Impact of Psychological Support on Motivation for Physical Activity in Colorectal Cancer Patients

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Abstract: *Introduction*: This study investigates the psychosocial determinants of physical activity (PA) in colorectal cancer (CRC) patients, specifically examining the influence of perceived autonomy support from healthcare providers on exercise behavior.

Methods: A cross-sectional analytical study was conducted among 72 patients with CRC using two validated scales. Perceived autonomy support was assessed via the Health Care Climate Questionnaire (HCCQ). Motivation to exercise during oncology treatment was measured using the Treatment Self-Regulation Questionnaire (TSRQ). Relationships were analyzed using the computed mean item scores of both instruments.

Results: The study results showed a slight male predominance (sex ratio: 1.25) with a mean age of 56±11.94 years. Diagnosis was predominantly late (84.7%), with a high prevalence of stages III and IV (84.7%). Furthermore, the study revealed a non-self-determined profile (index: -2.2), characterized by a healthcare environment perceived as controlling (HCCQ: 2.71). Patients engaged in physical exercise primarily out of guilt or external pressure (controlled regulation score: 5.11) rather than personal conviction (autonomous regulation score: 2.86). Educational level significantly influenced the perception of autonomy support ($p = 0.03$), to the detriment of the most and least educated patients. Conversely, participants' age and clinical stage (TNM) had no statistically significant impact on the various psychological dimensions assessed ($p > 0.05$).

Conclusion: In light of patient engagement being driven by external constraint, care in colorectal oncology must shift from directive prescription to autonomy support. To achieve this, integrating therapeutic patient education is essential to facilitate the internalization of the health benefits of exercise. Finally, establishing progressive goals proves indispensable for restoring self-efficacy and consolidating the patient's perceived competence prior to any focus on functional performance.

Keywords: Psychological support, Motivation, Self-determination, Physical activity, Colorectal cancer.

INTRODUCTION

Despite significant therapeutic advances in the management of colorectal cancer (CRC), the care pathway remains punctuated by invasive and repetitive interventions, the painful burden and psychological impact of which remain suboptimally managed for both the patient and their informal support system [1]. Indeed, painful and repetitive care procedures turn the medical environment into a major source of anxiety and depression linked to the loss of autonomy [2].

Although the benefits of physical activity (PA) across the CRC continuum are well established; notably in mitigating cancer-related fatigue, improving quality of life, and reducing recurrence risk; patient adherence to PA guidelines remains critically low. Most CRC patients adopt sedentary behaviors early in their care pathway [3, 4].

While general barriers such as pain, fatigue, and motivational deficits are documented, CRC patients face unique clinical challenges that severely restrict mobility and engagement [5-6].

Specifically, the presence of a stoma and the unpredictable bowel dysfunction associated with low anterior resection syndrome; affecting up to 75% of rectal cancer patients; induce significant psychological distress, amplifying sedentary habits [9].

Although autonomy support from healthcare networks and personal spheres is recognized as a key driver of health behaviors, the specific mechanism by which the attending physician's support influence motivational regulation for PA in CRC patients remains insufficiently explored [10].

The primary objective of the present study is to evaluate the influence of perceived autonomy support provided by the attending physician on the motivational regulation of physical activity practice among CRC patients.

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METHODS

This section outlines the methodological approach used to investigate the effect of psychological support on the study population's motivation to engage in PA.

Design of Study

To achieve our objectives, we conducted an analytical, cross-sectional quantitative study.

Study Site

Our study was conducted at the Regional Oncology Center (ROC) of Agadir, one of the largest oncology centers in the Souss-Massa region (SMR). This is a center of excellence operating under the Souss-Massa Mohamed VI University Hospital Center (UHC).

Study Population and Period

The study enrolled patients with CRC admitted to the ROC after obtaining their oral informed consent. The study was conducted over a two-month period, from January 19 to March 18, 2026.

Sampling Method and Sample Size

We used a convenience sampling method, recruiting participants based on their availability at the time of data collection. A total of 72 participants were enrolled.

Data Collection Method

The exploitation of data regarding patients managed at the study center was carried out through a structured information collection process. In order to explore the two central axes of the study, we developed a research questionnaire integrating two validated measurement scales:

- The Health Care Climate Questionnaire (HCCQ), specifically designed to measure the perceived autonomy support [11].
- The Treatment Self-Regulation Questionnaire (TSRQ), a healthcare-adapted version of the motivation scale for treatment adherence and physical exercise during oncological care [12].

Both instruments were scored on a 7-point Likert scale (from 1 to 7). The questionnaire was initially pilot-tested on five patients admitted to the study center, and subsequently administered to each participant who provided oral informed consent.

The questionnaire was structured into three sections. The first section focused on the sociodemographic and clinical characteristics of the patients. The second section explored patients' perceptions of oncology care attitudes. The third section investigated the nature of patient engagement in physical exercise.

Following the validation of the questionnaire, all participants were informed of the study's objectives and significance, and were subsequently invited to complete the assessment covering all study variables during the data collection period.

Data Analysis Plan

Qualitative variables were described using frequencies and percentages, whereas quantitative variables were expressed as means and standard deviations. To analyze the relationship between autonomy support and patient motivation, we used indicators based on the mean scores of items from scientifically validated measurement scales.

Indeed, high mean scores indicate strong autonomy support and high autonomous motivation. Bivariate analysis crossing quantitative variables was conducted using Pearson's correlation coefficient.

Prior to performing parametric tests, the assumptions of normality of data distribution and homogeneity of variances were assessed using the Shapiro–Wilk test and Levene's test, respectively. In the event of a violation of the normality assumption, or for variables measured on ordinal scales, the non-parametric Mann–Whitney U test (or Kruskal–Wallis test) was preferred. All results are presented with P-values, corresponding effect sizes (Cohen's d, Eta-squared $\square^2$) and 95% confidence intervals.

Inclusion and Exclusion Criteria

Inclusion in the study was conditional upon prior histological confirmation of colorectal adenocarcinoma in patients monitored at the center during the study period. Conversely, the following patients were excluded from the study:

- Patients who declined to participate, in accordance with the principle of free and informed consent.
- Patients presenting with isolated adenomatous polyps without evidence of proven malignant transformation, in order to ensure the

homogeneity of the investigated pathological sample.

RESULTS

The study results revealed a slight male predominance (55.6%) with a sex ratio (M/F) of 1.25. The mean age of the participants was 56±11.94 years. Geographically, nearly half of the patients were located in the Agadir Ida-Outanane province (44.4%), followed by Taroudant (30.6%). The study population was predominantly from urban areas (65.3%). Regarding educational attainment, heterogeneity was observed: 30.6% of patients had a primary education level, while a non-negligible proportion of the sample (18.1%) had no formal education.

Tumor location analysis revealed a clear prevalence of colon involvement (66.7%), with the rectum affected in 26.4% of cases.

The disease progression profile at the time of diagnosis was characterized by a predominance of advanced stages. Specifically, 84.7% of patients were diagnosed at a late stage (Stage III: 63.9%; Stage IV: 20.8%), whereas early stages (I and II) accounted for only a small fraction of the sample (4.2%).

The therapeutic strategy was largely dominated by the combination of surgery and adjuvant chemotherapy, involving two-thirds of the patients (66.7%). Chemotherapy alone or combined with metastasectomy accounted for 19.4% and 12.5% of the study participants, respectively. All of these results are summarized in Table **1**.

Autonomy Support and Motivation for Physical Activity after Diagnosis

Table **2** summarizes the participants' results regarding the healthcare climate, autonomy support, and motivation for physical activity following a CRC diagnosis.

Autonomy Support

The mean score calculated from the HCCQ was 2.71. This score is significantly low, indicating that patients perceive the healthcare environment as directive or controlling.

Motivation for Physical Activity after Diagnosis

The scores obtained from the TSRQ highlighted a marked imbalance between the different types of motivation.

Autonomous Regulation

The mean score for this dimension was low (2.86), indicating that patients have not integrated physical exercise as a personal value or as a tool for their own health.

Controlled Regulation

The score for the controlled regulation dimension revealed a relatively high mean (5.11). Indeed, patients engage in exercise out of guilt or external regulation (such as social pressure or fear of medical judgment).

Measurement of self-Determination

The measurement of the self-determination component yielded a negative index (-2.2), mathematically confirming a non-self-determined profile.

Analysis of sociodemographic determinants revealed significant gender-based disparities. Male patients reported a markedly higher perception of autonomy support than female patients (2.89, 2.50; $p < 0.001$). Concurrently, a more pronounced autonomous motivation was observed in men (2.94, 2.76; $p = 0.03$).

Regarding educational attainment, a significant association was identified with perceived autonomy support ($p = 0.03$). Descriptive analyses indicated that patients with a secondary education level perceived the highest level of support (2.89), contrasting with lower scores observed in patients with higher education (2.42) or no formal education (2.59). Conversely, participant age did not appear to exert any significant influence on the various psychological dimensions assessed ($p > 0.05$).

Analysis by clinical stage (TNM) revealed no statistically significant differences across any of the self-determination theory constructs ($p > 0.05$). Finally, examination of the mean scores highlighted a predominance of controlled motivation within the sample, with this dimension displaying the highest values in the study (scores > 5.00).

The results of all these associations are presented in Table **3**.

DISCUSSION

Autonomy support constitutes a central paradigm of contemporary oncological care. Far from being limited to simple functional empowerment, it is part of a

Table 1: Sociodemographic and Clinical Characteristics of the Study Patients

Variables		n (72)	(%)
Gender	Male	40	55.6%
	Female	32	44.4%
Age (years)[1]		56 ± 11.94	
Province	Agadir Ida outanane	32	44.4%
	Inezgane Ait Melloul	11	15.3%
	Chtouka Ait Baha	3	4.2%
	Tiznit	4	5.6%
	Taroudannt	22	30.6%
Area of residence	Urbain	47	65.3%
	Rural	25	34.7%
Educational level	No formal	13	18.1%
	Primary education	22	30.6%
	Lower secondary	11	15.3%
	Upper secondary	20	27.8%
	Higher	6	8.3%
Tumor site	Colon	48	66.7%
	Rectum	19	26.4%
	Colorectum	5	6.9%
TNM Staging	I	1	1.4%
	II	2	2.8%
	III	46	63.9%
	IV	15	20.8%
	Not specified	8	11.1%
Treatment	Surgery alone	1	1.4%
	Surgery / Adjuvant chemotherapy	48	66.7%
	Chemotherapy	14	19.4%
	Chemotherapy / Surgery for metastatic disease	9	12.5%
Treatment duration (months)[2]		6.4±2.8	
Performance Status	Fully active	38	52.8%
	Restricted strenuous activity	26	36.1%
	Capable of all selfcare / limited	8	11.1%
Comorbidities	Diabetes	10	14%
	Hypertension	24	33.3%
	Cardiopathy	7	9.7%
	None	31	43%

[1,2]Mean ± Standard Deviation.

Table 2: Perception of Autonomy Support and Motivation to Engage in Physical Exercise during Cancer Care

I. Perception of autonomy support according to the HCCQ[1]:	
Mean item score	Value
	2.71
II. Motivation for physical activity during treatment according to the TSRQ[2]:	
Dimension	Value
Autonomous regulation	2.86
Controlled regulation	5.11
Relative Autonomy Index	-2.2

[1]Health Care Climate Questionnaire.
[2]Treatment Self-Regulation Questionnaire.

Table 3: Sociodemographic and Clinical Determinants of Motivation for Physical Activity in Colorectal Cancer Patients: an Analysis Based on Self-Determination Theory

Variable	Psychological dimension	Mean score (or r[1])	Effect Size[2] (Cohen's d, η^2)	95% CI[3]	P-value	Statistical test
Age	Autonomy-supportive	r=−0.09	−0.18	(−0.65-0.29)	0.45	Pearson correlation
	Autonomous motivation	r=0.01	0.02	(−0.45-0.49)	0.93	Pearson correlation
	Controlled motivation	r=0.15	0.30	(−0.17-0.77)	0.22	Pearson correlation
Gender	Autonomy-supportive	M : 2.89 F : 2.50	0.65	(0.17-1.13)	0.00	Mann-Whitney U
	Autonomous motivation	M : 2.94 F : 2.76	0.32	(−0.15-0.79)	0.03	Mann-Whitney U
	Controlled motivation	M : 5.09 F: 5.13	−0.07	(−0.53-0.39)	0.65	Mann-Whitney U
Educational level	Autonomy-supportive	Range : 2.42 – 2.89	0.80 (η^2=0.14)	(0.20-1.40)	0.03	Kruskal-Wallis H
	Autonomous motivation	Range : 2.73 – 2.91	0.10 (η^2=0.01)	(−0.35-0.55)	0.71	Kruskal-Wallis H
	Controlled motivation	Range : 2.22 – 5.19	0.35 (η^2=0.04)	(−0.12-0.82)	0.19	Kruskal-Wallis H
Stage TNM	Autonomy-supportive	Range : 2.17 – 2.72	0.42 (η^2=0.05)	(−0.05-0.89)	0.12	Kruskal-Wallis H
	Autonomous motivation	Range : 2.76 – 3.00	0.08 (η^2=0.01)	(−0.38-0.54)	0.87	Kruskal-Wallis H
	Controlled motivation	Range : 4.88 – 5.25	0.22 (η^2=0.02)	(−0.24-0.68)	0.49	Kruskal-Wallis H

[1]Correlation coefficient.
[2]Cohen's d guidelines: small (|d|=0.20), moderate (|d|== 0.50), large (|d|≥0.80). For Kruskal-Wallis tests, 3d represents the estimated pairwise contrast between extreme categories, accompanied by Eta-squared (η2).
[3]95% Confidence Interval for Cohen's d.

structured therapeutic approach aimed at preserving patient agency and active involvement in their care pathway. The results of the present study showed that the mean HCCQ score was 2.71. This significantly low score indicates that patients with CRC perceive the healthcare environment as directive or controlling. This finding aligns with previous studies showing that post-chemotherapy cognitive impairment impacts patients' executive autonomy [13] and that cancer-related fatigue leads to a loss of autonomy from the very early stages of chemotherapy [14]. This lack of a 'supportive climate' hinders the establishment of a strong therapeutic alliance, which is nonetheless a major predictor of long-term adherence in oncology care pathways."

In the same vein, an international meta-analysis demonstrated that interventions promoting autonomy support by healthcare providers significantly increase adherence to health behaviors, reduce psychological distress, and improve physical outcomes [15]. Similarly, a meta-analysis highlighted that in the presence of severe barriers, such as a stoma or altered body image, autonomy support through education and personalized guidance is key to restoring overall quality of life and re-engaging in daily activities [16].

In self-determination theory, autonomy support from healthcare providers is the primary lever for satisfying basic psychological needs (autonomy, competence, and relatedness) [17-19].

In the same vein, the significant proportion of patients with a low level of education, representing nearly 50% of the sample, constitutes a significant variable influencing HCCQ scores (p = 0.031). Indeed, limited health literacy is likely to impair the patient's decisional autonomy and therapeutic engagement [20, 21].

TSRQ analysis revealed a stark disparity between motivational regulations among CRC patients. The low mean score (2.86) for autonomous regulation suggests that PA is not yet perceived as an intrinsic health lever, highlighting a lack of internalization regarding the

benefits of PA. Indeed, a low score in autonomous regulation signifies that the process through which a patient transforms an external rule into a personal value remains incomplete [22]. Consequently, successful internalization requires a balance among three major psychological levers: the needs for autonomy, competence, and relatedness [23].

With a high mean score (5.11), controlled regulation appears to be the primary driver of exercise among these patients. This finding reflects a dependent motivation, where physical activity is not chosen for its own sake but rather sustained under the influence of external pressures or internal coercion mechanisms, with patients acting more out of medical obligation or fear of social judgment than personal conviction. This result aligns with several prior studies postulating that the predominance of controlled regulation in cancer populations stems from perceiving exercise as a survival obligation. This 'medicalization' of physical effort, dictated by healthcare providers, thereby hinders voluntary engagement and autonomous patient adherence [24-26].

By combining these two forms of regulation, the current motivational climate of the study patients is heavily dominated by constraint. Indeed, with the self-determination index displaying a negative score of -2.2, the data corroborate the hypothesis of a primarily heteronomous motivation. This shift below the neutrality threshold mathematically reflects the dominance of controlled regulations over autonomous forms of motivation. Similarly, findings from a major meta-analysis highlighted that a low or negative motivation index acts as a barrier to the sustainability of health behaviors. The data indicated that patients presenting a controlled regulation profile tend to perceive PA through a utilitarian and constraining prism, assimilating it into a necessity for survival rather than a freely chosen life project [11].

Consequently, the negative score obtained by patients with CRC within the context of the TSRQ serves as an indicator of motivational vulnerability. Far from being a mere statistical artifact, this finding demonstrates that their engagement relies on a fragile equilibrium, necessitating psychological support to transition toward autonomy.

CONCLUSIONS

This study explores the psychosocial determinants of PA among patients with CRC, focusing specifically on the associations between healthcare providers' perceived autonomy support and exercise behaviors.

Statistical analyses revealed a strong association between the perception of a highly directive care environment and low levels of autonomous motivation. Within this controlling climate, PA practice was accompanied by poor internalization of exercise as a personal value or health asset; instead, exercise tended to be associated with an additional medical prescription rather than a deliberate choice for personal well-being.

Consequently, patient engagement appears to be predominantly driven by controlled regulation, characterized by co-occurring feelings of guilt, fear of judgment, or social pressure, as supported by a negative self-determination index. This non-self-determined profile suggests that psychological support tailored toward autonomy promotion may be more appropriate for facilitating the transition from a perceived constraint into an integrated health resource.

STUDY LIMITATIONS

While the modest sample size (n = 72) may constrain the statistical power and generalizability of our findings, this study nonetheless offers valuable preliminary insights into the clinical management of CRC patients in the SMR. However, several methodological limitations must be acknowledged. First, the cross-sectional design precludes any inference of temporal or causal relationships between perceived autonomy support and physical activity adherence. Second, the reliance on self-reported questionnaire data introduces the potential for response bias, particularly social desirability and recall bias, which may lead to an overestimation of physical activity levels. Future longitudinal studies with larger cohorts and objective measures are needed to validate and extend these observations.

RECOMMENDATIONS

This study highlights the need to systematically integrate a multifactorial PA approach into oncology care pathways. Given the motivational vulnerability of exhausted cancer patients, shifting from directive medical prescriptions to structured autonomy support is imperative to foster self-determined motivation. This strategy must leverage therapeutic patient education to facilitate the internalization of health benefits, while concurrently restoring self-efficacy through proximal goal-setting. Such an approach prioritizes consolidating the patient's perceived competence before targeting functional performance.

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COMPETING INTERESTS

The authors declare no conflicts of interest in relation to this article.

AUTHORS CONTRIBUTIONS

MS and LA jointly conceptualized the study, developed the methodology, curated the data, and validated the results. LA performed the formal analysis. MS wrote the original manuscript draft, and both authors contributed equally to reviewing and editing the final text.

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ABBREVIATIONS

CRC = Colorectal Cancer

HCCQ = Health Care Climate Questionnaire

PA = Physical Activity

ROC = Regional Oncology Center

SD = Standard Deviation

SMR = Souss-Massa Region

TSRQ = Treatment Self-Regulation Questionnaire

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