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Impact of education on knowledge and perception of cervical cancer and its prevention among adolescent's girls in school based interventional study

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Abstract
Cervical cancer is the fourth most common cancer among women in the world. According to the GLOBOCAN report in 2012, Saudi women have an estimated cervical cancer incidence of 2.2 per 100,000 age-standardized rates (ASR). Of these 241 women, 84 (34.8%) have died due to cervical cancer. Many factors have been identified as contributors to cervical cancer among women living in different regions of the world, including the prevalence of HPV, lack of screening programs, limited access to care, social environment that fosters certain behavioural factors, and values and beliefs concerning cervical cancer. This study was intended to identify the knowledge and perception of cervical cancer and its perception among adolescents in selected school, Farasan. Through quantitative survey approach and pre-experimental design, the 30 students from 16-18 years were selected by convenient sampling method. Initially, personal information was obtained from adolescents and then 40 questions were formulated to assess the knowledge on cervical cancer. The perception was assessed through 3-point Rating scale (Agree-3, Disagree-2 and not sure-1). The results of the study show the overall pre-test mean score was 6.43±3.1 where as in post-test it was 36.49±2.63 with the mean difference of 30.06. The calculated 't' value was 3.95 at 0.05 level. Hence it shows that significant improvement of students' knowledge on cervical cancer after implementation of video teaching programme. For perception the pre-test was 12.5±1.84, whereas in post-test it was 29.1±0.876, with the mean difference of 16.6. It shows that students had favourable attitude toward cervical cancer. The calculated 't' value was 3.068 at 0.05 level of significance. There was no association between knowledge and perception scores with selected demographic variables. There was a positive correlation between pre and post-test scores of knowledge and perception about cervical cancer. Planned communication aiming eligible women, complete availability of screening services in public health facilities may increase the acceptance of screening. There is a need for more educational programs to channel identified knowledge slits and scale up of regular practice of cervical cancer screening in women.

Keywords: knowledge, perception, adolescents, cervical cancer, video teaching programme

Introduction

Globally, cervical cancer ranks the third most common cancer in women, with a total estimated 569,847 diagnosed cases of invasive cervical carcinoma with 311, 365 deaths from the disease annually [1]. In Indonesia, cervical cancer is the second most common cancer and the leading cause of death among women aged 15-40 years, with about 32,469 newly diagnosed cases annually [2]. Cervical cancer is linked to Human Papillomavirus (HPV) infection [3]. The World Health Organization (WHO) recommended introducing HPV vaccination as part of a coordinated and comprehensive strategy to prevent cervical cancer and other diseases caused by HPV [4].

The WHO recommended 2-doses of HPV vaccine, explaining that a 2-doses HPV vaccine schedule provides satisfactory immunological outcomes in adolescent girls less than 15 years old [6].

Because children in this age need parental consent for the vaccination, the acceptance of the HPV vaccine is highly dependent on the knowledge, perceptions, and approval of their parents [7, 8, 9]. A systematic review found several factors associated with parents' acceptance of HPV vaccination for their children including: perceived susceptibility to HPV infection, benefits of vaccination, the safety of the vaccine, social-environmental factors (e.g., social norms, media influence, doctor's recommendation), and parental factors (educational level, household income, expenses, and attitudes) [10]. The WHO recommended countries which are introducing the HPV vaccine into their NIP should invest in a comprehensive communication plan to first build community awareness and acceptance for the vaccine and the program.

This plan includes clear program and communication objectives, understanding community knowledge, attitudes and practices, and defined target audiences. Communication efforts should reach all key target audiences, especially parents [11]. Parents' misperceptions and concerns about the vaccine may affect their acceptance and coverage of the vaccine [12]. Inadequate knowledge is one of the significant obstacles to increase HPV vaccine acceptability [13, 14].

Significance of the Study

The health of woman represents the health status of any country. Women's health assumes importance because "her health status directly affects children's health". Mothers from a 'vulnerable' or 'special risk group' the risk is connected with childbearing and nurturing. Cervical cancer is most common cause of death among women in developing countries despite the fact the cervical cancer is preventable.

The major reason for the highest incidence rate of cervical cancer in the developing countries is due to the lack of awareness about cervical cancer among the elderly women. More than 99% of cervical cancer cases are related to infection with Human Papilloma Virus (HPV) an oncogenic virus and is a sexually transmitted disease (STD) which is mostly asymptomatic.

In 2018, an estimated 570 000 women were diagnosed with cervical cancer worldwide and about 311000 women died from the disease. Early diagnosed of cervical cancer is one of the most successfully treatable forms of cancer, as long as it is detected early and managed effectively [3].

Cervical cancer is very much preventable and an important aspect of its prevention is the detection of the pre malignant form by cervical screening. A number of studies have shown that effective screening programmes have significantly reduced the incidence of cervical cancer in developed countries. The incidence of cervical cancer in the United Kingdom decreased significantly after the introduction of a national screening programme. This study seeks to compare the knowledge and Perception of female Adolescent students studying in Farasan School, Kingdom of Saudi Arabia towards cervical cancer and it screening.

Objectives

1. Assess the knowledge and perception of cervical cancer among Adolescent girls before implementation of structured educational intervention
2. Assess the effectiveness of knowledge and perception of cervical cancer among Adolescent girls after implementation of educational interventional
3. To associate the pre-test scores with selected demographic variables
4. Correlate the post-test knowledge and attitude scores of cervical cancer among Adolescent girls

Hypothesis

1. There is a significant difference between pre and post test scores of cervical cancer
2. There is a significant association between pre-test knowledge and perception scores on cervical cancer with demographic variables
3. There is a significant correlation between pre and post-test knowledge and perception scores on cervical cancer

Materials and Methods

- **Research approach:** This is a quantitative based cross-sectional study
- **Research design:** Pre experimental one group pre and post-test design
- **Research setting:** The study was carried out in middle and high school of Farasan Governorate, Saudi Arabia
- **Population:** The population of the current study was secondary school girls students studying with the age group of 16-18 years Farasan Governorate.
- **Sample size:** The sample size adopted for this study was 30 students between the age group of 16-18 years.
- **Sample techniques:** Non probability Convenient sampling technique was used for this study.
- **Criteria for sampling technique:** Inclusion criteria-Students were studying in Farasan school at the age group of 16-18 years & Students who can understand the Arabic

Tool for data collection

1. A questionnaire was developed for following components of information from the students. Basic sociodemographic profile like age, level of education, Family income, residence, age at menarche, regularity of menstrual cycle, previous knowledge on cervical cancer and vaccination and any vaginal infection.
2. The knowledge was assessed by Questionnaire, it has all the details of knowledge on cervical cancer and vaccination. The questionnaire has Yes, No and Don't Know options. The correct response was given for one mark and wrong options was given for zero mark. Totally 40 questions were formulated to assess the knowledge on cervical cancer.
3. The perception was assessed through 3-point Rating scale (Agree-3, Disagree-2 and Not sure-1). Totally 10 questions were formulated to assess the perception of cervical cancer. The total score was 30.

Data collection procedure

1. Permission was obtained from Dean of university college of Farasan and Manager of Farasan governorate school.
2. Pre-test was conducted by using knowledge questionnaire and Rating scale was used to assess the perception of cervical cancer. Immediately after pre-test the education on cervical cancer and its prevention was taught to the students through video assisted teaching for 20 minutes.
3. Post test was conducted by using same pre-test tool on 7th day after educational administration

Plan for data analysis

1. Both descriptive and inferential statistics was used.
2. Mean, standard deviation and mean percentage was used to assess the knowledge and perception about cervical cancer and its prevention among adolescents between the age group of 16-18 years.
3. Inferential statistics like paired "t" test was used to assess the difference between pre and post-test knowledge and perception on cervical cancer and its prevention.
4. Chi square used to assess the association between pre-test scores with Demographic variables.
5. Correlation and Coefficient test was used to identify the significant relationship between Knowledge and Perception scores of cervical cancer and its prevention.

Findings and Results

The Percentage wise distribution of demographic variable shows that, Most of the student (70%) where at the age group of 16-17 years. The highest percentage (63.33%) of students where at the level of intermediate education. 60 percentage (60%) of students living in rural areas. Most of the students (70%) had 5 number of family members in their house. The highest percentage (73.33%) of the students having regular menstrual cycle. Most (82%) of them had menarche at the age of 13 years. 37% of the students have irregular menstruation and recurrent vaginal infection.

Table 1: Frequency and percentage wise distribution of pre and post-test knowledge on cervical cancer

S.No	Awareness on Risk factors of cervical cancer	Yes		No		Don't Know	
		Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
1	Infection with HPV	4 (13.3%)	20 (66.7%)	10 (33.3%)	5 (16.7%)	16 (53.3%)	5 (16.7%)
2	Smoking any form of cigarettes	5 (16.7%)	22 (73.3%)	15 (50%)	3 (10%)	10 (33.3%)	5 (16.7%)
3.	Having a weakened immune system	9 (30%)	25 (83.3%)	10 (33.3%)	1 (3.3%)	11 (36.7%)	4 (13.3%)
4	Long term use of the contraceptive pill.	3 (10%)	24 (80%)	18 (60%)	2 (6.7%)	9 (30%)	4 (13.3%)
5	Infection with Chlamydia	2 (6.7%)	28 (93.3%)	10 (33.3%)	0 (0)	18 (60%)	2 (6.7%)
6	Having a sexual partner who is not circumcised.	1 (3.3%)	29 (96.7%)	9 (30%)	0 (0)	20 (66.7%)	1 (3.3%)
7	Starting sexual intercourse at a tender age	11 (36.7%)	30 (100%)	4 (13.3%)	0 (0)	15 (50%)	0 (0)
8	Having many sexual partners.	14 (46.7%)	30 (100%)	1 (3.3%)	0 (0)	15 (50%)	0 (0)
9	Having many children.	2 (6.7%)	27 (90%)	17 (56.7%)	0 (0)	11 (36.7%)	3 (10%)
10	Having a sexual partner with many previous partners	16 (53.3%)	29 (96.7%)	7 (23.3%)	0 (0)	7 (23.3%)	1 (3.3%)
11	Not going for regular smear (Pap)	6 (20%)	2 (6.7%)	14 (46.7%)	23 (76.7%)	10 (33.3%)	5 (16.7%)
12	Keep clean environment can reduce risk of Cervical cancer	1 (3.3%)	10 (33.3%)	12 (40%)	26 (86.7%)	3 (10%)	8 (26.7%)
13	Cervical cancer can occur in women and men	3 (10%)	22 (73.3%)	27 (90%)	3 (10%)	0 (0)	5 (16.7%)
14	Cervical cancer is caused by HPV infection	9 (30%)	30 (100%)	5 (16.7%)	0 (0)	16 (53.3%)	0 (0)
	Awareness about Symptoms of cervical cancer						
15	Vaginal Bleeding	8 (26.7%)	28 (93.3%)	12 (40%)	0 (0)	10 (33.3%)	2 (6.7%)
16	Persistent lower back pain	7 (23.3%)	29 (96.7%)	10 (33.3%)	0 (0)	13 (43.3%)	1 (3.3%)
17	Persistent vaginal discharge that smells unpleasant	17 (56.7%)	30 (100%)	3 (10%)	0 (0)	10 (33.3%)	0 (0)
18	Discomfort or pain during sex	5 (16.7%)	30 (100%)	3 (10%)	0 (0)	22 (73.3%)	0 (0)
19	Menstrual periods that are heavier or longer	19 (63.3%)	30 (100%)	0 (0)	0 (0)	11 (36.7%)	0 (0)
20	Persistent diarrhoea	2 (6.7%)	15 (50%)	2 (6.7%)	8 (26.7%)	26 (86.7%)	7 (23.3%)
21	Vaginal bleeding after the menopause	8 (26.7%)	28 (93.3%)	11 (36.7%)	0 (0)	11 (36.7%)	2 (6.7%)
22	Persistent pelvic pain	3 (10%)	25 (83.3%)	5 (16.7%)	0 (0)	22 (73.3%)	5 (16.7%)
23	Vaginal bleeding during or after sex	20 (66.7%)	30 (100%)	0 (0)	0 (0)	10 (33.3%)	0 (0)
24	Blood in the stool or urine	1 (3.3%)	22 (73.3%)	25 (83.3%)	2 (6.7%)	4 (13.3%)	6 (20%)
25	Unexplained weight loss	2 (6.7%)	21 (70%)	12 (40%)	1 (3.3%)	16 (53.3%)	8 (26.7%)
	Awareness about Vaccinations of cervical cancer						

26	HPV vaccine does not give protection from cervical cancer	12 (40%)	0 (0)	3 (10%)	30 (100%)	15 (50%)	0 (0)
27	HPV vaccine can be given to women and men	2 (6.7%)	30 (100%)	27 (90%)	0 (0)	1 (3.3%)	0 (0)
28	HPV vaccine is given to children	2 (6.7%)	0 (0)	0 (0)	30 (100%)	28 (93.3%)	0 (0)
29	HPV vaccine is given to Adolescent	2 (6.7%)	30 (100%)	8 (26.7%)	0 (0)	20 (66.7%)	0 (0)
30	2 doses of HPV vaccine to be given for adolescent age	1 (3.3%)	30 (100%)	4 (13.3%)	0 (0)	25 (83.3%)	0 (0)
31	Vaccinating girls and women before sexual debut to prevent cervical cancer	0 (0)	30 (100%)	28 (93.3%)	0 (0)	2 (6.7%)	0 (0)
	Awareness about Protective Factors of cervical cancer						
32	Not smoking	4 (13.3%)	20 (66.7%)	10 (33.3%)	5 (16.7%)	16 (53.3%)	5 (16.7%)
33	Not becoming sexually active at a young age	5 (16.7%)	22 (73.3%)	15 (50%)	3 (10%)	10 (33.3%)	5 (16.7%)
34	Being faithful to one sexual partner	9 (30%)	25 (83.3%)	10 (33.3%)	1 (3.3%)	11 (36.7%)	4 (13.3%)
35	Not taking contraceptives	3 (10%)	24 (80%)	18 (60%)	2 (6.7%)	9 (30%)	4 (13.3%)
36	No vaginal douching	2 (6.7%)	28 (93.3%)	10 (33.3%)	0 (0)	18 (60%)	2 (6.7%)
37	Practicing safe sex	1 (3.3%)	29 (96.7%)	9 (30%)	0 (0)	20 (66.7%)	1 (3.3%)
38	Being circumcised	11 (36.7%)	30 (100%)	4 (13.3%)	0 (0)	15 (50%)	0 (0)
39	HPV vaccination	2 (6.7%)	30 (100%)	27 (90%)	0 (0)	1 (3.3%)	0 (0)
40	Attending regular screening	18 (60%)	28 (93.3%)	1 (3.3%)	0 (0)	11 (36.7%)	2 (6.7%)

The item wise distribution of student's knowledge on cervical cancer shows that, in pre-test, more or less 60 percentage of students were answered in the aspects of having many sexual partners (53.3%), persistent vaginal discharge that smells unpleasant (56.7%), vaginal bleeding during, menstrual periods that are heavier or longer and after sex (63.3%) and attending regular screening can prevent cervical cancer (60%). Nearly 40 percentage of students had knowledge in the aspects of Starting sexual intercourse at a tender age (36.7%), HPV vaccine does not give protection from cervical cancer (40%) and being circumcised can prevent cervical cancer (36.7%). Less than 10 percentage of students had knowledge on the aspects like HPV vaccination can protect cervical cancer (6.7%), Practicing safe sex (3.3%), No vaginal douching (6.7%), not taking contraceptives (10%), 2 doses of HPV vaccine to be given for adolescent age (3.3%), HPV vaccine can be given to women and men (6.7%), HPV vaccine is given to children (6.7%), HPV vaccine is given to Adolescent (6.7%), Unexplained weight loss (6.7%), Blood in the stool or urine (3.3%), Persistent diarrhoea (6.7%), Cervical cancer can occur in women and men (10%), Keep clean environment can reduce risk of Cervical cancer (3.3%), Having many children (6.7%), Having a sexual partner who is not circumcised (3.3%), Infection with Chlamydia (6.7%) and Long term use of the contraceptive pill (10%).

Table 2: Area wise distribution Mean, SD and Mean percentage of pre and post-test scores on knowledge of cervical cancer

S. no	Areas of awareness on cervical cancer	Max score	Pre-intervention		Post intervention		Mean differenc	'T' test Value	P value
			Mean	SD	Mean	SD			
1	Awareness on Risk factors of Cervical cancer	14	2.57	0.97	12.53	0.91	9.96	3.95	0.05
2	Awareness about Symptoms of cervical cancer	11	2.03	0.72	10.03	0.62	8		
3	Awareness about Vaccinations of cervical cancer	6	0.53	0.57	5.7	0.47	5.17		
4	Awareness about Protective Factors of cervical cancer	9	1.3	0.84	8.23	0.63	6.93		
	Total	40	6.43	3.1	36.49	2.63	30.06		

Area wise distribution on Mean, SD and Mean difference shows that, in pre-test the students obtained the highest mean in the aspect of risk factors of cervical cancer (2.57±0.97) and similar mean score was obtained in the areas of awareness about symptoms of cervical cancer (2.03±0.72) and protective factors of cervical cancer (1.3±0.84) respectively. The lowest mean score was obtained in the area of vaccinations of cervical cancer (0.53±0.57).

Whereas in the post-test the highest means score was obtained in the area of awareness on risk factors of cervical cancer (12.53±0.91), More or less similar percentage of mean score was obtained in the areas of awareness about symptoms of cervical cancer (10.03±0.62) and awareness about protective factors of cervical cancer (8.23±0.63) and very less mean score was obtained in the area of awareness on vaccination of cervical cancer (5.7±0.47). The overall pre-test mean score was 6.43±3.1 where as in post-test it was 36.49±2.63 with the mean difference of 30.06. The calculated 't' value was 3.95 at 0.05 level. Hence it shows that significant improvement of students' knowledge on cervical cancer after implementation of educational programme.

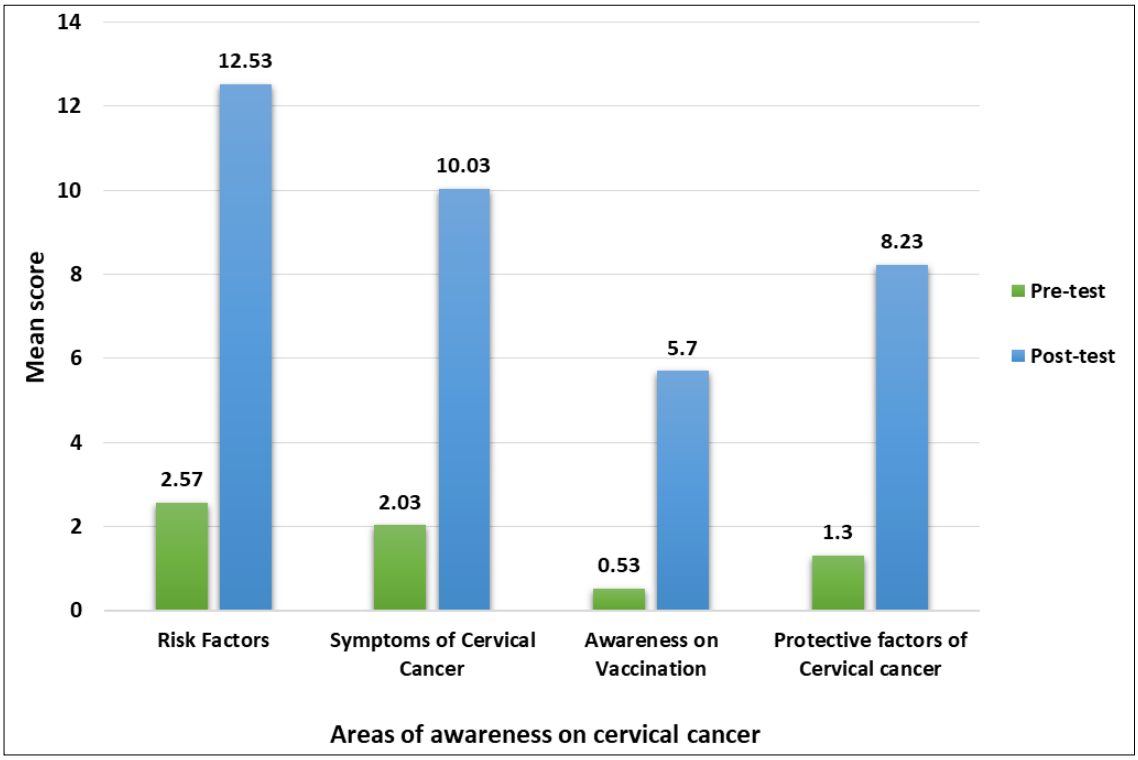

Fig 1

Table 3: Frequency and percentage wise distribution of pre and post-test perception on cervical cancer

S. no	Perception on cervical cancer	Agree		Disagree		Not sure	
		Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
1	HPV infection is a common STI in women	2 (6.7%)	26 (86.7%)	14 (46.7%)	1 (3.3%)	14 (46.7%)	3 (10%)
2	All person, both women and men are at risk for having HPV infection	1 (3.3%)	29 (96.7%)	27 (90%)	1 (3.3%)	2 (6.7%)	0 (0)
3.	HPV infection can cause cervical cancer	17 (56.7%)	30 (100%)	2 (6.7%)	0 (0)	11 (36.7%)	0 (0)
4	HPV infection is a major cause of women death	2 (6.7%)	28 (93.3%)	25 (83.3%)	2 (6.7%)	3 (10%)	0 (0)
5	No sex before marriage	5 (16.7%)	29 (96.7%)	3 (10%)	0 (0)	22 (73.3%)	1 (3.3%)
6	Cervical cancer is a dangerous cancer	18 (60%)	30 (100%)	3 (10%)	0 (0)	9 (30%)	0 (0)
7	Every woman is at risk of developing cervical cancer	2 (6.7%)	28 (93.3%)	24 (80%) (80%)	1 (3.3%)	4 (13.3%)	1 (3.3%)
8	I believe HPV vaccination is useful for preventing cervical cancer	20 (66.7%)	30 (100%)	0 (0)	0 (0)	10 (33.3%)	0 (0)
9	I believe HPV vaccine is safe	20 (66.7%)	30 (100%)	0 (0)	0 (0)	10 (33.3%)	0 (0)
10	Attending a seminar on screening and treatment of cervical cancer	17 (56.7%)	29 (96.7%)	2 (6.7%)	0 (0)	11 (36.7%)	1 (3.3%)

Item wise distribution of perception on cervical cancer shows that in pre-test the highest number of students were agreed in the aspects of HPV vaccination is useful for preventing cervical cancer (66.7%) and it is safe (66.7%) respectively. More or less nearly 60% of students were agreed in the items of cervical cancer is dangerous cancer (60%), HPV infection can cause cervical cancer (56.7%) and attending a seminar on screening and treatment of cervical cancer (56.7%). Very smaller number of students were agreed in the aspects of Every woman is at risk

of developing cervical cancer (6.7%), HPV infection is a major cause of women death (6.7%), HPV infection is a common STI in women (6.7%) and both women and men are at risk for having HPV infection (3.3%) respectively.

Table 4: Area wise distribution of Mean, SD and Mean percentage of pre and post-test scores on perception of cervical cancer

S.No	Areas of Perception on cervical cancer	Max Score	Pre-Intervention		Post intervention		Mean difference	't' test Value	P value
			Mean	SD	Mean	SD			
1	Risk factors of cervical cancer	21	5.3	2.23	20.13	0.819	14.83	**9.22**	**0.05**
2.	HPV vaccination & awareness education	9	1.07	0.78	8.47	0.51	7.4		
	Total	30	12.5	1.84	29.1	0.876	16.6		

Area wise distribution of Mean, SD and Mean percentage of pre and post-test scores on perception of cervical cancer shows that, in pre-test the mean score for risk factors of cervical cancer was 5.3±2.23, where as in post-test it was 20.13±0.819, with the mean difference of 14.83. The mean score for the area of HPV vaccination & awareness education in pre-test was 1.07±0.78, in post-test it was 8.47±0.51 with the mean difference of 7.4. The overall mean score shows that in pre-test it was 12.5±1.84, whereas in post-test it was 29.1±0.876, with the mean difference of 16.6. It shows that students had favourable attitude toward cervical cancer. The Calculated 't' value was 3.068 at 0.05 level of significance. It depicts that video assisted teaching programme on cervical cancer was highly effective.

There was no significant association between levels of education, residence, number of family members, Regularity of menstrual cycle, previous knowledge about cervical cancer, previous knowledge about cervical cancer vaccination and any vaginal infection with the pre test scores on cervical cancer. Hence it shows that the difference observed mean score values were not true difference so the research hypothesis was rejected. Where as in age it was significant association with the pre-test scores it shows that the difference observed mean score values were true difference so the research hypothesis was accepted. There was a positive correlation (0.84) knowledge and perception scores of cervical cancer.

Summary

This study was conducted to assess the cervical cancer Knowledge and perception among female adolescents' students (16-18 years) studying in Farasan Governorate School, Farasan, KSA. Through survey research approach and pre-experimental design 30 students were conveniently selected from the school. The overall pre-test mean score was 6.43±3.1 where as in post-test it was 36.49±2.63 with the mean difference of 30.06. The calculated 't' value was 3.95 at 0.05 level. Hence it shows that significant improvement of students' knowledge on cervical cancer after implementation of educational programme. in pre-test it was 12.5±1.84, whereas in post-test it was 29.1±0.876, with the mean difference of 16.6. It shows that students had favourable attitude toward cervical cancer. The calculated 't' value was 3.068 at 0.05 level of significance. It depicts that video assisted teaching programme on cervical cancer was highly effective. There was no association between knowledge and perception scores with selected demographic variables. There was a positive correlation between pre and post-test scores of knowledge and perception about cervical cancer.

Conclusion

The study found that students had Adequate knowledge and favourable attitude toward cervical cancer screening, and prevention; still there is a gap to transform it into practice. Since high knowledge and positive attitudes themselves are not enough to ensure uptake of practice of screening, there is a need to uplift such cervical cancer screening services so that more women can access them irrespective of where they reside. Planned communication aiming eligible women, complete availability of screening services in public health facilities may increase the acceptance of screening. There is a need for more educational programs to channel identified knowledge slits and scale up of regular practice of cervical cancer screening in women.

Conflicts of Interests

The research received no specific grant from any funding agency in public, commercial or not-for-profit sectors. The author declared no conflicts of interest.

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