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A Study to Assess the Effectiveness of Information, Education, Communication Regarding Cervical Cancer on Knowledge among Women

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A B S T R A C T

Cervical cancer mainly caused by human papilloma virus infection, is the leading cancer in Indian women and the second most common cancer in women worldwide. Almost 80% of cases occurred in developing countries. One of the most common symptoms of cervical cancer is abnormal bleeding, but in some cases there may be no obvious symptoms until the cancer has progressed with this aim the study was conducted to assess the Effectiveness of Information, Education, Communication Regarding Cervical Cancer on Knowledge among Women. For the pilot study 24 women who fulfill the inclusion criteria with cervical cancer were allotted to control, experimental II, experimental I group respectively (8+8+8). For the main study totally 225 women with cervical cancer were selected for control, experimental II and experimental I group respectively (75+75+75). included total of 24 women aged between 31 and 65 years across 10 independent studies. The included studies were hospital and community based cross sectional studies. Majority women were married, and the illiteracy rate ranged from 25% to 50%. Studies included in review concluded that in women still lack in appropriate knowledge and attitude toward Cervical Cancer and screening techniques due to low literacy rate. This case study showed that age, 31-65 education, Occupation and Family history of cervical cancers were significant factors independently associated with adequacy of knowledge, attitude, and practice of Cervical Cancer screening.

Introduction

The concept of cervical cancer was explained in a slogan in Samhitham. The meaning of the slogan is "death comes in the form of cervical cancer for those who are, leading sedentary life and lack of awareness of cervical cancer. Cervix is the lower portion of the uterus, it connects uterus to the vagina. The opening of the cervix remains small except when the manual labor pain happens, it expands to allow the baby to pass from uterus to vagina. Cervical cancer can occur only, when cells in the cervix grow unpredictably and it multiply out of

control. In accordance with other types of cancer, it often takes years to develop damaged cervical cell. First, Normal cervical cell changes into pre-cancerous cells.

Statement of the problem

A study to assess the effectiveness of information, education, communication regarding cervical cancer on knowledge among women.

The main objectives of this study to assess the pre and post test knowledge in 3 groups.

Hypotheses

o HO1-There is no significant difference between pre and post-test Knowledge on cervical cancer in 3 groups

A study was conducted on global impact of cervical cancer, and found that deaths are preventable with vaccination, screening and treatment. In 2012, there was an estimation of 527,000 new cases in cervical cancer, 265,700 cases are affected and deaths by cervical cancer in worldwide.

Based on current estimation, the number of death is projected to raise up to 443,000 annually in 2030 year. 67% of increase in cervical cancer shortly 4th most common cancer among women in worldwide and the primary causes of cancer are related to the deaths among women in low and middle income countries. In Kenya, cervical cancer is ranked as the number one cause among female and results reveals 4,802 women being diagnosed with cervical cancer and 2,451 are dying from the disease annually (Public policy resources, 2017).

A study was conducted on cervical cancer statistics in the United States and result revealed that 12,820 new cases of invasive cervical cancer will be diagnosed and about 4,210 women will die from cervical cancer (American cancer society, 2019). A retrospective study was conducted on pretreatment hemoglobin level for patients with early cervical cancer at Samsung Medical Centre, Seoul, Korea. The results of the study reveals that the pretreatment hemoglobin level was 12.8 g/dl in all patients. 99 patients out of 805 patients had pretreatment anemia. 12.3% of pretreatment anemia was significantly associated with large tumor size, advanced clinical stage and parametrical invasion.

In multivariate analysis, higher pretreatment Hb entailed prognostic significance in disease free survival. At the end, they found that, the negative association between pre-treatment Hb level and tumor size (Shin, *et al.,* 2011). A study was conducted to assess the relationship between low hemoglobin levels and the outcomes of treatment with radiation or chemo radiation in patients with cervical cancer.

The reviewed records of 2454 patients who underwent definitive radiation therapy from 1980 minimum hemoglobin level was recorded for 2359 patients and results shows concentrations in hemoglobin i.e., 9g/dg, 10g/dl, 12g/dl before and during radiation. The

significant association was only with hemoglobin less than 10g/dl. The use of transfusion is not correlated with benefit (Afaf Abdallah, *et al.*, 2016).

A study was conducted to assess the survivals after Leukocyte alterations with invasive cervical cancer. The result revealed that, the Leukocytes will be higher in patients with advanced cervical cancer. The Neutropillia is the best indicator of cancer invasiveness (Beatriz, 2020).

A longitudinal study was conducted to assess the correlations between white blood cells count and radiation therapy outcome in cervical cancer patients. The result of the study revealed that, no correlation of WBC and outcome of cancer patient receiving concurrent chemotherapy (Hung *et al.,* 2018).

A study was conducted to assess the elevated white blood cells count at the time of recurrent diagnosis and result revealed that the elevated WBC count is an indicator of short survival in patients with recurrent cervical cancer (Tavares *et al.,* 2017).

A study was conducted on white blood cell of DNA and maintaining hemoglobin. The result of the study revealed that the white blood cells was associated with maintaining hemoglobin level (Aswathy Sreedevi, *et al.*, 2015).

A cross sectional study was conducted on Knowledge, attitude and practice related to cervical cancer among adult women and the result revealed that the sub optimal level of knowledge and attitude was favorable for screening, but low in actual practice. Universal availability of screening facilities with free of cost may increase the utilization of screening (Agam *et al.,* 2015).

A cross sectional study was conducted on adverse effect of excess body weight and survival rate of cervical cancer patients after surgery and radiotherapy. The study proved that poor survival outcome was seen in over weight patients compared to normal weight patients or underweight patients (Atara Ntekim, *et al.*, 2015).

A study was conducted to assess the obesity in cervical cancer and the result revealed that the weight loss can reduce obesity and cancer incidence.

A cross sectional community survey was conducted on awareness of cervical cancer risk factors and symptoms in Northern Uganda and results revealed that women

often heard about cervical cancer through health care professional. Uses of contraception, genital infections, and multiple purity are risk factors for cervical cancer (Amos *et al.,* 2016).

A study was conducted on Global burden of disease worldwide examines by Department of Health and found that the cervical cancer is the fourth most common cancer among female in 2012. There were an estimated 528 new cases in cervical cancer of which around 85% was occurred in less developed regions around 266,000 females were died because of cervical cancer by accounting 7.5% of all female cancer deaths (Ferlay, 2019).

A study was conducted to assess the local burden of cervical cancer disease in Hong Kong and the result revealed that the cervical cancer was the eighth most common cancers among females. 472 new cases were diagnosed in 2014, the crude incidence rates were 12.1% per 100,000 female populations. Among Mortality in 2015, cervical cancer was the eight leading cause of females cancer death. There were 169 deaths due to cervical cancer, accounting for 2.8% of all cancer deaths in females and crude mortality rate was 4.3 per 100,000 female populations and the age standardized mortality rate was 2.5 per 100,000 (Almobarak and Elbadowi, 2016).

A study was conducted to assess the cervical cancers and cancer death rates of women in the United States and result revealed that around 10,042 women in the US were diagnosed with cervical cancer, in that 4,074 women in the US died from cervical cancer. It is estimated that about 11,967 of new cases of HPV were associated with cervical cancer are diagnosed in the United States every year (Freddie, 2018). A study was conducted on estimate of cervical cancer in the United States and result revealed about 13240 new cases were with invasive cervical cancer and diagnosed about 4,170 women were died from cervical cancer (American cancer society's, 2019).

A study was conducted and estimated about 212820 of all new cancer cases, 0.85% of estimated deaths in 42.10% of all cancer deaths, 0.7% of members of new cases of cervical cancer per year. The number of deaths were 2.3 per 100000 women per year. Appropriately, 0.6 percent of women will be diagnosed with cervical cancer at some point during their life time based on 2012 -2014. Data prevalence of this cancer in 2019, showed that, there was an estimate of 256,078 women were living

with cervical cancer in United States (Cancer statistics facts, 2018). A study was conducted on cervical cancer prevalence research in Africa and result revealed that the world estimated that 52,800 new cases and 2, 66,000 deaths among woman in every year (Aires, *et al*., 2018).

Materials and Methods

Research approach

The Quantitative evaluation research approach was used for this study to assess the knowledge among women with cervical cancer.

Research Design

The quasi experimental design includes a pretest and post test and control, experimental II and Experimental I group.

Setting

The study was conducted at the selected private hospitals in and around Chennai, Tamil Nadu, India women were diagnosed with cervical cancer.

Inclusion and Exclusion criteria

Women in the age group 18 to 65 years with cervical cancer in stage I, II and III, women with telephone facilities, who understand English or Tamil were included in this study. Women with cervical cancer stage IV, pregnant and lactating women, Women with other reproductive tract infection were excluded from this study.

Sample and Sample size

For the pilot study 24 women who fulfill the inclusion criteria with cervical cancer were allotted to control, experimental II, experimental I group respectively (8+8+8). For the main study totally 225 women with cervical cancer were selected for control, experimental II and experimental I group respectively (75+75+75).

Both the pilot study and main study were conducted at the same hospital. Information, education, communication given through laptop assisted teaching, pamphlet distribution and phone call reinforcement for women with cervical cancer with 90% power, 5 % α-error 20 % drop out. The sample size was rounded to 75 in each group.

Sampling technique

Purposive sampling method was used to select the women with cervical cancer. In this present study only days were randomized viz. Tuesday, Thursday (control group). Saturday, Wednesday (Experimental II group), Monday, Friday (Experimental I group). 75 women each group were selected.

Control group women did not received any intervention. After the intervention data were collected. Ist day after getting informed consent, pre test was collected, and IEC given to the participants.

IEC is the combining communication strategies, approaches and methods for the management of cervical cancer such as Concept, high risk factors, chemotherapy, radiotherapy side effects with its self care management and postoperative self care management provided through laptop assisted teaching for 30 minutes in repeated session twice (one week apart) pamphlet distribution for Exp-I and Exp-II groups.

Reinforcement followed by phone calls was be given to Exp-I group in 45th, 60th and 75th days after the laptop assisted teaching. 120 days, all above days post test was collected.

Results and Discussion

Effects of intervention of knowledge in all groups

For the pilot study 24 women who fulfill the inclusion criteria with cervical cancer were allotted to control, experimental II, experimental I group studied effects of intervention of knowledge in all groups and the results were interpreted in table.1. For the main study totally 225 women with cervical cancer were selected for control, experimental II and experimental I group also interpreted in table.1

These studies included total of 24 women aged between 31 and 65 years across 10 independent studies. The included studies were hospital and community based cross sectional studies. Majority women were married, and the illiteracy rate ranged from 25% to 50%. Studies included in review concluded that in women still lack in appropriate knowledge and attitude toward Cervical Cancer and screening techniques due to low literacy rate. This case study showed that age, 31-65 education, Occupation and Family history of cervical cancers were significant factors independently associated with adequacy of knowledge, attitude, and practice of Cervical Cancer screening (Table 1; Fig.1).

Table.1 Distribution of participants according to the demographic variables
Effects of intervention of knowledge in all groups

S. No	Demographic Variables	Control group n=8		Experimental II N=8		Experimental I N=8		Statistical analysis
		No	%	No	%	No	%	
1	Age							Not carried out since the sample size was less
	31-40 years	0	0	4	50	4	50	
	41-50 years	2	25	3	37.5	2	25	
	51-60 years	5	62.5	1	12.5	2	25	
	61-65 years	1	12.5	0	0	0	0	
	Total	8		8		8		
2	Education							
	No formal education	2	25	1	12.5	1	12.5	
	Primary	4	50	5	62.5	4	50	
	High school	2	25	1	12.5	2	25	
	Higher secondary	0	0	1	12.5	0	0	
	Graduate/post graduate	0	0	0	0	1	12.5	
	Total	8		8		8		
3	Occupation							

	Government employee	1	12.5	2	25	0	0
	Private employee	0	0	5	62.5	4	50
	Business	3	37.5	0	0	2	25
	Home maker	4	50	1	12.5	2	25
	Total	8		8		8	
4	Religion						
	Religion-1	6	75	6	75	6	75
	Religion-2	0	0	1	12.5	0	0
	Religion-3	2	25	1	12.5	2	25
	Total	8		8		8	
5	Marital status						
	Married	8	100	5	62.5	7	87.5
	Unmarried	0	0	2	25	0	0
	Divorce/Death of the spouse	0	0	1	12.5	1	12.5
	Total	8		8		8	
6	Type of family						
	Nuclear family	4	50	6	75	8	100
	Joint family	4	50	2	25	0	0
	Total	8		8		8	
7	Use of contraceptives						
	Yes	1	12.5	7	87.5	7	87.5
	No	7	87.5	1	12.5	1	12.5
	Total	75		8		8	
8	Parity +++++++						
	Nullipara	0	0	2	25	2	25
	One child	3	37.5	5	62.5	4	50
	Two children	1	12.5	1	12.5	2	25
	Three children	4	50	0	0	0	0
	Total	8		8		8	
9	No of abortion						
	0	8	100	2	25	3	37.5
	1	0	0	2	25	3	37.5
	2	0	0	4	50	2	25
	Total	8		8		8	
10	Family history of cervical cancers						
	Yes	2	25	5	62.5	6	75
	No	6	75	3	37.5	2	25
	Total	8		8		8	

Figure.1 Effect of intervention in the control, experimental group-1 (Exp-1 = IEC, pamphlet and phone call re-enforcement) and experimental group-2 (Exp-2 = IEC and pamphlet) among women with cervical cancer on knowledge 1 (Concept of cervical cancer).
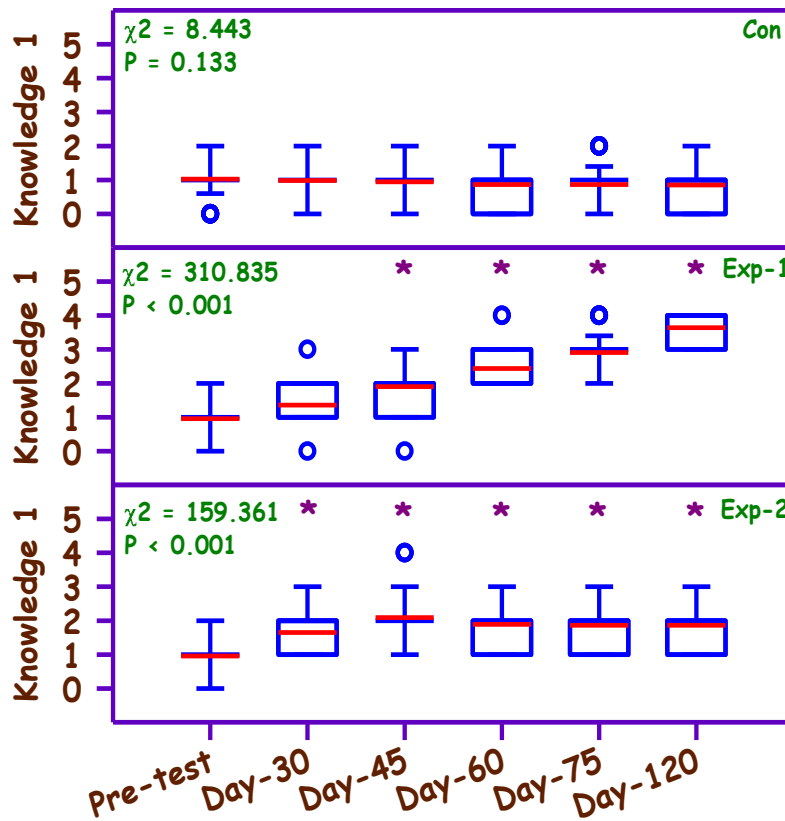
The middle blue line is the median and the red line is the mean (n = 75 each).
The $\chi 2$ and the 'P' values are by Friedman one way ANOVA on ranks.
*Significantly different from the respective pre-test.

Table.2 Knowledge of participants before and after the intervention n=8

S. No	Parameter	Group	Median Percentail 25-75%	Unpaired one way AnoVA				
				Student Newman Keuls multiple comparison Method				Friedman RM Analysis on Rank
				Time	Con Vs Exp I	Con Vs Exp II	Exp I Vs Exp II	
1	Knowledge on concept of cervical cancer	Con-pre-test	6.5(5.3-8.8)	Pre-test	NS	NS	NS	$\chi 2$ = 15.548
		Con-post-test-I	7.0(6.0-8.0)	Post-test-I	NS	S	NS	P < 0.008
		Con-post-test-II	6.0(5.0-7.8)	Post-test-II	S	S	NS	Nil
		Con-post-test-III	6.5(5.3-7.0)	Post-test-III	S	S	S	
		Con-post-test-IV	6.0(5.0-6.8)	Post-test-IV	S	S	S	
		Con-post-test-V	6.0(5.0-7.0)	Post-test-V	S	S	S	
		Exp-II-pre-test	6.0(5.3-7.0)	H=123.435				$\chi 2$ = 25.1
		Exp-II-post-test-I	9.5(8.3-10.0)	P<0.001				P < 0.001
		Exp-II-post-test-II	12.0(10.3-12.0)					45-S

		Exp-II-post-test-III	11.0(10.0-11.8)					60-S
		Exp-II-post-test-IV	10.0(9.3-11.8)					75-S
		Exp-II-post-test-V	11.0(10.0-11.8)					120-S
		Exp-I-pre-test	7.5(6.3-8.8)					χ2=38.8
		Exp-I-post-test-I	8.5(98.0-9.8)					77
		Exp-I-post-test-II	12.5(11.3-13.8)					P<0.001
		Exp-I-post-test-III	14.0(13.3-15.8)					60-S
		Exp-I-post-test-IV	18.0(16.3-19.8)					75-S
		Exp-I-post-test-V	21.0(20.0-22.0)					120-S
2	Knowledge on High risk factors	Con-pre-test	2.5(2.3-7.5)	Pre-test	NS	NS	NS	χ2 = 7.727
		Con-post-test-I	3.0(3.0-4.0)	Post-test-I	NS	NS	NS	P =0.172
		Con-post-test-II	3.0(2.5-3.5)	Post-test-II	NS	NS	NS	NS
		Con-post-test-III	3.0(2.25-3.0)	Post-test-III	S	S	NS	
		Con-post-test-IV	3.0(2.0-3.0)	Post-test-IV	S	S	NS	
		Con-post-test-V	3.0(2.0-3.75)	Post-test-V	S	S	S	
		Exp-II-pre-test	2.5(2.0-3.75)	H=105.818				χ2 =
		Exp-II-post-test-I	4.0(3.0-5.0)	P<0.001				31.860
		Exp-II-post-test-II	6.0(6.0-7.0)					P < 0.001
		Exp-II-post-test-III	6.0(5.3-7.0)					45-S
		Exp-II-post-test-IV	5.0(5.0-6.0)					60-S
		Exp-II-post-test-V	5.0(4.25-5.7)					75-S
		Exp-I-pre-test	3.0(2.0-3.0)					χ2=29.3
		Exp-I-post-test-I	4.0(3.0-4.75)					17
		Exp-I-post-test-II	6.0(5.0-6.75)					P<0.001
		Exp-I-post-test-III	7.0(6.0-7.75)					60-S
		Exp-I-post-test-IV	7.0(5.25-8.0)					75-S
		Exp-I-post-test-V	8.0(6.25-9.0)					120-S

Figure.2 Effect of intervention in the control, experimental group-1 (Exp-1 = IEC, pamphlet and phone call re-enforcement) and experimental group-2 (Exp-2 = IEC and pamphlet) among women with cervical cancer
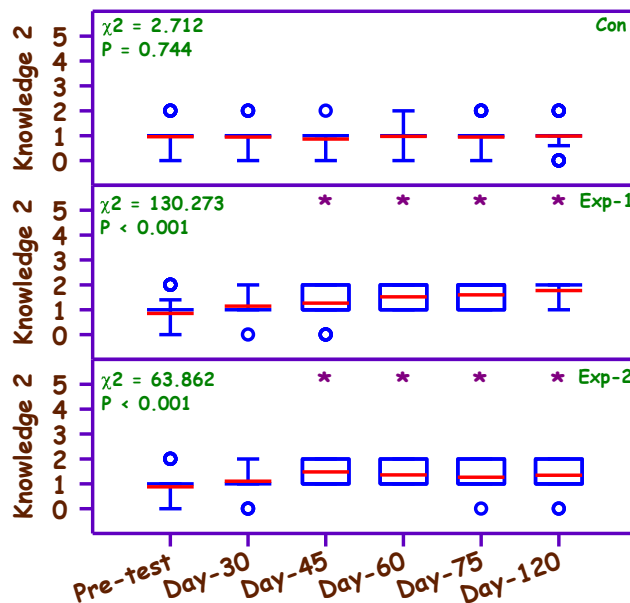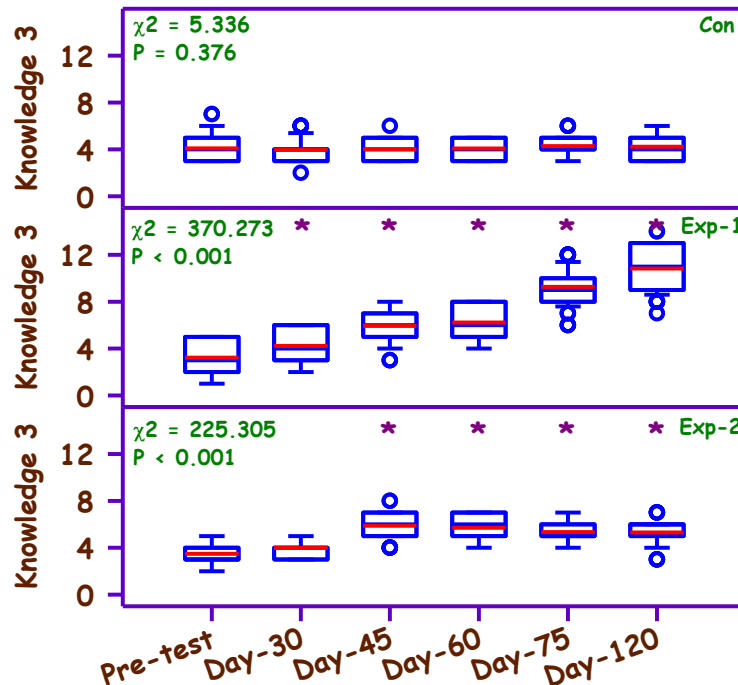
Figure.3 Effect of intervention in the control, experimental group-1 (Exp-1 = IEC, pamphlet and phone call re-enforcement) and experimental group-2 (Exp-2 = IEC and pamphlet) among women with cervical cancer on knowledge 3 (Self care management after chemotherapy).

The middle blue line is the median and the red line is the mean (n = 75 each).
The χ^2 and the 'P' values are by Friedman one way ANOVA on ranks.
*Significantly different from the respective pre-test.

Knowledge of participants before and after the intervention

Another study that includes the Knowledge on concept of cervical cancer and Knowledge on High risk factors parameters results were interpreted in table.2. The overall knowledge on Cervical Cancer among women was 12%. The awareness level of women regarding the risk factors was adequate.

Author Contribution

Thavamani: Investigation, formal analysis, writing—original draft. Affram: Validation, methodology, writing—reviewing. Philomina odoom:—Formal analysis, writing—review and editing. Owusu Danso: Investigation, writing—reviewing.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

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Ethical Approval: Not applicable.

Consent to Participate: Not applicable.

Consent to Publish: Not applicable.

Conflict of Interest: The authors declare no competing interests.

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