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Enhancing self-management of patients with inflammatory bowel disease: the role of autonomy support in health goal pursuit

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Abstract

Background: Inflammatory bowel disease (IBD) is a chronic condition that significantly affects patients' physical, mental, and social health, as well as their overall quality of life. Effective management of the disease demands self-management skills, enabling patients to navigate the daily challenges associated with IBD, such as unpredictable flare-ups, frequent hospitalization, severe symptoms, pain, and physical changes.

Objectives: This study examines the motivational aspects of self-management for patients with IBD and focuses on the role of autonomy and directive support from healthcare professionals in enhancing their self-concordance and self-efficacy.

Design: From November 2022 to February 2023, a cross-sectional questionnaire study was conducted at the IBD Center of Internal Medicine Clinic in Szeged, Hungary.

Methods: A total of 374 adult patients with IBD completed the paper–pencil questionnaire, of whom 241 patients (64.4%) had Crohn's disease, and 133 patients (35.6%) had ulcerative colitis.

Results: Based on the findings of the path analysis (χ^2 (8) = 18.914, p = 0.01, comparative fit index = 0.935, TLI = 0.837, root mean squared error of approximation = 0.06), autonomy support positively predicted self-concordance (β = 0.48) and self-efficacy (β = 0.02), particularly during disease relapse. In addition, self-concordance and self-efficacy predicted more positive (βs = 0.28 and 0.35) and fewer negative emotional experiences (βs = –0.09 and –0.20). The model's associations varied between the relapse and remission groups, indicating distinct impacts on different states of the disease.

Conclusion: Overall, autonomy support from healthcare professionals has been shown to enhance self-management in patients with IBD, particularly during disease relapse. Meanwhile, self-concordance and self-efficacy act as positive internal factors, thus reducing negative emotional experiences, especially during remission. In sum, this study underscores the need for further exploration of the motivational aspects of self-management and provides insights into developing interventions that promote the health behaviors of patients with IBD.

Plain language summary

Self-management of inflammatory bowel disease patients

Autonomy support from healthcare professionals has been shown to significantly improve the effectiveness of self-management in patients with inflammatory bowel disease (IBD) (especially during disease relapse), by enhancing their self-concordance and self-efficacy. In this case, the interplay between disease activity, positive and negative emotions, and self-regulatory mechanisms underscores the importance of examining the motivational aspects for developing interventions that promote health behaviors in patients with IBD.

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Introduction

Inflammatory bowel disease (IBD) is a chronic condition that can have a significant impact on an individual's quality of life. This study explores the health goals of patients with IBD and their adaptation to the lifestyle modifications necessitated by the disease.

Supporting patients' autonomy in establishing health goals not only enables them to actively participate in disease management, but it also fosters long-term success in coping with the condition. Additionally, increased self-concordance and self-efficacy during health goal pursuit and self-management can contribute to more positive and fewer negative emotional experiences. A unique aspect of our study is to examine the role of autonomy and directive support from healthcare professionals in enhancing the self-concordance and self-efficacy of patients with IBD, taking into account whether the disease is in remission or relapse. In this regard, our study addresses a notable gap in the current understanding of the motivational and self-regulatory factors of IBD self-management. In the following, we summarize the main factors in our study.

Psychological aspects of IBD

IBD refers to a chronic gastrointestinal condition with unclear etiology,[1,2] encompassing two main clinical forms: Crohn's disease and ulcerative colitis. This disease primarily affects the gastrointestinal tract, causing various symptoms such as diarrhea, abdominal pain, bloody stools, bloating, and weight loss.[3-5] Since IBD is a lifelong condition, with the alternation of relapses and remissions, it can significantly impair patients' physical, mental, and social conditions, as well as their overall quality of life.[6] Meanwhile, the unpredictability of relapses, the need for frequent hospitalization, the nature of the symptoms, the severe pain, and the physical transformation caused by the disease can lead to loss of control and autonomy. This may underpin the development of anxiety and depression whose prevalence is higher among patients with IBD.[7-10]

In IBD, disease self-management is crucial for maintaining remission and preventing progression. This includes daily behaviors such as adhering to regular medical check-ups, medication, and smoking cessation, as well as following dietary recommendations, participating in sports activities, and reducing stress.[11,12] Effective self-management can also lead to positive health-related outcomes, including the reduction of inflammation, the alleviation of symptoms, better psychological/physical well-being, and improved quality of life.[13-15]

Despite the benefits of adapting to lifestyle changes required by the disease, previous research has found that 30%–45% of patients are nonadherent.[16,17] Hence, examining the psychological factors that influence the efficacy of patients' self-management is important. It can elevate patients' engagement and improve their adherence to treatment plans, fostering a more comprehensive and patient-centered approach to self-management support.

Autonomy and directive support

Since healthcare professionals play an important role in patients' social environments and self-management, it is important to address the nature of their support, especially for patients with chronic diseases.[18] Extensive studies have consistently demonstrated the positive impact of social support on self-management behaviors, including medication adherence, dietary modifications, and psychological symptom management.[19,20] For the IBD population, such support can effectively enhance self-management and alleviate various symptoms.[9,21] Thus, we applied the self-determination theory (SDT), according to which social support is categorized into two types: directive and autonomy support. Directive support involves providing reminders, advice, suggestions, and even compliments to potentially persuade individuals to make behavioral changes, whereas autonomy support includes acknowledging personal volition, recognizing negative feelings, and enhancing internal motivation.[22] Regarding

personal goals, autonomy support refers to the extent to which the social environment fosters an individual's sense of autonomy, allowing them to feel that their actions are self-chosen and aligned with their own values and interests. Autonomy supportive behavior has proven to be more beneficial, being linked to increased health goal self-concordance and self-efficacy, and contributing to long-term mental well-being.[23,24] Conversely, directive support neither correlates with improved goal internalization nor with better well-being.[21,25,26]

Health-related personal goals

Meanwhile, health-related personal goals are one of the motivational aspects of self-management and play an important role in behavioral changes, emotions, and commitment.[26-30] Specifically, such goals encompass aspirations related to an individual's appearance, health, and fitness. Hence, setting appropriate health goals can increase an individual's sense of autonomy and motivate them to become more active.[31,32]

Self-concordance

Self-concordance is a micro-theory of the SDT,[24,33] describing the consistency with an individual's core values, talents, and needs.[34-36] Self-concordant motivation is crucial for the success of health goal pursuit as it can predict greater efforts and more positive emotions, contributing to an individual's well-being.[35,37-39] In their study on the role of self-concordance in IBD self-management, Horvát et al.[40] indicated that this psychological factor signifies an internal capacity, leading to lower quality of life through positive and fewer negative emotions during health goal pursuit.

Self-efficacy

Self-efficacy is a psychological function that has been recognized to act as a crucial tool for individuals adjusting to the lifestyle changes brought about by chronic diseases, regardless of disease severity.[41-44] According to Bandura,[45] self-efficacy represents the belief that an individual can successfully perform certain tasks to achieve the desired outcomes itself. In the context of personal goals, greater self-efficacy can predict better goal progress and long-term commitment.[35,46] Among patients with IBD, previous studies have indicated that self-efficacy is a relevant component in disease management and coping.[47-49]

Disease activity and self-management

IBD is characterized by an unpredictable course that fluctuates between remission and relapse.[50] Specifically, remission indicates a period in which the symptoms of the disease significantly improve or disappear, while relapse is when the inflammatory process in the digestive tract intensifies, leading to the worsening of symptoms.[51] The impact of disease activity on the quality of life is also noteworthy, demonstrating reduced life satisfaction of 18% during relapse, compared to 6.6% during remission.[52]

The goal of IBD treatment is not only treating active inflammation but also maintaining remission and preventing relapses to improve patients' overall well-being. Moreover, previous research has mainly focused on the impact of self-management on disease activity, indicating that effective self-management is associated with shorter duration of treatment[18,53] and fewer disease relapses.[54] However, since it is important to recognize the challenges of patients with IBD, we determine how disease activity can predict self-management.[8]

The present study

In this cross-sectional study, we investigate how healthcare professionals can enhance the self-concordance and self-efficacy of patients with IBD in health goal pursuit by fostering their autonomy. Additionally, we examine the mediating role of positive and negative emotions in the relationship between self-concordance and IBD patients' quality of life, expanding the research of Horvát et al.,[40] who investigated the correlation between goal self-concordance, goal self-efficacy, and general anxiety among a sample of patients with IBD.

Overall, the purpose of this study is threefold. First, we explore how autonomy and directive support from healthcare professionals shape self-concordance and self-efficacy during health goal pursuit. In this case, due to previous ambient results, we do not formulate a specific hypothesis on how directive support can predict self-concordance and self-efficacy. Second, we determine whether self-concordance and self-efficacy

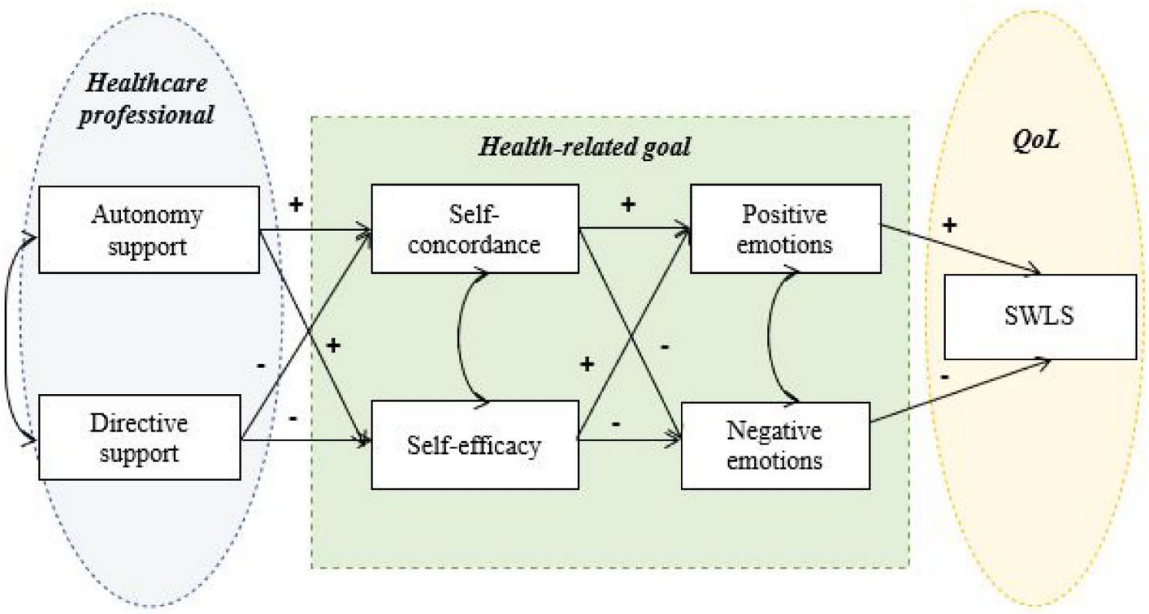

Figure 1. Model summary.
Both autonomy and directive goal support are related to the healthcare professional with whom the patient is in contact. QoL, quality of life; SWLS, Satisfaction With Life Scale.

are linked to positive and negative emotional experiences during health goal pursuit. Third, we assess whether positive and negative emotions during health goal pursuit can predict life satisfaction. All of the variables, except for life satisfaction, were evaluated in connection to health goal pursuit. Figure 1 summarizes the theoretical model. To test our model, we present the following hypotheses:

H1. Individuals with IBD who perceive higher levels of autonomy support from healthcare professionals will experience greater self-concordance and self-efficacy during health goal pursuit.
H2. Self-concordance and self-efficacy will predict positive and negative emotions during health goal pursuit.
H3. Positive emotions will predict greater life satisfaction, whereas negative emotions will predict lower life satisfaction among patients with IBD.

We also formulated the following research question:

Q1. Will individuals with IBD who perceive higher levels of directive support from healthcare professionals experience lower self-concordance and self-efficacy during health goal pursuit?

Moreover, we assess the influence of disease activity by comparing our theoretical model between two groups of patients: (1) those in remission and (2) those experiencing a relapse.

Materials and methods

Participants

This cross-sectional questionnaire study was conducted at the IBD Center of Internal Medicine Clinic in Szeged, Hungary. The participants were individually contacted during their regular check-ups at the center. Informed consent was collected before they completed the paper-and-pencil questionnaires. Their participation was voluntary; only the patients who agreed to participate, provided answers, and completed the questionnaire were included in the statistical analyses. The inclusion criteria were as follows: (1) aged 18 years or older; (2) an IBD diagnosis according to international criteria; and (3) a statement of consent. Those who are younger than 18 years of age or those currently receiving psychiatric treatment (or have received such treatment over the past year) were excluded from this study.

Ethical considerations

Ethical approval for this study was obtained from the Regional Research Ethics Committee of the Albert Szent-Györgyi Health Center at the University of Szeged. The date of ethics approval is November 11, 2023. This study was carried out according to the Code of Ethics of the World Medical Association (Declaration of Helsinki), and written informed consent was obtained from all the participants.

Procedure

Data collection for the study was conducted from November 2022 to February 2023. Patients were requested to complete a questionnaire, which took 30–40 min. Data collection was conducted with the assistance of psychology students trained in the procedure during their classes at the university. Training was necessary because patients might have raised clarifying questions during the completion of the questionnaires, and the students present were responsible for supervising the process and competently answering any questions. Participants did not receive any specific intervention in the study. The completion of the questionnaires took 30–40 min in average for the participants. Data entry, coding, cleaning, and analysis were performed by members of the research team.

Materials

The questionnaire consisted of three sections. In the first part, they were asked about socio-demographic factors, followed by information regarding their disease history and treatment (e.g. type of disease, treatment method, disease activity, year of diagnosis, surgery, medication, and presence of complications). The second part of the questionnaire covered questions on general health and life satisfaction, based on the Satisfaction with Life Scale. The third part of the questionnaire focused on personal health goals, based on the personal project analysis (PPA) method. In this case, such goals were assessed according to the following characteristics: autonomy and directive support from healthcare professionals, goal self-concordance, goal self-efficacy, and positive and negative emotions.

The questionnaires used in the study were administered in Hungarian and were adapted from previous studies conducted in Hungarian. Below, we refer to the original English and Hungarian publications, wherever it is appropriate. The exact Hungarian wording of the questions can be found in the Supplemental Materials under "Questionnaires."

IBD-specific questions

Self-reported questions about the disease, including diagnosis, type, and condition.

Health goal assessment

In this study, we applied the modified PPA method[32,55,56] to examine the participants' health-related goals. Specifically, the participants were asked to list their latest health-related goals, after being prompted by the statement "The health-related goals that you are actively pursuing." In this case, goals included weight management, sports participation, eating habits, smoking cessation, mental health, and sleeping. Then, they were asked to select the most relevant goal and rate it with respect to autonomy and directive support, self-concordance, self-efficacy, and positive and negative emotions, the details of which are as follows.

Autonomy and directive support. The questionnaire assessed the participants' perceptions of the support from the healthcare professionals for their health-related goals.[55] This assessment consisted of two subscales with three items each, namely: autonomy support (e.g. "My doctor understands how I see things with respect to this goal") and directive support (e.g. "My doctor repeatedly reminds me of this goal"). The responses were scored on a 7-point Likert-type scale ranging from 1 (not at all true) to 7 (very true). The internal consistency of the items for autonomy support demonstrated a Cronbach's α of 0.878, while that for directive support included a Cronbach's α of 0.910.

Goal self-concordance. The term "goal self-concordance" refers to the extent to which an individual has internalized the goal.[35,57] In this regard, we asked the participants to rate the extent to which they are pursuing their health-related goals based on four reasons, that is, external, introjected, identified, and intrinsic, representing a continuum of perceived locus of causality for action.[36] Additionally, an organismic integration variable was calculated from the subtraction of

two items of controlled (external) regulation (e.g. "You are pursuing this goal because someone else wants you to") and introjected regulation (e.g. "You are pursuing this goal because you would feel ashamed, guilty, or anxious if you did not"), and two items of autonomous motivation (identified) regulation (e.g. "You are pursuing this goal because you really believe that it is an important goal to have") and intrinsic regulation (e.g. "You are pursuing this goal because of the fun and enjoyment that the goal will provide"). Due to the composite nature of the index, the standard reliability estimate of alpha was not applicable.

Goal self-efficacy. The term "goal self-efficacy" refers to an individual's belief in his/her ability to achieve the goal.[58,59] This four-item questionnaire includes a 7-point Likert scale for each response (e.g. "I can usually handle the situations that come with achieving this goal"). Internal consistency of the four items was excellent, with a Cronbach's α of 0.846.

Positive and negative emotions. A total of six items were employed to assess emotional experiences during the goal implementation process.[56,57] To measure positive emotions, three items were utilized (e.g. "How often do you experience positive emotions, such as joy and happiness, about this goal"?). Conversely, three items were dedicated to measuring negative emotions (e.g. "How often do you experience negative emotions, such as stress, worry, and anxiety, about this goal"?). Both subscales utilized a 7-point Likert scale, ranging from 1 (Not at all true for me) to 7 (Very true for me). The internal consistency of the items for positive emotions demonstrated a Cronbach's α of 0.881, while that for negative emotions included a Cronbach's α of 0.869.

Satisfaction with Life Scale. A total of five items were employed to measure the patients' satisfaction with life (e.g. "In most respects, my life is almost ideal").[37,60] The responses were based on a 5-point Likert scale, ranging from 1 (totally agree) to 5 (I do not agree at all). The internal consistency of the items demonstrated a Cronbach's α of 0.837.

Statistical analyses

In this study, we used JASP software (Version 0.18.3, University of Amsterdam) to manage the data and calculate the statistics. We estimated the necessary sample size to detect an absolute value of 0.15 for correlation coefficients with at least 80% power (beta level = 0.2) and $p = 0.05$ alpha level. The correlation coefficient of $r = 0.15$ was considered a minimally interpretable effect size of a bivariate association. The calculation resulted in a minimum of 347 participants, which we considered the minimum sample size for the whole sample.

We tested path analytic models to estimate a system of equations that can specify possible causal linkages and identify the most significant pathways in predicting certain outcomes.[61] Meanwhile, we assessed the model's goodness of fit through multiple goodness-of-fit indices. Along with the χ^2 values test, we used the root mean squared error of approximation (RMSEA), the normed fit index (NFI), the comparative fit index (CFI), and the incremental fit index (IFI). In this case, the criteria were that the values for the NFI, CFI, and IFI should be greater than 0.90 and that the RMSEA should be 0.05–0.10, indicating a fair fit.[62] As for error estimation, it was conducted via the robust method, while the invariance between the two groups (i.e. those in remission and in relapse, respectively) was examined through multiple-group analyses. In this case, we used the CFI to define the invariance with a threshold of change below 0.01. Finally, we included more constrained models and individually assessed their model fit.

Results

Descriptive statistics

A total of 377 adult patients with IBD responded to our cross-sectional questionnaire study, of whom 241 patients (64.4%) had Crohn's disease and 133 patients (35.6%) had ulcerative colitis. In addition, 44.3% were men, the average age was 41.8 ± 12.1 years, and the average disease duration was 14.7 ± 9.34 years. Detailed descriptions of the demographic characteristics are presented in Table 1. Data from complete respondents were analyzed.

Bivariate associations

Since the sample size was large ($N = 370$), according to the central limit theory, we assumed that the sample distributions satisfy normal distribution assumptions and conducted parametric

Table 1. Demographic factors of IBD patients ($N = 377$).

Sociodemographic characteristics	*N*	Valid percentage (%)
Gender		
Male	167	44.3
Female	210	55.7
Education		
Elementary	12	4.1
High school	272	91.9
College or university studies	113	4.4
Marital status		
Single	67	17.8
In relationship	310	82.2
Economic activity		
Active	286	77.1
Inactive	72	19.4
Student	13	3.5
Disease type		
CD	241	61.6
UC	133	34.0
US	5	1.3
Disease activity		
Remission	289	77.9
Relapse	82	22.1
Intestinal complication		
Stenosis	137	56.2
Fistula	107	43.9
Operation		
Yes	159	42.2
No	218	57.8
Hospitalization within 1 year		
Yes	76	20.2
No	301	79.8

CD, Crohn's disease; IBD, inflammatory bowel disease; UC, Ulcerative Colitis; US, Unclassified type of IBD.

tests. To test our hypotheses, we ran a series of bivariate Pearson correlations for the study variables. The results of the correlation analyses and the average scores of the questionnaires are summarized in Table 2. Regarding autonomy support, it is significantly and positively linked to self-concordance, self-efficacy, positive emotions, and satisfaction with life, whereas it is negatively linked to negative emotions. As for directive support, it is only significantly and positively linked to self-efficacy. Meanwhile, the scores in the remission group remarkably differ from those in the relapse group. Specifically, the scores for self-concordance, self-efficacy, and satisfaction with life are significantly higher in the remission group, whereas the levels of negative emotions are significantly lower in this group.

Path model fit

In this study, the fit indices for the hypothesized model indicated an appropriate fit to the data: $\chi^2(8) = 18.914$, $p = 0.01$, CFI = 0.935, TLI = 0.837, RMSEA = 0.06. The results of the path analysis are presented on Figure 2.

Multigroup analysis

To examine the possible differences between the patients in different stages of the disease (i.e. remission or relapse), we tested the multiple-group path analytic models. To examine the model invariance between the patients in remission and relapse, the following steps were performed. First, the unconstrained model (i.e. the model in which the paths are free to vary between groups) was estimated, and the differences in significant pathways between the groups were analyzed: ($\chi^2 = 41.422$, df = 24, $p = 0.01$), NFI = 0.81, IFI = 0.91, CFI = 0.89, and RMSEA = 0.07, with a confidence interval CI = 0.03–0.12. Next, the model fit for the constrained model (i.e. the model in which the means are constrained to be equal across the groups) was assessed. In this case, the unconstrained and constrained models were compared using the CFI values. In addition, we tested additional constrained models (means and regression coefficients). We stopped testing when the model with restricted regression coefficients began to significantly deteriorate.

Overall, the fit indices for the constrained model were as follows: NFI = 0.68, IFI = 0.85, CFI = 0.83, and RMSEA = 0.07, CI = 0.04–0.12.

Table 2. Correlation matrix and the characteristics and average scores of the questionnaires ($N = 370$).

Variable		Disease activity												
		Remission		Relapse		*T* test								
		M	SD	*M*	SD	*p*	Range	1	2	3	4	5	6	7
1	Autonomy support	4.37	0.79	4.25	0.78	0.23	1–5	–						
2	Directive support	3.83	1.10	3.92	0.99	0.54	1–5	0.65***	–					
3	Self-concordance	1.92	1.28	1.37	1.23	<0.001	−2 to 4	0.07	0.01	–				
4	Self-efficacy	3.65	0.85	3.28	0.77	<0.001	1–5	0.23***	0.135**	0.235***	–			
5	Positive emotions	3.29	0.96	3.08	1.02	0.103	1–5	0.15**	0.04	0.31***	0.25***	–		
6	Negative emotions	1.71	0.93	2.40	1.14	<0.001	1–5	−0.12*	−0.04	−0.33***	−0.22***	−0.11*	–	
7	SWLS	3.69	0.74	3.43	0.82	0.007	1–5	0.13*	0.07	0.15**	0.28***	0.21***	−0.21***	–

$N_{remission} = 282$, $N_{relapse} = 82$.
*$p < 0.05$. **$p < 0.01$. ***$p < 0.001$ denote significant values.

According to the CFI values, there is no difference between the groups according to the means, but there is a difference between the groups in regression coefficients. Thus, by separately testing the model in the remission and relapse groups, we found differences in the pathways. According to the results in Table 3, autonomy and directive support only predict self-concordance among the patients in relapse, while self-efficacy and self-concordance only significantly predict negative emotions among the patients in remission. Moreover, positive emotions only significantly predict satisfaction with life in the remission group. Results of the multiple-group analysis between patients with IBD in remission and relapse are presented in Table 4. The standardized estimates for the pathways in the remission and relapse groups are presented in Table 5.

Discussion

A novel aspect of this study was the examination of the motivational aspects of self-management for patients with IBD and focused on the role of autonomy and directive support from healthcare professionals in enhancing their self-concordance and self-efficacy of adopting lifestyle changes dictated by the disease. Additional strength of our approach was the inclusion of a multigroup analysis that considered disease activity as a crucial factor of IBD patients' self-management.

First, the autonomy-supportive behavior of the healthcare professionals had a positive impact on both self-concordance and self-efficacy during health goal pursuit. This indicates the potential to facilitate the internalization of self-management activities, which are essential for managing the disease. Conversely, the same impact was not observed for the directive-supportive behavior of the healthcare professionals. Meanwhile, emotions played a distinct mediating role among self-concordance, self-efficacy, and life satisfaction, varying with disease activity. These results highlight the need for further investigations into the motivational, self-regulatory, and emotional experiences linked to individual health goals within the IBD population since these factors have a significant impact on overall well-being.

As stated earlier, the purpose of this study was threefold. The first objective was to explore the roles of two types of social support (i.e. autonomy and directive) received from healthcare professionals during health-related activities. The significance of social support in enhancing self-management among individuals with chronic diseases, including IBD, has been

Table 3. Standardized parameter estimates of direct effects for the study model.

Predictor variable	Predicted variable	Estimate	*p*	*z*
AS	SC	0.22	0.001	3.28
DS	SC	0.002	0.97	0.04
AS	SE	0.13	0.05	1.90
DS	SE	−0.10	0.05	−1.38
SC	PE	0.25	<0.001	4.96
SC	NE	−0.29	<0.001	−5.23
SE	PE	0.26	<0.001	5.19
SE	NE	−0.17	<0.001	−3.28
PE	SWLS	0.23	<0.001	3.93
NE	SWLS	−0.19	<0.001	−3.71

The values in the table are the standardized coefficients.
AS, autonomy support; DS, directive support; NE, negative emotions; PE, positive emotions; SC, self-concordance; SE, self-efficacy; SWLS, Satisfaction with Life Scale.

Table 4. Results of the multiple-group analysis between patients with IBD in remission and relapse.

Model	χ^2	df	χ^2/df	*p*	CFI (ΔCFI)
M0 (unconstrained)	41.422	24	1.73	0.01	0.89
M1 (means)	41.422	24	1.73	0.01	0.89 (0)
M2 (means and regression)	70.387	44	1.60	0.007	0.83 (0.07)

CFI, comparative fit index; IBD, inflammatory bowel disease.

well-established in the literature.[19,63] However, based on SDT, there is a notable gap in the literature regarding the examination of social support in IBD patients' self-management, with one research being an exception.[64]

In our study, within the IBD sample, autonomy support significantly and positively predicted both self-concordance and self-efficacy during health goal pursuit. Yet, distinctions emerged when we individually examined the remission and relapse groups, indicating the influence of disease activity on the efficacy of autonomy support from the healthcare professionals. Specifically, as disease symptoms intensify, autonomy support tends to function more as a positive resource, predicting higher self-concordance during relapse. Conversely, the negative impact of directive support becomes more pronounced during relapse, predicting lower self-concordance. In addition, autonomy support was beneficial for self-efficacy, in the relapse and remission groups, while directive support did not have a significant impact on self-efficacy in either group. These results underscore the significance of the supportive role of healthcare professionals in the health behavior change of patients with IBD. In sum, recognizing patients' autonomy and personal volition, and acknowledging negative emotions can boost their internal motivation and belief that the health behavior change will be carried out. On the contrary, providing reminders, guidance, and explicit recommendations can hinder the success of health behavior change.[55]

Table 5. Standardized estimates for defined pathways in remission and relapse group.

Predictor variable	Predicted variable	Disease remission		Disease relapse	
		Standardized estimate	*p*	Standardized estimate	*p*
AS	**SC**	0.03	**0.73**	0.48	**0.002**
DS	**SC**	−0.004	**0.96**	−0.47	**0.002**
AS	SE	0.18	0.02	0.35	0.02
DS	SE	−0.004	0.96	−0.05	0.75
SC	PE	0.27	<0.001	0.28	0.009
SC	**NE**	−0.28	**<0.001**	−0.09	**0.45**
SE	PE	0.21	<0.001	0.35	<0.001
SE	**NE**	−0.12	**0.04**	−0.20	**0.09**
PE	**SWLS**	0.23	**0.006**	0.10	**0.35**
NE	SWLS	−0.10	**0.12**	−0.40	**<0.001**

Values indicating a significant difference between the two groups are highlighted in bold.
AS, autonomy support; DS, directive support; NE, negative emotions; PE, positive emotions; SC, self-concordance; SE, self-efficacy; SWLS, Satisfaction with Life Scale.

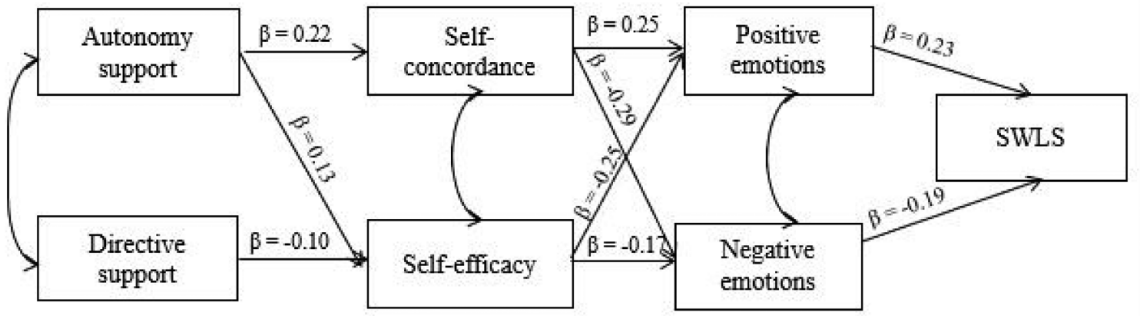

Figure 2. Path model.
Only significant paths ($p < 0.05$) are included.

The second objective of our study was to determine whether self-concordance and self-efficacy are linked to positive and negative emotional experiences during health goal pursuit. Based on the findings, autonomous motivation was identified as a core component of health behavior change.[65] In this regard, goal self-concordance represented an aspect of autonomous motivation, reflecting the extent of self-integration, encompassing internal interests and identity, and forming a connection with positive attitudes and behaviors.[35] Our path analysis also affirmed the influence of self-concordance on enhancing positive emotions and mitigating negative emotions during health goal pursuit. Previous research has shown that the level of self-concordance in health-related goals indicates the extent to which self-management activities are integrated into the self and internalized as intrinsic values.[34,35] Our findings align with a recent study on patients with IBD, which found that acceptance of the disease is associated with the activation of psychological resources and more effective disease management.[66] Moreover, in our IBD sample, self-concordance was a

predictor of reduced negative emotions. However, when considering disease activity, this association was only significant during remission. This implies that, during remission, self-concordance acts as a protective factor against negative emotions, reducing adverse experiences during health goal pursuit. Conversely, during relapse, this protective function appears to be overshadowed. A possible explanation is that during this period patients may prioritize efforts to manage physical symptoms, diverting attention from their motivation for health-promoting activities.

As for self-efficacy, it emerged as a predictor of positive emotions in both the relapse and remission groups. Similar to self-concordance, it forecasted fewer negative emotions, but this association was only observed during remission. According to related research, the role of self-efficacy in determining health outcomes for individuals with IBD is vital since it is a significant factor that influences the initiation and execution of health behaviors related to the disease.[45] Our observed positive impact of self-efficacy during health goal pursuit aligns with prior research, which found a positive correlation between self-efficacy and self-esteem, health-related quality of life, and improved mental well-being in patients with IBD.[41]

The third objective of our study was to investigate the relationship between emotional experiences during health goal pursuit and overall life satisfaction, by specifically determining whether emotions play a mediating role between self-concordance, self-efficacy, and life satisfaction in patients with IBD. The results of the path analysis indicated that, in our IBD sample, life satisfaction was influenced by both positive and negative emotions. However, upon considering disease activity, positive emotions only predicted higher life satisfaction in the remission group, while negative emotions only predicted lower life satisfaction in the relapse group.

Being the inaugural exploration into the role of health goal-related experiences in the life satisfaction of patients with IBD, these findings suggest that emotions during health behaviors linked to disease self-management can significantly influence patients' quality of life. Meanwhile, negative emotions have a more noticeable impact on psychological functioning, especially during relapse, whereas the protective effect of positive emotions is diminished. Conversely, during remission, the protective function of positive emotions is more evident, while the impact of negative emotions on patients' quality of life is attenuated.

In evaluating the results, a potentially valuable framework is the conservation resources theory,[67] which proposes that resources have psychological significance, serving as a safeguard against threatening situations. They also play an important role in enabling individuals to effectively manage stress and maintain positive self-esteem. In this regard, the primary objective is to conserve and enhance these resources. However, stressors, such as a chronic disease, can diminish the capacity to safeguard and generate resilience. It can also be inferred that the escalation of physical symptoms provides a modified context to protecting and generating resources, inhibiting self-regulatory mechanisms or the capacity for self-concordant and self-efficacious goal pursuit. This, in turn, can have an impact on emotional outcomes. Since this was the first study to comprehensively explore the complex interplay between disease activity and positive internal resources, including self-concordance and self-efficacy during health goal pursuit, and their associations with emotions and satisfaction with life, further research is essential for confirming the reliability of the results.

Limitations

In this study, we examined a linear model with a primary focus on autonomy support, as a predictor of self-concordance and self-efficacy. However, it is conceivable that autonomy support and internal resources may influence life satisfaction not only through emotional experiences but also through direct pathways. The intricate interplay of these factors in shaping the quality of life for individuals with IBD necessitates further research. The reliability of the data on disease status may have been compromised by relying only on self-reported data from patients instead of medical data. Additionally, due to the cross-sectional nature of this study, our models were not suitable for exploring causal relationships, highlighting the need for longitudinal research that focuses on causation.

Conclusion

Based on the findings of this study, if patients with IBD experience autonomy support from

healthcare professionals, then they can become more effective in self-management, through their enhanced capacity for self-concordant and self-efficacious health goal pursuit. This association is particularly pronounced during disease relapse. Moreover, self-concordance and self-efficacy can serve as positive psychological factors, mitigating the negative emotional experiences during health goal pursuit, especially during remission. However, the observed interplay among disease activity, emotions, and self-regulatory mechanisms underscores the need for further exploration of the motivational aspects of IBD self-management. Overall, these findings provide valuable insights into developing interventions that promote the health behaviors of patients with IBD.

Declarations

Ethics approval and consent to participate

Ethical approval for the study was obtained from the Regional Research Ethics Committee (RKEB) of the University of Szeged, Albert Szent-Györgyi Health Centre. All participants provided written informed consent prior to study participation. The research was carried out according to the Code of Ethics of the World Medical Association (Declaration of Helsinki), and informed consent was obtained from the enrolled patients. Ethics approval number: 14/2022-SZTE RKEB.

Consent for publication

Participants acknowledged their consent for data processing and the potential publication of information obtained from the aggregated data.

Author contributions

Barbara Horvát: Conceptualization; Formal analysis; Investigation; Methodology; Writing – original draft.

Kata Orbán: Data curation; Investigation; Writing – review & editing.

Anett Dávid: Investigation; Supervision; Writing – review & editing.

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Sanela Njers: Data curation; Investigation; Methodology; Project administration.

Tamás Molnár: Supervision.

Márta Csabai: Supervision; Writing – review & editing.

Georgina Csordás: Formal analysis; Methodology.

Tamás Martos: Conceptualization; Funding acquisition; Investigation; Resources; Supervision; Writing – review & editing.

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Competing interests

The authors declare that there is no conflict of interest.

Availability of data and materials

The data underlying this article will be shared on reasonable request to the corresponding author. The current manuscript, including related data and figures, has not been previously published and is not under consideration elsewhere.

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Supplemental material

Supplemental material for this article is available online.

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