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Health Related Quality of Life among Cervical Cancer Survivors in Lusaka District

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ABSTRACT

Background Health-Related Quality of Life (HRQoL) is a crucial health outcome that guides strategies for improving clinical care among cervical cancer survivors. Advances in cancer screening and treatment have led to an increase in the number of cervical cancer survivors (CCS) in Zambia. However, cancer and its treatment negatively impact their health, and little is known or documented about HRQoL among these survivors.

This study aimed to determine the HRQoL among CCS at the Cancer Diseases Hospital and University Teaching Hospitals in Lusaka.

Methods A cross-sectional study involved 83 conveniently selected CCS. Data were collected using an interview schedule with questions from the European Organization for Research and Treatment of Cancer, along with self-structured questions. The study received approval from the Zambia Biomedical Research Committee. Statistical Package for Social Sciences (SPSS) was used for data analysis, with a confidence interval set at 95%. Chi-square and linear regression tests were applied to assess associations. HRQoL scores ranged from 0 to 100, where higher scores (≥ 66.7%) indicated good HRQoL.

ResultsThe mean HRQoL score was 60.9. Factors influencing HRQoL included the stage of cervical cancer at diagnosis and the time point of treatment.

Conclusion The study findings indicate that HRQoL among cervical cancer survivors is poor. Therefore, to enhance quality care, it is essential to incorporate HRQoL assessment into the routine management of cervical cancer survivors.

Keywords: Cervical cancer, cervical cancer survivors, Quality of life, Health-Related Quality of life.

BACKGROUND

Cervical cancer continues to pose a significant global public health challenge, with approximately 662,044 new cases and 348,709 deaths recorded in 2022, the majority occurring in low- and middle-income countries (International Agency for Research on Cancer, 2024; World Health Organization, 2025). Although the burden remains high, cervical cancer is largely preventable and highly treatable when detected early through effective screening and timely intervention. Improvements in early detection and treatment have contributed to increased survival rates, particularly in regions with well-established cancer control programmes (World Health Organization, 2025). However, unequal access to key preventive services, including human papillomavirus vaccination, screening, and appropriate treatment, continues to drive the high incidence and mortality observed in sub-Saharan Africa.

While some women achieve complete remission following cervical cancer treatment, others may continue to live with persistent or recurrent disease, necessitating prolonged follow-up and supportive care. As a result, enhancing health-related quality of life (HRQoL) among survivors is essential. Given the wide range of physical, psychological, social, and functional challenges associated with both the disease and its treatment, it is important for healthcare providers to routinely assess HRQoL in order to deliver individualized, patient-centered care. HRQoL is defined as an individual's perception of their physical and mental health status as influenced by illness and its management (Centers for Disease Control and Prevention, 2022).

Advances in cancer management, including surgery, radiotherapy, and chemotherapy, have contributed to improved survival rates and enhanced health-related quality of life (HRQoL) among cancer survivors (World Health Organization, 2025; American Cancer Society, 2024). Despite these improvements, many survivors continue to experience adverse effects related to treatment. Common complications such as fatigue, vaginal stenosis, early menopause, altered body image, and dysfunction affecting sexual, urinary, and bowel systems can significantly reduce overall quality of life (National Cancer Institute, 2023; World Health Organization, 2023).

For patients diagnosed at early stages of cervical cancer (Stage IA1 to IIA1), surgical management, particularly hysterectomy is commonly recommended in accordance with the International Federation of Gynaecology and Obstetrics (FIGO) treatment guidelines, as the disease is still localized (FIGO, 2023). These patients typically have shorter hospital stays and are able to return to their normal daily and social activities with minimal disruption (American Cancer Society, 2024). Conversely, individuals diagnosed at more advanced stages (IB2 to IVB) are generally managed using concurrent chemoradiation, which remains the standard treatment for locally advanced disease and plays a critical role in controlling tumour progression (Berek *et al*., 2021; World Health Organization, 2025). However, even after treatment completion, many survivors continue to experience long-term physical and psychological effects, which may negatively influence their HRQoL (National Cancer Institute, 2023).

In high-income settings, routine evaluation of HRQoL has become an essential component of cancer survivorship care, supported by the availability of validated assessment tools designed to capture patient-reported outcomes (World Health Organization, 2023; European Organisation for Research and Treatment of Cancer, 2022). Recent research indicates that women diagnosed with early-stage cervical cancer and those treated exclusively with surgical intervention tend to report higher health-related quality of life than those who undergo combination treatments such as surgery followed by radiotherapy or chemo-radiotherapy (Tokarski et al., 2024; Chen et al., 2024).Furthermore, socioeconomic status plays a significant role in determining HRQoL outcomes, as patients with limited financial resources often face barriers to accessing healthcare services and adhering to follow-up care, resulting in poorer outcomes (World Health Organization, 2023).

In sub-Saharan Africa, including Zambia, survival outcomes for cervical cancer remain lower than those observed in high-resource countries. This is largely due to the tendency for patients to present with advanced-stage disease, which is often difficult to treat and may only be managed palliatively (World Health Organization, 2025). Contributing factors include inadequate access to screening services, low levels of awareness, and systemic healthcare challenges. As a result, many survivors experience diminished HRQoL. Additionally, the lack of routine assessment of HRQoL in clinical practice may lead to unaddressed health needs and poorer overall outcomes among survivors (World Health Organization, 2023).

In Zambia, cervical cancer is the most frequently diagnosed cancer among women and remains a leading cause of cancer-related mortality. It is estimated that between 3,000 and 3,600 new cases are diagnosed annually, with approximately 1,900 to 2,200 deaths reported each year (Ministry of Health Zambia, 2024; International Agency for Research on Cancer, 2023). The country experiences one of the highest cervical cancer burdens worldwide, with incidence rates exceeding 65 per 100,000 women and mortality rates above 40 per 100,000 women. Contributing factors include a high prevalence of HIV, inadequate screening coverage, delayed healthcare-seeking behaviour, and limited access to timely and effective treatment services (World Health Organization, 2023).

At the Cancer Diseases Hospital in Zambia, survival rates have shown improvement over time. For instance, in 2025, 298 out of 423 who received treatment survived compared to 2024, where 271 of 411 patients survived (Cancer Diseases Hospital, 2025). However, there is limited information regarding the HRQoL of these survivors. With increasing survival rates, HRQoL has emerged as a crucial outcome measure for evaluating the broader impact of cancer and its treatment on patients' lives (American Cancer Society, 2024). This highlights the importance of conducting studies aimed at assessing HRQoL among cervical cancer survivors.

METHODS

The study was conducted at Cancer Diseases and University Teaching Hospitals using a cross section study on 83 participants. The participants were purposively selected and included CCS who at least completed an initial treatment of cervical cancer who were visiting CDH and UTH for their follow up. An interview schedule with closed and open-ended questions was used to collect data. It contained self-structured and adapted questions from a validated Questionnaire for European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core-30 item (EORTC QLQ-C30) version four and EORTC QLQ-CX24, Cervical cancer module (Aaronson et al., 1993). HRQoL was measured on a range from 1- 100 and a score of ≥ represented good HRQoL.

The first section included socio- demographic data, second section, questions on HRQoL, third sections, questions on stage of cervical at diagnosis and treatment modalities.

Data analysis

Data was analyzed using SPSS version 25.0 software. Cross tabulations between the dependent and independent variables were done to establish an association. Chi square test was used to test for relation between HRQoL and age, level of education, monthly household income, stage of cervical cancer at diagnosis, treatment received and time point of treatment. The researcher further used multiple linear regression on those variables that showed an association with the dependent variable to determine whether they would remain to be determinants of HRQoL, controlling for covariates.

Ethical consideration

Ethical clearance was obtained from the University of Zambia Biomedical Research Ethics committee (UNZABREC). Permission to conduct a study was granted from both University Teaching Hospital, Cancer Diseases Hospital and from National Health Research Authority. All participants consented before participating in the study.

RESULTS

Table 1: Demographic characteristics (n= 83)

Demographic characteristics	frequency	Percentages
Age		
≤ 45	28	33.7
≥ 46	55	66.3
Level of education		
Never been to school	11	13.3
Primary level	37	44.6
Secondary level	26	31.3
Tertiary level	9	10.8
Monthly household income		
< k2000	71	85.5
K2000- k5000	9	10.8
> k 5000	3	3.6

Table 1 shows that above half (n = 55, 66.3 %) of respondents were ≥ 46 years old. The average mean age was 52.55 with standard deviation of 12.4 and a range of 24 to 81 years. Slightly above one tenth (11 %, n = 9) of the participants had attained tertiary education while the rest had not and only less than one tenth (3.6 %, n = 3) of the study participants had monthly house hold income of more than K5, 000.00.

Clinical characteristics

Table 2: clinical characteristics (n= 83)

Clinical characteristics	Frequency	Percentages
Stage of cervical cancer at diagnosis		
Stage I	13	15.6
Stage II	40	48.2
Stage III	28	33.7
Stage IV	2	2.4
Treatment modality		
Surgery only	7	8.4
Chemo radiotherapy	53	63.9
Surgery and chemo radiotherapy	18	21.7
Radiotherapy only	5	6.0
Feeling after treatment		
Fine	8	9.6
Much better	73	88.0
No improvement	2	2.4
Time point of treatment		
< 1 year	37	44.6
1 – 5 years	40	48.2

> 5 years	6	7.2

Table 2 shows that slightly below half (n= 40, 48.2 %) of the study participants were in cervical cancer stage II and participants who received Chemo radiotherapy were the majority (n= 53, 63.9 %). Slightly above half (n= 47, 56.6 %) of the study participants were admitted during the period of treatment and above three quarters (n= 73, 88 %) reported to be feeling much better after treatment. This means that treatment improves the quality of life among cervical cancer survivors. Further, slightly less than half (n= 40, 48.2 %) of the study participants were those who received treatment 1 to 5 years ago after treatment

Table 3: Health Related Quality of life among cervical cancer survivors (n=83)

HRQoL	Frequency	Percentage	Mean score SD	Total
Good	53	63.9	60.9 (21.4)	83
Poor	30	36.1		

Table 3 shows that more than half (n= 53, 63.9%) of the participants had good HRQoL. However, the mean score (60.9) of all the participants was less than the mean score (66.7) from the multi-center validation study by the authors of the European Organization for research and cancer treatment.

Table 4: Association of demographic, clinical variables and HRQoL (Chi square test)

Variables	**Overall HRQoL**	
	Mean (SD)	**P value**
Age		
≤ 45 years	66.6 (19.3)	0.132
≥ 46 years	58.1 (22.0)	
Level of education		
Low education	67.1 (21.6)	**0.031**
High educated	56.5 (20.3)	
Income		
<K2000	59.3 (20.1)	0.399
K2000- K5000	64.8 (27.1)	
> K5000	88.9 (19.3)	
Time point of treatment		
< 1 year	58.8 (22.0)	**0.005**
1-5years	60.8 (22.2)	
> 5 years	69.4 (6.7)	
Stage of cancer at diagnosis		
Stage i	74.4 (16.1)	
Stage ii	60.75 (20.1)	**0.034**
Stage iii	57.0 (23.0)	
Stage iv	33.0 (0.0)	

Treatment modality		
Surgery only	76.2 (16.2)	**0.010**
Radiotherapy	69.9 (24.8)	
Chemo radiotherapy	50.3 (27.2)	
Surgery & chemo radiotherapy	74.1 (21.6)	

Table 5: Health Related Quality of Life in Relation to age, level of education and monthly household income

Age of the patient	**Overall Health Related Quality of life**			
	Good	Poor	Chi square	P value
≤ 45 years	21 (40%)	7 (23%)	2.274	0.132
> 45 years	32 (60%)	23 (77%)		
Total	53	30	83 (100%)	
Level of education	**Overall Health Related Quality of Life**			
High	27 (51%)	8 (27%)	4.630	0.031
Low	26 (49%)	22 (73%)		
Linear Regression test				0.239
Total	53	30	83 (100%)	
Monthly household Income	**Overall Health Related Quality of Life**			
< K2000,00	44 (83%)	27 (90%)	1.838	0.399
K2000,00- K5000,00	6 (11%)	3 (10%)		
> K5000,00	3 (6%)	0 (0%)		
Total	53	30	83 (100%)	

Table 6: Health Related Quality of life in Relation to stage of cervical cancer at diagnosis, treatment modality, time point of treatment.

Stage of cervical cancer at diagnosis of the patient	**Overall Health Related Quality of life**			
	Good	Poor	Chi square	P value
Stage I	12 (23 %)	01(3 %)	8.672	0.034
Stage II	25 (47 %)	15(50 %)		
Stage III	16 (30 %)	12 (40 %)		
Stage IV	0 (0 %)	2 (7 %)		
Linear Regression test				0.005
Total	53	30	83 (100%)	
Treatment modality	**Overall Health Related Quality of life**			
Surgery only	7 (13 %)	0 (0 %)	11.314	0.010
Chemo radiotherapy	27 (51 %)	26 (87 %)		
Surgery and chemo radiotherapy	15 (28 %)	3 (10 %)		
Radiotherapy	4 (8 %)	1 (3 %)		
Linear Regression test				0.055

Total	53	30	83 (100 %)	
Time point of treatment				
< 1 year	17 (32 %)	20(67 %)	10.691	0.005
1-5 years	30 (57%)	10 (33 %)		
> 5years	6 (11%)	0 (%)		
Linear Regression test				0.01
Total	53	30	83 (100 %)	

DISCUSSION

The health-related quality of life (HRQoL) among cervical cancer survivors (CCS) in this study was found to be poor, as evidenced by a mean score of 60.9, which falls below the established average benchmark of 66.7. This reduced HRQoL may largely be explained by the financial difficulties experienced by the participants. A substantial proportion (81.9%, n = 68) reported financial challenges, while the majority (96%, n = 80) belonged to low-income households. Financial burden is increasingly recognized as a key factor influencing HRQoL among cancer patients, particularly in low- and middle-income countries, where healthcare costs are often borne out-of-pocket and social protection mechanisms are limited (World Health Organization, 2023; International Agency for Research on Cancer, 2022). These findings are consistent with earlier studies conducted in Africa, including Fadodun et al. (2018) in Nigeria and Owenga (2018) in Kenya, as well as more recent studies in sub-Saharan Africa which highlight persistent poor HRQoL among cervical cancer survivors due to economic constraints and limited access to comprehensive cancer care (Ezechi et al., 2020; Mwaka et al., 2021). Additionally, individuals with low socioeconomic status are less likely to participate in cervical cancer screening programs and often present late with advanced disease, further worsening their quality of life (Lemos et al., 2015; WHO, 2023).

Conversely, studies from higher-income settings, such as those conducted in China by Thapa et al. (2018) and Huang et al. (2017), have reported relatively better HRQoL outcomes among cervical cancer patients. More recent evidence supports these findings, attributing improved HRQoL to stronger healthcare systems, better financial support, and earlier diagnosis among patients (Zhang et al., 2022; Li et al., 2021). Furthermore, a lower proportion of patients with advanced-stage disease in these settings may contribute to better HRQoL, as individuals with stage IV cancer often undergo palliative care and continue to experience disease-related symptoms and treatment side effects that negatively impact their wellbeing (Arden-Close et al., 2020).

With regard to age, most participants (77 %) who reported poor HRQoL were older than 45 years, and their mean HRQoL scores were lower compared to those aged 45 years and below. This suggests that older cervical cancer survivors may be more likely to experience poorer quality of life, although the association was not statistically significant. Similar findings have been reported by Thapa et al. (2018), where younger patients demonstrated relatively better HRQoL scores than older patients, though without significant statistical association. Recent literature further indicates that increasing age is often associated with declining physical functioning, the presence of comorbidities, and reduced resilience, all of which contribute to poorer HRQoL outcomes (European Organisation for Research and Treatment of Cancer, 2021; Williams et al., 2022). The reduced HRQoL observed among older individuals may therefore be linked to age-related physiological decline, increased fatigue, and diminished functional capacity, which tend to be more pronounced in elderly populations (Leinert et al., 2017; Mishra et al., 2021).

In contrast to these findings, a study conducted by Owenga (2018) in Kenya reported that younger women experienced poorer HRQoL compared to older women and identified a significant relationship between age and overall quality of life. This may be attributed to heightened psychological distress among younger patients, including anxiety, depression, and concerns about fertility, childbearing, and the prognosis of the disease. Additionally, the majority of participants in Owenga's study were diagnosed at stage IV, which is commonly associated with severe symptoms and poorer quality of life. Variations in findings across studies could therefore be explained by differences in sample size and distribution of disease stages. Owenga (2018) included a larger sample with a higher proportion of advanced-stage cases compared to the present study and that of Thapa et al. (2018). Recent evidence also indicates that younger cancer patients, particularly those with advanced disease, may experience greater psychological burden, which adversely affects HRQoL (World Health Organization, 2023; Mutebi et al., 2021; Abrahams et al., 2022). Regarding education, most participants (73 %) who reported poor HRQoL in this study had low levels of education. Moreover, individuals with higher educational attainment recorded better mean HRQoL scores compared to those with lower education, suggesting that lower education is associated with poorer quality of life. However, this association was not statistically significant after regression analysis, indicating that the observed relationship may have occurred by chance. Similar findings were reported by Tadele (2015), who found no significant link between education and quality of life. In contrast, Owenga (2018) observed that HRQoL improved with increasing levels of education and reported a significant association between the two variables.

Lower levels of education may limit awareness and understanding of cervical cancer prevention, screening, and treatment, resulting in delayed healthcare-seeking behaviour and late-stage presentation, where management is often palliative. Conversely, individuals with higher education are more likely to access health information, engage in preventive practices, and develop stronger coping strategies, which can enhance their psychological wellbeing and overall quality of life. Recent studies support the positive role of education in improving health literacy, early diagnosis, and HRQoL among cancer patients (Singh et al., 2021; Musa et al., 2022). Higher education has also been associated with better emotional stability and coping capacity, contributing to improved quality of life outcomes (Javed et al., 2016; Nyambe et al., 2023).

The differences in findings regarding the relationship between education and HRQoL may be due to methodological variations across studies. For example, Tadele (2015) included patients with different cancer types, such as breast cancer, and involved both male and female participants, which may have influenced the results. Furthermore, Owenga (2018) had a higher proportion of stage IV cervical cancer patients compared to the current study, which may have strengthened the observed association. Recent literature also emphasizes that disease stage and sample characteristics play a crucial role in shaping the relationship between sociodemographic factors and quality of life outcomes (International Agency for Research on Cancer, 2022; Nakitto et al., 2021).

With respect to monthly household income, most participants who experienced poor HRQoL in this study were from low-income backgrounds. Nevertheless, monthly income was not found to be statistically associated with HRQoL. In contrast, studies conducted in China by Huang et al. (2017) and Thapa et al. (2018) reported a significant relationship between income and quality of life, with individuals of higher income levels demonstrating better overall HRQoL scores. The observed differences may be due to variations in sample distribution, particularly the very small proportion of high-income participants in the current study (3.6 %, n = 3), compared to Huang et al. (2017), where a larger proportion (34.7 %, n = 26)

of participants had higher income. Individuals with better economic status are more likely to adhere to treatment and experience fewer financial constraints, thereby improving their quality of life (Tadele, 2015; Musa et al., 2022; World Health Organization, 2023).

In this study, none of the participants diagnosed with stage IV cervical cancer reported good HRQoL. Regression analysis further indicated a significant association between stage at diagnosis and HRQoL, suggesting that advanced-stage disease is linked to poorer quality of life. These findings are consistent with earlier studies (Owenga, 2018 and Rahman et al., 2017) and are supported by more recent evidence demonstrating that patients diagnosed at earlier stages tend to have better HRQoL due to lower symptom burden and less intensive treatment requirements (Seyfu et al., 2024; Joseph et al., 2026). However, contrasting findings have been reported by Santos et al. (2019) and Huang et al. (2017), who found no significant association between cancer stage and HRQoL. This discrepancy may be explained by differences in study design, particularly the exclusion of stage IV patients in those studies, which may have reduced the ability to detect such associations (Chen et al., 2024).

In relation to treatment modalities, the majority of participants with poor HRQoL in this study were those who received chemoradiotherapy, while none of those treated with surgery alone reported poor HRQoL. This suggests that poorer HRQoL is more common among patients undergoing combined or intensive treatment approaches. However, regression analysis showed no statistically significant association between treatment modality and HRQoL. In contrast, studies conducted in the United States have demonstrated a significant relationship, with patients undergoing surgery alone reporting better HRQoL compared to those receiving chemoradiotherapy, radiotherapy alone, or combined treatments (Krista et al., 2015). Recent literature supports these findings, indicating that more aggressive or multimodal treatments are often associated with increased side effects and reduced quality of life (Abrahams et al., 2022; Mutebi et al., 2021). Differences between studies may be attributed to variations in sample size, as larger studies are more likely to detect statistically significant associations.

In this study, most participants who had received treatment within the previous year reported poor HRQoL, whereas none of those who had been treated for more than five years experienced poor HRQoL. This pattern indicates that long-term survivors are less likely to have reduced quality of life. Regression analysis further confirmed a significant association between time since treatment and HRQoL. In contrast, Thapa et al. (2018) did not find a significant relationship between quality of life and duration since treatment, which may be attributed to differences in sample size, as their study involved a larger number of participants. The relatively better HRQoL observed among long-term survivors may be due to improved coping strategies and psychological adjustment over time. Recent literature supports this, showing that cancer survivors often experience gradual improvements in physical, emotional, and social wellbeing as they adapt to life after treatment (Mishra et al., 2021; World Health Organization, 2023). Additionally, improvements in perceived health over time have been linked to reduced pain, enhanced body image, and increased adaptation to illness, although concerns about future health may still persist (Zhang et al., 2018; Joseph et al., 2026).

Conclusion

The findings of this study reveal that health-related quality of life among cervical cancer survivors was generally poor. Time since treatment and stage of cancer at diagnosis were identified as important determinants of HRQoL. These findings suggest the need for further research to better understand the factors contributing to poor quality of life among cervical cancer survivors. Integrating cervical cancer

screening and treatment services into primary healthcare is crucial, as it may enhance access to care, encourage early detection, and support timely treatment. Such measures have the potential to improve HRQoL outcomes among cervical cancer survivors.

LIMITATION OF THE STUDY

1. The small sample size and the purposive sampling method used in this study may limit generalization of findings to other settings.
2. The study being a cross section design, does not allow for causal inferences, but only describes the factors associated with self- reported HRQoL outcomes. A similar study to be conducted using random sampling to validate the findings of the present study. Further, a qualitative study to be conducted to explore reasons for poor HRQoL among CCS.

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