29.4	179	55.4
- University students' want to get vaccinated against the HPV virus.	64	19.8	112	34.7	147	45.5
- HPV vaccination has been shown to enhance risky sexual behaviors in adolescents and to encourage early sexual activity.	83	25.7	108	33.4	132	40.9

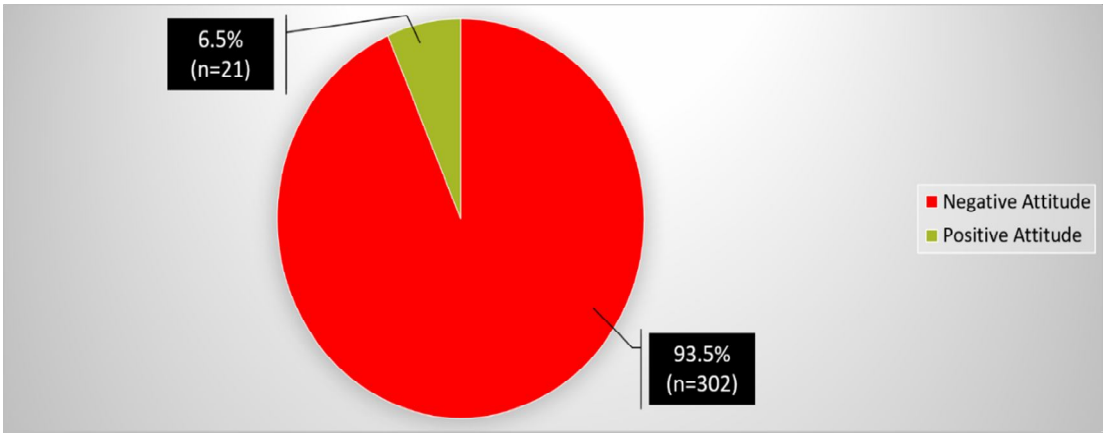

Figure 2. Overall attitude score of the study group toward HPV infection and vaccination.

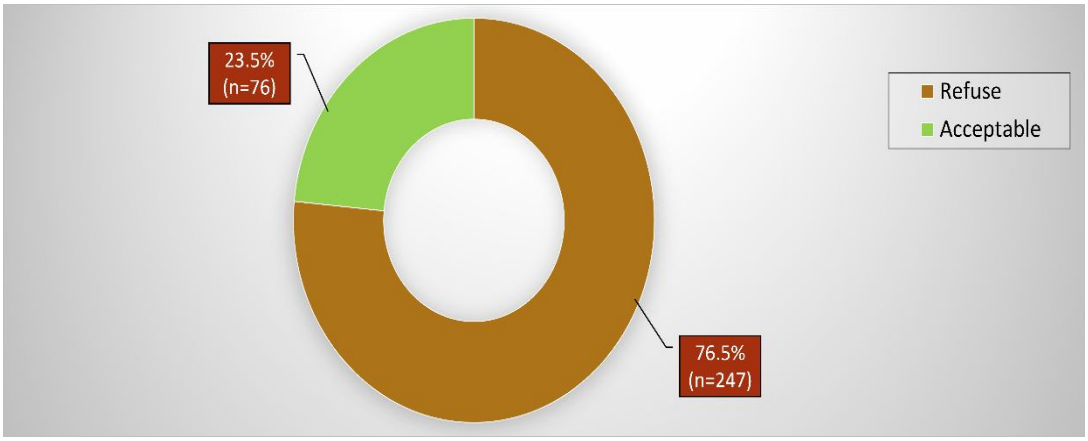

Figure 3. Total student's acceptability score for HPV vaccination

Table (4): Acceptability of the studied sample frequency distribution according to HPV vaccination (n=76)

Items	Yes		No	
	n	%	n	%
- Willing to get the HPV vaccine to protect against HPV infection.	57	75.0	19	25.0
- Agree to pay for the vaccination	25	32.9	51	67.1
- Agree to take the vaccine if it is free	58	76.3	18	23.4
- Agree to take the vaccine at a certain age	56	73.7	20	26.3

Table (5): Frequency distribution of the main barriers and causes of refuse vaccination among the students (n=247)

Items	n	%
- Too expensive	45	18.2
- Afraid to take vaccine	41	16.6
- University students think it increases risk of cervical cancer	37	15.9
- University students think it increases risk of HPV infection	35	14.2
- Too late, University student is sexually active	30	12.1
- University students do not prefer to have too many vaccines	30	12.1
- University students' do not accept any vaccinations	32	10.1
- University students' do not have time to be vaccinated	25	10.1
- Having three injections within six months is inconvenience for me	31	12.6
- University students are very young	23	9.3
- Not yet relevant	28	11.3

Table (6): Association between total attitude score and total acceptability score towards HPV infection and vaccination.

Total Attitude score	Total Acceptability score					
	Refuse		Accept		Significant test	
	n=247	%	n=76	%	X^2	P
Negative (302)	243	98.4	59	77.6		
Positive (21)	4	1.6	17	22.4	41.161	<0.001**

**Highly statistically significant (p<0.001)

5. Discussion

The present study aimed to assess of university students attitude towards human papilloma virus infection and vaccination and their vaccine acceptability. This aim was achieved because the findings of the current study, which revealed that that most of the participants had negative attitude towards HPV infection& vaccination and more than three quarters of them refused HPV vaccination. Therefore, the questions of the present study which are; what is attitude of HPV infection& vaccination among students at Mansoura university and does Mansoura university students accept HPV vaccination were answered.

The results of this study revealed that the majority of the participants had a negative attitude towards HPV infection and vaccination, this can be explained as, lack of knowledge level about HPV infection& vaccination affects their attitude towards it. Consistent with the present study findings, Abdaljaleel et al. (2021) they reported that the majority of participants had negative attitude towards HPV vaccine coverage among the study participants. Also, in accordance with the present study findings, Al-abbadi, Al-Azzam, Ali, Alsous, Al-Obaidi& Hussain et al. (2021) they assessed knowledge and awareness about HPV infection and its vaccination among women in Arab communities. They reported that most of the study subjects had negative attitude towards HPV vaccine. This might be due to inadequate information about HPV vaccination, side effects and the high cost of the vaccine.

In agreement with the present study findings, a study conducted by Forster, Marlow, Waller& Williams (2018) they assessed attitude towards HPV vaccination of vaccinated and unvaccinated girls aged 17–18 years. They discovered that over half of the participants had a negative attitude about HPV vaccination.

While, in disagreement with the present findings, Jin Lee, Jin, Ju Lee, Kim& Lim Lee et al. (2022) they discovered that more than half of the students were positive about HPV infection and vaccination. This could be due to these factors (sexual experience and genital warts knowledge) Influencing positive attitude toward HPV infection and vaccination plans. Also, a study conducted by Phaild, Schutze& Wijayanti (2021) they assessed parents' attitude, belief and uptake of the school-based HPV vaccination program in Jakarta&

Indonesia. They found that nearly three quarters of the studied sample had a favorable attitude towards the HPV vaccine. This could be due to the examined factors (perceived behavior, subjective norms) influencing parents' decisions to allow their daughters to receive free HPV vaccine at school.

Also, the present study findings contradict with, Naz, Perez, Rosberger, Shapiro& Tatar et al. (2017) they reported that more than half of students had positive attitude towards HPV vaccine among college students. This could be because the study participants were medical students who had a good understanding of vaccinations in general and their importance in disease prevention. Moreover, in disagreement with the present study findings, Abdulkarim, Alkhenizan, Alshmassi, Farooqi, Hussain& McWalter et al. (2016) they revealed that more than half of participants had positive attitude towards HPV vaccine among young women in Saudi Arabia. This might be due to it had been provided free.

Additionally, Chiang, Wong, Yeung, Choi, Fok& Mak et al. (2016) They studied the attitude, acceptance, and knowledge of HPV vaccination among Hong Kong university students. They revealed that the majority of adolescents were supportive of the HPV vaccine.This could be due to the availability of primary sources of HPV vaccination information for adolescents in their schools and from health experts. Moreover, in contrast to the findings of the current study, Jeyachelvi et al. (2016) they illustrated that the vast majority of participants had positive attitude towards HPV vaccination, this might be due to they believed the vaccine is safe.

The current study findings revealed that nearly one quarter of the participants accepted to take the HPV vaccination, while, more than three quarters of them refused it, this might be due to many factors such as it is very expensive, afraid to take it, they thought it increases the risk of cervical cancer, increases risk of HPV infection, they didn't prefer to have too many vaccines and it is inconvenient for them to have three injections within six months. In agreement with the findings of the current study, Baharoon, Farsi, Jiffri, Marzouki, Merdad & Merdad, (2021) they displayed that less than half of the studied participants had interested in receiving the HPV vaccine. In accordance with the present study findings, Di, Liu & Tao (2020) they revealed that nearly one quarter of students accepted to take the vaccine.

While, in disagreement with the present study findings, a study conducted by Batmunkh, Dalmau, Khorolsuren, Munkhsaikhan, Namjil & Surenjav, (2020) they assessed In China, The vaccination uptake and willingness to receive the vaccine among female college students. They discovered that more than half of the participants in the study agreed to receive the vaccine. This could be due to the influence of HPV vaccine knowledge and perceptions on vaccine acceptance. Also, Amicizia, Ansaldi, Bagnasco, Costantino, Durando& Icardi et al. (2020) they reported that more than three quarters strongly agreed to have their own child vaccinated. This can be explained by the fact that they had a higher level of knowledge about HPV infection and vaccination, so they were more willing to accept the vaccine.

Also, the present study findings contradict with, Artes et al. (2020) they evaluated HPV knowledge and vaccine acceptance among European adolescents. They discovered that only about a quarter of the participants in the study refused to receive the vaccine. This might be due to the main reasons for vaccination adoption were a lack of adequate information and safety concerns. Additionally, Gamaoun (2018) who found that the majority of participants across all demographics had high levels of HPV vaccine acceptability. This might be due to availability of HPV vaccine for free.

Moreover, in contrast with the present study findings, Grandahl, Hedin, Neveus, Oscarsson, Rosenblad& Tydenet al. (2017) study entitled "accept or decline at the start of Sweden's national school-based vaccination program, a pilot study of HPV vaccination was conducted". They concluded that less than one quarter of adolescents refused to take the vaccine, this might be due to safety concerns about HPV vaccination. Also, Chiang et al. (2016) they revealed that more than three quarters of the participants get the vaccination, this might be due to they were aware of it's protection against both cervical cancer and genital warts. Additionally, a study conducted by Gualano, Mussa, Stillo & Zotti, (2016) they investigated the disparities in HPV knowledge and behavior between vaccinated and unvaccinated girls. They revealed that most of girls corroborated for HPV vaccination.

The results of this study revealed that there was a highly statistically significant relationship between the total attitude score and total acceptability score of the studied sample as less than one quarter of students who had positive attitude towards HPV infection& vaccination accepted to take the vaccine. In agreement with the findings of the current study, Adesina, Saka, Isiaka,

Adesiyun, Gobir& Olarinoye et al. (2018) they reported a significant correlation between positive attitude towards HPV infection& vaccination and willing regarding HPV vaccination, this might be due to good knowledge of HPV infection& vaccination.

While, in disagreement with the current study findings, Jin Lee et al. (2022) they revealed that there were no significant association between positive attitude and vaccination intention towards HPV. This might be due to this factors (sexual experience and genital wart awareness) influencing positive attitude about HPV infection and HPV vaccination intention.

Therefore, assessment of university student' attitude towards HPV infection& vaccination and improving it are key factor for encouraging them to consent to vaccination, thus preventing the risk of infection& cervical cancer.

6. CONCLUSION

Most of students had negative attitude about HPV infection and vaccination, nearly one quarter of them accepted to take the vaccine, while, more than three quarters of them refused HPV vaccination. The total attitude score and total acceptability score had a highly statistically significant relationship. The results answered of the present study questions.

7. RECOMMENDATIONS

- Organizing educational programs and conferences to improve attitude of university students regarding HPV infection and vaccination.
- Providing university students with health education to improve university students' attitudes and enhance their motivation to receive the HPV vaccine by providing a thorough explanation of HPV infection and vaccination.
- Educational sessions before marriage, each male and female should be vaccinated against HPV.

Further studies:

- Effect of educational session regarding HPV infection and vaccination on student attitude.
- Developing an adolescent vaccination program to reduce the incidence of HPV related cervical cancer and genital warts.

8.Acknowledgements

The authors wish to acknowledge every student who participated in this study**.**

9.Conflicts of Interests

Authors observed that there was no disagreement on this study.

10.REFERENCES

Abd- Elhady R, Araby O & Atitt-Allah N, (2019). Effect of educational intervention on knowledge and attitudes regarding human Papilloma virus infection and its vaccination among nursing students. American journal of nursing research, 7(4) 453-464. https://doi.org/10.12691/ajnr-7-4-7.

Abdaljaleel M, Al-Mahzoum K, Areej M, Assaf A, Eid H, Sallam M& Mahafzah A, (2021). Attitude towards HPV vaccination and the intention to get vaccinated among female university students in health schools in Jordan. Vaccines (Basel). 9(12) 1432. https://doi.org/10.3390/vaccines9121432.

Abdulkarim A, Alkhenizan A, Alshmassi A, Farooqi S, Hussain A, McWalter P& Qazi N, (2016). Attitudes and perceptions towards HPV vaccination among young women in Saudi Arabia. J family community med 23(3)145–50. https://doi.org/10.4103/2230-8229.189107.

Adesina K, Saka A, Isiaka S, Adesiyun O, Gobir A, Olarinoye A& Ezeoke G, (2018). Knowledge, practice and acceptability of HPV vaccine by mothers of adolescent girls in Ilorin, Nigeria. Sudan journal of medical sciences (SJMS) 13(1) 33-49. https://doi.org/10.18502/sjms.v13i1.1687

Al-abbadi E, Al-Azzam S, Ali A, Alsous M, Al-Obaidi H, Hussain Z & Jirjees F, (2021). Knowledge and awareness about human papillomavirus infection and its vaccination among women in Arab communities Scientific Reports volume 11(4) 786-794. https://doi.org/10.1038/s41598-020-80834-9.

Amicizia D, Ansaldi F, Bagnasco A, Costantino C, Durando P, Icardi G, Silverio B, Sticchi L, Tafuri S, Trucchi C& Varlese F, (2020). Assessment of knowledge, attitudes, and propensity towards HPV vaccine of young adult students in Italy. Vaccines (Basel) 8(1) 74. https://doi.org/10.3390/vaccines8010074

Armitage J, Doroshow J, Kastan M, Niederhuber J& Tepper J, (2022). Abeloff's clinical Oncology, 6th Edition Elsevier Inc. All rights reserved 8(6)1468-1480**.**

Artes M, Lopez N, Panizo M, & Sanchez M, (2020). HPV knowledge and vaccine acceptance among European adolescents and their parents. Public health reviews 41(10). https://doi.org/10.1186/s40985-020-00126-5**.**

Batmunkh T, Dalmau M, Khorolsuren T, Munkhsaikhan M, Namjil N& Surenjav U, (2020). A single dose of quadrivalent human papillomavirus (HPV) vaccine is immunogenic and reduces HPV detection rates in young women in Mongolia, six years after vaccination. Vaccine 38(27) 4316-4324. https://doi.org/10.1016/j.vaccine.2020.04.041.

Baharoon A, Farsi N, Jiffri A, Marzouki H, Merdad L& Merdad M, (2021). Human papilloma virus knowledgye and vaccine acceptability among male medical students in saudi Arabic. Hum vaccin immunother 17(7) 1968-1974. https://doi.org/10.1080/21645515.2020.1856597.

Bates D, Hicks C, Hull R, Kibiki G, Makhafola T, Mbele M, Mehrotra R, Reis R& Wangs S, (2020). Cervical cancer in low and middle-income countries. Oncology letters 20(3) 2058-2074. https://doi.org/10.3892/ol.2020.11754.

Bray F, Ferlay J, Jemal A, Laversanne M, Siegel R, Soerjomataram I& Sung H, (2021). Global cancer statistics, globocan estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA cancer J clin 71(3)209–49. https://doi.org/10.3322/caac.21660.

Cai W, Ruan W, Zeng Q& Zhang X, (2021). Trends of cervical cancer at global, regional and national level. BMC Public Health 21(4) 894-887. https://doi.org/10.1186/s12889-021-10907-5**.**

Chiang V, Wong H, Yeung P, Choi Y, Fok M, Mak O, Wong K, Wong S, Wong Y& Wong E, (2016). Attitude, acceptability and knowledge of HPV vaccination among local university students in Hong Kong. J environ res public health 13(5) 486. https://doi.org/10.3390/ijerph13050486**.**

Dean M, Fenkl E, Garcia A, Jeffries A, Madhivanan P, Mccoy V, Sague C& Toma D, (2021). Cervical visual inspection with acetic acid and oncogenic human papillomavirus screening in rural indigenous Guatemalan women Int. J. Environ. Res. public health 18(23) 12406. https://doi.org/10.3390/ijerph182312406.

Di N, Liu Y& Tao X, (2020). Knowledge, practice and attitude towards HPV vaccination among college students in Beijing, China. hum vaccines immunother 21(1)116–23. https://doi.org/10.1080/21645515.2019.1638727**.**

Drozd S, Duszewska A, Majewski S& Smolarczyk K, (2022). Parents' knowledge and attitude towards HPV and HPV vaccination in Poland. Vaccines (basel) 10(2) 228. https://doi.org/10.3390/vaccines10020228.

Forster A, Marlow L, Waller J& Williams K, (2018). Attitude towards human papilloma virus vaccination a qualitative study of vaccinated and unvaccinated girls aged 17-18 years journal of family planning and reproductive health care37(1) 22-5.

Gamaoun R, (2018). Knowledge, awareness and acceptability of anti-HPV vaccine in the Arab states of the Middle East and North Africa region a systematic review. East mediterr health J. 24(6) 538–548. https://doi.org/10.26719/2018.24.6.538.

Grandahl M, Hedin E, Neveus T, Oscarsson M, Rosenblad A, Tyden T& Westerling R, (2017). To consent or decline HPV vaccination. A pilot study at the start of the national school-based vaccination program in Sweden. J Sch Health 87(1) 62-70.

Gualano M, Mussa M, Stillo M& Zotti C, (2016). Cross sectional study investigating the differences in knowledge and behaviors about HPV between vaccinated and non-vaccinated girls.Journal of preventive Medicine and Hygiene 57(3) 121-127. PMID: 27980375; PMCID: PMC5139606.

Jeyachelvi K, Juwita S& Norwati D, (2016). Human papilloma virus infection and its vaccines knowledge and attitudes of primary health clinic nurses in Malaysia.Asian pacific journal of cancer prevention 17(8) 3983-3988.

Jin Lee Y, Jin Y, Ju Lee E,Kim H, Kim S, Kim Y& Lim Lee J, (2022). Knowledge, attitude and perceptions associated with HPV vaccination among female Korean and Chinese university students. BMC Women's Health 22(51) 570-578. https://doi.org/10.1186/s12905-022-01624-1

Kehoe S, Kengsakul M& Wilailak S, (2021). Worldwide initiatives to eliminate cervical cancer. International journal of gynecology& obstetrics 155(1) 102-106. https://doi.org/10.1002/ijgo.13865.

Naz A, Perez S, Rosberger Z, Shapiro G& Tatar O, (2017). Psychosocial correlates of HPV vaccine acceptability in college males a cross-sectional exploratory study. Papillomavirus Res 4:99-107.

Phaild C, Schutze H& Wijayanti K, (2021). Parents' attitudes, beliefs and uptake of the school-**based** human papillomavirus (HPV) vaccination program in Jakarta, Indonesia a quantitative study Preventive medicine. Prev Med Rep. 24: 101651. https://doi.org/10.1016/j.pmedr.2021.101651.