Effect of Learning Package on Knowledge, Symptoms Severity and Quality of Life for Patients with Inflammatory Bowel Disease

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ABSTRACT
Background: Inflammatory bowel disease (IBD), a chronic gastrointestinal condition, significantly impacts patients' quality of life, leading to severe symptoms and frequent hospitalizations. Patient education plays a crucial role in managing the disease, as improved overall well-being. Aim: Evaluate the effect of learning package on knowledge, symptoms severity and quality of life for patients with inflammatory bowel disease. Research design: A quasi-experimental research design (pre-posttest). Subjects and setting: 33 patients diagnosed with inflammatory bowel disease were recruited from Tropical Medicine and Gastroenterology department at Aswan University Hospital within 6 months. Tools: (I): Patient's assessment Questionnaire which contained Demographic, Medical history and Knowledge Assessment sheet, (II): Symptom Severity Scale: (Modified Harvey Bradshaw Index Assessment Scale (CD) and Partial Mayo scoring index assessment scale) and (III): Inflammatory Bowel Disease Questionnaire (IBDQ). Results: post-intervention of the learning package, patients' knowledge level increasing from 57.6% to 84.8% (0.028), a statistically significant improvement in the ulcerative colitis activity scoring index and reduced symptom severity (0.001), the overall quality of life also saw a marked improvement, as evidenced by an increase from 63.6% to 90.9% (0.017). Furthermore, significant correlations were found between knowledge and quality of life as well as between quality of life and symptom severity (0.004). Conclusion: The application of the educational package had a significant positive effect on improving knowledge, reducing symptom severity, and enhancing quality of life. Recommendation: The integration of comprehensive educational programs for those patients should be prioritized to improve self-management, and enhance overall patient outcomes.

1. Introduction

Inflammatory Bowel Disease (IBD), which includes conditions such as Crohn's disease and ulcerative colitis, is a chronic inflammatory disorder of the gastrointestinal tract. IBD significantly impacts the lives of patients, causing a range of symptoms, including abdominal pain, diarrhea, fatigue, and weight loss. These symptoms often lead to reduced quality of life, both physically and psychologically, as patients struggle with fluctuating disease activity and long-term treatment regimens (1).

Inflammatory Bowel Disease (IBD), encompassing two primary conditions—Crohn's disease and ulcerative colitis—is characterized by chronic inflammation of the gastrointestinal (GI) tract. The unpredictable nature of IBD, with periods of remission and flare-ups, can greatly diminish patients' daily functioning and well-being. Symptoms such as persistent diarrhea, abdominal pain, rectal bleeding, weight loss, and fatigue can lead to a significant decrease in quality of life (QoL). In addition to the physical burden, IBD patients often experience psychological stress, anxiety, and depression, as the disease tends to affect their personal, social, and professional lives (2).

Management of IBD is complex, requiring a multidisciplinary approach that includes pharmacological treatment, lifestyle adjustments, and continuous monitoring. However, research has increasingly pointed to the critical role that patient education plays in disease control. Patients who understand their condition, treatment options, and lifestyle modifications are often better equipped to manage symptoms, adhere to treatment regimens, and maintain a more stable disease course (3).

The concept of patient-centered education, particularly through structured learning packages, has gained recognition in recent years. Learning packages are educational tools designed to provide patients with tailored information about their disease, treatment options, and self-management strategies. By enhancing patient knowledge, these packages can empower individuals to take an active role in managing their health. This, in turn, can lead to improved symptom control, better disease outcomes, and enhanced quality of life (4).

Several studies have indicated that patient education programs can improve health-related outcomes in chronic diseases, including IBD. However, there remains a need for more focused research on the direct impact of learning packages on key outcomes such as symptom severity, knowledge acquisition, and quality of life in IBD patients. Understanding these relationships is essential to optimizing the overall care of IBD patients [(5).]

Effective management of IBD relies not only on medical interventions but also on patient education, which can empower individuals to manage their condition more effectively. Learning packages designed to improve patients' knowledge about their disease, treatments, and symptom management have the potential to enhance self-care behaviors. By improving knowledge, such interventions may also reduce the severity of symptoms and positively affect patients' quality of life [(6).]

Nurses play a pivotal role in the management of patients with Inflammatory Bowel Disease (IBD), acting as educators, care coordinators, and patient advocates. Their responsibilities extend across various aspects of patient care, from clinical management to emotional support, making them essential in improving outcomes and quality of life for IBD patients [(7).]

Significance of the study:

In the last decades, an increase in IBD incidence and prevalence rates has been observed worldwide, especially in newly industrialized countries. IBD usually progresses to disabling conditions, especially at a functional and emotional condition, which seriously deteriorates the patient’s quality of life. In this sense, the new treatment strategies aim not only to block the progression of the disease and prevent intestinal damage, but also to reduce the disability and to restore the quality of life [(8).]

Therefore, the study conducts to evaluate the effect of learning package on knowledge, symptoms severity and QoL in the Egyptian population who experience IBD is needed. Providing individual education combined with non-pharmacological therapy could contribute to alleviation/remission of symptoms and improve QOL of patients with IBD.

Aim of the study:

Evaluate the effect of learning package on knowledge, symptoms severity and quality of life for patients with inflammatory bowel disease.

Research Hypothesis:

The following research hypotheses had formulated to achieve the aim of the study:

H1: The patients' knowledge scores regarding to inflammatory bowel disease will be improved post implementation of the learning package than their pre- implementation scores.

H2: The patients' symptoms severity level post implementation of the learning package will minimize compared to their pre-implementation.

H3: The patients' quality of life scores will be better post implementation of the learning package than their pre-implementation scores.

2. Patients and Methods:

Research design:

pre-experimental research design one group pre \post intervention

Setting:

This study was carried out at Tropical Medicine and Gastroenterology department at Aswan University Hospital.

Subjects:

consecutive sampling 33 patients diagnosed with inflammatory bowel disease were recruited from Tropical Medicine and Gastroenterology department at Aswan University Hospital within 6 months. Patients must have a confirmed diagnosis of inflammatory bowel disease (Crohn's disease or ulcerative colitis) based on established clinical, endoscopic, and/or histological criteria and their age from 20 to 65 years. Patients willing to participate in the study.

Exclusion criteria:

1. Cognitive Impairment:
2. Recent Surgical Procedures: such as bowel resection or ostomy creation
3. Comorbidities: such as uncontrolled cardiovascular disease, renal failure, or malignancy

Study duration:

The research was carried out over a period of six months from the beginning of November 2023 to the end of April 2024.

Tools of data collection:

Three tools were piloted and used by the researcher to collect data including:

Tool (I): Patient's assessment Questionnaire, which were being developed and used by the researcher parts [9; 10; 11], to collect necessary data about patients in this study-, comprised of three parts:

Part I: Demographic characteristics of the patients: as age, gender, marital status, educational level, occupation, etc.

Part 2: Medical history of the patients: it was be developed by the researcher-based reviewing of literature to assess past and present medical history of the patients, duration of illness, chronic diseases, family history of the same disease, laboratory investigations, diagnostic tests and smoking habit.

Part 3: Knowledge Assessment sheet about inflammatory bowel disease. This part was be developed by the researcher after reviewing of the recent literature [12; 13; 14]: A structured questionnaire consisting of multiple-choice. Questions can assess various aspects of knowledge related to inflammatory bowel disease, including its definition, symptoms, risk factors, treatment goals, and diagnostic tests. Scoring system is to assign one point for each correct answer and zero points for incorrect or unanswered questions. The total score is calculated by summing the points for all correctly answered questions.

Scoring system:

The scoring system for the knowledge assessment of inflammatory bowel disease (IBD) consists of 18 multiple-choice and true/false questions. Each correct answer is assigned one point, while incorrect or unanswered questions receive zero points. The total score is calculated by summing the points for all correctly answered questions.

The total score is calculated by summing the points for all correctly answered questions. These total scores are then converted into a percentage. Knowledge is considered satisfactory if the percentage score is 60% or higher, indicating a strong understanding of IBD. If the percentage score is below 60%, the knowledge level is considered unsatisfactory.

Tool II: Symptom Severity Scale: comprised of two parts:

Part I: Modified Harvey Bradshaw Index Assessment Scale for Crohn's disease (CD) activity developed by [15]. It is a comprehensive discriminative tool aimed to assess the degree of CD activity. It consists of four clinical parameters: General well-being (Very well = 0 , Slightly below Par = 1, Poor = 2, Very Poor = 3, Terrible = 4) Abdominal pain, (one = 0, Mild = 1, Moderate = 2, Severe = 3), numbers of liquid or soft stools per day (yesterday) and physician's assessment (None = 0, Arthalgia = 1 , Uveitis = 1 , Erythema Nodosum = 1 , Aphthous ulcer = 1 , Pyoderma gangrenosum = 1 , Anal Fissure = 1 , New Fistula = 1 , Abscess = 1). The first, second and third parameters asked for patient to answer and the fourth parameter for physician to answer. The numerical results provide a score that represented an estimate of CD activity. The cumulative scores for this scale vary from < 5 = remission, 5-7 = mild disease, 8-16 = moderate disease and >16= sever disease.

Part 2 Partial Mayo scoring index assessment scale for ulcerative colitis activity (PMS): developed by [16]. It consisted of three clinical parameters (fecal frequency, bleeding per rectum, and physician's global assessment). The first and second parameters asked the patient to answer and the third parameter to the physician to answer. The numerical results represented an estimate of the degree of UC severity. Scoring system: Each clinical parameter is assigned a score from 0 to 3 according to the clinical evaluation. Calculation formula: Add the scores of the three parameters. Clinical response is defined as a decrease of at least 2 Mayo Clinical Score. The

total score can be categorized to Remission =0-1, Mild Disease =2-4, Moderate Disease =5-6, and Severe Disease =7-9.

Tool III: Inflammatory Bowel Disease Questionnaire (IBDQ) adopted from :[17] Is a widely used tool for assessing the quality of life and symptom severity in patients with inflammatory bowel disease (IBD). It covers symptoms such as abdominal pain, diarrhea, emotional well-being, social functioning, and systemic symptoms. The IBDQ generates a total score, with lower scores indicating more severe symptoms and poorer quality of life. It is a patient-reported questionnaire designed to measure the impact of IBD on various aspects of a patient's life, including physical, emotional, and social well-being. The IBDQ consists of 32 items that cover four domains related to IBD. Each item in the IBDQ is rated on a Likert scale, typically ranging from 1 to 7, with higher scores indicating better quality of life. The total score is calculated by summing the scores of all items or by averaging the scores across domains.

Learning package:

It was developed by the researcher based on literature review [18]. It contained knowledge about IBD such as anatomy and physiology of the colon, definition of IBD, causes, signs, and symptoms, treatment plan which included (drug therapy, diet, exercises, and relaxation technique, as well as complication and follow-up care.

This learning package formulated in a booklet-colored pictured form.

A hard copy was given to the studied patients after completion of the research.

It contained:

Following this, the Definition and Function of the Intestines section provides detailed information on the anatomy and essential functions of the intestines, such as digestion, nutrient absorption, and waste management, offering patients insight into how their bodies work and the potential effects of IBD.

In the IBD Definition and Symptoms section, the booklet explains the disease in more detail, including its main types and common symptoms such as chronic diarrhea, abdominal pain, and weight loss, while also highlighting the impact on daily life.

The Causes and Risk Factors section explores the possible contributing factors to IBD, including genetic predispositions, immune system malfunctions, environmental influences, and dietary triggers, offering patients a comprehensive view of what might exacerbate the condition.

Next, the booklet addresses the Complications of IBD, discussing potential issues such as intestinal strictures, ulcers, abscesses, and nutritional deficiencies. It also covers extra-intestinal manifestations, including joint pain and skin conditions, providing patients with a thorough understanding of the risks associated with IBD.

The Diagnosis and Treatment section guides patients through the various diagnostic techniques like lab tests, imaging, and endoscopy, while outlining the range of treatment options available, including medications, dietary adjustments, and surgical interventions. This section aims to familiarize patients with the clinical processes they may encounter.

In the Prevention and Self-Care section, the booklet offers practical advice on managing stress, making lifestyle changes, and adhering to dietary recommendations. These tips are designed to help reduce symptoms and support better overall health.

The booklet also emphasizes Patient Education and Knowledge Improvement, highlighting the critical role that patient education plays in managing IBD. It details strategies and interventions that can enhance patients' understanding and ability to cope with the disease.

Lastly, the Conclusion provides a positive message, encouraging patients to remain hopeful, seek continued support, and engage in self-care practices to improve their quality of life despite the challenges of living with IBD.

Methods:

The study was carried out in to the following phases:

Phase (I): Preparatory phase:

- An official approval letter was obtained from the dean of the faculty of nursing.
- Official agreement was obtained to conduct the study from the responsible authorities of Aswan University hospital.
- The researcher reviewed the relevant related literature of the current study, local & international, using text books, articles, and scientific magazines [3,4].
- The study was be performed over a period of six months from the beginning of November 2023 to the end of April 2024.
- To ensure smooth collaboration, personal communication was established with the nurses and doctors involved. The nature and purpose of the research were clearly explained to them, ensuring their full cooperation throughout the study. Finally, after clarifying the study's objectives and obtaining their informed consent, patients who met the criteria were enrolled in the research

Tool's validity and reliability:

Tool's validity was tested through a jury of (5) experts from Der internal medicine and medical- Surgical nursing staff from Assiut University; their opinions were formulated as regards to the tool format layout, consistency, knowledge accuracy, relevance and competence. Tool's reliability refers to the degree of consistency with which the instrument (the questionnaire) measures the content. It is supposed to be measuring. Reliability of tool was confirmed by Alpha Cronbach test (0.95).

A pilot study:

A pilot study was carried out and conducted on 10% of the sample (3 patients) to evaluate the applicability and clarity of tool. Based on the results of the pilot study, needed refinements and modifications were made. The patients who were elected for the pilot study were included in the main study.

Ethical Considerations:

The research proposal will be submitted for approval from the Ethical Committee of the Faculty of Nursing in 24/8/2024 and the code of ethics was (1120230649) to ensure compliance with ethical standards. There is no risk posed to the study subjects during the implementation of the research, and all ethical principles commonly followed in clinical research will be adhered to.

Prior to participation, oral consent will be obtained from patients or their guardians who are willing to participate in the study. The nature and purpose of the study will be fully explained to ensure informed consent. Confidentiality and anonymity of all participants will be strictly maintained throughout the research process.

Participants will have the right to refuse participation or withdraw from the study at any time without providing any reason. Additionally, the privacy of the study subjects will be respected and considered during data collection to ensure a comfortable and ethical environment for all participants.

Phase (2): Planning phase: -

Based on finding of the exploratory phase, the learning backage was developed, after extensive literature review considering nurses needs and their levels of understanding.

Phase (3): Implementation phase:

- An outpatient exploratory visit was performed to estimate patient frequency rate and appropriate time to collect the data. Besides, personal communication will have made with the nurses and the doctor to clarify the nature of the research and get the best possible cooperation.
- After clarifying the nature and purpose of the study and obtaining their approval, patients who met the study criteria was included in the study.
- Patients' agreement for voluntary participation was obtained and purpose and nature of the study was explained.

- The researcher obtained the base line data from the patients using the study tool (pre-test) via face- to-face interview; it was taken about 20-30 minutes. assessment of Symptom Severity using Tool II which composed of comprised of two parts: Part I: Modified Harvey Bradshaw Index Assessment Scale for Crohn's disease (CD) activity and Part 2 Partial Mayo scoring index assessment scale for ulcerative colitis activity (PMS).
- The researcher assesses the quality of life and symptom severity in patients with inflammatory bowel disease using tool III (the Inflammatory Bowel Disease Questionnaire (IBDQ).
- Designing of the learning package the content was meets the patient's needs, and their levels of understanding.
- learning package sessions were offered to groups consisting of 2-5 patients and performed on the basis of specific needs and level of understanding through lectures, discussions, demonstration and re- demonstration.
- A learning package was conducted in 3 sessions, each session was lasted approximately 30-45 minutes, on the morning shift twice a week.
- Patients was asked questions relevant to the subjects addressed in the previous session before beginning a new session to ensure that they were remember the instructions given; missing or vague points will have re-emphasized by the researcher.

First session: This session aimed to provide the theoretical information Introduction to IBD and Its Impact

- It contained the following: The first session provides a foundational understanding of Inflammatory Bowel Disease (IBD), focusing on its chronic nature and the two main types: Crohn's disease and ulcerative colitis. Participants learn how these conditions affect the gastrointestinal system and the significance of recognizing symptoms. The session also covers the anatomy and functions of the intestines, including digestion and nutrient absorption, empowering patients with insights into their bodies. Common symptoms, such as chronic diarrhea, abdominal pain, and weight loss, are discussed, highlighting their impact on daily life. Participants receive an Arabic educational booklet for ongoing reference.
- It takes about 20 minutes.
- After that, the researcher takes the feedback from the studied patients to assess their understanding.

Second session: This session aimed to provide the patients instructions about patients Causes, Complications, and Clinical Processes.

- It delved into the causes and risk factors of IBD, including genetic predispositions and environmental influences. This understanding helps patients recognize what may exacerbate their condition. The session also covers potential complications, such as intestinal strictures and nutritional deficiencies, as well as extra-intestinal manifestations like joint pain. Participants learn about diagnostic techniques, including lab tests and imaging, and explore treatment options like medications and dietary adjustments. This knowledge aims to familiarize them with the clinical processes in managing IBD.
- It take about 20 minutes.
- Instructions for those suffering from inflammatory bowel disease, some frequently asked questions about Taking prescribed medications as directed. After that, the researcher takes the feedback from the studied patients to assess their understanding.

Third session: This session aimed to provide the patients instructions about Self-Care Strategies and the Role of Education

- It takes about 20 minutes.
- The final session emphasizes practical self-care strategies and the critical role of patient education in managing IBD. Participants receive guidance on stress management, lifestyle changes, and dietary adherence to reduce symptoms and improve health. Various self-management strategies are discussed, empowering patients in their care. The session concludes with a positive message, encouraging ongoing support and self-care practices to enhance quality of life despite IBD challenges. This comprehensive approach equips patients with the necessary tools and knowledge for effective management of their condition.

- After that, the researcher takes the feedback from the studied patients to assess their understanding.

Phase (4): Post-Assessment Phase

The post-assessment phase occurs after the implementation of the learning package, aiming to evaluate its effectiveness. The final session, lasting 30-45 minutes, reviews key concepts from previous sessions. The researcher engages participants with questions to gauge their retention of material and addresses any unclear points.

Symptom Monitoring Reinforcement: The session also revisits symptom monitoring tools, specifically the Modified Harvey Bradshaw Index and the Partial Mayo Scoring Index. Participants practice using these tools to ensure they feel confident in tracking their symptoms moving forward.

Group Discussion: The post-assessment concludes with a group discussion, where patients share feedback on their experiences with the symptom tracking tools. This setting allows for further clarification and reinforcement of their understanding.

Phase (5): Evaluation phase:

- Coordination was established with patients to follow up when they visited outpatient clinics. Additionally, follow-up communication was maintained through phone calls and social media platforms, such as WhatsApp, to track their progress and address any concerns.
- This phase was emphasized on estimating the effect of learning backage Intervention to determine the aim of the study has been fulfilled or not, through (Tool I, II and III) and was evaluated after 1 month (post), and after 2 months (follow- up).
- Coordination with the patients to follow up when they go to outpatient clinics. Also, will followed them by the phone and social media such as Watts App.

Statistical analysis

The data collected in the study were organized and analyzed using SPSS version 23 (Statistical Package for Social Science). For qualitative variables, the data were presented in the form of numbers and percentages to provide a clear overview of the categorical information.

Descriptive statistics for quantitative data were expressed as the mean and standard deviation ($\bar{X} \pm SD$) to summarize the central tendency and variability of the data. Statistical tests were used to compare both qualitative and quantitative variables. The Chi-square (χ^2) test and F-test (p-value) were employed to compare qualitative variables, while T-tests were used to assess differences between quantitative variables.

The interpretation of p-values followed standard statistical conventions. A p-value of less than 0.05 ($p < 0.05$) was considered statistically significant, indicating that the observed differences were unlikely to have occurred by chance and suggesting a meaningful relationship between the variables analyzed.

3. Results:

Table (1): revealed that the majority of participants are aged 30-<45 years (57.6%), Males dominate the majority of the studied sample (63.6%), the largest group being divorced (36.4%), Over half of the sample is composed of professionals (51.5%), the largest percentage had a secondary education (39.4%), Slightly more participants reside in urban areas (54.5%).

Table (2): showed that a vast majority (87.9%) have been living with IBD for more than 5 years, the studied patients were evenly split between Crohn's disease (30.3%) and microscopic colitis (30.3%), followed by Indeterminate colitis (21.2%) and Ulcerative colitis (18.2%). A significant portion (63.6%) has undergone surgery to treat complications of IBD, Regarding the medication history, the studied patients were varied in their medication use: 33.3% are currently taking prescribed medications, 36.4% have stopped taking medications due to symptom improvement, and 30.3% have never taken medications for IBD. Around half (51.5%) had been hospitalized for IBD, while 48.5% have never been hospitalized. A notable portion (60.6%) prefers not to disclose whether they have experienced complications. A strong majority (87.9%) report a family history of IBD, among those with a family history of IBD, the types are relatively evenly distributed: Crohn's disease (24.2%), Ulcerative colitis (24.2%), Indeterminate colitis (24.2%), and microscopic colitis (27.3%).

Fig (1) showed that there was a significant increase in the mean patient's knowledge post-intervention, indicating that the educational intervention was effective in improving patient knowledge about IBD. The percentage of the satisfied patient knowledge was increased after application of the intervention from 57.6% to 84.8%. with a statistically significant difference, P. 0.028

Fig (2) revealed that there was a statistically significant improvement between pre and post intervention of the learning package regarding total scoring index assessment scale for ulcerative colitis activity (P. 0.001)

Fig (3) showed that there was a significant increase in the total quality of life pre- post-intervention, indicating that the educational backage was effective in improving patient total quality of life. The percentage of the better level of total quality of life was increased after application of the educational backage from63.6% to 90.9% with a statistically significant difference, (P. 0.017).

Table (3): showed that enhancing patients' knowledge through structured education significantly correlates with improved management of ulcerative colitis symptoms, thereby potentially reducing disease activity post-intervention, P. 0.0001

Table (4): showed that there was a statistically significant difference between total patients' knowledge and quality of life, pre and post application of the educational backage (P. 0.004 and 0.001) respectively.

Table (5): showed that there was a statistically significant difference between total patients' quality of life and Symptom Severity pre and post application of the educational backage (P. 0.00 and 0.004) respectively.

Table (6): shows that negative correlation between knowledge and Crohn's disease Activity and ulcerative colitis activity pre / post intervention, but positive correlation regarding quality of life >also negative correlation between quality-of-life pre/post intervention regarding Crohn's disease Activity and ulcerative colitis activity.

Table I: Percentage distribution of demographic data for patient's participant n=33

Variables	N	%
Age: (years):		
18-<30	7	21.2
30-<45	19	57.6
45-<50	7	21.2
≥50		
Gender		
Male	21	63.6
Female	12	36.4
Marital status		
Single	4	12.1
Married	7	21.2
Widowed	10	30.3
Divorced	12	36.4
Occupation		
Professional	17	51.5
Manual	13	39.4
housewife	1	3.0
Not work	2	6.1
level of educational		
Illiterate	1	3.0
Read and Write	2	6.1
Primary Education	4	12.1
Preparatory Education	10	30.3
Secondary Education	13	39.4
University	3	9.1
Area of residence		
Rural	15	45.5
Urban	18	54.5

Table 2: Distribution of medical data for participant patients n=33

Variables	N	%
Duration of disease		
Less than 6 months ago	2	6.1
6 months to 1 year ago	1	3.0
1 to 5 years ago	1	3.0
More than 5 years ago	29	87.9
Type of disease (IBD)		
Crohn's disease	10	30.3

Ulcerative colitis	6	18.2
Indeterminate colitis	7	21.2
Microscopic colitis	10	30.3
diabetes or prediabetes		
A) Yes	28	84.8
B) No	5	15.2
hypertension (high blood pressure)		
A) Yes	30	90.9
B) No	3	9.1
laboratory investigations		
A) Yes	27	81.8
B) No	6	18.2
Smoking history		
A) Yes, I used to smoke regularly.	20	60.6
B) Yes, but I only smoked occasionally.	7	21.2
C) No, I have never smoked or used tobacco products.	6	18.2
Family History		
Yes, there is a family history of IBD.	29	87.9
No, there is no family history of IBD.	2	6.1
I don't know or prefer not to answer.	2	6.1
If yes What type ……..		
Crohn's disease	8	24.2
Ulcerative colitis	8	24.2
Indeterminate colitis	8	24.2
Microscopic colitis	9	27.3

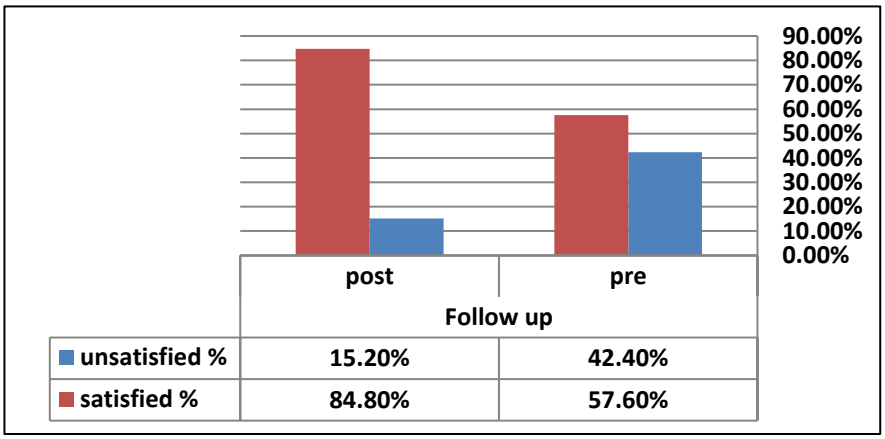

Fig (1): Distribution of total Knowledge about inflammatory bowel disease n=33

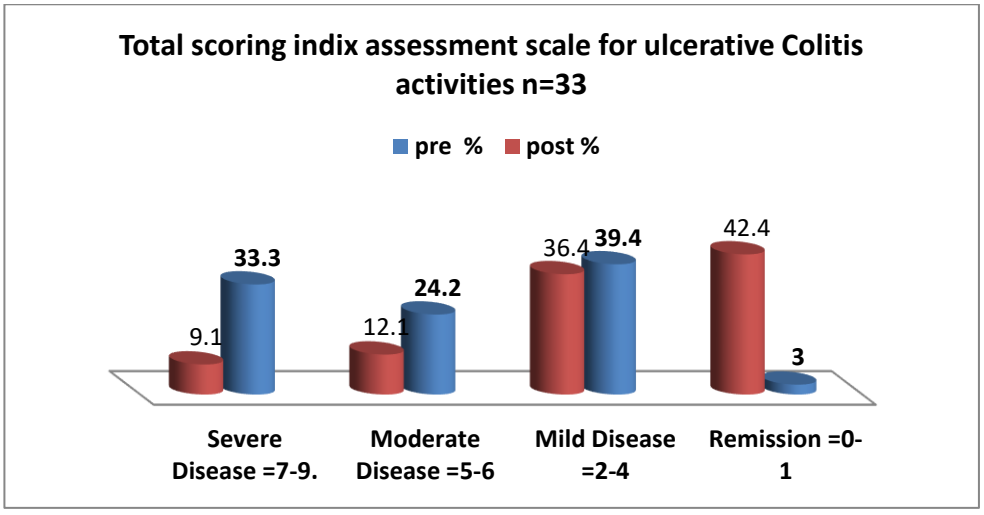

Fig (2): Comparison between pre and post regarding total scoring index assessment scale for ulcerative colitis activity n=33

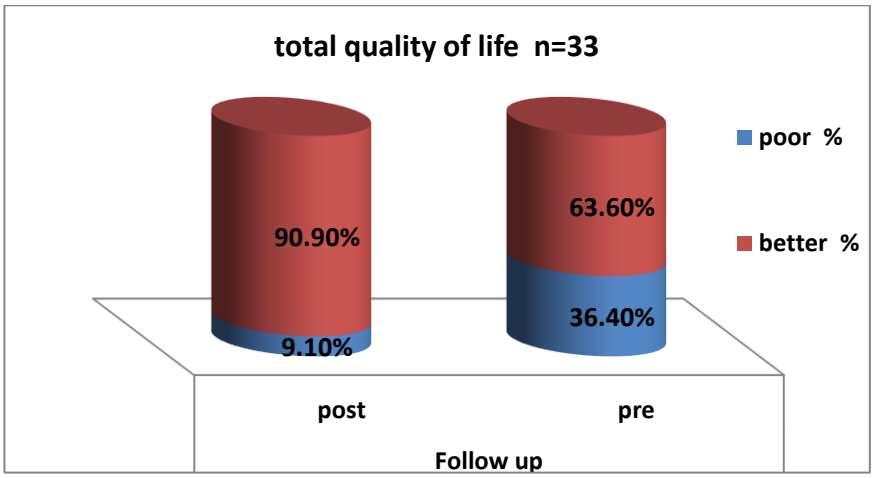

Fig (3): Comparison between pre / post regarding total quality of life n=33

Table (3): Relation between knowledge and ulcerative colitis activity pre and post implementing of learning package n=33

Variables	N	pre / post	Mean	95% Confidence Interval for Mean		Minimum	Maximum	Sig.1	Sig.2
				Lower Bound	Upper Bound				
Remission =0-1	1	Pre	21.00±0	.	.	21.00	21.00		
	14	Post	25.57±.75	25.1350	26.0079	24.00	26.00		
Mild Disease =2-4	13	Pre	21.00±.00	21.0000	21.0000	21.00	21.00		
	12	Post	22.00±.73	21.5307	22.4693	21.00	23.00		
Moderate Disease =5-6	8	Pre	19.00±1.195	18.0008	19.9992	17.00	21.00	F: 20.62	:.132 F
	4	Post	19.75±.957	18.2265	21.2735	19.00	21.00	P: .0001	P: .0001
Severe Disease =7-9.	11	Pre	19.18±.603	18.7767	19.5869	18.00	20.00		
	3	Post	18.00±.00	18.0000	18.0000	18.00	18.00		
Total	33	Pre	19.90±1.155	19.4994	20.3188	17.00	21.00		
		Post	22.87±2.72	21.9128	23.8448	18.00	26.00		

One way a nova test S= significant difference P>0.05 Ns= Non-significant difference P>0.05

Sig.1 = pre intervention sig.2 = post-intervention

Table (4): Relation between knowledge and quality of life pre and post implementing of learning package n=33

Variables	Quality of life	pre and after application of learning package intervention	N	Mean	Sig.1	Sig.2
Total knowledge	poor	Pre	12	19.16±.57	t: -3.157 p: .004 -	T: -3.914- p: .0001
		Post	3	18.00±.00		
	Better	Pre	21	20.33±1.197		
		Post	30	23.36±2.341		

Independent t- test S= significant difference P>0.05 Ns= Non-significant difference P>0.05

Sig.1 = pre intervention sig.2 = post-intervention

Table (5): Relation between quality of life and Symptom Severity pre and post implementing of learning package n=33

Variables	pre / post	N	Mean	95% Confidence Interval for Mean		Minimum	Maximum	Sig.1	Sig.2
				Lower Bound	Upper Bound				
< 5 = remission	Pre	23	108.00±6.34	105.2557	110.7443	94.00	114.00		
	Post	31	54.93±17.82	48.3972	61.4737	33.00	100.00		
5-7 = mild disease	Pre	2	120.00±.00	120.0000	120.0000	120.00	120.00		
	Post	1	102.0000	0	0	102.00	102.00	F: 41.306 p: .0001	F : 6.549 P: .004
8-16 = moderate disease	Pre	8	139.25±13.25	128.1702	150.3298	121.00	154.00		
	Post	1	102.0000	0	0	102.00	102.00		
Total	Pre	33	116.30±15.75	110.7173	121.8888	94.00	154.00		
	Post		57.78±20.68	50.4528	65.1229	33.00	102.00		

One way anova test S= significant difference P>0.05 Ns= Non-significant difference P>0.05

Sig.1 = pre intervention sig.2 = post-intervention

Table (6): Correlation between knowledge, Crohn's disease Activity, ulcerative colitis activity and Quality of life per\ post implementing of learning package n=33

Variables		Knowledge	Crohn's disease Activity	ulcerative colitis activity	Quality of life
Knowledge	Pearson Correlation		-.556-**	-.673-**	.493**
	Sig. (2-tailed)		.001	.0001	.004
Crohn's disease Activity	Pearson Correlation	-.556-**		.916**	-.802-**
	Sig. (2-tailed)	.001		.0001	.0001
ulcerative colitis activity	Pearson Correlation	-.673-**	.916**		-.825-**
	Sig. (2-tailed)	.0001	.0001		.0001
Quality of life	Pearson Correlation	.493**	-.802-**	-.825-**	
	Sig. (2-tailed)	.004	.0001	.0001	
Post – intervention					
Knowledge	Pearson Correlation		-.860-**	-.963-**	.575**
	Sig. (2-tailed)		.0001	.0001	.0001
Crohn's disease Activity	Pearson Correlation	-.860-**		.899**	-.770-**
	Sig. (2-tailed)	.0001		.0001	.0001
ulcerative colitis activity	Pearson Correlation	-.963-**	.899**		-.723-**
	Sig. (2-tailed)	.0001	.0001		.0001
Quality of life	Pearson Correlation	.575**	-.770-**	-.723-**	
	Sig. (2-tailed)	.0001	.0001	.0001	
**. Correlation is significant at the 0.01 level (2-tailed).					

4. Discussion:

A learning package designed for patients with Inflammatory Bowel Disease (IBD) can significantly enhance their knowledge about the condition, reduce the severity of symptoms, and improve their overall quality of life. By providing tailored information on disease management, nutrition, and stress reduction techniques, patients become more empowered to manage their condition effectively. Studies have shown that educational interventions can lead to better symptom control, fewer flare-ups, and a higher quality of life by reducing anxiety and improving patients' ability to cope with the challenges of IBD. The structured learning package also fosters greater adherence to treatment regimens, further contributing to improved health outcomes [(19).]

The present study found that the majority of participants were aged 30-<45 years and predominantly male. The researcher suggests that IBD may have a higher prevalence or diagnosis rate among younger to middle-aged adult.

In this line, Roda, et al., [(20)] found that the incidence of IBD, particularly Crohn's disease, was highest among individuals aged 20-40 years. Also, It was reviewed that global IBD trends and reported that the peak incidence of both Crohn's disease and ulcerative colitis occurs in the third and fourth decades of life, which aligns with the 30-<45 age range.

In the other hand, Agrawal, et al., [(21)] found that in South Asian populations, IBD tends to be diagnosed at a slightly younger age, often in the 20-30 year range, with a second peak in older age groups. Pudipeddi, et al., [(22)] reported in a study across Asia that the peak age of onset for IBD can vary significantly, with some regions showing a higher incidence in those aged 20-30, differing from the 30-<45 range in your data.

Regarding their gender, King, et al., [(23)] found that Crohn's disease is more common in males Faye, et al., [(24)] reported that in certain regions, particularly in North America and Europe, males have a slightly higher incidence of IBD compared to females.

While, Ye, et al., [(25)] observed that ulcerative colitis was more common in females, suggesting that gender distribution can vary by IBD subtype. Olén, et al., [(26)] found that the incidence of IBD was either equal between genders or slightly higher in females, particularly in cases of ulcerative colitis.

The present study found that, the marital status distribution shows that one third were divorced. This finding highlights the complex relationship between chronic illness and marital stability. While some studies support the idea that the challenges of managing IBD can lead to marital strain and higher divorce rates, others emphasize the role of strong support systems in maintaining marital stability despite these challenges.

In this context, Lichtenstein, et al., [(27)] conducted a study on patients with chronic illnesses, including IBD, and found higher rates of marital discord and divorce compared to the general population. The study suggests that the stress and burden of managing a chronic condition like IBD can contribute to relationship difficulties, supporting the finding of a higher divorce rate among patients. Additionally, Soh, et al., [(28)] explored the

psychological impact of IBD and noted that the emotional strain, coupled with the social and lifestyle limitations imposed by the disease, can lead to significant stress in marital relationships. This supports the observation of a higher divorce rate, as chronic stress is a known factor in marital breakdowns. In the other hand, Zare, et al., [29] found that while IBD can pose challenges to marital relationships, patients with strong social support systems, including supportive spouses, often maintain stable marriages. The study highlighted that divorce rates among IBD patients were not significantly higher than the general population, suggesting that other factors might influence marital outcomes more strongly. Wang, et al., [30] reported that despite the challenges of living with IBD, many patients reported high levels of marital satisfaction, particularly when both partners were actively involved in disease management. The study suggested that effective communication and mutual support could mitigate the impact of IBD on marriage, challenging the notion of a high divorce rate.

Regarding occupation, half of the studied patients were professionals, had secondary education. The researcher opinion hat IBD may be more prevalent among individuals with higher socioeconomic status and educational attainment. However, other research indicates that IBD affects people across all educational and occupational backgrounds, challenging the notion of a strong correlation. The differences in these findings may reflect variations in healthcare access, awareness, and diagnostic practices across different regions and populations. It's essential to consider these factors when interpreting the data, as they may influence the observed demographic patterns in IBD patients. Additionally, this demographic detail could have implications for patient education and support programs, particularly in tailoring them to the specific needs of professionally active individuals.

This supported by Mitropoulou, et al., [31] conducted a study in the United States that found a higher prevalence of IBD among individuals with higher educational attainment and professional occupations. The study suggested that this might be related to better access to healthcare and a greater likelihood of receiving an IBD diagnosis, aligning with the observation that half of the patients were professionals with secondary education.

Additionally, Damas, et al., [32]) observed that patients with IBD often belong to higher socioeconomic groups, which typically correlate with higher levels of education and professional occupations.

Reverse, Weidner,et al., [33] found in a Canadian study that IBD affects individuals across all socioeconomic strata, with no significant correlation between education level or professional occupation and the incidence of the disease. Bernstein, et al., [34] reported in a global study that IBD is increasingly diagnosed in lower socioeconomic and educational groups, particularly in developing regions where access to education and professional careers might be limited. This contradicts the observation that a significant portion of patients are professionals with secondary education.

The present study found half of the studied patients lived in urban areas. This may due to lifestyle, environmental exposures, and better access to healthcare services.

In this line, Su, et al., [35] conducted a global review of IBD and found that the prevalence of IBD is generally higher in urban areas compared to rural regions. The study attributed this trend to factors such as urban lifestyle, diet, and greater access to healthcare, supporting the observation that half of the patients lived in urban areas. Bernstein, et al., [34] explored the role of environmental factors in IBD and noted that urban living is associated with a higher risk of developing the disease. This is thought to be due to factors such as pollution, diet, and hygiene hypothesis, which suggests that lower exposure to pathogens in early life may increase susceptibility to autoimmune diseases like IBD.

However, Kitahata, et al., [36]) conducted a study in Europe that found no significant difference in the prevalence of IBD between urban and rural areas. The study suggested that while urban lifestyle factors are often implicated in IBD, the disease also significantly affects rural populations, challenging the notion that urban residency is a predominant factor. While, Dhaliwal, et al., [37] reported in a study on geographic variations in IBD that rural areas, particularly in Western countries, have seen rising IBD rates, potentially due to changing lifestyles and improved healthcare access in these regions. This finding suggests that the urban-rural divide in IBD prevalence may be narrowing.

Regarding past Medical History for the studied Patients (the present study reveals that majority of patients had been diagnosed with their illness for more than 5 years. The types of IBD were evenly distributed, with 30.3% having Crohn's disease or microscopic colitis.

The researcher opinion that these patterns is crucial for developing long-term management strategies and tailoring treatment approaches to the specific needs of patients with different IBD subtypes.

So, Krishna, et al., [38] found that the majority of IBD patients have a long disease duration, with many living with the condition for over 5 years. This is consistent with your observation that most of the patients had been diagnosed for more than 5 years, reflecting the chronic and persistent nature of IBD. Adding to this, Hruz, et al., [39] reported that in many patient cohorts, the distribution of IBD types tends to be relatively balanced, with similar proportions of Crohn's disease, ulcerative colitis, and other forms like microscopic colitis. While, Yuan, et al., [40] noted in a global epidemiological study that the duration of IBD can vary significantly, with some regions reporting a higher proportion of newly diagnosed cases. Bamias & Cominelli, [41] found variations in the distribution of IBD types, with some populations showing a higher prevalence of one type over another, such as a predominance of Crohn's disease over ulcerative colitis. This could differ from the even distribution observed in the present study, indicating that regional or demographic factors may influence the prevalence of specific IBD types.

The present study found a significant portion had undergone surgery to treat complications of IBD, the majority had hypertension, diabetes or prediabetes with family history of IBD.

The researcher opinion that IBD is associated with significant morbidity, including the need for surgical interventions and the presence of comorbid conditions. Goodman, et al., [42] found that a substantial proportion of IBD patients, particularly those with Crohn's disease, eventually require surgery to manage complications such as strictures, fistulas, or abscesses. D'Alessio, et al., [43] reported that patients with IBD often have an increased prevalence of comorbid conditions such as hypertension and diabetes. The study also highlighted the role of a family history of IBD in the disease's development. Kaur & Goggolidou, [44] conducted a study that suggested while surgery is common in IBD, advances in medical therapy have reduced the need for surgical interventions in many patients. This might challenge the observation of a significant portion undergoing surgery, particularly in regions with widespread access to biologic therapies. Faye, et al., [24] found that while comorbidities like hypertension and diabetes are present in IBD patients, their prevalence may not be significantly higher than in the general population when adjusted for age and other factors.

Regarding the lifestyle factors the present study indicated that half of the studied had high-stress levels, regular smokers and reported no change in symptoms or quality of life following treatment. The researcher opinion, the high stress and smoking are known to negatively impact IBD, and their prevalence in this study highlights areas where additional support and interventions might be needed. The lack of change in symptoms or quality of life for some patients despite treatment suggests that factors beyond medication, such as lifestyle modifications, may be crucial for achieving better outcomes. Addressing stress and smoking, along with optimizing treatment, could be key to improving overall patient well-being and disease management.

So, Lim & Rezaie, [45] found that high-stress levels are associated with exacerbations and poorer outcomes in IBD patients. Stress is known to affect the immune system and may worsen IBD symptoms. Also, Miller, et al., [46] reported that smoking is a known risk factor for Crohn's disease and can lead to more severe disease progression supported existing evidence linking smoking with adverse outcomes in IBD. While Iancu, et al., [47] found that some patients with IBD may not experience significant improvements in symptoms or quality of life following treatment, especially if lifestyle factors like stress and smoking are not addressed. However, Salvi, et al., [48] found that stress levels, while impactful, do not always correlate with disease severity or treatment outcomes. Some patients manage stress effectively, and its impact on IBD symptoms can vary, which may challenge the observation of uniformly high-stress levels affecting outcomes. Kıraç, et al., [49] reported that smoking cessation can lead to significant improvements in IBD symptoms and overall quality of life. This suggests that while some patients may continue smoking, the overall impact on symptoms and quality of life may be mitigated by quitting, which could differ from the observed lack of change in some patients. Santus, et al., [50] found that advancements in treatment strategies, including newer medications and therapies, often lead to improved symptom management and quality of life for many patients. This contrasts with the finding that some patients reported no change, indicating that treatment advancements may be effective for many, though not universally.

Regarding the patient Knowledge about Inflammatory Bowel Disease (Pre- and Post-Intervention), the present study showed a significant improvement in knowledge post-intervention, this indicates a statistically significant improvement in patient knowledge after the educational intervention. the percentage of patients with "satisfied" knowledge increased post-intervention, this demonstrates the effectiveness of the intervention in enhancing patient understanding of IBD.

In this line, Sierżantowicz, et al., [51] evaluated educational interventions for IBD patients and found that structured educational programs led to significant improvements in patient knowledge. The study supports the finding that educational interventions can effectively increase patients' understanding of their condition and treatment options. Erős, et al., [52] found that tailored educational interventions improved patients' knowledge and self-management skills. The study observed that patients who received education about their condition reported better understanding and satisfaction, consistent with the increase in "satisfied" knowledge observed in your study. Also, Xie, et al., [53] demonstrated that patients who participated in educational workshops on IBD had increased knowledge about their disease and reported higher levels of satisfaction with their understanding.

Disagreement of this study, Mohammed, et al., [54] found that while educational interventions can improve knowledge, they do not always translate into improved clinical outcomes or significant changes in disease management practices. This suggests that while knowledge improvement is valuable, it may not always lead to immediate or measurable changes in patient behavior or disease outcomes. Moreau, et al., [55] observed that the impact of educational interventions on patient knowledge can vary depending on the format and content of the intervention. Some studies found limited improvements in knowledge if the educational content was not sufficiently tailored to individual patient needs, which may challenge the assumption that all interventions will be equally effective. Blunck, et al., [56] reported that patients' retention of knowledge from educational interventions can decrease over time, indicating that initial improvements may not be sustained without ongoing support. This highlights the need for continuous reinforcement of educational content to maintain the gains in patient knowledge.

The present study showed a significant improvement in patients' overall well-being after the intervention. Pre-intervention, half of patients rated their well-being as "poor" or worse, while post-intervention, while rated their well-being as "very well" increased post-intervention, indicating a positive shift in how patients perceive their health.

The present study showed that the significant reductions in total gastrointestinal symptoms, systemic symptoms, emotional function, social function, and overall IBD activity post-intervention indicate that the intervention was highly effective in improving various aspects of disease management and patient well-being. The consistent p-values and substantial mean score reductions support the intervention's impact. However, it is important to consider that individual responses may vary, and continuous evaluation is necessary to ensure sustained benefits and address any ongoing challenges.

Keefer, et al., [57]) found that comprehensive interventions significantly reduced IBD disease activity and improved various aspects of patient well-being. Also, Miolda, et al., [58] demonstrated that targeted therapeutic and educational interventions resulted in significant improvements in gastrointestinal symptoms and overall disease activity. Schlee, et al., [59] showed that interventions addressing multiple dimensions of IBD, including emotional and social aspects, led to substantial improvements in symptom scores and quality of life. In the opposite side, Regev, et al., [60] observed that while interventions often lead to improvements, the extent of symptom reduction and overall disease activity can vary, suggesting that results may not be as universally significant. Lamers, et al., [61] noted that improvements might be modest or variable depending on the specific intervention and patient adherence, challenging the extent of improvement seen in some cases. Raman, et al., [62] found that while many patients benefit from interventions, long-term sustainability of improvements in disease activity and well-being can be inconsistent.

Regarding the QOL, the present study showed that the percentage of patients with a "poor" quality of life decreased post-intervention, while those reporting a "better" quality of life increased. This highlights the substantial improvement in overall well-being and quality of life following the intervention.

This match with the study by Rozich, et al., [63] who found that interventions can lead to improvements in patients' perceived quality of life.

Koch, et al., [64] aligned with the observed increase in patients reporting a "better" quality of life. Langhorst, et al., [65] intermentioned that address multiple dimensions of IBD, including emotional and social aspects, led to substantial improvements in quality of life. However, Paulides, et al., [66] found while interventions can improve quality of life, the extent of improvement might vary, and not all patients may experience substantial changes. Armuzzi & Liguori, [67] reported that the improvements in quality of life might be modest or variable depending on the intervention and patient adherence. Lamers, et al., [61] found improvements in quality of life can be inconsistent over the long term, even if initial gains are significant.

Regarding the relation between Demographic Data and Knowledge Post-Intervention. The present study reported that after the intervention, there was a notable improvement in knowledge levels across most demographic groups. Majority of males reported satisfied knowledge post-intervention, with a significant increase in knowledge among manual workers. However, it's important to consider that individual responses can vary, and the effectiveness of the intervention may depend on additional factors such as pre-existing knowledge and engagement with the intervention. Continuous evaluation and adjustments to the intervention may help further optimize knowledge outcomes for all demographic groups.

Rahman, et al., [68] concluded that a comprehensive intervention resulted in improved knowledge and understanding across various demographic groups.

Ayele, et al., [69)] reported that educational and therapeutic interventions led to significant improvements in patients' knowledge, with beneficial effects observed across different demographic backgrounds. AlKetbi, et al., [70] explained that interventions addressing diverse needs improved patients' knowledge about their condition, with notable effects across various demographic groups. In the other hand, Lebni, et al., [71] reported that interventions can improve knowledge, the extent of improvement might vary and not all demographic groups may experience significant gains with notable improvements, the results might not be as pronounced for every demographic group.

Khojastehfar, et al., [72] revealed that the improvements in knowledge can be inconsistent and dependent on factors like intervention design and patient engagement.

Alotaibi, et al., [73] reported that the effectiveness of educational interventions can vary based on pre-existing knowledge and individual learning preferences. Added that the points out that the increase in knowledge might be influenced by factors beyond demographic differences, such as personal learning styles and prior knowledge.

Regarding the relation between Knowledge and Ulcerative Colitis Activity Pre and Post-Intervention: The present study showed that patients with higher knowledge levels experienced greater improvements in ulcerative colitis activity post-intervention, the mean score for patients in remission increased while those with severe disease saw a reduction. The overall improvement in knowledge was associated with significant reductions in disease activity, particularly in patients with mild to moderate disease.

The significant improvement in UC activity associated with higher knowledge levels underscores the value of patient education in managing ulcerative colitis. The increase in mean scores for patients in remission and the reduction for those with severe disease illustrate the positive impact of improved knowledge on disease management.

Chen, et al., [74] found an increased patient knowledge led to better disease management and improved disease activity outcomes.

El Abdellati, et al., [75] reported that enhanced knowledge through targeted interventions resulted in significant improvements in disease activity, especially among patients with moderate conditions. Jakob, et al., [76] reported that the interventions that improve patient knowledge are correlated with better management of disease activity and symptom control.

Kvarnström, et al., [77] in the other hand the correlation between improved knowledge and disease activity might not always be strong or consistent across all patients.

Jones, et al., [9] found that the improvements in disease activity can be modest and influenced by various factors beyond just knowledge levels. Indicated that while there is a positive association, other factors may also affect the extent of improvement in UC activity.

Bisgaard, et al.,([78] found that the impact of improved knowledge on long-term disease activity may be inconsistent, and not all patients may experience significant reductions in symptoms. Highlighted that although knowledge improvement is beneficial, its direct impact on long-term disease activity may be variable.

Regarding the relation between Knowledge and Quality of Life Pre and Post-Intervention, the present study demonstrated a significant relationship between improved knowledge and enhanced quality of life post-intervention. Patients who had a "better" quality of life increased post-intervention, The intervention effectively improved both knowledge and quality of life, showing a strong correlation between these variables. The researcher highlighted the positive impact of patient education on overall well-being. However, it is important

to consider that while the correlation is strong, individual responses may vary, and factors such as ongoing support and personalized care may further influence the long-term sustainability of these improvements. Regular follow-up and tailored interventions may help maximize and maintain the benefits observed in both knowledge and quality of life.

Wark, et al., [79] reported that the effective interventions led to improvements in both patient knowledge and quality of life, highlighting the interconnectedness of these outcomes.

Alsoud, et al., [80] reported that enhanced patient knowledge through targeted interventions was associated with better quality of life and overall well-being.

Rodrigues, et al., [81] suggested that the interventions addressing both knowledge and practical aspects of disease management resulted in improved quality of life. Christensen, et al., [82] reported that while knowledge improvements can positively impact QOL, the extent of this impact may vary and not all patients experience the same degree of benefit. Palamenghi, et al., [83] reported that the relationship between knowledge and QOL might be influenced by other factors such as patient engagement and the quality of the intervention. Indicates that while knowledge improvement is linked to better QOL, other variables might also play a significant role. Bonetti, et al., [84] reported that the improvements in QOL related to knowledge gain might not always be sustained over the long term and can vary based on individual circumstances. Highlighted that while the short-term improvements are significant, the long-term sustainability of these gains in QOL may vary.

Regarding the relation between Quality of Life and Symptom Severity Pre- and Post-Intervention, the present study indicated a significant reduction in symptom severity and an improvement in quality of life after the intervention. The mean score for patients in remission improved post-intervention, reflecting a substantial decrease in symptom severity. Similarly, those with moderate disease showed a reduction in severity correlating with better quality of life outcomes. The researcher point of view that the role of targeted interventions in enhancing both symptom control and quality of life. However, it is important to monitor long-term outcomes and consider individual variations in response to ensure sustained benefits. Ongoing support and follow-up can help maintain and potentially enhance the observed improvements in symptom severity and quality of life.

Pacheco, et al., [85] reported that the comprehensive interventions resulted in significant reductions in symptom severity and improvements in quality of life for patients with chronic conditions. Volpato, et al., [86] documented that the targeted therapeutic and educational interventions led to notable reductions in symptoms and enhancements in quality of life.

Kim, et al., [87] reported that the interventions addressing multiple aspects of disease management resulted in better symptom control and improved quality of life. In the opposite line, Chen, et al., [74] concluded that interventions can improve symptom severity and QOL, the extent of improvement may vary, and some patients may not experience significant changes. El Abdellati, et al., [75] revealed that the impact of interventions on symptom severity and QOL may be modest and influenced by various factors such as intervention design and patient adherence. Highlighted that while significant improvements are noted, individual responses can vary.Ayele, et al., [69] recounted that the improvements in symptom severity and QOL might not be sustained long-term and could vary based on individual circumstances and ongoing support. Pointed out that while short-term improvements are significant, long-term outcomes may differ.

5. Conclusion/ recommendation:

From the results of the present study, it concluded that implementation of the learning backage for patients with IBD has a great and positive effect on improving their knowledge level, severity of the disease and their quality of life.

Recommendations:

1. Continuous patients' education should be planned regularly to control the disease symptoms and reduce its undesirable effect on the quality of life.

2. Increase patient's awareness of the patients about IBD and its management.

3. Continuous patients' education should be planned regularly to control the disease symptoms and reduce its undesirable effect on the quality of life.

4. Further studies are recommended to validate our results and to better understand the disease process.

5. Further studies are recommended to validate our results and to better understand the disease process.

6. Nurses should implement a comprehensive learning package incorporating multimedia education and regular follow-ups to enhance IBD patients' knowledge, symptom management, and quality of life.

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