



Original Article

Assessment Of Patient's Education and Lifestyle Factors in Ulcerative Colitis: A Cross-Sectional Study

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ABSTRACT

Background:

Ulcerative colitis is a chronic inflammation of the colon that can significantly affect daily life. Managing this condition requires medication as well as healthy habits like staying active, eating well, managing symptoms, and following treatment plans.

Objective:

This study explored what patients with ulcerative colitis know about their condition, manage their lifestyle, and how these relate to their personal and medical backgrounds.

Methods:

A descriptive cross-sectional study was conducted among 152 patients with ulcerative colitis, recruited through purposive sampling from a total population of 300 at a gastroenterology and hepatology teaching hospital. The required sample size was determined using power analysis. Data were collected using a structured questionnaire. Inferential statistics were used to examine associations between patient characteristics and outcomes. The analysis was conducted using t-test, ANOVA (F-test), independent, and SPSS version 24.

Results:

Participants averaged 41 years old, mostly female, and lived in urban or suburban areas. Nearly half had been hospitalized, mainly due to bleeding, and 27.6% had surgery related to their condition. Most patients showed poor knowledge of ulcerative colitis (96%), low physical activity (99%), and unhealthy lifestyle habits (79%). Medication adherence was poor in nearly 60%. Occupation and age were linked to knowledge and lifestyle, while economic status affected medication adherence. Better knowledge was associated with healthier habits and better treatment adherence. Specifically, knowledge was significantly correlated with medication adherence ($p = 0.006$), physical activity ($p = 0.006$), diet management ($p = 0.001$), and psychosocial factors ($p = 0.028$). Knowledge was not significantly correlated with symptom management ($p = 0.106$) or overall healthy lifestyle ($p = 0.995$).

Conclusion:

Patients with ulcerative colitis often have limited knowledge and face challenges with lifestyle and medication adherence. Providing tailored education and support from healthcare providers can enhance disease understanding, improve self-management, and promote a healthy lifestyle.

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Keywords: Ulcerative colitis, lifestyle, physical activity, diet, psychosocial health, medication adherence, patient knowledge.

1 Introduction

Ulcerative colitis (UC) constitutes a chronic condition characterized by the presence of inflammation and ulceration within the mucosal layer of the large intestine, predominantly impacting the rectum and colon. This ailment is classified under

the wider spectrum of inflammatory bowel diseases (IBD), which encompasses conditions such as Crohn's disease. Although UC can develop at any age, it most commonly begins between the ages of 15 and 30, with a smaller second peak after age 60^[1]. In recent decades, the number of people affected by UC has grown steadily around the world. This rising trend is seen not only in traditionally high-prevalence areas like North America and Europe but also in developing regions, possibly due to increasing urbanization, dietary changes, and Westernized lifestyles^[2,3].

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The symptoms of UC can be physically draining and emotionally exhausting. Many patients experience urgent, frequent diarrhea, rectal bleeding, abdominal cramps, and mucus passage. When the disease is more active, systemic symptoms such as fatigue, fever, and weight loss may also occur. These intense and unpredictable flare-ups often disrupt daily routines, affecting work, social life, and overall quality of life—highlighting the heavy toll UC takes on well-being ^[4].

The exact cause of ulcerative colitis remains unclear, but researchers believe it results from an interaction between genetic predisposition, environmental triggers, immune system dysregulation, and gut microbiota imbalance ^[5]. Known risk factors include a family history of IBD, use of certain medications such as Non-Steroidal Anti-inflammatory Drugs (NSAIDs) and oral contraceptives, antibiotic exposure, smoking cessation, and dietary patterns low in fiber and high in processed foods ^[6]. In recent years, there has also been growing interest in how everyday lifestyle habits, such as physical activity, hydration, sleep, and even beverage consumption (coffee, tea, carbonated drinks), may influence disease onset or progression, though findings have been inconsistent across studies and populations ^[7,8].

Mental health is a significant determinant of individuals' overall health status. It encompasses emotional and psychological well-being, self-confidence, autonomy, competitive ability, interpersonal relationships, the development of attachment, and the manifestation of potential skills ^[9].

Aside from physical symptoms, UC places a heavy emotional and psychological burden on patients. Living with an unpredictable and sometimes stigmatizing illness often leads to feelings of isolation, anxiety, and depression. Studies have shown that people with UC are more likely to experience mood disorders, particularly during active disease periods, which can further worsen outcomes and reduce adherence to treatment ^[10]. A recent study by ^[11] emphasized that these mental health challenges are not only prevalent but also underrecognized, significantly affecting patients' quality of life and daily management of the disease. Therefore, integrating psychological assessment and support into UC care is critical for improving treatment adherence and long-term outcomes. Mental health challenges are often underrecognized but play a significant role in how patients manage their illness day to day.

Because UC is influenced by so many interconnected factors, there's growing interest in understanding patients' lifestyle behaviors more deeply. Elements such as diet, exercise, symptom management strategies, psychosocial well-being, and adherence to treatment are all believed to affect disease control, flare frequency, and long-term outcomes ^[12]. However, these behaviors are also shaped by a person's age, income, education level, and social environment. Unfortunately, little is known about how these sociodemographic variables influence daily self-care practices among people with UC, especially in lower-resource or transitioning health systems ^[13].

Ulcerative colitis (UC) is emerging as a growing health concern globally, with increasing incidence reported in newly industrialized regions, including much of the Middle East ^[2]. In the Kurdistan region of Iraq, UC poses a serious challenge—not only due to its chronic, relapsing nature, but also because of its profound effects on quality of life, mental health, and daily functioning ^[1]. Non-adherence to treatment and unhealthy lifestyle behaviors further complicate disease management and contribute to worse outcomes (Prevalence and predictors; notes adherence <50% leads to higher relapse rates. These findings reinforce the critical need to address and improve adherence and lifestyle behaviors in UC for better long-term disease control. This study is significant because it evaluates a nurse-led program aimed at improving knowledge, lifestyle behaviors, and medication adherence in UC patients offering a practical, patient-centered intervention in a region where such strategies are limited.

This study aims to explore patients' knowledge and lifestyle behaviors in patients living with ulcerative colitis, including physical activity, dietary habits, psychosocial well-being, symptom management, and medication adherence. It also seeks to examine how these behaviors are associated with sociodemographic factors. By understanding these relationships, we hope to support more individualized and effective patient care strategies that improve overall well-being and disease management in people living with UC.

Materials and Methods

Study Design and Setting

This descriptive study cross-sectional was conducted at Gastroenterology and Hepatology Teaching Hospital in Sulaiamani City from 1-8 -2024 to 1-12-2024

Study Population and Sampling

A total of 152 adult patients (≥ 18 years) with a confirmed diagnosis of ulcerative colitis were included in this study. Patients were recruited from the Gastroenterology and Hepatology Teaching Hospital in Sulaimani City. Exclusion criteria were the presence of other major chronic illnesses or cognitive impairments that could interfere with participation.

From the total target population of 300 patients with ulcerative colitis, participants were recruited using purposive sampling. The required sample size was calculated using power analysis (finite population correction, 95% confidence level, 5% margin of error, and 50% expected prevalence).

Data Collection Tools

A structured and validated questionnaire was used to gather data for this study. To ensure accuracy and relevance, the questionnaire was reviewed by twelve experts in the field. Their feedback helped refine and modify the tool, improving its clarity and making it more appropriate and understandable for the study population. Sociodemographic characteristics (age, gender, education, marital status, employment, income, residence).

- Patient's information (Education)
- Lifestyle domains: physical activity, dietary habits, psychosocial well-being, symptom management, and medication adherence

Responses were recorded on Likert scales, and composite scores were calculated for each lifestyle domain.

Scores in all domains were interpreted using Original Bloom's cut-off points, with some studies referencing Modified Bloom's thresholds:

- Good/Severe: 75%–100% of total score
- Fair/Moderate: 50%–74% of total score
- Poor/Mild: <50% of total score

This standardized scoring and categorical system ensures accurate quantification of patient behaviors, knowledge, and lifestyle practices, allowing meaningful comparisons and interpretations across domains. Higher scores consistently reflect better outcomes, whether in physical activity, dietary management, symptom control, psychosocial well-being, knowledge about ulcerative colitis, or medication adherence.

Data Collection Procedure

Participants were recruited during routine clinic visits. Following informed consent, trained research assistants administered questionnaires via face-to-face interviews to ensure data quality.

Ethical consideration

Approval was obtained from at Gastroenterology and Hepatology Teaching Hospital directors of health in Sulaiamani City. Participants provided informed consent, and confidentiality was ensured.

Statistical Analysis

All statistical computation is enhanced using the statistical method (SPSS 24). The data had been coded, tabulated, and presented in a descriptive form. The statistical procedure that was applied to determine the results of the present study included:

Inferential data analysis: Independent Samples T-Test and ANOVA table (F-test)

The probability level in determining the significance of the P value ($P < 0.05$).

Result

Part one: Patient's socio-demographic characteristics

Table 1: Distribution of the patient's socio-demographic characteristics.

Socio-demographic		F(%)	Socio-demographic		F(%)
Age (years)	< 25	19(12.5)	Residence	Urban	86(56.6)
	25 – 50	83(54.6)		Sub-urban	61(40.1)
	> 50	50(32.9)		Rural	5(3.3)
Mean±S.D	41.13 ± 13.36		Gender	Male	72(47.4)
Level of education	Illiterate	25(16.5)		Female	80(52.6)
	Able to read and write	9(5.9)	Smoking Cigarette	Never Smoker	87(57.2)
	Primary school	35(23.0)		Passive Smoker	12(7.9)
	Intermediate school	28(18.4)		EX-Smoker	40(26.3)
	Secondary school	14(9.2)		Current Smoker	13(8.6)
	Institute & College	40(26.3)	Marital status	Single	32(21.1)
	MSc. & Ph.D.	1(0.7)		Married	113(74.3)
Occupation	State Employees	38(25.0)		Widow/er	4(2.6)
	Private employee	1(0.7)	Divorce		3(2.0)
	Self-employee	23(15.1)	Drink alcohol	No	146(96.1)
	Retired	9(5.9)		Yes	6(3.9)
	Housewife	58(38.2)	Economic Status	Insufficient	76(50)
	Jobless	11(7.2)		Barely sufficient	71(46.7)
	Student	12(7.9)		sufficient	5(3.3)
Total		152(100)	Total		152(100)

Table 1 presents the sociodemographic profile of the 152 patients with ulcerative colitis. Among 152 patients (mean age 41.1 ± 13.4 years), most were 25–50 years (54.6%), female (52.6%), and urban residents (56.6%). Educational levels varied, with 26.3% completing college and 16.5% illiterate. Housewives (38.2%)

were the largest occupational group, followed by state employees (25%). Over half (57.2%) never smoked, while 74.3% were married. Nearly all (96.1%) were non-drinkers. Economically, half reported insufficient income, 46.7% barely sufficient, and only 3.3% sufficient.

Part two: Clinical characteristics of ulcerative colitis

Table 2: Distribution of the patient's clinical characteristics of ulcerative colitis.

Clinical characteristics		F(%)	Baseline clinical characteristics		F(%)
Duration of ulcerative colitis (years)	6 months -1	14(9.2)	Age at first diagnosis	Young onset	54(35.5)
	1-10	98(64.5)		Middle-aged onset	84(55.3)
	> 10	40(26.3)		Late onset	14(9.2)
Family history of ulcerative colitis	No	123(80.9)	Other chronic disease	No	110(72.4)
	Yes	26(17.1)		Yes	42(27.6)
	I don't know	3(2.0)		If yes, select	
Previous hospital admission for ulcerative colitis: If yes, reason for admission	No	78(51.3)		Diabetes	16(22.2)
	Yes	74(48.7)		Hypertension	18(25.0)
	Diarrhea	19(22.4)		Multiple Sclerosis	2 (2.8)
	Bleeding	47(55.2)		Hypothyroidism	5 (6.9)
	Flare-up	19(22.4)		Hyperthyroidism	3 (4.2)
	Total	85		Kidney Failure	1 (1.4)
any surgery related to this disease: If yes, type of surgery	No	110(72.4)		Asthma	1 (1.4)
	Yes	42(27.6)		Rheumatoid Arthritis	5 (6.9)
	Hemorrhoid removal	30(71.4)		Anemia	20 (27.8)
	Anal fissure repair	8(19.1)		Leukemia	1 (1.4)
	Polyp removal	4(9.5)		Total	72(100)
	Total	42(100)			
Total		152(100)	Total		152(100)

Age at first diagnosis: Young onset < 30, Middle age onset 30 - 50 and Late onset >50

Table 2 shows clinical features of 152 ulcerative colitis patients. Only 9.2% were newly diagnosed within 6–12 months, while 64.5% had the disease for 1–10 years and 26.3% for over 10 years. Most (55.3%) were diagnosed in middle age, 35.5% younger, and 9.2% later in life. A majority (80.9%) reported no family history of ulcerative colitis. Nearly half (48.7%) were hospitalized, mainly due to bleeding (55.2%), with flare-ups and

diarrhea each at 22.4%. Surgery was reported by 27.6%, mostly hemorrhoid removal (71.4%), anal fissure correction (19.1%), and polyp removal (9.5%). Common comorbidities included anemia (27.8%), hypertension (25.0%), diabetes (22.2%), and other chronic illnesses such as hypothyroidism, rheumatoid arthritis, multiple sclerosis, asthma, and renal failure.

Part three: Patients' Knowledge regarding ulcerative colitis, II: Healthy Lifestyle and Medication Adherence

Table 3: levels of the Patients' information regarding ulcerative colitis, II Healthy Lifestyle, and Medication Adherence.

Levels	Total score %		Poor	Fair	Good	Total
	Mean	S.D	Fr (%)	Fr (%)	Fr (%)	
Physical Activity	13.60	15.69	144 (94.7)	8 (5.3)	0 (0.0)	152
Diet and ulcerative colitis	42.31	12.06	114 (75.0)	36 (23.7)	2 (1.3)	152
Symptom Management	55.42	17.29	54 (35.5)	78 (51.3)	20 (13.2)	152
Psychosocial	60.64	17.50	36 (23.7)	83 (54.6)	33 (21.7)	152
Overall (Healthy Lifestyle)	42.99	10.48	111 (73.0)	41 (27.0)	0 (0.0)	152
Information ulcerative colitis	18.83	8.85	151 (99.3)	1 (0.7)	0 (0.0)	152
Medication Adherence	38.20	11.69	120 (78.9)	32 (21.1)	0 (0.0)	152

Table (3) demonstrates that the majority of patients scored poorly across most lifestyle domains. Physical activity was particularly low, with 94.7% of patients in the poor category and none reaching good levels. Dietary knowledge and practices were also limited, with 75% poor, 23.7% fair, and only 1.3% good. In contrast, symptom management and psychosocial domains showed relatively better outcomes: about half of patients fell into the fair category, and around 13–22% achieved good levels, indicating moderate awareness and coping strategies in these areas.

Overall, healthy lifestyle scores were poor in 73% of participants, with no patients achieving a good level. Information about ulcerative colitis was alarmingly low, with nearly all patients (99.3%) classified as poor. Medication adherence was also poor for the majority (78.9%), with none achieving good adherence. These findings highlight major gaps in patient knowledge, lifestyle behaviors, and treatment adherence, emphasizing the urgent need for targeted educational and supportive interventions.

Table 4: Association between socio-demographic characteristics and patient's Information on ulcerative colitis.

Socio-demographic		Mean±S.D	P-value	Socio-demographic		Mean±S.D	P-value
Age (years)	< 25	16.72 ± 4.50	0.132**	Residence	Urban	20.08 ± 9.82	0.14**
	25 – 50	20.13 ± 9.86			Sub-urban	17.21 ± 7.44	
	> 50	17.47 ± 8.07			Rural	17.06 ± 1.32	
Level of education	Illiterate	16.00 ± 8.19	0.097**	Gender	Male	19.53 ± 9.29	0.358*
	Able to read and write	15.69 ± 7.92			Female	18.20 ± 8.45	
	Primary school	17.48 ± 7.31		Smoking	Never Smoker	20.01 ± 9.17	0.08**
	Intermediate school	19.12 ± 7.31			Passive Smoker	14.46 ± 5.67	
	Secondary school	19.33 ± 6.60			EX-Smoker	16.99 ± 6.64	
	Institute & College	21.84 ± 11.40			Current Smoker	20.59 ± 12.93	
Occupation	MSc. & Ph.D.	29.41 ± —	0.000**	Marital status	Single	19.67 ± 9.55	0.421**
	State Employees	20.43 ± 9.12			Married	18.84 ± 8.84	
	Private employee	58.82 ± —			Widow/er	17.65 ± 2.40	
	Self-employee	18.03 ± 6.59			Divorce	10.78 ± 3.40	
	Retired	19.28 ± 6.76		Drink alcohol	No	18.96 ± 8.95	0.377*
	Housewife	17.29 ± 8.14			Yes	15.69 ± 5.78	
	Jobless	18.98 ± 9.87		Economic Status	Insufficient	17.76 ± 7.56	0.33**
	Student	18.87 ± 8.73			Barely sufficient	19.84 ± 10.12	
					Sufficient	20.59 ± 7.20	

* Independent samples t –test, and ** One Way ANOVA (F-test)

Table (4) explains the association between socio-demographic characteristics and information ulcerative colitis. As a result, it shows that there was a statistically significant difference (or association) between information ulcerative colitis and occupation because the result of the p-value was less than the

common alpha of 0.05. But there was no statistically significant difference (or association) between information ulcerative colitis and other socio-demographic characteristics because the result of the p-value was more than the common alpha of 0.05.

Table 5: Association between socio-demographic characteristics and Healthy Lifestyle.

Socio-demographic		Mean±S.D	P-value	Socio-demographic		Mean±S.D	P-value
Age (years)	< 25	42.01 ± 11.01	0.005**	Residence	Urban	42.44 ± 10.21	0.756**
	25 – 50	40.87 ± 9.97			Sub-urban	43.64 ± 10.77	
	> 50	46.88 ± 10.21			Rural	44.48 ± 13.31	
Level of education	Illiterate	44.18 ± 9.80	0.407**	Gender	Male	46.24 ± 9.73	0.000*
	Able to read and write	43.03 ± 5.45			Female	40.06 ± 10.33	
	Primary school	42.22 ± 10.63		Smoking	Never Smoker	42.55 ± 10.76	0.373**
	Intermediate school	41.92 ± 11.87			Passive Smoker	39.13 ± 9.87	
	Secondary school	43.83 ± 8.43			EX-Smoker	44.88 ± 10.85	
	Institute & College	42.76 ± 11.09			Current Smoker	43.71 ± 7.20	
	MSc. & Ph.D.	67.06 ± ----		Marital status	Single	43.58 ± 10.33	0.961**
Occupation	State Employees	44.40 ± 10.04	0.029**		Married	42.76 ± 10.48	
	Private employee	33.47 ± ----			Widow/er	44.98 ± 11.98	
	Self-employee	47.85 ± 9.41			Divorce	42.71 ± 16.24	
	Retired	48.20 ± 14.04	Drink alcohol	No	43.41 ± 10.41	0.015*	
	Housewife	40.07 ± 9.77		Yes	32.82 ± 6.66		
	Jobless	40.60 ± 12.27	Economic Status	Insufficient	41.22 ± 9.17	0.107**	
	Student	42.40 ± 8.92		Barely sufficient	44.63 ± 11.43		
Sufficient				46.55 ± 12.72			

* Independent samples t –test, and ** One Way ANOVA (F-test)

Table (5) explains the association between socio-demographic characteristics and a healthy lifestyle. As a result, it shows that there was a statistically significant difference (or association) between a healthy lifestyle with age, occupation, gender and drink alcohol because the result of the p-value was less than the

common alpha of 0.05. But, there was no statistically significant difference (or association) between healthy lifestyle and other socio-demographic characteristics because the result of the p-value was more than the common alpha of 0.05.

Table 6: Association between socio-demographic characteristics and medication adherence.

Socio-demographic		Mean±S.D	P-value	Socio-demographic		Mean±S.D	P-value	
Age (years)	< 25	37.59 ± 15.54	0.386**	Residence	Urban	38.87 ± 11.86	0.691**	
	25 – 50	37.22 ± 11.98			Sub-urban	37.47 ± 11.75		
	> 50	40.07 ± 9.33			Rural	35.71 ± 8.75		
Level of education	Illiterate	37.71 ± 11.20	0.278**	Gender	Male	38.64 ± 11.43	0.664*	
	Able to read and write	34.92 ± 10.22			Female	37.81 ± 11.98		
	Primary school	41.84 ± 9.47		Smoking	Never Smoker	38.05 ± 11.55	0.849**	
	Intermediate school	34.82 ± 11.40			Passive Smoker	36.61 ± 12.84		
	Secondary school	38.27 ± 14.79			EX-Smoker	38.21 ± 11.86		
	Institute & College	38.13 ± 12.77			Current Smoker	40.66 ± 12.07		
	MSc. & Ph.D.	50.00 ± —		Marital status	Single	37.61 ± 14.82	0.763**	
Occupation	State Employees	37.31 ± 9.74	0.756**		Drink alcohol	Married		38.43 ± 10.76
	Private employee	50.00 ± —				Widow/er		41.07 ± 7.43
	Self-employee	38.98 ± 13.79				Divorce		32.14 ± 16.37
	Retired	40.48 ± 11.15		No		38.33 ± 11.87		
	Housewife	37.75 ± 10.75	Yes	35.12 ± 5.26	0.511*			
	Jobless	35.39 ± 16.48	Economic Status	Insufficient		35.76 ± 10.23	0.018**	
	Student	41.67 ± 14.07		Barely sufficient		40.24 ± 12.58		
Sufficient				46.43 ± 12.63				

* Independent samples t –test, and ** One Way ANOVA (F-test)

Table (6) explains the association between socio-demographic characteristics and medication adherence. As a result, it shows that there was a statistically significant difference (or association) between medication adherence and economic status because the result of the p-value was less than the common alpha of 0.05. But,

there was no statistically significant difference (or association) between medication adherence and other socio-demographic characteristics because the result of the p-value was more than the common alpha of 0.05.

Table 7: Association between clinical characteristics of ulcerative colitis with Information ulcerative colitis, Healthy Lifestyle, and Medication Adherence.

Clinical Characteristics		Information ulcerative colitis		Healthy Lifestyle		Medication Adherence	
		Mean±S.D	p-value	Mean±S.D	p-value	Mean±S.D	p-value
Duration of ulcerative colitis (years)	< 1	15.76 ± 5.24	0.381**	42.94 ± 8.72	0.053**	45.15 ± 12.96	0.017**
	1-10	19.00 ± 9.62		41.62 ± 10.74		36.48 ± 12.16	
	> 10	19.49 ± 7.76		46.37 ± 9.83		40.00 ± 8.79	
Family history of ulcerative colitis	No	19.11 ± 8.83	0.037**	43.63 ± 10.39	0.077**	38.24 ± 11.37	0.327**
	Yes	16.29 ± 7.59		39.19 ± 10.19		36.95 ± 13.13	
	I don't know	29.41 ± 13.48		49.70 ± 11.29		47.62 ± 10.91	
Previous hospital admission for ulcerative colitis	No	17.91 ± 7.39	0.191*	41.93 ± 10.59	0.202*	37.23 ± 11.52	0.29*
	Yes	19.79 ± 10.13		44.11 ± 10.33		39.24 ± 11.86	
Age at first diagnosis	Young onset	19.83 ± 9.30	0.50**	41.92 ± 11.39	0.011**	37.83 ± 13.76	0.937**
	Middle age onset	18.21 ± 8.57		42.35 ± 9.53		38.31 ± 10.51	
	Late onset	18.70 ± 9.05		50.92 ± 9.63		39.03 ± 10.43	
any surgery related to this disease	No	18.74 ± 9.50	0.85*	43.29 ± 10.29	0.569*	37.82 ± 11.65	0.518*
	Yes	19.05 ± 6.97		42.20 ± 11.06		39.20 ± 11.87	
chronic disease	No	18.88 ± 8.76	0.911*	42.95 ± 10.80	0.941*	37.05 ± 12.02	0.047*
	Yes	18.70 ± 9.21		43.09 ± 9.73		41.24 ± 10.32	

* Independent samples t-test, and ** One Way ANOVA (F-test).

Table (7) shows the associations between baseline clinical characteristics and patient outcomes. Information about ulcerative colitis was significantly associated with family history ($p = 0.037$). Interestingly, patients who were uncertain about their family history had the highest mean information scores, while those with a confirmed family history had lower scores. No significant relationships were observed with disease duration, previous hospital admissions, age at first diagnosis, history of surgery, or presence of chronic disease (all $p > 0.05$).

For healthy lifestyle, a significant association was found with age at first diagnosis ($p = 0.011$), with patients diagnosed later in life

reporting higher lifestyle scores. Other factors, such as disease duration, family history, surgery, previous admissions, and chronic disease, showed no significant links. In terms of medication adherence, significant associations were noted with disease duration ($p = 0.017$) and the presence of chronic disease ($p = 0.047$). Patients with disease duration less than one year and those with chronic illnesses demonstrated higher adherence scores. No significant associations were identified with family history, previous admissions, age at diagnosis, or surgery (all $p > 0.05$).

Table 8: Correlation between Information Ulcerative Colitis, Healthy Lifestyle, and Medication Adherence.

Variables		Information ulcerative colitis	Physical Activity	Diet and ulcerative colitis	Symptom Management	Psychosocial	Overall (Healthy Lifestyle)	Medication Adherence
Information ulcerative colitis	Correlation	1	0.201*	0.279**	-0.132	-0.178*	0.027	0.223**
	p-value		0.013	0.001	0.106	0.028	0.740	0.006
Physical Activity	Correlation	0.201*	1	0.130	0.217**	0.271**	0.614**	0.138
	p-value	0.013		0.110	0.007	0.001	0.000	0.091
Diet and ulcerative colitis	Correlation	0.279**	0.130	1	0.053	0.184*	0.435**	0.035
	p-value	0.001	0.110		0.517	0.023	0.000	0.666
Symptom Management	Correlation	-0.132	0.217**	0.053	1	0.570**	0.747**	0.147
	p-value	0.106	0.007	0.517		0.000	0.000	0.072
Psychosocial	Correlation	-0.178*	0.271**	0.184*	0.570**	1	0.807**	0.037
	p-value	0.028	0.001	0.023	0.000		0.000	0.652
Over all (Healthy Lifestyle)	Correlation	0.027	0.614**	0.435**	0.747**	0.807**	1	0.137
	p-value	0.740	0.000	0.000	0.000	0.000		0.091
Medication Adherence	Correlation	0.223**	0.138	0.035	0.147	0.037	0.137	1
	p-value	0.006	0.091	0.666	0.072	0.652	0.091	

The correlation analysis revealed several significant relationships between patients' knowledge of ulcerative colitis (UC), lifestyle behaviors, and medication adherence. Knowledge about UC was positively associated with physical activity ($r = 0.201$, $p = 0.013$), diet adherence ($r = 0.279$, $p = 0.001$), and medication adherence ($r = 0.223$, $p = 0.006$), while showing a negative correlation with psychosocial issues ($r = -0.178$, $p = 0.028$). Physical activity correlated positively with symptom management ($r = 0.217$, $p = 0.007$), psychosocial well-being ($r = 0.271$, $p = 0.001$), and overall healthy lifestyle ($r = 0.614$, $p < 0.001$). Similarly, diet related to UC was positively linked with psychosocial well-being ($r = 0.184$, $p = 0.023$) and overall healthy lifestyle ($r = 0.435$, $p < 0.001$). Symptom management was strongly associated with psychosocial factors ($r = 0.570$, $p < 0.001$) and overall healthy lifestyle ($r = 0.747$, $p < 0.001$), while psychosocial well-being was highly correlated with overall healthy lifestyle ($r = 0.807$, $p < 0.001$). Although overall healthy lifestyle showed positive trends with medication adherence, this association was not statistically significant ($r = 0.137$, $p = 0.091$). These findings suggest that better UC knowledge is linked to healthier behaviors and improved adherence, and that lifestyle components are closely interrelated.

Discussion

This cross-sectional study, conducted with 152 patients at the Gastroenterology and Hepatology Teaching Hospital in Sulaimani, aimed to assess sociodemographic characteristics and lifestyle factors associated with ulcerative colitis (UC). Living with ulcerative colitis (UC) often means navigating a wide range of physical and emotional challenges. In this study, we aimed to better understand how people with UC manage their condition through everyday habits like diet, physical activity, medication use, and emotional coping. What we found highlights the importance of looking beyond just symptoms and considering the whole person.

The mean age of our study participants was 41.13 years, which is slightly younger than figures reported in prior regional studies, 46.3 years in Mosul and 49.3 years in South India [14,15]. The majority of patients were categorized within the age range of 25 to 50 years. Conversely, research conducted in the Middle East and Eastern Mediterranean region indicates an earlier onset of the disease; for instance, in Iran, the median age at which diagnosis occurred was 29.2 years [16], and a comprehensive meta-analysis encompassing multiple Islamic regions revealed mean ages varying from 24 to 43 years [17]. These differences likely reflect variations in demographics, healthcare access, environmental exposures, and treatment patterns, such as the widespread use of corticosteroids in younger patients in this region [18]. Additionally, our finding aligns with the typical bimodal distribution of UC onset, with peaks in the 15–30 and 50–70-year age ranges [19,20], suggesting that local factors may shift the peak toward middle adulthood.

In terms of gender, females outnumbered males in our sample, aligning with the study of [21]. The majority of participants were educated at the institute or college level (26.3%) and were

married, a demographic pattern consistent with the study conducted by [22]. Additionally, most patients resided in urban areas, echoing results from a study conducted in Baghdad [23]. However, our study revealed that half of the participants reported insufficient income, differing from findings in Al-Najaf, Iraq, where over 55% had moderately sufficient income [20].

Regarding disease duration, most patients had been living with UC for 1–10 years (64.5%), which is higher than the 1–5-year duration reported in other Iraqi studies [20]. Family history was not a significant factor, with most patients indicating no known familial UC, a finding consistent with previous studies [20].

One of the most critical findings of this study concerns patients' knowledge levels. Over two-thirds demonstrated low awareness of UC-related information, with only 0.7% displaying a good understanding. This mirrors findings from an Egyptian study where most participants had limited pre-intervention knowledge [24]. Lack of awareness may hinder proper disease management and underscores the urgent need for education programs tailored to UC patients. Recommended lifestyle guidance includes consuming small, balanced meals, avoiding trigger foods, engaging in light physical activity, managing stress, prioritizing sleep, and adhering to prescribed medications. We found that patients with better disease knowledge tended to follow treatment more consistently. This mirrors broader findings showing that low health literacy is a key risk factor for non-adherence in UC [25,26].

Our findings also revealed low adherence to a healthy lifestyle. Physical activity levels were poor, and dietary adherence was moderate among less than half the participants. Additionally, more than half of the patients reported high levels of psychosocial distress. These findings are supported by [27], who observed similar deficits in physical activity and high stress levels in UC patients prior to educational intervention. Further, this is consistent with growing evidence that moderate, regular exercise tailored to a patient's condition helps reduce inflammation, increase quality of life, and may even reduce relapse risk [28].

Patients followed a wide range of diets, often shaped by personal experience rather than structured guidance. Umbrella reviews show that high intake of processed meats, refined sugars, and ultra-processed foods is associated with increased UC progression, while high fruit and vegetable diets and Mediterranean-style patterns correlate with reduced risk and better outcomes [29].

Clinical evidence suggests that interventions like the anti-inflammatory diet or Mediterranean diet may help induce remission or lower disease severity, though the overall certainty remains modest due to heterogeneity in studies [30,31].

A large portion of patients reported ongoing stress, anxiety, and emotional fatigue, particularly during disease flare-ups. Cross-sectional data from Saudi Arabia confirm these findings; patients experienced lower quality of life and high perceived stress [32]. Emerging evidence even suggests that effective psychological interventions may reduce inflammation beyond what medication alone achieves [33].

Medication adherence was notably low, with 59.9% of patients classified as non-adherent. Comparable results were found by Ahmed & Hassan (2022) ^[22], where non-adherence rates were 42.2% in the case group and 35.8% in the control group. Similar trends were also seen in studies of hypertensive patients in Iraq, where educational programs significantly improved medication compliance ^[34]. These outcomes suggest that informed patients are more likely to adhere to prescribed treatments.

Statistical analysis indicated a significant relationship between knowledge levels and occupation ($p < 0.05$), but no significant associations were observed with other sociodemographic variables. Importantly, patient knowledge was positively correlated with medication adherence, which aligns with findings from a recent systematic review reported by ^[35] in the UK, that identified poor adherence as a persistent issue in UC management.

Furthermore, knowledge was positively associated with key lifestyle domains: physical activity ($r = 0.223$, $p = 0.006$), diet ($r = 0.279$, $p = 0.001$), overall healthy lifestyle ($r = 0.346$, $p < 0.001$), and medication adherence ($r = 0.223$, $p = 0.006$). These correlations support findings of the study by ^[36], who emphasized the effectiveness of tailored educational interventions for inflammatory Bowel disease patients, particularly in improving dietary behavior and lifestyle routines. The practice of health awareness is mainly attributed to nurses, who must identify both current and potential health problems during clinical evaluations of patients. Additionally, nurses are responsible for developing a suitable treatment plan that promotes the improvement, maintenance, and restoration of the patient's health ^[37].

Limitations of the Study

This study has some limitations. First, being conducted in a single hospital setting may limit the generalizability of the findings to broader populations. Second, the reliance on self-reported lifestyle behaviors may introduce recall bias and social desirability bias, potentially affecting the accuracy of the reported data.

Conclusion

In summary, this study highlights the critical role of patient education and lifestyle management in UC care. Interventions tailored to sociodemographic backgrounds and psychological needs are essential for improving disease control and patient outcomes. An integrated, multidisciplinary approach is strongly recommended to address the complex interplay between UC symptoms, behavior, and social factors.

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