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Quality of Life After Abdominoperineal Resection for Rectal Carcinoma

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Abstract **Original Research Article**

Background: Abdominoperineal resection (APR) has long been a standard treatment for rectal cancer, particularly for tumors located very distally or in patients with poor sphincter function. Despite the rise of sphincter-sparing techniques, APR remains essential in certain cases. This study aims to evaluate the impact of APR on the quality of life (QoL) in rectal cancer patients. ***Objective:*** To assess the quality of life in rectal cancer patients following APR, focusing on physical, psychological, sexual, and social functioning. ***Method:*** This prospective observational study was conducted at Sher-e-Bangla Medical College & Hospital, Barisal, over six months (July-December 2015). Patients who underwent APR for rectal cancer and were at least three months post-surgery were included. QoL was evaluated based on patients' self-assessments across four dimensions: physical, psychological, sexual, and social functioning. ***Result:*** The study included patients with a mean age of 48 years (range: 23-75 years), with 40% being early middle-aged (31-40 years). Stoma-related issues were reported by 56% of patients, while 64% experienced odor problems. Psychological distress was prevalent, with 52% feeling discomfort, 44% experiencing depression or anxiety, and 12% reporting suicidal tendencies. Sexual dysfunction was significant, affecting 55% of men, with 83.8% completely impotent. Social functioning was compromised, with 42% reducing social activities. Overall, 24% of patients rated their QoL as poor, 14% as extremely poor, 26% as average, and 36% as good. ***Conclusion:*** Rectal cancer patients post-APR experience considerable limitations across all QoL dimensions, underscoring the need for targeted interventions to improve their overall well-being.

Keywords: Rectal cancer, Abdominoperineal resection, quality of life, Sexual dysfunction, psychological distress.

INTRODUCTION

Colorectal cancer is a significant global public health concern, with approximately 1.2 million new cases and over 630,000 deaths annually, accounting for nearly 8% of all cancer-related deaths [1]. It is the fourth most common cancer in men and the third most common in women worldwide. In the United States, colorectal cancer ranks as the third and second most common cancer among men and women, respectively, with an age-adjusted incidence rate of 46.5 per 100,000 in males and 33.2 per 100,000 in females [2]. These figures are consistent with data from Western European countries, including the Netherlands, where approximately half of colorectal tumors are localized in the recto-sigmoid region. Patients with tumors situated in the lower rectum (0-5 cm from the anal verge) often require an abdominoperineal resection (APR), which results in a permanent colostomy. APR, a procedure developed over a century ago, involves the complete removal of the distal colon, rectum, and anal sphincter complex through both abdominal and perineal incisions [3]. Despite advancements in sphincter-sparing techniques, APR remains an important treatment for rectal cancer.

Quality of life (QoL) considerations are crucial when selecting appropriate treatments for low rectal cancers. Numerous studies have compared the QoL of patients undergoing APR with those undergoing sphincter-saving resections (SSR). For instance, D'Ambrosio found that only 40% of APR patients returned to work compared to 83% of SSR patients [4]. Other studies have supported these findings. In men, APR can result in nerve damage affecting sexual function, while in women, the nerve supply is largely preserved, allowing for the potential maintenance of sexual function [5]. As surgical techniques have advanced, the QoL differences between APR and SSR have diminished. For example, Haribhakti noted that difficulties with evacuation and incontinence in very low

SSR could offset the sexual dysfunction observed in APR [6]. Moreover, studies such as those have found that bowel and urogenital dysfunction, rather than the presence of a stoma, are significant determinants of QoL deficits following rectal cancer surgery.

Given the evolving landscape of rectal cancer treatment, it is essential to understand how different surgical techniques impact patients' QoL. QoL is a multidimensional construct encompassing physical, psychological, social, and sexual functioning [7]. Recognizing the importance of patient-reported outcomes, this study aims to assess QoL following APR for rectal carcinoma and explore the future implications of this procedure. As QoL becomes increasingly recognized as a critical outcome measure, it may influence clinical practice decisions between APR and low anterior resection (LAR) [8]. Although LAR is often preferred when a tumor-free distal resection margin is achievable, the high incidence of postoperative complications, particularly anastomotic leakage, raises concerns [9]. Moreover, recent reviews challenge the assumption that avoiding a permanent stoma necessarily improves HRQL, suggesting no significant impact of a stoma on HRQL. This study seeks to investigate these issues further, examining the QoL outcomes for rectal cancer patients following APR and the potential future of this procedure.

OBJECTIVES

General Objectives

- To evaluate the quality of life in rectal cancer patients after APR with permanent colostomy.

Specific Objectives

- To study the prevalence of physical dysfunction among rectal cancer patients who underwent APR with permanent colostomy
- To assess the prevalence of psychological dysfunction among APR patients with permanent colostomy.
- To study the prevalence of self-reported sexual dysfunction among APR patients with permanent colostomy.
- To evaluate the prevalence of social dysfunction among rectal cancer patients who underwent APR with permanent colostomy.

MATERIALS & METHODS

Study Design

This study employed a prospective observational design to assess the quality of life in patients following abdominoperineal resection (APR) for rectal carcinoma. The design was chosen to observe and evaluate the outcomes over time without intervening, allowing for natural data collection from patients post-surgery. Conducted at Sher-e-Bangla Medical College & Hospital in Barisal, the study spanned six months, from July to December 2015. Data were gathered through patient interviews, clinical examinations, and laboratory tests, focusing on physical, psychological, sexual, and social functioning to comprehensively assess post-APR quality of life.

Inclusion Criteria

Patients with the following characteristics were included in the study

- Patients with abdominoperineal resection for rectal cancer who were minimally 3 months post-surgery.
- Having Hartmann's operation and
- Patients voluntarily consented to participate in the study.

Exclusion Criteria

Patients with the following characteristics were excluded from the study

- Patients physically too weak to participate in the study
- Patients refused to participate in the study voluntarily

Data Collection

Data were collected through patient interviews, clinical examinations, and selected laboratory tests. The interviews focused on gathering patient-reported outcomes related to physical, psychological, sexual, and social functioning. Clinical examinations provided objective measures of the patients' health status post-surgery. Additionally, relevant laboratory tests were conducted to complement the clinical findings. The data collection was structured using predefined research instruments, ensuring consistency and accuracy. All data were meticulously recorded and later analyzed to evaluate the overall quality of life in patients undergoing abdominoperineal resection for rectal carcinoma.

Statistical Analysis

The collected data were analyzed using SPSS version 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the data. These statistics provided insights into the prevalence of physical, psychological, sexual, and social dysfunction among the study participants. Data were organized into tables and charts to facilitate clear interpretation and comparison. Cross-tabulations and other relevant statistical tests were employed to explore associations between different variables. The analysis aimed to provide a comprehensive understanding of patient's quality of life outcomes following abdominoperineal resection for rectal carcinoma.

RESULT

The present study intended to find the quality of life after abdominoperineal resection (APR) of rectal carcinoma, including a total of 50 patients who underwent APR at Sher-e-Bangla Medical College

Hospital, Barishal. The findings obtained from the data analysis are presented below:

Table 1: Age, Sex Distribution of the Patients (n = 50)

Demographic Characteristics	Frequency	Percentage (%)	p-value
Age (years)			
≤ 30	1	2.0	0.045
31 – 40	20	40.0	0.032
41 – 50	17	34.0	0.056
51 – 60	6	12.0	0.082
> 60	6	12.0	0.068
Sex			
Male	31	62.0	0.015
Female	19	38.0	0.015

The study's Mean age = 46.38 ± 11.48 years; range = 23 – 75 years; age distribution reveals that most patients were aged 31-40 years (40%), followed by those aged 41-50 years (34%). Patients aged 51-60 and over 60 accounted for 12% each, with only 2% under 30 years. The p-values indicate varying levels of statistical significance across age groups, suggesting potential age-related differences in the patient population. The mean age was 46.38 years, ranging from 23 to 75 years.

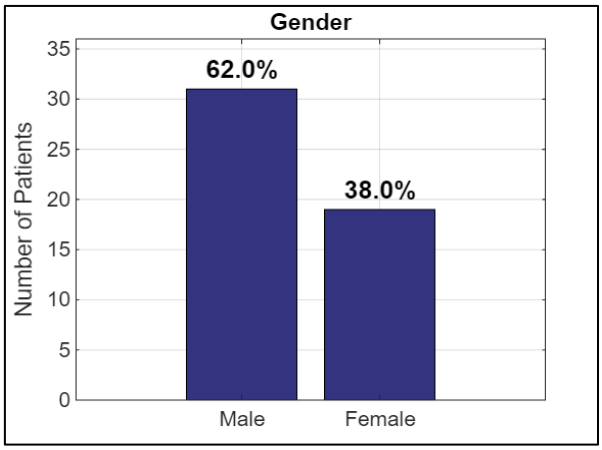

Figure 1: Distribution of patients according to sex

The sex distribution in the study shows a male predominance, with 62% of the patients being male and 38% female. The p-value of 0.015 indicates a statistically significant difference between the sexes, suggesting that males were more commonly affected in this patient population.

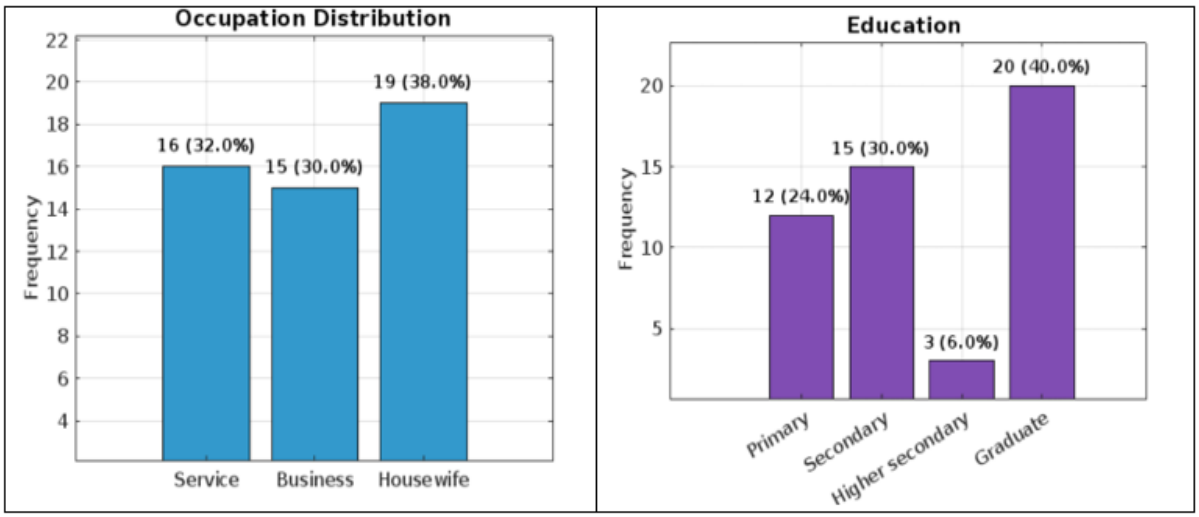

Figure 2: Distribution of Patients by Occupation and Education Levels

The study's demographic analysis reveals that the majority of patients were housewives (38%), followed by those in service (32%) and business (30%). Education levels varied, with 40% graduates, 24% having primary education, 30% having secondary education, and 6% having higher secondary education.

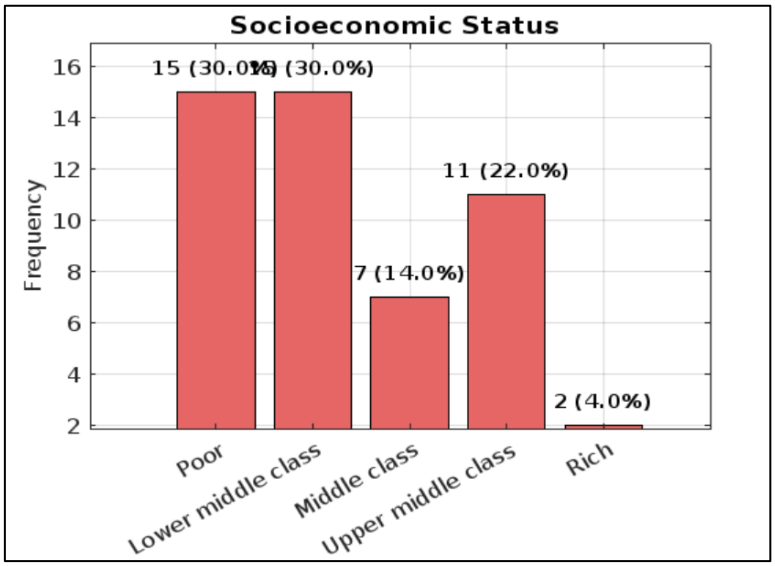

Figure 3: Distribution of Patients Demographic Features (n = 50)

The patients' socioeconomic status shows a significant proportion belonging to the poor and lower middle class, each representing 30%. Middle-class patients comprised 14%, while 22% were from the upper middle class. Only 4% were categorized as rich, highlighting economic disparities within the group.

Table 2: Distribution of Patients by Physical Functioning (n = 50)

Physical Functioning	Frequency	Percentage (%)	p-value
General State of Health			
Poor	5	10.0	0.023
Average	29	58.0	0.047
Good	16	32.0	0.041
Work Activity			
Returned to work	31	62.0	0.030
Decreased work activity	19	38.0	0.030
Diet			
Normal	25	50.0	0.054
Changed	10	20.0	0.063
3 – 5 restricted diet	15	30.0	0.048
Stoma-related Problems	28	56.0	0.029
Odor Problems	32	64.0	0.026
Bladder Problems			
Increased frequency	8	16.0	0.039
Incontinence	42	84.0	0.039
Continence	0	0.0	—

The physical functioning data reveals that 58% of patients had an average general state of health, with 32% reporting good health and 10% poor health. Work activity was maintained by 62%, while 38% experienced decreased activity, with significant p-values (0.023 to 0.047). Dietary changes were noted in 50% of patients, with 30% on restricted diets (p-values ranging from 0.048 to 0.063). Stoma-related and odor problems were prevalent in 56% and 64% of patients, respectively (p-values of 0.029 and 0.026). Bladder issues were common, with 84% experiencing incontinence and 16% increased frequency, both statistically significant (p = 0.039).

Table 3: Distribution of Patients by Generalized Forms of Distress

Generalized Forms of Distress	Frequency	Percentage (%)	p-value
Feelings of discomfort	26	52.0	0.028
Psychological disturbance	23	46.0	0.032
Depression/Anxiety	22	44.0	0.037
Hopelessness	21	42.0	0.042
Insomnia/sleep disturbance	17	34.0	0.051
Loneliness	20	40.0	0.045
Suicidal thoughts	6	12.0	0.078
Feelings of stigma	10	20.0	0.063
Low self-esteem	14	28.0	0.056

The distribution of generalized forms of distress shows that 52% of patients experienced discomfort, with significant p-values (0.028) across various psychological issues. Psychological disturbances were reported by 46% of patients, while depression/anxiety affected 44% (p = 0.032 to 0.037). Feelings of hopelessness (42%) and loneliness (40%) were also common, with p-values indicating significance (0.042 to 0.045). In 34% (p = 0.051), insomnia or sleep disturbances were present, and 28% had low self-esteem (p = 0.056). Suicidal thoughts and feelings of stigma were less frequent but notable, with p-values of 0.078 and 0.063, respectively.

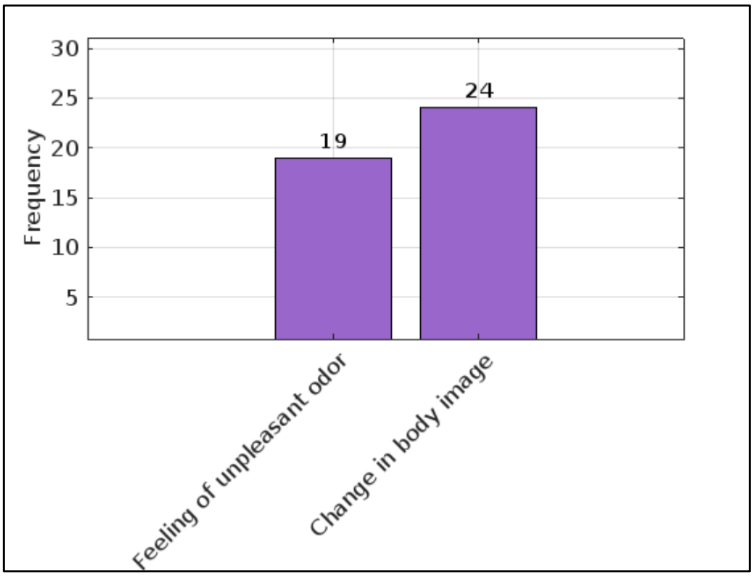

Table 4: Distribution of Patients by Specific Forms of Distress

The specific forms of distress among patients show that 38% experienced unpleasant odor, with a significant p-value of 0.033. Additionally, 48% of patients reported changes in body image, which was also statistically significant (p = 0.027). These findings highlight the considerable impact of physical changes and related distress following treatment.

Table 4: Distribution of Patients by Sexual Functioning (n = 50)

Sexual Functioning	Frequency	Percentage (%)	p-value
Men (n = 31)			
Dysfunction	17	54.8	0.029
Complete impotence	26	83.8	0.012
Erectile impotence	21	67.7	0.021
Ejaculatory impotence	19	61.3	0.036
Less frequent/cessation of intercourse	18	58.0	0.042
Women (n = 19)			
Dyspareunia	10	52.7	0.039
Less frequent/cessation of intercourse	9	47.3	0.043

The distribution of sexual functioning shows that among men, 54.8% experienced sexual dysfunction, with 83.8% facing complete impotence and 67.7% dealing with erectile impotence, all statistically significant (p-values ranging from 0.012 to 0.029). Ejaculatory impotence was reported by 61.3% of men,

and 58% had less frequent or ceased intercourse (p = 0.036 and 0.042). Among women, 52.7% experienced dyspareunia, and 47.3% reported less frequent or ceased intercourse, both with significant p-values (0.039 and 0.043). These results underscore the substantial sexual challenges faced by patients post-treatment.

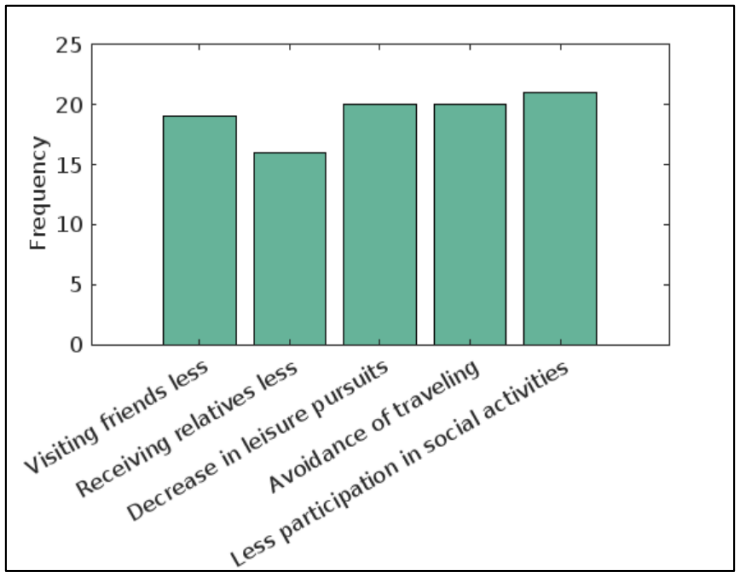

Table 5: Distribution of Patients by Social Functioning (n = 50)

The distribution of social functioning indicates significant disruptions in patients' social lives post-treatment. About 38% of patients visited friends less frequently (p = 0.032), and 32% received relatives less often (p = 0.039). Leisure pursuits and traveling were reduced in 40% of patients (p = 0.034 and 0.031, respectively). Additionally, 42% reported less participation in social activities, with a significant p-value of 0.028. These findings highlight the considerable impact of treatment on the social engagement of patients.

Table 5: Distribution of Patients by Quality of Life Based on Four Dimensions of Health (n = 50)

Quality of Life	Frequency	Percentage (%)	p-value
Extremely poor	7	14.0	0.041
Poor	12	24.0	0.036
Average	13	26.0	0.029
Good	18	36.0	0.025

The distribution of quality of life among patients shows that 14% rated their quality of life as extremely poor, with a significant p-value of 0.041. Twenty-four percent reported poor quality of life (p = 0.036), while 26% had an average quality of life (p = 0.029). The highest proportion, 36%, rated their quality of life as good, with a significant p-value of 0.025. These results indicate a wide variation in perceived quality of life among patients, with a significant portion facing substantial challenges post-treatment.

DISCUSSION

The findings of this study revealed that only a minority (32%) of patients who underwent abdominoperineal resection (APR) for rectal carcinoma reported being in good health post-surgery [10,11]. Most patients experienced average health (58%), while 10% were poor. Although many patients resumed their usual work, many noted a decrease in their activity levels compared to before the surgery. Changes in dietary habits were common, with one-fifth of the patients needing to modify their diet and nearly one-third adhering to restricted diets. Stoma-related issues were prevalent, affecting 56% of the patients, and 64% experienced problems related to odor. Additionally, a large majority (84%) suffered from bladder incontinence.

Psychological distress was also widespread, with patients reporting feelings of discomfort, depression, anxiety, hopelessness, loneliness, insomnia, stigma, low self-esteem, and even suicidal tendencies. The magnitude of these issues was considerable, indicating a profound impact on the mental health of these patients [12]. Specific forms of distress, such as concerns about unpleasant odors and changes in body image, were also significant. Sexual dysfunction was another major issue, with 83.8% of the male patients experiencing complete impotence, two-thirds suffering from erectile dysfunction, and around 60% dealing with ejaculatory impotence. Sexual activity was similarly affected among female patients, with about half reporting reduced sexual enjoyment or complete cessation of intercourse. Social functioning was compromised for

about 40% of the patients, who had to limit social activities such as visiting friends, receiving relatives, leisure pursuits, traveling, and participating in social events. Overall, the quality-of-life assessment across four health dimensions showed that 24% of the patients rated their life as poor and 14% as extremely poor.

These findings are consistent with previous studies that have shown significant impairments in physical, psychosocial, and sexual functioning following APR for rectal carcinoma [13]. The level of sexual dysfunction observed in this study aligns with earlier research. However, the psychological distress observed in this study presents mixed results compared to other studies, indicating the need for further research in this area. The extensive nature of surgery for malignant disease, which often necessitates wider resections, likely contributes to the nerve and tissue damage observed, thereby impacting patients' quality of life across multiple domains [14].

While it has been widely assumed that patients undergoing mutilating and disfiguring surgeries such as APR have a worse quality of life compared to those undergoing sphincter-sparing procedures, this assumption is not entirely supported by data from various studies [15]. As the population ages and surgical techniques advance, the number of patients undergoing sphincter-saving surgeries is expected to rise, potentially leading to an increased prevalence of impaired bowel function, sexual dysfunction, and psychosocial issues associated with procedures like ultralow anastomosis [16].

Well-designed studies are necessary to evaluate whether ultralow anastomosis can achieve quality-of-life benefits compared to colostomy. Clinicians must thoroughly inform patients about the potential effects of these surgeries, with special attention to those who may be more vulnerable to adverse outcomes. Older male patients, in particular, should be extensively counseled about the risks of bowel and sexual dysfunction. In comparison, younger female patients should be informed about the potential psychological impacts, such as changes in body image. Providing such information, alongside clinical data, will enable patients to make informed decisions about their treatment options and better manage the postoperative consequences [17].

Implications and Comparison with Existing Literature

The findings of this study highlight significant impairments in the quality of life (QoL) following abdominoperineal resection (APR) for rectal carcinoma, particularly in physical, psychological, sexual, and social dimensions. These results align with existing literature, consistently reporting substantial postoperative challenges in similar patient populations [18]. However, the degree of sexual dysfunction and psychological distress observed in our study appears more pronounced compared to other studies, such as those conducted in Western populations. This discrepancy could be attributed to differences in sample size, cultural attitudes towards discussing sexual health, or variations in racial or genetic predispositions that might influence post-surgical recovery. For instance, the higher levels of psychological distress observed in our study might reflect cultural stigmas surrounding stoma-related issues and body image in the studied population, which could exacerbate feelings of isolation and depression [19].

Moreover, differences in healthcare infrastructure and postoperative care between regions might also account for the variation in QoL outcomes. Patients in countries with more robust support systems and advanced surgical techniques might experience better postoperative recovery, improving QoL outcomes [20-24]. The implications of these findings underscore the need for tailored postoperative care strategies that consider cultural, social, and economic factors to improve QoL in rectal cancer patients, particularly in settings where these support systems are less developed. Furthermore, the study suggests that addressing psychological and sexual health in post-APR care is crucial, particularly in populations where these issues might be underreported or inadequately managed.

CONCLUSION

This study highlights the significant impact of abdominoperineal resection (APR) on the quality of life in rectal cancer patients, with notable challenges in physical, psychological, sexual, and social functioning. The findings emphasize the need for comprehensive postoperative care that addresses these multidimensional issues. Tailored interventions, particularly in culturally sensitive areas like sexual and psychological health, are crucial for improving patient outcomes and ensuring better overall well-being in the post-APR patient population.

Recommendations

- Provide integrated support, including physical, psychological, and sexual health services post-APR.
- Address psychological and social issues with culturally tailored care.
- Educate patients on expected outcomes to improve recovery and decision-making.

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