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Impact of health educational programabout cervical cancer, Human PapillomaVirus, its vaccine onKnowledgeand attitude of female student nurses'

Rasha Mohamed Essa* ,Noha Mohamed Hassan* ,NaglaaAbdel-Halim**
Prof. of Obstetric and Gynecological Nursing-Faculty of Nursing Damanhour University*
Assist. Profof Obstetric and Gynecological Nursing-Faculty of Nursing Alexandria university*
Clinical instructor ofObstetric and gynecological Health Nursing-Faculty of Nursing *

Abstract:cervical cancer is a major health concern and remains the most common malignancy in women worldwide. The major causative agent for cervical cancer is Human papilloma virus. Awareness and education about cervical cancer, HPV and its vaccination can help to prevent cervical cancer. **Aim:** To identify the impact of an education program on femalestudent nurses' Knowledge and attitude about cervical cancer, Genital Human Papilloma Virus Infection. **Subjects & Methods: Design:** The study was carried out through a qusi-experimental research design one study group pre &post test. **Setting:** The study was conducted at Faculty of nursing, Damanhour University **Subjects:** the total sample was 200 female nursing students. **Tools:** Three tools were used for data collection: **1):** A structured Interviewing Questionnaire.2)Follow up sheet and 3)likert Scale. **Results:** It was observed that 47.5% gained their knowledge from their friends. Significant improvement was observed in total score of knowledge and attitude of female nursing student pre –an educational pregame compared to immediate and 3months post- educational pregame P= < 0.01. **Conclusion:** The study concluded that the education program had a positive impact on females' knowledge and attitude regarding cervical cancer and Genital Human Papilloma Virus. **Recommendations:** The study recommended that developing an educational program for female students at secondary schools about cervical cancer, HPV and its vaccination is important issue that modify behavior and decrease risk of HPV infection in order that they will obtain the HPV vaccine and prevent cervical cancer.

Key Words: cervical cancer ,Human papillomavirus, screening, health education program

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I. Introduction

Cervical cancer has an enormous impact on women's health and remains a major public health concern across the world. Cervical cancer is the fourth most common cancer in women and a main cause of cancer mortality worldwide representing 7.5% of the entire female cancer deaths. WHO report that, there were just about 530,000 new cases of cervical cancer and approximately 270,000 cervical cancer related deaths, of which more than 85% occurred in low and middle-income countries(WHO, 2014, **Laurent et al., 2018).** Human Papillomavirus (HPV) is the most prevalent risk factor. Nearly all cases of cervical cancer can be attributable to HPV infection. According to National Cancer Institute, (2017) Human papilloma virus infection cause approximately 5% of all cervical cancers worldwide. Egypt has a population of 28.37 million women with ages 15 years and older who are at risk of developing cervical cancer**(Nartey et al., 2018)**.. Cervical cancer ranks as the 13th most frequent cancer among women in Egypt and the 10th most frequent cancer among women between 15 and 44 years of age **(Abdelbadiaa et al., 2016).**

Human papillomavirus HPV genotypes categorized into two main types: thefirst is low-risk types, for example HPV-6/11/40 and -72 which cause genital warts**,** but do not cause cervical cancer **(Chabedaetal,2018)**. The second: **is** High-risk (hr) type for example HPV-16/18/ 31 and -68, which are responsible for 99 % of cervical cancer cases. **(Bravo & Sanchez, 2015).**prevention, early diagnosis and treatment have been shown to reduce mortality due to cervical cancer. Many countries have significantly reduced their cervical cancer morbidity and mortality through cervical cancer screening and early treatment. In the United States, the introduction of the Pap smear has been responsible for a 90% decrease in deaths from cervical cancer. Early detection through cervical cancer screening has dcreased the incidence of cervical cancer by 50% over the last 30 year**(Parmin et al., 2019).**.

There were an estimated 266,000 deaths from cervical cancer worldwide in 2012, accounting for 7.5% of all female cancer deaths. Almost nine out of 10 (87%) cervical cancer deaths occur in the less developed

regions. Mortality varies 18-fold between the different regions of the world, with rates ranging from <2 per 100,000 in Western Asia, Western Europe, and Australia/New Zealand to more than 20 per 100,000 in Melanesia , middle (22.2), and Eastern (27.6) Africa **(Zitkute&Bumbuliene, 2016).** In Egypt 25.76 million women aged 15 years and older at risk of developing cervical cancer. The current estimates indicate that every year about 514 women are diagnosed with cervical cancer and 299 die from the disease related to cervical cancer**(Alessandro et al., 2018)**.

A recent study reported a low level of knowledge on HPV infection among university students in developing country**.** There was a significant improvement post nursing intervention in all items of knowledge regarding Cervical Cancer and Human Papillomavirus Vaccines (11% & 21%) respectively in Tanta City **(Fouda&Elkazeh,2014)** . The prevalence of HPV infection was highest (13.2%, 12/91) in women aged 18-24 years at two hospitals (AlKasr Al Aini University Hospital, Cairo, and Ain Shams University Hospital, Cairo) and an outpatient clinic (Alexandria University Hospital) **(Shaltout et al.,2014).**

So that advanced health education program approach among human papilloma virus infection including education ,vaccination, screening, and treatment is very important to improve knowledge and attitude among university female students and therefore improve community knowledge and hence reduction of morbidities and mortalities resulting from cervical cancer related human papilloma virus.

Aim of the Study:was to evaluate Impact of health educational program about cervical cancer, Human PapillomaVirus, its vaccine on Knowledge and attitude of female student nurses'

Research Hypothesis: Students nursewho receive health educational program will have high Knowledge and attituderegardingcervical cancer, Human PapillomaVirus, its vaccine

II. Methodology

A-Research design: Quasi-experimentalpre-posttest design was conducted
B-Setting: The study was conducted at Faculty of nursing in Damanhour University.
Sample Type: A convenience sampling technique

Sample size: Total sample size was two hundred (200), all female students of first and second academic year in faculty of nursing at Damanhour University who approved to participate in the study through 1st term of academic year 2018-2019. Follow up educational program at the second term of the same academic year.

Tools of Data Collection:

- **Part I:** assessed student's general characteristics included in the study as Personal data of the study sample: such as age, level of education, marital status, level of mother's education and student's mother occupation.
- **Part II**:including hearing about cervical cancer and their sources of knowledge.
- **Part III:** including knowledge about cervical cancer (definition,, high risk group, types, risk factors , sign & symptoms, availability of treatment, types of treatment of cervical cancer, preventive measures, and early detection methods. Also it includes knowledge about Human PapillomaVirus, (HPV) and its vaccination that included the following:(definition, methods of transmission, Risk factors of Human papilloma virus, methods of prevention, complications of it and routine examination, the vaccine and doses of vaccine)
- Providing session after determine baseline of students' knowledge.

Scoring System for knowledge:
The female student'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 corrected answer. Accordingly the female students total knowledge will be categorized into either satisfactory level of knowledge (>60%), and unsatisfactory knowledge (<60%).
Tool II: Follow up sheet: was designed by researcher for follow using health educational program among female students of first and second academic year in faculty of nursing at DamanhourUniversity.
Tool III:Likert Scale: was used to evaluate attitude of Females student's towards cervical cancer human papilloma virus &its vaccine before and after using health educational program . It includes level of attitude Agree, Uncertain, and disagree.

Scoring System:
The total score of attitude rating scale .each statement was assigned a score according to female students attitude, response were" agree", 'uncertain ", "disagree' 'and were scored 3, 2 and 1 respectively .The scoring was reversed for negative statements; the score of the items were summed up and were converted into a percentage score.
It was classified into 2 categories:

- **Positive attitude** if score ≥ 80%
- **Negative attitude** if score < 80%

Supportive material: educational program , was designed by researcher based on the identified need post the assessment of knowledge and attitude to Increasing knowledge of female students about cervical cancer , genital Human papilloma virus and its vaccination.
Content validity and reliability:
The tools of data collections were developed by the researcher was reviewed for appropriateness of items and measuring the concepts through jury of three specialized university Prof at faculty of nursing ,Damanhour and Alexandria University to assure content of validity of the questionnaire then accordingly to their comments, modification were considered. On the other hand there were Reliability was done by Cronbach's Alpha coefficient test which r=0.79.

Ethical Consideration:

- The aim of the study was explained to each student before applying the tools to gain her confidence and trust.
- An oral consent was obtained from each student prior to participate in the study.
- Data was confidential and using coding system for it. The study did not cause any harmful effects on participating students. Each student has right to withdraw from the study at any time

II- Field work:
a) **Preparatory phase:**
Reviewing of the current local and international related literature using books, articles and scientific magazines will be done by the researchers to be acquainted with the problem and guided them in the process of tools' designing of data collection and designed an educational program.

-Administrative Design:

An official written approval letter clarifying the purpose of study was obtained from Dean of Faculty of Nursing Damanhour University.
Pilot study:
A pilot study was conducted for 10% from total number of sample to evaluate the simplicity and clarity of tools that was used in the study.
b) Implementation phase:
An official written approval letter clarifying the purpose of study was obtained from Dean of Faculty of Nursing Damanhour University to obtain her approval for data collection. At the first the researcher was obtain an oral consent after explain aim of the study and explained how to fill the tools.

- The researchers were attended the previous mentioned study setting forthree days per week (from 8 am to 12am).
- The researchers were interviewed 20 female students nurses /day according to sequence of their attendance in collage and explain the aim of the study to female students nurses (duration of each interview 20 min). The researcher was completed the tool by interviewing the students.
- The assessment phase was started using the data collection tools for 6 months which comply with the educational program to assess female students' knowledge and attitude related to cervical cancer , Human papilloma virus &its vaccine

d) Follow-up:
Follow up for female students after receiving nursing guideline session to find out the effect of it after 3month .
IV- Data management and analysis.
The appropriate statistical methods and tests will be used for analysis of results, presented in tables, figures and graphics as required.

Significant of the results:
Test of significance was used to find out association between the variable using the following way; Chi-square, correlation coefficient, Mean &SD, P value.

- No significant difference obtained at $P > 0.05$
- significant difference obtained at $P < 0.05$
- Highly significant difference obtained at $P < 0.001$

III. Results

Table (1): Number and Percentage Distribution of the studiedstudents according to their demographic Characteristics. (N=200)

Demographic Characteristics	No	%
Age (years)		
18-	85	42.5
19- 20	115	57.5
$\bar{x}$ **19.1±1.3**		
Residence		
Rural	146	73
Urban	54	27
Marital Status		
Unmarried	185	92.5
Married	15	7.5
Academic year		
First year	87	43.5
Second year	113	56.5

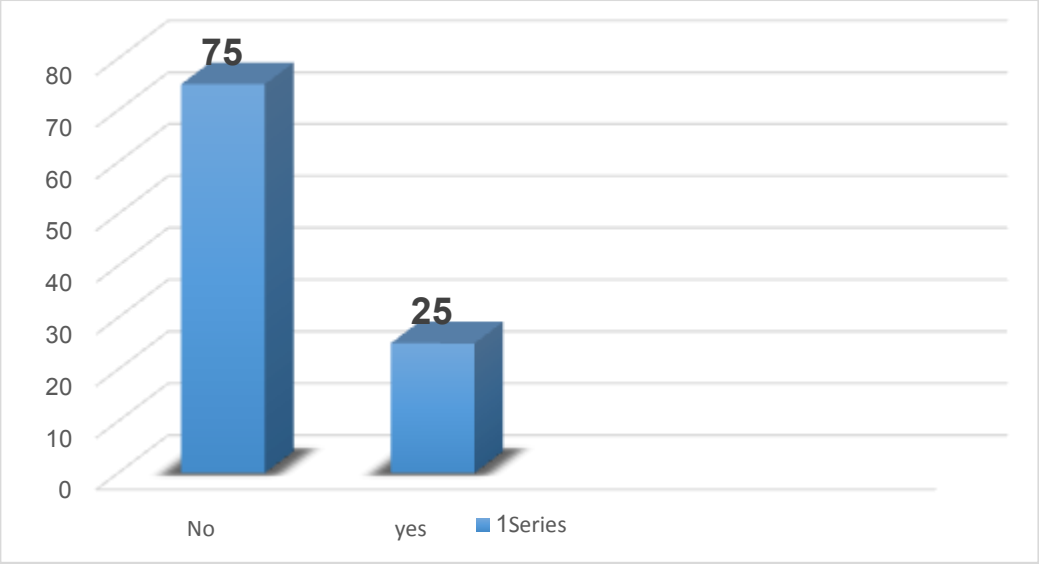

Figure (1): Percentage Distribution of studied Students according to students'hearing about cervical cancer examination **(N=200)**

Students knowledge related to HPV	Pre- application health educational program		Post application health educational program		Friedman test	
					X2	p. value
	Correct	Incorrect &don't know	Correct	Incorrect &don't know		
	%	%	%	%		
There is a vaccine available to prevent HPV infection in the cervix	3.5	96.5	69.5	30.5	11.300	.004**
The appropriate age for vaccination against HPV for women	2	98	83.5	16.5	9.556	.007**
Types of vaccines against HPV.	4	96	91.5	8.5	16.584	.000**
Sites of injection of the vaccination.	12	88	90	10	10.664	.005**
How many doses should be taken from this vaccination	3	97	36.5	63.5	13.784	.002**
precautions should be taken before giving the vaccination	2.5	97.5	51.5	48.5	8.145 .	.009**

Table (2): Percentage Distribution of the studied students according to their knowledge about vaccination for genital human papilloma virus pre and post application health educational program . (N=200)

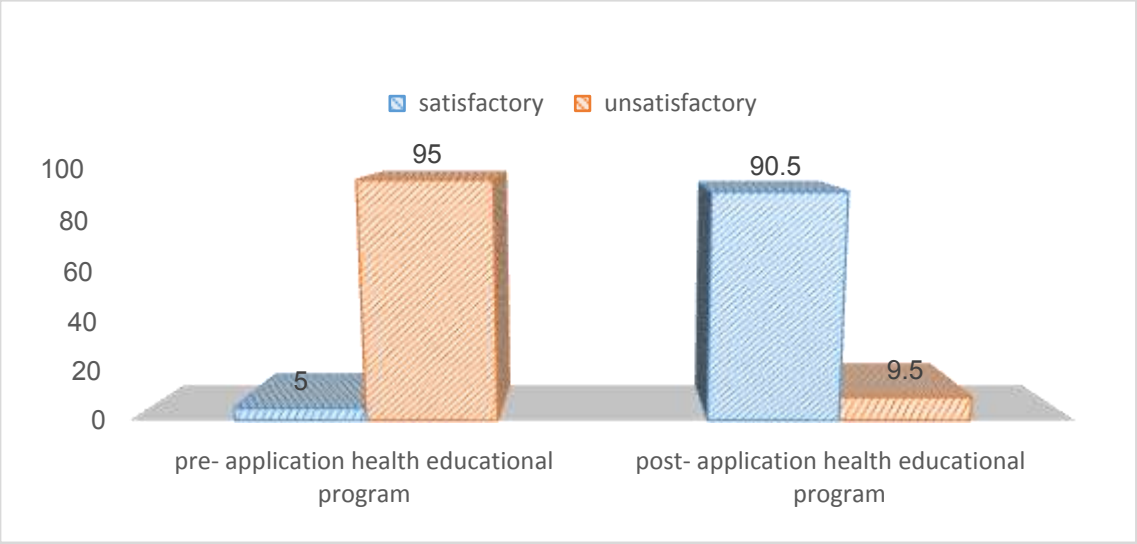

Figure (2): Percentage Distribution of the studied students according to their total knowledge score of pre and post health educational programabout cervical cancer ,genital Human papilloma virus infection and its vaccine . (N=200)

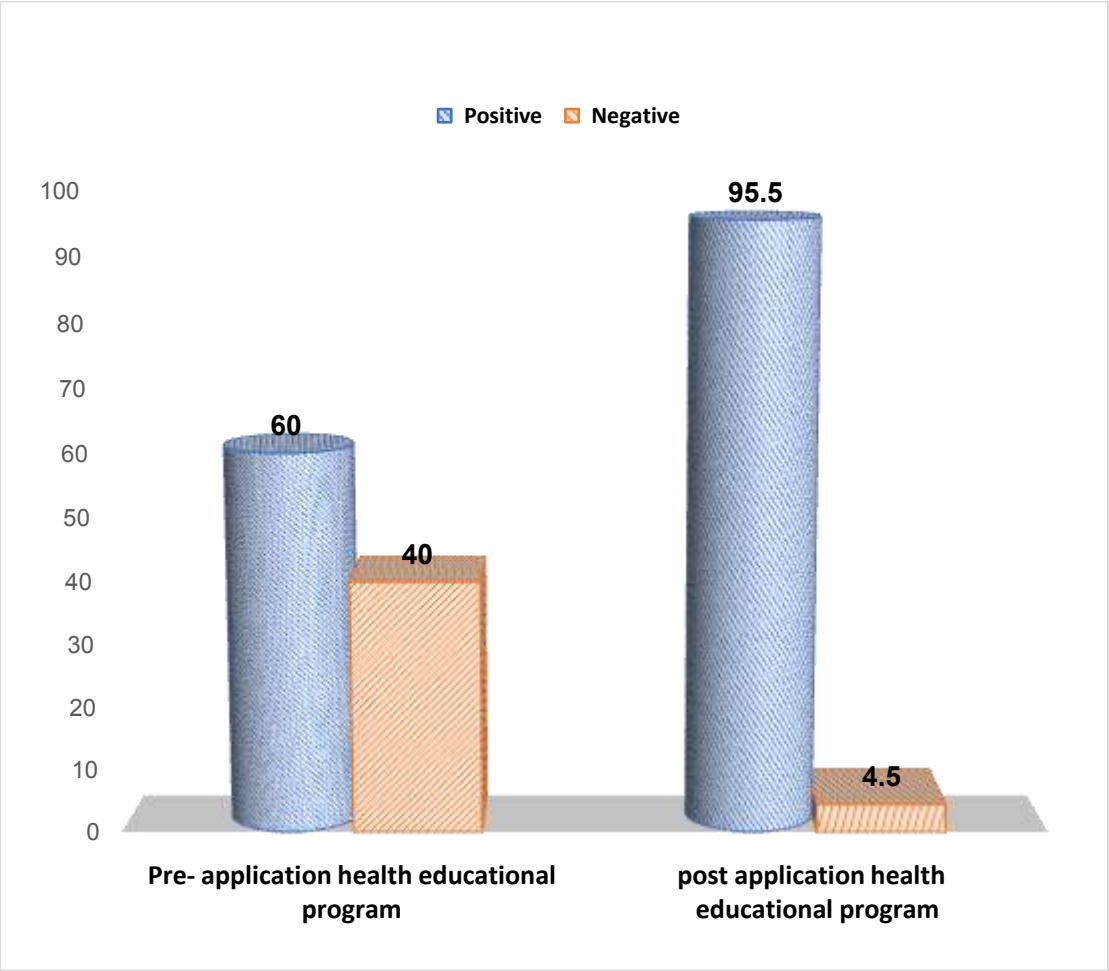

Figure (3): Percentage Distribution of the studied students according to their total attitude of pre and post health educational program about cervical cancer ,genital Human papilloma virus infection and its vaccine . (N=200)

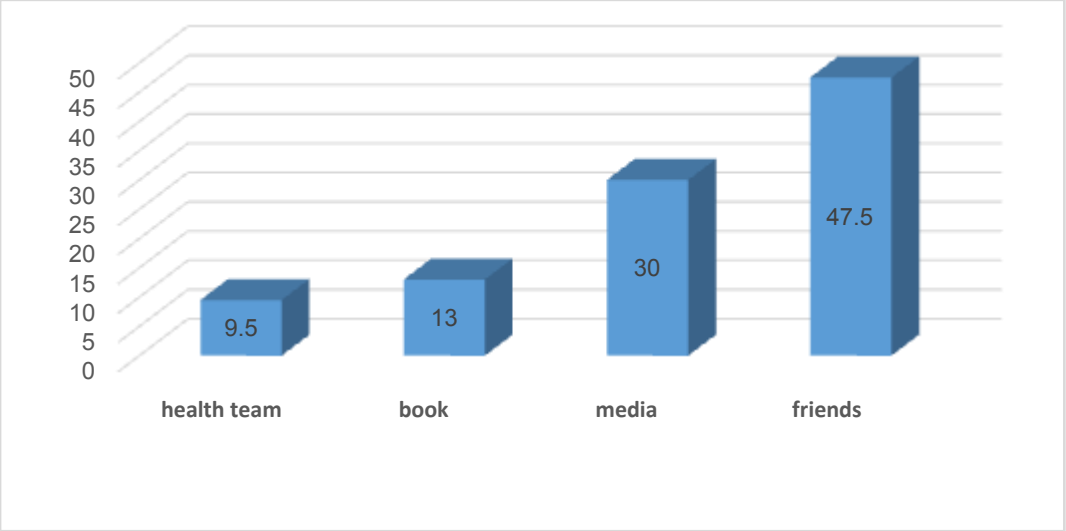

Figure (4): Percentage Distribution of the studied students according to Source of information about cervical examination, genital Human papilloma virus infection and its vaccine . (N=200)

Table (3): Relation between demographic characteristics of the studied students and total knowledge post health educational program about cervical cancer and genital Human papilloma virus . (N=200)

Demographic characteristics		Total knowledge post health educational program		Chi-square	
		Satisfactory N=190	Unsatisfactory N=10		
		%	%	X2	P-value
Age	18 -	42.5	38.5		
	19-20	57.5	61.5	14.926	.001**
Marital Status	Unmarried	88	45.0	1.079	.299
	Married	12	55.0		
Academic year	First year	44.5	38.5		
	Second year	55.5	61.5	14.465	.002*
Residence	Rural	73.5	69.5	2.365	.075
	Urban	16.5	30.5		

> 0.05 insignificant *≤ 0.05 significant **≤ 0.001 highly significant

Table (4): Relation between demographic characteristics of the studied students and total attitude post health educational program about cervical cancer and genital Human papilloma virus . (N=200)

Demographic characteristics		Total attitude post health educational program		Chi-square	
		Positive N=(191)	Negative N=(9)		
		%	%	X2	P-value
Age	18-	42.5	38.5		
	19- 20	57.5	61.5	6.992	.030*
Marital Status	Unmarried	87.5	100	1.872	.171
	Married	12.5	00.0		
Academic year	First year	44.5	38.5		
	Second year	55.5	61.5	4.672	.019*
Residence	Rural	73.5	69.5	9.331	.009**
	Urban	16.5	30.5		

Table (1) demonstrate that, 57.5% of the studied students their age ranged between 19-20 years, the mean of age of them was 19.1±1.3 year.the majority (87.5%) of female were unmarried, about three quarter from rural area

Table (2):showed that, there was a marked improvement in knowledge about vaccination for genital human papilloma virus infectionof the studied students post application health educational program with statistically significant difference at (P= < 0.05) between pre& post application health educational program .

Figure (1) reveals that three quarters of female in this study previously heard about cervical cancer and its examination

figure (2) showed that there is improvement in knowledge about cervical cancer and screening tests of genital human papilloma virus infection of the studied students post implementation of health education program with highly statistically significant difference at (P= < 0.01) between pre, post and follow up implementation of program.

figure (3) revealed that, there was a marked improvement in attitude about cervical cancer human papilloma virus of the studied students post implementation of health education program with highly statistically significant difference at (P= < 0.01)& (P= < 0.05) between pre, post and follow up implementation of health education program.

As regards sources of information of female employees, figure (4) display that, the main resource was the friends (47.5%).While the Medias (T.V, radio, newspapers and magazines) represented 30.0% and books represented 13.0%. Those who mentioned health team (as nurse & physicians) represented 9.5% which is the least one.

Table (3) showed that, there was statistically significant relation between total knowledge post application health educational program about cervical cancer and HPV of the studied nurses and their age and academic year at (P= < 0.05).

Table (4) revealed that, there was highly statistically significant relation between total attitude post application health educational program aboutcervical cancer and HPVof the studied nurses and their age at (P= < 0.01).

IV. Discussion

cancer is increasingly becoming the disease of the century, especially cervical cancer that is now the fourth most common Gynecologic malignant tumor worldwide after breast cancer to cause death among the female population. This disease originates at the squamocolumnarjunction of cervical canal. It most commonly arises in an area known to undergo considerable changes during late fetal life, adolescence and first pregnancy **(Bray, et al., 2018).**

The present study was aimed to evaluate theImpact of health educational programabout cervical cancer, Human PapillomaVirus, its vaccine on Knowledge and attitude of female student nurses''**.** This aim was significantly approved within the framework of the present study's research hypothesis which was ffemale students nurses who receive the health educational program will have high knowledge and positive attitude regarding genital Human papilloma virus,vaccine&cervical cancer . The total sample size was two hundred (200) female students of first and second academic year

In relation to the general characteristics of the studied students, the current finding revealed that more than half of them were between 19 to 20 years old. Concerning residence, nearly three –quadrant of the studied students from rural area .While, the majority of studied students were unmarried .This finding agree with **(Amukugo et al., 2018)** who conducted a study on knowledge, attitude and practices regarding human papilloma virus among female students reported that the majority of participants were nursing students, below 25 years and, unmarried.

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The present study finding reported the majority of sample didn't hear about cervical examination . The present finding was supported by**(Altamimi T , 2020),** who conducted a study on cervical cancer , Human papillomavirus and its vaccination: Knowledge and attitudes among female university students in Saudi Arabia, who reported The majority of students did not hear about HPV and its vaccine .

In relation to Knowledge about genital Human papilloma virus vaccination , the present findings revealed that,the majority of the students had poor knowledge about cervical cancer examination ,genital human papilloma virus (HPV), and vaccination for genital human papilloma virus before application health educational program , which improved drastically immediately post applicationhealth educational program . The findings of the current study are similar to the **(Staples et al , 2018),** who had done a study in North Carolina

about an educational intervention to (HPV) and cervical cancer knowledge among African American college students, they found that, there was a highly significant improvement of students' knowledge because students didn't have knowledge pre intervention compare post intervention .

The present study, it was observed that there was a significant difference in total knowledge score between pre-health educational program application and post health educational program application . The present study findings revealed that a highly significant improvement in students' totalattitudescores about genital Human papilloma virus infection posthealth educational application compare to pre –application, this improvement of students' attitude may be due to health educational play a major role in health education, promotion and provide a comprehensive, important &complete information about HPV .

The present study, it was observed that there was the source of information of the studied students, nearly half of student know about cervical examination ,HPV and its vaccine from friends ,The findings of the current study are similar to the (**Hoque,2018),**who conducted a study onFemale University Students in South Africa,aboutCervical Cancer Awareness and Preventive,he found more than half of student know about cervical cancer from their peer.

In relation to the Relation between demographic characteristics of the studied students and total knowledge score, the present study findings revealed that,there was significant relations between total knowledge score and student's demographic characteristics , post health educational program application .Moreover , there is a highly significant relationsbetween total knowledge post health educational program application and Residence. The present Study finding was agreed with (**Ping et al ,2018)** who found that there was a highly significant difference post application health educational program and significant association with students demographic characteristics with their knowledge level about cervical cancer and genital Human papilloma virus . These results are not agreement with the study by **(Arunachalam and Chandrabose, 2019)** related to Knowledge and attitude on human papilloma virus among adolescent girls in school students at Puducherry who found there is no significant association with any demographic variables and the level of knowledge.

The present study revealed that there were highly statistically significant relationbetweengeneral students characteristics andtotalattitude score after health educational program application about cervical cancer and Human papilloma virus I , these findings supported by**(Tung et al, 2019)** who found that there was a highly significant difference post application health educational between demographic students characteristics with their attitude .

Lastly, the present study findings highlight attention toward the effectiveness and practicability of the application the present study health educational program to student's nurses as a method for continuous updating and improved their knowledge and attitude to promote and improve their competences.

V. Conclusion

The study concluded that the education program had a positive impact on females' knowledge and attitude regarding cervical cancer and Genital Human Papilloma Virus

VI. Recommendations

In the light of the study results, the study recommended the following:

-The study recommended that developing an educational program for female students at secondary schools about cervical cancer, HPV and its vaccination is important issue that modify behavior and decrease risk of HPV infection in order that they will obtain the HPV vaccine and prevent cervical cancer.

-Raising community awareness especially females about risk factors, signs and symptoms, preventive measures, and early detection methods of cervical cancer and Human papilloma virus infection

- Reinforce outreach program to females in order to provide them with information, education and communication about cervical cancer as well as screening services.

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