Sexual Function in Cervical Cancer Patients Based on Female Sexual Function Index Questionnaire at Dr. Hasan Sadikin Central General Hospital From 2018 – 2023

Bangbang Ahmad Kholila Muhyiddin Abadi Zakaria, Andi Rinaldi, Zulvayanti
[1]Department of Obstetrics and Gynecology, Faculty of Medicine, Padjadjaran University, Bandung, West Java, Indonesia
Corresponding: Bangbang Ahmad Kholila Muhyiddin Abadi Zakaria, Email: bangbang22001@mail.unpad.ac.id

Abstract
Objective: To describe the sexual function of cervical cancer patients undergoing radiation therapy at RSHS using the Female Sexual Function Index (FSFI) questionnaire.
Methods: This cross-sectional study involved cervical cancer patients who received radiation therapy at RSHS between January 2018 and December 2023. Data were collected using the FSFI questionnaire and were analyzed descriptively.
Results: Among 100 patients aged 15 to 70 years, the participants experienced overlapping symptoms. The most frequently reported dysfunctions were vaginal dryness (90.63%), orgasm disorders (79.17%), dyspareunia (64.58%), and decreased libido (58%). Comorbidities included hypertension, diabetes mellitus, and urinary tract infections.
Conclusion: Most cervical cancer patients receiving radiation therapy experience sexual dysfunction, as identified using the FSFI questionnaire. Limited clinical discussion, psychosocial stress, and socioeconomic constraints contribute to this issue. Integrating sexual health assessment and support into survivorship care is essential to improving overall patient well-being.
Keywords: Sexual function, cervical cancer, radiotherapy complications.

Fungsi Seksual pada Pasien Kanker Serviks Berdasarkan Kuesioner *Female Sexual Function Index* di Rumah Sakit Umum Pusat Dr. Hasan Sadikin Bandung Tahun 2018 – 2023

Abstrak
Tujuan: Penelitian ini bertujuan untuk mengetahui gambaran fungsi seksual pasien kanker serviks yang menjalani terapi radiasi di RSHS menggunakan kuesioner Female Sexual Function Index (FSFI).
Metode: Penelitian ini menggunakan metode potong lintang dan dilakukan pada pasien kanker serviks yang sedang menjalani terapi radiasi di RSHS antara Januari 2018 hingga Desember 2023. Data dikumpulkan menggunakan kuesioner FSFI dan dianalisis secara deskriptif.
Hasil: Dari 100 pasien berusia 15 – 70 tahun, para pasien mengalami gejala yang saling tumpang tindih. Disfungsi seksual yang paling sering dilaporkan adalah vagina kering (90,63%), gangguan orgasme (79,17%), dispareunia (64,58%), dan penurunan libido (58%). Komorbiditas yang ditemukan meliputi hipertensi, diabetes melitus, dan infeksi saluran kemih.
Kesimpulan: Sebagian besar pasien kanker serviks yang menjalani terapi radiasi mengalami disfungsi seksual, sebagaimana diidentifikasi melalui kuesioner FSFI. Kurangnya diskusi klinis, stres psikososial, dan keterbatasan sosial ekonomi turut berkontribusi terhadap masalah ini. Integrasi penilaian dan dukungan kesehatan seksual dalam perawatan pascaterapi sangat penting untuk meningkatkan kesejahteraan pasien secara menyeluruh.
Kata kunci: fungsi seksual; kanker serviks; komplikasi radioterapi

Indonesian Journal of Obstetrics & Gynecology Science is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License (https://creativecommons.org/licenses/by-sa/4.0/) **DOI: 10.24198/obgynia.v8i2.899**

Introduction

Cervical cancer develops from dysplastic changes in the cervix, the lower part of the uterus that connects to the vagina. If left untreated, these abnormal cells may progress to malignancy.[1] It remains a leading cause of cancer-related mortality among women.[2] Over the past three decades, the incidence among younger women has increased by 10% to 40%. In 2008, the WHO and IARC reported 529,000 new global cases, with 452,000 occurring in developing countries.[3] GLOBOCAN 2020 estimated that cervical cancer accounted for 9.2% of new cancer cases and was the third leading cause of cancer-related death among Indonesian women. At Dr. Hasan Sadikin Hospital (RSHS), 368 cases were recorded in 2023.[4]

Persistent infection with high-risk Human Papillomavirus (HPV), particularly types 16 and 18, is responsible for approximately 70% of cervical cancer cases. While most HPV infections resolve spontaneously within two years, persistent infection, especially in individuals who have early sexual debut or multiple sexual partners, increases the risk of cervical cancer carcinogenesis.[5] Studies consistently demonstrate a strong association between high-risk sexual behavior and the development of cervical cancer, even after adjusting for HPV status.[6,7]

Cervical cancer can be treated with surgery, radiation therapy, chemotherapy, or a combination of these. Cancer treatments often lead to direct and indirect side effects, impacting physiological, psychological, and interpersonal aspects, all of which can negatively affect sexual function and satisfaction. Several studies report that cervical cancer patients experience changes in sexual function and impaired sexual response.[8,9]

Chemoradiation is recommended for stage IB3–IVA cervical cancer, while radiation therapy or chemoradiation is conditionally recommended for stage IA1–IB2 when surgery is not medically feasible. Intensity-Modulated Radiation Therapy (IMRT) is recommended for postoperative RT and conditionally for definitive RT to reduce acute and long-term toxicity. Brachytherapy is highly recommended for all women receiving definitive RT, with specific guidelines for dose targets, fractionation, intraoperative imaging, volume-based planning, and dose limits for at-risk organs.[10]

Brachytherapy has evolved from the manual insertion of radium capsules into the uterine cavity to 2D treatments using radiography and now to image-guided 3D techniques based on MRI or CT scans. The development of various radioactive sources (Cesium-136, Cobalt-60, Iridium-192), applicators, afterloading systems, and high-dose brachytherapy has made treatment safer for patients and healthcare providers. Accurately defining tumor volume and improving dose delivery using image-guided approaches improves local control and survival while reducing toxicity.[11]

Sexual dysfunction, including vaginal dryness, superficial and deep dyspareunia due to vaginal stenosis, and loss of libido, is commonly experienced by cervical cancer survivors undergoing therapy. Pain and psychological stress increase their susceptibility to reduced sexual function. Overall, sexual function significantly declines in cervical cancer survivors after treatment, regardless of the modality used.[12]

Younger patients tend to experience worse outcomes and more significant effects on sexual well-being. The degree of surgical radicality is directly correlated with sexual dysfunction. Common issues include low or absent sexual desire, poor lubrication, dyspareunia, and decreased vaginal caliber.[13]

A study by Puspasari *et al*. reported varying prevalence rates of sexual dysfunction in women treated for cervical cancer: loss of sexual desire (26%–85%), reduced lubrication

(27%–35%), dyspareunia (26%–55%), dissatisfaction with sex life (30%–37%), narrowed/shortened/dry vagina (32%–50%), reduced sexual activity (45%), and orgasm dysfunction (20%) among women who received radiotherapy or radical hysterectomy with pelvic lymphadenectomy.[14,15]

This study aims to investigate the sexual function profile using the Female Sexual Function Index (FSFI) questionnaire in cervical cancer patients who received radiation therapy at Dr. Hasan Sadikin Central General Hospital in Bandung, from 2018 to 2023.

Method

This study used a qualitative descriptive method by reviewing primary data from all controlled cervical cancer patients treated at the Department of Obstetrics and Gynecology, Dr. Hasan Sadikin General Hospital, Bandung, from January 2018 to December 2023.

The inclusion criteria were all women diagnosed with cervical cancer who were receiving radiation therapy, regularly attending follow-up visits at RSHS, and actively engaged in sexual relationships. The exclusion criteria included women with a history of sexual dysfunction prior to their cervical cancer diagnosis, women with severe medical or psychological conditions that could affect their participation in the study, women undergoing active treatment for uncontrolled cervical cancer, and women unable to participate in the study due to physical or cognitive limitations.

The examined variables included sexual function, controlled cervical cancer status, sociodemographic factors, maternal factors, psychological factors, and relationship factors. The minimum sample size was calculated using descriptive research formulas for both categorical and numerical scales (Cochran, 1977; Israel, 1992; Krejcie & Morgan, 1970):

Categorical Variable

With:

n = minimum sample size

P = proportion (assumed to be 0.5 due to unknown value)

d = precision (0.115)

Z = Z-score value (1.96 for 95% confidence level)

The minimum sample size for the categorical variable was 72 participants.

Numerical Variable

With:

n = minimum sample size

Z = Z-score value (1.96 for 95% confidence level)

σ = population standard deviation (estimated at 10)

d = margin of error (2.5)

The minimum sample size for the numerical variable was 62 participants.

The larger sample size from the two calculations is 72. To account for a 10% dropout rate, the final required sample size was 80 participants.

Statistical Analysis

This is a descriptive study. Patient characteristics were presented using means and standard deviations for numerical data, along with percentages for categorical variables. The descriptively analyzed variables included sexual function, controlled cervical cancer status, sociodemographic factors (education and residence), maternal factors (age, disease complications, treatment history), psychological factors (anxiety, depression, stress, individual perceptions of illness), and relationship factors (relationship status, partner support, relationship communication).

Result

Data collection identified 100 women diagnosed with cervical cancer who regularly attended follow-up visits at the RSHS clinic and were actively engaged in sexual activity between January and December 2023. A total of 100 patients who met the inclusion and exclusion criteria were included in the study.

The characteristics of the study subjects are presented in Table 1. The average age of the patients was 52 years, with an average weight of 64.5 kg (range: 39–88) and an average height of 156 cm (range: 140–198). A total of 49 patients (49%) initiated sexual activity before the age of 18. The most common education level among the patients was a high school graduate. Most patients had an income below the regional minimum wage.

Table 1 Subject characteristics

Variable	Total N= 100
Age (year), mean (range)	52 (15-70)
Weight (kg), mean (range)	64.5 (39-88)
Height (cm), mean (range)	156 (140-198)
Initial age of sexual activity	
< 18 years old	49 (49%)
≥ 18 years old	51 (51%)
Educational degree	
Not completing primary school	11 (11%)
Primary school	27 (27%)
Junior high school	23 (23%)
Senior high school	30 (30%)
Higher Education/University	9 (9%)
Family income	
< Regional minimum wage	72 (72%)
≥ Regional minimum wage	28 (28%)

Risk factors for sexual dysfunction in cervical cancer patients, shown in Table 2, revealed that 49 patients had initiated sexual activity before the age of 18. A total of 35 patients had multiple sexual partners, while 65 patients had only one partner. The average Body Mass Index (BMI) indicated obesity in 69 patients. Most patients were neither active nor passive smokers. Twelve patients had a history of psychiatric disorders, specifically depression. Most patients reported satisfaction with their family and partner relationships. The most common comorbid condition was hypertension, reported in 39 patients.

Table 2 Demographic Profile of Cervical Cancer Patients Who Are Sexually Active

Variable	Total N=100
Initial age of sexual activity	
< 18 years old	49 (49%)
≥ 18 years old	51 (51%)
Had more than 1 sexual partner	
Yes	35 (35%)
No	65 (65%)
Body mass index, n (%)	
Normal	17 (17%)
Malnutrition	2 (2%)
Overweight	12 (12%)
Obese	69 (69%)
Smoking	
Active smoker	29 (29%)
Passive smoker	0 (0%)
No	71 (71%)
Relationship satisfaction with	
family and partner	2 (2%)
Very satisfied	17 (17%)
Satisfied	74 (74%)
Moderately satisfied	7 (7%)
Not satisfied	
Comorbid condition	39 (39%)
Hypertension	10 (10%)
Diabetes	3 (3%)
Chronic heart disease	4 (4%)
Urinary tract disorder	43 (43%)
Long-term medication use	

The clinical manifestations of sexual

dysfunction that largely overlap in cervical cancer patients, as shown in Table 3, indicate that most experienced dyspareunia, with some reporting decreased libido, vaginal dryness, and orgasm disorders. Out of the total 100 cervical cancer patients receiving radiation therapy (ages 15–70), the identified sexual dysfunctions included vaginal dryness (90.63%), orgasm disorders (79.17%), dyspareunia (64.58%), and decreased libido (58%). Several comorbidities were identified among the subjects, including hypertension, diabetes mellitus, and urinary tract infections.

Table 3 Characteristics of Sexual Dysfunction in Cervical Cancer Patients

Variable	Number (%)
Vaginal dryness	98 (98%)
Orgasm disorders	86 (79,17%)
Dyspareunia	76 (64,58%)
Decreased libido	58 (58%)

Discussion

The World Health Organization (WHO) states that sexuality is one of the essential indicators of quality of life, encompassing the mind, emotions, actions, and social integration. Therefore, it is closely linked to both physical and mental health and well-being.[2] In cervical cancer patients undergoing radiation therapy, the impact on sexual function is profound and multifactorial, involving disruptions across several domains of the sexual response cycle—domains that are comprehensively assessed using the Female Sexual Function Index (FSFI) questionnaire.[1,2]

The FSFI evaluates six key dimensions of sexual function: desire, arousal, lubrication, orgasm, satisfaction, and pain. This study found significant impairments in nearly all FSFI domains among cervical cancer patients after radiation therapy. The sexual dysfunctions identified in this cohort included vaginal dryness (90.63%), orgasm disorders (79.17%), dyspareunia (64.58%), and decreased libido (58%). These symptoms correspond directly to the lubrication, orgasm, pain, and desire domains of the FSFI.

The impact of gynecological cancer on sexuality depends on several factors, including psychosexual elements, biological changes, and the age of the patient. Younger patients often experience worse outcomes, with more pronounced effects on sexual well-being. The degree of surgical intervention is also directly correlated with sexual dysfunction.[6]

Several comorbidities were identified among study participants, including hypertension, diabetes mellitus, and urinary tract infections, which may further exacerbate sexual health problems. Mishra et al. reported a variable prevalence of sexual dysfunction among women treated for cervical cancer: loss of sexual interest (26%–85%), reduced lubrication (27%–35%), dyspareunia (26%–55%), dissatisfaction with sexual life (30%–37%), narrow/short/dry vagina (32%–50%), reduced sexual activity (45%), and orgasm dysfunction (20%) among women treated with radiotherapy or radical hysterectomy with pelvic lymphadenectomy.[16] These findings are consistent with the domain-specific disruptions identified through FSFI evaluation in our study.

A study by Osei *et al.* involving 30 cervical cancer patients similarly found that the majority reported sexual inactivity and dysfunction, with urinary leakage affecting approximately two-thirds of the participants. Other reported effects included loss of libido, vaginal dryness, and dyspareunia, which led to low sexual arousal and a significant loss of interest in sexual activity. Their study also identified pain during intercourse (32.9%), changes in sexual life (25.9%), and vaginal stenosis (75.2%) as common issues. These symptoms were associated with increased depression and reduced quality of life among affected patients.[17]

Sexual dysfunction in cervical cancer patients receiving radiation therapy may result directly from the therapeutic response. Patients undergoing surgery, chemoradiation, or interventional radiotherapy often report side effects such as discomfort during intercourse, vaginal atrophy, and reduced libido.[6] Jensen et al. presented data from cervical cancer patients treated with EBRT and IRT between 1990 and 1993. The findings revealed that 85% reported little or no sexual interest, 35% experienced moderate to severe lubrication issues, 55% dealt with mild to severe dyspareunia, and 30% expressed dissatisfaction with their sexual life. Vaginal size reduction was reported by 50%, and 45% of women were seldom or never able to engage in full intercourse. Despite these challenges, 63% of previously sexually active women remained sexually active post-treatment, although with significantly reduced frequency.[6,7]

The structural tissue changes due to radiation, including increased connective tissue, decreased elasticity, and vaginal fibrosis, are known to negatively affect sexual health. This aligns with the current study's findings, where vaginal dryness emerged as the most commonly reported dysfunction. These results parallel prior reports of decreased lubrication (27%–35%) and dyspareunia (26%–55%) among cervical cancer patients.[16]

Additionally, hormonal changes caused by treatment-induced or surgical menopause—characterized by decreased estrogen, testosterone, and progesterone—contribute to vaginal thinning, vulvovaginal atrophy, and dyspareunia. These endocrine changes correlate with FSFI domains like lubrication and pain. Acute symptoms include dyspareunia, difficulty achieving orgasm, reduced sexual satisfaction, and distress from reduced vaginal caliber. Chronic symptoms include reduced libido and diminished lubrication. A radical hysterectomy may impair vaginal blood flow during arousal and disrupt the hypogastric and splanchnic nerve plexuses, leading to urinary retention, urgency, constipation, and subsequent effects on sexual function.[8,9]

Although many women experience statistically significant reductions in sexual function after radiation, it is important to note that the FSFI also captures dysfunction in women with preserved vaginal anatomy. Some patients lose sexual interest even before treatment due to symptoms such as bleeding, discharge, and emotional stress. This loss of desire can last for a long time, influenced by both physical and psychological symptoms. One of the significant challenges in gynecological oncology is the alteration in body image and female sexual identity. Women may experience fear and anxiety regarding sexual activity, worries about sexual adequacy, and uncertainty about the future relationships.[10,11] These emotional factors greatly affect FSFI scores in areas such as satisfaction and desire.

Conclusion

This study offers an overview of sexual function in cervical cancer patients receiving radiation therapy, employing the Female Sexual Function Index (FSFI) questionnaire as a standardized assessment tool. The results indicate that cervical cancer survivors often face sexual dysfunction across several FSFI domains, including desire, arousal, lubrication, orgasm, satisfaction, and pain. These patients show significantly impaired sexual function and compromised vaginal health after radiation treatment when compared to the general population. Given the high prevalence and multifactorial nature of these dysfunctions, there is an urgent need for further research to develop targeted interventions and supportive therapies. The findings from this study provide a foundation for future efforts to improve sexual health

outcomes in cervical cancer survivors and emphasize the necessity of routine sexual function assessment using validated tools like the FSFI in oncology care.

Conflict of Interest

The authors declare there is no conflict of interest.

References

1. National Cancer Institute. What Is Cervical Cancer? [Internet]. 2023. Available from: https://www.cancer.gov/types/cervical
2. Mattiuzzi C, Lippi G. Cancer statistics: A comparison between World Health Organization (WHO) and Global Burden of Disease (GBD). Eur J Public Health [Internet]. 2020 Oct 1 [cited 2025 May 3];30(5):1026–7. Available from: https://pubmed.ncbi.nlm.nih.gov/31764976/
3. Song B, Ding C, Chen W, Sun H, Zhang M, Chen W. Incidence and mortality of cervical cancer in China, 2013. Chinese Journal of Cancer Research [Internet]. 2017 Dec 1 [cited 2025 May 3];29(6):471–6. Available from: https://pubmed.ncbi.nlm.nih.gov/29353969/
4. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. Int J Cancer [Internet]. 2010 Dec 15 [cited 2025 May 3];127(12):2893–917. Available from: https://pubmed.ncbi.nlm.nih.gov/21351269/
5. GLOBOCAN. Cancer Incident in Indonesia [Internet]. Vol. 858. International Agency for Research on Cancer; 2020. p. 1–2. Available from: https://gco.iarc.fr/today/data/factsheets/populations/360-indonesia-fact-sheets.pdf
6. Pimple S, Mishra G. Cancer cervix: Epidemiology and disease burden. Cytojournal [Internet]. 2022 Mar 1 [cited 2025 May 3];19. Available from: https://pubmed.ncbi.nlm.nih.gov/35510109/
7. Cervical Cancer Causes, Risk Factors, and Prevention. PDQ Cancer Information Summaries [Internet]. 2024 Aug 2 [cited 2025 May 3]; Available from: https://www.ncbi.nlm.nih.gov/books/NBK65901/
8. Clements AE, Raker CA, Cooper AS, Boardman LA. Prevalence and patient characteristics associated with CIN 3 in adolescents. Am J Obstet Gynecol [Internet]. 2011 [cited 2025 May 3];204(2):128.e1-128.e7. Available from: https://pubmed.ncbi.nlm.nih.gov/21145032/
9. Remschmidt C, Kaufmann AM, Hagemann I, Vartazarova E, Wichmann O, Deleré Y. Risk factors for cervical human papillomavirus infection and high-grade intraepithelial lesion in women aged 20 to 31 years in germany. International Journal of Gynecological Cancer [Internet]. 2013 Mar [cited 2025 May 3];23(3):519–26. Available from: https://pubmed.ncbi.nlm.nih.gov/23360813/
10. Chino J, Annunziata CM, Beriwal S, Bradfield L, Erickson BA, Fields EC, et al. Radiation Therapy for Cervical Cancer: Executive Summary of an ASTRO Clinical Practice Guideline. Pract Radiat Oncol [Internet]. 2020 Jul 1 [cited 2025 May 3];10(4):220–34. Available from: https://pubmed.ncbi.nlm.nih.gov/32473857/
11. de Andrade Carvalho H, Mauro GP. History of radiotherapy in the treatment of uterine cervix cancer: an overview. Rev Assoc Med Bras [Internet]. 2023 [cited 2025 May 3];69(Suppl 1):e2023S126. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC10411717/
12. Dyer O. WHO links long term pill use

to cervical cancer. BMJ [Internet]. 2002 [cited 2025 May 3];324(7341):808. Available from: https://pubmed.ncbi.nlm.nih.gov/11934771/

13. Asthana S, Busa V, Labani S. Oral contraceptives use and risk of cervical cancer—A systematic review & meta-analysis. European Journal of Obstetrics and Gynecology and Reproductive Biology [Internet]. 2020 Apr 1 [cited 2025 May 3];247:163–75. Available from: https://pubmed.ncbi.nlm.nih.gov/32114321/
14. Puspasari D, Trisyani M, Widiasih R. Latihan Kegeldan Nyeri Saat Berhubungan Seksual Pada Perempuan Pasca Terapi Kanker. Padjadjaran Nursing Journal [Internet]. 2013 Apr 10 [cited 2025 May 3];1(1):105083. Available from: https://www.neliti.com/publications/105083/
15. Sadovsky R, Basson R, Krychman M, Morales AM, Schover L, Wang R, et al. Cancer and sexual problems. Journal of Sexual Medicine [Internet]. 2010 [cited 2025 May 3];7(1 PART 2):349–73. Available from: https://pubmed.ncbi.nlm.nih.gov/20092444/
16. Mishra N, Singh N, Sachdeva M, Ghatage P. Sexual Dysfunction in Cervical Cancer Survivors: A Scoping Review. Womens Health Rep (New Rochelle) [Internet]. 2021 Dec 1 [cited 2025 May 3];2(1):594–607. Available from: https://pubmed.ncbi.nlm.nih.gov/35141708/
17. Osei Appiah E, Amertil NP, Oti-Boadi Ezekiel E, Lavoe H, Siedu DJ. Impact of cervical cancer on the sexual and physical health of women diagnosed with cervical cancer in Ghana: A qualitative phenomenological study. Women's Health [Internet]. 2021 Dec 1 [cited 2025 May 3];17. Available from: https://pubmed.ncbi.nlm.nih.gov/34937442/