

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

Abstract:

Background:

Cervical cancer is becoming one of the emerging health burdens for womenhood and India accounts for one-third of the cervical cancer deaths globally. More than 80% are diagnosed at an advanced stage. In this study, we 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.

29 Hence, enhancing the above listed factors could be beneficial in improving QOL of cervical cancer
30 patients.

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

32 INTRODUCTION

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

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

51 Age-specific data from Globocan 2012 showed peak incidence of cervical cancer in 55-59 year
52 old women with an increasing trend from 40 to 59 years and then a decline after 60 years. However
53 mortality was increasing with increasing age. The age-specific incidence and mortality estimates of India
54 are much higher than the overall estimates in less developed region [10]. The main factor for prognosis
55 and survival for cervical cancer is its staging at presentation. Other factors responsible for survival are
56 age at diagnosis, histological tumor type [11-13]. Additionally, they are further deprived due to high

57 medical costs, especially since most of the cases in developing countries are diagnosed at later stages,
58 when the treatment is costly combined with poor prognosis [14]. Many studies have in fact failed to
59 establish a significant relationship between socioeconomic status (SES) and cervical cancer survival
60 mainly because most of such studies were done in a group of patients with similar socioeconomic
61 characteristics and/or had similar accessibility or inaccessibility to cancer treatment facilities [15, 16, 13,
62 17]. Apart from delayed diagnosis, more women with a lower social position also tend to have comorbid
63 conditions and risky health behaviour, such as smoking, and these may influence incidence, comorbidity,
64 treatment choice and survival after cervical cancer [18-20]. Survival was determined by age and the
65 extent of disease, with younger women having longer survival, the possibility of a survival rate around
66 100% is high for ladies with minuscule types of cervical disease [21, 22]. It is based on the patient's own
67 rating of simple questions and can provide an overview of how and to what extent a disease and its
68 treatment affect the lives of patients [23]. **Lack of awareness, well organized screening programs and**
69 **efficient preventive measures are the key factors playing role in the increased incidence and disease**
70 **progression to the advanced stage.** There is a need to study the factors affecting the QOL of women with
71 cervical **cancer. In this** study the various factors were taken into consideration, which like to affect the
72 performance status of the women, including socioeconomic and clinical conditions.

73 **MATERIALS AND METHODS**

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

83 The QOL was assessed by using the ECOG-PS scale, which categorizes cancer patients into five groups:
84 0, normal activity; 1, strenuous activity restricted; 2, up and about >50% of waking hours; 3, confined to

85 bed/ chair >50% of waking hours; 4, 100% bedridden; and 5, dead [24, 25]. The validity and reliability of
 86 this instrument have led to its widespread use, for many studies as a prognostic factor or as an inclusion
 87 criterion for entry into predictive and prognosis evaluations [26, 27].

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

92 RESULTS

93 Among the 218 women received treatment for cervical cancer, 189 (86.7%) were alive and 29 (13.3%)
 94 were deceased, the mean age of death in cervical cancer patients found to be 60.1 ± 12.92 Years. The
 95 death rate was higher in stage-III and stage-IV of cervical cancer, accounting 8/30 (26.7%) and 2/7
 96 (28.57%) compared to the stage-I and II of cervical cancer 6/75 (8%) and 13/106 (12.26%) respectively
 97 [table.1].

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

Stage of cancer	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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100 **Table 2. Type of cervical cancer and mortality in cervical cancer patients**

Type of cancer	SCC		AC		ASC		P-value (χ^2 , df)
	N	%	n	%	n	%	
Alive	178	87.25	10	83.33	1	50	0.285 (2.51,2)
Dead	26	12.75	2	16.67	1	50	

101

102 Highest proportion were squamous cell carcinomas (SCC) with 204 cases (93.58%)
 103 followed by 12 (5.5%) adenocarcinomas (AC) and 2 (0.92%) adenosquamous cell
 104 carcinomas (ASC). The death rate was higher in the patients with AC followed by SCC yet, this found
 105 to be statistically insignificant ($p=0.285$) [table.2].

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107

108 **Table 3. 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

109

110 Among 218 cervical cancer patients, 48 (22.02%) members had early menopause at an age ≤40 years
 111 (premature menopause) due to surgical or radiation therapy, 170 members had menopause at the age
 112 ≥41years suggestive cervical cancer at post menopausal stage [table. 3].

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

118 **Table 4. 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	<.0001** (33.7, 4)
41-60	25	23.15	53	49.07	30	27.78	
61-80	2	3.85	20	38.46	30	57.69	
Occupation							
House wife	11	24.44	20	44.44	14	31.11	.013* (12.6, 4)
Coolie	17	13.93	60	49.18	45	36.89	
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	<.0001** (173, 4)
Primary	28	25.23	83	74.77	0	0	
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	

119 **; High statistical significant *; Statistical significant

120
121 The patients in labour forces had reduced QOL, where the maximum number of women in labour forces
122 occupied the 1-2, 3-4 of ECOG-PS grades, compared with patients as farmers and housewives. The
123 patients in farming had good QOL compared with patients in labour forces and those who are staying at
124 home. Our study, has a strong association (p=.013) between the occupation of the patients and their QOL
125 [table.4]. Patients from the rural areas had poor QOL when compared with women of urban areas, where,
126 high proportion of patients from rural background were having ECOG-PS scores of 1-2 and 3-4. There
127 was a significant association (p=.005) between the residence of the patients and their QOL [table. 4].
128 Patients with an educational status of middle school and above had a good QOL by occupying the major
129 proportion in ECOG-PS score of 0, illiterates had poor QOL, where the higher proportion of ECOG-PS
130 score of 3-4 were illiterates. Through this, our study had shown as strong association (p<.0001) between
131 Level of education of patients and their QOL. In our study the SES of the patients had shown a greater
132 impact on their QOL, where the patients from upper SES had better QOL when compared with the
133 Women with middle and low SES where the higher proportion of the ECOG-PS score of 3-4 were the
134 patients form the middle and low SES and there was a significant association (p <.0001) between SES of
135 patients and their QOL [table.4].

136 The patients with early stage of cervical cancer had good QOL compared with later stages and the
137 relation between the stage of the cancer and the QOL of the patients was statistically insignificant
138 (p=.194) [table.4].

139 Out of 189 patients 38 members had the social habits like chewing tobacco, paan, smoking, having snuff
140 and alcohol had poor QOL where the 19 out of 38 (50%) of patients with social habits were in ECOG-PS
141 score of 3-4 and it is statistically significant (p=.026). 114 out of 189 patients, received adjuvant radiation
142 therapy (RT) + chemotherapy (CT), which includes surgical treatment along with RT and CT where as 75
143 members received non-surgical therapy like RT+CT and RT/CT. Patients received adjuvant RT+CT had
144 good QOL than patients received non-surgical treatments, yet this found to be statistically insignificant
145 (p=.43) [table. 4].

146 **DISCUSSION**

147 In this study, out of 218 members of cervical cancer patients, 189 (86.7%) were alive 29 and (13.3%)
148 were deceased, whereas, Marc A. Koopmanscha et al. reported the annual death rate due to cervical
149 cancer as 27% [30]. The mean age of death in cervical cancer patients found to be 60.1±13 years where
150 as Irving ER et al. reported the mean age of death due to cervical cancer as 58 ± 15 years [31]. In our
151 study, 48/218 patients (22.02%) attained menopause at an age of ≤40 years due to surgical or radiation
152 treatment, Michael Frumovitz et al. reported that the surgical treatment and irradiation results in
153 menopausal symptoms [32]. The type of cervical cancer showed no significant difference on the survival
154 of the patients, where Grigsby et al. also reported the same [33].

155 Through this study, age showed a significant effect on QOL of patients, Osann et al. reported that, age
156 had no significant impact on the QOL of the survivors [34]. Through our study, QOL was poor in patients
157 in labour forces than patients in other occupations like farming and patients as home makers, yet the
158 occupational status wise scores of QOL did not show any significant difference among the cervical cancer
159 survivors, in a study conducted by Saishree Pradhan et al. [35].

160 According to the study conducted by Niresh Thapa et al. patients living in an urban area showed better
161 QOL than patients from rural areas, which supporting the findings of our study [36], patients with lowest
162 educational level were associated with lowest QOL, where the study of Sarikapan Wilailak et al.
163 supported our findings [37].

164 Our study revealed that, women with the lowest income had poor QOL, where findings of Howard P.
165 Greenwald et al. reported the same [38], T. Bindu et al. reported that, the patients with diagnosis at early
166 stage of cancer had good survival compared to advanced stages of cervical cancer, our study also
167 showed the same results but these were statistically insignificant [39].

168 Our study has proved that, the patients without any social habits had good survival, where Waggoner SE
169 et al. reported the same [40]. A study conducted by Ann. L. Coker et al. revealed that, the patients
170 received hysterectomy had significantly better cervical cancer specific survival, where, the type of
171 treatment in our study had no significant effect on the QOL of patients [13].

172 **CONCLUSION**

173 The lack of access to preventive and definitive care by the health care sectors, poor socioeconomic
174 status, educational status of the women and awareness regarding the disease and its treatment patterns
175 resulted in poor follow up, low adherence to the treatment, which accentuated the cervical cancer burden.
176 Cancer Awareness campaigns among the women, vaccination programs for teenage girls, early detection
177 and employing See & Treat methods helps to combat the cervical cancer.

178 **ETHICAL APPROVAL**

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

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