Effect of Educational Program on Quality of Life and Health Promoting Lifestyle Behaviors for Patients with Inflammatory Bowel Disease

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Abstract:

Context: Crohn's and Ulcerative colitis disease are two common inflammatory bowel disease (IBD), which is a chronic inflammation in the gastrointestinal tract. Patients frequently experience painful symptoms and encounter adverse effects from medications due to the chronicity of the illness and its relapsing and remitting course, which can reduce quality of life (QoL). **Aim:** Evaluate the effect of educational program on quality of life and health promoting lifestyle behaviors for patients with inflammatory bowel diseases. **Methods:** The study used a quasi-experimental design, specifically employing a pre/post-test methodology on a convenience sample of (60) patient with IBD admitted within six months to gastrointestinal outpatient clinic and medicine department of Benha University Hospital. The study utilized the following tools: Patients' Structured Interview Questionnaire, Health Promoting Lifestyle Profile-II Scale, Short Inflammatory Bowel Disease (IBD) Questionnaire. **Results** indicated a statistically significant improvement in the overall mean score of patients' knowledge after implementing the educational program and at three months later (follow-up) (P<0.001). Besides, a statistically significant enhancement in the overall health-promoting lifestyle mean score, whereas preprogram the total mean score was 1.898±0.141 indicating unhealthy lifestyle which increase post implementation and at follow up to 2.429±0.131 and 2.721±0.146 respectively indicating healthy lifestyle. Total mean score of SIBDQ was 26.700±4.072 preprogram implementation which indicating poor QoL, but improved significantly to 51.083±8.749 and 56.633±8.144 post one month and at follow up respectively, which indicating better QoL (p<0.001).**Conclusion:** Patients with inflammatory bowel disease benefit from the implementation of educational programs that improve their quality of life and encourage healthy lifestyle choices. **Recommendations:** Implementing further study to investigate factors affecting compliance of IBDs patients with healthy lifestyle.

Keywords: Health Promoting Lifestyle Behaviors, Inflammatory Bowel Disease, Patients, and Quality of Life.

Introduction:

Crohn's and Ulcerative colitis disease are two types of the chronic inflammatory gastrointestinal tract disorders known as "inflammatory bowel disease" (IBD). When a typical stimulus, such as food or intestinal flora, triggers an overly exaggerated immune response in genetically predisposed individuals, it happens. Inflammatory bowel disease (IBD) is featured as recurring episodes of gastrointestinal tract inflammation due to an abnormal immune reaction to gut microbiota. These two forms of idiopathic intestinal diseases, categorized under IBD, are distinguished based on their location and the extent of involvement within the bowel wall **(Maaser et al ., 2019)**.

Diffuse inflammation of the intestinal mucosa is a symptom of ulcerative colitis (UC). Proctitis, the most common form of

ulcerative colitis (UC), can also affect the sigmoid (proctosigmoiditis), the whole colon including the cecum (pancolitis), or somewhere in between. Crohn's disease (CD) has the potential to cause transmural ulceration across different parts of the gastrointestinal tract, with the colon and terminal ileum being frequent sites of involvement. Both disorders, ulcerative colitis (UC) and Crohn's disease (CD), are classified based on their severity (mild, moderate, or severe) and the specific areas affected **(Dmochowska et al., 2018).**

The intestinal immune system plays a pivotal role in the pathophysiology of inflammatory bowel disease (IBD), where the intercellular connections within the intestinal epithelium typically act as a barrier against bacteria or antigens entering the bloodstream. However, in IBD, these connections are compromised either due to a breakdown in the barrier function or heightened inflammation. Additionally, defensive mechanisms such as mucus production by goblet cells and α-defensins secretion by Paneth cells, known for their natural antibacterial properties, are involved. When inflammation is exacerbated, the epithelium further deteriorates, leading to increased exposure to intestinal bacteria and aggravating the inflammatory response **(Liu et al., 2021).**

For all patients, receiving an IBD diagnosis means facing an unfathomable reality. It is a painful experience. Their lifestyle will be severely disrupted and their quality of life reduced as a result of these chronic conditions. Throughout the course of the disease, patients will undergo various therapeutic interventions, all of which require comprehensive examination to mitigate potential adverse effects and prevent non-compliance, which can lead to therapeutic failure. This holds true for both active and inactive stages of the disease. The progression of the disease, management, and complications are major worries, along with a variety of day-to-day issues like relationships, sexuality, family, employment, sports, and leisure **(Parra et al., 2019)**. Enhancing patients' understanding of the illness, how to manage it, and the basic concepts of treatment may help them live better and experience fewer side effects **(Tran &Mulligan , 2019)**.

According to studies, Higher disease-related knowledge benefits IBD patients, and This knowledge positively affects their quality of life and lifestyle outcomes. Greater levels of understanding about the condition are linked to better results not only with IBD but with other conditions as well, particularly chronic conditions **(Park et al., 2020).**

Identification, prevention, and mitigation of problems are the primary objectives of management. The primary approach for all patients, initially targeted at improving their health outcomes and preventing the recurrence of complications, involves lifestyle adjustments **(Abdelwahab et al., 2021).** The term "lifestyle" pertains to the way of life of individuals with the condition. It encompasses actions that either improve or impede health, such as eating a diet high in sugar and fat, exercising, using drugs, and smoking. All these factors influence inflammatory bowel disease. To stabilize the disease's progression and enhance both the physical and mental well-being of patients, lifestyle modifications are essential. Therefore, educating patients with inflammatory bowel disease about various lifestyle options is important **(Langhorst et al., 2020)**.

Significance of the Study:

According to numerous epidemiological studies, the global incidence

and prevalence rates of IBD are increasing (**Kaplan & Windsor, 2021).** According to estimates, there would be 89.6 cases of IBD per 100,000 individuals worldwide in 2020, a 31% rise from 1990 (**Piovani et al., 2020**). While the frequency of IBD has leveled off in wealthy nations, there has been a rise in new diagnoses of IBD in developing nations. (**Kaplan & Windsor, 2021).** There are 3.0 million males and 3.9 million females with IBD worldwide, and the incidence is increasing. The financial toll that IBD takes is quite important. Research has shown that the annual expenses per patient with IBD are three times greater compared to individuals without the condition (**Kaplan& Hays, 2022).**

The incidence of inflammatory bowel disease (IBD) is escalating within the Arab world, and individuals from these regions may exhibit distinct symptoms from those from Europe. In September 2009, a retrospective study was carried out on patients who were referred to an IBD center and had an established diagnosis of IBD over a ten-year period. Of these patients, sixteen nine were Egyptian, indicating a relatively low prevalence of the disease, likely because they were not aware of it; one hundred and thirty-six of these patients had ulcerative colitis, and the remaining patients had Crohn's disease (**Shamkh et al., 2022**). According to the 2023 annual report from the statistical office of Benha University Hospital, there were a total of 100 cases of patients admitted with IBD in the medicine department (**Statistical Office at Benha University Hospital, 2023**).

Aim of the study:

The aim of this study was to evaluate effect of educational program on quality of life and health promoting lifestyle behaviors for patients with inflammatory bowel diseases.

Research hypotheses:

H1: Patients' knowledge score regarding inflammatory bowel diseases could be significantly higher after educational program implementation compared to pre implementation level.

H2: The health promoting lifestyle behaviors among patients with inflammatory bowel diseases could be significantly improved after educational program implementation compared to pre implementation level.

H3: The Quality-of-life mean score among inflammatory bowel diseases could be significantly improved post educational program implementation than before implementation.

Research Design:

This study used a quasi-experimental research design employing a pre/post approach. A quasi-experimental design aims to establish a cause-and-effect relationship between an independent and dependent variable. However, unlike a true experiment, a quasi-experiment does not rely on random assignment. Instead, subjects are assigned to groups based on non-random criteria (**Sefidkar &Madadizadeh, 2022**).

Setting:

The Benha University Hospital in Qualiobya, Egypt's medical department and gastrointestinal outpatient clinic served as the study's settings.

Subjects:

A sample of (60) patient with IBD admitted to the above settings within six months were recruited for this study conveniently.

Inclusion Criteria

- Male and female patients aged between 21-60 years
- On IBD medication therapy

- The patients consented to take part in the study.

Exclusion criteria
- IBD patients affected with neuropsychiatric conditions, or diverticulosis and colon cancer.

Tools of the study:

The study utilized the following three tools to collect pertinent data:

Tool 1: Patients' Structured Interview Questionnaire

After studying pertinent and recent literature, the researcher constructed this Arabic-language questionnaire based on **Ahmed et al. (2022)** & **Mohamed et al. (2022).** It involved three main parts as follow:

Part 1: Patients' personal data including age, gender, marital status, residence, level of education and job.

Part 2: Patients' medical data including onset of the disease, type of inflammatory bowel disease, comorbid diseases, family history of IBD and smoking.

Part 3: Patients' knowledge assessment it aimed to assess patients' knowledge of inflammatory bowel diseases and its related lifestyle; it contained two sections:

Section 1: Patients' Knowledge about inflammatory bowel diseases it consisted of 10 MCQs related to definition of IBD, types , causes, risk factors, clinical manifestation, investigations , goal of treatment and medications

Section 2: Patients 'Knowledge about life style, it consist of 7 multiple choice questions about diet, exercise, stress management and follow up.

Scoring system:

Patient-provided knowledge was score as every question had a score range of 0 to 1.

The right response received a score of 1, whereas a wrong response received a zero.

Tool II: Health Promoting Lifestyle Profile-II (HPLP II) Scale:

The tool was originally created by **Walker7 Hill-Polerecky, (1997)** and was adopted to achieve the current study aim. The scale analyzes existing health-promoting practices based on the Health Promotion Model, which is based on the primary categories of healthy living. The HPLP II, consisting of 52 items, utilizes a 4-point Likert scale and encompasses six subscales as outlined below: Physical activity comprise eight questions (4, 10, 16, 22, 28, 34, 40, 46), patient nutrition include nine questions (2, 8, 14, 20, 26, 32, 38, 44, 50), stress management include eight questions (5, 11, 17, 23, 29, 35, 41, 47), health responsibility involve nine questions (3, 9, 15, 21, 27, 33, 39, 45, 51), Spiritual growth involve nine questions (6, 12, 18, 24, 30, 36, 42, 48, 52), and interpersonal relations that involve nine questions (1, 7, 13, 19,25, 31, 37, 43, 49).

Scoring:

Participants were directed to assign numerical values ranging from 1 to 4 corresponding to "never," "sometimes," "often," and "routinely" when answering the questions. To compute the means for both the overall mean score and each of the six subscales comprising 52 items, the values of each item were summed and then divided by the total number of items in the instrument or subscales. It is advisable to use means rather than sums for scale items to preserve the 1-4 metric of responses and facilitate comprehensive evaluations of scores using subscales. Both overall and sub-scale scores range from 1.00 to 4.00, with mean values approaching 4.00 indicating a healthy lifestyle

and those closer to 1.00 suggesting an unhealthy lifestyle.

Tool III: Short Inflammatory Bowel Disease (IBD) Questionnaire.

The Short IBD Questionnaire, designed by **Irvine and Thompson (1996**), consists of 10 items and serves as a disease-specific tool for evaluating four domains of health-related quality of life: Social performance, emotional state, bowel function, and systemic symptoms.

Scoring system: Each question is assessed using a seven-point Likert scale, where a rating of 1 signifies a substantial issue and 7 denotes the absence of any problem. The overall score on the Short IBD Questionnaire (SIBDQ) varies between 10 and 70, with lower scores reflecting poorer health-related quality of life (HRQoL). A SIBDQ score below 50 is indicative of a diminished quality of life (**Rosara et al., 2021).**

Ethical and administrative consideration

The study received initial authorization from the Benha University's Scientific Research and Ethics Committee of the Faculty of Nursing. Following this, official endorsements were obtained from the dean of the nursing faculty, the director of the medical department, and the director of the gastrointestinal outpatient clinic at Benha University Hospital. Throughout the research process, all ethical guidelines were strictly adhered to. The study's aim and objectives were communicated to each patient, along with their freedom to discontinue participation at any moment. Patients who took part in the research gave further verbal consent. Researchers ensured the privacy and anonymity of their participants.

Preparation of the study tools:

The research tools were selected and developed after reviewing of relevant literatures from textbooks, scientific periodicals.

Tools validity and reliability

The instruments were evaluated by a panel consisting of five experts from the medical surgical nursing department to ensure their comprehensiveness, clarity, and suitability. The reliability of the proposed instruments was examined using the Cronbach alpha test, resulting in values of 0.925, 0.917, and 0.798 for the knowledge questionnaire, HPLP II Scale, and Short IBD Questionnaire, respectively.

Pilot study:

Ten percent (6 patients) of the study sample participated in a pilot study to test the tools' applicability, clarity, and the amount of time needed to complete them. After analyzing the data from the pilot study, the study instruments underwent the required adjustments and reorganizations. Participants who took part in the pilot study were not included in the larger sample and replaced by others.

Field of Work:

Beginning in September 2023 until the end of February 2024. The data collection period extended over six months, during which the researchers conducted visits to the designated locations twice a week during the morning hours from 9:00 am to 12:00 pm, using their established data collection methods. The study progressed through four stages: planning, implementation, assessment, and evaluation.

Assessment Phase: The patients were first given a brief explanation of the study's aim by the researchers along with an introduction. Each patient was seen separately to assess his personal data, medical history and assessment

through structured interview questionnaire (Tool I), then the researchers assess life style behaviors by using HPLP II Scale (Tool II) and also assess QoL by using short IBDQ (Tool III). This session lasted about 60 minutes.

Planning Phase: Using the information gathered throughout the assessment phase, the researchers reviewed pertinent literature, designed an educational program and created an educational booklet with illustrations in simple Arabic language based on chronic inflammatory bowel disease patients' needs. The number of sessions, their content, different teaching strategies and the instructional media were also determined. The aim of the education program was to help individuals with inflammatory bowel illnesses lead healthier lifestyles and improve their quality of life. Booklet includes information about definition of IBD, types, causes, risk factors, clinical manifestation, investigations, goal of treatment and medications, healthy lifestyle behaviors as diet, physical activity, stress management and importance of follow up. Among the teaching strategies used were lectures with simplified information followed by discussions, teaching materials included power point presentations, booklets, and images.

3-Implementation phase: Through instructive sessions, the implementation phase was completed. It was divided into three sessions. Each session lasted between thirty and forty-five minutes. Ten groups of five to six patients each were created from the patients. Each session commenced with a review of the goals and objectives from the previous session, conducted in Arabic to accommodate the educational background of the patients. During the session, encouragement and reinforcement were used

to boost motivation for sharing this. In addition, comments were given, and questions were answered. After being completed, the educational pamphlet was distributed to each patient.

Session 1: At the onset of this session, the researchers provided introductions of themselves, discussed the educational program and its significance, and elaborated on its goals. The session covered topics such as understanding the anatomy and physiology of the colon, defining IBD, exploring its causes, types, risk factors, and clinical manifestations.

Session (2): Topics covered included methods of diagnosis of disease, complication of disease, goal of treatment, methods of treatment and importance of compliance to medication and follow up.

Session (3): Contained instructions related to healthy lifestyle behaviors as physical activity, maintaining diet, mange stress, quitting alcohol and smoking.

3-Evaluation Phase:

This phase sought to assess the efficacy of a teaching program for individuals with inflammatory bowel disorders about healthy lifestyle choices and quality of life. Using instruments for data collection (Tool I, II, III). Before, one and three months following the implementation of the educational program, the researchers evaluated the patients' knowledge, quality of life, and lifestyle behaviors.

Statistical analysis of the data:

The data underwent collection, coding, digitization, tabulation, and analysis using Version 21 of the Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL).

Descriptive statistics, including mean, standard deviation, frequency, and percentages, were applied. Statistical analyses encompassed the Spearman correlation test (r) to establish correlations between socio-demographic characteristics and the study sample across different study phases, the Chi-square test for number and percentage distribution, and the Paired (t) test for comparing mean scores within the same sample across various study phases. Significance levels were determined as highly significant for $p \leq 0.001$, significant for $p \leq 0.05$, and not significant for $p > 0.05$.

Results:

Table 1 shows the distribution of studied patients' personal information. 53.3% of them aged between 31-40, with a mean age of 35.18 ± 7.718. In terms of gender and marital status, the patients under study comprised 60% females and 66.7% married individuals, respectively. Furthermore, 78.3% of them were from rural communities, and 66.7% of them have a secondary education. Of these, 58.3% are employed.

Based on their medical history, **Table (2)** shows the distribution of the patients under study. It reveals that 45% of the studied patients had disease for 5-<10years followed by 43.3% had disease for<5 years. Regarding type of disease, 80% of the studied patients had ulcerative colitis, and 86.7% not suffer from chronic diseases .90% of them reported no family history of IBD disease and 76.7% not smokers.

Table 3 displays the distribution of the study patients' knowledge score related to lifestyle modifications and inflammatory bowel disease prior to, post one month and post three months of program implementation. Prior to the program's

implementation, it was found that 45%, 38.3%, and 38.3% of participants correctly identified the definition, types, and causes of IBD. One month later, these percentages increased to 86.7%, 83.3, and 81.75%, respectively. However, there was a minor decrease in these percentages after three months. All knowledge items exhibited highly significant differences before, after, and during the follow-up phase, with a p-value of less than 0.001. Furthermore, significant differences in patients' knowledge were observed between pre/post and pre/follow-up phases, indicating an enhancement in the overall mean knowledge score post-program implementation and during the follow-up period (P<0.001).

Table 4 presents the comparison of the Health-Promoting Lifestyle Profile II for the patients at three different phases: pre-program implementation, post-program implementation, and follow-up. The results show the total mean score of health-promoting lifestyle improved statistically significantly after the program was implemented and followed up on (p <0.001). Prior to the program, the total mean score was 1.898 ± 0.141, indicating an unhealthy lifestyle. After the program was implemented and followed up on, the scores increased to 2.429 ± 0.131 and 2.721 ± 0.146, respectively, indicating a healthy lifestyle.

The distribution of the patients under study with respect to their overall scores for adopting healthy lifestyle practices before, during, and following up the program's implementation is shown in **Figure (1)**. It shows that, during the pre-program implementation phase, only 20% of the patients under study were often engaging in health-promoting lifestyle behaviors; in contrast, 96% of them did so after the

program, and at the follow-up, 90% of them were often engaging in such activities, and 10% of them did so routinely.

Table (5) demonstrates the comparison of QoL for the studied patients before, after and at follow up program implementation. It reveals the total mean score of SIBDQ was 26.700±4.072 preprogram implementation which indicating poor QoL, but improved significantly to 51.083±8.749 and 56.633±8.144 post one month and at follow up respectively, which indicating better QoL ($p<0.001$).

The correlation between overall health-promoting lifestyle and total knowledge post-month, and follow-up, is shown in **Table (6).** After one month and during the follow-up, there is a statistically significant positive correlation found in their overall knowledge, overall health-promoting lifestyle, and overall quality of life.

Table (1): Frequency and percentage distribution of the IBD patients' personal characteristics (No=60).

Personal data	Items	Studied patients (n=60)	
		N	%
Age	20-30	15	25.0
	31- 40	32	53.3
	41 -50	9	15.0
	51-60	4	6.7
X ± SD		**35.18± 7.718**	
Gender	−Male	24	40.0
	−Female	36	60.0
Marital status	−Single	10	16.7
	−Married	48	80.0
	-Divorce	1	1.7
	-Widow	1	1.7
Residence	−rural	47	78.3
	−urban	13	21.7
Level of education	-Read and write	6	10.0
	−Preparatory	5	8.6
	−Secondary	40	66.7
	−University	9	15.0
Job	−Not work	25	41.7
	−Work	35	58.3

Table (2): Frequency and percentage distribution of the IBD patients medical characteristics (No=60).

Medical history	Items	Studied patients (n=60)	
		N	%
Past history			
Onset of diagnosis	<5 years	26	43.3
	5<10years	27	45.0
	>10 years	7	11.7
Types of inflammatory bowel disease	Ulcerative colitis	48	80.0
	Crohn disease	12	20.0
Suffering from Chronic diseases	Yes	8	13.3
	No	52	86.7
If yes (no=8)	-hypertension	5	62.5
	Diabetes	3	37.5
	Cardiac	0	0.0
Family history	Yes	6	10.0
	No	54	90.0
Smoking	Yes	14	23.3
	No	46	76.7

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Table (3): Comparison of the studied patients 'knowledge score about inflammatory bowel disease and life style pre, post and follow up program implementation (no=60)

Items	Preprogram implementation				Post-program implementation (post 1 month)				follow up (post 3 months)				χ^2 1 (P 1)	χ^2 2 (P 2)
	Correct		Incorrect		Correct		Incorrect		correct		incorrect			
	No	%	No	%	No	%	No	%	No	%	No	%		
General knowledge about inflammatory bowel disease														
Definition of inflammatory bowel disease	27	45	33	55	52	86.7	8	13.3	41	68.3	19	31.7	23.155 <0.001**	6.652 0.016*
Types	23	38.3	37	61.4	50	83.3	10	16.7	49	81.7	11	18.3	25.497 <0.001**	23.472 <0.001*
Causes	23	38.3	37	61.4	49	81.7	11	18.3	47	78.3	13	21.7	23.472 <0.001*	19.749 <0.001**
Risk factors	7	11.7	53	88.3	55	91.7	5	8.3	52	86.7	8	13.3	76.885 0.000**	67.519 0.000**
Clinical manifestation	6	10	54	90	51	85	9	15	47	78.3	13	21.7	64.605 0.000**	53.872 0.000**
Investigation	14	23.3	46	76.7	53	88.3	7	11.7	46	76.7	14	23.3	51.400 0.000**	34.133 0.000**
Complication	8	13.3	52	86.7	49	81.7	11	18.3	46	76.7	14	23.3	56.174 0.000**	48.620 0.000**
Goal of treatment	12	20	48	80	56	93.3	4	6.7	50	83.3	10	16.7	65.701 0.000**	48.187 0.000**
Medication	7	11.7	53	88.3	50	83.3	10	16.7	50	83.3	10	16.7	61.788 0.000**	61.788 0.000**
Knowledge about lifestyle														
Diet	10	16.7	50	83.3	49	81.7	11	18.3	39	65	21	35	50.714 0.000**	29.005 <0.001**
Physical activity & exercise	8	13.3	52	86.7	51	85	9	15	46	67.7	14	23.3	61.650 0.000**	48.620 0.000**
Stress management	15	25	45	75	50	83.3	10	16.7	51	85	9	15	41.119 0.000**	43.636 0.000**
Follow up	15	25	45	75	52	86.7	8	13.3	45	75	15	25	46.263 0.000**	30.000 <0.001**
Means score of knowledge	3.633± 2.131				14.583±2.242				13.433± 2.664				T$_1$=27.42 0.000	T2=22.25 0.000

χ^2 1(P 1) between pre and post implementation χ^2 2(P 2) between pre and follow up (3months)

Table (4): Comparison of health-promoting lifestyle profile II for the IBD patients pre , post and follow up program implementation(No=60)

Health-promoting lifestyle profile II	Pre program	Post one month	Follow up (Post 3 months)	T 1(P 1)	T² 2(P 2)
	X ± SD	X ± SD	X ± SD		
Physical Activity	1.706±0.414	2.472±0.292	2.791±0.285	T:-11.718 P <0.001**	T:-16.649 P <0.001**
Nutrition	1.942±0.225	2.401±0.322	2.679±0.318	T:-9.045 P <0.001	T:-14.636 P <0.001**
Stress Management	1.752±0.293	2.268±0.322	2.575±0.233	T:-9.187 P <0.001	T:-16.992 P <0.001**
Health Responsibility	1.903±0.346	2.559±0.340	2.837±0.289	T:-10.457 P <0.001**	T:-16.015 P <0.001**
Spiritual Growth	1.948±0.379	2.359±0.261	2.666±0.258	T:-6.908 P <0.001**	T:-12.112 P <0.001**
Interpersonal Relations	2.109±0.317	2.501±0.291	2.768±0.227	T:-7.198 P <0.001**	T:-13.238 P <0.001**
Total mean score of health-promoting lifestyle profile	**1.898±0.141**	**2.429±0.131**	**2.721±0.146**	**T:-21.287 P =0.000****	**T:-31.244 P =0.000****

T 1(P 1) between pre and post one month   T 2(P 2) between pre and follow up
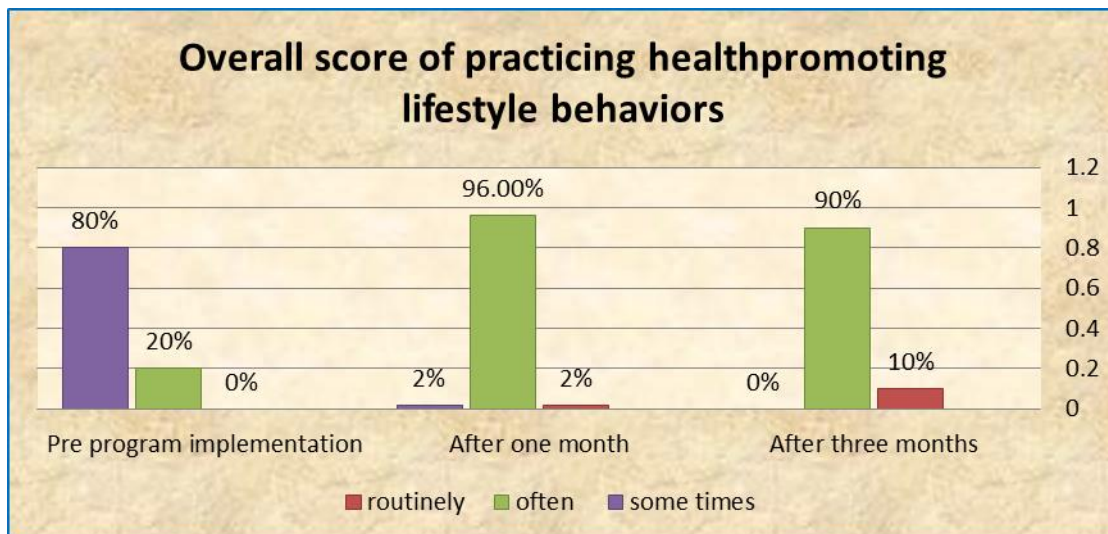
Figure (1): Overall scores for adopting healthy lifestyle practices before, during, and following up the program's implementation

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Table (5): Comparison of QoL by Short Inflammatory Bowel Disease (IBDQ) Questionnaire for the studied patients pre , post and follow up program implementation(no=60)

Item	Preprogram	Post one month	Follow up	T 1(P 1)	T 2(P 2)
	X ± SD	X ± SD	X ± SD		
Total score of IBD questionnaire	26.700±4.072	51.083±8.749	56.633±8.144	T:19.571 P =0.000**	T:25.462 P =0.000**

T 1(P 1) between pre and post one month   T 2(P 2) between pre and follow up

Table (6): Correlation between total knowledge and total health promoting life style with total Qol, post one month and follow up. (No=60).

Items	Total QoL (IBD)Questionnaire			
	Post one month		Follow up (post 3 months)	
	r	p	r	P
Total knowledge	0.404	0.001**	0.272	0.036*
Total health promoting life style	0.400	0.002**	0.307	0.017*

Discussion

Inflammatory bowel disease (IBD) consists of a variety of persistent digestive disorders marked by continuous inflammation in the gastrointestinal tract. Among these are Ulcerative Colitis and Crohn's Disease (CD), which exhibit comparable physiological processes. **Parra et al. (2019)** have indicated a correlation between IBD and diminished quality of life, emotional strain, and heightened medical expenses.

Concerning the personal data of individuals suffering from inflammatory bowel disorders. The findings of the current study indicate that more than half of the participants fell within the middle-aged category (31-40 years), with a mean age of 35.18±7.718. Moreover, over half of the sample was married, over three quarters were living in rural areas, over two thirds had completed secondary education, and over half of them were employed.

These results were in alignment with **Elbadry et al. (2022)** who conducted a nationwide multicenter investigation into the clinical and epidemiological characteristics of individuals diagnosed with inflammatory bowel disease in Egypt. Their study revealed that a majority of the participants hailed from rural areas, with an average age of 35.1 ± 12.5 years. Furthermore, these findings were consistent with those of **Ahmed et al., (2022)** who explored the factors influencing health-

promoting behaviors and self-efficacy in individuals diagnosed with inflammatory bowel diseases. Their research indicated that nearly two-thirds of the subjects were employed, predominantly married, and that more than half of the participants were women, with an average age of 33.8 years±5.1 years. Additionally, the findings align with **Ferreira et al. (2021)** study, that investigated the demographic clinical features of Patients with IBD at a Referral Center in Brazil," which showed that the majority of patients had completed their basic education and that over fifty percent of the participants were female.

Furthermore, these findings were consistent with **Ashok et al. (2017),** who investigated pharmaceutical interventions by clinical pharmacists on medication adherence and knowledge among patients with inflammatory bowel disease. Their study revealed that the majority of patients were aged between 18 and 40 years, with an average age of 37.33 ± 15.12. Additionally, more than one-third of the participants had attained secondary education, and nearly half of them were employed.

Regarding the medical history of patients with inflammatory bowel illnesses, the current investigation reveals that over thirty percent of the patients had the IBD for fewer than five years, and nearly half had been ill for five to less than ten years. **Ahmed et al. (2022)** discovered that around one-third of the patients examined had encountered symptoms of their disease for duration of five years or less, whereas the remaining two-thirds had been managing the disease for over five years. This distribution of findings might be attributed to the chronic nature of the condition.

In terms of the type of IBD, the most recent study found that over three-quarters of

patients had ulcerative colitis (UC), and only twenty percent had chron disease (CD), but the majority of them did not have any other chronic diseases. According to the researchers, this could be because bleeding, that is more frequent in UC, is a strong inducer to seek medical attention, making UC cases easier to identify than CD cases. **Elbadry et al., (2022)** who discovered that the majority of individuals had UC and just one fifth had CD, corroborated this conclusion. But disagreed with **Ahmed et al., (2022)** who found that above half of the studied patient in his study had CD and others had UC .

In terms of smoking and family history of the IBD, this study found that three-quarters of the participants did not smoke, and the majority of patients had negative family history of IBD. The study carried out by **Mohamed et al. (2022)** reported that most of research participants lacked a family history of the IBD. Their research focused on examining how Lifestyle Modification affects the Health Status of Ulcerative Colitis Patients.

Regarding the patients' understanding of inflammatory bowel disease and lifestyle options, the study examined their knowledge before, immediately after, and three months following the implementation of the program. The current study findings reveals, that before the program was implemented, more than thirty percent of the participants got correct knowledge about the definition, types, and causes of IBD, while the majority of participants were correctly knowledgeable after the program had been implemented for one and three months. All knowledge items before, after, and throughout the follow-up program was highly statistically significant. These outcomes resonated with **Mohamed et al. (2022)** findings, where after the

intervention, approximately two-thirds of participants in the study group exhibited adequate levels of knowledge regarding disease comprehension, causative factors, and risk factors. Similarly, **Berding et al. (2016),** in their investigation on the Effects of Educational Intervention on Emotional Distress, Self-Care, and Coping Strategies among Individuals with Inflammatory Bowel Disease, noted an improvement in disease-related knowledge subsequent to an educational initiative, which is consistent with the results of the current study.

Furthermore, the present study demonstrated significant statistical differences in patients' knowledge between pre/post and pre/follow-up phases, indicating an enhancement in the overall mean knowledge score concerning the disease and lifestyle subsequent to program implementation and follow-up. These results validate the first research hypothesis, demonstrating the efficacy of the educational program and showing that patients' knowledge increases when information is presented in an understandable manner.

The study conducted by **Shabaan et al. (2022)** that aimed to assess Impact of Educational Guidance on knowledge Among Ulcerative Colitis Patients provided support for this outcome, as they observed a statistically significant enhancement in the patients' knowledge level, both immediately after the intervention and during the follow-up period. According to **Park et al. (2020)** who investigated the correlation between improved disease knowledge and decreased medical interventions among patients diagnosed with IBD, the education group's knowledge levels were significantly better than compared to the controls. Patients with IBD may have different levels of disease-related knowledge, which may have an impact

on their capacity for self-management and their ability to adopt adaptive coping mechanisms.

Concerning to health-promoting lifestyle profile II for the IBD patients. The results of the present study indicate a statistically significant enhancement in the overall mean score of health-promoting lifestyle following the implementation of the program and during the follow-up period (p < 0.001), where as pre program the total mean score was 1.898±0.141 indicating unhealthy life style which increase post implementation and at follow up to 2.429±0.131 and 2.721±0.146 respectively indicating healthy life style . Also, this study reported that less than quarter of IBD patients were often practicing health promoting life style behaviors in preprogram implementation , compare to majority post program and at follow up were often practicing health promoting life style behaviors . This might be referred to the educational program help patient to recognize the illness and improve their lifestyle behavior toward achieving long-term results and positive outcomes. These findings are supporting the second research hypothesis.

This result agreed with the findings of **Mohamed et al. (2022)** who found that most of patients not adhere to healthy life style pre intervention which improved post intervention and follow up with highly statistically significant differences .Also this result supported by **Ahmed et al., (2022)** reported that total mean score of health-promoting lifestyle was 2.6768± 0.57935 which indicating healthy life style. This outcome supported the conclusions of a study by **Solhi et al., (2020)** In examining the influence of an educational intervention on lifestyle through the intervention mapping approach, the study revealed that compared to

the initial assessment, the intervention group displayed a notable rise in the average score of health-promoting lifestyle and its diverse aspects at both one month and three months after the intervention. Conversely, there was no significant alteration observed in the lifestyle and its dimensions of the control group.

Concerning IBD patients' life quality, this study demonstrated that the overall mean score of SIBDQ was26.700±4.072 pre program implementation ,improved significantly to 37.733±3.768 and 41.500±4.006 post one month and at follow up respectively ,which indicating better QoL (p<0.001). Which was supporting the third research hypothesis denoting to the sustained positive effect of education on knowledge, life style and quality of life .

Magharei et al. (2019) conducted a randomized control study to evaluate the impact of self-management education on the life quality and self-efficacy of ulcerative colitis patients that yielded the following result: the intervention group's overall Qol and its dimensions significantly increased both immediately and one month later (P<0.001).

Moreover, consistent with the results reported by **Uran et al. (2019)** in their randomized controlled trial investigating the effects of Online Education on Disease Activity, Symptom Management, and Quality of Life in IBD Patients, the average quality of life scores were higher among patients who underwent web-based education. This indicates that patient education significantly contributes to improving their quality of life, as evidenced by the observed upward trend in quality of life scores over the duration of the study.

Furthermore, this outcome was consistent with that of **Abed et al. (2015)**, who examined the the impact of an educational program on enhancing the psychological health and quality of life among individuals with UC patients. The study reported that post-program quality of life mean scores had increased.

About the relationship between overall health-promoting lifestyle knowledge and overall QoL, post-month, and follow-up. It indicates a significant positive correlation between participants' overall knowledge and health-promoting lifestyle, as well as their overall quality of life, both at one month and three months later. It served to validate the fourth hypothesis.

Mohamed et al. (2022) found a significant (P < 0.001) association between the overall knowledge level and lifestyle modifications post-educational intervention. Furthermore, **Mazaheri et al. (2020)** in clinical trial examining the effectiveness of a lifestyle education in ulcerative colitis patients. It supported these results by demonstrating a correlation between lifestyle changes and quality of life.

Conclusion:

The present study concluded that patients with inflammatory bowel illnesses benefit from the implementation of the educational program that improved their knowledge, quality of life and encourage healthy lifestyle choices which supported the study hypotheses.

Recommendations:

The current study recommended the following:

1-Educational materials including handouts, films, posters, and booklets should be available for all patients with IBD to increase

their knowledge regarding healthy life style behaviors either in medicine department or at outpatient clinics.

2. Patients with IBDs should attend ongoing education regarding IBD's risk factors and clinical manifestations in order to be informed about the condition, which is essential to their treatment, and to prevent any negative effects on their quality of life.

3. Replication of the study on larger probability sample from different geographic distribution for generalization of results.

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تأثير برنامج تعليمي على جودة الحياة و تعزيز سلوك نمط الحياة الصحى للمرضى الذين يعانون من أمراض الأمعاء الإلتهابية

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مرض كرون والتهاب القولون التقرحي هما مرضان التهابيان شائعان لمرض الأمعاء الالتهابية، وهو التهاب مزمن في الجهاز الهضمي.يعاني المرضى في كثير من الأحيان من أعراض مؤلمة ويواجهون آثارًا ضارة من الأدوية بسبب مرضهم المزمن ومسار الانتكاس والتي يمكن أن تقلل من جودة الحياة لديهم . هدفت هذه الدراسة الي تقييم تأثير برنامج تعليمي على جودة الحياة و تعزيز سلوك نمط الحياة الصحى للمرضى الذين يعانون من أمراض الأمعاء الإلتهابية. حيث استخدمت الدراسة التصميم شبه التجريبي،باستخدام منهجية الاختبار القبلي والبعدي على عينة ملائمة مكونة من (60) مريض مصاب بمرض الامعاء الالتهابية خلال ستة أشهر في العيادة الخارجية للجهاز الهضمي بقسم الباطنة بمستشفي بنها الجامعي. استخدمت الدراسة الادوات الاتية : استبيان المقابلة للمرضى، مقياس جودة الحياة لمرضى الامعاء الالتهابية ، استبيان مرض التهاب الأمعاء القصير. أشارت النتائج إلى تحسن ذي دلالة إحصائية في متوسط النتيجة الإجمالية لمعرفة المرضى بعد تنفيذ البرنامج التعليمي وبعد ثلاثة أشهر (P <0.001). الى جانب ذلك، هناك تحسن كبير إحصائيا في أسلوب الحياة المعزز للصحة، وايضا قبل تنفيذ البرنامج اشار المقياس إلى ضعف جودة الحياة، ولكنه تحسن بشكل ملحوظ بعد شهر واحد وعند المتابعة مما يشير إلى جودة حياة افضل. كما ان تطبيق برنامج تعليمى كان ناجحا للمرضى الذين يعانون من مرض التهاب الأمعاء وعمل على تحسين جودة حياتهم وتشجيع خيارات نمط الحياة الصحي. وأوصت الدراسة بتنفيذ مزيد من الدراسة لدراسة العوامل التي تؤثر على التزام مرضى الأمعاء الالتهابية بنمط حياة صحي.