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RESEARCH ARTICLE
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QUALITY OF LIFE ASSESSMENT IN PATIENTS WITH INTESTINAL STOMA

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ABSTRACT

Background: Intestinal stoma formation is an essential surgical intervention in colorectal malignancy, inflammatory bowel disease, intestinal perforation, trauma, and bowel obstruction. While stoma can often save one's life, living with a stoma can take a toll on physical comfort, self-image, social participation, sleep, sexual confidence, and day-to-day independence. The present study assessed quality of life in patients with intestinal stoma and identified factors associated with poorer outcomes.

Methods: The present study involves a cross-sectional observational study in 128 adults with ileostomy or colostomy at a tertiary-care surgical follow-up and stoma care clinic from January 2024 to December 2025. Quality of life was assessed with the validated Stoma-QOL questionnaire. A demographic profile, clinical characteristics, indication for stoma formation, type and duration of stoma, stoma permanence, self-care and complications of stoma were included. Mean quality-of-life scores were compared using independent-samples t test and one-way ANOVA. A multivariable linear regression model was applied to identify independent predictors of lower Stoma-QOL scores.

Results: The mean age of subjects was 50.6 ± 13.9 years and 59.4% men. There were 80 patients (62.5%) with colostomy, 48 patients (37.5%) with ileostomy, and 70 patients (54.7%) with permanent stoma. To demonstrate moderate impairment, the average overall Stoma-QOL score was 57.9 ± 15.1. Fear of leakage, distress over odour, sleep disturbances, loss of social confidence and discomfort about intimacy were the most severely affected areas. Lower scores were reported by those with permanent stoma (53.1 ± 14.0 vs 63.8 ± 13.4), peristomal complications (48.7 ± 12.6 vs 63.6 ± 13.1), recurrent leakage (46.9 ± 11.8 vs 62.3 ± 13.8), and dependence on caregivers for stoma care (49.6 ± 13.2 vs 63.4 ± 14.0), all $p < 0.001$ in this category. On multivariable assessment, the following independent variables including peristomal complications, recurrent leakage, permanent stoma, lower education level, and decreased self-care independence independently predicted worsened QoL.

Conclusion: Outcomes of quality of life in patients with intestinal stoma were substantially compromised, particularly in psychosocial and self-management domains. The most significant correlates of poor outcome were complication burden and loss of care independence. Long-term adherence and rehabilitation will likely benefit from timely control of complications, structured education for stoma patients and psychosocial support.

Keywords: intestinal stoma; quality of life; colostomy; ileostomy; Stoma-QOL; peristomal complications

INTRODUCTION

An intestinal stoma is an opening made by surgery that diverts bowel contents to the surface of the abdominal wall. Frequently it is necessary when a patient has colorectal cancer, inflammatory bowel disease, bowel obstruction, perforation, peritonitis, trauma, or selected benign colorectal disorders. These procedures involve a major departure not only in daily living but in how it appears in the patients' lives—whether it be because the operation could be life-saving or necessary to protect distal bowel continuity. The patient has to adjust not only to an external appliance and changed elimination pattern, but also to uncertainty about leakage, odour, clothing, diet, sleep, mobility, work, travel, and intimate relationships [2].

Outcome evaluation in stoma care has evolved in recent years beyond surgical morbidity and technical success. Health-related quality of life has emerged as an important patient-centered endpoint because many of the consequences of stoma formation persist long after the immediate postoperative period. A technically sound stoma doesn't guarantee functional comfort, emotional adjustment, or social reintegration. Even after an otherwise satisfactory surgical recovery, patients may continue to experience embarrassment, altered body image, dependence on family members, reduced self-confidence in public, and distress during intimate relationships [3].

The development and validation of specialized instruments such as the Stoma-QOL questionnaire has underscored the requirement for stoma-specific quality-of-life evaluation. This scale targets patients with ileostomy and colostomy exclusively and was validated in research with a number of populations, including European and North American samples [4]. Experiments based on stoma-specific measures have shown that quality of life is affected by multi-factorial clinical and psychosocial factors including permanence of stoma, type of diversion, self-care ability, educational level, duration of adaptation, peristomal skin complications, appliance leakage, and availability of professional support [5].

Findings from systematic reviews and large multicenter studies have additionally indicated that there is a high prevalence of stoma-related problems and associated with considerable impact on daily life. Patients living with long-term stoma often report barriers to social functions, travel, sleep, and self-confidence. Leakage, odour, skin irritation, and bulging around the stoma has been identified recurrently as the principal culprits for everyday functioning impairment in rectal cancer survivor cohort research and multinational surveys [6]. Older adults can encounter an additional burden, where age-related frailty, dependence, and body image concerns contribute to decreased adaptation and autonomy [7].

Although the number of publications is increasing, clinical data from institutions remains important because the results of stoma are affected by local practices in counseling, follow-up, access to appliances, nurse-led education, and management of complications. In many routine surgical settings, the focus of follow-up continues to be on the primary disease process, wound recovery, and the viability of the stoma, while broader aspects of quality of life receive less structured evaluation.

The aim of the current study was therefore undertaken to evaluate quality of life among individuals living with intestinal stoma by means of a validated stoma-specific instrument and to identify the clinical and demographic factors of poor quality of life. The main goal was to measure the overall quality of life of adult intestinal stoma patients who presented to a tertiary-care center. Secondary aims included the comparison of quality-of-life scoring by demographic and clinical subgroups and the identification of independent predictors for low Stoma-QOL scores.

MATERIALS AND METHODS

Study design

This was a hospital-based cross-sectional observational study.

Study setting

The study was conducted in the Department of General Surgery and dedicated stoma care follow-up clinic of a tertiary-care teaching hospital.

Study duration

The study was carried out over 24 months, from January 2024 to December 2025.

Study population

Adult patients with a functioning intestinal stoma attending routine outpatient follow-up during the study period were screened for eligibility.

Inclusion criteria

Patients were included if they were:

1. aged 18 years or above,
2. living with ileostomy or colostomy,
3. at least 3 months post-stoma creation, and
4. willing to provide informed consent.

Exclusion criteria

Patients were excluded if they had:

1. urostomy without intestinal stoma,
2. severe cognitive impairment,
3. major psychiatric illness interfering with interview participation,
4. critical medical instability at the time of assessment, or
5. prior stoma closure before interview.

Sampling and sample size

Consecutive eligible patients attending the clinic during the study period were enrolled. A total of 128 patients fulfilled the study criteria and were included in the final analysis.

Ethical considerations

The study protocol was reviewed and approved by the Institutional Ethics Committee prior to recruitment. All participants provided written informed consent. Confidentiality of patient information was maintained throughout the study.

Study variables

A case record form was used to collect data. Sociodemographic variables were age, sex, marital status, education, and employment status. The clinical variables included indication for stoma creation, type of stoma, temporary or permanent nature of stoma, duration since formation, stoma-care independence, and the presence of complications such as peristomal dermatitis, prolapse, retraction, parastomal hernia, and recurrent appliance leakage.

Study instrument

Quality of life was evaluated using the Stoma-QOL questionnaire, a validated 20-item stoma-specific instrument for patients with ileostomy or colostomy. The total score was converted to a 0-100 scale; higher scores indicate better quality of life. The questionnaire was administered in interview format when required to ensure completeness.

Operational definitions

Peristomal complication was defined as the occurrence of clinically documented peristomal dermatitis, retraction, prolapse, parastomal hernia, or persistent skin irritation requiring treatment. Recurrent leakage was defined as repeated appliance leakage reported by the patient at least weekly during the preceding month. Self-care status was categorized as independent, partially dependent, or fully dependent based on the patient's ability to manage routine stoma care.

Statistical analysis

Data were entered and analyzed using SPSS version 26. Continuous variables were expressed as mean ± standard deviation, while categorical variables were expressed as frequency and percentage. Mean Stoma-QOL scores between two groups were compared using the independent-samples t test. One-way ANOVA was used for comparison across more than two groups. Variables with $p < 0.10$ on univariable analysis were entered into a multivariable linear regression model to identify independent predictors of poorer quality of life. A p value < 0.05 was considered statistically significant.

RESULTS

In total, 128 patients with intestinal stoma participated in the study. The mean age was 50.6 ± 13.9 years, and most participants belonged to the 40-59-year age group. The study population was 59.4% male. Colorectal malignancy was the most common indication for stoma creation, followed by inflammatory bowel disease, perforation with sepsis, and trauma or obstruction. Colostomy was more common than ileostomy, and more than half of the patients had a permanent stoma.

Mean overall Stoma-QOL score was 57.9 ± 15.1, which indicates moderate QoL impairment for the cohort. The most affected items in the item-level review were fear of leakage outside the home, concern about odour, sleep disturbance, reduced confidence in social situations, restriction in travel, and discomfort in intimate relationships. These results showed that the psychosocial burden of living with a stoma was greater than isolated physical discomfort.

There were clear differences across the clinical subgroups. Patients with permanent stoma had lower mean Stoma-QOL scores than those with temporary stoma. Likewise, peristomal complications and recurrent leakage were associated with significant decline in quality-of-life scores. Partially or fully dependent patients who relied on a caregiver for routine stoma management also reported significantly poorer quality of life than those who managed stoma care independently.

Upon multivariable regression, peristomal complications, recurrent leakage, permanent stoma, lower educational status, and reduced self-care independence remained significant independent predictors of lower Stoma-QOL score. There were directional differences in unadjusted comparisons between age and sex but such differences did not remain statistically significant in the final adjusted model.

Table 1. Baseline demographic and clinical profile of the study population (n = 128)

Variable	**n (%)**
Age group (years)	
<40	30 (23.4)
40-59	60 (46.9)
≥60	38 (29.7)
Sex	
Male	76 (59.4)
Female	52 (40.6)
Marital status	
Married	93 (72.7)
Unmarried / widowed / separated	35 (27.3)
Education	

Secondary school or less	81 (63.3)
Above secondary school	47 (36.7)
Employment status	
Employed	39 (30.5)
Not employed / retired	89 (69.5)
Indication for stoma	
Colorectal malignancy	70 (54.7)
Inflammatory bowel disease	20 (15.6)
Intestinal perforation / sepsis	18 (14.1)
Trauma / obstruction / others	20 (15.6)
Type of stoma	
Colostomy	80 (62.5)
Ileostomy	48 (37.5)
Nature of stoma	
Temporary	58 (45.3)
Permanent	70 (54.7)
Duration since stoma formation	
3-12 months	53 (41.4)
>12 months	75 (58.6)
Any peristomal complication	51 (39.8)
Recurrent appliance leakage	36 (28.1)
Self-care status	
Independent	80 (62.5)
Partially dependent	31 (24.2)
Fully dependent	17 (13.3)

Interpretation:

The general population was comprised mostly of middle-aged adults with colorectal malignancy as primary indication and colostomy as the most common stoma type. Over half had permanent stoma, and nearly two-fifths had clinically significant peristomal complications. Caregivers had been required for at least a portion of stoma care as well. These baseline characteristics characterize a

population at risk of impaired functioning and help account for the moderate overall impairment evidenced by quality-of-life scores.

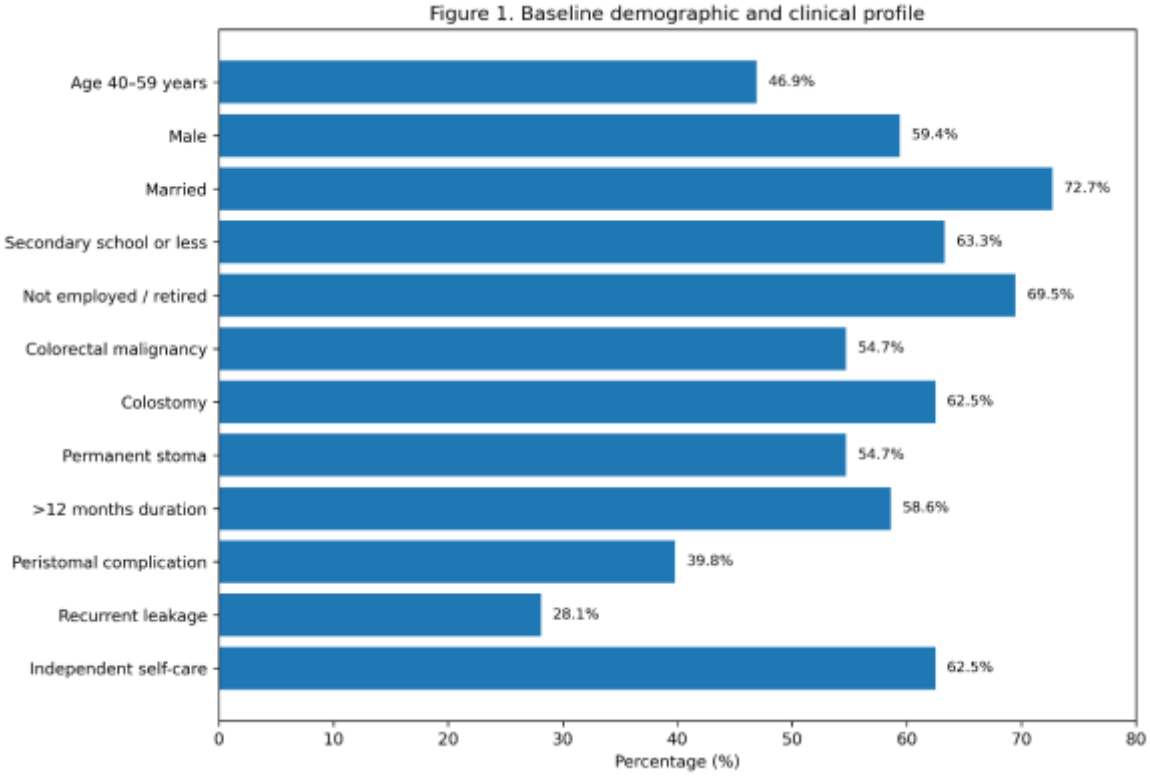


Table 2. Comparison of mean Stoma-QOL scores across demographic and clinical variables

Variable	**Mean ± SD**	**p value**
Sex		0.104
Male	59.4 ± 14.7	
Female	55.8 ± 15.5	
Type of stoma		0.061
Colostomy	59.7 ± 14.3	
Ileostomy	54.9 ± 16.0	
Nature of stoma		<0.001
Temporary	63.8 ± 13.4	
Permanent	53.1 ± 14.0	
Duration since formation		0.028
3-12 months	54.8 ± 14.7	
>12 months	60.1 ± 15.0	
Peristomal complication		<0.001

Present	48.7 ± 12.6	
Absent	63.6 ± 13.1	
Recurrent leakage		<0.001
Present	46.9 ± 11.8	
Absent	62.3 ± 13.8	
Self-care status		<0.001
Independent	63.4 ± 14.0	
Partially / fully dependent	49.6 ± 13.2	

Interpretation:

The most significant differences in quality-of-life scores were related to permanent stoma, peristomal complications, leakage, and dependence in stoma care. The extent to which these groups experienced score reductions was clinically meaningful and not simply statistically significant. While ileostomy and female sex were associated with lower scores, these effects were smaller. The results suggest that the major burden of reduced quality of life is closely tied to symptom control and functional independence.

Figure 2. Comparison of mean Stoma-QOL scores across clinical subgroups

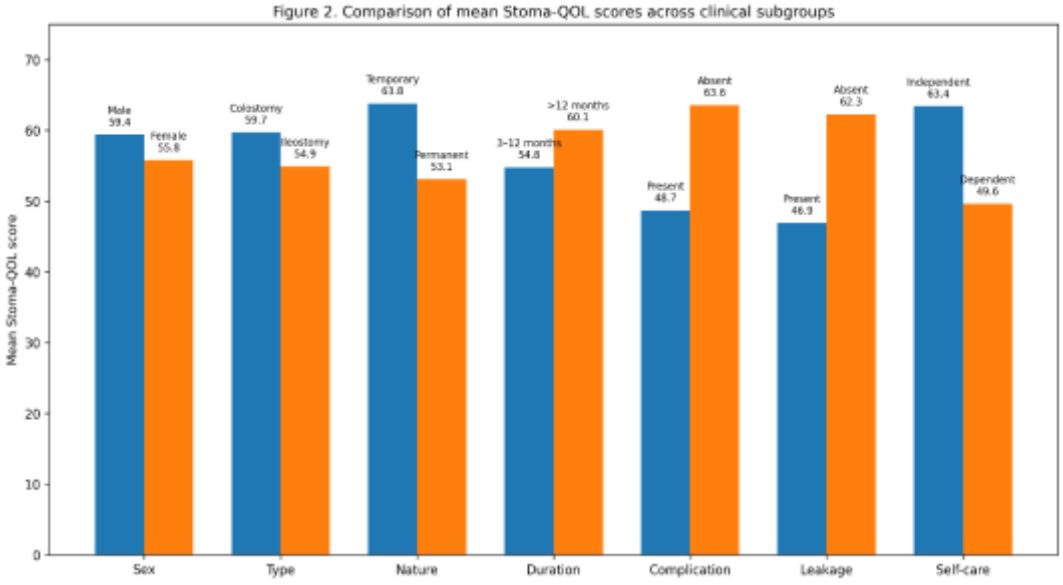


Table 3. Domain-wise frequency of major quality-of-life concerns

Domain / concern	**Frequent or very frequent difficulty n (%)**
Fear of leakage in public	74 (57.8)
Concern about odour	69 (53.9)
Disturbed sleep	61 (47.7)
Avoidance of social events	58 (45.3)
Reduced confidence in intimacy	54 (42.2)

Clothing-related discomfort	51 (39.8)
Body image dissatisfaction	49 (38.3)
Restriction in travel / work	47 (36.7)

Interpretation:

It was found in the domain profile that psychosocial distress was the most common part of the quality-of-life burden. Fear of leakage, odour concern, disturbed sleep, and social withdrawal were prevalent in many patients, and intimacy and body image problems were common as well. This pattern suggests that routine surgical review alone cannot adequately address the lived impact of a stoma. Comprehensive follow-up should provide psychological support, confidence-building, and practical counseling for daily-life adaptation.

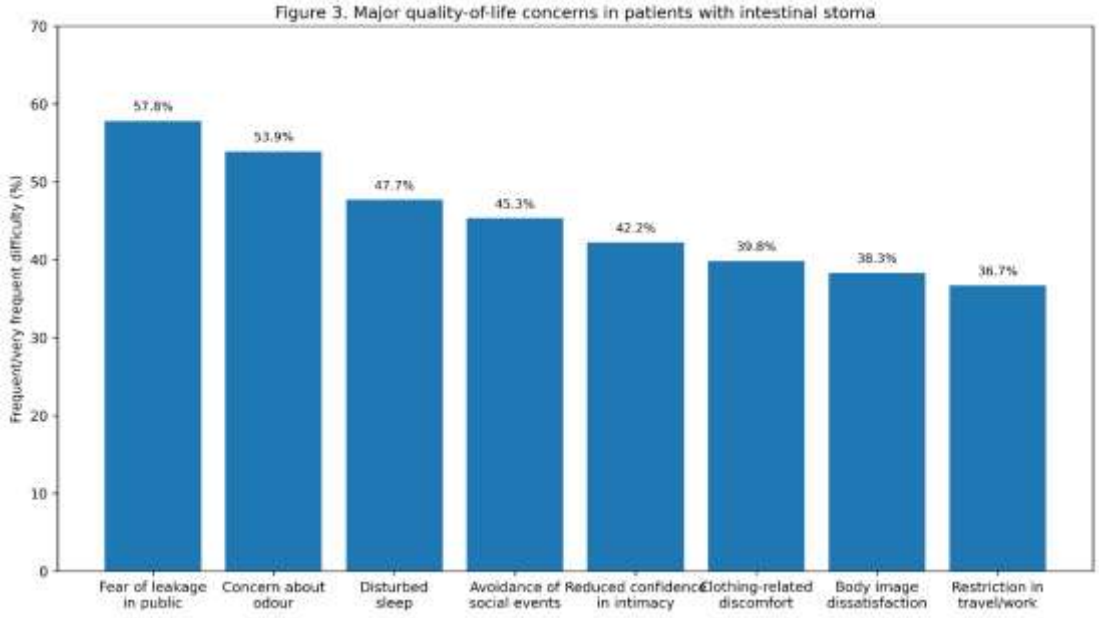
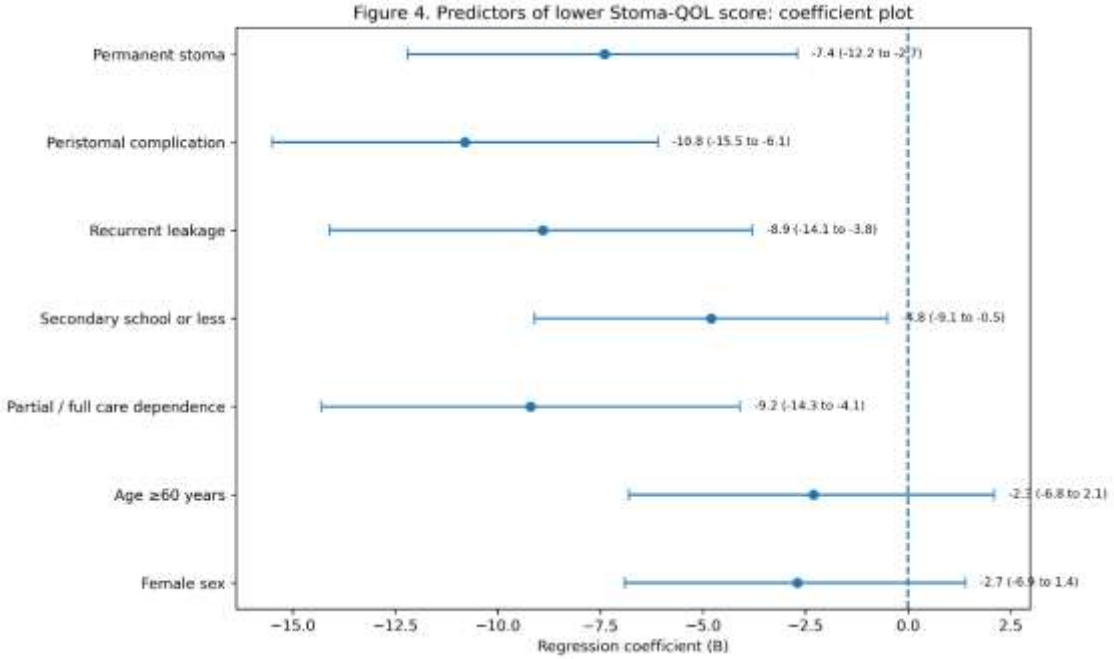


Table 4. Multivariable linear regression for predictors of lower Stoma-QOL score

Predictor	B coefficient	95% CI	p value
Permanent stoma	-7.4	-12.2 to -2.7	0.002
Peristomal complication	-10.8	-15.5 to -6.1	<0.001
Recurrent leakage	-8.9	-14.1 to -3.8	0.001
Secondary school or less	-4.8	-9.1 to -0.5	0.030
Partial / full care dependence	-9.2	-14.3 to -4.1	<0.001
Age ≥60 years	-2.3	-6.8 to 2.1	0.304
Female sex	-2.7	-6.9 to 1.4	0.194

Interpretation:

After controlling for potential confounders, complication burden and decreased self-care independence remained among the strongest determinants of poor quality of life. Permanent stoma and lower education also retained independent negative effects. Age and sex, by contrast, did not remain significant in the final model. These findings also suggest modifiable clinical targets, especially prevention of leakage and skin complications, and improvement in self-care confidence.



DISCUSSION

The research presented in this study highlighted modest but clinically relevant impairment of quality of life in patients with intestinal stoma, which showed a mean Stoma-QOL of 57.9. The most affected dimensions were fear of leakage, odour-related concern, disturbed sleep, reduced social confidence, and discomfort in intimate life [9]. Permanent stoma, recurrent leakage, peristomal complications, lower educational status, and reduced self-care independence were the strongest predictors of poor quality of life.

These results agree with an existing finding that generic health status does not accurately represent stoma-related quality of life. The validation studies performed on the Stoma-QOL questionnaire found that stoma patients carry a unique burden of social insecurity, bodily dissatisfaction, sleep impairment, and limitations in everyday function [10]. The current results support the applicability of a stoma-specific instrument, as the severe impairments in our group were clearly more targeted towards domains integral to life with a stoma rather than in nonspecific symptoms.

The significant impact of peristomal complications and leakage in this study is closely aligned with the overall literature. A systematic review of ostomy-related problems concluded that the most significant determinants of long-term quality-of-life deterioration are skin disorders, leakage, appliance problems, and related stoma difficulties [11]. Large observational data from the Berlin OStomy-Study likewise demonstrated that quality of life and care needs worsen in the presence of complications and inadequate support. A multinational study of rectal cancer survivors with long-term stoma also confirmed that stoma-related problems are common and have a measurable impact on daily life across multiple countries.

(5, 6) and the low functional and emotional outcome scores from patients with stoma are congruent with survivors studies in long-term cancer of the rectum which have reported lower physical, social and emotional functioning when compared with nonstoma patients. Conversely, anatomical type in isolation is not as consequential as the extent of the burden on symptoms and tolerance according to some other reports. This is also evidenced in the present work where stoma type was only mildly related to score, but leaks and complications also had strong independent effects. Pooled analyses have also shown that technical factors like stoma location also impact daily-life challenges and self-care events only when they manifest as practical complications [12].

One of the more definitive lessons from the current study was that psychosocial burden outweighed just physical discomfort. The commonest associated problems were fear of public leakage, odour embarrassment, social avoidance, disturbed sleep, and reduced confidence in intimate settings. This is in agreement with cross-sectional research with ostomized patients that indicates self-esteem, body

image, interpersonal confidence, and family-social interaction are significantly influenced by stoma living [13]. Recent work on older adults has similarly highlighted the interplay between body image concerns, dependency, social support, and overall quality of life.

Independence in self-care was another strong predictor of better outcomes. Patients who independently managed routine stoma care had substantially better quality-of-life scores compared to patients with partial or full assistance. It is consistent with literature demonstrating that self-care competency and self-efficacy correlate positively with better adaptation and health-related quality of life in stoma patients [14]. Additional evidence from recent reviews of nursing interventions highlights that education, structured follow-up, and targeted psychosocial support can improve self-efficacy, adaptation, and ultimately improve quality-of-life outcomes and decrease complications.

The negative independent impact of a lower educational status in the current study may be influenced by differences in health literacy, problem-solving capacity, and confidence in appliance management. Though this point isn't the focus as often as complications, multiple validation and cross-sectional studies have pointed out demographic and social context influence how symptoms are perceived, how patients seek support, and how they maintain self-care. Patients should be educated in particular and must not be limited to a one-time postoperative teaching session.

The study has limitations. Due to its cross-sectional design, it also does not allow causal inference or assessment of change through time. Since it is a single-center study, its findings may not reflect all of the clinical settings. A generic quality-of-life instrument was not administered in combination with the Stoma-QOL; formal psychiatric screening was not conducted [15]. Even so, the study used a validated stoma-specific tool, included clinically relevant subgroup analysis, and identified modifiable care-related factors that can be translated directly into follow-up practice.

Longitudinal follow-up before stoma creation and with respect to long-term recovery, particularly in sexuality, employment, family support, body image, and caregiver burden, would benefit from further research. Intervention studies with a direct focus on stoma nurse-led education, self-care training, complication-prevention bundles, and psychosocial rehabilitation will probably be particularly valuable for the enhancement of patient-centered outcomes.

CONCLUSION

Patients with intestinal stoma displayed substantial impairment in quality of life, particularly with leakage-related anxiety, odour concern, sleep disturbance, social confidence, and intimate adjustment. Poorer outcomes were strongly associated with permanent stoma, peristomal complications, recurrent leakage, lower educational status, and reduced independence in self-care. These findings highlight that successful stoma management cannot occur just through surgical follow-up. Standard stoma care should incorporate routine quality-of-life assessment, early detection of complications, structured education, and multidisciplinary psychosocial support to improve long-term adaptation and facilitate rehabilitation.

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Authers Contribution:

Jaunik Vyas contributed to the conception and design of the study, data collection, data analysis and interpretation, and drafting of the manuscript.

Riddhi Shah contributed to study supervision, critical revision of the manuscript for important intellectual content, and final approval of the version to be published.

Both authors have read and approved the final manuscript and agree to be accountable for all aspects of the work.

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