

# Quality of life components in women with cervical cancer post-diagnosis

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**Introduction.** A cervical cancer (CC) diagnosis can significantly impact an individual's quality of life (QoL) across many domains. This study aimed to identify QoL components in women diagnosed with CC post-diagnosis, and compare them to healthy controls.

**Material and methods.** QoL was assessed using the SF-36 survey and six-item Female Sexual Function Index in 60 women diagnosed with CC pre-treatment and 60 healthy women.

**Results.** The women with CC scored significantly lower on physical functioning (M = 53.56 vs. 69.69), psychological functioning (M = 35.33 vs. 85.67), and sexual functioning (M = 32.50 vs. 88.50) compared to controls (all p < 0.001).

**Conclusions.** A CC diagnosis was associated with markedly reduced QoL in physical, psychological, and sexual domains, even pre-treatment. Early screening and support for psychological and sexual wellbeing should be integral in CC patient care.

**Keywords:** cervical cancer, quality of life, sexual functioning

## Introduction

Cervical cancer (CC) is a frequently occurring cancer worldwide. In Poland, around 1.17 million people currently live with cancer. Due to medical advancements and improved treatment availability, cancer is becoming a chronic condition with decreasing mortality rates [1, 2]. However, CC diagnosis and treatment can still disrupt quality of life (QoL). Thus, research on the QoL of oncology patients is increasing.

The concept of QoL has evolved over the years. The definitions have changed to include various factors that contribute to a high QoL. The World Health Organization (WHO) defines QoL as “an individual's perception of their position in life in

the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” [3]. However, the disease is understood as a disturbing event that can disrupt a person's functioning to varying degrees. It can significantly impact the fulfillment of previous social roles [4, 5], limit social interactions [6], and lead to a sense of insecurity, depression, or anxiety [5, 7]. The WHO recognizes sexual functioning as another vital QoL component [8]. However, sexuality is often overlooked as less important than other aspects of functioning. Importantly, sexual functioning includes self-image, relationships, and intimacy [9, 10], which change during illness and may become more important than

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previously. Moreover, as CC increasingly affects younger individuals [1], addressing sexuality is critical also because of fertility issues.

Hence, the research on QoL involving psychosexual functioning has highlighted the need for a holistic, systematic approach to patient care. Gynecological cancers and treatments directly impact physical, emotional, and sexual wellbeing. Also, genital cancer localization may influence sexuality and body image perceptions [11]. Moreover, available studies have focused on QoL during/after treatment, which disrupts functioning [12]. However, the diagnosis itself could lower actual QoL [13], making assessment at different stages valuable.

This study aimed to identify QoL components in women diagnosed with CC post-diagnosis and compare them to healthy controls, as part of a broader effort exploring CC patients' psychosexual correlates of QoL. Based on the literature, QoL was conceptualized across three areas: physical, psychological, and sexual functioning. This study focused on CC patients due to CC's rising incidence, even among younger women [1], in the post-diagnosis, pre-treatment period.

## Material and methods

This study was conducted at the Radiotherapy and Clinical Brachytherapy departments, Oncology Center in Bydgoszcz, Poland. A bioethics committee approval and informed consent were obtained. The data were collected January 2022–October 2022.

### Participants

An experimental group was comprised of 60 women diagnosed with stage IIb–IIIa CC, pre-radiotherapy/brachytherapy. A control group included 60 healthy women, purposely selected to match the experimental group in gender, age, and education. The participants were recruited via snowball sampling. They were unpaid volunteers. The inclusion criteria were:

- participants aged 40–65, representing middle adulthood;
- participants diagnosed with CC in stages II to III according to the International Federation of Gynecology and Obstetrics (FIGO);
- participants undergoing radiotherapy or brachytherapy; and
- participants without any medical and psychological conditions potentially affecting their sexual functioning.

### Study method

Quality of life was assessed using the 36-Item Short Form Survey (SF-36) that is a part of the Medical Outcomes Study (MOS). The SF-36 overall assesses two components (physical and mental functioning), and includes subscales addressing eight health concepts (physical functioning, role limitations due to physical health problems, bodily pain, general health, vitality, social functioning, role limitations due to emotional health problems, mental health) [14]. All necessary agreements

were obtained from the questionnaire's authors. The reliability in the study was  $\alpha = 0.93$ .

As the SF-36 does not include the sexual functioning component, the six-item Female Sexual Function Index (FSFI) was used. The survey measures five domains, including sexual desire arousal, lubrication, orgasm, satisfaction, and pain [15]. The reliability in the study was  $\alpha = 0.87$ . Per the broader scope of the study, a more extensive set of questionnaires was employed, hence the authors opted to use the short version of the FSFI to prevent patient exhaustion.

### Statistical analysis

All analyses were performed using IBM's SPSS (Version 26). Descriptive statistics were employed to summarize the demographic and clinical characteristics of the patients. Reliability was assessed using Cronbach's  $\alpha$ . Bivariate analyses, including the Student's *t*-test and ANOVA, all were utilized depending on the distribution of the scales which was assessed using the Shapiro-Wilk test.

## Results

The sample comprised 120 women, with 60 women diagnosed with CC and 60 healthy controls. The average age in the CC group was 55.75 ( $\pm 6.27$ ) years, while in the control group it was 52.13 ( $\pm 6.46$ ) years. Approximately 63.33% of the women in both groups resided in urban areas. Most of the women reported being in a formal relationship (73% of the CC group; 70% of the controls). Educational backgrounds were equally distributed between the groups. In the CC group, 36.67% ( $n = 22$ ) had vocational education, 30.00% ( $n = 18$ ) had secondary education, and 33.33% ( $n = 20$ ) had higher education. In the control group, 25% ( $n = 15$ ) had vocational education, 33.33% ( $n = 20$ ) had secondary education, and 41.67% ( $n = 25$ ) had higher education.

Sixty percentage ( $n = 36$ ) of the CC patients and 61.67% ( $n = 37$ ) of the healthy controls reported coexisting medical conditions, most commonly hypertension, thyroid dysfunction, and diabetes. Among the CC group, the average time between diagnosis and examination was 4.06 ( $\pm 1.91$ ) weeks, and between hospital admission and examination was 2.13 ( $\pm 1.23$ ) days. In terms of treatment, 48.33% ( $n = 29$ ) were undergoing radiation therapy and 51.67% ( $n = 31$ ) were undergoing brachytherapy; 51.67% ( $n = 31$ ) had stage II CC and 48.33% ( $n = 29$ ) had stage III CC.

The CC patients scored significantly lower on all the QoL components. Their average physical functioning score was 53.56 ( $\pm 2.92$ ) vs. 69.69 ( $\pm 10.45$ ) in controls ( $p < 0.001$ ). Their average psychological functioning score was 35.33 ( $\pm 4.95$ ) vs. 85.67 ( $\pm 9.82$ ) in the controls ( $p < 0.001$ ). Their average sexual functioning score was 32.50 ( $\pm 3.39$ ) vs. 88.50 ( $\pm 3.86$ ) in the controls ( $p < 0.001$ ).

Table I presents clinical data related to CC. The average time between diagnosis and examination was 4.06 weeks ( $\pm 1.91$ ). It

**Table I.** Clinical data related to cervical cancer

|  | M    | SD     |
|--|------|--------|
| Time between diagnosis and examination [weeks]         | 4.06 | ± 1.91 |
| Time between hospital admission and examination [days] | 2.13 | ± 1.23 |
| Treatment applied                                      | n    | [%]    |
| Radiation therapy                                      | 29   | 48.33  |
| Brachytherapy  | 31   | 51.67  |
| Disease stage  | n    | [%]    |
| I  | 0    | 0.00   |
| II   | 31   | 51.67  |
| III  | 29   | 48.33  |
| IV   | 0    | 0.00   |

SD — standard deviation

**Table II.** Quality of life components' descriptive statistics

| Quality of life           | CC patients    |                 | Healthy individuals |                 |
|---------------------------|----------------|-----------------|---------------------|-----------------|
|                           | M (±)          | Range (min–max) | M (±)               | Range (min–max) |
| Physical functioning      | 53.26 (± 2.92) | (45.14–58.40)   | 69.69 (± 10.45)     | (40.50–91.00)   |
| Psychological functioning | 50.10 (± 4.95) | (37.52–57.16)   | 69.34 (± 9.82)      | (46.50–89.50)   |
| Sexual functioning        | 9.62 (± 3.39)  | (5.00–16.00)    | 18.65 (± 3.86)      | (12.00–28.00)   |

CC — cervical cancer

is important to note that the assessment was conducted prior to the initiation of appropriate treatments to minimize the potential side effects' impact on QoL. The average time between hospital admission and examination was 2.13 days ( $\pm 1.23$ ); 48.33% ( $n = 29$ ) of the patients underwent radiation therapy, and 51.67% ( $n = 31$ ) underwent brachytherapy; 51.67% ( $n = 31$ ) were diagnosed with stage II CC and 48.33% ( $n = 29$ ) were diagnosed with stage III CC according to the FIGO criteria. Table II refers to the QoL components' descriptive statistics. The lowest levels of QoL were reported by the group with CC. The QoL components are compared in Table III.

## Discussion

This study aimed to gather information about the QoL of women diagnosed with CC after their diagnosis and compare it with that of healthy women. In the study, both the psychological and physical aspects of QoL were found to be significantly lower in CC patients than in healthy controls, which is consistent with previous reports. In other studies using the SF-36, the average score for physical functioning was 50.99, and for psychological functioning it was 53.17 [16–18]. Summarized norms for the SF-36 show that the average score for women aged 35–64 is 80.33 for physical functioning and 78.55 for psychological functioning [19]. This suggests a significantly

**Table III.** Comparison of quality of life components

|                           | CC patients      | Healthy individuals |
|---------------------------|------------------|---------------------|
| Physical functioning      | Mean: 53.56      | Mean: 69.69         |
|                           | t value: –10.81  |                     |
|                           | df: 118          |                     |
|                           | p value: < 0.001 |                     |
| Psychological functioning | Mean rank: 35.33 | Mean rank: 85.67    |
|                           | U: 290.00        |                     |
|                           | Z: –7.926        |                     |
|                           | p value: < 0.001 |                     |
| Sexual functioning        | Mean rank: 32.50 | Mean rank: 88.50    |
|                           | U: 120.00        |                     |
|                           | Z: –8.832        |                     |
|                           | p value: < 0.001 |                     |

CC — cervical cancer; df — degrees of freedom; U — U statistic; Z — Z-scored

lower QoL in the CC group, not only in the present study but also when compared to the general population. Furthermore, the average score for sexual functioning was 9.62, significantly

lower than the cutoff point for possible sexual dysfunction (a score of 19 or less) [15].

This study's findings can be interpreted considering the distinction between objective and subjective QoL [20]. In its early stages, CC is often asymptomatic [21]; thus, objective QoL indicators related to daily functioning may not yet deteriorate. However, a patient's subjective appraisal of life and wellbeing seems relevant. A cancer diagnosis and the associated stress can disrupt psycho-physical functioning, even pre-treatment [13]. Prolonged tension may lead to somatic issues like fatigue, sleep disruption, decreased energy, and limited daily activity [22]. Additionally, having to organize life around cancer treatment (e.g., involving work absences and delegation of duties) negatively impacts social and emotional functioning. Also, fear about one's health and life, exacerbated by cognitive distortions, may intensify depression and anxiety symptoms. According to previous research, oncology patients often exhibit cognitive errors such as discounting positives, fortune telling, catastrophizing, or overgeneralizing. Expecting both the situation and the future to be worse than reality may lead to a significant decline in the emotional component of QoL before treatment even begins. Additionally, it is essential to note that the patients studied were diagnosed with advanced cervical cancer, which could also contribute to increased stress and fear, potentially affecting their subjective quality of life [23].

The observed decrease in sexual functioning at the post-diagnostic stage is also concerning. When analyzing the results obtained, it is crucial to consider specific questions from the tool used. The tool assesses sensations and sexual responses over the 4 weeks previously, so for the patients it was a period shortly after their diagnosis. Moreover, an analysis of individual questions revealed that none of the patients had engaged in vaginal intercourse. That said, most of them indicated that they had engaged in various sexual activities during this time, such as kissing or caressing. The results obtained are consistent with previous studies in which sexual functioning was significantly lower in CC patients. However, these studies focused on periods during or after treatment, when significant changes may be caused by the treatment, such as vaginal dryness, anatomical alternations in vaginal structure, or dyspareunia [24, 25]. Changes in sexual functioning can result from subjective changes in the perception and attitude towards one's own sexuality [26]. Sexual activity is crucial for fulfilling physical needs, but it also aims to create and maintain intimacy between partners or to confirm one's attractiveness [27, 28]. A stressful event, such as a cancer diagnosis, can lead to a decrease in sexual needs and a perception that sexual activity is less important. However, engaging in sexual activity — understood as a form of closeness and intimacy with a partner — could be helpful in maintaining wellbeing and reducing stress. Nho [29] and Jang [30] created two separate training programs aimed at educating gynecological cancer patients and their partners about sexual health. They found

that couples who participated in these programs showed significantly higher sexual functioning compared to couples who did not participate. These findings highlight the importance of addressing the sexual well-being of cancer patients as a part of their overall care and support.

The present findings highlight an urgent need to provide women with CC comprehensive, interdisciplinary care encompassing psychological and sexual aspects that starts immediately after diagnosis. Further research into psychosexual functioning changes at different cancer stages is warranted to optimize therapeutic strategies. Ultimately, the results demonstrate that a CC diagnosis itself exerts a profoundly detrimental impact on women's QoL across physical, mental, and sexual domains. This underscores the necessity of implementing comprehensive psychological and sexual support as the standard of care for female cancer patients from the earliest possible stage.

The study has several limitations. The study's relatively small sample size and the selection of the sample (snowball sampling) limit the generalizability of the results. The study's cross-sectional design limited the ability to observe changes during treatment. A longitudinal strategy would yield more information about general quality of life over the period. Furthermore, the study focused on specific aspects of sexual functioning related to the sexual response cycle. Assessing sexual distress could have added a new dimension to the study's findings. Future research might consider including patients with various stages of the disease, including those undergoing surgical and palliative treatments. It would also be valuable to investigate the experiences of cancer patients with different types of cancer, as well as younger individuals, to understand how their sexuality evolves.

### **Clinical implications**

Despite several limitations, assessing pre-treatment QoL was a strength of this study, demonstrating the need for early psychological interventions as standard care to improve patient experiences. Our results also highlight the importance of incorporating sexual functioning within the broader QoL framework and addressing patient sexual wellbeing proactively from diagnosis, ensuring comprehensive, holistic care from the outset, and providing insights into the multifaceted issues patients encounter throughout their cancer journey.

Additionally, by addressing psychological and sexual wellbeing right from diagnosis, healthcare professionals can better understand and handle the myriad concerns that arise from patients during treatment and beyond. A proactive approach would help patients receive well-rounded care from the start, thereby enhancing the overall patient experience.

### **Conclusions**

Overall, this study found significantly poorer physical, psychological, and sexual QoL ratings of women diagnosed with CC

starting immediately after receiving the diagnosis even before the initiation of treatment. Our findings emphasize the need for early intervention and holistic care that addresses patients' psychological and sexual wellbeing as an integral component of care to improve cancer patients' overall QoL.

## Article information and declarations

### Data availability statement

Data will be made available by the authors upon reasonable request.

### Ethics statement

Bioethics Committee approval and informed consent were obtained.

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### Conflict of interest

None declared.

### Supplementary material

None.

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