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Quality of Life in Patients Undergoing Chemoradiotherapy Concomitant Treatment for Cervical Cancer in Madagascar

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Abstract

Cervical cancer remains a major problem in Madagascar. Its occurrence affects all aspects of an individual's life. Our study therefore assessed the impact of cervical cancer and its treatment on quality of life. A total of 24 cases of cervical cancer treated with concomitant radiochemotherapy were followed up. Through a prospective descriptive and analytical study conducted at the Radiotherapy Department of the CHUJRA between January and July 2022, quality of life was assessed before the start of treatment and after three cycles of chemoradiotherapy using the QLQ-C30 and QLQ-CX24 questionnaires. Our study highlights the influence of age and co-morbidities on the quality of life of individual patient characteristics. Cervical cancer, through its various clinical stages, increasingly impairs overall quality of life. During treatment, after 3 cycles of chemoradiotherapy, symptom scores for nausea/vomiting, diarrhoea, pain and loss of appetite increased significantly. Cervical cancer, its treatment and individual patient characteristics all have an impact on patients' quality of life. Given our results, it would be important to develop strategies to mitigate the impact of cervical cancer and its treatment on quality of life.

Keywords

Quality of Life, Chemoradiotherapy, Cervical Cancer, Madagascar

1. Introduction

Cervical cancer is the fourth leading cause of cancer and cancer-related death in women worldwide [1]. In Madagascar, cervical cancer is the leading cancer in terms of annual incidence and mortality [2].

Depending on the stage of the disease, surgery, external beam radiotherapy, brachytherapy or chemotherapy may be used [3]. The current standard of care for locally advanced cervical cancer is concomitant chemoradiotherapy (CCRT) [4].

The disease and its treatments cause discomfort, undesirable effects and toxic reactions [5] which affect patients' Quality of Life (QoL). These repercussions include several dimensions, in addition to the physical condition, it also concerns the psychological, social and economic health of patients.

In this context, evaluating quality of life seems to be a major issue. The European Organisation for Research and Treatment of Cancer (EORTC) has developed the QLQ-C30 (Quality of Life Questionnaire Core 30) [6] questionnaire, a basic instrument that can be used to assess patients' QoL for all cancer sites. It can be combined with modules more specific to the cancer site, in particular the QLQ-CX24 questionnaire for cervical cancer [7].

Our aim is to assess the impact of cervical cancer and its treatment on QOL, and also to identify the sociodemographic and clinical characteristics that may affect QOL in patients treated with concomitant radiochemotherapy (CCRT) for cervical cancer at the Radiotherapy Department of the Joseph Ravoahangy Andrianavalona University Hospital (CHUJRA).

2. Methods

This is a prospective, descriptive and analytical longitudinal study of the quality of life of cervical cancer patients treated with CCRT. The study was conducted over a period of 7 months, from January to July 2022. The inclusion criteria were patients with cervical cancer confirmed by an anatomopathological examination and treated with concurrent chemoradiotherapy. Patients were excluded if they had difficulty responding due to cognitive impairment, limited comprehension, or acute symptoms caused by comorbidities, disease complications, or treatment-related adverse effects.

The prescribed treatment consisted of radiotherapy delivered with chemotherapy. The delivered dose per fraction, the total dose, and the number of radiotherapy fractions were recorded. The curative radiation dose for cervical cancer is 70 Gy. Initially, patients received a pelvic dose of 46 Gy over 23 fractions at 2 Gy per fraction. An additional 20 Gy boost followed this, also delivered in 2 Gy fractions to compensate for a lack of brachytherapy. In the lithotomy position, a final 4 Gy dose was administered perineally at 2 Gy per fraction. The chemotherapy regimen included details on the agent used, the administered dose, and the number of chemotherapy cycles. Patients received weekly platinum-based chemotherapy, administered for 5 to 7 cycles. The standard regimen consisted of cisplatin 40 mg/m^2 weekly. For patients with renal impairment (glomerular filtration rate < 60 mL/min), carboplatin (AUC 2) was administered instead.

The scores of the different dimensions of the QLQ-C30 questionnaire were calculated separately. They are obtained by calculating the average of the items completed for each dimension. Raw scales range from 1 to 4 for all dimensions, except for the "Global Health Status" dimension, which ranges from 1 to 7. Normalized scores are calculated from the raw score such that 0 corresponds to the worst quality of life and 100 corresponds to the best for the multi-item functional scales. For symptoms, 0 corresponds to their absence and 100 to their permanent presence.

*The Raw Score is calculated as follows:

$$\text{Raw Score}(\text{RS}) = \frac{(\text{Q1} + \text{Q2} + \cdots + \text{Qn})}{\text{n}}$$

With Q1, Q2, ···, Qn: Correspond to the items that constitute the dimension;

n: Number of items entered.

*The Normalised Scores are calculated as follows:

-For Functional Score:

$$\text{Normalised Score} = \left[1 - \frac{(\text{RS} - 1)}{\text{range}}\right] \times 100$$

-For Symptoms Scores and Health/Global quality of life:

$$\text{Normalised Score} = \left[\frac{(\text{RS} - 1)}{\text{range}}\right] \times 100$$

The QLQ-CX24 questionnaire score is a quality-of-life questionnaire specifically designed for patients treated for cervical cancer. It includes 24 questions addressing certain aspects of quality of life. Each question is scored from 1 (not at all) to 4 (a lot) and is time-limited. The higher the total score, the more the quality of life is impaired, except for questions 19 and 24, which is the opposite. Questions 20 to 24 are optional. If not answered, the vaginal and sexual function dimension is not included in the total score.

*The Raw Score is calculated as follows:

$$\text{Raw Score}(\text{RS}) = \frac{(\text{Q1} + \text{Q2} + \cdots + \text{Qn})}{n}$$

With Q1, Q2, ···, Qn: Correspond to the items that constitute the dimension;

n: Number of items entered.

*The Normalised Scores are calculated as follows:

For all scales (symptom and functional scales), the calculation of standardized scores is the same:

$$\text{Normalised Score} = \left[\frac{(\text{RS} - 1)}{\text{range}}\right] \times 100$$

The range is the difference between the maximum and minimum possible response values.

The data were initially collected in an Excel table. Data were then processed using IBM SPSS software® Statistics version 26.

3. Results

During the period of our study, we had 28 eligible patients. Of these 28 patients, 24 were selected and 4 were not included. The mean age of the patients was 54.4 years (±11.3 years) with extremes ranging from 32 to 75 years. The age group most affected was between 51 and 60, accounting for 41.67% of cases. We found that 75% of our patients were married, 16.67% were widowed, 4.17% were single and 4.17% were divorced. Working women represented 66.67% of the study population, followed by retired women and housewives, each representing 16.67%. We noted that 25% of our patients suffered from hypertension (high blood pressure), 8.33% had type 2 diabetes, and 70.83% had no particular antecedents. In our series, menopausal and non-menopausal women accounted for 66.67% and 33.33% respectively. Stage IVA was found most frequently in 33.33% of cases (**Figure 1**). All patients received a total dose of 70 Gy. Additional doses were given to compensate for the absence of brachytherapy. In our patients, chemotherapy was carried out between 5 and 7 concomitant courses. Initial surgery was performed in 5 patients (20.8%) prior to chemoradiotherapy. All were hysterectomies.

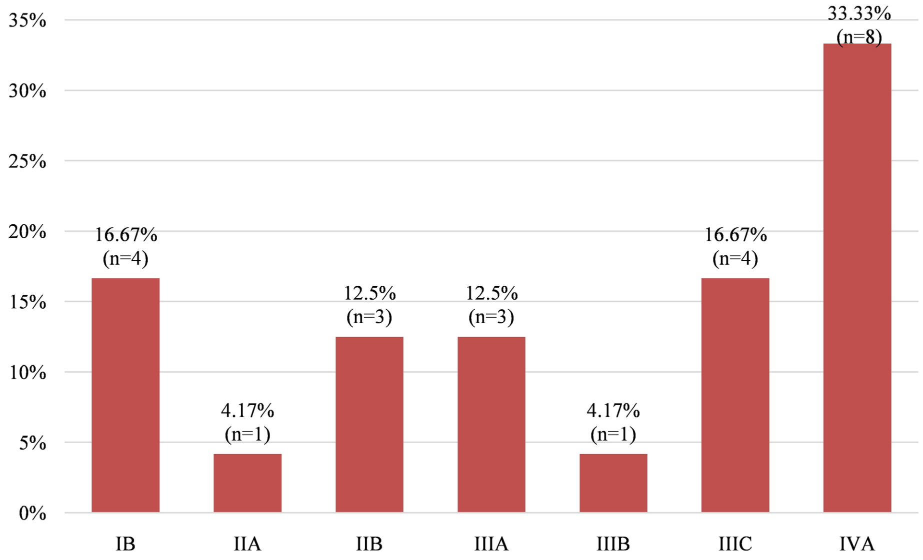

Figure 1. Distribution of patients according to clinical stage (FIGO classification).

The multi-item scales of the QLQ-C30 questionnaire, namely physical function, role function, social function, emotional function, fatigue, nausea and vomiting, pain and overall quality of life/global health all showed Cronbach's α coefficients greater than or equal to the acceptability threshold of 0.7 (**Table 1**). Mean QoL scores measured before treatment compared with mean scores after three cycles of concomitant CRT showed statistically significant differences over time. For the QLQ-C30 questionnaire, the areas of nausea and vomiting ($p = 0.048$), pain ($p = 0.045$), loss of appetite ($p = 0.003$), constipation ($p = 0.021$) and diarrhoea ($p = 0.002$) showed statistically significant differences. (**Table 1**). For the QLQ-CX24 questionnaire, the mean score before treatment and after three cycles of concomitant radiochemotherapy showed a statistically significant difference in the body image scale ($p = 0.004$). (**Table 2**)

Table 1. QLQ-C30 score before treatment and after three cycles of concomitant chemoradiotherapy.

QUALITY OF LIFE SCALE	AVERAGE SCORE BEFORE CCR (N = 24)	MEAN SCORE AFTER 3 CYCLES OF RCC (N = 24)	P* VALUE
Physical function	80.27	75.75	0.115
Role function	81.25	75	0.097
Social function	86.11	81,06	0.220
Cognitive function	82.63	84.09	0.582
Emotional function	71.52	73.10	0.685
Fatigue	29.16	33.83	0.343
Nausea and vomiting	11.11	18.93	**0.048**
Pain	31.81	38.88	**0.045**
Dyspnoea	1.38	4.54	0.157
Insomnia	27.77	28.78	0.675
Loss of appetite	16.66	36.36	**0.003**
Constipation	20.83	6.06	**0.021**
Diarrhoea	2.77	24.24	**0.002**
Financial problems	61,11	56.06	0.305
Quality of life/overall health	58.33	57.08	0.943

*Wilcoxon test.

Table 2. QLQ-CX24 score before treatment and after three cycles of concomitant radiochemotherapy.

QUALITY OF LIFE SCALE	AVERAGE SCORE BEFORE CCR (N = 24)	AVERAGE SCORE AFTER 3 CYCLES OF CCR (N = 24)	P* VALUE
Symptomatic scales			
Experience of symptoms	16.41	14.32	0.357
Body image	25	13.63	**0.004**
Vaginal/sexual function	16.66	-	n/a†
Lymphedema	1.23	1.51	0.317
Peripheral neuropathy	15.27	12.12	0.792
Symptoms of the meno-pause	11.11	19.69	0.096
Sexual preoccupation	25	19.69	0.808
Functional items			
Sexual activity	2.77	0	0.157
Sexual pleasure	0	-	n/a†

*Wilcoxon test, † Not applicable.

For the QLQ-C30 questionnaire, a statistically significant difference was found in the overall QoL scale (p = 0.05) between the over-45 and under-45 age groups (**Table 3**). No statistically significant difference was found for the QLQ-CX24 questionnaire. It should be noted, however, that patients aged 45 or under had more body image alterations than patients aged over 45 (28.07 versus 13.33), and they also had more sexual preoccupations (39.99 versus 21.05). (Table 4)

Table 3. QLQ-C30 score by age group.

QUALITY OF LIFE SCALE	AVERAGE SCORE AGE ≤ 45 (N = 5)	AVERAGE SCORE AGE > 45 (N = 19)	P* VALUE
Physical function	82.8	70.66	0.313
Role function	84.21	70	0.152
Social function	71.66	71.49	0.856
Cognitive function	90	80.70	0.370
Emotional function	86.66	85.96	0.970
Fatigue	33.33	28.07	0.664
Nausea and vomiting	9.99	11.40	0.872
Pain	43.33	37.71	0.459
Dyspnoea	6.66	0	0.051
Insomnia	6.66	33.33	0.107
Loss of appetite	6.66	19.29	0.255
Constipation	19.99	21.05	0.495
Diarrhoea	0	3.50	0.458
Financial problems	59.99	61.40	0.795
Quality of life/overall health	73.33	54.38	**0.05**

*Mann Whitney U test.

Table 4. QLQ-CX24 score by age group.

QUALITY OF LIFE SCALE	AVERAGE SCORE AGE ≤ 45 (N = 5)	AVERAGE SCORE AGE > 45 (N = 19)	P* VALUE
Symptomatic scales			
Experience of symptoms	18.78	15.78	0.642
Body image	28.07	13.33	0.060
Vaginal/sexual function	25	8.33	0.317
Lymphedema	0	0	1
Peripheral neuropathy	19.99	14.03	0.740
Symptoms of the menopause	6.66	12.28	0.591
Sexual preoccupation	39.99	21.05	0.297
Functional items			
Sexual activity	6.66	1.75	0.299
Sexual pleasure	0	0	1

*Mann Whitney U test.

For the QLQ-C30 and QLQ-CX24 questionnaires, no statistically significant difference was found between the group of patients living alone and married patients. (Table 5 and Table 6)

Table 5. QLQ-C30 score by marital status.

QUALITY OF LIFE SCALE	AVERAGE SCORE FOR PATIENTS LIVING ALONE (N = 6)	AVERAGE SCORE FOR MARRIED PATIENTS (N = 18)	P* VALUE
Physical function	77.78	81.1	0.417
Role function	80.54	81.47	0.697
Social function	83.32	87.04	0.830
Cognitive function	86.1	81.47	0.599
Emotional function	80.54	68,52	0.102
Fatigue	25.91	30.25	0.475
Nausea and vomiting	11.1	11.1	0.880
Pain	33.32	40.73	0.366
Dyspnoea	0	1.84	0.564
Insomnia	11.1	33.32	0.195
Loss of appetite	16.67	16.67	0.819
Constipation	22.21	20.36	0.792
Diarrhoea	0	3.69	0.404
Financial problems	72.21	57.39	0.364
Quality of life/overall health	66.67	55.54	0.303

*Mann Whitney U test.

Table 6. QLQ-CX24 score by marital status.

QUALITY OF LIFE SCALE	AVERAGE SCORE FOR PATIENTS LIVING ALONE (N = 6)	AVERAGE SCORE FOR MARRIED PATIENTS (N = 18)	P* VALUE
Symptomatic scales			
Experience of symptoms	19.7	15.32	0.524
Body image	25.91	24.68	0.724
Vaginal/sexual function	n/a	16.67	n/a†
Lymphedema	0	0	1
Peripheral neuropathy	16.67	14.8	0.640
Symptoms of the menopause	22.21	7.41	0.153
Sexual preoccupation	18.52	44.43	0.114
Functional items			
Sexual activity	0	3.69	0.404
Sexual pleasure	n/a	0	n/a†

*Mann Whitney U test, †Not applicable.

Between patients with one or more comorbidities and patients without comorbidities, a statistically significant difference in mean score was found in the QLQ-C30 questionnaire in the area of loss of appetite (p = 0.023). (Table 7) For the QLQ-CX24 questionnaire, patients with comorbidities had lower mean scores than patients without comorbidities in sexual preoccupation (9.52 versus 24.44) but none of the differences were statistically significant. (Table 8)

Table 7. QLQ-C30 score by patient co-morbidity conditions.

QUALITY OF LIFE SCALE	COMORBIDITY		P* VALUE
	Yes (n = 7)	No (n = 17)	
Physical function	77.14	75.11	0.802
Role function	76.19	74.44	0.563
Social function	79.76	70	0.319
Cognitive function	83.33	84.44	0.881
Emotional function	90.47	76.66	0.082
Fatigue	28.57	36.29	0.498
Nausea and vomiting	21.42	17.77	0.621
Pain	28.57	33.33	0.501
Dyspnoea	0	6.66	0.214
Insomnia	42.85	22.22	0.181
Loss of appetite	52.38	28.88	**0.023**
Constipation	4.76	6.66	0.752
Diarrhoea	33.33	19.99	0.367
Financial problems	33.33	66.66	0.058
Quality of life/overall health	61.90	56.11	0.491

*Mann Whitney U test

Table 8. QLQ-CX24 score according to patient co-morbidity conditions.

QUALITY OF LIFE SCALE	COMORBIDITY		P* VALUE
	Yes (n = 7)	No (n = 17)	
Symptomatic scales			
Experience of symptoms	13.85	14.54	0.775
Body image	15.87	12.59	0.579
Vaginal/sexual function	-	-	n/a†
Lymphedema	0	2.22	0.495
Peripheral neuropathy	9.52	13.33	0.762
Symptoms of the menopause	19.04	19.99	0.720
Sexual preoccupation	9.52	24.44	0.201
Functional items			
Sexual activity	0	0	1
Sexual pleasure	-	-	n/a†

*Mann Whitney U test, †Not applicable.

For the QLQ-C30 questionnaire, patients in early FIGO stages I-II showed a better mean score in the areas of overall QOL/health, physical function, and role function compared to advanced FIGO stages III-IV but a difference was statistically significant only in the area of overall QOL/health (p = 0.05). (**Table 9**) For the QLQ-CX24 questionnaire, stage III-IV patients, compared with stage I-II patients, reported higher scores for peripheral neuropathy (18.75 vs. 8.33), menopausal symptom (14.58 vs. 4.16), sexual preoccupation (33.33 vs. 8.33) and also had a poor perception of body image (27.77 vs. 19.44). None of our results showed statistically significant differences. (**Table 10**)

Table 9. QLQ-C30 scores by FIGO stage.

QUALITY OF LIFE SCALE	AVERAGE FIGO I-II SCORE (N = 8)	AVERAGE SCORE FIGO III-IV (N = 16)	P* VALUE
Physical function	87.50	76.66	0.203
Role function	87.50	78.12	0.205
Social function	79.16	89.58	0.131
Cognitive function	81.25	83.33	0.797
Emotional function	63.54	75.52	0.098
Fatigue	23.61	31.94	0.261
Nausea and vomiting	2.08	15.62	**0.032**
Pain	31.24	42.70	0.190
Dyspnoea	0	2.08	0.480
Insomnia	20.83	31.25	0.260
Loss of appetite	12.50	18.75	0.363
Constipation	16.66	22.91	0.704
Diarrhoea	4.166	2.08	0.609
Financial problems	58.33	62.49	0.749
Quality of life/overall health	68.75	53.12	0.05

*Mann Whitney U test.

Table 10. QLQ-CX24 scores by FIGO stage.

QUALITY OF LIFE SCALE	AVERAGE SCORE FIGO I-II (N = 8)	AVERAGE SCORE FIGO III-IV (N = 16)	P* VALUE
Symptomatic scales			
Experience of symptoms	16.66	16.28	0.735
Body image	19.44	27.77	0.364
Vaginal/sexual function	-	16.66	n/a†
Lymphedema	0	0	1
Peripheral neuropathy	8.33	18.75	0.316
Symptoms of the menopause	4.16	14.58	0.203
Sexual preoccupation	8.33	33.33	0.062
Functional items			
Sexual activity	0	4.16	0.307
Sexual pleasure	-	0	n/a†

*Mann Whitney U test, †Not applicable.

In the QLQ-C30 questionnaire, patients treated immediately with surgery (hysterectomy) followed by CCRT compared with patients treated with exclusive CCRT showed statistically significant differences in the areas of nausea and vomiting (p = 0.028), insomnia (p = 0.034) and diarrhoea (p = 0.008). (**Table 11**)

In the QLQ-CX24 questionnaire, patients treated with surgery followed by CCR showed lower mean scores in the domains of symptom experience, body image, peripheral neuropathy and sexual preoccupation compared to patients treated with CCRT alone but none of the differences were statistically significant. (**Table 12**)

Table 11. QLQ-C30 scores by treatment modality.

QUALITY OF LIFE SCALE MEAN	AVERAGE RCC SCORE (N = 19)	SCORE SURGERY + RCC (N = 5)	P* VALUE
Physical function	75.29	77.33	0.780
Role function	74.50	76.66	1
Social function	73.52	71.66	0.874
Cognitive function	88.23	70	0.073
Emotional function	79.41	86.66	0.435
Fatigue	32.67	37.77	0.606
Nausea and vomiting	14.70	33.33	**0.028**
Pain	33.33	26.66	0.393
Dyspnoea	5.88	0	0.323
Insomnia	21.56	53.33	**0.034**
Loss of appetite	33.33	46.66	0.259
Constipation	7.84	0	0.241
Diarrhoea	15.68	53.33	**0.008**
Financial problems	56.86	53.33	0.903
Quality of life/overall health	57.35	60	0.778

*Mann Whitney U test.

Table 12. QLQ-CX24 scores by treatment modality.

QUALITY OF LIFE SCALE	AVERAGE RCC SCORE (N = 19)	AVERAGE SURGICAL SCORE + RCC (N = 5)	P* VALUE
Symptomatic scales			
Experience of symptoms	15.68	9.69	0.122
Body image	14.37	11.11	0.681
Vaginal/sexual function	-	-	n/a†
Lymphedema	1.96	0	0.588
Peripheral neuropathy	13.72	6.66	0.501
Symptoms of the menopause	21.56	13.33	0.425
Sexual preoccupation	23.52	6.66	0.291
Functional items			
Sexual activity	0	0	1
Sexual pleasure	-	-	n/a†

*Mann Whitney U test, †Not applicable.

4. Discussion

In our series, the mean age of patients with cervical cancer was 54.4 years (±11.3 years). Compared with studies carried out in other African countries, Hailu *et al.* in Ethiopia in 2020 [8] noted a peak between 50 and 54 years of age. These results are comparable to those of our study. Our study showed a predominance of married women accounting for 75% of patients. In his 2011 study, Andrianandrasana made a similar observation, with a large proportion of married patients representing 91.42%, followed by divorced patients represented by 2.85%, on an equal footing with single women and widows [9]. Working women were largely represented in our sample at 66.7%. Similar results were found by Andrianadrasana [9] in 2011, who found that active women represented 71.41%. Stage IVA was the most common and was found in 33.33% of cases. Randriamanovontsoa found slightly better results, with 82.6% of patients in the locally advanced stage. Our patients all received 70 Gy. Additional doses are intended to compensate for the absence of brachytherapy. The literature reports that therapies such as surgery, radiotherapy and chemotherapy can have a negative impact on QoL through a marked increase in depression, anxiety and anger [10]. Our patients underwent 5 to 7 courses of chemotherapy in conjunction with radiotherapy. Platinum-based chemotherapy, used in the treatment of cervical cancer, can induce various adverse effects, including loss of ovarian function, nausea, vomiting, diarrhoea, constipation or fatigue, alopecia (carboplatin) and nephrotoxicity (cisplatin) [11] [12]. Initial surgery was performed in 5 of our patients. These were exclusively hysterectomies. In terms of QoL, Lutgendorf *et al.* report [13] that surgery such as a hysterectomy involving organ loss and scarring have a negative impact on psychophysical identity leading to anxiety.

Our study was characterised by good reliability of the multi-item scales of the QLQ-C30 and QLQ-CX24 questionnaires. All dimensions showed Cronbach's α values greater than or equal to the acceptability threshold $\alpha \geq 0.7$ demonstrating the reliability of the questionnaires. The internal consistency of the multi-item scales in our study was found to be consistent with other previous studies conducted in Ethiopia and Poland, using the same questionnaires [14] [15].

For the QLQ-C30 questionnaire, a comparison of scores before and after 3 cycles of CCRT showed statistically significant differences in scores. An increase in the mean score for nausea/vomiting ($p = 0.048$), pain ($p = 0.045$), loss of appetite ($p = 0.003$), diarrhoea ($p = 0.002$) and a decrease in constipation ($p = 0.021$) were observed after 3 cycles of CCRT. Heijkoop *et al.* reported results comparable to our own [16]. For the QLQ-CX24 questionnaire, differences were observed over time between scores before treatment and after 3 cycles of CCRT. The mean score for body image decreased, indicating an improvement in body image (25 versus 13.63), and the difference was statistically significant ($p = 0.004$). Heijkoop *et al.* [16] found similar results, namely an increase in menopausal symptoms and an improvement in body image.

Regarding age, for the QLQ-C30 questionnaire, patients aged 45 or under-reported a better overall QoL score than the over-45 age group (p = 0.05), similar to the result of the study reported by the Action Study Group [19]. For the QLQ-CX24 questionnaire, no statistically significant difference was found between the two groups. The mean scores on the QLQ-CX24 questionnaire showed that the younger patients, aged 45 or under, had a poor body image and a tendency to be more sexually preoccupied, but they were also more sexually active than the women over 45. This was also found in other studies in South Korea and Italy [17] [18].

In our study, for the QLQ-C30 questionnaire, no statistically significant difference was found between the groups of single and married patients. Contrary to our results, other studies [19] [20] found that characteristics related to the psychological aspect of patients, particularly marital status, positively influenced QoL, with married women scoring higher. For the QLQ-CX24 questionnaire, none of the differences found were statistically significant between single and married patients. Uma Singh *et al.* made the same observation in their study [20].

In this study, 33.33% of patients had one or more comorbidities. For the QLQ-C30 questionnaire, a statistically significant difference was found in the area of loss of appetite (p = 0.023), with patients presenting one or more comorbidities reporting a higher loss of appetite score, with a mean score of 52.38 compared with 28.88. Shin *et al.* [21] reported the same finding in their study. For the QLQ-CX24 questionnaire, patients without comorbidities had higher mean scores than patients with comorbidities in the area of sexual preoccupation (24.44 versus 9.52) but this difference was not statistically significant (p = 0.201). Nevertheless, this trend could be explained by the fact that our patients without comorbidities tend to be younger. However, as reported in the study by Bjelic-Radisic *et al.*, younger patients have more sexual preoccupation and problems with sexual pleasure than older patients [22].

Regarding clinical stages, for the QLQ-C30 questionnaire, patients in stages III-IV, compared with clinical stages I-II, reported a statistically significant result in the area of nausea/vomiting symptoms (p = 0.032). Stage I-II patients showed a better overall QOL/health than stage III-IV patients (68.75 versus 53.12) and the latter was statistically significant (p = 0.05). The study by Luvián-Morales *et al.* [23] found the same results. For the QLQ-CX24 questionnaire, they reported higher scores for peripheral neuropathy, menopausal symptoms and sexual preoccupation. Also, they had a poor perception of body image. None of our results showed statistically significant differences. Whereas Luvián-Morales *et al.* [23] found the same trends in their results, but their differences were all statistically significant.

According to the treatment modalities, the Surgery + CCRT group showed more impairment of QoL in the symptom domains compared with patients treated with CCRT alone in the QLQ-C30 questionnaire. They had more nausea/vomiting (p = 0.028), more insomnia (p = 0.034) and more diarrhoea (p = 0.008). A European study made the same finding; they found statistically significant differences in the areas of nausea/vomiting (p = 0.02), insomnia (p = 0.001) and diarrhoea (p = 0.02) [22]. No statistically significant differences were found for the QLQ-CX24 questionnaire. A Chinese study also found no statistically significant difference between the group of patients treated with surgery combined with CCR and those treated with CCRT alone [24].

5. Suggestions

Cervical cancer and its treatments have significant impacts on the patients' quality of life (QoL). However, we will propose strategies to improve QoL.

5.1. At Diagnosis

It is crucial to adequately inform patients about the impacts of cervical cancer and its treatment on QoL, starting at the time of diagnosis. This information is necessary and should be provided throughout the cancer treatment process. It will involve communication between the physician and the patient to prepare the patient psychologically. The information should remain as simple and basic as possible.

In our study, the most commonly reported symptoms include nausea and vomiting, diarrhea, pain, loss of appetite, and insomnia.

5.2. During Treatment

Throughout treatment, the physician must also encourage patients to adhere to their treatment. To achieve this, the patient must understand the purpose of the proposed treatment and the benefits they can derive from sometimes intensive treatment.

The communication between the physician and the patient must be facilitated, and it is within this framework of communication that QoL assessments play a crucial role. Indeed, one of the primary reasons for QoL evaluation is to gather information about the range of issues affecting the patients, enabling better overall patient management.

Although most of our patients reported low sexual activity scores, discussions and management of the implications of female cancer on sexuality should be addressed from the beginning of the care journey, for all women, regardless of age or marital status. It is essential to prepare patients for the physical changes induced by treatments and to discuss their impact on the quality of sexual relations.

To improve quality of life, it is essential to manage the symptoms associated with cancer and the side effects of treatments that affect patients. In our study, the most common complaints from patients were pain, nausea and vomiting, diarrhea, loss of appetite, and insomnia.

In our study, patients with one or more comorbidities experienced more symptoms than patients without comorbidities. The comorbidities present in our patients were type 2 diabetes and hypertension. To improve the quality of life for these patients, it will be essential to properly manage these comorbidities to minimize their potential impact on quality of life. Diabetic patients should be referred to an endocrinologist, while hypertensive patients should be referred to a cardiologist.

6. Conclusion

Cervical cancer is a major health problem for women in developing countries. Concomitant radiochemotherapy, which has shown an undeniable benefit in terms of survival, can affect patients' quality of life. It, therefore, seemed important to gather information on quality of life to measure the full extent of the impact of the disease and its treatment on patients. In oncology practice, this study encourages us to implement the measures needed to maintain good patient autonomy by optimising doctor-patient communication to improve patient care and quality of life.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Bray, F., Ferlay, J., Soerjomataram, I., Siegel, R.L., Torre, L.A. and Jemal, A. (2018) Global Cancer Statistics 2018: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. *CA*: *A Cancer Journal for Clinicians*, **68**, 394-424. https://doi.org/10.3322/caac.21492

[2] IARC and GLOBOCAN 2020 (2020) IARC. https://gco.iarc.fr/today/online-analysis-table

[3] Pointreau, Y., Ruffier Loubière, A., Denis, F. and Barillot, I. (2010) Cancer du col utérin. *Cancer*/*Radiothérapie*, **14**, S147-S153. https://doi.org/10.1016/s1278-3218(10)70018-4

[4] Marnitz, S., Wlodarczyk, W., Neumann, O., Koehler, C., Weihrauch, M., Budach, V., *et al*. (2015) Which Technique for Radiation Is Most Beneficial for Patients with Locally Advanced Cervical Cancer? Intensity Modulated Proton Therapy versus Intensity Modulated Photon Treatment, Helical Tomotherapy and Volumetric Arc Therapy for Primary Radiation—An Intraindividual Comparison. *Radiation Oncology*, **10**, Article No. 91. https://doi.org/10.1186/s13014-015-0402-z

[5] Kirwan, J.M., Symonds, P., Green, J.A., Tierney, J., Collingwood, M. and Williams, C.J. (2003) A Systematic Review of Acute and Late Toxicity of Concomitant Chemoradiation for Cervical Cancer. *Radiotherapy and Oncology*, **68**, 217-226. https://doi.org/10.1016/s0167-8140(03)00197-x

[6] Aaronson, N.K., Ahmedzai, S., Bergman, B., Bullinger, M., Cull, A., Duez, N.J., *et al*. (1993) The European Organization for Research and Treatment of Cancer QLQ-C30: A Quality-of-Life Instrument for Use in International Clinical Trials in Oncology. *JNCI Journal of the National Cancer Institute*, **85**, 365-376. https://doi.org/10.1093/jnci/85.5.365

[7] Greimel, E.R., Kuljanic Vlasic, K., Waldenstrom, A., Duric, V.M., Jensen, P.T., Singer, S., *et al*. (2006) The European Organization for Research and Treatment of Cancer (EORTC) Quality-of-Life Questionnaire Cervical Cancer Module. *Cancer*, **107**, 1812-1822. https://doi.org/10.1002/cncr.22217

[8] Hailu, H.E., Mondul, A.M., Rozek, L.S. and Geleta, T. (2020) Descriptive Epidemiol-

ogy of Breast and Gynecological Cancers among Patients Attending Saint Paul's Hospital Millennium Medical College, Ethiopia. *PLOS ONE*, **15**, e0230625. https://doi.org/10.1371/journal.pone.0230625

[9] Andrianandrasana, N.O.T.F. (2011) Exclusive Chemotherapy in the Treatment of Cervical Cancer in the Absence of Radiotherapy. Thesis, Médecine Humaine: Antananarivo, 67 p.

[10] Cull, A., Cowie, V., Farquharson, D., Livingstone, J., Smart, G. and Elton, R. (1993) Early Stage Cervical Cancer: Psychosocial and Sexual Outcomes of Treatment. *British Journal of Cancer*, **68**, 1216-1220. https://doi.org/10.1038/bjc.1993.507

[11] Maduro, J.H., Pras, E., Willemse, P.H.B. and de Vries, E.G.E. (2003) Acute and Long-Term Toxicity Following Radiotherapy Alone or in Combination with Chemotherapy for Locally Advanced Cervical Cancer. *Cancer Treatment Reviews*, **29**, 471-488. https://doi.org/10.1016/s0305-7372(03)00117-8

[12] Herzog, T.J. and Wright, J.D. (2007) The Impact of Cervical Cancer on Quality of Life—The Components and Means for Management. *Gynecologic Oncology*, **107**, 572-577. https://doi.org/10.1016/j.ygyno.2007.09.019

[13] Lutgendorf, S.K., Anderson, B., Rothrock, N., Buller, R.E., Sood, A.K. and Sorosky, J.I. (2000) Quality of Life and Mood in Women Receiving Extensive Chemotherapy for Gynecologic Cancer. *Cancer*, **89**, 1402-1411. https://doi.org/10.1002/1097-0142(20000915)89:6<1402::aid-cncr26>3.0.co;2-h

[14] Araya, L.T., Gebretekle, G.B., Gebremariam, G.T. and Fenta, T.G. (2019) Reliability and Validity of the Amharic Version of European Organization for Research and Treatment of Cervical Cancer Module for the Assessment of Health Related Quality of Life in Women with Cervical Cancer in Addis Ababa, Ethiopia. *Health and Quality of Life Outcomes*, **17**, Article No. 13. https://doi.org/10.1186/s12955-019-1089-x

[15] Paradowska, D., Tomaszewski, K.A., Bałajewicz-Nowak, M., Bereza, K., Tomaszewska, I.M., Paradowski, J., *et al.* (2014) Validation of the Polish Version of the EORTC QLQ-CX24 Module for the Assessment of Health-Related Quality of Life in Women with Cervical Cancer. *European Journal of Cancer Care*, **23**, 214-220. https://doi.org/10.1111/ecc.12103

[16] Heijkoop, S.T., Nout, R.A., Quint, S., Mens, J.W.M., Heijmen, B.J.M. and Hoogeman, M.S. (2017) Dynamics of Patient Reported Quality of Life and Symptoms in the Acute Phase of Online Adaptive External Beam Radiation Therapy for Locally Advanced Cervical Cancer. *Gynecologic Oncology*, **147**, 439-449. https://doi.org/10.1016/j.ygyno.2017.08.009

[17] Park, S.Y., Bae, D., Nam, J.H., Park, C.T., Cho, C., Lee, J.M., *et al.* (2007) Quality of Life and Sexual Problems in Disease-Free Survivors of Cervical Cancer Compared with the General Population. *Cancer*, **110**, 2716-2725. https://doi.org/10.1002/cncr.23094

[18] Bifulco, G., De Rosa, N., Tornesello, M.L., Piccoli, R., Bertrando, A., Lavitola, G., *et al.* (2012) Quality of Life, Lifestyle Behavior and Employment Experience: A Comparison between Young and Midlife Survivors of Gynecology Early Stage Cancers. *Gynecologic Oncology*, **124**, 444-451. https://doi.org/10.1016/j.ygyno.2011.11.033

[19] Kumar, S., Rana, M.L., Verma, K., Singh, N., Sharma, A.K., Maria, A.K., *et al.* (2014) PrediQt-Cx: Post Treatment Health Related Quality of Life Prediction Model for Cervical Cancer Patients. *PLOS ONE*, **9**, e89851. https://doi.org/10.1371/journal.pone.0089851

[20] Verma, M., Singh, U., Rahman, Z., Qureshi, S. and Srivastava, K. (2019) Factors Af-

fecting Quality of Life of Cervical Cancer Patients: A Multivariate Analysis. *Journal of Cancer Research and Therapeutics*, **15**, 1338-1344. https://doi.org/10.4103/jcrt.jcrt_1028_17

[21] Shin, D.W., Nam, J.H., Kwon, Y.C., Park, S.Y., Bae, D., Park, C.T., *et al.* (2008) Comorbidity in Disease-Free Survivors of Cervical Cancer Compared with the General Female Population. *Oncology*, **74**, 207-215. https://doi.org/10.1159/000151368

[22] Bjelic-Radisic, V., Jensen, P.T., Vlasic, K.K., Waldenstrom, A., Singer, S., Chie, W., *et al.* (2012) Quality of Life Characteristics Inpatients with Cervical Cancer. *European Journal of Cancer*, **48**, 3009-3018. https://doi.org/10.1016/j.ejca.2012.05.011

[23] Luvián-Morales, J., Flores-Cisneros, L., Jiménez-Lima, R., Alarcón-Barrios, S., Salazar-Mendoza, J., Castro-Eguiluz, D., *et al.* (2021) Validation of the QLQ-CX24 Questionnaire for the Assessment of Quality of Life in Mexican Women with Cervical Cancer. *International Journal of Gynecological Cancer*, **31**, 1228-1235. https://doi.org/10.1136/ijgc-2021-002720

[24] Thapa, N., Maharjan, M., Xiong, Y., Jiang, D., Nguyen, T., Petrini, M.A., *et al.* (2018) Impact of Cervical Cancer on Quality of Life of Women in Hubei, China. *Scientific Reports*, **8**, Article No. 11993. https://doi.org/10.1038/s41598-018-30506-6