

Impact of an Educational Program on Sexual Dysfunction Associated With Cervical Cancer

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Received February 18, 2021; Revised March 19, 2021; Accepted April 22, 2021

Abstract Background: Sexuality is an important part of normal human functioning. Causes of sexual dysfunction following cervical cancer treatments may be multi-factorial but it may often result from the direct effects of the treatment. **Aim:** study the impact of an educational program on sexual dysfunction of women with cervical cancer **Methods; Design:** A quasi-experimental design. **Setting:** out-patient clinic in the oncology unit at Beni-Suef University Hospital. **Subjects:** A purposive sample of 70 women. **Tools:** structured interviewing questionnaire sheet, and a female sexual function index. **Results:** The results of the study progression and improvement of all items of women's Sexual Function Index (Desire, Arousal, Lubrication, Orgasm, Satisfaction, and Pain) post-program compared to pre-one. **Conclusion:** The teaching program was very effective in improving sexuality for women with cervical cancer. **Recommendations:** Women's counseling activities regarding cervical cancer, and sexuality need to be popularized and facilities and decision-making aids made available to those who need them.

Keywords: cervical cancer, sexual dysfunction

Cite This Article: Hanan Elzeblawy Hassan, Ragaa Ali, Soad Abd El Salam, and Hagar Kamal, "Impact of an Educational Program on Sexual Dysfunction Associated With Cervical Cancer." *Journal of Cancer Research and Treatment*, vol. 9, no. 2 (2021): 22-31. doi: 10.12691/jcrt-9-2-1.

1. Introduction

Cervical cancer affects all aspects of a patient's life, including sexual functioning and intimacy. [1,2,3] Health care providers don't ask patients about it, and women may be uncomfortable broaching the topic on their own. Sexual dysfunction poses challenges to one's social, mental, emotional, and physical wellbeing. [4,5]

Gynecological cancer and its treatments can affect one or more phases of the sexual response cycle, through alterations of sexual function. The high durability of cervical cancer, when detected early, combined with the latest scientific advances in medical treatment, has contributed to the greater survival of patients. However, treatment of this neoplasm can, on the other hand, lead to late adverse effects, primarily related to radiotherapy, caused by its action on healthy tissue and organs adjacent to the tumor. The areas most affected are the vagina, bowel, and bladder, which undergo changes in the mucosa. [6-11]

In gynecological cancer, Ratner, et al., (2014) reported that between 30% of the women that underwent treatment for cervical cancer experienced some sexual problems and most of the women are at greater risk for developing vaginal stenosis and agglutination within the first three months of radiotherapy. [12]

Causes of sexual dysfunction following cervical cancer treatments may be multi-factorial; but it may often result from the direct effects of the treatment. With an aging global population, improved diagnosis, and better cancer treatments, more people surviving cancer. Despite recognition of the problem, sexual morbidity remains under-treated in these patient groups. This is, in part, because of the embarrassment associated with sexual dysfunction not only from the patient's point-of-view but from that of clinicians. [13,14,15,16] Sexual dysfunction is one of the most distressful symptoms among cervical cancer survivors. Cancer treatment including radiotherapy results in a high degree of vaginal morbidity and persistent sexual dysfunction. Vaginal symptoms reported after cervical cancer treatment; sore membranes, reduced lubrication and genital swelling severely affect the women's sexual health. [17-22]

Nurses are the caregiver for patients; help to manage physical needs, prevent illness, and treat health conditions. [23-31] Oncology nurse among health care providers is in the first degree to which women can easily explain themselves and can be effective in removing their concerns related to sexual health. [32] Oncology nurses are expected to fulfill a variety of activities such as information giving, symptom control, psychological care, and social support for the patient. [3] Nurses have important duties as a counselor and guide in determining the factors affecting sexual functions of cancer patients,

problems that may be experienced in sexual matters, and providing help to these individuals in order to get over these problems. [33,34,35,36]

Molina & Gallo (2020) argue that in order to meet patient's needs; care provided by nurses should be holistic and individualized. This may include individualized pain interventions, or for instance, tailored follow-ups. In their study, noticed that patients receiving telephone follow-ups expressed high levels of satisfaction with their care and preferred telephone contact over usual physician appointment due to greater convenience. [37]

The nurse also guides the cervical cancer survivor to regain self-confidence and adapt to physical and psychological changes to optimize survivor autonomy. [1,6] Nurses provide psychosexual counseling can significantly improve sexual function in patients with gynecological cancer. Education and counseling for women after cancer treatment may also reduce sexual problems and improve an intimate relationship. [38]

Survivors of cervical cancers and their spouses need help from health care personnel, especially nurses, to overcome their sexual problems. Providing psychosexual health care is one of the important roles for nurses that work at a cancer unit. [39] Other studies have provided scientific evidence that intervention on counseling education may improve complaints of sexual dysfunction, reducing anxiety and depression, which finally may lead to increased quality of life in women following treatment of cervical cancer. [40]

Sexuality after cancer may be different, but different does not mean better or worse. The favorite sexual positions may become less comfortable temporarily or change over-time. To adapt to these changes, women may need to develop more openness and confidence, in and out of the bedroom. Try to keep an open mind about ways to feel sexual pleasure. [41-44]

2. Significance of the Study

The most common problem related to sexual dysfunction in women with cervical cancer is inhibited sexual desire. This involves a lack of sexual desire or interest in sex. Many factors can contribute to a lack of desire, including hormonal changes, medical conditions, treatments, depression, stress, and fatigue. Regular sexual routines and lifestyle factors, such as careers and the care of children may contribute to a lack of enthusiasm for sex. [45] For women, the inability to become physically aroused during sexual activity after cervical cancer treatment often involves insufficient vaginal lubrication. This inability also may be related to anxiety or inadequate stimulation. In addition, researchers are investigating how blood flow problems affecting the vagina also clitoris may contribute to arousal problems. [46]

Painful intercourse (dyspareunia) can be caused by poor lubrication, the presence of scar tissue from surgery, a sexually transmitted disease and decreased lubrication following cervical cancer treatment. Vaginismus is a painful, involuntary spasm of the muscles that surround the vaginal entrance. It may occur in women that fear that penetration will be painful. [11,47]

Nurses play a vital role in health care provision; nurses provide the majority of direct patient care. In addition to performing routine medical procedures, also play many other important roles (teacher, caregiver, counselor, manager, and researcher). Nurses educate patients regarding medications, diseases, treatment, life-style changes, and discharge from the hospital. This education can be informal, part of daily care, or given in more formal teaching [48,49,50].

3. Aim of the Study

The aim of this study is to evaluate the impact of an educational program on sexual dysfunction among women with cervical cancer.

4. Hypothesis

Women with cervical cancer that attended the conducted program will experience improvement in sexual function.

5. Subjects and Methods

5.1. Research Design

A quasi-experimental (pre-post) test study design was used.

5.2. Setting

The out-patient clinic in the oncology unit at Beni-Suef university hospital.

5.3. Subjects

5.3.1. *Type*: a purposive sample of women who met the criteria for inclusion in this study.

5.3.2. *Size*: 70 women were selected. Steven and Thompson's equation was used to calculate the sample size from the next formula;

$$n = \frac{Np(1-P)}{(N-1)\left(\frac{d^2}{z^2}\right) + P(1-P)}$$

N= Population (140), Z= confidence level 95% (1.96), P= probability (10%), d= margin of error (0.05).

5.4. Tools of Data Collection

To attain the aim of this study, two tools were used for data collection;

1. **Tool I: Structured interviewing questionnaire** sheet. It was consisting of Socio-demographic characteristics, and medical & surgical history of women, as well.
2. **Tool II: Female Sexual Function Index (FSFI)**. A multidimensional self-report questionnaire that assesses the key dimensions of female sexual

function during the 4 weeks prior to the interview day.

- It comprises 19-Multiple-choice-questions that measure 6, domains, including desire domain (2-questions), arousal (4-questions), lubrication (4-questions), orgasm (3-questions), and satisfaction (3-questions), and sexual pain (3-questions). Each domain scored from 0/1 (no sexual activity or sexual dysfunction, respectively) to 5 (suggestive of normal sexual activity).
- The domain score is determined by adding the score of the questions that comprise the domain, and multiply the sum by the domain factor (i.e., desire 0.6, arousal, and lubrication 0.3, orgasm, satisfaction and pain 0.4). While the full-scale score was calculated by adding the six domain scores (2 to 36).
- For the present study, the researchers will use the Arabic version of FSFI that was translated by Anis et al., (2011). [51] It was validated for the Egyptian population. A total score of 28.1 was taken as the cutoff point for the Arabic version FSFI to distinguish between women with FSD and those with normal function (sensitivity 96.7%, specificity 93.2%). The scale was translated into the Arabic language.

Scoring system for tool II (Female Sexual Function Index) (FSFI):

The individual domain scores and full scale (overall) score of the FSFI can be derived from the computational formula outlined in the table below. For individual domain scores, add the scores of the individual items that comprise the domain and multiply the sum by the domain factor (see below). Add the six domain scores to obtain the full-scale score. It should be noted that within the individual domains, a domain score of zero indicates that the subject reported having no sexual activity during the past month. Subject scores can be entered in the right-hand column. A total score of 28.1 was taken as the cutoff point for the Arabic version FSFI to distinguish between women with FSD and those with normal function.

Doman	Questions	Score Rang	Factor	Minimum Score	Maximum Score	Score
Desire	1,2	1-5	0.6	1.2	6.0	
Arousal	3,4,5,6	0-5	0.3	0.0	6.0	
Lubrication	7,8,9,10	0-5	0.3	0.0	6.0	
Orgasm	11,12,13	0-5	0.4	0.0	6.0	
Satisfaction	14,15,16	0 (or 1) – 5	0.4	0.8	6.0	
Pain	17,18,19	0-5	0.4	0	6.0	
Full Scale Score Rang				2.0	36.0	

5.5. Validity and Reliability

Before starting the fieldwork, the developed tools were reviewed by 3 specialists in the maternity specialty and their comments were considered. Cronbâch alpha and Spearman-Brown coefficients were calculated to assess the reliability of the developed tools through their internal consistency.

5.6. Administrative & Ethical Considerations

Before conducting the study, official permission was obtained from the director of Beni-Suef University Hospitals. Consent was obtained from each woman recruited in the study. Participants' were told that all their data were highly confidential. Informed oral consent was obtained from women after explaining the purposes of the study.

5.7. Field Work

5.7.1. Preparatory Phase

It was included reviewing national and international related literature and theoretical knowledge about various aspects of the study problem. Then the researcher tested the validity of the tool through a jury of expertise to test the content, knowledge, accuracy & relevance of questions for tools.

5.7.2. Pilot Study

A pilot study was conducted on 7 women to evaluate the applicability, efficiency, clarity of tools, assessment of the feasibility of fieldwork, and identification of the suitable place for interviewing women.

5.7.3. Data Collection Phase

The data was collected through a period of six months from the start of August 2019 till the end of January 2020. The researcher introduced herself to women and explains the aim of the study prior to data collection. The filling questionnaire ranged from 15-20 minutes for each woman. The sexual nursing counseling was given by the researcher at the outpatient unit in three meeting sessions. Weekly follow up by using telephone call for instruction & reinforcement about items of sexual counseling. The effect of the sexual nursing intervention was evaluated by comparing between the women's dysfunction condition (Desire, Arousal, Lubrication, Orgasm, Satisfaction, and Pain) pre/post-intervention one month later.

5.8. Statistical Analysis

The collected data was revised, coded, tabulated, and introduced to a PC using a statistical package for social sciences (IBM SPSS 25.0). Statistical significance was considered at p-value <0.05. Data were presented and suitable analysis was done according to the type of data obtained for each parameter

- Mean \pm SD, and range for parametric numerical data.
- Frequency (N), and percentage (%) of non-numerical data.

- Student t-test
- Mann-Whitney
- Kruskal-Wallis tests were used.

6. Results

Table 1 reveals that the mean age of the study sample was 49.4 ± 9.38 . Almost (64.3% & 52.8%) of them were housewives, and live in urban areas, respectively. Their mean marriage age of women was 19.1 ± 4.23 .

Table 1. Distribution of demographic characteristics of the study subjects (n=70)

Demographic characteristics	No	%
1. Age		
Mean \pm SD	49.4 ± 9.38	
2. Educational level of women		
• Illiterate	2	2.9
• Basic education	24	34.3
• Secondary education	34	48.6
• Above secondary education	10	14.3
3. Job		
• Working	25	35.7
• Not working	45	64.3
4. Residence		
• Rural	33	47.2
• Urban	37	52.8
5. Marriage age		
Mean \pm SD	19.1 ± 4.23	

Table 2 shows that slightly less than three-quarters (72.8%) of the studied women had the diagnosis of cervical cancer from signs and symptoms, more than one-third of women were in the 1st degree when diagnosed with cervical cancer, more than one-third of women had received radiotherapy, chemotherapy, and surgical operation.

Table 2. Distribution of the study subjects according to their medical-surgical history (n=70)

Medical surgical history	No	%
1. Detection of cervical cancer		
• When regular screening	11	15.7
• During delivery	8	11.4
• From symptoms	51	72.8
2. Degree of disease when detected		
• Zero degree	16	22.9
• 1 st degree	25	35.7
• 2 nd degree	22	31.4
• 3 rd degree	4	5.7
• 4 th degree	3	4.3
3. Type of disease intervention		
• Radiotherapy	4	5.7
• Surgical	9	12.9
• Chemotherapy and surgical	14	20
• Radiotherapy and surgical	17	24.3
• Radiotherapy, Chemotherapy and surgical	26	37.1
4. Surgery type		
• Local tumor surgery	6	8.6
• Partial hysterectomy	7	10
• Total hysterectomy	57	81.4

Table 3. Percentage distribution of women's sexual functions indicators (n = 70)

Female Sexual Function Index) (FSFI)	Intervention phases				X ²	P-value
	Pre		post			
	N	%	N	%		
A. Sexual Desire Indicator						
1. FSFI 1						
5	0	0	1	1.4	16.37	0.000**
4	0	0	22	31.4		
3	4	5.7	27	38.6		
2	38	54.3	19	27.1		
1	28	40	1	1.4		
2. FSFI 2						
5	0	0	3	4.3	16.28	0.000**
4	0	0	18	25.7		
3	5	7.1	32	45.7		
2	34	48.6	17	24.3		
1	0	0	1	1.4		
B. Sexual Arousal Indicator						
3. FSFI 3						
0	8	11.4	0	0	14.59	0.000**
5	1	1.4	6	8.6		
4	2	2.9	26	37.1		
3	6	8.6	23	32.9		
2	38	54.3	15	21.4		
1	15	21.4	0	0		
4. FSFI 4						
0	8	11.4	0	0	17.81	0.000**
5	0	0	9	12.9		
4	0	0	23	32.9		
3	3	4.3	26	37.1		
2	41	58.6	12	17.1		
1	18	25.7	0	0		

Female Sexual Function Index) (FSFI)	Intervention phases				X ²	P-value
	Pre		post			
	N	%	N	%		
5. FSFI 5						
0	8	11.4	0	0	17.14	0.000**
5	0	0	4	5.7		
4	0	0	21	30		
3	6	8.6	35	50		
2	35	50	10	14.3		
1	21	30	0	0		
6. FSFI 6						
0	8	11.4	0	0	13.67	0.000**
5	0	0	6	8.6		
4	5	7.1	27	38.6		
3	8	11.4	29	41.4		
2	36	51.4	7	10		
1	13	18.6	1	1.4		
C. Vaginal Lubrication Indicator						
7. FSFI 7						
0	8	11.4	0	0	16.67	0.000**
5	0	0	2	2.9		
4	0	0	32	45.7		
3	15	21.4	22	31.4		
2	32	45.7	14	20		
1	15	21.4	0	0		
8. FSFI 8						
0	8	11.4	0	0	18.08	0.000**
1	20	28.6	1	1.4		
2	27	38.6	11	15.7		
3	15	21.4	19	27.1		
4	0	0	37	52.9		
5	0	0	2	2.9		
9. FSFI 9						
0	8	11.4	0	0	16.62	0.000**
5	0	0	8	11.4		
4	0	0	27	38.6		
3	16	22.9	30	42.9		
2	27	38.6	3	4.3		
1	19	27.1	2	2.9		
10. FSFI 10						
0	8	11.4	0	0	11.68	0.000**
1	13	18.6	1	1.4		
2	38	54.3	8	11.4		
3	10	14.3	31	44.3		
4	1	1.4	26	37.1		
5	0	0	4	5.7		
D. Sexual Orgasm Indicator						
11. FSFI 11						
0	8	11.4	0	0	13.21	0.000**
5	0	0	3	4.3		
4	0	0	26	37.1		
3	15	21.4	31	44.3		
2	27	38.6	9	12.9		
1	20	28.6	1	1.4		
12. FSFI 12						
0	7	10	0	0	16.38	0.000**
1	24	34.3	1	1.4		
2	32	45.7	6	8.6		
3	7	10	21	30		
4	0	0	38	54.3		
5	0	0	4	5.7		

Female Sexual Function Index) (FSFI)	Intervention phases				X ²	P-value
	Pre		post			
	N	%	N	%		
13. FSFI 13	6	8.6	0	0	17.63	0.000**
0	0	0	11	15.7		
5	0	0	32	45.7		
4	20	28.6	25	35.7		
3	30	42.9	2	2.9		
2	14	20	0	0		
1	8	11.4	0	0		
E. Sexual Satisfaction Indicator						
14. FSFI 14					17.63	0.000**
0	5	7.1	0	0		
5	0	0	13	18.6		
4	0	0	28	40		
3	20	28.6	26	37.1		
2	29	41.4	3	4.3		
1	16	22.9	0	0		
15. FSFI 15					16.17	0.000**
5	0	0	10	14.3		
4	0	0	38	54.3		
3	28	40	20	28.6		
2	22	31.4	2	2.9		
1	20	28.6	0	0		
16. FSFI 16					12.33	0.000**
5	0	0	3	4.3		
4	2	2.9	26	37.1		
3	13	18.6	34	48.6		
2	31	44.3	6	8.6		
1	24	34.3	1	1.4		
F. Pain Indicator						
17. FSFI 17					10.56	0.000**
0	8	11.4	0	0		
1	20	28.6	1	1.4		
2	23	32.9	10	14.3		
3	13	18.6	31	44.3		
4	6	8.6	20	28.6		
5	0	0	8	11.4		
18. FSFI 18					6.46	0.000**
0	8	11.4	0	0		
1	16	22.9	2	2.9		
2	22	31.4	12	17.1		
3	13	18.6	25	35.7		
4	9	12.9	28	40		
5	2	2.9	3	4.3		
19. FSFI 19					8.47	0.000**
0	8	11.4	0	0		
1	21	30	2	2.9		
2	19	27.1	8	11.4		
3	15	21.4	25	35.7		
4	7	10	31	44.3		
5	0	0	4	5.7		

Table 3 indicates that there was a high statistical significant improvement in all items of Female Sexual Function Index (FSFI); (19-Multiple-choice-questions that measure 6, domains, including desire domain, arousal, lubrication, orgasm, satisfaction, and sexual pain) after application of the educational program compared to pre-program ($p < 0.001$).

Table 4 indicates that there was a high statistically

significant difference between mean scores (desire, arousal, lubrication, orgasm, satisfaction, pain) of the FSFI at pre/post-program.

Figure 1 portrays the percentage distribution of women's total sexual functions indicators. It illustrates that no women (0%) of the studied women had sexual functioning at pre-program while changed to (50%) at post-program.

Table 4. Mean scores of Female Sexual Function Index (FSFI) pre/post-program (n = 70)

FSFI sub-items	Pre-intervention	Post-intervention	t-test	p-value
	Mean ±SD	Mean ±SD		
Desire	3.28±1.14	6.15±1.39	22.98	0.000**
Arousal	6.71±2.98	13.44±2.86	24.25	0.000**
Lubrication	6.95±3.22	4.84±1.79	3.12	0.000**
Orgasm	5.17±2.34	10.58±1.87	4.88	0.000**
Satisfaction	5.84±2.23	10.11±2.16	3.79	0.000**
Pain	5.81±3.21	9.98±2.19	3.31	0.000**

(**) highly statistically significant at P<0.001.

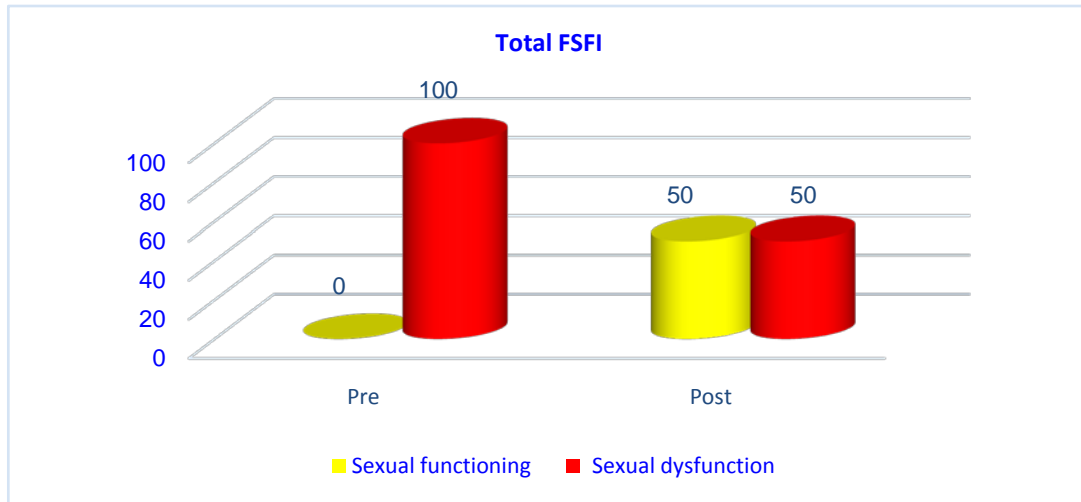


Figure 1. Percentage distribution of women's total sexual functions indicators (n = 70)

7. Discussion

Egypt is a country where sexuality is not talking, about within the family; sexual education is not included in the curriculum of schools. Sexuality is regarded as shameful and guilty in this community that is becoming more and more conservative. In Egypt, since many parents received no education regarding sexuality from their parents, they do not have much knowledge about sexuality and generally avoid speaking about the theme with their children. Loss of sexual health education in the curriculum of schools; give health problems regarding the assessment of patients' sexual health, and the discussion of their sexual problems. [52]

As regard to demographic characteristics of the study subjects, the present study indicated that slightly more than half of the study samples' age more than 50 years old. Slightly less than half of the studied women had secondary education and two-thirds were housewives. These results are in line with Zhou et al., (2017) that study "Patterns and predictors of healthcare-seeking for sexual problems among cervical cancer survivors: An exploratory study in China", found that slightly less than half of the women their age ranged from (46-55) years old and about half of the patients had education up to Junior high school level or less. [53]

Slightly less than three-quarters of patients had a diagnosis of cervical cancer from signs and symptoms through health care provider while slightly more than one-third of women were in the 1st degree when diagnosed with cervical cancer and slightly less than one-third had the second and the third degree, respectively, as found in

the current study. Similarly, Soliman & Abd-Elsalam (2018) that evaluate the Effect of "Standardized Oncology Nursing Care Intervention on Reducing Sexual Dysfunction among Cervical Cancer Survivors' Women" distributed the stages of cervical cancer among women, which IIB represented 16%, IIIA represented 30%, IIIB represented 32%, and IVA represented 22% and clarified that women completed the duration of the chemo-radiotherapy. [54]

Regarding to scores of female sexual functions index (FSFI) (desire, arousal, lubrication, orgasm, satisfaction, and pain) the current study findings showed that women's total sexual functions indicators. It illustrates that no women (0%) of the studied women had sexual functioning at pre-program while changed to 50% at post-program. A high statistically significant difference between mean scores (desire, arousal, lubrication, orgasm, satisfaction, and pain) of the FSFI at per/post-program. This may be related to embarrassment, lack of access to information, low education about sex, and ignorance of communication about sexual concerns by the health care provider.

This is supported by Afiyanti et al., (2016) that studied "Evaluating sexual nursing care intervention for reducing sexual dysfunction in Indonesian cervical cancer survivors" which stated that nursing care intervention on sexuality (FSFI) was statistically significant and alleviated dyspareunia (pain). Nursing care intervention also improved sexual satisfaction, which covered the second most improved domain. Vaginal lubrication & Sexual desire of the respondents and their spouses were also improved. An orgasm was also improved. This may be due to the high level of education among their studied women and their partners. [55]

In agreement with our study result Mohamed et al., (2018) that studied "Effectiveness of Application of PLISSIT Counseling Model on Sexuality Among Women with Dyspareunia" in Egypt revealed that there were statistically significant differences between pre and post-application of the PILLIST model ($P < 0.001$) as regard to elements of female sexual function index (FSFI) including desire, arousal, orgasm, satisfaction, and pain. And disagree with the present study results in which there were no statistically significant differences regarding lubrication ($P > 0.4$). This finding can be explained by how cancer treatment leads to vaginal mucosal damage leading to vaginal dryness and stenosis. [56]

Hassan et al., (2019) that studied "Comprehension of Dyspareunia and Related Anxiety among Northern Upper Egyptian women: Impact of Nursing Consultation Context Using PLISSIT Model" in Egypt revealed that there were statistically significant differences between pre and post application of PILLIST model ($P < 0.001$) as regard to elements of female sexual function index (FSFI) including desire, arousal, orgasm, satisfaction, and pain. [57]

This result is supported by Mansour, et al., (2014) that conduct a study about "The effect of sexual counseling program on pain level and sexual function among women with dyspareunia" In Egypt reported that statistically significant differences between the pre and post FSFI scores in favor of post. All women post-intervention mean scores were higher than pre-intervention mean scores. As showed that after counseling sessions. Women's scores were significantly higher than before concerning; desire, arousal, satisfaction, orgasm, and pain. This may be due to the continued motivation of women to address their sexual problems related to cervical cancer treatment. [58]

In a congruent with the current study findings Bakker (2016) that studied "A nurse-led sexual rehabilitation intervention after radiotherapy for gynecological cancer" During the intervention by using an educational booklet about sexuality, Participants' sexual functioning significantly changed over time compared to their situation before diagnosis, participants reported lower levels of sexual functioning at one month. However, after treatment with rehabilitation therapy (RT), participants' sexual functioning significantly increased over time. This may be due to after 1 month of treatment sexual symptoms are vigorous related to treatment side effects and women fear to engage in any sexual activity. [59]

The results of the current study revealed regression of all items of women's Sexual Function Index (desire, arousal, lubrication, orgasm, satisfaction, and pain) post-program compared to pre-one. This may be attributed to the attending of the educational program sessions. [9,20,60,61,62,63] Also, educational booklet, also, had an important role in attaining knowledge. it was designed by the researchers containing data regarding the following; Information and education on reproductive organs and sexual function, including anatomy and physiology of female genital system, explanation in the series of female sexual response cycle, and types of sexual dysfunctions, dealing with sexual problems, numerous relaxation and other exercises for improving sexual fitness (such as Kegel exercise, sensation focus exercise, and exercise of various technical positions during sexual intercourse). Booklets are best used when they are brief, written in

plain language, full of good pictures, and when they are used to back-up other forms of education. This is, in accordance, with Edgar Dale's or the NTL's Pyramid of Learning as cited by Masters as the pyramid illustrated that individuals can retain 10.0% of what they read and 20.0% of what they see and hear (audiovisual). The same author added that one can retain 50.0% of what he learned by a discussion [64-76].

8. Conclusions

Based on the finding of the present study, it can be concluded that: The teaching program was very effective in improving sexuality for women with cervical cancer. So, the research hypothesis is accepted

9. Recommendations

In the light of the findings of the study, the following are suggested:

1. Disseminate the educational booklet at health centers, gynecology, and oncology outpatients
2. Proper training of maternity and oncology nurses regarding sexual dysfunction associated with cervical cancer to enhance their ability to improve women's awareness and positive attitudes regarding sexuality with cervical cancer
3. Women's counseling activities for women regarding cervical cancer, and sexuality need to be popularized and facilities and decision-making aids made available to those who need them.
4. Replication of this study on a large representative probability sample is highly recommended to achieve more generalization of the results for further research.

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