Effect of Self- Management Instruction on Quality of Life and Pain among Adult Patients with Irritable Bowel Syndrome

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Abstract: Irritable bowel syndrome is a functional gastrointestinal disorder causing changes in stool frequency or form and abdominal pain. Treatment of irritable bowel syndrome through lifestyle modification plays an essential role in relieving anxiety, tension, alleviating symptoms of irritable bowel syndrome, and improving quality of life. **So, the aim** was to evaluate the effect of self-management instruction on quality of life and pain among adult patients with irritable bowel syndrome. **Subjects & Method,** a quasi-experimental research design was applied. 60 patients were divided into two equivalent groups: a study group who attended educational sessions and a control group who received hospital care only. Three tools had been used in this research: tool I: Structured interview that was divided into three parts. Part I: Socio-demographic data, Part II: Living habits data, Part III: Knowledge questionnaire related to irritable bowel syndrome. Tool II: Numerical Pain Rating Scale: to assess pain level, and Tool III: The irritable bowel syndrome-quality of life questionnaire. **Results,** illustrated there were a significant difference into knowledge level, pain level and quality of life after implementing educational sessions. **Conclusion,** educational sessions have an important role in improving patients' knowledge, quality of life and reducing pain level. **Recommendation,** Self management instructions should be applied along with pharmacological therapy for patients with irritable bowel syndrome.

Keywords: Irritable bowel syndrome, Pain, Quality of life, Self-instruction management.

Introduction

Irritable bowel syndrome (IBS) is a chronic functional disease that causes abdominal pain and changes in bowel function. These changes affect normal patients' lives and work. It commonly affects female and young adult people, causing a huge burden on their lives and the economy of society [(1)]. IBS is characterized by periods of remission and exacerbation, which lead to disorganization of patients' professional activity. In patients with IBS, infective gastroenteritis could cause systemic inflammation and altered microbiome diversity [(2)].

Several factors may precipitate to IBS such as genetic factors, dietary factors, disturbance into mental and physical health, stress that represent the main cause for colon stimulation among IBS patients, alteration into intestinal flora, chronic inflammation of intestine, altered signaling, and abnormal gut neuroendocrine system [(3)].

The IBS symptoms that most commonly occur and affect Quality Of Life (QOL) include bloating, diet restriction, abdominal pain, and bowel difficulties. Over 50% of people with IBS are compelled to remain near the bathroom, and 57% felt they had no control over their lives. Additionally, emotional disorders such as being less confident, worry, depression, and anxiety [(4)].

Patient's awareness about disease, recommendation related to dietary changes, physical activity, and lifestyle modification are accepted and applied into many medical practices [5]. Treatment of IBS through lifestyle modification plays an essential role- in relieving anxiety, tension, alleviating symptoms of IBS, and improving QOL. Nurses encourage patient to follow self-instruction and apply lifestyle modification for improving QOL and improve patient's-health [6]. Sothat, this research was applied to-evaluate effect of self-management instruction on pain and QOL for IBS patients. -

The aim of this study was to -

Evaluate effect of self-management instruction on quality of life and pain among adult patients with irritable bowel syndrome. -

Research Hypothesis -

H1. There will be a difference into patient's pain score level after implementation of self-instruction management among study group as compared with control group.

H2. There will be an improvement into patient's quality of life score after given self-instruction management for study group than control group.

H3. There will be a change into patient's knowledge score level after implementing self-instruction management among study group than control group.

Method

Study Design: The researchers used quasi experimental design.

Setting: This study was conducted at gastrointestinal unit in specialized medical hospital at Mansoura University, and gastrointestinal unit in Egyptian liver hospital.

Subjects: A purposive sample used in this study that involved 60 patients classified into two equal groups based on inclusion and exclusion criteria. Study group which consisted of 30 patients who attended educational sessions and applied self-instruction management, and control group that involved 30 patients who received only hospital routine care.

Inclusion criteria

Patients with Rome IV criteria for IBS that characterized with (recurrent abdominal pain associated with defecation or a change in bowel habits, and symptoms of abdominal bloating or distension).

Adult patient aged from 18-60 years old

Agreed to participate in the study.

Exclusion criteria

Patients with IBS and not classified

Patient with any alarming sign such as (significant weight loss, bleeding per rectum, anemia, occult blood stool)

Illiterate patient

Patient who had lack in communication and can't use phone

Sample size: Steve Thompson formula was utilized to calculate the sample size, at 5% ∞ error (95.0% significance) and 20.0 β error (80.0% power of the study) [7]. Total sample was 60 patients, classified into two equal groups each group include 30 patients.

$$n = \frac{N \times P\,(1-P)}{(N-1 \times (d2 / Z2)) + P\,(1-P)}$$

Tools: Three tools were used in this study to collect necessary data and achieving the aim of study.

Tool I: Structured interview

Tool II: Numerical Pain Rating Scale

Tool III: The IBS 34 QOL Questionnaire

Tool I: Structured interview

This tool was developed by researchers to collect the required baseline data and evaluate patient's knowledge about IBS. It was divided into 3 parts;

Part I: Socio-demographic data

This part used for collection of personal data such as age, gender, residence, marital status,

level of education, occupation, family history, duration of illness, and medical payment.

Part II: Living habits data

It was developed by the researchers after reviewing related literature [8] to evaluate life habit such as smoking, coffee or tea consumption, physical activity, and food type.

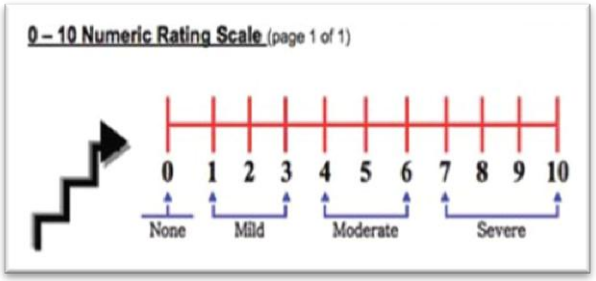
Part III: Knowledge questionnaire related to IBS:

Researchers created this part to evaluate patient's knowledge about IBS after reviewing related literature [9]**.** It consisted of 14 questions, correct answer takes score "1 ", while wrong answer takes "zero". Total score (14 equal 100%) was calculated and classified into categories as following;

Knowledge categories	Percentage
Poor	Less than 50%
Average	50- 75%
Good	More than 75%

Tool II: Numerical Pain Rating Scale

This tool adopted from (**McCaffery, & Beebe, 1989)** [10] to assess patient's pain level before and after giving self-instruction management. The numerical rating scale ranged from "0 to 10" where "0" is no pain and "10" is the worst pain imaginable.



Tool III: The IBS-QOL questionnaire

This tool was adopted from **(Andrae, Patrick, Drossman, & Covington, 2013)** [11] to evaluate QOL for patients with IBS. It consisted of 34 questions that divided into 8 subscales included body image "4 items", dysphoria "8 items", health worry "3 items", interference with activity "7 items", food avoidance "3 items", social reaction "4 items", relationships "3 items", and sexual issues "2 items". It using 5 likert-type response ranging from "A lot or extremely" to "Not at all". QOL score was from 0-100 points; higher scores refer to a higher quality of life.

The frame work

Validity of the tools: done by 5 experts from Medicine and Nursing Faculty Staff to test tool's contents, and any required modifications was made accordingly.

Reliability: was done using Cronbach's alpha coefficient test. The alpha reliability for tool I; Part III (Knowledge questionnaire related to IBS) was 0.81. Numerical rating scale for pain was 99%. IBS-QOL 34 item demonstrated high internal consistency (Cronbach's alpha = 0.95) and high reproducibility (ICC = 0.86) [12].

Pilot study: Applied on 10% of patients before starting data collection to test the tools for its relevance, feasibility, applicability, clarity and to determine the length of time needed to collect the data from each patient.

Ethical considerations: Research Ethics Committee of Faculty of Nursing was granted acceptance with Ref No. (P.0451). Informed consent obtained from each patient before inclusion in this study, after the researcher emphasized that participants can withdraw at any time without any effect of researchers on them.

Filed work: was implemented through 4 phases as the following;

1. **Assessment**

The researchers started by introducing themselves to the patients and giving them a brief explanation about the study.

Each patient was interviewed before applying educational sessions using all study tools.

Each patient takes about 20-25 minutes to answer pre-intervention questionnaire.

2. **Planning**

- According to findings of assessment phase goals, and priorities was formulated.
- Researchers planned 4 educational sessions for study group to provide them with general knowledge and self-instruction management related to IBS and its symptoms.

3. **Implementation**

- The developed educational booklet was implemented for study group. It was conducted into 4 sessions each session took (30-45minutes) according to items that would be discussed in each session and attention span of patients.
- Each session conducted during morning shifts.
- Study group was divided into 6 small groups; each group contains 5 patients.
- During each session the researcher used different teaching methods such as discussion, asking questions, pictures, using clear, simple words, and at end of each session a brief summary was given by the researchers about items that discussed.
- Moreover, the instruction colored booklet was given to each patient for attracting `his attention, motivated him, and help him for reviewing.
- Before starting each new session, researchers asked questions related to items that explained into previous session, and if there was any unclear points, researchers repeated it again.
- Telephone coordination for follow up was used and patients were advised to follow up self-instruction management.
- Only routine hospital care was applied for control group.

4. **Evaluation**

- Each patient interviewed individually after applying educational sessions for doing immediate post-test for tool I (part III), while post-test was done for tool II, and tool III after 2 months.
- Comparison was done between pre and post intervention for both groups.

Statistical Analysis

The collected data were revised then analyzed, coded and fed to the computer and analyzed using IBM SPSS software package version 26.0. (Armonk, NY: IBM Corp). Descriptive statistics represented in the form of frequencies and percentages. Inferential statistics as Independent t-test, used for normally distributed quantitative variables, to compare means between two studied groups. Chi square test ($\chi 2$) used to test the association between the categories of two independent samples.

Results

Table (1): Distribution of Study Participants According to Their Demographic Characteristics (No= 30 for each group).

This table showed that there wasn't a significant difference between study and control group regarding demographic data. Concerning age group (36.7%, 30%) in control and study group aged (40 >50, 50 >60) respectively. Female participants represented (76.7 %, 70%) respectively into study and control group. About (66.7%, 60%) in study and control group were resident into rural area. The majority (83.3%) in study group and (93.3%) in control group were married. (50%. 53.3%) in study and control group had low educational level.

Housewife represented (46.7%, 53.3%) in study and control group respectively. Above half (53.3%, 56.7%) in study and control group were total self-paid during treatment. Concerning duration of disease, it represented (11.77 ± 9.504, 11.80 ± 9.535) in study and control group respectively. The majority of

participants (70%) in study and (60%) in control group hadn't family history of IBS.

Table (2): Distribution of study participants According to Their Living Habits (N= 30 for each group):

This table revealed that (56.7%, 53.3%) in study and control group weren't smoking. As regard to tea and coffee consumption (83.3%, 80%) in study and control group were consumed with mean number of cups per day (2.7407 ± 1.16330, 3.0400 ± 1.27410) respectively. The majority of participants (76.7%, 86.7%) in study and control group respectively weren't performing physical activities. About (90%) in study group and (80%) in control group used home-made food.

Table (3): Comparison between the mean score of IBS knowledge of patients in the two groups pre & post intervention (N=30 for each group).

This table illustrated that there was a significant improvement into patient's knowledge related to IBS in study group than control group after implementing education sessions. This proves that continuous educational sessions had an important role for improving patient's knowledge about IBS and how to deal with it.

Figure (1): Distribution of knowledge levels among study and control group pre and post intervention (N= 30 for each group):

According to this figure there was a significant difference into patient's knowledge levels related to IBS between pre & post intervention in study and control group but more improvement was observed into study as compared with control group.

Figure (2): Distribution of pain levels among study and control group pre and post intervention (N= 30 for each group):

This figure illustrated that there was a significant change into patient's pain level in study group than control group after implementing educational sessions.

Table (4): Comparison between the mean scores of IBS _QOL of patients in the two groups pre &post intervention (N=30 for each group).

This table commented that there was a significant improvement into patient's total QOL in study than control group between pre & post intervention where p value was (p=0.000). Also there was a significant difference in all items of QOL in study group than control group.

Table (1): Distribution of Study Participants According to Their Demographic characteristics (No= 30 for each group).

	Study group		Control group		Significance test	
Items	**No (30)**	**%**	**No (30)**	**%**	**P**	**X^2**
Age group						
20 >30	6	20.0	4	13.3	**.865**	**.736**
30 >40	6	20.0	7	23.3		
40 >50	9	30.0	11	36.7		
50 >60	9	30.0	8	26.7		
Mean ±SD	40.1667 ±11.20063		41.2333±10.02990			
Gender						
Male	7	23.3	9	30.0	**.559**	**.341**
Female	23	76.7	21	70.0		
Residence						
Rural	20	66.7	18	60.0	**.592**	**.287**
Urban	10	33.3	12	40.0		
Marital status						
Married	25	83.3	28	93.3	**.212**	**4.503**
Single	2	6.7	0	0		
Widen	2	6.7	0	0		
Divorced	1	3.3	2	6.7		
Educational level						
Read and write	10	33.3	11	36.7	**.748**	**.580**
Low educational level	15	50.0	16	53.3		
University	5	16.7	3	10.0		
Occupation						
Manual work	4	13.3	4	13.3	**.360**	**4.356**
Employee	10	33.3	8	26.7		
Student	2	6.7	0	0		
House wife	14	46.7	16	53.3		
Others	0	0	2	6.7		
Medical payment						
Totally reimbursed	12	40.0	10	33.3	**.814**	**.412**
partially reimbursed	2	6.7	3	10.0		
Totally self –paid	16	53.3	17	56.7		
Disease duration						
Mean ±SD	11.77 ± 9.504		11.80 ± 9.535		**.989**	**.976**
Family history of IBS						
Yes	9	30.0	12	40.0	**.417**	**.659**
No	21	70.0	18	60.0		

*Significant at $P \leq 0.05$ X^2: Chi-Square Tests

Table (2): Distribution of study participants According to Their Living Habits (N= 30 for each group):

	Study group		Control group		Significance test	
	No (30)	%	No (30)	%		
Smoking					P	X^2
Active	5	16.7	6	20.0	**.912**	**.531**
Passive	7	23.3	6	20.0		
Stopped	1	3.3	2	6.7		
Not smoking	17	56.7	16	53.3		
Coffee or tea consumption						
Yes	25	83.3	24	80.0	**.739**	**.111**
No	5	16.7	6	20.0		
Mean numbers of cups per daily	2.7407 ± 1.16330		3.0400 ± 1.27410		**.380**	**.921**
Physical activity						
Yes	7	23.3	4	13.3	**.317**	**1.002**
No	23	76.7	26	86.7		
Food type						
Home-made food	27	90.0	24	80.0	**.278**	**1.176**
Fast food	3	10.0	6	20.0		

*Significant at P ≤ 0.05 X^2: Chi-Square Tests

Table (3): Comparison between the mean score of IBS knowledge of patients in the two groups pre & post intervention (N=30 for each group).

	Study group No. (30)	Control group No. (30)	Significance test	
	Mean ±SD	Mean ±SD	t. value	P
Pre intervention	6.6667±2.61736	6.5667±2.40235	.583	.878
Post intervention	12.2667±1.70057	7.0333±2.52550	.046	.000**

*Independent t-test *Significant at P ≤ 0.05

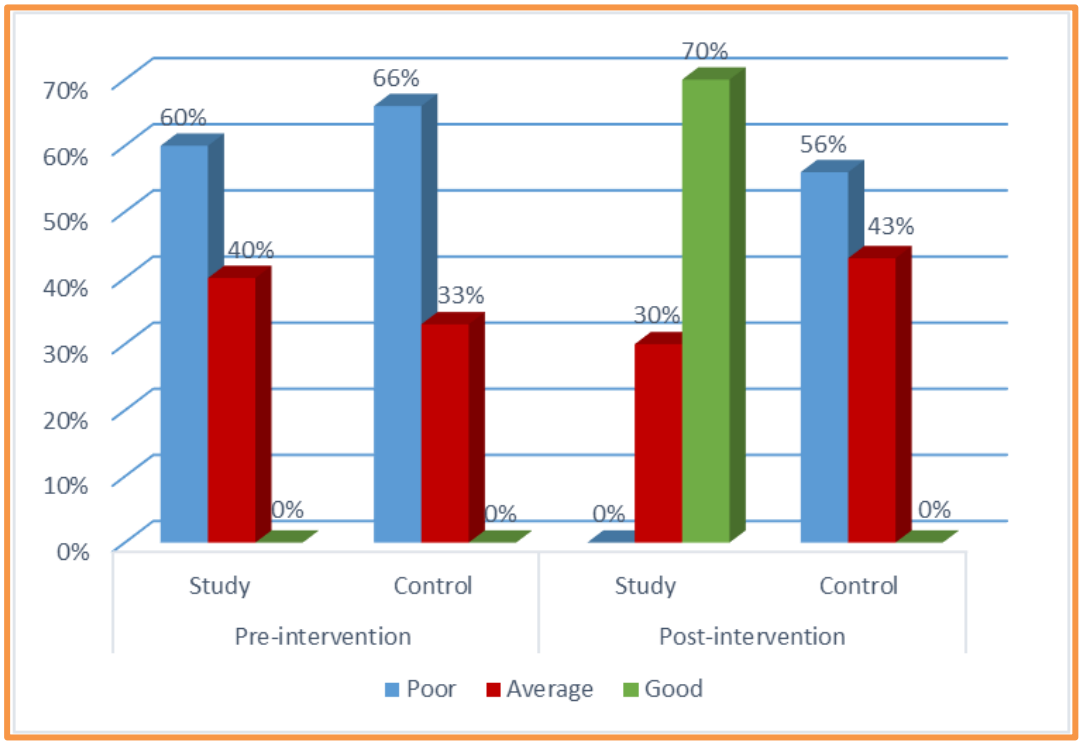


Figure (1): Distribution of knowledge levels among study and control group pre and post intervention (N= 30 for each group)

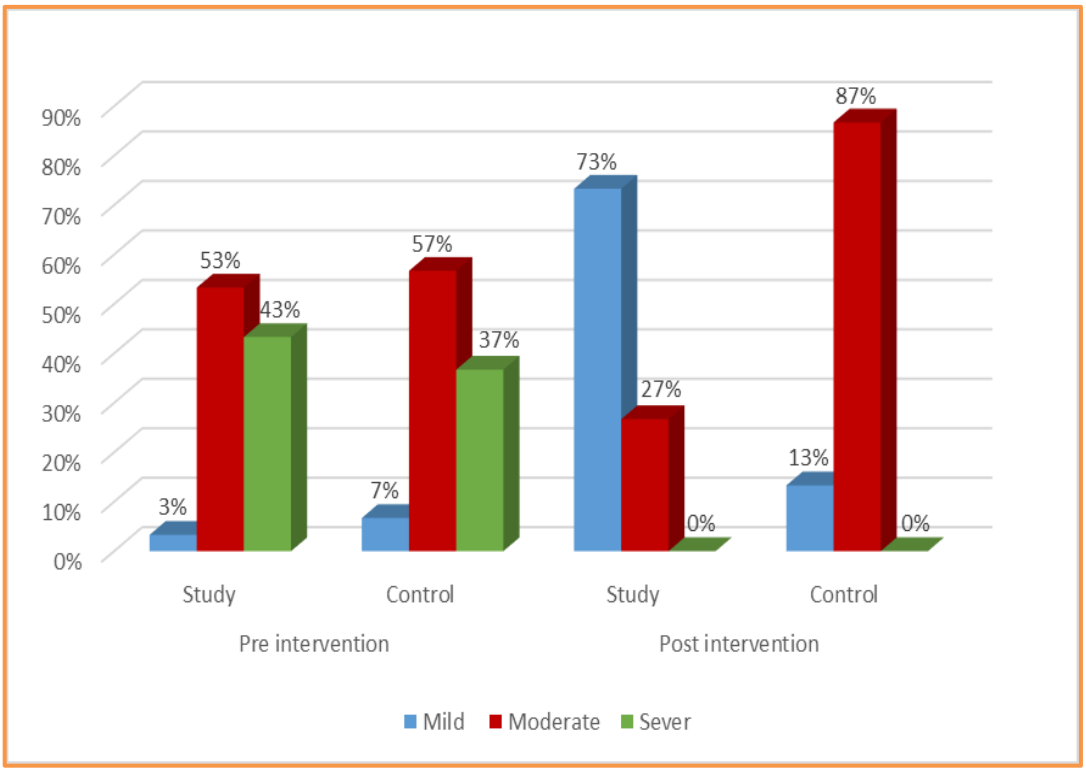


Figure (2): Distribution of pain levels among study and control group pre and post intervention (N= 30 for each group)

Table (4): Comparison between the mean scores of IBS _QOL of patients in the two groups pre &post intervention (N=30 for each group).

IBS-QOL	Study group No. (30)		Control group No. (30)		Significance test	
	Pre - intervention	Post- intervention	Pre - intervention	Post- intervention		
	Mean ±SD	Mean ±SD	Mean ±SD	Mean ±SD	Independent t test (P)1	Independent t test (P) 2
Dysphoria	32.6027±23.39471	61.5590±16.66287	34.7905±20.60986	38.4367±17.66027	.514 (.702)	.889(.000)**
Interference with activity	26.1857±19.20549	59.9950±12.56398	27.4953±18.83181	32.7150±16.75116	.887(.791)	.190(.000)**
Body image	27.2917±19.17502	60.4390±16.29679	25.8333±17.42698	33.1943±13.67681	.825(.759)	.278(.000)**
Health worry	32.5860±22.36678	67.2183±15.77109	32.3083±22.30186	36.6630±17.99267	.954(.962)	.526(.000)**
Food avoidance	19.1633±18.58717	58.3960±13.26698	25.5530±24.36216	33.3303±20.41241	.207(.258)	.311(.000)**
Social reaction	41.0333±28.59812	63.2637±20.20221	45.2000±26.74983	46.5970±24.70766	.564(.562)	.427(.006)*
Sexual issues	35.2679±33.68797	77.3807±21.52979	43.7500±36.22101	53.7500±28.64580	.636(.361)	.416(.001)*
Relationships	28.0303±24.04092	57.4669±14.66377	34.1413±25.20071	40.5520±21.41221	.966(.341)	.112(.001)*
IBS-QOL Total	31.0986±17.54848	64.7773±14.22135	35.4373±18.51457	41.1210±16.32908	.663 (.355)	.585(.000)**

*Significant at P ≤ 0.05 *Independent t-test (p) 1: pre-intervention
* Independent t-test (p) 2: post-intervention

Discussion

Irritable bowel syndrome is a functional gastrointestinal disorder causing changes in stool frequency or form and abdominal pain. It affects 5% to 10% of otherwise healthy individuals at any one point in time and, in most people runs a relapsing and remitting course. The basic points of treatment include the patient's education and training related to knowledge, understanding the pathophysiology of disease, lifestyle, diet changes, medication, and soluble fiber [13].

According to results of presented study the Mean Standard for patient's age in study group was 40.1667 ±11.20063, and in control group was 41.2333±10.02990. In the same point **(Lacy, Weiser, Noddin, Robertson, Crowell, Parratt-Engstrom, et al, 2007)** [14] proved that mean aged ± SD was 53.7±16.9 years. Female participants represented more than two-thirds in both groups, in harmony with **(Sierzantowicz, Lewko, & Jurkowska, 2020)** [15], who reported that the largest proportion was female. This may be related

to the fact that IBS was more prevalent in women than men because gender and sex hormones play an important role in the occurrence of IBS (**Kim, & Kim, 2018)** [16].

Rural participants represented more than half, in contrast (**Muhsin, Abass, & Hassan, 2023)** [17] who reported that the majority of participants came from urban areas. Concerning marital status, more than three quarter of participants were married. Also (**Muhsin, Abass, & Hassan, 2023)** [17] proved that the majority of participants were married.

The low educational level represented the largest proportion of study participants. In contrast **(Sierzantowicz, Lewko, & Jurkowska, 2020)** [15] who reported that above half of participants reached to secondary level of education. As regard to occupation, the majority of participants were housewife. In the same way study by (**Qora, EL Kot, Salama, & Abd El Rahman, 2018)** [4] reported that less than of half was housewife.

In respect to medical payment, more than half of participants were total self-paid, duration of IBS in study group was 11.77 ± 9.504, and in control group was 11.77 ± 9.504. While **(Amr, Hussein, & Gad, 2021**) [18] revealed that above half has IBS for less than 5 years. About family history related to IBS, above half of participants hasn't family history, in consistence with **(Mohamed, Abouelala, & Elessawy, 2020)** [19] who reported that above half were no family history related to IBS. In contrast **(Abd Elaziz, Ismail, Mohammed, & Abd Elaziz, 2019)** [20] stated that the majority of study patients have positive family history for IBS.

The findings of the current study reported that above half of participants were not smoking; this is in agreement with **(Thong, Phuc, & Quynd, 2021)** [21] who reported that majority of patients were no smoking. More than three-quarters were consuming tea and coffee; in contrast, **(Thong, Phuc, & Quynd, 2021)** [21] found more than half did not consume coffee. Regarding type of food and physical activity, the majority of participants eat home-made food, and more than two-thirds do not perform physical activity, also **(Thong, Phuc, & Quynd, 2021)** [21] who commented that more than one-third doesn't perform physical activity.

In the current study, there was a significant improvement into patient's knowledge of study group than control group after implementing educational sessions compared with pre intervention. This is in agreement with (**Amr, Hussein, & Gad, 2021**) [18] who observed a statistical change into total knowledge score of patients after implementing educational sessions.

Concerning pain level, the study results revealed that there was a significant change into distribution of pain level in study group more than control group after implementing educational sessions. These results supported by **(Sierzantowicz, Lewko, & Jurkowska, 2020)** [15] who proved that there was a reduction into severity of symptoms after applying educational program for patients with IBS.

About QOL, the results of current study emphasized that there was a significant improvement into patient's total QOL, and all parameters of QOL in study than control group. In the same point **(Sierzantowicz, Lewko, & Jurkowska, 2020)** [15] found that there was a significant improvement into QOL for IBS after applying educational sessions. Also (**Mohamed, Abouelala, & Elessawy,**

2020) [19] noticed that there was a significant change into subscales IBS QOL in post and follow up after implementation of educational modules as compared with pre educational implementation.

Conclusion

According to the results of the present research, there was a significant improvement in patient's knowledge level, reducing pain level and improve QOL after implementation of educational sessions for study group as compared with control group.

Recommendation

- Lifestyle modification instructions should be applied along with pharmacological therapy for patients with IBS.
- Application of educational sessions for IBS patients regularly.
- Applying periodical awareness program for nurses dealing with IBS patients.
- Further studies can be conducted on other Rome classification of IBS.

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