

**ASSESSMENT OF QUALITY OF LIFE OF CERVICAL CANCER PATIENTS USING ECOG-
PERFORMANCE STATUS SCALE**

Abstract:

Aim

This study aimed to assess the Quality of Life (QOL) of patients with cervical cancer after treatment and to examine the factors affecting their QOL.

Materials and methods

This is a retrospective observational study, included 218 cervical cancer patients. The study was conducted in a tertiary care hospital in Warangal of Telangana State. The impact of socioeconomic factors and clinical factors on the QOL of the patients were studied using Eastern Cooperative Oncology Group-Performance status (ECOG-PS) scale. The protocol was approved by KIEC-KMC, Warangal. The statistical analysis was performed by using Fischer's Exact test, a value of $p < .05$ was considered as significant.

Results

Out of 218 patients 189 were alive and 29 were deceased. Patient of age group 21-40 years, patients from urban areas, from upper socioeconomic status, patients with literacy, without any social habits had good QOL, where as patients in labour forces had poor QOL and are statistically significant. Patients with early stage at diagnosis and patients underwent surgical treatment along with chemoradiation therapy had good QOL, yet, these are statistically insignificant.

Conclusion

The lack of access to preventive and definitive care by the health care sectors, poor socioeconomic status, educational status of the women and awareness regarding the disease and its treatment patterns resulted in poor follow up, low adherence to the treatment, which accentuated the cervical cancer burden. Hence, enhancing the above listed factors could be beneficial in improving QOL of cervical cancer patients.

29 **Keywords:** Cervical cancer; chemoradiation; socioeconomic status; Quality of Life.

30 **INTRODUCTION**

31 Cervical cancer is becoming one of the emerging health burdens for womenhood and is estimated that,
32 annually 5,28,000 new cases and 2,66,000 deaths of women worldwide are due to cervical cancer. A
33 disproportionate number of these cases (85 %) and deaths (87 %) occur among women living in low and
34 middle income countries [1]. India accounts for one-third of the cervical cancer deaths globally. In
35 absolute terms, there are over 130,000 new cases of cervical cancer every year and nearly 74,000
36 deaths, according to this “per every 7 minutes, Indian women are dying due to cervical cancer” [2]. More
37 than 80% are diagnosed at an advanced stage [3]. India has the largest burden of cervical cancer
38 patients as one in every 5th woman in the world suffering from cervical cancer belongs to India [4]. In
39 India, huge section of the population is from below poverty line who are neither aware nor have accesses
40 to cervical cancer screening, diagnosis, and treatment facilities. Furthermore, despite cervical cancer
41 being the leading cause of cancer mortality in India, accounting for 17% of all cancer deaths among
42 women aged 30–69 years [5].

43 The health care-related factors such as availability of screening, diagnostic and treatment facilities, quality
44 of treatment and follow-up care are also extremely important in determining survival. In addition
45 behavioral factors such as awareness of cancer symptoms and compliance with screening and treatment
46 are affecting survival [6]. Improvements in early detection and advances in treatments such as
47 chemotherapy, radiotherapy, surgery, and hormone therapy have played significant roles in the decrease
48 in cancer mortality rates [7-9].

49 Age-specific data from Globocan 2012 showed peak incidence of cervical cancer in 55-59 year old
50 women with an increasing trend from 40 to 59 years and then a decline after 60 years. However mortality
51 was increasing with increasing age. The age-specific incidence and mortality estimates of India are much
52 higher than the overall estimates in less developed region [10]. The main factor for prognosis and survival
53 for cervical cancer is its staging at presentation. Other factors responsible for survival are age at
54 diagnosis, histological tumor type [11-13]. Additionally, they are further deprived due to high medical
55 costs, especially since most of the cases in developing countries are diagnosed at later stages, when the
56 treatment is costly combined with poor prognosis [14]. Many studies have in fact failed to establish a

57 significant relationship between socioeconomic status (SES) and cervical cancer survival mainly because
58 most of such studies were done in a group of patients with similar socioeconomic characteristics and/or
59 had similar accessibility or inaccessibility to cancer treatment facilities [15, 16, 13, 17]. Apart from delayed
60 diagnosis, more women with a lower social position also tend to have comorbid conditions and risky
61 health behaviour, such as smoking, and these may influence incidence, comorbidity, treatment choice
62 and survival after cervical cancer [18-20]. Survival was determined by age and the extent of disease, with
63 younger women having longer survival, the possibility of a survival rate around 100% is high for ladies
64 with minuscule types of cervical disease [21, 22]. It is based on the patient's own rating of simple
65 questions and can provide an overview of how and to what extent a disease and its treatment affect the
66 lives of patients [23]. There is a need to study the factors affecting the QOL of women with cervical
67 cancer this study the various factors were taken into consideration, which like to affect the performance
68 status of the women, including socioeconomic and clinical conditions.

69 **MATERIALS AND METHODS**

70 This retrospective observational study was conducted in a tertiary care hospital at Warangal of
71 Telangana state, India. The study was carried out over a period of 6 months, from March 2018 to August
72 2018. The study protocol was approved by Kakatiya Institutional Ethics Committee, Kakatiya Medical
73 College, Warangal. Cervical cancer patients, who had finished at least three months, after the treatment
74 for cervical cancer, married women, with the age >20 years were included in the study. Patients of age
75 <20 years of age, unmarried, with history of hysterectomy and patient with missing data were excluded
76 from the study. The data was collected using the medical records of the patients. The details which were
77 not included in the record were extracted by the conversation with the patient or her family members,
78 directly or by telephonic contact.

79 The QOL was assessed by using the ECOG-PS scale, which categorizes cancer patients into five groups:
80 0, normal activity; 1, strenuous activity restricted; 2, up and about >50% of waking hours; 3, confined to
81 bed/ chair >50% of waking hours; 4, 100% bedridden; and 5, dead [24, 25]. The validity and reliability of
82 this instrument have led to its widespread use, for many studies as a prognostic factor or as an inclusion
83 criterion for entry into predictive and prognosis evaluations [26, 27].

84 The study focused on the factors such as the age of patient, occupation, residence, literacy, SES (based
 85 on Modified kuppuswamy scale, 2018 [28]), social habits, stage of cancer, and type of treatment received
 86 etc and their association with the QOL was analyzed by Fischer's exact test [29], a value of $p < .05$ was
 87 considered as significant.

88 RESULTS

89 Among the 218 women received treatment for cervical cancer, 189 (86.7%) were alive and 29 (13.3%)
 90 were deceased, the mean age of death in cervical cancer patients found to be 60.1 ± 12.92 Years. The
 91 death rate was higher in stage-III and stage-IV of cervical cancer, accounting 8/30 (26.7%) and 2/7
 92 (28.57%) compared to the stage-I and II of cervical cancer 6/75 (8%) and 13/106 (12.26%) respectively
 93 [table.1].

94 **Table 1. Stage wise mortality in cervical cancer patients**

Characteristic	Alive (n=189)		Dead (n=29)	
	N	%	N	%
Stage I	69	92	6	8
Stage II	93	87.74	13	12.26
Stage III	22	73.33	8	26.67
Stage IV	5	71.43	2	28.57

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Table 2. Age at menopause in women with cervical cancer

Age at menopause	No. Of cases (n=218)	Percentage (%)
≤ 40 years	48	22.02
≥ 41 years	170	77.98

98
99 Among 218 cervical cancer patients, 48 (22.02%) members had early menopause at an age ≤40 years
 100 (premature menopause) due to surgical or radiation therapy, 170 members had menopause at the age
 101 ≥41years suggestive cervical cancer at post menopausal stage [table. 2].

102 Through our study, it has been proved that there is a proportional relation between the ECOG-PS scores
 103 and inverse relation between the age of the patients and their QOL. The patients of age group 21-40
 104 years had good QOL with ECOG-PS score of 0 and 1-2, patients of age group 41-60 years had poor
 105 QOL, where in the patients of age group 61-80 years the QOL was further reduced, hence in our study,
 106 the age of the patients shown the significant differences ($p < .0001$, $df=33, 4$) on their QOL [table. 3].

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108 **Table 3. Statistical representation of various factors affecting QOL**

Factor	ECOG Grade 0		ECOG Grade 1-2		ECOG Grade 3-4		P-value (χ^2 , df)
	n=36	%	n=93	%	n=60	%	
Age in years							
21-40	9	31.03	20	68.97	0	0	
41-60	25	23.15	53	49.07	30	27.78	<.0001** (33.7, 4)
61-80	2	3.85	20	38.46	30	57.69	
Occupation							
House wife	11	24.44	20	44.44	14	31.11	
Coolie	17	13.93	60	49.18	45	36.89	.013 (12.6, 4)
Farmer	8	36.36	13	59.09	1	4.55	
Residence							
Rural	27	16.98	74	46.54	58	36.48	.005** (10.8, 2)
Urban	9	30	19	63.33	2	6.67	
Literacy							
High and middle school and above	7	46.67	7	46.67	1	6.67	
Primary	28	25.23	83	74.77	0	0	<.0001** (173, 4)
Illiterate	1	1.59	3	4.76	59	93.65	
Socio-economic status							
I	2	100	0	0	0	0	
II	1	14.29	4	57.14	2	28.57	
III	19	35.19	28	51.85	7	12.96	<.0001** (30.1, 8)
IV	14	11.97	56	47.86	47	40.17	
V	0	0	5	55.56	4	44.44	
Stage of cancer							
I	16	23.19	32	46.38	21	30.43	
II	15	16.13	47	50.54	31	33.33	.194 (8.65, 4)
III	5	22.73	13	59.09	4	18.18	
IV	0	0	1	20	4	80	
Social habits							
Yes	5	13.16	14	36.84	19	50	.026* (7.34, 2)
No	31	20.53	79	52.32	41	27.15	
Type of treatment							
Adjuvant RT+CT	25	21.93	53	46.49	36	31.58	.43(1.69, 2)
RT+CT, RT/CT	11	14.67	40	53.33	24	32	
Total (n=189)	36	19.05	93	49.2	60	31.75	

109 **; High statistical significant *; Statistical significant

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112 The patients in labour forces had reduced QOL, where the maximum number of women in labour forces
113 occupied the 1-2, 3-4 of ECOG-PS grades, compared with patients as farmers and housewives. The
114 patients in farming had good QOL compared with patients in labour forces and those who are staying at
115 home. Our study, has a strong association ($p=.013$, $df=12.6$, 4) between the occupation of the patients
116 and their QOL [table.3].

117 Patients from the rural areas had poor QOL when compared with women of urban areas, where, high
118 proportion of patients from rural background were having ECOG-PS scores of 1-2 and 3-4. There was a
119 significant association ($p=.005$, $df=10.8$, 2) between the residence of the patients and their QOL [table. 3].

120 Patients with an educational status of middle school and above had a good QOL by occupying the major
121 proportion in ECOG-PS score of 0, illiterates had poor QOL, where the higher proportion of ECOG-PS
122 score of 3-4 were illiterates. Through this, our study had shown as strong association ($p<.0001$, $df=173$,
123 4) between Level of education of patients and their QOL.

124 In our study the SES of the patients had shown a greater impact on their QOL, where the patients from
125 upper SES had better QOL when compared with the Women with middle and low SES where the higher
126 proportion of the ECOG-PS score of 3-4 were the patients form the middle and low SES and there was a
127 significant association (P- value $<.0001$) between SES of patients and their QOL [table.3].

128 The patients with early stage of cervical cancer had good QOL compared with later stages and the
129 relation between the stage of the cancer and the QOL of the patients was statistically insignificant
130 ($p=.194$, $df=8.65$, 4) [table.3].

131 Out of 189 patients 38 members had the social habits like chewing tobacco, paan, smoking, having snuff
132 and alcohol had poor QOL where the 19 out of 38 (50%) of patients with social habits were in ECOG-PS
133 score of 3-4 and it is statistically significant ($p=.026$, $df=7.34$, 2).

134 114 out of 189 patients, received adjuvant radiation therapy (RT) + chemotherapy (CT), which includes
135 surgical treatment along with RT and CT where as 75 members received non-surgical therapy like RT+CT
136 and RT/CT. Patients received adjuvant RT+CT had good QOL than patients received non-surgical
137 treatments, yet this found to be statistically insignificant ($p=.43$, $df=1.69$, 2) [table. 3].

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139 **DISCUSSION**

140 In this study, out of 218 members of cervical cancer patients, 189 (86.7%) were alive and 29 (13.3%)
141 were deceased, whereas, Marc A. Koopmanscha et al. reported the annual death rate due to cervical
142 cancer as 27% [30]. The mean age of death in cervical cancer patients found to be 60.1 ± 13 years, similar
143 with the reported mean age of death due to this disease as 58 ± 15 years, by Irving ER et al. [31]. In our
144 study, 48/218 patients (22.02%) attained menopause at an age of ≤ 40 years due to surgical or radiation
145 treatment, Michael Frumovitz et al. reported that the surgical treatment and irradiation results in
146 menopausal symptoms [32].

147 Age showed a significant effect on QOL of patients, Osann et al. reported that, age had no significant
148 impact on the QOL of the survivors [33]. Through our study, QOL was poor in patients in labour forces
149 than women in other occupations like farming and patients as home makers, yet the occupational status
150 wise scores of QOL did not show any statistically significant difference among the cervical cancer
151 survivors, reported by Saishree Pradhan et al. [34].

152 According to the study conducted by Niresh Thapa et al. patients living in an urban area showed better
153 QOL than patients from rural areas, which supporting the findings of our study [35], patients with lowest
154 educational level were associated with lowest QOL, where, Sarikapan Wilailak et al. also supported our
155 findings [36].

156 Our study revealed that, women with the lowest income had poor QOL, where findings of Howard P.
157 Greenwald et al reported the same [37], T. Bindu et al. reported that, the patients with diagnosis at early
158 stage of cancer had good survival compared to advanced stages of cervical cancer, our study also
159 showed the same results but were statistically insignificant [38].

160 Our study has proved that, the patients without any social habits had good survival, where Waggoner SE
161 et al. reported the same [39]. A study conducted by Ann. L. Coker et al. revealed that, the patients
162 received hysterectomy had significantly better cervical cancer specific survival, where, the type of
163 treatment in our study had no significant effect on the QOL of patients [13].

164 **CONCLUSION**

165 The lack of access to preventive and definitive care by the health care sectors, poor socioeconomic
166 status, educational status of the women and awareness regarding the disease and its treatment patterns

167 resulted in poor follow up, low adherence to the treatment, which accentuated the cervical cancer burden.
168 Cancer Awareness campaigns among the women, vaccination programs for teenage girls, early detection
169 and employing See & Treat methods helps to combat the cervical cancer.

170 **ETHICAL APPROVAL**

171 The study protocol was approved by Kakatiya Institutional Ethics Committee, Kakatiya Medical College,
172 Warangal and the code of approval is KIEC/KMC/NCT/NIS/2018/P22.

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UNDER PEER REVIEW