Original Research Article

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.

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 &

69 efficient preventive measures are the key factors playing role in the increased incidence and disease

70 progression to the advanced stages. There is a need to study the factors affecting the QOL of women

71 with cervical cancer. In this study the various factors were taken into consideration, which affect the

72 performance status of the women, including socioeconomic and clinical conditions.

73 **MATERIALS AND METHODS**

74 This is a retrospective observational study, 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

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

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

RESULTS

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

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

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	

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

107 **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

108

109 Among 218 cervical cancer patients, 48 (22.02%) members had early menopause at an age ≤40 years

110 (premature menopause) due to surgical or radiation therapy, 170 members had menopause at the age

111 ≥41years suggestive cervical cancer at post menopausal stage [table. 3].

112 Through our study, it has been proved that there is a proportional relation between the ECOG-PS scores

113 and inverse relation between the age of the patients and their QOL. The patients of age group 21-40

114 years had good QOL with ECOG-PS score of 0 and 1-2, patients of age group 41-60 years had poor

115 QOL, where in the patients of age group 61-80 years the QOL was further reduced, hence in our study,

116 the age of the patients shown the significant differences (p<.0001) on their QOL [table. 4].

117 The patients in labour forces had reduced QOL, where the maximum number of women in labour forces

118 occupied the 1-2, 3-4 of ECOG-PS grades, compared with patients as farmers and housewives. The

119 patients in farming had good QOL compared with patients in labour forces and those who are staying at

120 home. Our study, has a strong association (p=.013) between the occupation of the patients and their QOL

121 [table.4]. Patients from the rural areas had poor QOL when compared with women of urban areas, where,

122 high proportion of patients from rural background were having ECOG-PS scores of 1-2 and 3-4. There

123 was a significant association (p=.005) between the residence of the patients and their QOL [table. 4].

124 Patients with an educational status of middle school and above had a good QOL by occupying the major

125 proportion in ECOG-PS score of 0, illiterates had poor QOL, where the higher proportion of ECOG-PS

126 score of 3-4 were illiterates. Through this, our study had shown as strong association (p<.0001) between

127 Level of education of patients and their QOL. In our study the SES of the patients had shown a greater

128 impact on their QOL, where the patients from upper SES had better QOL when compared with the

129 Women with middle and low SES where the higher proportion of the ECOG-PS score of 3-4 were the

130 patients form the middle and low SES and there was a significant association (p <.0001) between SES of

131 patients and their QOL [table.4].

132
133

134 **Table 4. Statistical representation of various factors affecting QOL**

Factor	ECOG Grade 0		ECOG Grade 1-2		ECOG Grade 3-4		P-value (χ2, 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	

135 **; High statistical significant *; Statistical significant
136

137   The patients with early stage of cervical cancer had good QOL compared with later stages and the

138   relation between the stage of the cancer and the QOL of the patients was statistically insignificant

139   (p=.194) [table.4].

140   Out of 189 patients 38 members had the social habits like chewing tobacco, paan, smoking, having snuff

141   and alcohol had poor QOL where the 19 out of 38 (50%) of patients with social habits were in ECOG-PS

142   score of 3-4 and it is statistically significant (p=.026). 114 out of 189 patients, received adjuvant radiation

143   therapy (RT) + chemotherapy (CT), which includes surgical treatment along with RT and CT where as 75

144   members received non-surgical therapy like RT+CT and RT/CT. Patients received adjuvant RT+CT had

145   good QOL than patients received non-surgical treatments, yet this found to be statistically insignificant

146   (p=.43) [table. 4].

147   **DISCUSSION**

148   In the present study, out of 218 members of cervical cancer patients, 189 (86.7%) were alive and 29

149   (13.3%) were deceased. The death rate in current study was less than the annual death rate reported by

150   the researchers Marc A. Koopmanschap et al. The mean age of death in cervical cancer patients found to

151   be 60.1±13 years where, a study conducted by Irving ER et al. in Suriname, reported the mean age of

152   death due to cervical cancer as 58 ± 15 years [31]. 48/218 patients (22.02%) attained menopause at an

153   age ≤40 years due to surgical or radiation treatment. In a study conducted by Michael Frumovitz et al.

154   observed that the surgical treatment and irradiation resulted in menopausal symptoms in women treated

155   with radiation and surgical methods, while the overall menopausal symptoms were significantly more

156   bothersome for women received radiotherapy [32]. The impact of type of cervical cancer on the survival of

157   the patients conforms the findings of Grigsby et al. who compared the survival of 101 patients with AC

158   with that of 1138 patients with SCC treated during the same period and found no significant difference in

159   overall disease-free survival [33].

160   Through the findings of our study, the age of patients showed a significant effect on QOL of patients, on

161   the other hand, Osann et al. found no significant difference between the QOL of cervical survivors with

162   different age groups [34]. A descriptive study conducted by Saishree Pradhan et al. in Regional Cancer

163   Center, JIPMER, found no significant association between occupation status and QOL of patients [35].

164 Residence of the patients showed a greater impact on their QOL. Niresh Thapa et al. conducted a study

165 using 256 patients with cervical cancer who visited Zhongnan Hospital of Wuhan University, concluded

166 that the patients living in an urban area showed better QOL than patients from rural areas [36]. Patients

167 with lowest educational level were associated with lowest QOL. Poor QOL due to low level of education

168 was also reported by the studies done by Saishree Pradhan et al. and Sarikapan Wilailak et al. who found

169 that higher levels of education were related to higher QOL [35, 37]. However, Bradley et al. did not find

170 any significant association between education and QOL [38]

171 Our study revealed that, women in SES had poor QOL, the study conducted by Howard et al, stated that

172 income was the measure for predicting QOL of patients. Yet, in the study of Saishree Pradhan et al. the

173 SES had no significant effect on QOL [39, 35]. Stage of cancer at diagnosis had no significant impact on

174 the QOL of patients, where T. Bindu et al. reported that patients in advanced stages such as stage III and

175 stage IV were more likely to be lost to follow- up when compared to patients with early stage, thus had

176 poor QOL [40]. Our study showed that the patients without any social habits had good survival than

177 patients with social habits like chewing tobacco, paan, smoking, having snuff and alcohol. The study of

178 Waggoner SE et al. also showed that social habits predict worse overall survival in women with cervical

179 cancer [41]. A study conducted by Ann. L. Coker et al. revealed that, the patients received hysterectomy

180 had significantly better cervical cancer specific survival, where, the type of treatment in our study had no

181 significant effect on the QOL of patients [13].

182 **CONCLUSION**

183 The lack of access to preventive and definitive care by the health care sectors, poor socioeconomic

184 status, educational status of the women and awareness regarding the disease and its treatment patterns

185 resulted in poor follow up, low adherence to the treatment, which accentuated the cervical cancer burden.

186 Cancer Awareness campaigns among the women, vaccination programs for teenage girls, early detection

187 and employing See & Treat methods helps to combat the cervical cancer.

188 **Concent :**

189 As per international standard, patient's informed written consent has been collected and preserved by

190 the author(s).

191 **ETHICAL APPROVAL**

192 The study protocol was approved by Kakatiya Institutional Ethics Committee, Kakatiya Medical College,

193 Warangal and the code of approval is KIEC/KMC/NCT/NIS/2018/P22.

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