RESEARCH ARTICLE

Health Related Quality of Life and Religiosity of Women with Cervical Cancer in the Souss-Massa Region, Morocco: A Cross-Sectional Study

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Abstract

Background: Cervical cancer is a highly prevalent cancer among women, especially in low- and middle-income countries. This disease affects women in various ways and consequently impacts the quality of life of those diagnosed with this type of cancer. The aim of this study is to assess the quality of life and the degree of religiosity among women with cervical cancer in Morocco. **Methods:** This is a cross-sectional study conducted at the Regional Oncology Center in the Souss-Massa region of Morocco during the period from January to May 2024. A total of 80 patients with cervical cancer were surveyed using the two validated Moroccan versions of the European Organization for Research and Treatment of Cancer (EORTC QLQ-C30) module and the BIAC (Belief Into Action Scale). Mean scores were calculated, and the ANOVA test was used to examine the significance of the mean difference between variables. A stepwise multivariable logistic regression analysis was used to explore the predictive factors of health-related quality of life. **Results:** The average age of the patients was 56.1 ± 9.21 years. The mean overall quality of life score was 51.78 ± 30.06. Social functioning had the highest score (92.19 ± 21.90), while emotional functioning had the lowest score (62.55 ± 42). Pain (AOR= 6.98, 95% CI: 1.18-41.16) was associated with the patients' health-related quality of life. Regarding religiosity, the mean overall score on the BIAC scale was 54.17 ± 23.72. The patients' faith in God remained intact, but religious practice was significantly impaired. **Conclusion:** Cervical cancer significantly affects the health-related quality of life of patients. Consequently, efforts to improve quality of life should be undertaken, particularly in terms of emotional functioning, pain, and financial difficulties.

Keywords: Health Related Quality of life- cervical cancer- functioning- religiosity- BIAC

Introduction

Cervical cancer (CC) is a major public health concern. Around 604,127 individuals received a cervical cancer diagnosis in 2020, while 341,831 people worldwide lost their lives to the illness. It should be mentioned that less developed nations account for 85–90% of new cases and fatalities [1]. At an age-standardized incidence rate of 10.4 new cases per 100,000 women annually, cervical cancer ranks second in Morocco's cancer incidence rates among women, after breast cancer. The annual age-standardized death rate for women is 5.8 per 100,000 [2].

Quality of life is the subjective perception of the impact of the disease and its treatment on the patients' health status. It encompasses areas related to physical, functional, psychosocial or emotional functioning, which are used to examine the impact of the disease and its treatment on quality of life [3, 4]. It is a multidimensional and complex concept that reflects patients' experiences with the disease and its treatment [5].

Studies focusing on quality of life, particularly in oncology, have become an essential tool for evaluating patients' performance and their progress. Even though significant advances have been made in the treatment of cervical cancer, women with this disease suffer from its negative impact on their quality of life [6]. In a recent systematic review, women living with cervical cancer experience a decline in sexual function and quality of life

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for several reasons [7]. In fact, younger patients have a poorer body image and lower sexual/vaginal functioning compared to older patients [8]. Long-term quality of life can be affected in various ways for patients with cervical cancer. Anatomical changes resulting from the cancer or its treatment can permanently impair sexual function and reproductive capacity, significantly impacting self-image and social well-being [9]. Sexual functioning was mainly compromised due to physical discomfort, with a high incidence of hot flashes and vaginal dryness [10]. Financial difficulties, especially during the treatment period, also have a negative influence on quality of life, as women with CC need to visit the hospital daily during the treatment period, which could explain this observation [11].

Regarding spiritual well-being, women with cervical cancer had significant spiritual needs, and the majority of them were older. Spirituality is an important factor in the lives of the elderly, and spiritual well-being could affect their quality of life. A diagnosis of a life-threatening illness, such as cancer, may evoke patients' spiritual requirements. Evidence suggests that spiritual anguish or unfulfilled spiritual demands adversely impacts patients' health outcomes [12]. A study examining the relationship between quality of life and religiosity in women with breast cancer found that overall quality of life, as well as all subscales, was significantly greater in patients with high religiosity compared to those with moderate religiosity (P < 0.0001). The Pearson analysis demonstrated a substantial association between quality of life (both overall and its individual components) and religion (both overall and its individual components) (P < 0.0001) [13].

Given that cervical cancer and its treatment impact quality of life, the aim of this study is to assess the quality of life and explore the religiosity of Moroccan women with cervical cancer, with the goal of helping policymakers develop appropriate care strategies for women living with cervical cancer.

Materials and Methods

Study Design, Sampling and recruitment of participants

This is a cross-sectional study conducted in a hospital environment, focusing on cervical cancer patients who visited the Regional Oncology Center in the Souss-Massa region between January and May 2024. For the interview, 80 patients with a diagnosis of cervical cancer were contacted. The study comprised patients who had been diagnosed with cervical cancer, were at least eighteen years of age, could comprehend and provide consent for the survey questions, and could reply to them. Patients were excluded from the interview if they refused to participate, had undergone a hysterectomy, were unable to grasp the questionnaires as judged by their doctor, or had cognitive or behavioral impairments. The sample size was calculated based on a margin of error of 5.0% and a confidence interval (CI) of 95% for a proportion of Moroccan women living with cervical cancer of 4%. The sample size calculation was done via the sample size calculator site "Riskcalc" [14]. The minimum sample size

required for the study was 59 people. A 30% increase to compensate for women not wishing to participate in the study will be established at the sample size obtained. Thus, the women included in the study are 80 participants.

Measurement Instruments

We selected generic and disease-specific instruments commonly used to measure the quality of life and the degree of religiosity in cancer patients. We used two validated instruments adapted to the Moroccan population: EORTC QLQ-C30 and BIAC. The details of each tool and the sub-domains are described below.

EORTC-QLQ-C30

The EORTC QLQ-C30, 30-item instrument, is a psychometrically robust tool widely accepted across cultures and most frequently used to assess health-related quality of life. It is divided into 15 domains, including five functional subscales (physical functioning, role functioning, emotional functioning, cognitive functioning, and social functioning), three multi-item symptom subscales (fatigue, nausea/vomiting, and pain), a global health status/quality of life subscale, and six single items addressing various symptoms and perceived financial impact.

BIAC (Belief Into Action Scale)

Several approaches have been developed to comprehensively assess the many dimensions of religiosity. Belief Into Action scale (BIAC) was developed for this purpose to evaluate the extent to which personal beliefs translate into actual actions.

This scale is specifically designed to focus on religiosity, including cognitive and behavioral commitments, organizational activities with others, and private devotional activities. The BIAC determines how central God is in a person's life, surpassing all other interests. This was clearly stated in the original description of the measure: "People may say they believe, but what does that mean in terms of action? This 10-point scale is designed to transform ordinary belief into action, with action judged by what people say is most important in their life, how they spend their time, and where they invest their financial resources" [15].

Data Collection Procedures

Patients who met the eligibility criteria were consecutively recruited during their visit to the Regional Oncology Center in the Souss-Massa region, and a face-to-face interview was conducted to complete the questionnaires. Two final-year nursing students collected the data under the daily supervision of the principal investigator. The role of the data collectors was clearly defined, as well as the expectations placed upon them. Patients were informed that their responses would not influence the management of their case, and an informed consent script approved by the ethics committee was read to them by the nurses. The participants were assured of the confidentiality and anonymity of the information obtained.

Statistical Analysis

Descriptive statistics were used to summarize the sociodemographic characteristics of the patients. Mean scores were calculated, and the ANOVA test was used to examine the significance of the mean difference between variables. Stepwise multivariable logistic regression analysis was employed to explore predictive factors for health-related quality of life. For analytical purposes, we dichotomized the variables: Functional domains and global health/quality of life scores below 75 (a score above 75 indicates no problem) were considered "affected to some degree" (i.e., poor functioning and poor global health/quality of life), while for symptomatic domains, a score > 25 (below 25 indicates "no symptoms") was considered "affected to some degree." All statistical analyses were performed using Jamovi software version 2.3.28. All relevant tests were two-tailed; $p < 0.05$ was considered statistically significant.

Ethical Approval and Consent to Participate

The Biomedical Research Ethics Committee of the Faculty of Medicine and Pharmacy Mohammed V in Rabat approved this research (N/R: file number 72/23), and informed consent was obtained from each participating woman.

Results

Sociodemographic characteristics of the participants

A total of 80 patients participated in the study, with a mean age of 56.1 ± 9.21 years. The majority of the patients (77.5%) were married and unemployed (95%). Most of the patients (71.3%) resided in rural areas and had no formal education (68%). The median duration since cancer diagnosis was 12 months.

Health-related quality of life

The Cronbach's alpha index for internal reliability analysis of EORTC QLO-C30 scale is 0.94, indicating high internal consistency. The mean score for overall health status/quality of life was 51.78 ± 30.06. The multiple-item and single-item scales of the EORTC QLQ-C30 were also calculated, with mean scores for functional scales ranging from 62.55 ± 42.00 to 92.18 ± 21.90, with the lowest being emotional functioning and the highest being social functioning. For the symptom scales, all items indicated moderate to high symptoms, with the highest being pain (52.05 ± 39.82) (Table 1).

Differences between the mean scores of the EORTC QLQ-C30 scales with demographic and clinical characteristics

The comparison of different scores related to overall quality of life, functional quality of life, and symptoms revealed significant differences regarding dyspnea according to the age of the women (older women were more affected, p = 0.046) and loss of appetite according to the level of education (women with primary education were more affected, p = 0.011) (Table 2).

Predictive factors of health-related quality of life

The multivariable model of health-related quality of life outcomes revealed only one variable that showed a significant association with overall quality of life. Quality of life was significantly associated with pain (AOR = 6.98, 95% CI: 1.18-41.16) (Table 3).

Spiritual life of patients with cervical cancer

The internal consistency of the BIAC as a whole, and after the removal of each item from the scale to assess the impact of removal on the scale's reliability, is presented in Table 4. The BIAC scale had a Cronbach's alpha

Table 1. Mean (SD) of EORTC QLQ– C30 of Patients with Cervical Cancer at Regional Oncology Center in the Souss-Massa Region, Morocco.

Scale	EORTC QLQ-C30	Item Number	Mean ± SD
	Global Quality of Life	29, 30	51.78 ± 30.06
	Functional Quality of Life		
	Physical functioning	1 to 5	67.40 ± 38.68
	Role functioning	6, 7	68.10 ± 40.92
	Emotional functioning	21 to 24	62.55 ± 42.00
	Cognitive functioning	22, 25	70.16 ± 36.10
	Social functioning	26, 27	92.18 ± 21.90
EORTC QLQ-C30	Symptoms		
	Fatigue	10, 12, 18	36.21 ± 40.16
	Nausea/vomiting	14, 15	32.92 ± 36.79
	Pain	9, 19	52.05 ± 39.82
	Dyspnea	8	38.27 ± 39.12
	Insomnia	11	36.21 ± 41.23
	Loss of appetite	13	31.68 ± 37.23
	Constipation	16	25.51 ± 33.85
	Diarrhea	17	24.27 ± 34.96
	Financial difficulties	28	69.54 ± 37.71

Table 2. Mean Differences (Only the Significant Results) of EORTC QLQ-C30 Symptoms Scale with Demographic and Clinical Characteristics of Patients at Regional Oncology Center in the Souss-Massa region, Morocco

Variables	Age			P-value
	< 40 years	40 -50 years	> 50 years	0.011
Loss of Appetite	50 [16.7- 100]	66.7 [16.7- 83.3]	50 [33.3- 83.3]	
Variables	Education level			P- value
	Illiterate	Primary	Secondary	0.046
Dyspnea	0	0 [0- 33.3]	33.3 [0- 100]	

Table 3. Logistic Regression Analysis of Global Health Status/QoL of Moroccan Cervical Cancers Patients at Regional Oncology Center in the Souss-Massa Region, with socio-demographic, clinical characteristics subscale variables

Variables	Global Health status/QoL, n (%)		Odds ratio (95%CI)	
	Affected	Unaffected	COR	AOR
Age				
< 40 years	0	2 (2.5)	3.19e-8 [0-inf]	
40-50 years	21 (26.3)	5 (6.3)	2.10 [0.59- 7.41]	
50-60 years	20 (25)	5 (6.3)	2 [0.56- 7.09]	
> 60 years	18 (22.5)	9 (11.3)	1	
Time since diagnosis				
Less than 12 months	39 (48.8)	14 (17.5)	1	
1-5 years	20 (25)	7 (8.8)	1.03 [0.35- 2.95]	
Physical functioning				
Affected	32 (40)	1 (1.3)	23.70 [2.98- 188.34]	
Unaffected	27 (33.8)	20 (25)	1	
Role functioning				
Affected	29 (36.3)	1 (1.3)	19.33 [2.43- 153.55]	
Unaffected	30 (37.5)	20 (25)	1	
Emotional functioning				
Affected	36 (45)	4 (5)	6.65 [1.98- 22.27]	
Unaffected	23 (28.7)	17 (21.3)	1	
Cognitive functioning				
Affected	30 (37.5)	1 (1.3)	20.69 [2.60- 164.32]	
Unaffected	29 (36.3)	20 (25)	1	
Social functioning				
Affected	10 (12.5)	0	1.82e+7 [0.00- inf]	
Unaffected	49 (61.3)	21 (26.3)	1	
Fatigue				
Affected	34 (42.5)	2 (2.5)	12.92 [2.75- 60.62]	
Unaffected	25 (31.3)	19 (23.8)	1	
Nausea and vomiting				
Affected	35 (34.8)	6 (7.5)	3.65 [1.23- 10.73]	
Unaffected	24 (30)	15 (18)	1	
Pain				
Affected	46 (57.5)	6 (7.5)	8.84 [2.86- 27.37]	6.98 [1.18-41.16]
Unaffected	13 (16.3)	15 (18.8)	1	1
Dyspnea				
Affected	43 (53.8)	6 (7.5)	6.72 [2.22- 20.33]	
Unaffected	16 (20)	15 (18.8)	1	
Insomnia				
Affected	38 (47.5)	5 (6.3)	5.79 [1.85- 18.05]	
Unaffected	21 (26.3)	16 (20)	1	

COR, Crude odds ratio; AOR, Adjusted odds ratio

Table 3. Continued

Variables	Global Health status/QoL, n (%)		Odds ratio (95%CI)	
	Affected	Unaffected	COR	AOR
Loss of appetite				
Affected	35 (43.8)	6 (7.5)	3.65 [1.23- 10.73]	
Unaffected	24 (30)	15 (18.8)	1	
Constipation				
Affected	32 (40)	4 (5)	5.04 [1.51- 16.78]	
Unaffected	27 (33.8)	17 (21.3)	1	
Diarrhea				
Affected	25 (31.3)	6 (7.5)	1.84 [0.62- 5.40]	
Unaffected	34 (42.5)	15 (18.8)	1	
Financial difficulty				
Affected	54 (67.5)	15 (18.8)	4.32 [1.15- 16.13]	
Unaffected	5 (6.3)	6 (7.5)	1	

COR, Crude odds ratio; AOR, Adjusted odds ratio

Table 4. Internal Consistency Reliability Coefficients for the BIAC Scale and for the Scale after Individual Items Deleted.

	If item dropped
	Cronbach's α
Priority	0.731
Frequency of religious practice	0.695
Religious social gatherings outside of attendance	0.679
Religion and God's guidance	0.717
Time spent listening /watching to religious media	0.695
Percentage of annual income devoted to religion	0.709
Reading the Quran or other religious books	0.715
Time spent in prayer or meditation	0.696
Decided to conform life to religious teachings	0.719
Time devoted to religious volunteering	0.714
Total score	0.716

coefficient of 0.72, and the individual removal of items from the scale had little effect on its reliability (Table 4). The item scores ranged from 2.2 to 9.17 with item 9 of the BIAC (time spent on religious volunteering) receiving the lowest score and item 10 of the BIAC (the degree of compatibility of life with religious recommendations) receiving the highest score (Table 5).

To compare the BIAC scores according to the quality-of-life variables of women with cervical cancer, ANOVA test was conducted to identify statistically significant differences (Table 6). All comparisons identified statistically significant differences between the total BIAC score based on the quality-of-life variables except for two variables: family life disrupted by physical condition or treatment (Q26) and financial difficulties caused by physical condition or treatment (Q28) (Table 6). The correlation test revealed no relationship between the total BIAC score and overall quality of life (p = 0.680).

Discussion

This study aims to assess the quality of life and related characteristics, as well as to investigate the religiosity of Moroccan women diagnosed with cervical cancer. This study- according to our knowledge- is the first to evaluate both the QOL (Quality of Life) and the factors influencing it, as well as spirituality among Moroccan

Table 5. Descriptive Statistics for the BIAC (n = 80) of Moroccan Cervical Cancers Patients at Regional Oncology Center in the Souss-Massa Region

Item	Mean ± SD	Median	Range of score (min- max)
BIAC 1 (God highest priority in life now)	6.74 ± 1.66	7	1 to 10
BIAC 2 (frequency of religious attendance)	3.15 ± 3.20	1	1 to 10
BIAC 3 (religious social get-togethers besides attendance)	5.51 ± 3.79	6	1 to 10
BIAC 4 (decided to place life under God's direction)	9.11 ± 2.01	10	1 to 10
BIAC 5 (percent of annual income given to religious causes)	5.73 ± 2.47	6	1 to 10
BIAC 6 (time spent listening/viewing religious media)	4.78 ± 2.30	6	1 to 10
BIAC 7 (time spent reading the Quran)	2.96 ± 2.48	1.5	1 to 10
BIAC 8 (time spent in prayer or meditation)	4.82 ± 2.05	5	1 to 10
BIAC 9 (time devoted to religious volunteering)	2.2 ± 1.97	1	1 to 10
BIAC 10 (decided to conform life to religious teachings)	9.17 ± 1.79	10	1 to 10
Total score	54.17 ± 23.72	53.5	10 to 95

Table 6. Comparison of the Total BIAC Score According to the Quality-of-Life Variables (EORTC QLQ-C30) of Moroccan Cervical Cancers Patients at Regional Oncology Center in the Souss-Massa Region.

Variables	Not at all	A little	Moderately	A lot	P-value
Difficulty in making physical efforts	56.5±12.81	12±11.95	6±3.36	46.7±13.31	0.018
Difficulty in taking a long walk	57.7±11.1	58.5±15.1	53.9±10.5	44± 10.9	< 0.001
Difficulty in taking a short walk	56.4 ± 12	58.4 ± 16.9	52.9 ± 13.3	45.1 ± 11	0.025
Staying in bed	56.2 ± 12.4	60.8 ± 13.2	46.7 ± 11	46.1 ± 12.1	0.009
Need help to eat...	56.3 ± 12.2	64.7 ± 22.3	49.7 ± 11.1	46 ± 11.5	0.011
Limited work	56 ± 12.9	61 ± 10.8	52.6 ± 11.1	44.4 ± 10.8	0.001
Total incapacity	56.2 ± 12.65	63.6 ± 9.95	52.6± 11.08	44.2 ± 10.53	< 0.001
Difficulty breathing	59.1 ±12.73	54.7 ± 12.31	54.8 ± 5.12	44.4 ± 11	0.001
Pain	59.3 ± 12.93	54.1 ± 15.15	56.5 ± 9.71	47.8 ± 11.68	0.006
Need for rest	56.6 ± 11.58	62 ± 13.42	53.8 ± 9.58	43.3 ± 10.43	< 0.001
Difficulty sleeping	56.3 ± 12.08	56.8 ± 11.51	57 ± 8.86	45.7 ± 14.54	0.017
Feeling weak	57 ± 11.78	58.3 ± 13.12	57.2 ± 9.47	42.9 ± 10.63	< 0.001
Loss of appetite	56.1 ± 12.2	58.8 ± 11.7	52.9 ± 10.8	40.9 ± 11.3	< 0.001
Feeling nauseous	56.9 ± 12	56.1 ± 11.3	55.9 ± 16.4	42.8 ± 11	0.002
Vomiting	56.8 ± 11.3	54.9 ± 14.9	54 ± 10.93	40 ± 10.53	0.004
Constipated	54.2 ± 13.61	59.9 ± 9	54 ± 10.93	40 ± 10.53	0.004
Diarrhea	55.1 ± 10.99	55 ± 9.49	62.3 ± 16.99	37.8 ± 12.40	< 0.001
Feeling tired	57.4 ± 12.3	60.1± 10.8	51.2 ± 11.5	43.5 ± 10.5	< 0.001
Disruptive pain	57.9 ± 13.7	61.4 ± 10.3	52.7 ± 11.3	46.8 ± 11.3	<0.001
Difficulty concentrating	56.8 ± 12.26	62.8 ± 10.5	53 ±13	42 ± 8.90	< 0.001
Feeling tense	55.8 ± 12.5	60.2 ± 13.4	54 ± 10.3	47.1 ± 12.3	0.02
Worrying	56 ± 12.5	59.6 ± 14	55.6 ± 10.2	46.3 ± 12	0.012
Feeling irritable	55.2 ± 11.9	62.9 ± 12.7	51.8 ± 12.8	46.3 ± 12	0.002
Feeling depressed	54.6 ± 12.3	62.2 ± 11.7	49.8 ± 11.9	47.1 ± 12.3	0.003
Difficulty remembering things	55.1 ±14.65	59 ± 10.77	53.2 ± 9.82	43.5 ± 7.58	0.007
Disturbance in family life	54.2 ±13.63	57.7 ± 9.45	41.3 ± 3.06	59 ± 0	0.34
Financial problems	56.2 ± 14.7	53.8 ± 12.9	59.1 ± 13.5	52.1 ± 12.6	0.417

survivors of cervical cancer. Overall, pain and dyspnea are the most frequently reported symptoms by the patients. The symptom domain of QOL for most patients in this study was generally poor, with the exception of diarrhea. Regarding functional quality of life, the scores in the domains of physical functioning, role functioning, emotional functioning, and cognitive functioning were relatively low. The average score for general health/QoL was low, which is consistent with Iranian and Chinese results [16, 17], but lower than the Romanian and Ghanaian studies [18, 19]. This can be explained by the fact that cervical cancer survivors have to deal with the aftermath of treatment, which leads to a deterioration in their quality of life (QoL), as well as cultural beliefs, distorted perceptions of the disease, and low self-esteem [10]. In this study, diarrhea was one of the least reported symptoms among cervical cancer survivors, which is similar to a study conducted in India [20]. However, a study conducted in Morocco showed that diarrhea was the most frequently reported symptom [21]. This could be due to the different treatment protocols used for managing cervical cancer in different countries. The participants reported fairly good physical functioning (67.40±38.68), contrary to two studies conducted in Ethiopia and Ghana,

which highlighted that women with cervical cancer exhibit impaired physical function [8, 22]. Regarding emotional functioning, the participants had an average score of (62.55±42.00), with similar results obtained in a study conducted in Ghana [22]. Nevertheless, in a study conducted in Taiwan, emotional well-being is impaired by radiotherapy [23]. The participants showed a very high social functioning score (92.18±21.90) contrary to a study that showed that social problems have an impact on the quality of life of women with cervical cancer which was manifested by mood disorders, stress, altered body image, and fear of recurrence [24]. Regarding cognitive functioning (70.16±36.10), the study by Xiao et al,. reported a higher score (82.66±22.65) [25]. For role functioning, the participants had a score of (68.10±40.92), a similar finding was reported in previous studies [8, 23]. The evaluation of symptomatic dimensions revealed that "pain", "dyspnea", "fatigue", and "insomnia" were the most affected by cervical cancer, while the dimensions "constipation" and "dyspnea" were the least affected among patients, which is consistent with the literature [26].

As for the spiritual aspect, the total score on the BIAC scale was 54.17 ± 23.72. This result is higher than that of another study conducted in Portugal where the

score did not exceed 29.53 ± 15.61 [27]. The religious practices of the participants were significantly altered, but their faith in God remained intact which is consistent with the results of another study conducted in Indonesia that highlighted that women with cervical cancer do not always manage to perform prayers and ablutions [12]. Similarly, in another study, African Americans, Asians, Latin Americans, and Euro-Americans with cervical cancer recognized the importance of faith and spirituality in coping with cervical cancer [28]. This suggests that a holistic approach that considers the spiritual aspect of cancer patients significantly contributes to improving quality of life, care satisfaction, and overall survival [29]. Similarly, patients who received less spiritual care than desired reported more depressive symptoms and less sense of meaning and peace [30].

In conclusion, cervical cancer significantly diminishes the quality of life for women on multiple levels, rendering the experience increasingly arduous. The emotional functioning of Moroccan women undergoing treatment at the regional cancer facility in the Souss-Massa region is markedly affected, with pain being the only factor associated with quality of life. Spiritual life undeniably alleviates the effects of this sickness. Our study indicates that women with substantial social support encounter the condition with reduced difficulty and exhibit a more favorable response to treatment. Healthcare workers must consistently acknowledge the spiritual dimensions of their patients and support their religious activities, which substantially enhance their quality of life.

Author Contribution Statement

AA contributed to the conception and design of the study, drafted the manuscript and provided final approval of the version to be published. ME, HA were responsible for the acquisition and interpretation of data. MS, HB creation and processing of databases and calculation of scores. SA, LL conducted the statistical tests and assessed their validity. MO and RR participated in the conceptualization and design of the study, supervised the study, and reviewed the results and final approval of the manuscript. All authors participated in the review of the manuscript and final approval of the manuscript.

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Abbreviations
ANOVA: Analyze of variance; AOR: Adjusted odds ratio; BIAC: Belief Into Action Scale; CC: cervical cancer; EORTC QLQ-C30: European organization for research and treatment of cancer module; QOL: Quality of Life; SD: standard deviation.

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