Effectiveness of Teaching Program on Knowledge and barriers towards cervical cancer screening amongwomen of reproductive age

Rasha Mohamed Hassan Etelt

1Women Health and Maternity Nursing, Faculty of Nursing, Kafr El-Sheikh University, Egypt

Abstract: *Cervical cancer is a major global health problem, with nearly 500,000 new cases occurring each year worldwide.* ***The study aim to*** *evaluate the effectiveness of teaching program on knowledge and barriers towards cervical cancer screening among women of reproductive age .****Research design****: A quasi- experimental design was used.* ***Settings****: The study was conducted at outpatient clinic for gynecological problems at the cancer center in Tanta University Hospital, affiliated to General Secretariat of Specialized Centers.* ***Subjects****: A purposive sample of 92 married women, from the previous setting during the period of three months.* ***Tools****, two tools were used to collect data.****1****)A structure interview questionnaire, it was composed of five parts; 2) The Female Sexual Function Index (FSFI): This index assesses sexual function.* ***Results:*** *shows that there was highly statistically significant improvement was shown posttest compared to the pretest. Regardingthe women knowledge about screening for early investigations by done the Pap smear test, HPV andvaccine related to disease, reveals that the women's total knowledge score about teaching program about cancer cervix throughout pre and posttest program phases. It is evident that a highly statistically significant improvement with P<0.0001. No significant differences were observed in terms of their score of sexual functioning pre the program (P=0.038); however, a significant difference was observed between them post the program (P<0.001).* ***Conclusion:*** *There was highly statistical relationship between total knowledge and barriers in which P=0.001 as women who had poor knowledge more likely to had negative barriers compared to women who had good knowledge more likely to had positive barriers.* ***Recommendations:*** *Increase awareness of community about cervical cancer through efforts by out-patient clinics to promote cervical cancer screening among women, focus on age for first screening and encouraging a belief that regular screening can detect the pre-cancerous stage, further research about awareness of women about stages of disease and its effect on quality of life.*
Keywords: *Teaching program, Barriers toward cervical cancer screening, Reproductive age*

I. Introduction:

Cervical cancer is a cancer found in the cells of the cervix (The cervix is the lower part or 'neck' of the uterus where it joins the inner end of the vagina). Cervical cancer progresses slowly from precancerous lesion to advanced cancer. Globally the incidence of the cancer is very low in women under age of 25 years. However, the incidence increases at age of 35 to 40 years and reaches the maximum in women in their 50s and 60s [1] and [2].

More than 90% of cervical cancer cases occur in women who have been previously infected with human papillomavirus (HPV). HPV is a group of viruses, rather than a single virus, it is spread during sexual intercourse and there are additional risk factors that affect a woman's chance of developing cervical cancer, such as taking the oral contraceptive pill for more than five years, multiple sexual partners, cigarette smoking, high parity, low socio-economic status, poor genital hygiene, chronic immune suppression (HIV) [3].

Cervical cancer is one of the leading causes of death for middle-aged women in the developing world, however it is almost totally preventable if precancerous lesions are identified and treated in a timely way. Incidence and mortality of cervical cancer differs between the developed and developing world. In developing countries, cervical cancer is more common and mortality is higher. In developed countries, wherever screening programs are more prevalent, cervical cancer rates and deaths are lower[4] and [1].

Prevention, early recognition, intervention and treatment of cervical cancer are critical to improve quality of life of women with cervical cancer. Community health nurses serve a vital role in providing health promotion, care for people who receive cancer treatment, palliative care and rehabilitation to improve physical, social, psychological and sexual well-being of women with cervical cancer[5].

Women ability to carry out her important roles can affect her entire family; therefore women should receive services that promote health through safer sex to avoid human papillomavirus (HPV) infection, HPV vaccination, quitting smoking& healthy diet and detect disease at an early stage through regular screening for

Pap test and HPV test. Early detection and improved treatment for disease allow women to return to work or remain working throughout the course of illness **[6].**

A lack of knowledge about cervical cancer screening among rural women has been highlighted as one of the most important factors influencing participation rate of screening. Other barriers to accessing cervical cancer screening included anxiety about the possibility of being diagnosed with cervical cancer and the lack of symptoms [7].

A Women's Reproductive health needs are very important to the health of the family as women have important roles to play in their families. They need to be healthy in order to function optimally. Thus, women's health must be seen as a holistic concept that includes all bio-psychosocial aspects of the women's being**.** A woman is healthy when free from organic disorders, diseases and deficiencies that interfere with sexual and reproductive functions **[8].**

Cervical cancer is a preventable disease so the ultimate goal of community health nurse is the prevention of cervical cancer through educating public about protection against Human papillomavirus through increase awareness of people about importance of vaccination, genital hygiene, use of condom during sex and also educating people about greater risk factor of cervical cancer. Cervical cancer can also be prevented by identifying pre-cancerous condition early through increasing awareness of public about the Papanicolaou cytology screening (Pap smear); it was accepted worldwide as an efficient tool for secondary prevention**[9].**

Significance of study:

In Egypt, cervical cancer ranks as the 13th cause of female cancer with an estimated that every year 866 new cervical cancer cases are diagnosed &373 die from the disease. Treatments for cervical cancer often cause unwanted side effects including physical changes, mental stress, digestive and urinary dysfunctions, menopausal symptoms, infertility, and sexual dysfunction. Some side effects are chronic and significantly affect patients' normal life, including small bowel obstruction, stress urinary incontinence, vaginal atrophy, and limb swelling due to lymphatic blockage**[10] &[3].**

The women with cervical cancer are confronted with physical, psychological and social problems. The women mostly experience pain, profuse and offensive vaginal discharge and bleeding. These physical changes result in stigmatization, isolation from social milieu and loneliness .There are also feelings of fear, hopelessness, anger, shock and self-blame. Other problems associated with cervical cancer are depression, sadness, and embarrassment **[11].**

Sexual functioning problems among women with cervical cancer may have a deeper effect on quality of life as they reflect challenges with physical symptoms, self-esteem, self-perception, sense of well-being, satisfaction with life, and relationships with partners. This may be particularly distressing because the body parts involved are associated with femininity, sexuality, and childbearing, thus leading to negative consequences for intimate relationships **[12].**

Aim of the study: The aim of this study was to evaluate the effectiveness of teaching program on knowledge and barriers towards cervical cancer screening among women of reproductive age **through: -**
- Assessing the women of reproductive age,knowledge, and barriers about cervical cancer to identify their needs.
 - Designing and implementing teachingprogram according to women needs.
- Evaluating the women of reproductive agepractices regarding cervical cancer prevention.
Research Hypothesis: health teaching program would expect to improve women knowledge about cervical cancer screening, positive changes of health beliefs toward Pap smear test for cervical cancer early detection.

II. Subjects & Method:
* **Research design:** A quasi-experimental research design was utilized.
Research Setting: The study was conducted at outpatient clinic for gynecological problems at the cancer center in Tanta University Hospital, affiliated to General Secretariat of Specialized Centers.

Sample size: A Purposive sampling technique was used. The total sample size was 92, married women who attended at the previously mentioned settings during the period of three months started from October 2018 to December 2018, according the following inclusion criteria: woman aged 20–50 years, married women, women having any of risk factors to cervical cancer, no history of total hysterectomy or surgical treatment on the cervixand accepted to participate in the research.

Tools of data collection: Two tools were used for data collection.
The tools were designed by the researcher after reviewing literature in this field; as well as similar researches

First tool: It encompassed five main parts:
Part I: A structure interview questionnaire .This tool was designed to collect data related to, age, educational level, and family income,Period of marriage and Length of contraceptive pill period.

Part II: Assessment ofmarital and reproductive history, which Includes: age at marriage, Period between each menses regular, Amount of blood during menses, Number of days of menses, bleeding during menses, suffered from STDs, used a condom or diaphragm during sex and suffered from any type of infection.

Part III: Assessment knowledge of the studied women regarding cervical cancer it included multiple choice questions about meaning of cervical cancer, risk factors, signs &symptoms of disease,methods of treatment,complications of disease,side effect of radio therapy and chemotherapy, knowledge about vaccine related to disease. This part was used (pre/posttest format) of teaching program.

Part IV:pertained to assess women knowledge was usedPre and post program about the cervical cancer screening, as Pap smear screening, the HPV (human papilloma virus) test and vaccine related to disease.

Scoring for knowledge :The answer was evaluated using model key answer prepared by the researcher, the score was (1) score for incorrect answer & (2) score for correct answer, the total score for knowledge were graded as Poor <60%, Good >60%). In addition, was categorized in to: satisfactory level if the percent score was 60% and more and unsatisfactory level if less than 60%.

Part V: Assessment of women's screening barriers for cervical cancer such as getting cervical test would only make me worry, screening is not necessary since there is no cure for cancer, the Pap screening is painful., It is too expensive to have a Pap screening or HPV vaccination, it is too embarrassing to have a Pap screening? Etc…. the answer ranged from yes, No and I do not know, they were assessed positive or negative. The total barriers was scored negative (<50%), indifferent (50-<75%) and positive (>75).

Second tool: The Female Sexual Function Index (FSFI)**:** This index assesses sexual function over the preceding four weeks and contains 10 items in six different sexual function domains, including sexual desire, sexual arousal, vaginal lubrication, orgasm, sexual satisfaction and pain. The validity and reliability of this index have been confirmed by**[13]**in a study conducted (Cronbach's alpha=0.89).

Validity of tool:
The researcher designed an opinionnaire sheet to test the content validity of the assessment Structured Interview sheet by a jury including 5 experts in the field of maternity and gynecological& oncology medicine professor staff. The reliability was done by Cronbach's Alpha coefficient test which revealed that each of the three tools consisted of relatively homogenous items as indicated by the moderate to high reliability of each tool.

Ethical considerations: Each woman was informed about the purpose and benefits of the study then oral consent was obtained before starting the data collection. Strict confidentiality was ensured throughout the study process. The women were assured that all data was used only for research purpose and each woman was informed of the rights to refuse or withdraw at any time with no consequences, after the study was completed.

Pilot study: A pilot study was carried out on 10%(9) women from the total number of sample to assess the tools clarity, objectivity and feasibility. As well to estimate the time needed for data collection. Those women in the pilot study were included in the main study sample since some modifications were done.
Administrative Design: A written official letter was obtained from the Dean of the Faculty of Nursing, Tanta University and delivered to the Secretary General of Tanta University hospital in order to obtain the statistical numbers of women enrolled in the previous setting. At the time of data collection a verbal agreement was taken from every participant in the study after clear and proper explanation of the study purpose and its importance for them.
The study was carried out through four phases: assessment, planning, implementation, and evaluation. These phases were carried out from beginning of September 2018 to the end of November 2018, covering along a period of three months. The previous mentioned settings were visited by the researcher two days/week (Monday and Wednesday) from 10.00 am to 2.00 pm.

Assessment phase: During this phase, the data was collected from the study sample using the tools designed in the previous phase. Women's knowledge and their behavior were assessed regarding cervical cancer, risk

factors, and screening methods. The data collected at this stage were considered as pre-program database information (**Pre-test**).

- **Program Development phase**: The program was aiming to improving the knowledge and behavior of women toward cervical cancer.

It emphasized the areas of major deficiency in women knowledge about cervical cancer prevention, health beliefs and intention to practice cervical cancer prevention behaviors such as meaning of cervical cancer, causes, risk factors, signs and symptoms, diagnosis, methods of treatment and prevention, cervical cancer screening and technique of Pap smear, and HPV vaccination (benefits, safety, and availability, recommended age for vaccination, who should receive the HPV vaccination). Expressing sexual problems, ways of overcoming them acquire, assess information about sexual health and thus examine the potential concerns and problems faced. In designing the program, different and suitable teaching methods were considered such as group discussions, role-playing, and demonstrations. Also, audio-visual materials, such as data show and video were used, in addition to program handouts.

- **Program Implementation phase**:

 Implementation of an educational program for study women was carried out during this phase. Participants were divided into 7groups; each group was composed of (13 to 15 women). The program lasted for a period of 9 weeks according to educational program time schedule. Two week for each group to cover the theoretical parts and practical parts. The duration of each was two days. Each day included two sessions, each session took about 60-90 minutes excluding the time of the pretest assessment. Information was provided using simple words in Arabic language to suite the women's level of understanding. At the end of each session, participants' questions were answered to correct any miss understanding. Different teaching strategies were used to conduct the program.

- **Program evaluation phase**: Evaluation of the study outcomes was done after program implementation to determine the effect of the educational program on women knowledge and screening behavior about cervical cancer (Post-test).

Statistical design:

Data were coded and transferred into specially designed formats for data entry then data were analyzed and computed. The collected data in pre-test and post- test were organized, categorized, tabulated in tables using numbers and percentage, mean percentage and standard deviation. Chi-square (x^2) test was used to test the associations among the under studied qualitative variables, the statistical package for social sciences (SPSS version 20) was used for statistical analysis. Statistical significance was considered at p-value < 0.05.

III. Result:
Table (1) shows that mean ±SD age of studied women were 28.16 ± 4.51year. As regards level of education, 37% of them were highly educated. Besides, 63% of women with cervical cancer had 1000 pounds or more per month, 62.8% of them have been married from 10 years or more.in addition, Regarding to length of contraceptive pill period, the result of current study showed that, 79.3% of women with cervical cancer used oral contraceptive as family planning method for five years ago.

Table 2:illustrated that, 43.5% of studied women with cervical cancer have regular menses. Regarding age of married, 50.0% of studied women have been married at age 18 to 30 year; also 11% of studied women complain from sexually transmitted disease, 72.7% of them were suffering from gonorrhoea. Concerning type of infection, 48.9%of studied women with cervical cancer suffering from infection, 62.2% of them were having vaginal infection while 37.8 %only suffering from cervical infection.

Table 3: this table shows that highly statistically significant difference between pre and post implementation of the teaching program for cancer cervix women as regards risk factors of cervical cancer, methods of treatment, and complications of cervical cancer at p value = 0.001, while statistically significant difference was observed in relation to meaning of cervical cancer, signs & symptoms of disease, know HPV vaccine, side effect of radio therapy and chemotherapy at p value= 0.01.

Table 4: shows that there was highly statistically significant improvement was shown posttest compared to the pretest.Regardingthe women knowledge about screening for early investigations by done the Pap smear test, HPV andvaccine related to disease.

Table 5: reveals that the women's total knowledge score about teaching program about cancer cervix throughout pre and posttest program phases. It is evident that a highly statistically significant improvement with P<0.0001 was shown in the total score of satisfactory knowledge at the posttest compared to the pretest (97.8% vs. 2.2%) respectively with a mean ±SD of 84.8±9.5 vs. 23.9±14.3.

Table 6: according to the results obtained, the mean score of sexual functioning was 26.3±3.8 in the studied women pre the program and reached to 30.3±4.4 post program, suggesting a significant difference (P<0.001). No significant differences were observed in terms of their score of sexual functioning pre the program (P=0.038); however, a significant difference was observed between them post the program (P<0.001).

Figure 1: highlighted a marked improvement in total women's barriers regarding screening of cervical cancer post program, with highly statistically significant difference x² 45.4 and p= 0.0001.

Table 7: demonstrated that there was highly statistical relationship between total knowledge and barriers in which P=0.001 as women who had poor knowledge more likely to had negative barriers compared to women who had good knowledge more likely to had positive barriers.

Table 1: Distribution of studied women with cervical cancer according to their demographic characteristics (n=92)

Demographic Characteristics	No	%
Age(years)		
• 20- <30	10	10.9
• 30- <40	38	41.3
• 40-50	44	47.8
Mean± SD 28.16 ± 4.51		
Educational level		
• Not read and write	14	15.2
• Primary	12	13.0
• Secondary	32	34.8
• High education	34	37.0
Family Income /month		
• <1000 pound	34	37.0
• ≥ 1000 pound	58	63.0
Period of marriage /year		
• 1- <5 years	8	9.3
• 5 - <10 years	24	27.9
• ≥ 10 years	54	62.8
Length of contraceptive pill period		
• < 5 years	19	20.7
• >5years	73	79.3

Table (2): Distribution of studied women as regards to their marital and reproductive history (n= 92)

Item	No	%
○ **Menstrual history**		
Age of first menstrual period		
• <12 year	48	52.2
• ≥ 12year or **more**	44	47.8
Period between each menses regular	40	43.5
Amount of blood during menses		
• Mild	16	17.4
• Moderate	54	58.7
• Sever	22	23.9
Number of days of menses		
• 1-< 3	29	31.5
• 3-<7	41	44.6
• ≥ 7	22	23.9
Bleeding in the days of non-date monthly menses	20	21.7
Age of marriage		
• < 18	26	28.3
• 18 – 30	46	50.0
• > 30	20	21.7
Suffered from STDs (Sexually Transmitted Disease) (n=11)		
• Herpes	3	27.3
• Gonorrhea	8	72.7
• AIDS	0	0.0
• Don't know	0	0.0
Used a condom or diaphragm during sex during STDs	11	100
Suffered from any type of infection (n=45)		
• vaginal infection	28	62.2
• cervical infection	17	37.8
• tubal infection	0	0.0

* N.B: not mutual exclusive sample

Table (3) Distribution of women with cervical cancer according to their knowledge about disease (n= 92)

Item	Pre program		Post program		Chi-square (p-value)
	No	%	No	%	
Meaning of cervical cancer correct incorrect	45 47	48.9 51.1	75 17	81.5 18.5	17.9 0.01*
***Risk factors of cervical cancer** correct incorrect	14 78	15.2 84.8	78 14	84.7 15.3	8.5 0.001**
***Signs & symptoms of disease** correct incorrect	38 54	41.3 58.7	57 35	62.0 38.0	6.6 0.01*
***Methods of treatment of cervical cancer** correct incorrect	0 92	0.0 100	71 21	77.2 22.8	6.2 0.001**
Know HPV vaccine correct incorrect	2 90	2.2 97.8	83 9	90.2 9.8	40.1 0.01*
Complications of cervical cancer correct incorrect	40 52	43.5 56.5	72 20	78.3 21.3	9.4 0.001**
Side effect of radio therapy correct incorrect	6 86	6.5 93.5	81 11	88.1 11.9	10.9 0.01*
Side effect of chemotherapy correct incorrect	12 80	13.1 86.9	85 7	92.4 7.6	52.2 0.01*

* Statistically significant ** highly statistically significant

Table (4): Distribution of studied women with cervical cancer according to knowledge about screening test and vaccine related to disease pre/post program (n=92)

Screening knowledge	Pre – Program		Post – Program		Significance
	No.	%	No.	%	
Pap smear test					$^{Mn}x^2$=39.44 P<0.0001**
Yes	38	41.3	87	94.6	
No	34	37.0	5	5.4	
The HPV (human papilloma virus) test					$^{Mn}x^2$=1.97 P=0.16
Yes	13	14.1	84	91.3	
No	79	85.9	8	8.9	
Vaccine related to disease					$^{Mn}x^2$=2.191 P=0.002**
No	10	10.9	61	66.3	

** Highly statistically significant

Table (5): Distribution of total women's knowledge score regarding cancer cervix disease and screening test pre implementation of the program and immediately after (n=92)

| Score of knowledge about cancer cervix	Pre- program		Post- program		x^2	P-value
	No.	%	No.	%		
Satisfactory >60	9	9.8	90	97.8		
Unsatisfactory < 60%	83	90.2	2	2.2	**33.758**	**P<0.0001****
Min-Max	0.0-71.1		52.6-97.4			
Mean ± SD	23.9±14.3		84.8±9.5			

** Highly statistically significant

Table (6): Distribution of studied women according to their Mean Score of Sexual functioning before and after teaching program (n=92)

FSFI Total sub scales	Pre – program Mean ±SD	Post - program Mean ±SD	Significance P-value
Desire	3.4±1.0	4.5±0.9	0.72 0.01
Arousal	4.3±0.6	4.8±1.0	3.21 0.01
Lubrication	4.51 ± 0.84	4.96± 0.78	3.49 0.01
Orgasm	3.87 ± 0.76	3.79 ± 0.77	3.38 0.01
Satisfaction	5.0±0.5	5.6±0.5	0.56 0.01
Pain	3.5±1.0	4.7±1.1	2.93 0.038
FSFI total	**26.3±3.8**	**30.0±4.4**	**0.38 0.001***

* Statistically significant

Figure (1): Number and percentage distribution for women's total barriers towards Screening of cervical cancer (n=92)
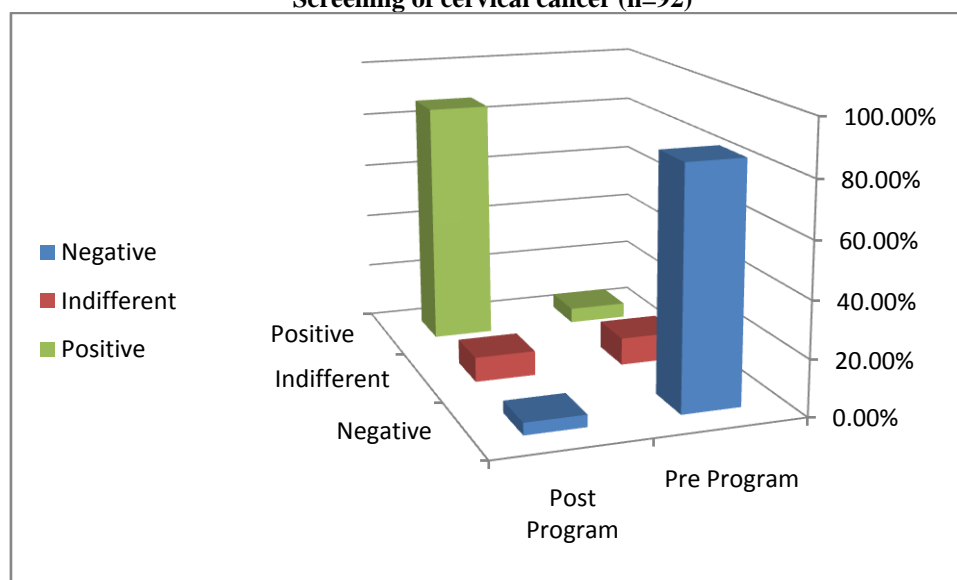
x² 45.4 and p= 0.0001.

Table (7): Relationship between knowledge of women with cervical cancer and their barriers (n=92)

Barriers		Satisfactory knowledge	unsatisfactory knowledge	Total	P Value
Negative	**No**	30	6	36	LR= 35.5, **P=0.001 HS
	%	83.3%	16.7%	100.0%	
Indifferent	**No**	10	32	42	
	%	23.8%	76.2%	100.0%	
Positive	**No**	2	12	14	
	%	14.3%	85.7%	100.0%	
Total	**No**	42	36	92	
	%	45.7%	39.1%	100.0%	

** Highly statistically significant P<0.001**

IV. Discussion:

Cancer of the cervix is a serious burden on the reproductive health of women world-wide, despite the fact that it is preventable and a key aspect of its prevention is the detection of the pre malignant form by cervical screening. It is also one type of cancer that can be prevented and cured if detected early enough **[14].**

Regarding socio-demographic characteristics of the studied women the results of the current study showed that, near to half of them were in age group 40-50 years; with the mean age was 28.16 ± 4.51years. This result were in an accordance to the results of [15] in the study about health practices among female university students regarding prevention of reproductive tract infections who reported that mean age was 27.1 ± 4.5 years old, which is similar to study by [16]who considered this age as a risk factor to infection, and mentioned that younger female was vulnerable to significantly high rates of infections, and infection complications. Also in an agreement with the study by [17] in titled "assess association between stage at diagnosis and knowledge on cervical cancer among patients" in a Kenyan tertiary hospital who reported that, less than half of studied sample were aged 45 years or more with mean age 49 years. This result might be related to facts that women at this age more likely to have persistent human papilloma virus infection.

According to level of education of studied women the results of the current study showed that, few of women with cervical cancer were illiterate while more than one third of them were highly educated. These findings are supported by[18], thestudy which entitled "knowledge, awareness and attitudes about cervical cancer among women attending treatment centres" in Lao who mentioned that, few of subjects were illiterate while more than one third of them were educated. These results might be related to the fact that the Central Agency for Public Mobilization and Statistics issued a report that only 29.7%Illiteracy rate in Egypt.

Regarding income the current study clarified that, near to two thirds of studied women with cervical cancer had 1000/ LE or more per month. The study findings were in an accordance to the results of[19], the study which entitled "impact of an educational intervention on women's knowledge and perception regarding cervical cancer and human papillomavirus vaccines" in Tanta city, applying health belief model reported that two thirds of subjects had 1000/LE or more per month.

Regarding to menstrual history for the studied women, the present study found that, less than half of them had regular menses .This result is supported with[17],who found that, less than half of studied subjects (40%) were regular menses.

Regarding to age of marriage for studied women with cervical cancer, the current study revealed that, half of them had been married at age ranged between 18 to 30 years. This finding is supported with [20], the study which entitled assess awareness of cervical cancer risk factors and symptoms: cross-sectional community survey in post-conflict northern Uganda who reported that, more than half of women has been married at age between18 to 29 years.

Regarding to period of contraceptive pill use, the result of current study showed that, near to third fourth of women with cervical cancer used oral contraceptive as family planning method for five years ago. From the investigator point of view, the uses of contraceptive pill for long time is consider a risk factor of cervical cancer.This result congruent with[20],who found that, more than two third of subjects using the family planning pills more than ten years. This result could be due to that, the oral contraceptive pill is the most common contraception for women.

Regarding to sexually transmitted disease (STDs), the present study showed that a few of women with cervical cancer had sexual transmitted disease .The previous findings are also congruent with [17]in a Kenyanreported that (17.6%) of women had sexual transmitted disease.From the investigator point of view this finding could be due to thatEgypt's Eastern society traditions were decrease the sexually transmitted diseases occur.

The present study revealed that the most common type of sexual transmitted disease (STDs) is Gonorrhoea stated by less than three quarter of women with cervical cancer that had sexual transmitted disease. This finding in agreement with [21], whose conducted study on the role of infectious agents in urogenital cancers stated that there is relationship between cervical cancer and gonorrhoea in which gonorrhoea was present in more than half of women with cervical cancer.

The result of the current study showed that, quarter of women with cervical cancer knew about a Pap smear test. These finding are in agreement with [22]who assess knowledge, attitude and practice towards cervical cancer among reproductive health clients at the University of Science & Technology hospital-Sana'a in Yemen, found in study thatmost of the females in his study knew about a Pap smear test. From the investigator point of view this finding could be due to all women with cervical cancer already had cervical cancer and done this test.

On assessing women' knowledge level about cervical cancer disease pre and post program implementation, it was observed from this study that represented significant improvement post program implementation in all items of knowledge regarding the disease, high statistical significant differences were observed between pre and post implementation of teaching program regards risk factors of cervical cancer, methods of treatment of cervical cancer, and complications of cervical cancer at p=0.001, while statistically significant difference was observed in relation to meaning of cervical cancer, signs & symptoms of disease, know HPV vaccine, side effect of radio therapy and chemotherapy p=0.01. These may be attributed to the ability of the women to gain knowledge easily; they are interested in the research topics. This study was highly

supported with the study of[23]who mentioned in his study; mean score of knowledge before program intervention was indicative of the low individual's knowledge of Pap smear and cervical cancer, while after educational intervention, the level of knowledge improved significantly that is emphasized on the impact of the education on knowledge.

Regarding to human papilloma virus vaccine (HPV) against cervical cancer, the current study showed that, all of women with cervical cancer not be aware about HPV vaccine. This result congruent with [24]in India stated that among 200 subjects, only1subject 0.5% was aware about HPV vaccine. From the investigator point of view this finding could be due to lack of awareness and this vaccine is not available in Egypt.

The result of present study showed that shyness and fear from screening were also mentioned as the barriers for performing the screening tests. Shyness, anxiety and fear from examinations as well as fear from finding of an incurable disease were also showed as the barriers for performing Pap smear in other three studied [25].Similarly other Studies conducted elsewhere [26] and[27]found "embarrassment" as a common barrier to Pap test. Study conducted among 10[th]graders in the United States of America[28]found fear of cancer 37% as a barrier to Pap test.

Cervical cancer screening is an effective method for reducing incidence and mortality of cervical cancer. In the current study, over two of women indicated that they had never undergone cervical cancer screening. This finding agree with Previous studies have indicated that the main barriers to participation in cervical cancer screening include a lack of knowledge and awareness of cervical cancer screening and its benefits, shortage of staff, equipment and supplies, the fear of pain and being diagnosed with cervical cancer, embarrassment, the lack of husband's support for screening, and cultural factors [29] & [30].

According to the mean score of sexual functioning was 26.3 ± 3.8 in the studied women pre the program and reached 30.3 ± 4.4 post program, suggesting a significant difference $P<0.001$. No significant differences were observed in terms of their score of sexual functioning pre the program ($P=0.038$); however, a significant difference was observed between them post the program ($P<0.001$). This result goes in line with [31], [32]and[33],who found that less than two thirds of Egyptian women complained of loss of libido and more than half complained of vaginal dryness. These results supported by those of[34]and[35],who reported that the majority of Egyptian women had dyspareunia during intercourse and more than half had no sexual desire. This could be due to the vaginal dryness that leads to loss of libido.

According the relationship between knowledge & barriers of cervical cancer women, the current results revealed that there were high statistical relation between knowledge and barriers in which $P=0.00$ as women who had poor knowledge more likely to had negative barriers compared to women who had good knowledge. The previous findings are congruent with[2],who assess the knowledge, attitude, and practices related to cervical cancer among adult women,and stated that, women with higher education level and more knowledgeable &positive barriers about disease are more likely to know about the benefits of screening and hence better practices. This finding could be due to more than one third of women were educated and this lead them to read about disease and hence good practices.

V. Conclusion:

In the light of the study findings, it can be concluded that, the educational program was effective in improving the women's knowledge and behavior regarding cervical cancer except the barriers. There was a significant improvement post program in all items of knowledge regarding the disease. These study findings were supported the study hypotheses.

VI. Recommendations:

These study findings were supported the study hypotheses. Based on the findings of the present study, it was recommended that:

* Create an integrated program for women's including basic knowledge regarding cervical cancer such as risk factors, barriers , Pap-smears and others screening methods should be improved to increase their participation in cervical cancer screening .
* HPV vaccination should be recommended before marriage for female
* Increase awareness of community about cervical cancer by outpatient clinics and MCH through efforts to promote cervical cancer screening among women, focus on age for first screening and encouraging a belief that regular screening can detect the pre-cancerous stage. Informing women of their risk factor to cervical cancer and hence enabling early treatment and prevention of cancer development.
* Prepare a secure environment in the hospital outpatient units to discuss sexual problems with women freely as well as increasing the number of specialized trained counselor nurses for sex therapy.
* Further researches: replication of the research on a large probability sample is recommended to achieve more generalization.

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