

# Reasons for Low Quality of Life in South Indian Cancer Patient Population: A Prospective Observational Study

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Over the last decade, quality of life investigations of cancer patients' have become a critical evaluation parameter in the clinical cancer research and treatment evaluation programs. This study was carried out in a 1200 bed tertiary care teaching hospital, MGM Hospital, located at Warangal, India. Present study assessed the overall quality of life, symptoms of patients affected by breast, head and neck, cervical and stomach cancers by using guidelines and modules of The European Organisation for Research and Treatment of Cancer. The assessment was carried out in two phases, as review I at  $\leq 2$  cycles and review II at  $\geq 5$  cycles of treatment. Data were analyzed for 104 individuals with the mean age of  $46.1 \pm 11.2$  years. The evaluation was characterised as functional scale and symptom scale. In the functional scale physical, and role functions were significant ( $P < 0.05$ ) in all the 4 types of cancers studied. Additional, future perspective, social and emotional functions were observed to be significant in breast cancer, head and neck cancer and cervical cancer, respectively. Where as in symptom scale pain was observed to be significant for all cancers studied. Individually, breast cancer patient also showed significant parameters like fatigue, arm symptoms, and upset by hair loss. Head and neck cancer patients had insomnia and diarrhoea as additional significant symptom scale parameters. In cervical cancer patients, fatigue, insomnia, menopausal symptoms, and in stomach cancer patients, nausea and vomiting, dysphagia, reflux symptoms and eating restrictions were significantly affected. Most of the findings are similar to past studies in the respective type of cancer patients which shows that, quality of life was mostly influenced by the above mentioned factors and have some interesting implications for management and treatment of cancer.

**Key words:** Quality of life, breast cancer, cervical cancer, stomach cancer, symptomology, functional scale, symptom scale

Quality of Life (QOL) was first mentioned in 1920 in a book of economics and welfare by Pigou<sup>[1]</sup>. The concept of QOL was first introduced in population surveys of United States during 1960s and 70s, to investigate the level of well-being<sup>[2]</sup>. WHO defines QOL as individual perception of life, values, objectives, standards and interests in the frame work of culture. Cancer is one of the most important health concerns of today and evaluating QOL in cancer patients is an increasingly important issue<sup>[3]</sup>. The cancer specific QOL can be related to all stages of the disease<sup>[4,5]</sup>. QOL is increasingly being used as a primary outcome measure in evaluating the effectiveness of treatment<sup>[6-9]</sup>. The long term cancer survivors mainly face problems with social/emotional support, health habits, spiritual/philosophical view of life, and body image concerns<sup>[10-13]</sup>. The European Organisation for Research and Treatment

of Cancer (EORTC) QLQ-C30 is a cross culturally accepted and widely used instrument for assessing the health related quality of life (HR QOL) of cancer patients<sup>[14]</sup>. Palliative care aims to improve the QOL of people living with a life threatening illness and that of their families<sup>[15]</sup>. In order to achieve this aim, there is a need to evaluate the QOL and factors that affect it, which may help as a guide to health care personnel dealing with cancer patients<sup>[16]</sup>. Even though many articles are available on QOL exploring with different disease groups, only a limited number of studies have evaluated QOL in cancer patients in South India. Therefore, this study was carried out that would allow us to evaluate the QOL and affecting factors on it among the study population. Information from QOL studies may help to decide about the relative effectiveness of cancer treatment, enhancing patients' decision making by providing them data regarding the side effects of such treatment, improving the organization and quality of cancer care and in prognostic factor analysis.

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## MATERIALS AND METHODS

This study was carried out at Mahatma Gandhi Memorial (MGM) Hospital, a 1200 bed government tertiary care teaching hospital located at Warangal, India. Present study was approved by the Human Ethics Committee of the medical college/hospital. Inclusion criteria included age greater than 19 years, receiving cancer treatment and exclusion criteria included the ambulatory and terminally ill patients. During data collection patients were informed about the study using patient information form and the written consents were obtained from the patients or their caregivers. Study recruited a consecutive sample of cancer patients attending the outpatient unit of the Department of Oncology at the study site between January and June 2011. Patient demographic data like age, weight, date of admission, and medical histories including drug allergies were entered into the specially designed data entry form. The questionnaires were administered (interviewed) to the patients twice, review I on  $\leq 2$  cycles of treatment followed by review II on  $\geq 5$  cycles of treatment.

### Quality of life questionnaires:

QOL was assessed by using a series of interviews using standard questionnaires. QLQ-C30, the core questionnaire, is the contribution of more than a decade of research. Various modules like breast cancer module (QLQ-BR23), head and neck cancer module (QLQ-HandN35), cervical cancer module (QLQ-CX24), gastric module (QLQ-STO22) were used among patients. These modules have been proven to have good validity and reliability properties both for the English original and the translation into Telugu, the local language.

### Statistical analysis:

The numerical data obtained from the study were analyzed and the significance of difference was estimated by using statistical methods. Data were expressed in percentage, mean and standard deviation as applicable. The QOL questionnaire administered

were statistically analyzed, comparison between reviews was done by the non-parametric tests like Willcoxon signed rank test and Spearman's correlation test, which were performed using computer based SAS Version 9.1.3 (SAS Institute Inc., Cary, NC, USA).  $P < 0.05$  were considered as statistically significant.

## RESULTS

Total 104 patients were included during the study period based on their inclusion/exclusion criteria, in which male patients were 39.42% (41/104) and female patients were 60.57% (63/104). A total of 39.42% (41/104) breast cancer patients, 31.73% (33/104) head and neck cancer patients, 14.42% (15/104) cervical cancer patients and 14.42% (15/104) stomach cancer patients were included in the study. Interpretation of diagnosis based on demography reveals that patients with breast cancer were 65.07% (41/63) of the total female cancer patients. The age distribution of the study population is given in Table 1 and the characteristics of the study population are given in Table 2. The mean age of study population was found to be  $46.1 \pm 11.2$  years. Study population was subjected to various laboratory investigations like hemoglobin (Hb), erythrocyte sedimentation rate (ESR), Red blood cell (RBC) count, White blood cell (WBC) count, platelet count and creatinine levels, which have helped in accurate diagnosis of the disease state and selecting the choice of therapy. The reason for patient's admission to the hospital was also thoroughly screened. Of the total patients, 36.53% (38/104) had nipple discharge, 14.42% (15/104) had abdominal pain and micturition, 26.92% (28/104) had difficulty in swallowing and 2.88% (3/104) had growth in oral cavity. The co-morbidities of the study population was also screened. Among them, 5.76% (6/104) suffered with diabetes and hypertension, 2.88% (3/104) suffered with diabetes, 7.69% (8/104) with hypertension. It was also observed that no head and neck cancer patient was prescribed with combination

**TABLE 1: AGE DISTRIBUTION OF THE STUDY POPULATION**

Age group in years % (n)	Overall patients (N=104) % (n)	Breast cancer (N=41) % (n)	Head and neck cancer (N=33) % (n)	Cervical cancer (N=15) % (n)	Stomach cancer (N=15) % (n)
Young adult (19-35)	22.11 (23)	14.42 (15)	1.92 (2)	3.84 (4)	1.92 (2)
Adult (36-50)	28.84 (30)	8.65 (9)	11.53 (12)	2.88 (3)	5.76 (6)
Old adult (51-64)	26.92 (28)	8.65 (9)	7.69 (8)	6.73 (7)	3.84 (4)
Young older (65-74)	16.34 (17)	7.69 (8)	4.80 (5)	0.96 (1)	2.88 (3)
Old (75-84)	5.76 (6)	0	5.76 (6)	0	0

chemotherapy agents. In combination doxorubicin, vincristine, and cyclophosphamide were the most commonly prescribed drugs for breast cancer. Of overall study population, 32.69% (34/104) were treated with surgery and supported by chemotherapy. The results revealed that there were no surgery cases in head and neck cancer patients.

The QOL of the study population were assessed and the obtained values were subjected to statistical

**TABLE 2: CHARACTERISTICS OF THE STUDY POPULATION**

Characteristics	n (%)
Marital status	
Married	81 (77.88)
Divorced/separated/widowed	22 (21.15)
Unmarried	1 (0.96)
Occupation	
Farmers	23 (22.11)
Daily wage	27 (25.96)
Government employ	3 (2.88)
Private employ	11 (10.57)
Labour	14 (13.46)
Housewives	26 (25)
Habitat	
Rural	81 (77.88)
Urban	23 (22.11)
Social history	
Smoking	
Current	14 (13.46)
Past	34 (32.69)
None	56 (53.84)
Alcohol	
Current	4 (3.84)
Past	38 (36.53)
None	62 (59.61)
Others (Past)	
Tobacco	8 (7.69)
Pan	6 (5.76)
Gutka	12 (11.53)
Body Mass Index	
Underweight	16 (15.38)
Normal weight	80 (76.92)
Overweight	7 (6.73)
Obese	1 (0.96)
Mean BMI	22.09457 (SD: 3.643)
Co-morbidity	
Diabetes	3 (2.88)
Hypertension	8 (7.69)
Diabetes and hypertension	6 (5.76)
None	87 (83.65)
Cohabitants	
Living alone	12 (11.53)
Living with partner	62 (59.61)
Living with others (Children and relatives)	30 (28.84)

No. of patients (N=104), BMI=Body mass index

analysis by comparing the QOL scores using Wilcoxon signed rank test and Spearman's correlation test. Wilcoxon analysis for breast cancer revealed that in functional scale, physical function, role function and in the extended functional scale using EORTC QLQ-BR23 questionnaire revealed that future perspective was found to be significant ( $P<0.05$ ). Where as in symptom scale, fatigue, pain, arm symptoms and upset by hair loss were found to be significant ( $P<0.05$ ). Spearman's correlation analysis revealed that the global health status when paired with physical function, role function, insomnia, body image, future perspective in functional scale and breast symptoms, arm symptoms in symptoms scale were found to be significant (Table 3). Wilcoxon analysis for head and neck cancer revealed that physical, role, social functions in functional scale were found to be significantly correlated ( $P<0.05$ ). Pain, insomnia and diarrhoea of symptoms scale were found to be significantly correlating ( $P<0.05$ ) and the extended symptoms scale using EORTC QLQ-HandN35 questionnaire revealed that swallowing, speech problems, dry mouth were found to be significant. Also, Spearman's correlation analysis revealed that the global health status when paired with the functional scales, physical function, social function, pain, insomnia, speech problems,

**TABLE 3: EORTC-QLQ-C30 AND BR23 STATISTICALLY SIGNIFICANT CORRELATIONS WITH ONE ANOTHER**

Domain	Review-I	Review-II	P values
Functional scales			
Physical function (PF2)	64.30±24.33	51.62±12.65	0.008*
Role function (RF2)	67.88±10.67	56.01±19.80	0.005*
Future perspective (BRFU)	48.93±24.63	42.83±24.38	0.013*
Symptoms scales			
Fatigue	44.35±16.56	56.19±23.53	0.017*
Pain	41.46±12.93	51.62±12.65	0.04*
Arm symptoms (BRAS)	34.39±13.21	42.61±15.74	0.017*
Upset by hair loss (BRHL)	43.89±16.01	55.68±21.68	0.042*
Variable pairs	Spearman RHO ( $r_s$ )		P values
Functional scales			
GHS/QOL status with physical function (PF2)	0.62		0.003*
GHS/QOL status with role function (RF2)	0.00		0.00*
GHS/QOL status with body image (BRBI)	0.67		0.00*
GHS/QOL status with future perspective (BRFU)	0.62		0.003*
Symptoms scales			
GHS/QOL status with Insomnia	-0.83		0.00*
GHS/QOL status with breast symptoms (BRBS)	0.00		0.00*
GHS/QOL status with Arm symptoms (BRAS)	-0.64		0.002*

trouble with social eating and in symptoms scale, nutritional supplements, feeding tube, weight loss were influencing the global health status (Table 4). Wilcoxon analysis for cervical cancer revealed that physical and emotional function of the functional scales were found to be significant. The extended symptoms scale using EORTC QLQ-CX24 questionnaire revealed that in symptoms scale, fatigue, nausea and vomiting, pain, insomnia, symptom experience scale, menopausal symptoms were found to be statistically significant ( $P < 0.05$ ). Spearman's correlation analysis revealed that global health status when paired with physical, emotional functions, fatigue, nausea and vomiting, pain, insomnia, sexual/vaginal functions, menopausal symptoms were found to be significantly correlating with global health status (Table 5). For gastric cancer, Wilcoxon analysis revealed that the physical and role function in functional scale and pain, nausea and vomiting, financial problems were found to be significant in symptom scale ( $P < 0.05$ ). The extended symptom scales using EORTC QLQ-STO22 questionnaire revealed that dysphagia and reflux symptoms, eating restrictions were found to be significant ( $P < 0.05$ ). Spearman's correlation analysis revealed that the global health status when paired with physical, emotional, cognitive, social function, fatigue, insomnia, appetite loss, diarrhoea, financial problems were significantly correlating with global health status ( $P < 0.05$ ). Under the symptoms scales, reflux symptoms, eating restrictions, taste were found to be very significantly correlating with global health status (Table 6).

## DISCUSSION

QOL refers to "global well-being," including physical, emotional, mental, social, and behavioral components. In the last few years, a number of informative and valid QOL tools have become available to measure health-related QOL<sup>[3]</sup>. The most widely applicable tool to measure the QOL in cancer patients is the EORTC QLQ-C30. Using this method, the current study assessed the QOL in cancer patients undergoing various treatment modalities. Several studies also support these findings on the influence of treatment on QOL among the cancer patients. In fact, improving QOL is as important as the survival benefit that a pharmacological treatment may provide. However, this is not always the case. For example, Nemati *et al.* reported that the level of QOL in patients

**TABLE 4: EORTC-QLQ-C30 AND HANDN35 STATISTICALLY SIGNIFICANT CORRELATIONS WITH ONE ANOTHER**

Domain	Review-I	Review-II	P values
<b>Functional scales</b>			
Physical function (PF2)	46.25±21.48	35.34±20.68	0.025*
Role function (RF2)	45.95±30.74	31.81±27.87	0.008*
Social function	63.63±18.80	48.48±22.14	0.013*
<b>Symptoms scales</b>			
Pain	52.08±19.17	61.91±20.36	0.008*
Insomnia	34.34±34.84	52.01±32.99	0.04*
Diarrhoea	3.03±9.87	16.16±21.58	0.001*
Swallowing (HNSW)	41.10±27.29	57.62±28.08	0.02*
Speech problems (HNSP)	39.85±21.05	57.03±24.35	0.042*
Dry mouth (HNDR)	36.36±29.02	55.04±24.58	0.025*
<b>Variable pairs</b>		<b>Spearman RHO (<math>r_s</math>)</b>	<b>P values</b>
<b>Functional scales</b>			
GHS/QOL status with physical function (PF2)		0.00	0.00*
GHS/QOL status with social function		0.50	0.01*
<b>Symptoms scales</b>			
GHS/QOL status with pain		-0.83	0.00*
GHS/QOL status with Insomnia		-0.64	0.002*
GHS/QOL status with speech problem		-0.11	0.044*
GHS/QOL status with trouble with social eating (HNSO)		0.62	0.03*
GHS/QOL status with nutritional supplements (HNNU)		0	0*
GHS/QOL status with feeding tube (HNFE)		0	0*
GHS/QOL status with weight loss (HNWL)		0	0*

**TABLE 5: EORTC-QLQ-C30 AND CX24 STATISTICALLY SIGNIFICANT CORRELATIONS WITH ONE ANOTHER**

Domain	Review-I	Review-II	P values
<b>Functional scales</b>			
Physical function (PF2)	65.77±17.43	57.55±13.68	0.025*
Emotional function	68.88±18.25	58.33±20.11	0.008*
<b>Symptoms scales</b>			
Fatigue	36.40±14.61	43.61±18.46	0.017*
Nausea and vomiting	34.52±24.59	41.10±24.20	0.021*
Pain	38.09±9.62	40.55±12.05	0.042*
Insomnia	37.77±31.64	42.21±28.27	0.01*
Symptom experience scale	28.88±24.61	39.99±29.77	0.025*
Menopausal symptoms	22.75±14.95	30.53±15.85	0.01*
<b>Variable pairs</b>		<b>Spearman RHO (<math>r_s</math>)</b>	<b>P values</b>
<b>Functional scales</b>			
GHS/QOL status with physical function (PF2)		0.61	0.002*
GHS/QOL status with emotional function		-0.45	0.02*
<b>Symptoms scales</b>			
GHS/QOL status with fatigue		0.50	0.01*
GHS/QOL status with Nausea and vomiting		0.62	0.003*
GHS/QOL status with pain		-0.45	0.02*
GHS/QOL status with insomnia		0.20	0.01*
GHS/QOL status with sexual/vaginal functioning		0.50	0.01*
GHS/QOL status with menopausal symptoms		0.00	0.00*

**TABLE 6: EORTC-QLQ-C30 AND STO22 STATISTICALLY SIGNIFICANT CORRELATIONS WITH ONE ANOTHER**

Domain	Review-I	Review-II	P values
<b>Functional scales</b>			
Physical function (PF2)	56.44±20.93	44.21±21.35	0.005*
Role function (RF2)	54.43±15.47	46.44±15.69	0.04*
<b>Symptoms scales</b>			
Nausea and vomiting	36.66±25.70	47.39±34.49	0.017*
Pain	42.21±24.98	53.32±23.73	0.025*
Financial problems	44.44±38.35	62.21±32.49	0.021*
Dysphagia	44.39±32.10	51.41±24.53	0.042*
Reflux symptoms	55.04±19.67	71.06±24.16	0.013*
Eating restrictions	41.66±23.25	46.10±24.05	0.025*
<b>Variable pairs</b>		<b>Spearman RHO (r<sub>s</sub>)</b>	<b>P values</b>
<b>Functional scales</b>			
GHS/QOL status with physical function (PF2)		0.62	0.003*
GHS/QOL status with emotional function		-0.64	0.002*
GHS/QOL status with cognitive function		-0.20	0.01*
GHS/QOL status with social function		-0.45	0.02*
<b>Symptoms scales</b>			
GHS/QOL status with fatigue		0.62	0.002*
GHS/QOL status with Insomnia		0.50	0.01*
GHS/QOL status with appetite loss		0.41	0.01*
GHS/QOL status with diarrhoea		0.61	0.002*
GHS/QOL status with financial problems		-0.83	0.00*
GHS/QOL status with reflux symptoms		0.00	0.00*
GHS/QOL status with eating restrictions		0.41	0.01*
GHS/QOL status with taste		0.00	0.00*

with leukemia was 87.5% lower than that in the control group<sup>[17]</sup>. For instance, Hurny *et al.* shown that chemotherapy had a measurable adverse effect on QOL in women with node-positive operable breast cancer<sup>[18]</sup>. The results from the current study indicate that disease burden may deteriorate the QOL in cancer patients. Rustoen *et al.* and Holzner *et al.* in two separate studies found that the extent to which QOL of cancer patients depends on the time elapsed since initial treatment, with an increase in the extent of the disease, a decrease in the QOL was observed<sup>[19,20]</sup>.

The gender distribution of the study population revealed that females were mostly affected by cancer, which was up to 60.57% (63/104) in this area. One of the reasons behind this may be the inclusion of breast and cervical cancer patients. However, the past studies have shown that incidence of cancer is more predominant among women in this study site<sup>[21]</sup>. The age distribution indicated that the adult and elderly people were commonly getting affected and similar findings were reported by other

literature<sup>[22]</sup>. Habitat is also a contributing factor for the cancer incidence and our study found that 77.88% (81/104) of the patients were having rural background since the rural population is more in this area. Only 5.76% (6/104) were vegetarians, and 7.69% (8/104) consumed tobacco, 5.76% (6/104) consumed pan, 11.53% (12/104) consumed gutka, nearly 13.46% (14/104) were smokers, 3.84% (4/104) were alcoholics, 24.03% (25/104) having both smoking and alcoholism. This result does not clearly explicit the social habits and its influence on the disease state as explained in the literature<sup>[23]</sup>. As in the study population 42.30% (44/104) of patients were having clean habits which may be because of large number of women population (about 60.57%, 63/104). Among all the patients only 27.87% (29/104) were literate indicating illiteracy rate in the patient group, which is a major factor for various cancers including cervical cancer of this patient population<sup>[24]</sup> and there is a need to cause awareness among illiterate population in this area. According to some researchers<sup>[25]</sup>, performance of marital role or duties, relationship with spouse, looking after the family are important regarding the QOL for Indian cancer patients and it was found that 21.15% (22/104) of our study population were divorced and/or separated. Cohabitant status revealed that 11.53% (12/104) were living alone and 28.84% (30/104) were living with others like children or relatives. Of the total female population 49.20% (31/63) were in post-menopausal state. Occupationally, most of the patients were on daily wages and housewives, about 25% (26/104) each of the total patient population. The reasons behind may be uncertain. Body mass index of the patients was calculated and found that 76.92% (80/104) were having normal weight and 15.38% (16/104) of the patients were underweight. As the cancer treatment may deteriorate the weight of the patients, there is a chance of increasing in the number of underweight patients thereby reducing their QOL. Since most of patients were low socioeconomic, there is a need to implement the dietary counselling in this study site according to their financial background<sup>[26]</sup>.

Laboratory investigations like Hb, ESR were analyzed. It is a known fact that the treatment modalities for cancer will definitely reduce the Hb levels which ultimately leads to anemia<sup>[27]</sup>. Main reasons for admissions included nipple discharge from breast among 36.53% (38/104)

breast cancer patients and difficulty in swallowing among 26.92% (28/104) head and neck cancer patients, white discharge among 8.65% (9/104) cervical cancer patients and abdominal pain among 14.42% (15/104) stomach cancer patients. This shows the need of causing awareness about signs and symptoms for early detection of cancers among common public. Diagnosis of the study population depending on the thorough screening revealed that 39.42% (41/104) have breast cancer, 31.73% (33/104) have head and neck, 14.42% (15/104) have both cervical and stomach cancer cases. These findings can be supported by previous studies in this department<sup>[21,23]</sup>. Hypertension was found as a major co-morbidity 7.69% (8/104), followed by diabetes among 2.88% (3/104), and both of them were found in 5.76% (6/104). The co-morbidities were very well treated with respective drugs. Treatment patterns in this study site were following standards and the patients were treated by chemotherapy, radiotherapy, surgery, or the combination of them. Up to 40.38% (42/104) of the patients have undergone radiotherapy, for treating head and neck cancers. As the inclusion of patients in this study was  $\leq 2$  cycles, 50.96% (53/104) of the patients were in first cycle and the remaining were in the second cycle of treatment.

In the early phase after initial treatment ( $\leq 2$  cycles), patients have a good QOL in many areas. This is especially true for the functional scales and similar observations were also made by Dow *et al.*<sup>[28]</sup>. With regard to the emotional domain, clinical experience shows that fear about possible relapse and associated depressive reactions play an important role in the process of coping with the illness and its treatment. The majority of the women were housewives, having been responsible for the organization of households. The areas of life affected are those of physical and role functions, social well-being, cognitive functions, and sexuality. This pattern can be observed for physical symptoms like pain, fatigue, constipation and dyspnoea, which occurred in the same extent across all groups. Impairments reported in role functioning might be similarly explained in that support initially offered in occupational and household activities may tend to disappear with time. The “rebound effect” observed in this study (a recurring reduction of QOL after initial improvement) was most pronounced, as mentioned earlier, in the areas of emotional functioning, role

functioning, social well-being, and sexual life. Ganz *et al.* report similar results, indicating that a whole series of psychosocial and sexual problems not only continue to plague cancer patients, but might also worsen with time<sup>[12]</sup>.

Final scores of Review-I and Review-II were analyzed with Wilcoxon analysis for breast, head and neck, cervical, and stomach cancers. In the functional scale of breast cancer patients, physical, role function and in the extended functional scale, future perspective was found to be significant and in symptom scale, fatigue, pain, arm symptoms and upset by hair loss were also significantly affected. A similar observations were found by previous studies<sup>[29-31]</sup>. In head and neck cancer patients, physical, role function as well as social function and in symptom scale pain, insomnia, diarrhoea were significantly affected. In the extended symptom scale, swallowing, speech problems, dry mouth were significantly affected. These findings are in supportive to past studies by Duffy *et al.*<sup>[32]</sup>. In cervical cancer patients, physical, emotional function and in symptom scale fatigue, nausea and vomiting, pain, insomnia and in the extended symptom scale, symptom experience scale, menopausal symptoms were significantly affected. Past studies were also similar to this<sup>[33]</sup>. In stomach cancer, physical, role function and in symptom scale, nausea and vomiting, pain, financial problems were significant and in the extended symptom scale, dysphagia, reflux symptoms, eating restrictions were significantly affected, which are comparable to the studies conducted by Mills *et al.*<sup>[34]</sup>. Therefore, there is a need to focus on all these aspects among various types of cancers patients.

The scores were also analyzed with the nonparametric test, Spearman's correlation analysis, which revealed that in breast cancer, the global health status when paired with physical, role function and insomnia, body image, future perspective, breast symptoms, and arm symptoms were significantly correlated. The negative sign on the symptoms scale indicates a decrease in the symptoms after the previous cycle treatment. Similarly, in head and neck cancer patients' global health status when paired with physical, social function, pain, insomnia, speech problems, trouble with social eating, nutritional supplements, feeding tube, and weight loss were significant. In cervical cancer patients global health status when paired with physical, emotional function, fatigue, nausea and vomiting, pain, insomnia, sexual/vaginal functioning,

menopausal symptoms were significantly correlating. Global health status of stomach cancer patients when paired with physical, emotional, cognitive, social function, fatigue, insomnia, appetite loss, diarrhoea, financial problems, reflux symptoms, eating restrictions, taste were found to be significantly correlating. Most of these findings are similar to the past studies in the respective type of cancer patients<sup>[30,32-34]</sup>.

Cancer is an important health issue which influences QOL. Concern for improving the quality of patients' lives has in many contexts become as important as regard for extending QOL. These findings have shown that, there is a strong correlation between QOL and number of treatment cycles and QOL was mostly influenced by the various cancer related factors and have some interesting implications for management and treatment of cancer. Many times it may not be possible to alleviate patients' worries and concerns in a patient population where the disease is essentially and actually incurable, a simple discussion of these general issues is very important to those patients. So health services should be planned keeping in mind an entire life perspective rather than just the cancer-focused approach and there is a need to understand the underlying factors in the patient's QOL, and consider the impact of cancer treatment in each patient.

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