



The Effect of Educational Guidelines on Late Adolescent Female's Knowledge and Attitude Regarding Human papilloma Virus.

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Abstract

Back ground: Human papillomavirus (HPV) is the commonest viral sexually transmitted infection in the world and the leading cause of cervical cancer. **Aim:** To evaluate the effect of educational guidelines on late adolescent females' knowledge and attitude regarding human papilloma virus. **Research Design:** A quasi-experimental research design was used to achieve the aim of the study. **Setting:** The study was conducted at Faculty of nursing Alazhar University, Cairo, Egypt.. **Sample:** A convenience sample was used from 120 third year female nursing students in maternity and gynecological nursing department through first semester in academic year 2023-2024 during three months for data collection. **Tools:** three tools were used; **Tool(I):** structured interviewing questionnaire consists of three-part **Part I:** General characteristics **Part II: Health History.** **Part III:** Knowledge assessment questioner, **Tool (II):** Attitude of Female students towards human papilloma virus. **Tool III:** Student's Satisfaction tool. **Results:** The majority of female students have satisfactory level of total knowledge at post educational guidelines regarding Human papillomavirus infection and its vaccination and more than three quarters of female students have positive total attitude at post educational guidelines regarding Human papillomavirus infection and its vaccination. The most studied female students satisfied regarding implementation of educational guidelines. **Conclusion:** The educational guidelines enhanced student's knowledge and positively changed their attitude regarding human papilloma virus infection and its vaccination and Student's Satisfaction level were increased. **Recommendations.** Raising awareness about dissemination of educational guidelines among female university students regarding human papilloma virus infection and vaccination to prevent the risk of Human papillomavirus infection and cervical cancer.

Key words: Attitude, Educational Guidelines, Human papilloma virus, knowledge, Late Adolescence.

Introduction

Adolescence, means to grow up, Adolescent is the Latin root of this word. The transitional stage between childhood and adulthood known as adolescence is marked by unique physiological and psychological traits. At this age, children's physical and mental growth is significantly accelerated, the adolescent curiosity about a wide range of topics grows, their need for novelty increases, their character is created, their spiritual world is expanded, and their conflicts intensify. (Inomovna et al.,2023)

Human papilloma virus (HPV) is a virus that can be sexually transmitted, and high-risk HPV DNA is found to be present in 99.7% of cervical cancer specimens. HPV is small non enveloped viruses with 55-nm diameter icosahedral capsids that contain double-stranded DNA virus belonging to the papovaviridae family. Almost 200 HPV types have been identified with more than 40 types colonizing the genital tract. Infection affects especially squamous epithelia, and cause the generation of warts. (Mohammed et al.,2022)

The majority of sexually active individuals become infected with HPV at least once in their lifetime, often without being aware and not presenting any symptoms. Prevalence of HPV acquisition, persistence, and

infection are correlated with sexual behavior, viral load, anatomical site, local immunity and clearance. With age, the incidence of new infections decreases, while persistence increases. This phenomenon may result from changing sexual habits and age-related immune senescence affecting HPV clearance. (**Rintala et al.,2023**)

Nurses play essential and very important role in preventing HPV infection and cervical cancer because the nurses are responsible to provide health education and promotion services for the students by organizing educational programs, conferences, distributing booklets or brochures to increase students' knowledge, positively change the attitude and create awareness regarding HPV infection as well as recommending all students to receive preventive immunization including the HPV vaccination so, it is important to understand the knowledge and attitude of adolescents regarding HPV infection and vaccination and its association with cervical cancer.(**AtittAllah et al.,2019**)

Significance of the study:

Cervical cancer is the fourth most frequently diagnosed cancer in women worldwide, with an estimated 604,000 new cases in 2020, representing 6.5% of all female cancers. That is the fourth leading cause of cancer death in women, with 342,000 deaths worldwide, according to the latest report from the International Agency for Research on Cancer (IARC) in 2020 . (**Sung et al.,2020**)

In Egypt, cervical cancer ranks as the 14th leading cause of female cancers in all ages, and the 11th most common female cancer in women aged 15 to 44 years with an estimated age-standardized incidence rate of 2.3 per 100,000 individuals per year. Recent estimates showed that 33.2 million women were at risk for cervical cancer in Egypt, with an annual incidence of 1320 cases, in 2020 .(**Mohamed.,etal 2022**)

Cervical cancer, unlike many other cancers, is largely preventable through screening and vaccination. Therefore, it is necessary for nurses to educate females about cervical cancer, raise awareness of the mortality rates associated with cervical cancer, and promote the cervical cancer screening program to reduction of morbidities and mortalities resulting from cervical cancer related human papilloma virus .(**Farag et al.,2024**)

Aim of the Study

The current study aimed to:

Evaluate the effect of educational guidelines on late adolescent female's knowledge and attitude regarding human papilloma virus.

This aim was achieved through the following objectives:

- Assess knowledge of late adolescent females regarding human papilloma virus.
- Assess attitude of late adolescent females regarding human papilloma virus.
- Design educational guidelines on late adolescent females regarding human papilloma virus.
- Implement educational guidelines on late adolescent females regarding human papilloma virus
- Evaluate effect of educational guidelines on late adolescent females regarding human papilloma virus.
- Assess satisfaction of late adolescent females toward educational guidelines.

Research Hypothesis:

The current study hypothesized that:

The adolescent females knowledge and attitude will improved after implement of educational guidelines.

Research design: A Quasi-experimental design was used to achieve the aim of the study including one group with pre and post test .

Setting:

The study was conducted at Faculty of nursing Alazhar University ,Cairo, Egypt.

Sampling:

Sample type: A convenience sample was used .

Sample size:120 nursing student were collected during 3 months for data collection .



Sampling Technique: data was collected from third year female nursing students in maternity and gynecological nursing department through first semester in academic year 2023-2024.

Tools for data collection:

Three tools were used to collect data of this study as follow:

Tool(I):Structured interviewing questionnaire:

Structured Interviewing Questionnaire: it was developed by the researcher based on literature review. It divided into three parts as follow:

Part I: General characteristics:

This part was used to assess Socio-demographic characteristic of the studied late Adolescent female's such as: (age, marital status, residence ,source of information) about papilloma virus infection. .

Part II : Late Adolescent females Health History:

This part was used to Assess obstetrical and gynecological history as (last menstrual period , history of any vaginal infection and history of cancer)

Part III: Knowledge assessment questioner.

It was designed by the researcher after an extensive reviewing of the related literature (**Abuel-Zahab et al., 2022**) it was used to assess students' knowledge regarding genital Human papilloma virus infection and its vaccination) that included the following:(definition, methods of transmission, risk factors of Human papilloma virus, methods of prevention, complications of it ,diagnosis , and the vaccine and doses of vaccine)consist of (13)statement .

Scoring System for knowledge: The late adolescent female's knowledge would be checked with a model key answer Zero grade would be given to uncorrected answer and one grade would be given to incomplete correct answer and two grad would be given to complete correct answer. Accordingly the total knowledge was categorized into either satisfactory level of knowledge (>60%), and unsatisfactory (<60%). (**Atitt-Allah et al., 2019**).

Tool II: Attitude of late Adolescent female's student's towards human papilloma virus.

It was designed by the researcher based on the literature review (**McRee et al, 2010**) and consist of three-point Likert scale“ including (13)statements.

scoring system: The late adolescent female's attitude would be checked with a model key answer two grade would be given to agree answer ,one grade to uncertain answer and zero grad to disagree answer . Accordingly the total attitude was categorized into positive attitude (>60%), and negative attitude (<60%). (**Dönmez, et al, 2019**)

Tool III: Student's Satisfaction tool.

The tool designed by researcher based on the literature review, to assessed late adolescent females student satisfaction after using guidelines which involved(8) statements.

scoring system: Upon which students respond as Satisfied ,Unsatisfied (**Bhamani and Hussain,2012**)

Supportive material: (Arabic educational booklet): it was designed by the researcher based on literature review. It was designed in the form of handout (booklet) using simple Arabic language and different illustrative pictures in order to facilitate understanding its content, that includes (concept of Human papilloma virus, risk factors for HPV, signs and symptoms of genital Human papilloma virus Infection, complications of HPV, diagnostic and screening tests for early detection of cervical cancer, cervical cancer prevention, the importance of the screening and the vaccination.

Validity:

Content validity was conducted to determine whether the content of the tools cover the aim of study , it was measured by jury of 3 experts . The expertise reviewed the tool for clarity of sentences, relevance, accuracy, comprehensiveness, simplicity and applicability and minor modification were done such as(clarity of sentences of the tool). Finally, the final forms were developed.

Reliability:

Reliability of tools was applied by researcher for testing the internal consistency of the tool, by administration of the same tools to the same subjects under similar condition on one or more occasion. Cronach's Alpha was used to determine the internal reliability of the tool.

Tool	No of questions	Cronbach's Alpha
Knowledge	13	0.883
Attitude	13	0.897

Ethical considerations:

An official permission to conduct the proposed study was obtained from the Scientific Research Ethics Committee faculty of nursing Helwan University. Participation in the study is voluntary and subjects were given complete full information about the study and their role before signing the informed consent. The ethical considerations include explaining the purpose and nature of the study, stating the possibility to withdraw at any time, confidentiality of the information where it weren't be accessed by any other party without taking permission of the participants. Ethics, values, culture and beliefs were respected.

Pilot study:

A pilot study was conducted to test feasibility and applicability of the study tools. It was carried out on 10% of total study subjects (12). There were no modifications of tools and the student's included in the pilot study were included in the main study group

Fieldwork:

- ♣ The researcher introduced herself to the late adolescent females nursing student during preparatory phase and briefly explained the nature and purpose of the study to the sample before the participation..
- ♣ The researcher assessed knowledge and attitude of female nursing students after finishing their daily sessions during assessment phase
- ♣ The late adolescent females nursing student were told that the data collected during the analysis would be confidential and would only be used for research purposes.
- ♣ Written consent was taken after explaining the purpose and procedures of the study.

Operational design:

Firstly, regarding women the data collection was carried out 5 steps as the following:(Preparatory- assessment- planning -implementation- follow up and evaluation phase)

a) Preparatory phase:

The preparatory phase was the first phase of the study, the researchers carried out through review of local and international related literature about the various aspects of the research problem. This helped the researchers to be acquainted with magnitude and seriousness of the problems, and guided the researchers to prepare the required data collection tools. The tool was distributed to three experts in the field, the aim was to test its appropriateness, comprehensiveness, clarity, importance and applicability. The jury recommended omissions of some items or addition which were done.

b) Assessment Phase :

This phase encompassed interviewing the students to collect baseline data, in the educational lecture hall at the faculty of nursing –Al-azhar university, at the beginning of interview the researchers greeted each student, explained the purpose, duration, and activities of the study. The student received the self-administered questionnaire (first tool) to assess students socio-demographic characteristics and knowledge regarding HPV infection and its vaccination. Then, the student received modified Likert's scale sheet (second tool) to assess their attitude regarding HPV infection and its vaccination (Pre-test). The data obtained during this phase constituted the baseline for further comparison to evaluate the effect of applying the educational intervention.

C) Planning Phase:

Based on baseline data obtained from assessment phase and relevant review of literature, the educational guidelines was developed by the researchers in a form of printed Arabic booklet to satisfy the studied students' deficit knowledge and change their negative attitude regarding HPV infection and its vaccination. Therefore, at the end of educational sessions each student should be acquiring essential knowledge needed to improve their knowledge and positively change their attitude regarding HPV infection and its vaccination.

D) Implementation phase:

- At the first the researcher was obtain on written consent after explain aim of the study and explained how to fill the tools. The researcher was attended the Previous mentioned study setting during the practice period (from 8 am to 2 pm).
- The researcher divided student into 12 subgroups {each group involved 10 students}, this distribution according to sequence of their attendance in collage and explain the aim of the study to female students nurses. The researcher was completed the tool by interviewing the students.
- The content was divided into four interactive sessions "twice per week" for each group of students. Each session was conducted for (2) hours, during which, The PowerPoint presentation was done, followed by a group discussion and distribution of educational booklet to all students.
- Feedback was given in the beginning of each session about the previous one. Simple explanation Language, recent teaching strategy and media, and educational booklet were. The educational booklet contains all the updated information regarding HPV infection and its vaccination with illustrated images. The content of sessions was as following:

First session: which contain definition of HPV and types of HPV, etiology, methods of transmission, symptoms and signs, complications of HPV .Which conducted for 2hr /day ,to improve student knowledge level about HPV.

Second session: which contain methods of prevention, methods of early detection, methods of diagnosis, treatment of HPV, role of nurse in increasing awareness to prevent HPV infection Which conducted for 2hr /day, to help student protect himself against HPV.

Third session: which contain definition of HPV vaccination, types of HPV vaccine, importance of HPV vaccination, targeted audience HPV vaccination, recommended age, doses of vaccine, method of administration. Which conducted for 2hr /day, to improve attitude of nursing student .

Fourth session: which contain barrier of HPV vaccination, safety of vaccine, extent of protection of vaccination, side effects of vaccine, role of nurse in increasing awareness about HPV vaccination Which conducted for 2hr /day, to eliminate any difficulties facing student from receiving method of protection.

E) Follow up and Evaluation Phase:

The researchers asked the students to apply post-test by using the same format of knowledge questionnaires and attitude scale to compare their knowledge attitude regarding HPV infection and its vaccination before and after applying the educational guidelines sessions regarding human papilloma virus .

Statistical item:

Recorded data were analyzed using the statistical package for social sciences, version (28).Quantitative data were expressed as mean± standard deviation (SD). Qualitative data were expressed as frequency and percentage. The following tests were done:

- The Chi-square test was used to compare between qualitative data.
- Pearson's correlation coefficient (r) test was used to assess the degree of association between two sets of variables.
- The confidence interval was set to 95% and the margin of error accepted was set to 5%. So, the p-value was considered significant as the following:
- Probability (P-value)
P-value ≤ 0.05 was considered significant.
P-value > 0.05 was considered insignificant.

Results:

Table (1) shows that, less than three quarters (73.3%) of the studied female students their age is 20 years, the mean \pm SD of age is 20.27 ± 0.444 years. As regard to marital status, the most (96.7%) of the studied female students are not married. Moreover, less than two thirds (63.3%) of the studied female students are residing at rural areas.

Table (2): Indicates that, more than half (61.7 %, 58.3% & 56.7 %) of the studied female students don't know number of HPV vaccine doses, age to take the vaccination against HPV and types of HPV vaccine ; meanwhile 68.3 %, 75% & 68.3 % of them had correct and complete answer post educational guidelines respectively. Moreover, there are a highly statistically significant differences observed between all items of the studied female students' knowledge regarding genital human papilloma virus infection and its vaccination pre and post educational guidelines ($p \leq 0.001$).

Figure (1): Shows that, more than three quarters (76.7%) of the studied female students have unsatisfactory level of total knowledge at pre educational guidelines compared to; the majority (81.7 %) of them have satisfactory level of total knowledge at post educational guidelines. Moreover, there is a highly statistically significant difference for the studied female students' total knowledge about genital human papilloma virus infection and its vaccination pre and post educational guidelines ($P, \leq 0.001$).

Table (3): Clarifies that, more than three quarters (76.7% & more than two thirds 66.7%) of studied female students are uncarts that vaccinate is preferable to both male & female, females are susceptible for the HPV infection and must get the vaccine, recommend the vaccine to other college friends and HPV vaccine is highly effective, meanwhile 76.7%, 78.3%, 75.0% & 75.0 % of them are agree post educational guidelines. Moreover, there is a highly statistical significant differences observed between all parts of the studied female students 'attitude towards human papilloma virus items pre and post educational guidelines ($p \leq 0.001$).

Figure (2): Shows that, less than three quarters (70.0 %) of the studied female students have negative total attitude regarding towards human papilloma virus pre educational guidelines compared with, more than three quarters (78.3 %) of them have positive total attitude at post educational guidelines. Moreover, there is a highly statistically significant difference for the studied female students' total attitude towards human papilloma virus pre and post educational guidelines ($P, \leq 0.001$).

Table (4): Shows that, there is a highly statistically significant relation between the studied female students' knowledge and their age post educational guidelines ($P = \leq 0.001$). Also, there is statistically significant relation the studied female students' knowledge and their age pre educational guidelines ($P = \leq 0.05$). While, there is no statistically significant relation with their marital status and residence pre and post educational guidelines ($P > 0.05$).

Table (5) Shows that, there is a highly statistically significant relation between the studied female students' attitude and their age post educational guidelines ($P = \leq 0.001$). Also, there is statistically significant relation the studied female students' attitude and their age pre educational guidelines ($P = \leq 0.05$). While, there is no statistically significant relation with their marital status and residence pre and post educational guidelines ($P > 0.05$).

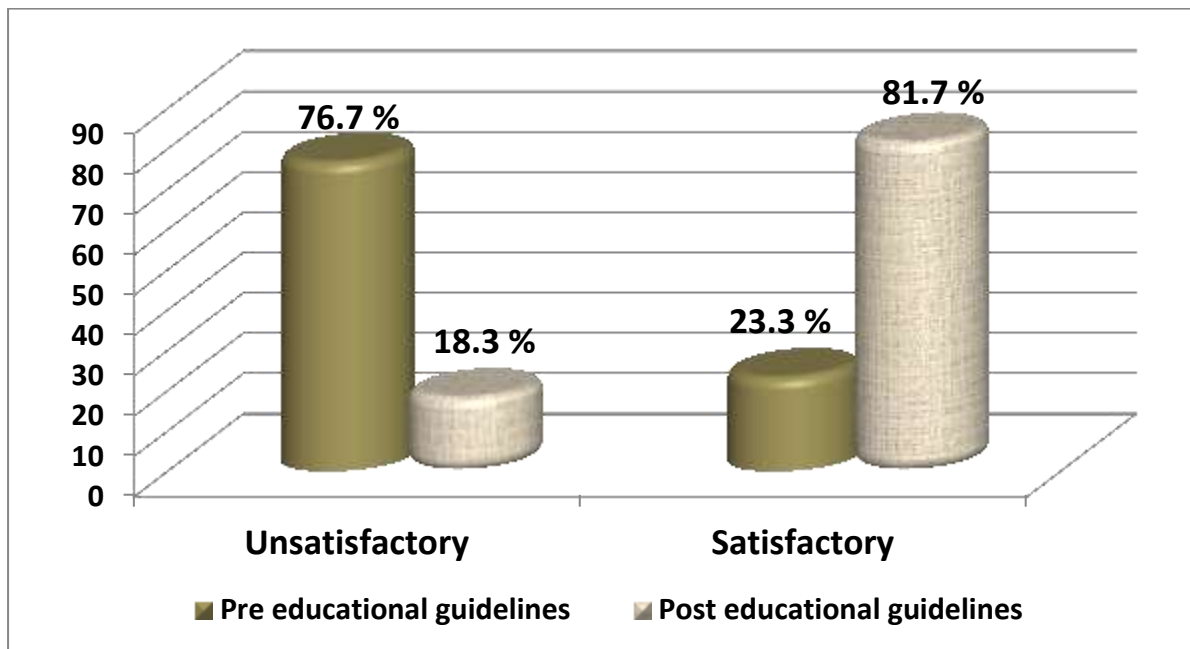
Table (1): Distribution of the studied female students according to their general characteristic (n=120).

General characteristic	No.	%
Age/ years		
-20	88	73.3
-21	32	26.7
Mean ±SD	20.27±0.444	
Marital status		
Married	4	3.3
Not married	116	96.7
Residence		
Rural	76	63.3
Urban	44	36.7

Table (2): Distribution of the studied female students regarding their level of knowledge about genital human papilloma virus infection and its vaccination items pre and post educational guidelines (n=120).

Items	Pre						Post						Chi-square	
	Correct & complete		Correct & incomplete		Don't know		Correct & complete		Correct & incomplete		Don't know		X ²	p-value
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Definition of human papilloma virus	8	6.7	72	60.0	40	33.3	82	68.3	30	25.0	8	6.7	22.010	0.000**
Symptoms of HPV	26	21.7	56	46.7	38	31.7	96	80.6	16	13.3	8	6.7	20.162	0.000**
Risk factors of HPV	48	40.0	58	48.3	14	11.7	98	81.7	18	15.0	4	3.3	22.403	0.000**
Causes of HPV	28	23.3	72	60.0	20	16.7	96	80.0	20	16.7	4	3.3	28.578	0.000**
HPV related diseases	20	16.7	72	60.0	28	23.3	90	75.0	24	20.0	6	5.0	28.519	0.000**
Mood of transmission of HPV	20	16.7	66	55.0	34	28.3	98	81.7	16	13.3	6	5.0	20.584	0.000**
Complication of HPV	12	10.0	86	71.7	22	18.3	88	73.3	28	23.3	4	3.3	23.187	0.000**
Preventive measures of HPV	28	23.3	72	60.0	20	16.7	98	81.7	14	11.7	8	6.7	50.340	0.000**
Diagnosis of HPV	22	18.3	76	63.3	22	18.3	90	75.0	28	23.3	2	1.7	23.072	0.000**
The effect of HPV Vaccine to prevent cervical cancer	60	50.0	18	15.0	42	35.0	94	78.3	24	20.0	2	1.7	27.872	0.000**
Age to take the vaccination against HPV	8	6.7	42	35.0	70	58.3	90	75.0	24	20.0	6	5.0	24.457	0.000**
Types of HPV vaccine	16	13.3	36	30.0	68	56.7	82	68.3	28	23.3	10	8.3	20.328	0.000**
Number of HPV vaccine doses	6	5.0	40	33.3	74	61.7	82	68.3	24	20.0	14	11.7	19.566	0.001**

Chi-square test, ** highly statistically significance $p \leq 0.00$



$\chi^2 =$ Relation between pre& post educational guidelines (8.199), (p=0.01*.)

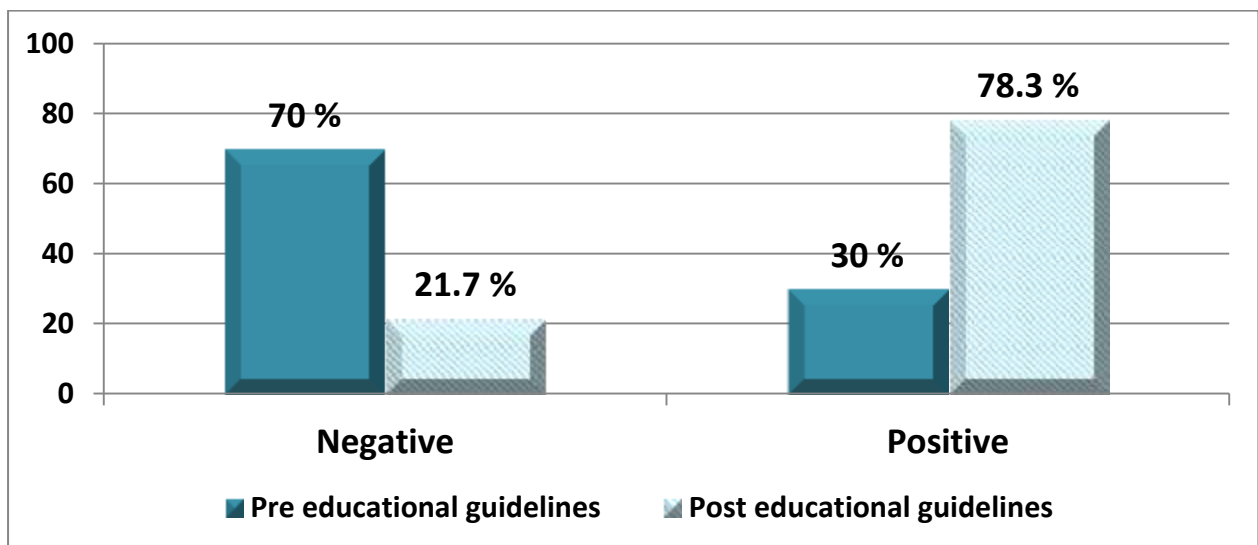
Figure (1): Distribution of the studied female students regarding their total level of knowledge about genital human papillomavirus infection and its vaccination pre and post educational guidelines (n=120).and post educational guideline

Table (3): Distribution of the studied female students regarding their level of attitude towards human papilloma virus items pre and post educational guidelines (n=120).

Items	Pre						Post						Chi-square	
	Agree		Uncertain		Disagree		Agree		Uncertain		Disagree		X ²	p-value
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Educational guidelines about HPV should be implemented at school& university.	62	51.7	52	43.3	6	5.0	104	86.7	12	10.0	4	3.3	95.503	0.000**
HPV virus is serious and life threatening.	32	26.7	76	63.3	12	10.0	102	85.0	16	13.3	2	1.7	20.416	0.000**
HPV can cause cervical cancer	36	30.0	58	48.3	26	21.7	104	86.7	10	8.3	6	5.0	19.490	0.001**
Females are susceptible for the HPV infection and must get the vaccine	16	13.3	80	66.7	24	20.0	94	78.3	22	18.3	4	3.3	21.849	0.000**
HPV vaccination is not necessary because a Pap test can be done to rule out cervical cancer.	8	6.7	60	50.0	52	43.3	74	61.7	34	28.3	12	10.0	19.16	0.001**
Females are worried to	36	30.0	60	50.0	24	20.0	72	60.0	36	30.0	12	10.0	73.389	0.000**

get a Pap test.														
HPV vaccination is important for cervical cancer prevention.	22	18.3	76	63.3	22	18.3	88	73.3	26	21.7	6	5.0	37.038	0.000**
Vaccine may be seen as not a risky.	16	13.3	66	55.0	38	31.7	82	68.3	30	25.0	8	6.7	25.769	0.000**
HPV vaccination given was impressed that have sexually active.	16	13.3	76	63.3	28	23.3	76	63.3	34	28.3	10	8.3	19.684	0.001**
Worry about potential side effects from HPV vaccine.	36	30.0	58	48.3	26	21.7	84	70.0	28	23.3	8	6.7	52.793	0.000**
Recommend the vaccine to other college friends.	28	23.3	80	66.7	12	10.0	90	75.0	28	23.3	2	1.7	28.866	0.000**
Vaccinate is preferable to both male & female.	2	1.7	92	76.7	26	21.7	92	76.7	22	18.3	6	5.0	24.607	0.000**
HPV vaccine is highly effective.	28	23.3	80	66.7	12	10.0	90	75.0	22	18.3	8	6.7	19.945	0.001**

Chi-square test, ** Highly statistically significance $p \leq 0.001$



χ^2 = Relation between pre& post educational guidelines (14.225), ($p=0.000^*$)

Figure (2): Percentage distribution of the studied female students regarding their total level of attitude towards human papilloma virus pre and post educational guideline

Table (4): Statistically relation between total knowledge and general characteristics among the studied female students pre and post educational guidelines (n=120).

Items	Pre				X ²	p-value	Post				Chi-square	
	Unsatisfactory (n=92)		Satisfactory (n=28)				Unsatisfactory (n=22)		Satisfactory (n=98)		X ²	p-value
	No.	%	No.	%			No.	%	No.	%		
Age/ years												
20	74	80.4	14	50.0	10.168	0.003*	22	100.0	66	67.3	9.796	0.001**
21	18	19.6	14	50.0			0	0.0	32	32.7		
Marital status												
Married	2	2.2	2	7.1	1.645	0.232	0	0.0	4	4.1	0.929	0.440
Not married	90	97.8	26	92.9			22	100.0	94	95.9		
Residence												
Rural	58	63.0	18	64.3	.014	0.546	14	63.6	62	63.3	0.001	0.589
Urban	34	37.0	10	35.7			8	36.4	36	36.7		

Chi-square test, ** Highly statistically significance $p \leq 0.001$, * statistically significance $p \leq 0.05$, Not statistically significance $p > 0.05$

Table (5): Statistically relation between total attitude and general characteristics among the studied female students pre and post educational guidelines (n=120).

Items	Pre				X ²	p-value	Post				Chi-square	
	Negative (n=84)		Positive (n=36)				Negative (n=22)		Positive (n=94)		X ²	p-value
	No.	%	No.	%			No.	%	No.	%		
Age/ years												
20	68	81.0	20	55.6	8.312	0.005*	26	100.0	62	66.0	12.070	0.000*
21	16	19.0	16	44.4			0	0.0	32	34.0		
Marital status												
Married	2	2.4	2	5.6	0.788	0.348	0	0.0	4	4.3	1.145	0.371
Not married	82	97.6	34	94.4			26	100.0	90	95.7		
Residence												
Rural	50	59.5	26	72.2	1.750	0.132	16	61.5	60	63.8	0.046	0.501
Urban	34	40.5	10	27.8			10	38.5	34	36.2		

Chi-square test, ** Highly statistically significance $p \leq 0.001$, * statistically significance $p \leq 0.05$, Not statistically significance $p > 0.05$

Discussion

Human papilloma virus (HPV) is one of the most common causes of sexually transmitted infections (STIs), with the highest rates are found among young and sexually active men and women worldwide. HPVs constitute a group of more than 200 different types associated with benign and malignant neoplasms of the skin and mucosal membranes. among them, forty different HPV types, known to infect the genital system. The prevalence of HPV infections peaks in adolescence in both genders and increases every year from 14 to 24 years of age. **ElMansourietal.,(2022)**

The aim of present study was to evaluate the effect of the educational intervention on late adolescent female's knowledge and attitude regarding human papilloma virus .



Regarding general characteristics of the studied nursing students, the current study results revealed that about three quarters of studied nursing students were in age group 20 years old with a mean age of 20.27 ± 0.444 years. The majority of studied students were single. And the residence, nearly three – quadrants of the studied students from rural area

This result was supported by **Berenson et al., (2021)** in a study entitled “A brief educational intervention can improve nursing students’ knowledge of the human papillomavirus vaccine and readiness to counsel” in Texas. Revealed that the majority of student were females and within age less than 30 years.

From the researcher point of view the incidence for acquiring sexual infection like human papilloma virus is highly occurring during this period and the educational guidelines will reduce occurring of this infection. And the majority of students were single due to policy of faculty of nursing . And it is crucial to provide structured and ongoing education to individuals in this age group .

Regarding nursing students’ knowledge, about human papillomavirus infection and cervical cancer, Pap smear test, and human papillomavirus vaccination ,the results of present study illustrated that there was improvement in the level of all knowledge items regarding human papilloma virus infection and its vaccination, it was revealed that the majority of students had poor knowledge regarding human papilloma virus infection and its vaccination at pre educational intervention.

These results were observed as a highly statistical significant difference between the results of post-test compared to pre-test in favor of post-test regarding all items of students' knowledge regarding human papilloma virus infection with $p < 0.001$ and human papilloma virus vaccination with $p < 0.001$.

This due to the female university students' ability to gain knowledge easily and they are interested in the research topic. This improvement in the students' knowledge also due to students' active participation and good communication with the researcher who helped them to acquire knowledge .

The study in contrasts with **Sallam et al., (2021)**. who conducted a study on “Attitude towards HPV vaccination and the intention to get vaccinated among female university students in health schools “in Jordan. The study reported that the majority had lack of knowledge about HPV among nursing students and a lack of prior awareness of HPV.

This study in accordance with **Farag et al., (2024)** who conducted study with a title “Effectiveness of Educational Intervention Program about Cervical Cancer on Working Women's Knowledge, Attitude, and Practice” in Egypt .who found that, the knowledge scores of the studied women about HPV and cervical cancer is low and the study findings indicated that the women's knowledge before the educational guidelines was generally limited.

This due to the absence of a well-designed educational guidelines that is provided to women. Also, there was a highly statistically significant improvement in the knowledge score regarding all items of knowledge about cervical cancer at different times of assessment.

This study in disagreement with **Pelullo et al., (2019)** who conducted study with a title “Human Papillomavirus Infection and Vaccination Knowledge and Attitudes among Nursing Students” in Italy. who found that, the majority of the students have a knowledge regarding HPV items ,which can cause cervical cancer.

The cause for this variation between agreement and dis agreement with this study is that presence of social culture about sexual issues in developed country and applied of sexual topics in school curriculum.



Finally, the above mentioned results can be concluded as there was a highly statistical significant difference between the results of post-test and pre-test in favor of post-test regarding all items of students' total knowledge regarding human papilloma virus infection and its vaccination. cervical cancer.

From the researcher point of view there is a need for all stakeholders to step up awareness creation for HPV infection and improved HPV vaccination, protection against cervical cancer ,through more educational guidelines , mass media and university and pre university curriculum.

This opinion is supported by **Meites et al.,(2021)** .who conducted a study with atilt” Epidemiology and prevention of vaccine-preventable diseases: Human Papilloma virus” in turkey .Who recommend that the healthcare professionals are the most reliable source of information that can effectively educate individuals in society, highlighting the importance of regularly updating the knowledge of healthcare professionals. To achieve this, the initial step involves revising undergraduate curricula and delivering current information through continuous training for existing healthcare personnel. These efforts will significantly enhance public awareness regarding HPV infection and vaccines.

Regarding attitude of the studied nursing students, the results of current study displays that, less than three quarters of the studied female students have negative total attitude regarding towards human papilloma virus pre educational guidelines compared with, more than three quarters of them have positive total attitude at post educational .

There is a marked improvement in all items of studied sample attitude regarding all items of students' attitude regarding human papilloma virus infection ,cervical cancer, PAP test, and human papilloma virus vaccination post implementation of the educational guideline based on health belief model with a highly statistical significant difference ($p \leq 0.001$) between pre, and post intervention. This due to interventional sessions provided, the participants with valuable information that can positively affect their beliefs which in turn positively affect their attitude.

The study agree with **Berenson et al., (2021)** who conduct study with a title “A brief educational intervention can improve nursing students’ knowledge of the human papillomavirus vaccine and readiness to counsel” in Taxes. Who found that the majority of nursing students experienced a strong increase in post-intervention attitudes phase when compared with pre-intervention phase.

The current study in agreement with **Mahmoud et al., (2021)** who studied “Effect of the Educational Package based on Health Belief Model on Nursing Students’ Knowledge and Attitude Regarding Human Papillomavirus and Cervical Cancer” in Egypt .Who revealed that the studied sample attitude was highly positive after the implementation of the educational intervention.

The current result matched with **Hui Chen et al., (2021)** who studied” Effect of an educational intervention on human papillomavirus (HPV) knowledge and attitudes towards HPV vaccines among healthcare workers (HCWs) “in Western China. Who revealed that the studied sample attitude was improved and be positive after the implementation of the educational intervention and show that Less than half of the participants provided the correct answer before the intervention and more than half chose the right answer after the intervention

The current study in agreement with **Abdelaliem et al., (2023)**.In a study entitled “Knowledge and Attitudes toward Human Papillomavirus and Vaccination: A Survey among Nursing Students” in Saudi Arabia. Who found that More than half of the nursing students had a moderate attitude level toward HPV and its vaccination during initial assessment compared to generally positive attitude of the majority of nursing students after educational intervention

From the researcher point of view due to lack of positive attitude toward human papilloma virus ,there is an essential need for applying of instructional guideline, through the educational sessions, the incorporation of

interactive learning methods played a pivotal role where participants had the opportunity to share their own experiences, ideas, beliefs, and cultural values as much as possible. Moreover, the use of interactive learning methods helped reduce anxiety and facilitated communication and education about Human Papilloma Virus, which is crucial for changing attitudes towards such harmful practices.

The researcher opinion supported by **Dag et al., (2023)** who conduct study with title “The effects of two different teaching techniques on the knowledge level of nursing students about HPV” in Turkish. The study revealed the imperative need for university students to receive comprehensive information about the HPV. It emphasizes the importance of educational interventions aimed at increasing awareness among nursing students about HPV and its vaccine, even within health-related programs, as students often have inaccurate or insufficient knowledge regarding HPV.

The current study disagree with **Shakurnia et al. (2022)** who conducted a study with a title “Knowledge and Attitude of Midwifery Students toward Human Papilloma Virus Infection and Cervical Cancer” in Iran. Who found that midwifery students in higher academic years had a more positive attitude towards HPV and the HPV vaccine during application of pretest ,because they have better knowledge and awareness about HPV and knowing members of their families with cervical cancer.

Ultimately, it can be concluded that there was a highly statistical significant difference between the results of immediate post-test and compared to pre-test regarding all items of students' total attitude regarding human papilloma virus infection and its vaccination ,cervical cancer ,PAP smear test .

This can be explained by the fact that improved knowledge leads to a positive changing in attitudes and beliefs of studied sample. This also supports the necessary need for publishing health educational intervention especially regarding issues such as HPV which is mainly sexually transmitted disease and cervical cancer.

Regarding Relation between general characteristics of the studied students and total knowledge. Shows that, there is a highly statistically significant relation between the studied female students' knowledge and their age post educational guidelines ($P = \leq 0.001$). Also, there is statistically significant relation the studied female students' knowledge and their age pre educational guidelines ($P = \leq 0.05$). While, there is no statistically significant relation with their marital status and residence pre and post educational guidelines ($P > 0.05$).

This study in agreement with **Abuel-Zahab et al., (2022)**,who revealed that , there was significant relations between total knowledge score and student’s general characteristics as age post nursing guidelines implementation.

This refer to the students age increased, the chance of hearing & known about HPV also increased. Furthermore, there is a highly significant relations between total knowledge post nursing guidelines a residence.

The current study in the line with **D’Errico et al.,(2021)** who conducted a study with a title “Knowledge, attitudes, and practices related to human papillomavirus vaccination among college student: Implications for nurse practitioners” in America .who found that there was a significant relation between total knowledge of HPV and participant age.

Regarding Relation between general characteristics of the studied students and total attitude. The present study revealed that there were highly statistically significant relation between general students characteristics and total attitude score after nursing guidelines about genital Human papilloma virus infection, these findings supported by (Mohammed et al, 2022) who found that there was a highly significant difference post application nursing guideline between general students characteristics with their attitude .

The current study in the line with **D’Errico et al.,(2021)** who conducted a study with a title “Knowledge, attitudes, and practices related to human papillomavirus vaccination among college student: Implications for nurse practitioners” in America .who found that the participants who had higher HPV knowledge were more likely to have a more positive attitude toward HPV and the HPV vaccination.

Conclusion

Based on the results of the present study: Implementation of the educational guidelines have a positive effect on improving nursing students' knowledge and attitude regarding human papilloma virus and its vaccination, and there was a highly statistical significant difference between the results of pre-test compared to post-test in favor of post-test regarding students' knowledge and attitude in relation to human papilloma virus infection and its vaccination. While, there was a highly positive statistical significant correlation between total knowledge and total attitude regarding human papilloma virus infection and its vaccination at post-intervention phase. Therefore, the study hypothesis was supported and the aim was achieved.

Recommendations

Based on the results of the present study the following recommendations are suggested:

- Dissemination of educational program among all female university students regarding human papilloma virus infection and vaccination to prevent the risk of HPV infection and cervical cancer.

Further recommendation:

- Future study should aim to conduct a similar study on a large sample (including males) for generalizing the findings..

References:

1. **Abdelaliem, S.M.F.; Kuaia, A.M.; Hadadi, A.A.; Alhujayri, A.K.; Al Anazi, A.A.; Hajar, A.A.; AlShareda, R.S.; Amri, S.M. (2023)** Knowledge and Attitudes toward Human Papillomavirus and Vaccination: A Survey among Nursing Students in Saudi Arabia. *Healthcare*, 11, 1766. <https://doi.org/10.3390/healthcare11121766>
2. **Abuel-Zahab, N.H., el-Sheikh, M., Abdel-Fattah, H., & Metwally, N.M. (2022)**: Effect of Nursing Guideline about Genital Human Papilloma Virus Infection on perception of Female University Students, Original Article. *Egyptian Journal of Health Care, EJHC* Vol. 13 No. 1 130
3. **AtittAllah, N.A., AbdElhady, R. & Araby, O.A (2019)**: Effect of Educational Intervention on Knowledge and Attitudes Regarding Human Papillomavirus Infection and Its Vaccination among Nursing Students." *American Journal of Nursing Research*, vol. 7, no. 4: 453-464. doi: 10.12691/ajnr-7-4-7
4. **Berenson, A. Hirth, M., J. Chang, M. Kuo, F., Y. Richard, P. & Deborah, L. (2021)**: A brief educational intervention can improve nursing students' knowledge of the human papillomavirus vaccine and readiness to counsel. *VOL. 17, NO. 7, 1952-1960* <https://doi.org/10.1080/21645515.2020.1852871>
5. **Bhamani, S., & Hussain, N. (2012)**: Student university satisfaction scale. *Interdisciplinary Journal of Contemporary Research in Business*, 4(3), 332-341. Available from <http://journal-achievers20.webs.com/332-341>.
6. **D'Errico, M.P., Tung, W.C., & Lu, M.P. (2020)**. Knowledge, attitudes, and practices related to human papillomavirus vaccination among college students in a state university: Implications for nurse practitioners. *J. Am. Assoc. Nurse Pract.*, 33, 709-718. doi:10.1097/Jxx.0000000000000431.
7. **Dag, H., Donmez, S., Sezer, H., Sendag, F., Sevil, U., & Saruhan, A. (2023)**: The effects of two different teaching techniques on the knowledge level of nursing students about HPV [in Turkish]. *European Journal of Therapeutics*, 21(2), 90-98. <https://doi.org/10.5455/GMJ30-168267>
8. **Dönmez, S., Öztürk, R., Kısa, S., Karaoz Weller, B., & Zeyneloğlu, S. (2019)**. Knowledge and perception of female nursing students about human papillomavirus (HPV), cervical cancer, and attitudes toward HPV vaccination. *Journal of American College Health*, 67(5): 410-417



9. **Farag ,S.,Mohamed, S., Malk, R., & Hassan,H.(2024)** :Effectiveness of Educational Intervention Program about Cervical Cancer on Working Women's Knowledge, Attitude, and Practice at Beni-Suef University. Egyptian Journal of Health Care, March ,Vol 15. No.1
10. **Hui Chen, Xi Zhang, Wei Wang, Rong Zhang, Mei Du, Li Shan, Yucong Li, Xiaohui Wang, Yijun Liu, Wen Zhang, Xiaoling Li, Youlin Qiao, Jianqiao Ma, Jing Zhou & Jing Li (2021):** Effect of an educational intervention on human papillomavirus (HPV) knowledge and attitudes towards HPV vaccines among healthcareworkers (HCWs) in Western China, Human Vaccines & Immuno therapeutics, 17:2, 443-450, DOI:10.1080/21645515.2020.1780093
11. **Inomovna,K.,N.(2023):**ADOLESCENT PSYCHOLOGY AND ADOLESCENT BEHAVIOR SELF-HOSTING. International Conference on Developments in Education Hosted from Amsterdam, Netherlands. <https://econferencezone.org> 22nd April, 1
12. **McRee A, Brewer N, Reiter P, Gottlieb S and Smith J,(2010):** The Carolina HPV Immunization Attitudes and Beliefs Scale (CHIAS): Scale Development and Associations With Intentions to Vaccinate. Volume 37, Number 4,:P: 234-239
13. **Meites, E., Gee, J., Unger, E., & Markowitz, L. (2021).** Epidemiology and prevention of vaccine-preventable diseases: Human Papillomavirus. <https://www.cdc.gov/vaccines/pubs/pinkbook/hpv.html>
14. **Mohamed.,M.,L . Tawfk.,A.,M., Mohammed.,G.,F ., Elotla.,S.,F.(2022):** Knowledge, Attitude, and Practice of Cervical Cancer Screening, and HPV Vaccination: A Cross-Sectional Study Among Obstetricians and Gynecologists in Egypt. Maternal and Child Health Journal (2022) 26:565–574 <https://doi.org/10.1007/s10995-021-03352-8>
15. **Mohammed.,E.M., Mohamed., M., Ramadan., S. A.,& a Abd EL-Monem., S. (2022):**Knowledge and Attitudes of Nursing Students toward Human Papilloma Virus Vaccination .Journal of Nursing Science - Benha University ISSN 2682 – 3934 Vol. (3) No. (1) 2022 JNSBU 51
16. **Pelullo,C.P.,Esposito,M.R.,&Giuseppe,G.D(2019):**Human Papillomavirus Infection and Vaccination: Knowledge and Attitudes among Nursing Students in Italy, Int. J. Environ. Res. Public Health, 16, 1770; doi:10.3390/ijerph16101770
17. **Rintala, M., Grenman, S., Puranen ,M.,& Syrjanen ,S.,(2022):** Natural history of oral papillomavirus infections in spouses: a prospective Finnish HPV family study. J Clin Virol. 35(1):89-94
18. **Sallam, M., Al-Mahzoum, K., Eid, H., Assaf, A. M., Abdaljaleel, M., AlAbbadi, M., & Mahafzah, A. (2021).** Attitude towards HPV vaccination and the intention to get vaccinated among female university students in health schools in Jordan. Vaccines, 9(12), 1432. <https://doi.org/10.3390/vaccines9121432>
19. **Shakurnia,A.,Ghadiri,A.,Hamidi,M.,&Jelodar, N. (2022).**Knowledge and Attitude of Midwifery Students toward Human Papilloma Virus Infection and Cervical Cancer at Ahvaz Jundishapur University of Medical Sciences, Iran. J. Res. Dev. Nurs. Midwifery, 19, 5–8
20. **Sung ,H., Ferlay, J., Siegel ,R.,L., Laversanne ,M., Soerjomataram, I., Jemal ,A., (2022):**Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 71(3):209–249. <https://doi.org/10.3322/caac.21660> PMID: 3353