Health Problems of Civilization
eISSN: 2354-0265, ISSN: 2353-6942

ORIGINAL PAPER

Quality of life, disease acceptance, and psychosocial functioning in colorectal cancer patients with colostomy: a cross-sectional study

Tomasz Jurys[1(A,C,E,G)], **Marika Wlazło**[2(B,C,E,G)], **Agnieszka Gdańska**[3(A,C,D,F)], **Julia Szałabska**[2(B,C,E,F)], **Eliza Działach**[2(E,C,E,G)], **Elżbieta Nowara**[4(A,C,E,G)], **Mateusz Grajek**[2(A,D,E,G)]

[1]Department of Rehabilitation, Faculty of Health Sciences in Katowice, Medical University of Silesia in Katowice, Poland

[2]Department of Public Health, Faculty of Public Health in Bytom, Medical University of Silesia in Katowice, Poland

[3]Institute of Sport Sciences, Jerzy Kukuczka Academy of Physical Education in Katowice, Poland

[4]Department of Health Sciences, Jan Dlugosz University of Humanities and Natural Sciences, Czestochowa, Poland

Jurys T, Wlazło M, Gdańska A, Szałabska J, Działach E, Nowara E, et al. Quality of life, disease acceptance, and psychosocial functioning in colorectal cancer patients with colostomy: a cross-sectional study. Health Prob Civil. https://doi.org/10.29316/hpc/221022

Tables: 2
Figures: 0
References: 31
Submitted: 2026 March 16
Accepted: 2026 Apr 23

Address for correspondence: Tomasz Jurys, Department of Rehabilitation, Faculty of Health Sciences in Katowice, Medical University of Silesia in Katowice, Ziołowa 45/47 Street, 40-635 Katowice, Poland, e-mail: tomasz.jurys@sum.edu.pl

ORCID: Tomasz Jurys https://orcid.org/0000-0002-9961-5157, Marika Wlazło https://orcid.org/0000-0003-0476-3585, Agnieszka Gdańska https://orcid.org/0009-0004-5276-5205, Julia Szałabska https://orcid.org/0009-0007-0589-9448, Eliza Działach https://orcid.org/0000-0003-3798-8115, Elżbieta Nowara https://orcid.org/0000-0001-5883-6853, Mateusz Grajek https://orcid.org/0000-0001-6588-8598

Abstract

Background. Permanent colostomy after colorectal cancer surgery constitutes a major life change that may influence patients' physical, psychological, and social well-being. This study aimed to evaluate these outcomes in patients with a permanent colostomy and to explore differences according to age, gender, and place of residence.

Material and methods. The study included 150 adult patients with a permanent colostomy following colorectal cancer treatment. Participants were recruited during oncological follow-up visits in Poland. Quality of life was measured by the World Health Organization Quality of Life Questionnaire – Brief Version (WHOQoL-BREF), illness acceptance using the Acceptance of Illness Scale (AIS), and psychosocial functioning using an author-designed questionnaire. Sociodemographic variables included age, gender, and place of residence. Statistical analyses were performed using independent-sample t-tests and analysis of variance with a significance level of $p<0.05$.

Results. Older participants demonstrated significantly higher quality of life, greater illness acceptance, and better psychosocial functioning than younger patients. Men reported higher quality of life and illness acceptance than women, while psychosocial functioning did not differ significantly by gender. Urban residents achieved significantly higher scores across all assessed domains compared with rural residents.

Conclusions. Sociodemographic factors significantly influence adaptation to life with a permanent colostomy. Younger patients, women, and individuals living in rural areas may require additional psychosocial support and targeted interventions.

Keywords: psychological adaptation, psychosocial functioning, colorectal neoplasms, colostomy, quality of life

Introduction

Colorectal cancer remains one of the most common malignancies worldwide, and for a substantial proportion of patients, its treatment necessitates the creation of a permanent colostomy [1-3]. Although advances in surgical techniques and perioperative care have improved survival rates, living with a stoma constitutes a profound and long-lasting life change [4]. The formation of a colostomy affects not only physiological functioning but also multiple psychological and social dimensions of everyday life, requiring patients to adapt to an altered body image, modified self-care routines, and new patterns of social interaction [5,6].

Previous research consistently demonstrates that the presence of a stoma may substantially compromise quality of life [2,5]. Patients frequently report difficulties related to altered body image, fear of leakage or odor, skin complications, and constant awareness of bodily changes [7,8]. These challenges often extend beyond physical discomfort and interfere with emotional well-being, interpersonal relationships, and participation in social or professional activities. As a result, individuals with a stoma may experience reduced self-esteem, increased emotional distress, and limitations in social functioning [5,9].

Psychological adjustment to living with a stoma is a complex and dynamic process. Many patients struggle with anxiety, embarrassment, or fear of negative evaluation by others, which can lead to social withdrawal and feelings of isolation [10,11]. Stigma (both perceived and internalized) has been identified as a key factor negatively influencing psychosocial functioning. Importantly, the extent to which individuals are able to accept their illness appears to play a central role in determining adaptation outcomes [12,13]. Illness acceptance is not merely a passive process but rather an active psychological adjustment that allows patients to integrate the stoma into their self-concept and daily life. Higher levels of acceptance have been associated with better emotional well-being, fewer depressive symptoms, and a more favorable perception of quality of life [10,13].

Socio-demographic variables further shape the process of adaptation to a colostomy. Previous studies suggest that age, gender, educational level, and socioeconomic status may influence coping strategies and psychosocial outcomes [14,15]. Older individuals often report greater emotional stability and acceptance, possibly due to accumulated life experience and different expectations regarding health and physical functioning [16]. Gender-related differences have also been observed, with women more frequently reporting body image concerns and emotional distress [17]. In addition, place of residence may play an important role, as access to specialized healthcare services, stoma care education, and social support networks is often more limited in rural areas. These disparities may translate into differences in quality of life and psychological adjustment between urban and rural populations [18,19].

Despite the growing body of literature on stoma-related quality of life, relatively few studies have simultaneously examined quality of life, illness acceptance, and psychosocial functioning in relation to key sociodemographic variables within a single analytical framework.

Moreover, data from Central and Eastern European populations remain limited, despite potential differences in healthcare accessibility and social support structures compared with Western countries [17]. The selection of age, gender, and place of residence was based on previous evidence indicating their relevance for psychosocial adaptation and access to healthcare resources in patients with chronic conditions.

Aim of the work

The aim of the present study was to assess quality of life, illness acceptance, and psychosocial functioning among patients with a permanent colostomy due to colorectal cancer and to examine how these outcomes vary according to age, gender, and place of residence. A better understanding of these associations may help identify vulnerable subgroups of patients and inform the development of targeted psychosocial and educational interventions aimed at improving long-term adaptation to life with a stoma.

Material and methods

Study design and participants

A cross-sectional observational study was conducted among adult patients undergoing oncological follow-up in Poland who had previously been treated for colorectal cancer with the creation of a permanent colostomy. The study sample consisted of 150 participants recruited from outpatient oncology and surgical follow-up settings. Eligibility criteria included age ≥18 years, history of colorectal cancer treated surgically with permanent colostomy formation, and the ability to complete self-report questionnaires independently. Patients with severe cognitive impairment or active psychiatric disorders preventing reliable questionnaire completion were excluded. A post hoc power analysis indicated that a sample size of 150 participants was sufficient to detect medium effect sizes (Cohen's $d \approx 0.5$) with a statistical power of approximately 0.80 at $\alpha = 0.05$. No specific exclusion criteria related to comorbidities were applied beyond severe cognitive or psychiatric conditions. No participants withdrew from the study after providing consent.

The study population represented a wide age range, from approximately 40 to 85 years, with a mean age of about 63 years, reflecting the typical demographic profile of colorectal cancer survivors. The sample was relatively balanced in terms of gender distribution, comprising approximately 80 men and 70 women. An age cut-off of 60 years was adopted based on commonly used thresholds in clinical and gerontological research, distinguishing middle-aged from older adult populations and reflecting differences in psychosocial adaptation and health expectations. The participants were recruited from both urban and rural areas, with urban residents accounting for around 60% of the sample and rural residents approximately 40%, allowing for comparative analyses based on place of residence.

Outcome measures

Quality of life was assessed using the Polish version of the World Health Organization Quality of Life Questionnaire – Brief Version (WHOQoL-BREF). The questionnaire consists of 26 items, including two general items assessing overall quality of life and general health, and 24 items grouped into four domains: physical health (7 items), psychological well-being (6 items), social relationships (3 items), and environmental functioning (8 items). Responses are given on a 5-point Likert scale. Domain scores are calculated according to the World Health Organization guidelines and transformed to a 0-100 scale, with higher scores indicating better perceived quality of life. The Polish version of the WHOQoL-BREF demonstrates good psychometric properties, with Cronbach's alpha coefficients ranging from approximately 0.69 to 0.81 across domains, confirming satisfactory internal consistency [20,21].

Acceptance of illness was measured using the Acceptance of Illness Scale (AIS), an 8-item instrument developed by Felton, Revenson, and Hinrichsen to assess psychological adaptation to chronic illness. Each item is rated on a 5-point Likert scale (1 = strongly agree to 5 = strongly disagree), yielding a total score between 8 and 40, with higher scores reflecting greater acceptance of illness and better psychological adjustment. The Polish adaptation by Z. Juczyński has demonstrated satisfactory internal consistency (Cronbach's $\alpha \approx 0.82$-0.85) [22-24].

Psychosocial functioning in everyday life was evaluated using an author-developed questionnaire composed of 5 items rated on a 5-point Likert scale. The items assessed subjective functioning in social interactions, emotional well-being, perceived independence, and daily life adaptation. The total score ranged from 5 to 25 points, with higher values indicating more favorable psychosocial functioning. Although the questionnaire was not previously validated, it was designed to capture key aspects of daily psychosocial adjustment relevant to individuals living with a permanent stoma. In addition, sociodemographic data were collected for all participants, including age, gender, and place of residence (urban vs. rural), to enable subgroup analyses.

To assess the internal consistency of the author-designed psychosocial functioning questionnaire, Cronbach's alpha coefficient was calculated for the present sample. The obtained value was α=0.82, indicating acceptable/good internal consistency. The use of an author-developed instrument was motivated by the lack of brief tools specifically tailored to capture everyday psychosocial adaptation in patients with a permanent colostomy within the Polish clinical context. Existing validated instruments primarily focus on general quality of life or specific symptom domains and do not fully address practical aspects of daily functioning, independence, and social interaction relevant to this population. Therefore, a concise, targeted tool was developed to complement standardized measures used in the study.

In the present sample, internal consistency was confirmed for all standardized instruments. Cronbach's alpha coefficients were α=0.72 for WHOQoL-BREF (overall scale) and α=0.84 for AIS, indicating good reliability.

Data collection

Data were collected between February and May 2025 during routine follow-up visits in outpatient oncology and surgical clinics. Questionnaires were administered in paper form and completed independently by the participants in the presence of a researcher when needed.

The average time required to complete the questionnaire set was approximately 10-20 minutes. Data collection was conducted by trained research personnel. No blinding procedures were applied due to the observational nature of the study.

A convenience sampling method was used based on the availability of eligible patients during the study period. No major difficulties during data collection were reported.

Data analysis

Statistical analyses were performed using Statsoft Statistica 13.3. Descriptive statistics were calculated for all variables, including means and standard deviations for continuous data and frequencies for categorical variables. Comparative analyses were conducted to examine differences in quality of life, illness acceptance, and psychosocial functioning across sociodemographic groups. Independent-sample t-tests were used to compare outcomes between men and women and between urban and rural residents. Age-related differences were examined by comparing younger and older participants using independent-sample t-tests. In cases where appropriate, analysis of variance (ANOVA) was applied. All statistical tests were two-tailed, and a significance level of $p<0.05$ was considered indicative of statistical significance. Prior to inferential analyses, the distribution of continuous variables was assessed using the Shapiro-Wilk test. The results indicated that the distributions did not significantly deviate from normality ($p>0.05$ for most variables), which justified the use of parametric statistical tests. In cases of minor deviations, parametric methods were retained due to their robustness for moderate sample sizes.

Results

The study sample consisted of 150 participants. Of these, 65 patients were aged ≤60 years, and 85 were aged >60 years. The mean age of the sample was approximately 63 years (SD≈11).

Significant differences were observed between younger and older participants across all analyzed outcome measures. Older individuals (≥60 years) demonstrated consistently more favorable results in terms of quality of life, illness acceptance, and psychosocial functioning compared with younger participants. With regard to overall quality of life, older adults achieved a significantly higher mean WHOQoL-BREF score (M≈66, SD≈12) than younger participants (M≈58, SD≈15; $p\approx0.008$). In addition to overall quality of life scores, analyses of WHOQoL-BREF domains were conducted. Older participants demonstrated higher scores across physical health, psychological well-being, social relationships, and environmental domains compared with younger individuals. The largest differences were observed in the psychological and environmental domains. Detailed domain-level results are presented in Table 1.

Table 1. WHOQoL-BREF domain scores (N=150)

Domain	Younger (M±SD)	Older (M±SD)	*p*
Physical	60±14	67±12	0.01
Psychological	56±15	68±11	<0.001
Social	59±16	65±13	0.03
Environment	57±14	66±12	0.002

Notes: M – mean; SD – standard deviation.

This finding indicates a more positive subjective evaluation of well-being among older patients living with a permanent colostomy. A similar pattern was observed for illness acceptance. Older participants obtained significantly higher scores on the AIS, with a mean of approximately 32 compared to 27 in the younger group ($p<0.001$). This suggests a greater degree of psychological adaptation and integration of the disease-related limitations into daily life among older individuals. Psychosocial functioning also differed significantly by age. Older participants reported higher scores (M≈20) than younger participants (M≈17; $p≈0.02$), indicating better emotional adjustment, social functioning, and perceived ability to manage everyday challenges associated with living with a stoma.

Gender-related differences were observed primarily in quality of life and illness acceptance, although they were less pronounced than age-related effects. Men reported significantly higher overall quality of life scores (M≈64, SD≈13) compared with women (M≈60, SD≈14; $p≈0.03$). Similarly, illness acceptance was higher among male participants, who achieved a mean AIS score of approximately 32, compared with 28 among female participants ($p≈0.01$). These findings suggest that men may experience fewer emotional or body image-related difficulties associated with living with a stoma. In contrast, differences in psychosocial functioning between men and women did not reach statistical significance. Although men reported slightly higher scores (M≈19) than women (M≈17), this difference was not statistically significant ($p≈0.10$), indicating that gender-related variations in daily psychosocial functioning may be less pronounced or influenced by other contextual factors.

Place of residence emerged as one of the strongest determinants of patient-reported outcomes. Participants living in urban areas demonstrated significantly better results across all measured domains compared with those residing in rural areas. Urban residents reported markedly higher quality of life scores (M≈68, SD≈11) than rural residents (M≈56, SD≈14; $p<0.001$). Similarly, illness acceptance was substantially higher among urban participants (M≈33) compared with rural participants (M≈26; $p<0.001$). The largest disparity was observed in psychosocial functioning. Urban residents achieved a mean score of approximately 21, whereas rural residents scored around 16 ($p<0.001$), indicating significantly poorer psychosocial adaptation among patients living in rural settings. These findings highlight the potential influence of environmental and structural factors, such as access to healthcare services, availability of support resources, and social infrastructure, on adaptation to life with a colostomy.

Overall, the results indicate that older age, male gender, and urban residence are associated with more favorable outcomes in terms of quality of life, illness acceptance, and psychosocial functioning among patients with a permanent colostomy. The strongest and most consistent differences were observed between urban and rural residents, suggesting that place of residence plays a particularly important role in shaping adaptation to life with a stoma. A detailed overview of the associations between sociodemographic variables and study outcomes is presented in Table 2.

Table 2. Associations between sociodemographic factors and study outcomes (N=150)

Variable	Quality of Life (WHOQoL-BREF)	Acceptance of Illness (AIS)	Psychosocial functioning	Statistical significance
Age	Younger: 58±15 Older: 66±12	Younger: 27±6 Older: 32±5	Younger: 17±4 Older: 20±3	WHOQoL: $p \approx 0.008$ AIS: $p < 0.001$ Psychosocial: $p \approx 0.02$
Gender	Male: 64±13 Female: 60±14	Male: 32±6 Female: 28±7	Male: 19±4 Female: 17±4	WHOQoL: $p \approx 0.03$ AIS: $p \approx 0.01$ Psychosocial: p≈0.10
Residence	Urban: 68±11 Rural: 56±14	Urban: 33±5 Rural: 26±6	Urban: 21±3 Rural: 16±4	WHOQoL: $p < 0.001$ AIS: $p < 0.001$ Psychosocial: $p < 0.001$

Notes: WHOQoL-BREF – the World Health Organization Quality of Life Questionnaire – Brief Version; AIS – Acceptance of Illness Scale; SD – standard deviation; *p* – level of statistical significance.

Correlation analysis revealed a significant positive relationship between illness acceptance (AIS) and overall quality of life ($p < 0.001$). Additionally, the AIS scores were positively correlated with all the WHOQoL-BREF domains, with the strongest association observed for the psychological domain.

Discussion

Psychological resilience plays a critical role in adaptation to chronic illness and major life changes such as living with a permanent stoma. The present study examined quality of life, illness acceptance, and psychosocial functioning among colorectal cancer patients living with a permanent colostomy, with particular attention paid to differences related to age, gender, and place of residence. The findings indicate that these sociodemographic factors are meaningfully associated with patients' adaptation to life with a stoma, highlighting the heterogeneous nature of post-treatment experiences in this population.

One of the most consistent findings of the study was the more favorable psychosocial profile observed among older participants. Older adults reported higher quality of life, greater illness acceptance, and better psychosocial functioning compared with younger patients. These results are in line with previous research suggesting that older individuals may demonstrate greater psychological resilience and more realistic expectations regarding health and physical functioning [25-27]. Life experience, prior exposure to health-related limitations, and a shift in value systems toward emotional regulation and acceptance may contribute to this pattern. In contrast, younger patients may experience the stoma as a more disruptive event, particularly in relation to professional activity, intimate relationships, and perceived loss of bodily control, which can negatively affect their psychosocial adjustment [10,13,28].

Gender-related differences were also observed, although they were less pronounced than age-related effects. Men reported higher quality of life and illness acceptance than women, while differences in psychosocial functioning did not reach statistical significance. These findings are consistent with earlier studies indicating that women with a stoma may experience greater body image concerns and emotional distress [17,29,30]. Sociocultural expectations related to physical appearance and femininity may intensify the psychological burden associated with stoma formation in women [29]. At the same time, the lack of significant gender differences in psychosocial functioning suggests that daily social adaptation may be influenced by additional factors beyond gender alone, such as social support, coping strategies, or family context [31].

Place of residence emerged as one of the strongest determinants of outcomes in this study. Patients living in urban areas demonstrated significantly higher quality of life, illness acceptance, and psychosocial functioning compared with those residing in rural areas. This finding underscores the importance of environmental and structural factors in shaping adaptation to life with a colostomy. Urban residents may benefit from easier access to specialized healthcare services, stoma care education, psychological support, and peer support groups, as well as better availability of high-quality ostomy supplies [19]. In contrast, patients in rural areas may face barriers related to healthcare accessibility, limited social resources, and increased social isolation, all of which can negatively affect psychosocial well-being and illness acceptance.

Taken together, the results suggest that adaptation to living with a permanent colostomy is not solely determined by medical factors but is strongly influenced by sociodemographic and contextual variables. Identifying subgroups at higher risk of poorer outcomes (such as younger patients, women, and individuals living in rural areas) may help clinicians tailor supportive interventions more effectively. Programs aimed at enhancing illness acceptance, strengthening coping strategies, and improving access to psychosocial and educational resources may be particularly beneficial for these vulnerable populations.

Limitations

This study has several limitations. Its cross-sectional design prevents conclusions about causality or changes over time. The sample size (150 patients) and recruitment from select centers and regions in Poland may limit the generalizability of the findings. All data were self-reported, which introduces the possibility of response bias. In addition, the psychosocial functioning questionnaire used in the study was author-designed and not previously validated. Although internal consistency in the present sample was acceptable, the lack of prior validation limits the comparability of results and the robustness of conclusions. Future studies should incorporate standardized and psychometrically validated instruments or further validate the tool used in this study.

Despite these limitations, the study provides valuable insight into the psychosocial adaptation of colorectal cancer patients with a permanent colostomy and highlights the importance of considering the sociodemographic context in both research and clinical practice. Future longitudinal studies incorporating clinical variables and validated psychosocial measures are warranted to further clarify the mechanisms underlying successful adaptation and to inform targeted interventions aimed at improving long-term quality of life in this patient population. An important limitation of the study is the lack of data regarding time since colostomy creation. Duration of living with a stoma is a key factor influencing psychological adaptation, quality of life, and social functioning. Patients at different stages of adaptation (early vs. long-term) may present substantially different psychosocial profiles. The absence of this variable limits the depth of interpretation and may partially explain variability in the observed outcomes.

Furthermore, regression analysis was not performed to assess the relative contribution and predictive strength of individual sociodemographic variables. As a result, the observed associations should be interpreted with caution, as potential confounding effects between variables (e.g. age and place of residence) could not be controlled.

Conclusions

The present study demonstrates that quality of life, illness acceptance, and psychosocial functioning among colorectal cancer patients with a permanent colostomy vary significantly according to age, gender, and place of residence. Older patients, men, and individuals living in urban areas reported more favorable outcomes across most assessed domains, indicating better overall adaptation to life with a stoma. These findings suggest that younger patients, women, and those residing in rural settings may be particularly vulnerable to poorer psychosocial adjustment and lower acceptance of their condition. From a clinical perspective, this highlights the need for tailored supportive interventions that take the sociodemographic context into account. Strategies aimed at enhancing illness acceptance, strengthening coping skills, and improving access to psychosocial support and stoma care resources may be especially beneficial for at-risk subgroups.

Incorporating demographic factors into routine assessment and follow-up may help identify patients requiring additional support and contribute to improved long-term quality of life among individuals living with a permanent colostomy.

Disclosures and acknowledgements

The authors declare no conflicts of interest with respect to the research, authorship, and/or publication of this article.

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

The study was conducted in accordance with the ethical principles of psychological research and approved by the Bioethical Committee of the Medical University of Silesia in Katowice, Poland (approval number: PCN/CBN/0052/KB/302/22/23 on March 03, 2023). All the participants provided informed consent prior to participation and were informed about the anonymity and confidentiality of their data. The research design did not involve any form of intervention or manipulation and was not associated with any risk to the participants. The study protocol was conducted in accordance with the ethical standards of the Declaration of Helsinki.

Artificial intelligence (AI) was not used in the creation of the manuscript.

References:

1. Shi Y, Yu H, Wang L, Zhang H. Acceptance and commitment therapy combined with usual care improves psychosocial outcomes and reduces complications in patients with permanent colostomies after colorectal cancer surgery: a retrospective cohort study. Front Surg. 2025; 12: 1693290. https://doi.org/10.3389/fsurg.2025.1693290
2. Lau J, Ng A, Koh WL, Peh CH, The Singapore Colorectal Cancer Research Group, Luo N, et al. Associations between ostomy creation and health-related quality of life in colorectal cancer patients: a longitudinal observational study. Cancer Med. 2025; 14(23): e71388. https://doi.org/10.1002/cam4.71388
3. Sandberg S, Asplund D, Bock D, Ehrencrona C, Ohlsson B, Park J, et al. Predicting life with a permanent end colostomy: a prospective study on function, bother and acceptance. Colorectal Dis. 2021; 23(10): 2681-2689. https://doi.org/10.1111/codi.15842
4. Yeniğün Akbulut SC, Ilgaz A. Psychosocial effects and quality of life after stoma surgery: systematic review and qualitative meta-synthesis. BMC Psychol. 2026; 14: 315. https://doi.org/10.1186/s40359-026-03993-w
5. Lupo R, Rubbi I, Barletta A, Mele C, Lezzi A, Triglia C, et al. Quality of life and psychophysical consequences in individuals with intestinal stoma: an observational study. Int J Environ Res Public Health. 2025; 22(9): 1327. https://doi.org/10.3390/ijerph22091327
6. Aker FZ, Karazeybek E. Relationship between perceived social support and stoma self-efficacy in permanent colostomy patients: a correlational study. J Eval Clin Pract. 2025; 31(1): e14117. https://doi.org/10.1111/jep.14117
7. Shin J, Yan G, Gibson JS, Jones RA, Gray M, Debnam KJ. Ostomy leakage, odor, and peristomal skin complications as predictors of anxiety symptoms in colorectal cancer survivors: a cross-sectional study. J Wound Ostomy Continence Nurs. 2025; 52(6): 476-484. https://doi.org/10.1097/WON.0000000000001222
8. Brady RRW, Sheard D, Howard K, Vestergaard M, Boisen EB, Mather R, et al. The prevalence of leakage, peristomal skin complications and impact on quality of life in the first year following stoma surgery. Nurs Rep. 2025; 15(3): 107. https://doi.org/10.3390/nursrep15030107
9. Açil HC, Yilmaz AÇ, Aygin D. The effect of recovery status and life conditions on the quality of life in colorectal cancer patients with stoma: a path analysis. Front Psychol. 2025; 16: 1693626. https://doi.org/10.3389/fpsyg.2025.1693626

10. Li G, Qin R, Zhao X, Junyan D, Li P. Adaptation to colorectal cancer and ostomy: Psychological flexibility mitigates loneliness associated with social withdrawal. Support Care Cancer. 2025; 33: 950. https://doi.org/10.1007/s00520-025-10008-8
11. Afiyanti Y, Milanti A, Wahidi KR, Fitch M. Embracing my stoma: psychosocial adjustment of Indonesian colorectal cancer survivors living with a stoma. Cancer Nurs. 2025; 48(2): E121-E128. https://doi.org/10.1097/NCC.0000000000001303
12. Karahan A, Çıtak EA, Çevik B, Abbasoğlu A, Uğurlu Z. Determining the perception of stigma of individuals with ostomies. BMC Psychol. 2025; 13: 767. https://doi.org/10.1186/s40359-025-03112-1
13. Li G, He X, Qin R, Yao Q, Dong X, Li P. Linking stigma to social isolation among colorectal cancer survivors with permanent stomas: the chain mediating roles of stoma acceptance and valuable actions. J Cancer Surviv. 2025; 19: 2037-2046. https://doi.org/10.1007/s11764-024-01614-2
14. Doucette JE, Mawn BE, Beitz JM, Koren A. Factors affecting psychosocial adjustment in persons with a recent ostomy. J Wound Ostomy Continence Nurs. 2023; 50(4): 297-306. https://doi.org/10.1097/WON.0000000000000986
15. Xavier SSdM, Medeiros LPd, Lima Neto AVd, Silva IPd, Lucena SKP, Oliveira ACdS, et al. Sociodemographic and clinical characteristics of people with ostomy and the adaptive domains of Roy’s theory: a cross-sectional study. PLoS One. 2024; 19(4): e0302036. https://doi.org/10.1371/journal.pone.0302036
16. Burr DA, Castrellon JJ, Zald DH, Samanez-Larkin GR. Emotion dynamics across adulthood in everyday life: older adults are more emotionally stable and better at regulating desires. Emotion. 2021; 21(3): 453-464. https://doi.org/10.1037/emo0000734
17. Fischer M, Büntzel J, Hübner J. Social and psychological effects of a stoma on the sexuality and self-image of patients. Int J Colorectal Dis. 2026; 41: 39. https://doi.org/10.1007/s00384-026-05091-0
18. Xian H, Zhang Y, Yang Y, Zhang X, Wang X. A descriptive, cross-sectional study among Chinese patients to identify factors that affect psychosocial adjustment to an enterostomy. Ostomy Wound Manage. 2018; 64(7): 8-17. https://doi.org/10.25270/owm.2018.7.817
19. Ketterer SN, Leach MJ, Fraser C. Factors associated with quality of life among people living with a stoma in nonmetropolitan areas. Nurs Res. 2021; 70(4): 281-288. https://doi.org/10.1097/NNR.0000000000000511
20. Skevington SM, Lotfy M, O’Connell KA. The World Health Organization’s WHOQOL-BREF quality of life assessment: psychometric properties and results of the international

field trial. A Report from the WHOQOL Group. Qual Life Res. 2004; 13: 299-310. https://doi.org/10.1023/B:QURE.0000018486.91360.00

21. Jaracz K, Kalfoss M, Górna K, Baczyk G. Quality of life in Polish respondents: Psychometric properties of the Polish WHOQOL-BREF. Scand J Caring Sci. 2006; 20(3): 251-260. https://doi.org/10.1111/j.1471-6712.2006.00401.x
22. Czerw A, Religioni U, Szumilas P, Sygit K, Partyka O, Mękal D, et al. Normalization of the AIS (Acceptance of Illness Scale) questionnaire and the possibility of its use among cancer patients. Ann Agric Environ Med. 2022; 29(2): 269-273. https://doi.org/10.26444/aaem/144197
23. Mazurek J, Lurbiecki J. [Acceptance of illness scale and its clinical impact]. Pol Merkur Lekarski. 2014; 36(212): 106-108 (in Polish).
24. Felton BJ, Revenson TA, Hinrichsen GA. Stress and coping in the explanation of psychological adjustment among chronically ill adults. Soc Sci Med. 1984; 18(10): 889-898. https://doi.org/10.1016/0277-9536(84)90158-8
25. Goulia P, Papadimitriou I, Machado MO, Mantas C, Pappa C, Tsianos E, et al. Does psychological distress vary between younger and older adults in health and disease?. J Psychosom Res. 2012; 72(2): 120-128. https://doi.org/10.1016/j.jpsychores.2011.11.011
26. Kohn JN, Jester DJ, Dilmore AH, Thomas ML, Daly R, Jeste DV. Trends, heterogeneity, and correlates of mental health and psychosocial well-being in later life: study of 590 community-dwelling adults aged 40-104 years. Aging Ment Health. 2023; 27(6): 1198-1207. https://doi.org/10.1080/13607863.2022.2078790
27. Shabani M, Taheri-Kharameh Z, Saghafipour A, Ahmari-Tehran H, Yoosefee S, Amini-Tehrani M. Resilience and spirituality mediate anxiety and life satisfaction in chronically ill older adults. BMC Psychol. 2023; 11: 256. https://doi.org/10.1186/s40359-023-01279-z
28. Brown H, Randle J. Living with a stoma: a review of the literature. J Clin Nurs. 2005; 14(1): 74-81. https://doi.org/10.1111/j.1365-2702.2004.00945.x
29. Redeker C, Grunfeld E, Miles A. The impact of an ostomy on body image and sexual function of patients with colorectal cancer: a systematic review and meta-analysis. Psychooncology. 2025; 34(8): e70249. https://doi.org/10.1002/pon.70249
30. Beaubrun En Famille Diant L, Sordes F, Chaubard T. [Psychological impact of ostomy on the quality of life of colorectal cancer patients: role of body image, self-esteem and anxiety]. Bull Cancer. 2018; 105(6): 573-580 (in French). https://doi.org/10.1016/j.bulcan.2018.03.005

31. Zhou J, Wang Z, Chen X, Li Q. Gender differences in psychosocial outcomes and coping strategies of patients with colorectal cancer: a systematic review. Healthcare. 2023; 11(18): 2591. https://doi.org/10.3390/healthcare11182591