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# Patients with Trachelectomy Surgery Sexual Performance Domains in Cervical Cancer Patients

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**ABSTRACT**

**Background & Objective:** Today, the prevalence of cervical cancer in developing societies and its impacts on various body functions, mainly sexual performance, is of particular significance. In order to examine the relationship between sexual function and its domains with different stages of cervical cancer, the present study was conducted.

**Materials & Methods:** Examined in the current study were 284 cervical cancer patients with a history of trachelectomy surgery, referred to the Baghdad Women's Hospitals in 2020 and 2021 and selected randomly. The personal profile form and the female sexual function index (FSFI) were among the research instruments. The data were investigated by statistical software SPSS.23 and the Spearman correlation coefficient test. A *P*-value of less than 0.05 was deemed statistically significant.

**Results:** The results revealed that 26.8% of women complained of low sexual desire, 43.0% did not receive adequate sexual arousal, and 39.1% experienced deficient vaginal lubrication. Additionally, 46.8% of women did not experience a proper orgasm, 27.8% were dissatisfied with their sexual satisfaction, and 37.0% reported experiencing pain during intercourse. In addition, there was an inverse correlation between the stages of cervical cancer and sexual performance (r= -0.25, *P*= 0.002), as well as its domains, including sexual desire (r= -0.18, *P*= 0.02), sexual arousal (r= -0.23, *P*= 0.004), vaginal lubrication (r= -0.23, *P*= 0.003), orgasm (r= -0.20, *P*= 0.009), sexual satisfaction (r= -0.21, *P*= 0.005), and pain during intercourse (r= -0.26, *P*= 0.001).

**Conclusion:** The sexual performance of cervical cancer patients is impaired, and the more advanced stages of the disease weaken sexual performance and its domains.

**Keywords:** Cervical cancer, Trachelectomy, Surgery, Sexual Disorders



## Introduction

The prevalence of non-communicable diseases has increased dramatically in recent decades. The global prevalence of gynecological cancers is approximately 13%, according to the most recent data on non-communicable diseases (1). Among these, cervical cancer is the second most common cancer in women, accounting for 12% of deaths caused by malignant tumors in women. Cervical cancer is typically diagnosed very late and is often fatal due to the absence of significant and distinct symptoms. Two-thirds of cervical cancer patients are recognized in advanced stages, and more than half pass away (2). In the meantime, Asian and Pacific nations have a higher death rate from this disease, according to global reports (3).

Cancer and its treatments result in extensive physical, mental, and psychological disorders for the patient and his family. These extensive changes affect the patient's self-awareness, self-confidence, sense of worth, and acceptance (4). In addition to psychological consequences, including death anxiety in this group of patients, sexual dysfunction is one of the effects of cancer (5). Considering that the nervous system of the pelvic region traverses the vaginal-uterine nerve network surrounding the cervix, it appears that involvement of the cervix and its environs can have

sexual consequences, including changes in sexual stimulation and orgasm **(6)**. In addition, it is hypothesized that cervical involvement can reduce vaginal slippage and cause pain during sexual activity due to a lack of mucus secretion **(7)**.

Sexual health is the integration and harmony between the mind, emotions, and body, which leads a person's social and rational aspects to improve his personality and establish relationships **(8)**. Consequently, any disorder that causes inconsistency and, as a result, sexual dissatisfaction can result in sexual dysfunction. Due to the deterioration of physical strength, diminished ability to perform daily activities, hospitalization of the patient, and ensuing depression, cancer can be a significant cause of sexual dysfunction; among the issues that arise as cancer treatment advances are those about quality of life **(9)**. The impacts of cancer and its treatments on quality of life, because most of the treatment team's efforts are concentrated on saving the patient's life, sexual concerns are frequently overlooked **(10)**.

Sexual dysfunction is a disorder in sexual desire and psychosocial variations that affect the sexual performance and causes stress and interpersonal issues. This disorder encompasses sexual aversion, lack of sexual desire, the disorder of sexual arousal, and orgasm **(11)**. Vascular congestion in reaction to erotic stimuli is significantly reduced in several individuals. The primary issue with most patients is that they remain in the arousal stage and cannot reach the orgasm stage, causing them to lose sexual desire gradually **(12)**.

The treatment modality relates to sexual issues. By inactivating the ovaries and decreasing estrogen, chemotherapy causes vaginal atrophy, decreased vaginal lubrication, vascular congestion, and decreased sexual desire **(13)**. In conjunction with the decrease and restriction of estrogen, the symptoms of sexual dysfunction include decreased vaginal lubrication, hot flashes, increased urinary tract infections, fatigue, mood changes, and irritability, resulting in sexual dysfunction and diminished life expectancy. A hysterectomy signifies the loss of femininity and the inability to reproduce for many women. Many studies have examined the impact of mastectomy on marital satisfaction, mental and emotional factors, the frequency of sexual performance, and the prevalence of sexual disorders **(14)**. The trauma associated with cancer diagnosis and treatment has a significant effectiveness on a person's mental and sexual performance, as well as their marital relationships, according to researchers **(15)**.

Sexual activity disorders have many negative consequences, and sexual dysfunction is closely linked to social issues such as sexual assault crimes, mental illnesses, and divorce **(16)**. Other consequences of failing to satisfy the sexual instinct include nervousness, lower back and heart pains, inability to concentrate, and even inability to perform regular tasks **(17)**. In comparison, the sexually desired function is a factor in family consolidation and a foundation for obtaining and maintaining a stable culture. Given the high prevalence of cervical cancer among women, it is critical to focus on improving their quality of life as well as the importance and role of the sexual domain **(18)**.

Diverse studies conducted in this field indicate that various factors affect people's sexual performance. Contradictory results have been reported regarding the impacts of chemotherapy, surgery, hormone therapy, and radiotherapy on patient's sexual performance after the cancer treatment period regarding the severity of sexual dysfunction **(19)**. Researchers found that undergoing surgery in conjunction with chemotherapy and radiotherapy, or being in a long cycle of chemotherapy and experiencing its side effects, increases sexual dysfunction in patients **(20)**. In contrast, in addition to the diagnosis and treatment of cervical cancer, underlying factors can also affect women's sexual performance. Gynecological cancers affect various aspects of women's lives.

Trachelectomy surgery is one type of cervical cancer treatment. This surgery can be performed via abdominal, vaginal, or laparoscopic methods. The cervix and upper part of the vagina are separated using this method, but the uterus body remains intact. A permanent thread suture is used inside the abdominal cavity at the end of the surgery to hold the cervix in place. The laparoscopic method is also used to remove lymph nodes nearby.

The treatment of cervical cancer alters the anatomy and function of the vagina in women. The impact of these changes on women's sexual performance is a subject whose various aspects remain unknown and requires more studies. In contrast, it is crucial to focus on enhancing patients' quality of life in light of the proliferation of new treatment methods, including trachelectomy surgery, for patient survival. The current study aimed to investigate the relationship between the sexual performance of cervical cancer patients with trachelectomy surgery and the various stages of this disease. The novelty of the current study is that it investigates the relationship between various sexual function domains and cervical cancer stages.

## Methods

The current descriptive cross-sectional study evaluated 284 cervical cancer patients with trachelectomy surgery referred to Baghdad Women's Hospitals in 2020 and 2021. In each hospital, study participants were selected based on sampling criteria and availability. The inclusion criteria for the study included married women aged 20 to 80 with one of the types of cervical cancer with trachelectomy surgery whose disease was under control for at least two months prior to treatment, who were experiencing recovery symptoms, and whose ovaries were active

based on the results of hormonal tests. Exclusion criteria included women with a history of sexual dysfunction prior to the onset of the disease, not living with their spouse, receiving educational interventions on sexual issues within the previous year, suffering from other gynecological cancers, the absence of genital diseases such as myomas, endometriosis, ovarian cyst, and pelvic inflammatory disease, and unwillingness to participate in the study.

In order to comply with ethical standards, the researchers informed the participants that their participation in reading was entirely voluntary. This was done after obtaining permission from hospital officials, describing the study's aims and methods, obtaining their consent, and assuring them of the confidentiality of their information. In addition, participants were free to decline participation or withdraw from the study at any time. In the current study, all questionnaires were completed anonymously. The ethics committee of the College of Medicine at the University of Baghdad approved the present study.

The personal profile form and the female sexual function index (FSFI) were used to collect data, completed during interviews with the research units. The research units were instructed on how and when to answer the index questions. In this manner, they completed questionnaires on personal characteristics and fertility information on their own. If illiterate, the questionnaires were read to them and completed in the form of an interview.

The female sexual function index (FSFI; Rosen *et al.*, 2000) was used to assess women's sexual function. This index contains 19 questions covering six domains: (a) sexual desire, (b) sexual arousal, (c) vaginal lubrication, (d) orgasm, (e) sexual satisfaction, and (f) pain during intercourse **(21)**. The maximum score for each domain is 6, and the maximum score for the entire index is 36. A higher score generally indicates more fantastic sexual performance. The content validity method was employed to determine the validity of the index; thus, these tools were developed by analyzing the most recent authoritative articles in the research topic area. In the following, eight professors from the College of Medicine at the University of Baghdad were given the tools for evaluation, and their correction comments were included at the end. The present study determined the index's reliability using Cronbach's alpha, and its value was 0.83.

To determine the relationship between normal and non-normal quantitative variables, data were analyzed using SPSS software (version 23) and Spearman correlation coefficient tests. To obtain the stage of the disease, the electronic medical records of the patients have been used. The aim and general process of the present study is schematically shown in Figure 1. Frequency tables and mean and standard deviation indices were used to describe the data. These variables include age, number of births, cervical cancer stages, and FSFI domains. It was determined that the statistical significance level of the results was equal to 0.05.

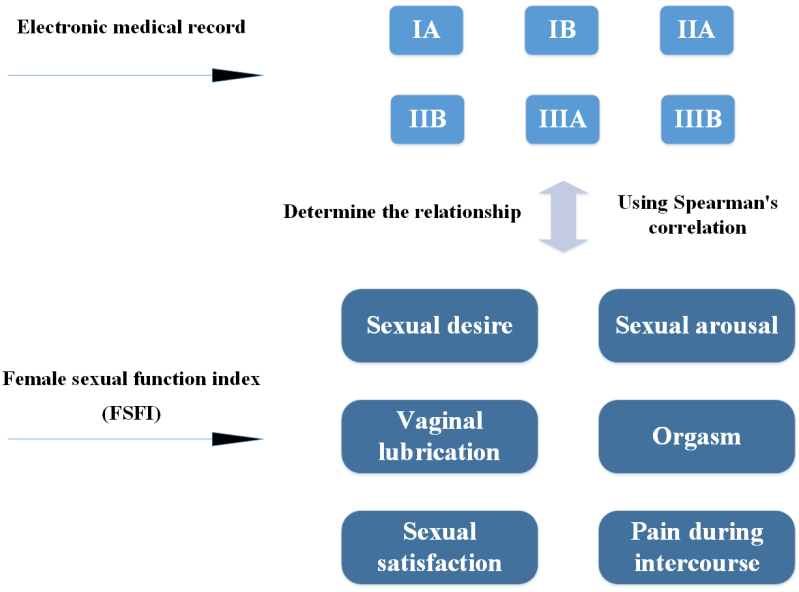


**Figure 1. Schematic form of the aim and general process of the study.**

## Results

The mean age of cervical cancer patients was 48.17±8.53 years. The youngest age of infection was 21 years old, and the oldest was 78. The number 167 women (58.8%) were in the pregnancy age range (20-50 years), and 96 women (33.8%) were in the 41-50 age range. Regarding the number of births, the highest percentage of women (27.5%) had four births, while the lowest percentage (3.5%) had one birth. Regarding

the stage of cervical cancer, the most significant proportion of women (31.3%) were in stage IIB, while the minor (6.3%) were in stage IIIB. In 86 women (30.3%), the duration of sexual dysfunction from the beginning of treatment was 6-9 days. Table 1 shows the frequency distribution of study participants by age range, number of births, stage of cervical cancer, and duration of sexual dysfunction from the beginning of the treatment.

**Table 1. Distribution of women based on age range, number of births, and cervical cancer stage**

| Age | | Number of births | | Cervical cancer stage | | Duration of sexual dysfunction (day) | |
|---|---|---|---|---|---|---|---|
| **Range** | N (%) | Range | N (%) | Range | N (%) | Range | N (%) |
| **20-30** | 18 (6.3%) | 1 | 10 (3.5%) | IA | 32 (11.3%) | <3 | 51 (18%) |
| **31-40** | 53 (18.7%) | 2 | 23 (8.1%) | IB | 45 (15.9%) | 3-6 | 63 (22.2%) |
| **41-50** | 96 (33.8%) | 3 | 57 (20.1%) | IIA | 47 (16.5%) | 6-9 | 86 (30.3%) |
| **51-60** | 76 (26.8%) | 4 | 78 (27.5%) | IIB | 89 (31.3%) | 9-12 | 37 (13%) |
| **61-70** | 37 (13%) | 5 | 69 (24.3%) | IIIA | 53 (18.7%) | 12-15 | 26 (9.2%) |
| **71-80** | 4 (1.4%) | >5 | 47 (16.5%) | IIIB | 18 (6.3%) | >15 | 21 (7.4%) |

In the present study, women with cervical cancer completed the FSFI, which consisted of 19 questions related to measuring sexual function. The results are presented in Table 2. The mean and standard deviation of the sexual function score was 44.09±16.72, with a range of 4 to 92. One hundred twenty-four women (43.7%) scored above 50, while 160 women (56.3%) scored lower than 50. Additionally, 86 women (30.3%) had a score below 25, indicating poor sexual performance.

**Table 2. The mean (SD) values of women's sexual performance according to domain separation**

| Variable | Mean±SD* | Minimum | Maximum |
|---|---|---|---|
| **Sexual desire** | 4.61±1.84 | 0 | 10 |
| **Sexual arousal** | 5.27±2.36 | 2 | 14 |
| **Vaginal lubrication** | 8.62±3.57 | 1 | 18 |
| **Orgasm** | 4.07±2.43 | 0 | 7 |
| **Sexual satisfaction** | 11.78±5.61 | 1 | 24 |
| **Pain during intercourse** | 9.74±4.15 | 0 | 19 |
| **Total score** | 44.09±16.72 | 4 | 92 |

***SD= Standard deviation**

Table 3 displays the results of Spearman's correlation test, which was conducted to investigate the relationship between the various stages of cervical cancer and sexual function and its domains in women with this disease. Table 3 shows an inverse correlation between sexual performance and cervical cancer staging in women (r= -0.25, *P*= 0.002). Sexual function declined as the stage of cervical cancer advanced. In addition, Spearman's correlation test revealed an inverse correlation between sexual desire (r= -0.18, *P*= 0.02), sexual arousal (r= -0.23, *P*= 0.004), vaginal lubrication (r= -0.23, P= 0.003), orgasm (r= -0.20, *P*= 0.009), sexual satisfaction (r= -0.21, *P*= 0.005), and pain during intercourse (r= -0.26, *P*= 0.001) with the stages of cervical cancer. So, women with a more advanced disease stage experienced less sexual desire, sexual arousal, vaginal lubrication, orgasm, and sexual satisfaction. Also, these women experienced more pain during intercourse.

**Table 3. The relationship between domains of sexual function and cervical cancer staging**

| Variable | Correlation coefficient (r) | Significance |
|---|---|---|
| **Sexual desire** | -0.18 | 0.02 |
| **Sexual arousal** | -0.23 | 0.004 |
| **Vaginal lubrication** | -0.23 | 0.003 |
| **Orgasm** | -0.20 | 0.009 |
| **Sexual satisfaction** | -0.21 | 0.005 |
| **Pain during intercourse** | -0.26 | 0.001 |
| **Total score** | -0.25 | 0.002 |

Further research revealed that 76 (26.8%) of women had a low sexual desire, 179 (63%) had an acceptable sexual desire, and 29 (10.2%) had a strong sexual desire. Regarding sexual arousal, 122 women (43%) demonstrated poor performance, 138 women (48.6%) demonstrated acceptable performance, and 24 women (8.5%) demonstrated excellent performance. One hundred eleven women (39.1%) had very low vaginal lubrication, 97 women (34.2%) had low vaginal lubrication, 46 women (16.2%) had acceptable vaginal lubrication, and 30 women (10.0%) had adequate vaginal lubrication. One hundred thirty-eight women (48.6%) did not have a satisfactory orgasm, 86 women (30.3%) had an acceptable orgasm, and 60 women (21.1%) had a satisfactory orgasm. Seventy-nine women (27.8%) were dissatisfied with their sexual satisfaction, 154 women (54.2%) were satisfied with their sexual satisfaction, and 51 women (18%) were delighted with their sexual satisfaction. One hundred-five women (37%) complained of pain during intercourse, 129 women (45.4%) had partial complaints, and 50 women (17.6%) did not mention many complaints. It should be noted that women in higher stages of cervical cancer (IIB, IIIA, and IIIB) experienced greater pain intensity than those in lower stages (IA, IB, and IIA).

## Discussion

The present study aimed to investigate the association between sexual function, its domains, and the various stages of cervical cancer in women. The current study found an inverse correlation between sexual function and its domains with the stage of cervical cancer in female patients, such that the more advanced the stage of cervical cancer, the lower the sexual function. This outcome is consistent with previous research in this field **(22, 23)**.

Cervical cancer can have a profound effect on a woman's ability to perform a variety of daily tasks. There are few studies on the prevalence of sexual dysfunctions, and little information is readily available. According to the available studies, the treatment of cervical cancer, including trachelectomy surgery and radiotherapy, negatively affects sexual activity due to its effect on organs such as the bladder, rectum, and anus **(24, 25)**. According to studies, the level of sexual activity in patients with cervical cancer is related to the length of their treatment, their age, the support of their relatives, and their financial situation **(26, 27)**. Therefore, healthcare professionals should pay greater attention to elderly, impoverished, and unaccompanied patients.

In the current study, women with early-stage cervical cancer experienced short-term sexual issues, such as pain during sexual activity. They decreased sexual satisfaction, which diminished in the months following trachelectomy surgery. However, some sexual issues remained, including sexual desire and vaginal dryness. In contrast, women with advanced stages of relapse and stable disease experienced longer-lasting problems, including decreased vaginal lubrication, lack of orgasm, and decreased frequency of intercourse, as well as decreased sexual desire during the first two years following diagnosis.

In the present study, higher disease stages were associated with a greater prevalence of pain during sexual activity than lower disease stages. The high prevalence of pain in the current study may be attributable to the lack of investigation into the type of treatment method. According to some studies, the pain experienced during radiotherapy treatment is greater than during a hysterectomy **(28)**. According to several studies, vaginal dryness increases with cervical cancer progression. Also, women with advanced disease reported lower sexual desire, fewer episodes of orgasm, and fewer occasions of intercourse, which was consistent with the present study **(29, 30)**. In most studies, among all subcategories of sexual performance of women with cervical cancer, the frequency of sexual activity and vaginal lubrication are variable **(31)**.

According to studies, the proportion of women with cervical cancer who experience vaginal dryness is significantly higher than that of healthy women. The type of treatment performed on women with cervical cancer had little effect on the prevalence of vaginal changes, and treated women with cervical cancer had persistent vaginal changes. These changes have affected women's sexual activity and significantly increased stress levels **(32, 33)**. The number of sexual activities decreased after treatment for patients with advanced cervical cancer, and sexual activity was correlated with quality of life.

Several factors, such as the patient's previous sexual relationship status, the patient's self-confidence and spirit, the sexual partner's empathy during the disease, the incidence of pain, and other complications, influence the sexual desire, satisfaction with the sexual status, and orgasm of the patients, according to the studies conducted. In the current study regarding age and total index score, the majority of those with a healthy sexual status were between the ages of 30 and 40. The highest prevalence of sexual dysfunction was observed between 50 and 70. There was a correlation between aging and sexual dysfunction, which generational and cultural differences and hormonal changes can cause. The findings revealed that, despite causing sexual dysfunction, most patients have acceptable sexual desire, sexual stimulation, and orgasm, with only 27.8% dissatisfied with their sexual status. As a result, it is incorrect to believe that a cancer patient has no life expectancy and that the presence of cancer means the end of sexual function.

The current study's findings can be used to plan and implement appropriate health and treatment policies. It may be beneficial to prepare and compile counseling or educational and treatment programs in this field for gynecologists, midwives, psychologists, and medical staff in women's clinics. As a result, it is recommended that when women with cervical cancer, particularly those with sexual disorders, visit treatment and counseling centers, their sexual performance be evaluated and, if necessary, education and counseling be provided to these women.

## Limitations of this Study

The primary limitation of the current study is that the results were not compared to a group of healthy women. In addition, the present study did not investigate the effect of different types of treatment methods on the sexual performance of women. The inability to collect data again is another limitation. In addition, the effect of some demographic variables on the various domains of patients' sexual performance has not been investigated.

## Conclusion

In the current study, cervical cancer patients with trachelectomy surgery had disorders in sexual function domains. Sexual function and its domains were also correlated with cervical cancer staging. Therefore, it appears necessary to evaluate the sexual function of women with cervical cancer during diagnosis, treatment, and follow-up. Education and counseling of these women, especially those with sexual disorders, can play a significant role in improving their sexual relations with their husbands and their life expectancy.

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## Conflict of Interest

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