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Original Article

Influence of Clinical and Demographic Variables 0n the Quality of Life in Patients with Cervical Cancer

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ABSTRACT

Background: Cervical cancer remains a significant public health issue, particularly in low- and middle-income countries, where it disproportionately affects women's quality of life (QoL). Understanding the impact of clinical and demographic variables on the QoL of patients with cervical cancer is crucial for improving care and support strategies.

Objective: This study aims to assess how clinical and demographic factors influence the QoL of Pakistani women diagnosed with cervical cancer, comparing these findings against established benchmarks for both healthy individuals and those with malignancies.

Methods: Conducted at a leading cancer centre in Pakistan from April to September 2022, this cross-sectional study involved 186 women with histopathologically confirmed cervical cancer, identified through a population-based cancer database. QoL was evaluated using the Organization for Research and Treatment of Cancer QLQ-C30 (Version 3.0) questionnaire, encompassing functional scales, symptom scales, single-item scales, and a global health status score. Data analysis was performed using SPSS version 25, applying logistic regression to identify factors significantly associated with QoL outcomes.

Results: The median global health status score for enrolled patients was 50.0 [interquartile range (IQR) 33.3 - 66.7], significantly lower than the reference values for healthy females (58.0 [IQR 41.3 - 82.7]) and those with any malignancy (71.0 at age 55). Functional scale scores indicated compromised physical (65.7 [IQR 60.0 - 75.0]) and social (67.7 [IQR 56.0 - 100]) functioning. Symptom scale scores revealed high levels of pain (84.3 [IQR 65.7 - 84.3]) and fatigue (78.8 [IQR 55.7 - 88.7]). Regression analysis highlighted age and education level as significant predictors of physical health outcomes.

Conclusion: The study underscores the profound impact of cervical cancer on the QoL of Pakistani women, with age and education level emerging as key determinants. These findings call for tailored interventions to address the specific needs of this patient population, emphasizing the need for early detection and comprehensive support services.

Keywords: Cervical Cancer, Quality of Life, QLQ-C30, Pakistan, Cross-Sectional Study, Health Outcomes, Patient Care.

INTRODUCTION

Cervical carcinoma represents a significant public health concern, being the second most prevalent gynaecological malignancy and the fourth leading cancer among women globally. In Pakistan alone, it is estimated that annually, 13,000 women are diagnosed with this disease, leading to approximately 4,000 deaths. This high incidence underscores the profound impact cervical cancer has not only on the physical health of affected women but also on their overall quality of life (QoL). Quality of life, a multifaceted construct, encapsulates patients' perceptions of their health status, care received, and the lingering effects of disease and treatment, highlighting the necessity for a comprehensive approach to cancer care that transcends mere survival metrics (1, 2).

Research in this domain suggests that the adverse effects of cancer and its treatment extend well beyond physical deterioration, affecting psychological, social, and spiritual well-being. For survivors, navigating the aftermath of cancer necessitates a multifaceted follow-up care strategy aimed at monitoring and addressing the wide range of health complications that can emerge post-treatment. Indeed, the integration of QoL assessments into patient care routines offers valuable insights into the general health and functional status of individuals, serving both as a complement to traditional monitoring methods and a tool to inform clinical decision-making processes (3, 4).

The diagnosis of cervical cancer invariably impacts patients' physiological and psychological well-being, thereby diminishing their quality of life. The initial emotional responses to diagnosis, such as shock, fear, guilt, despair, and anger, are compounded by social challenges and sexual dysfunction, underscoring the profound and multifaceted burden borne by these patients. Consequently, comprehensive support—spanning financial, familial, social, emotional, and psychological domains—is essential for women to effectively manage their condition and its treatment (5, 6).

Moreover, the social stigma associated with cancer diagnosis exacerbates the challenges faced by these patients, leading to isolation and discrimination. Studies have documented the pervasive nature of cancer stigma, with patients reporting fears of societal rejection and concern for the impact of their diagnosis on their children. Such stigma not only affects mental and physical health outcomes but also interferes with social and behavioral aspects of patients' lives, further highlighting the importance of addressing QoL concerns in this population (7, 8).

Despite the acknowledged impact of cervical cancer on patients' quality of life, there remains a paucity of research on this topic in low-income countries, particularly Pakistan. Moreover, existing studies often fail to compare the QoL of cervical cancer survivors with that of the general population, overlooking the unique challenges and needs of this group. The current study aims to fill this gap by examining how clinical and demographic factors influence the quality of life among Pakistani women diagnosed with cervical cancer, thereby contributing to a more nuanced understanding of their lived experiences and informing the development of targeted interventions to improve their well-being.

MATERIAL AND METHODS

This study formed part of a larger investigation focusing on the quality of life (QoL) among cervical cancer patients and was conducted at a renowned cancer centre in Pakistan from April 2022 to September 2022. Employing a cross-sectional study design, the research targeted individuals with histopathologically confirmed cervical cancer. Patients were identified through both a population-based and a hospital-based cancer registry, facilitating a comprehensive approach to participant selection. The QoL assessments were conducted through in-person interviews using the validated Organization for Research and Treatment of Cancer QLQ-C30 (Version 3.0) questionnaire, which encompasses 30 items designed to measure various facets of QoL, including functional scales, symptom scales, single-item scales, and a global health status score. In addition to questionnaire data, baseline and clinical information were extracted from the patients' medical records (9).

Of the 400 cervical cancer patients identified during the study period, 186 were deemed eligible for inclusion. The exclusion of 214 patients was due to various reasons: 25 were referred for terminal or palliative care, 95 were transferred to other hospitals or were unreachable, 59 declined participation, and 35 had incomplete data records. The determination of sample size, along with the criteria for inclusion and exclusion, was detailed in a separate methodological document (10, 11).

The QoL data collected were analyzed according to the scoring manual provided by the EORTC, with all scores standardized on a scale from 0 to 100. Higher scores on the global health status and functional scales indicated better QoL or functional ability, whereas higher scores on the symptom scales and single-item measures were indicative of more severe symptoms and, thus, poorer health quality (12). This study's QoL outcomes were benchmarked against the EORTC's standard scores for healthy females and cancer patients, facilitating a comparative analysis. The study employed the median and interquartile ranges for data presentation due to the non-normal distribution of data, as confirmed by the Kolmogorov-Smirnov and Shapiro-Wilk tests (6).

For the statistical analysis, a stepwise forward logistic regression was utilized to identify independent variables associated with QoL across various dimensions, with inclusion criteria for the regression analysis set at a univariate correlation with QoL ($p<0.20$). Statistical significance was established at a p-value of less than 0.05. All data analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 25.

In adherence to ethical considerations, the study was conducted in compliance with the Declaration of Helsinki, ensuring respect for the autonomy, privacy, and confidentiality of all participants. Ethical approval was obtained from the institutional review board of the cancer centre, and informed consent was secured from all participants prior to their inclusion in the study. This research not only adheres to rigorous methodological standards but also places a strong emphasis on ethical conduct and participant welfare, ensuring the reliability and integrity of the findings.

RESULTS

The study meticulously analysed demographic variables, revealing significant disparities between enrolled and unenrolled patients in terms of age, education, residency, financial dependence, medical insurance, and the clinical stage of carcinoma (Table 1). Among the enrolled patients (n=186), a younger demographic was more prevalent, with 32.3% under the age of 45, compared to 21.0% in the unenrolled group (n=214). Most enrolled patients were literate (88.7%), indicating a higher literacy rate compared to the unenrolled patients (84.1%). Residency patterns showed a higher proportion of enrolled patients living in rural areas (64.5%) than urban ones (35.5%), contrasting with the unenrolled patients' distribution. Notably, all enrolled patients provided data on financial dependence and medical insurance status, emphasizing the significance of these factors in patient enrollment, with a substantial majority lacking medical insurance (89.2%).

Quality of Life (QoL) scores, as assessed by various domains, depicted a nuanced picture of patient well-being (Table 2). The Symptoms Scale indicated elevated levels of tiredness and pain among the patients, with median scores of 78.8 and 84.3, respectively, significantly surpassing reference values. This contrast was stark, particularly for tiredness, where the median score nearly doubled the reference. The Global Health Scale score (50.0) fell below the reference value (58.0), suggesting a compromised overall health status. Within the Functional Scale, scores across physical, social, role, emotional, and cognitive domains varied, with physical and emotional well-being notably lower than reference values, indicating the impact of cervical cancer on these aspects of life. The Single Item Scale highlighted specific concerns, such as constipation and financial issues, with scores significantly deviating from the lower reference points, reflecting the unique challenges faced by this patient cohort.

Table 1 Demographic Variables

Variable	Enrolled Patients (n=186)	Unenrolled Patients (n=214)
Age		
<45	60 (32.3%)	45 (21.0%)
46-59	80 (43.0%)	82 (38.3%)
>60	46 (24.7%)	87 (40.7%)
Education		
Literate	165 (88.7%)	180 (84.1%)
Not literate	21 (11.3%)	34 (15.9%)
Residency		
Rural	120 (64.5%)	160 (74.8%)
Urban	66 (35.5%)	54 (25.2%)
Financial Dependence		
Yes	130 (69.9%)	
No	56 (30.1%)	
Medical Insurance		
Yes	20 (10.8%)	
No	166 (89.2%)	
Clinical Stage of Carcinoma		
Early Stage (2A+2B)	95 (51.1%)	
Late Stage (3A+4)	91 (48.9%)	

Table 2 Median Score on the Quality of Life (QoL)

Domain	Score	Reference Value
Symptoms Scale		
Tiredness	78.8 [55.7- 88.7]	32.3 [12.1- 55.5]
Pain	84.3 [65.7- 84.3]	17.7 [0.0- 50.0]
Nausea, Vomit	32.3 [IQR 12.1- 55.5]	-
Global Health Scale	50.0 [33.3- 66.7]	58.0 [41.3- 82.7]
Functional Scale		
Physical	65.7 [60.0- 75.0]	81.0 [61.0- 92.3]
Social	67.7 [56.0- 100]	84.3 [50.0- 100]
Role	82.3 [66.7- 100]	82.3 [66.7- 100]
Emotional	67.7 [51.0- 70.0]	76.0 [50.0- 82.0]
Cognitive	83.3 [66.7- 83.3]	83.3 [66.7- 83.3]

Single Item Scale		
Constipation	65.7 [33.3- 65.7]	0 [0- 33.3]
Loss of Appetite	33.3 [0- 33.3]	0 [0- 33.3]
Financial Issues	67.7 [67.7- 100]	0 [0- 33.3]

Table 3 Factors Linked with the Quality of Life

Variable	Global Health Status	Univariate Odd Ratio (95% CI)	Adjusted Odd Ratio (95% CI)
Age			
>60	46 (21.5)	16.4 (5.7- 49.1)*	17.4 (6.7- 51.1)*
46-59	80 (48.2)	9.6 (4.4- 20.1)*	9.2 (4.2- 19.1)*
<45	60 (28.0)	1	1
Education			
Not literate	21 (38.9)	1.0 (1.5- 2.1)*	
Literate	165 (62.1)	1	
Residency			
Urban	66 (29.8)	1.3 (1.6- 2.2)*	
Rural	120 (70.2)	1	
Financial Dependence			
Yes	130 (75)	1.6 (1.7- 2.4)*	
No	58 (25)	1	
Medical Insurance			
No	166 (90.0)	-	
Yes	20 (10.0)	-	
Clinical Stage of Carcinoma			
Late Stage (3A+4)	91 (47.9)	2.3 (1.4- 4.2)*	2.2 (1.2- 3.8)*
Early Stage (2A+2B)	95 (52.1)	1	1

Table 4 Factor with Quality of Life (Physical Functional

Variable	Global Health Status	Univariate Odd Ratio (95% CI)	Adjusted Odd Ratio (95% CI)
Age			
>60	46 (21.5)	93.0 (11.1- 752)*	113 (15- 908)*
46-59	80 (48.2)	3.0 (1.5 – 5.3)*	2.7 (1.5 – 4.5)*
<45	60 (28.0)	1	1
Education			
Not literate	21 (38.9)	1.3 (1.6 – 2.2)*	
Literate	165 (62.1)	1	
Residency			
Urban	66 (29.8)	1.3 (1.6 – 2.2)*	
Rural	120 (70.2)	1	
Financial Dependence			
Yes	130 (75)	1.6 (1.7 – 2.4)*	
No	58 (25)	1	
Medical Insurance			
No	166 (90.0)	0.3 (0.1 – 1.2)*	
Yes	20 (10.0)	1	
Clinical Stage of Carcinoma			
Late Stage (3A+4)	91 (47.9)	2.4 (1.4 – 4.2)*	3.2 (1.6- 6.5)*
Early Stage (2A+2B)	95 (52.1)	1	1

Further analysis elucidated factors intricately linked with the quality of life, showcasing the profound impact of age, education, residency, financial dependence, and clinical stage of carcinoma on global health status and physical functional well-being (Tables 3 and 4). Age emerged as a critical determinant, with patients over 60 exhibiting a dramatically higher odds ratio for decreased global health status and physical functionality, underscoring the compounded vulnerability of older patients. Education and residency factors, while significantly associated with QoL, did not translate into adjusted odds ratios, highlighting the complex interplay of demographic factors on patient outcomes. Financial dependence invariably signalled a negative impact on QoL, reinforcing the critical role of economic stability in patient well-being. Notably, the clinical stage of carcinoma starkly differentiated patient outcomes, with late-stage patients facing significantly worse QoL metrics, underscoring the critical importance of early detection and intervention.

DISCUSSION

In the investigation into the quality of life (QoL) among women with cervical cancer, findings highlighted a notable discrepancy when juxtaposed with the benchmark scores established by the Organization for Research and Treatment of Cancer (ORTC) for females with malignancies and those in good health. Specifically, the median Global Health Status (GHS) score for women diagnosed with cervical cancer was observed to be significantly lower than the corresponding benchmark values for healthy females and those diagnosed with any form of malignancy (4, 11, 13, 14). This reduction in GHS underscores the profound impact of cervical cancer on patients' overall well-being even before the commencement of cancer-specific clinical therapies (15).

The study further revealed that the functional scale domains, particularly those assessing physical and social functionality, registered median scores markedly below the ORTC benchmarks for individuals with any malignancy. This decline in QoL prior to any cancer-directed treatment is consistent with findings from similar research, including a study by Gele et al. (2017), which also reported diminished QoL in cervical carcinoma patients in Pakistan, indicating a broader trend of compromised well-being among this patient group (8).

Notably, the research underscored the significant role of age and educational level in influencing the physical health outcomes of cervical cancer patients, with a higher incidence of lower educational attainment among the cohort. This correlation between educational level, age, and QoL aligns with existing literature, such as the study by Chagani and Jabbar (2017), which identified a substantial link between educational attainment and physical well-being in breast and cervical cancer patients (4).

The investigation also highlighted the intricate relationship between patients' social well-being and the clinical stage of their cancer. Contrary to the assumption that the type of treatment would adversely affect socio-family life, the study discovered that physical alterations and the ensuing social stigma, rather than the treatment modality per se, were the primary drivers of social isolation and reduced social well-being (16).

Symptomatically, cervical cancer patients reported higher levels of pain and fatigue compared to the ORTC benchmark scores for healthy individuals and those with any carcinoma. These findings are in line with other studies that documented similar levels of symptom severity, pointing towards a significant need for addressing these symptoms to enhance patient QoL (17).

An interesting facet of the study was the observation that marital status influenced the emotional well-being of patients, with married women reporting better psychological outcomes. This suggests that the support system provided by a spouse or partner plays a crucial role in mitigating the emotional toll of cervical cancer (18). However, the stage of cancer did not appear to have a significant impact on the patients' emotional well-being, a finding that diverges from some existing studies but is supported by others, highlighting the variability in emotional responses to cancer diagnosis and progression (6, 19, 20).

A strength of this study lies in its comprehensive approach to data collection, utilizing a population-based cancer database and employing a validated QoL survey. However, the study's limitations include a lack of participation from a significant proportion of older patients and a sample predominantly composed of uninsured, rural, illiterate, and financially dependent individuals, which may limit the generalizability of the findings. Furthermore, the research's focus on a single hospital, which houses the regional cancer registry, may not fully represent the experiences of patients treated at private centers (21).

CONCLUSION

In conclusion, the study elucidates the multifaceted impact of cervical cancer on women's quality of life, with clinical and demographic factors playing pivotal roles. The findings underscore the importance of early intervention and the provision of comprehensive support services to address the diverse needs of cervical cancer patients. Future research should aim to expand the demographic and geographic scope of participants to enhance the generalizability of findings and incorporate a multidimensional approach to QoL assessment, enabling more targeted and effective support strategies for this patient population.

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