

Quality of Life of Cervical Cancer Patients in the State Tripura Following Chemoradiotherapy

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Abstract:

Objectives: Cervical cancer is the prevailing tumor of the female genitals and represents a significant public health concern in emerging nations. The initial stage in designing control measures and treatment facilities involves examining the sociodemographic characteristics and risk factors of patients. The primary objective of this study was to assess the quality of life (QOL) and its associated factors in individuals who have received a diagnosis of cervical cancer and undergone chemoradiotherapy. **Method:** A cross-sectional observational study was undertaken at the Atal Bihari Vajpayee Regional Cancer Centre in Agartala, focusing on patients diagnosed with cervical cancer who sought medical care at the hospital between the years 2018 and 2022. A group of 400 individuals diagnosed with cervical cancer participated in a survey where they were administered a standardized questionnaire to assess their quality of life (QOL). The questionnaire used was the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30), together with its specific module for cervical cancer (EORTC QLQ-CX24). The analysis of quality-of-life categories, socio-demographic characteristics, and risk factors was conducted using the Mann-Whitney test on SPSS version 16. **Result:** The study findings revealed that patients diagnosed with Cervical cancer had a mean overall quality of life and global health status of 64.67 ± 2.68 , suggesting a moderate level of well-being. The findings of this study indicate that a significant proportion of the sample, particularly 53% (n=213), demonstrated a positive global health status. A significant proportion of the participants (67.5%) received their diagnosis between the age range of 40 to 60 years, with an average age of 50.90 ± 2.41 . Correlations ($p < 0.05$) were analysed between the functional domains and the variables encompassing demographic parameters and risk factors. The study revealed a significant impairment in sexual functioning with mean value 15.15 ± 3.83 . The results of this study suggest that younger patients demonstrated enhanced functional scores in comparison to older age groups.

Key word: Quality of Life , Cervical Cancer, Cross sectional study, ABV Regional Cancer Centre, Tripura

Introduction:

Among women, cervical cancer ranks as the second most prevalent gynecological malignancy. In India, an annual total of 67,477 women succumb to cervical cancer following diagnosis, out of a larger pool of 122,844 newly reported cases each year. The well-being of survivors is significantly impacted by both the

cancer itself and the methods employed for its treatment, hence influencing their overall quality of life (QOL). The disease's characteristics and the therapy measures employed to address it can have a dramatic impact on both patients and their family members.¹In the state of Tripura, the prevalence of this particular form of cancer is highest among the female population. According to the 2021 report by the Indian Council of Medical Research (ICMR), the Northeast region exhibits the highest incidence rate of cancer.²However, it is important to acknowledge that there exist certain impediments that impede the upward trajectory of this rate. The primary etiological factor for cervical cancer is the human papillomavirus (HPV). Survey revealed that a mere 21% of participants possessed knowledge regarding cervical cancer. Among this group, approximately 77% were aware that all women are eligible for the PAP smear test, whereas approximately 9% lacked any understanding about the test. Surviving patients lack awareness regarding their lifestyle and no suitable protocol has been examined to enhance their quality-of-life following radio-chemotherapy.³Cervical cancer survivors may encounter a range of enduring side effects that persist for an extended duration, without showing signs of resolution. Symptoms such as sexual difficulties, discomfort, premature menopause, tiredness, and reduced physical function have been reported. The side effects of cancer treatment have the potential to negatively impact the quality of life for individuals who have survived cancer.⁴

The recognition of patients' satisfaction with their lifestyle is crucial in the development of cancer follow-up care research and management programs. These programs aim to customize the needs of cancer survivors and offer comprehensive training in cancer care prevention and early detection. Ultimately, such initiatives have the potential to enhance the overall quality of life for these individuals. The dearth of data regarding illness statuses over the follow-up period of the research is mostly attributed to the predominant use of telephonic means for follow-up. Therefore, the analysis was conducted in a categorical manner, resulting in limited clinical usefulness. Although the treatment regimen for cervical cancer is standardized and contingent upon the disease's stage, there remains a dearth of knowledge regarding the post-treatment and side effects experienced by cervical cancer survivors. The impact on a patient's sexual health varies depending on the sort of therapy techniques administered. The combination of surgical intervention and chemo-radiotherapy has been shown to significantly enhance the quality of life for patients. However, it is important to note that ongoing follow-up counseling is also necessary in order to maintain a stable and healthy existence.^{6,7}The Cancer Atlas Project in Tripura was initiated on January 1, 2006, by the National Cancer Registry Program of the Indian Council of Medical Research (ICMR) at the ABV Regional Cancer Centre in Agartala. It was officially designated as a Population Based Cancer Registry in March 2009, thereafter commencing the collection of data on cancer incidence and mortality. The diligent monitoring of registries is of utmost importance in assessing cancer survival rates, as they are influenced by various factors such as the severity of the disease, the efficacy of therapy, the environmental impact, and host characteristics including age and lifestyle habits. The efficacy of preventive measures is enhanced when they are subjected to long-term monitoring. The quality of data acquisition is influenced by various factors, including lack of knowledge, socioeconomic limitations, deficiencies in the death registration system, incomplete or inaccurate certification of the cause of death, and insufficient medical records. The collection of cancer incidence data by population-based cancer registries (PBCRs) mostly relies on hospitals equipped with diagnostic capabilities. In addition, PBCR conducted visits to individuals who were homebound or bedridden in order to gather data. Home-based palliative care services aim to meet the needs of cancer patients who are currently residing at home and are experiencing symptoms and distress. The objectives of the services rendered are to enhance the quality of life and minimize avoidable hospitalizations.^{2,8}

This study aims to investigate the challenges encountered by women in relation to their cognitive processes. The patients' reported experiences regarding treatment-related side effects align with existing literature in this domain. Some of the observed adverse effects included fatigue, lesions, urgency and leaking of urine, diarrhea, decreased appetite, nausea, and the development of fistulas. Another significant issue that was observed pertained to the olfactory perception of the liquid discharge associated with the condition. The symptoms experienced by women and the subsequent consequences of the condition had a

notable influence on their capacity for social interaction. Furthermore, the illness had a significant impact on their interpersonal relationships with their spouses or partners. It is imperative for women to engage in various therapeutic interventions that may potentially exert adverse effects on their sexual and reproductive well-being.^{9,10,11} The survival rate for people diagnosed with cervical cancer is progressively improving over time, leading to a growing emphasis on the quality of life (QOL) experienced by these individuals. The assessment of quality of life (QOL) during & after chemo-radiotherapy has the potential to enhance the overall situation. Consequently, it has become imperative for healthcare professionals to regularly address this matter both during and after the course of treatment.^{12,13}

Material & Method:

Study Design:

A cross-sectional study was undertaken at Atal Bihari Vajpayee Regional Cancer Centre, Agartala, focusing on cervical cancer patients who sought medical care between the years 2018 and 2022. Ethical approval was taken from Agartala Govt. Medical College institutional review board. The study center encompasses comprehensive cancer treatment capabilities, rendering it the sole cancer hospital within the state of Tripura. A cohort of 400 individuals diagnosed with cervical cancer were enrolled for the study through the face-to-face interview process. Eligibility criteria for inclusion in the study were patients who had received a pathological diagnosis of cervical cancer of any stage and had undergone chemoradiotherapy as a component of their treatment at least six months prior to enrollment. Additionally, inclusion was contingent upon patients providing written consent. Participants who expressed unwillingness to take part in the interview or were below the age of 18 were omitted from the study.

Data Collection:

A standardized questionnaire, administered by an interviewer, was employed, comprising of two portions. The first section focused on the variables, such as demographics and health conditions. The initial segment was acquired through in-person interviews with participants and by examining patient care records. The second portion of the study focused on the analysis of quality of life (QOL) and utilized the EORTC questionnaire modules QLQ-C30 and QLQ-CX24. These modules were available in both English and Bengali versions.¹⁴ The data collected from the Quality of Life (QOL) modules was scored according to prior reports and then translated into a raw score. This raw score was subsequently transformed linearly to a scale ranging from 0 to 100, following the guidelines provided in the scoring manuals of the European Organization for Research and Treatment of Cancer (EORTC).^{15,16} Better functioning is correlated with higher scores on the global health score (GHS) and functional domains, while high scores on the symptom scales are indicative of worse functioning or more issues.

Data Analysis

The data were subjected to analysis using SPSS version 16 software developed by IBM Corporation, as well as Microsoft Excel. Descriptive statistics were employed to compute the means and standard deviations for quantitative variables, whereas percentages were utilized for categorical variables. The scores obtained from the QLQ-C30 and QLQ-CX24 questionnaires were categorized into three groups: good, moderate, or poor. A score of $\geq 66.7\%$ was considered good, a score between 33.4% and 66.6% was considered moderate, and a score $\leq 33.3\%$ was considered poor. These categorizations were based on the scoring manual that has been previously documented. The nonparametric Mann-Whitney U test was conducted in order to assess the disparities between the groups. A p-value less than 0.05 was deemed to be statistically significant.

Result:

The sociodemographic and clinical details of the population studied is presented in Table 1. The majority of the patients (67.5%) were diagnosed between the ages of 40 and 60, with a mean age of 50.90 ± 2.41 . According to the results, the vast majority of the people in the sample (71% to be exact) had only completed elementary school. The majority of patients (66% to be exact) in the study were from non-urban areas. As shown in Table 1, 51% of the population was from middle-class homes. Cervical cancer risk factors include a lack of formal education, living in poverty, and being a rural resident. According to the data in the table, 57% of the patients had their first marriage before turning 20. Half of all patients said they had their first baby before the age of 20, making it the most common age of first pregnancy. Betel nut use alongside cigarette use was also reported by a sizable proportion of the population (67% to be exact). According to the numbers, almost 45 percent of patients have between three and four children. 84% of cases were diagnosed as squamous cell carcinoma, whereas 15% were diagnosed as adenocarcinoma.

Table 1: Socio-demographic Profile & clinical details of subjects participated in the study

Variable	Number	Percentage (%)	Mean \pm SD
Age at diagnosis (years), N=400			50.90 \pm 2.41
20-40	57	14	
40-60	270	67.5	
60-80	71	18	
Above 80	2	0.5	
Education level			
Primary	282	71	
Secondary	93	23	
Higher	16	4	
Illiterate	09	2	
Economic Status			
Lower class	180	45	
Middle class	205	51	
Upper class	15	4	
Place of residence			
Urban	137	34	
Rural	263	66	
Marital Age			20.81\pm1.74
\leq 20 years	227	57	
21-30	133	33	
31-40	33	8	
\geq 41 years	04	1	
Never married	03	1	
Number of Children			
0-2 nos.	138	34.5	
3-4 nos.	180	45	

Above 4 nos. Never had children	76 06	19 1.5	
Age of 1st Pregnancy			
≤ 20 years 21-30 > 30 years Never got pregnant	201 155 40 04	50 39 10 1	21.43±0.77
Risk Behaviour			
Chewing Paan Smoking Smoking +Pan Never used any of the above item	270 3 11 116	67 1 3 29	
Histopathological finding			
Squamous cell carcinoma Adenocarcinoma Others	335 59 06	84 15 2	

Table 2: Percentage of patients with issues and in good condition based on QLQ-C30 scale scores (N=400)

Variables	Mean ± SD	(Scoring≤33.3)Poor(%)	(Scoring 33.4–66.6) Moderate (%)	(Scoring≥66.7) Good(%)
EORTC QLQ-C30 Functional domain				
Global health score	64.67±2.68	9	38	53
Physical functioning	76.26±3.27	2.6	16.2	81.2
Cognitive functioning	77.51±3.35	3.8	9.9	86.3
Role Functioning	76.51±3.65	5.7	9.0	85.3
Social Functioning	66.09±2.73	21.8	8.2	70.0
Emotional Functioning	70.92±2.97	9.2	18.9	71.9
EORTC QLQ-C30 Symptom Domain				
Fatigue		80.8	12.4	6.8
Nausea &		79.3	5.1	15.6

vomiting			
Pain	53.2	15.0	31.8
Dyspnea	96.5	0	3.5
Insomnia	62.2	0	37.8
Appetite loss	68.7	0	31.3
Constipation	63.0	0	37.0
Diarrhea	95.0	0	5.0
Financial difficulties	19.3	27.0	53.7

EORTC QLQ–C30: European Organization for Research and Treatment of Cancer core-30 items; SD : standard deviation

The overall quality of life and global health status of patients with Cervical cancer was determined to be 64.67 ± 2.68 , indicating a moderate level of well-being (Table 2). A majority of the sample, specifically 53% (n=213), exhibited favorable global health status. The findings of the study indicate that the domain of social functioning had the lowest score at 21.8%, while the domain of cognitive functioning had the greatest score at 86.3% according to the EORTC QLQ C30 assessment. Moreover, a significant proportion of individuals, specifically 53.7%, are currently experiencing financial challenges. Additionally, a notable percentage of respondents, amounting to 37%, have reported instances of constipation.

Table 3: Percentage of patients with issues and in good condition according to QLQ-CX24 scale scores (N=400)

Variables	Mean \pm SD	Scoring ≤ 33.3 (%)	Scoring 33.4–66.6 (%)	Scoring ≥ 66.7 (%)
EORTC QLQ-CX 24 Functional domain				
Sexual Activity	15.15 \pm 3.83	84.4	0	15.6
EORTC QLQ-CX 24 Symptom Domain				
Symptom experience		83.5	12.4	4.1
Body image		75.6	11.0	13.4

Lymphoedema	86.7	6.2	7.1
Peripheral neuropathy	74.5	9.0	16.5
Menopausal symptom	70.1	0	29.9

EORTC QLQ–CX24: European Organization for Research and Treatment of Cancer Cervical cancer module

The domain EORTC QLQ CX 24 demonstrates significant findings, as presented in Table 3. Approximately 94% of individuals have experienced a decline in interest or lack of engagement in sexual activities for an extended period of time. A total of 29% of patients exhibited symptoms often associated with menopause and 16.5% with peripheral neuropathy.

Table 4 : Assessing women's quality of life following cervical cancer therapy in relation to demographic characteristics

QLQ item	Age at diagnosis		p	Education		p	Economic status		p	Residence		p
	≤60	≥61		Primary & Illiterate	Secondary & higher		Lower	Middle & upper		Urban	Rural	
	N=327	N=73		N=291	N=109		N=180	N=220		N=137	N=263	
EORTC QLQ-C30 Functional domain												
Global health score	60.9±7.0	63.3±6.2	0.422	63.0±5.8	62.9±5.7	0.454	61.8±6.9	66.6±6.2	0.369	68.04±7.4	60.86±7.6	0.241
Physical functioning	68.6±9.2	60.2±8.6	0.292	67.7±9.2	64.5±7.9	0.241	65±9.6	70.9±6.7	0.491	68.82±9.9	63.86±9.8	0.204
Role functioning	57.5±11.1	58.7±8.0	0.341	57.3±10.5	58.7±8.1	0.390	56.1±10.4	65.4±7.8	0.320	62.6±3.2	55.39±11.9	0.359
Cognitive Functioning	76.8±7.9	60.2±3.5	0.042	79.4±7.4	66.8±7.4	0.087	78.7±7.5	77.2±6.6	0.410	86.1±5.9	79±7.8	0.224
Social Functioning	66.8±9.7	60.2±8.8	0.384	66.8±9.9	54±8.9	0.028	66.9±9.2	62.7±8.1	0.364	73.7±9.3	68.3±10.2	0.233
Emotional Functioning	79.1±8.3	80±0.4	0.302	78.2±8.4	74±9.6	0.369	74.5±8.2	78.1±7.7	0.034	83.4±6.02	75.4±9.0	0.295

The values are presented in mean ± SD. P value < 0.05 significance by Mann Whitney U test

Table 5 : Assessing women's quality of life following cervical cancer therapy in relation to risk factors

QLQ item	Marital Age		p	Age at 1 st pregnancy		p	Smoking or tobacco use		p
	≤30 N=360	≥31 N=37		≤20 N=201	≥21 N=195		Used N=284	Not used N=116	
EORTC QLQ-C30 Functional domain									
Global health score	79.08±6.6	80.5±2.9	0.125	64.4±7.07	64.4±6.1	0.433	62.2±11.2	64.8±3.8	0.436
Physical functioning	67.2±9.6	91.3±3.4	0.122	68.1±9.4	75.6±4.8	0.491	67.7±9.3	75.6±4.9	0.427
Cognitive functioning	74.8±8.6	83.3±3.8	0.224	80.1±7.2	75.7±7.2	0.027	80.23±7.4	83.4±6.1	0.430
Role Functioning	60.65±11.0	88.9±	0.224	65.7±9.7	69.7±6.7	0.046	58.0±11.2	61.3±9.4	0.490
Social Functioning	65.6±10.0	55.6±11.8	0.035	69.1±9	60.2±8.1	0.208	71.6±9.3	76.1±6.5	0.480
Emotional Functioning	76.9±8.9	66.6±13.4	0.484	76.2±7.9	79±6.6	0.472	77.8±8.4	81.5±5.9	0.5

Table 4 and 5 show that age at diagnosis correlates with cognitive performance ($p = 0.04$), while educational attainment is connected with social performance ($p = 0.02$). There was also a significant relationship ($p=0.03$) between the number of years married and how well one's social life is operating. Patients who became pregnant for the first time after the age of 20 demonstrated a correlation between improved cognitive ($p=0.02$) and role ($p=0.04$) functioning.

Discussion:

The study demonstrated that over 50% of colorectal cancer patients exhibited a favorable global health status and overall quality of life, which aligns with findings from a previous study.¹² Several research conducted in various countries like Ethiopia, Iran, Tanzania, China etc. have provided data on the overall quality of life (QOL), with reported values of 48.3, 46.9, 64.4, and 65.3, respectively. Our findings align with these previous studies, as we observed a global health status value of 64.67 ± 2.68 in Tripura.^{15,17,18,19} In accordance with our findings, a separate study conducted in a different region of India found that the global health status of cervical cancer patients was recorded as 59.5 ± 10.9 .²⁰ The predominant adverse symptoms reported included insomnia, constipation, a lack of appetite, financial hardship, menopausal symptoms, and peripheral neuropathy. These findings exhibit similarities to other studies of a similar

nature.^{12,21} It is crucial for women to comprehend the substantial alterations in quality of life (QoL) following therapy with each technique, as patients diagnosed with early-stage cervical cancer may get multiple treatment modalities. The significance of late adverse events in the context of long-term survival among young patients with cervical cancer is underscored, particularly in view of the growing population of younger individuals affected by this disease.^{22, 23} The study reported satisfactory levels of functioning in several domains, specifically 76.26 ± 3.27 in physical functioning, 77.51 ± 3.35 in cognitive functioning, 76.51 ± 3.65 in role functioning, 66.09 ± 2.73 in social functioning, and 70.92 ± 2.97 in emotional functioning. However, the study found low functioning in sexual activity. The results of this study suggest that younger patients demonstrated enhanced functional scores in comparison to the elderly group, which is in line with previous investigations. The study observed a positive correlation between age and cognitive performance, suggesting that younger patients exhibited higher levels of engagement in daily activities, as well as enhanced abilities to concentrate and retain information, in comparison to their older counterparts. This finding exhibits resemblance to previous studies.¹⁹ Multiple studies showed an adverse influence of sexuality on individuals diagnosed with various types of cancer. The study findings indicate that the younger patients exhibited a higher prevalence of sexual concern in comparison to older. Consistent with the scope of our investigation, prior studies have indicated that younger patients express concerns regarding fertility, femininity, treatment-induced menopause, and challenges connected to interpersonal relationships.^{15,24} The aforementioned findings highlight the significance of providing counseling services to address these issues, particularly among younger individuals and those with higher levels of education. It is crucial to ensure that these patients receive accurate information regarding high-risk HPV infection and are made aware of all relevant co-factors. Sexuality has a fundamental role in the context of gynecological cancer, thus serving as a pivotal factor in determining an individual's quality of life. The current investigation saw a notable reduction in the sexual activity score. In accordance with other studies, 40% to 100% of patients experience sexual dysfunction as a result of their treatments since CC and its therapy affect the same bodily regions that are important for sexual response. Patients who underwent surgery in combination with chemotherapy and radiotherapy exhibited poorer sexual and vaginal functioning compared to patients who only underwent surgery.^{15,25} Radiotherapy (RT) is distinguished from other treatment techniques due to its ability to induce damage not only to cancerous cells, but also to adjacent healthy cells in the vicinity of the tumor. Consequently, the adjacent anatomical structures, namely the cervix, uterine body, vagina, bladder, and rectum, experience concurrent effects. Bladder and intestinal diseases exhibit a higher prevalence subsequent to radiation therapy, concurrently leading to ovarian failure in premenopausal women. One effective strategy for mitigating the occurrence of adverse effects involves minimizing the administration of ionizing radiation by employing lower doses wherever feasible. The study done by Yu et al. aimed to investigate potential variations in the impact on quality of life (QoL) resulting from different doses of external beam radiation therapy, specifically 45-Gy and 50.4-Gy. The findings of the study indicate that implementing a suitable reduction in the dosage of external beam radiation therapy can effectively mitigate the adverse impact on adjacent healthy organs, while maintaining the treatment's therapeutic effectiveness. An additional strategy for mitigating the adverse effects on quality of life is the utilization of a mixed approach using external radiation therapy in conjunction with brachytherapy.^{26,27} In the present research, comparative analysis of the quality of life (QoL) across various treatment methods have not been conducted. This study evaluates the relationships between sociodemographic characteristics (such as age, economic position, and education), risk factors (including marital age, age of first pregnancy, and tobacco use), and the functional domains of quality of life among women following therapy.²⁸ The study result indicated there were no significant associations observed. In order to enhance the health outcomes of individuals diagnosed with CC, it is imperative for treatment and management strategies to also include the duration of time from diagnosis. Long-term care is essential for patients in order to get improved health outcomes. This discovery implies that the quality of life of the patient is undergoing long-term alterations. It is advisable to do additional research in order to assess the quality of life (QoL) among those who have survived for an extended period of time.

The comparatively large patient population is one of this study's advantages. Nevertheless, the quality of life experienced by individuals who have survived cancer undergoes transformations as time progresses. Due to the utilization of a cross-sectional design, the evaluation of quality of life was not conducted longitudinally, and the absence of a comparison of QOL scores pre- and post-treatment contributes to the limitations of this study. The scope of data collection was confined to a singular institution, hence restricting the portability of the study findings to the entire population of cancer survivors in the overall North-East region of India. Longitudinal research and intervention studies including a control group may provide a more comprehensive evaluation of the quality of life (QOL) among cervical cancer survivors.¹⁵

Conclusion:

Our research shows that many people with cervical cancer report a high quality of life despite their diagnosis. However, it is crucial to direct focus towards specific aspects such as sexual functioning in the post-treatment phase. In order to enhance quality of life, it may be necessary to implement interventions that prioritize social and psychological assistance as well as physical rehabilitation. The association of rural residency and poor socioeconomic status has been identified as a contributing factor to the negative impact on the overall quality of life in individuals diagnosed with cervical cancer. The sexual functioning of cervical cancer survivors who underwent chemoradiotherapy was found to be significantly impaired. To mitigate the adverse effects of radiotherapy on sexual functioning, it is advisable to employ suitable interventions such as pelvic exercises, yoga, vaginal dilators, and vaginal cream. The domain of social functioning had the greatest degree of impairment and shown limited improvement over the course of time. The individual encountered significant financial challenges, while also experiencing persistent issues with constipation and insomnia.

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