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Assessment of nutrition and dietary pattern in IBD patients

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***Abstract*---**Background: Inflammatory bowel diseases are chronic debilitating illnesses, nearly 3,9 million females and nearly 3,0 million males are living with IBD worldwide and the number of prevalent cases is on the rise. Malnutrition is not uncommon and is a grave complication that negatively impacts various clinical outcomes as it responsible for chronic weight loss. The current study aims to assess the nutritional status of IBD patients. Patients and methods: A cross sectional study was conducted in Medical city hospital for a period of 6 months, the study included 201 IBD patients were chosen randomly upon their entry to Gastrointestinal outpatient clinic (every 5th patient), patients were interviewed, their files were checked, data were collected and their current nutritional intake were logged into excel sheet, Subjective Global Assessment (SGA) nutritional assessment were done for each patient. In all statistical analysis, P value ≤0.05 is considered significant. Results: More than half 105 (52.2%) of the patients had UC and the remaining 96(47.8%) had CD. Majority of the sample were younger than 45 years of age, females, non-smokers, with paid jobs, secondary or higher education and living in urban setting. More than half of CD (61.5%) and UC (51.4%) patients were Class A according to SGA score. The study showed a similar pattern of food avoidance in CD and UC patients, 81(40.3%) patients stated that its due to GIT upset, 49 (24.4%) said that if not avoided it may cause flaring of symptoms and 57(28.4%) reported that they avoided food based on a professional advice. The current study showed a significant difference in total calorie, fat, protein, and carbohydrate intake between the two SGA classes in both CD and UC patients.

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Conclusions and recommendations: The study demonstrated a need for proper nutritional consultation in IBD as early recognition and management of malnutrition in clinical practice can spare patients from many complications.

***Keywords*---**Inflammatory bowel diseases are chronic debilitating illnesses, Subjective Global Assessment (SGA), IBD.

Introduction

Inflammatory bowel diseases (IBD) are chronic debilitating illnesses; including Crohn's disease (CD) and ulcerative colitis (UC), they affect the gastrointestinal tract. [1] UC affects the rectum and large intestine mainly, whereas CD can involve any part of the intestine. [2]

Both diseases are characterized by alternating periods of remission and activity. Exacerbations can be severe and can lead to death and complications, and both are associated with extraintestinal manifestations. It was reported that these manifestations from 10% to 50%. The large variation in their occurrence has been linked to genetic predisposition. [3] Although many current theories link a combination of environmental, genetic, and immuno-regulatory factors, yet the main cause of IBD remain obscure. [4]

Currently, nearly 3.9 million females and nearly 3.0 million males are living with IBD worldwide and the number of prevalent cases is on the rise. [5] Western countries and those of high-income have been historically observed as the populations where IBD is prevalent and continues to increase, while the general expectations and impressions favor a low incidence and prevalence of IBD in middle east countries, unfortunately that is changing. [6]

The incidence rates vary depending on the region. In 2017, UC incidence rates ranged from 0.97 to 57.9 per 100,000 in Europe, 8.8 to 23.14 per 100,000 in North America, and 0.15 to 6.5 per 100,000 in Asia and the middle east. [6] A recent meta-analysis revealed a pooled incidence rate of 2.33 per 100,000 persons per year for UC in the Arab world. Likewise, the pooled incidence rate for CD in the Arab world was 1.46 per 100,000 persons per year.[1]

Up-to-date results showed an emerging epidemic for the prevalence of IBD in Asia regions and countries. In 2035, as compared to 2020, it is expected to witness an upsurge of 2.3-fold of IBD cases in North Africa and the Middle East. The prevalent IBD cases increased from about 166 thousand cases in 2017 to about 220 thousand cases in 2020 and will be extended to nearly a half-million cases in 2035. Hence, there is a need for an immediate action to control this increasing trend in Asia; including Iraq. [7] These new drifts have shown a significant rise in the incidence of IBD cases in Middle Eastern countries and as a consequence prevalent case will increase, which were linked to a change in lifestyle and dietary habits, improvements in the socioeconomic status of newly industrialized countries, sanitation, changed microbiota, and environmental factors. [5]

Malnutrition is not uncommon and is a grave complication among patients with IBD and negatively impacts various clinical outcomes as it responsible for chronic weight loss. Quality of life is generally low in benign gastrointestinal disease and is further reduced in patients who are classified as malnourished. [8]

Existing data suggest that malnutrition affects a large portion of patients, estimated in 65–75% of patients with CD and in 18–62% UC patients. [9]

One part that can be incriminated in malnutrition is food avoidance, the other is malabsorption which had been linked to inflammatory cytokines released from immune cells within gut mucosa of CD and UC patients during active and remission phases. Another important mechanism seems to be bacterial overgrowth and increased intestinal mobility. [9, 10] Hence, early recognition, diagnosis and management of malnutrition in clinical practice can spare IBD patients from increased hospitalizations, disease flares, a need for surgery, and post-operative complications. [11] This is actually significant for health-care systems and economy since treating chronic diseases like IBD, because care for these conditions, principally immunotherapies, is very expensive. [5] Thus, the current study aims to assess the nutritional status of IBD patients.

Patients and methods

A cross sectional study with a prospective element was conducted in the GIT & hepatic diseases teaching hospital in the medical city for 6 months from July 2021 to January 2022 , the study included 201 IBD patients were chosen randomly upon their entry to Gastrointestinal outpatient clinic (every 5th patient), patients were interviewed, their files were checked, data were collected and their current nutritional intake were logged into excel sheet, Subjective Global Assessment (SGA) nutritional assessment were done for each patient. Data were analyzed using SPSS version 20, all records were kept anonymous.

Continuous data were presented in mean and standard deviation, an independent t student test was used to compare the difference in means of dietary intake between the SGA classes for the two types of IBD. As for categorical variable, frequency and percentages were used and chi square were applied to illustrates the association between dependent and independent variables.

Patients' current calorie and protein intake were compared with their energy and protein requirements and were divided into three categories (over-taken, Balanced and less-taken). In all statistical analysis, P value ≤0.05 is considered significant.

Results

More than half 105 (52.2%) of the patients had UC and the remaining 96(47.8%) had CD. The average age of patients with UC was 37.1±14.4 years and with CD was 32.3±11.6 years. Table 1 illustrates the demography of the sample according to IBD type. Majority of the sample were younger than 45 years of age, females, non-smokers, with paid jobs, secondary or higher education and living in urban setting. Average duration of CD was 5.9±5.7 years while that for UC 6.5±4.8 years

Table 1. The demography of the sample (n=201)

Variables		CD		UC	
		n	%	n	%
Age	18-44	76	79.2	74	70.5
	45-64	19	19.8	24	22.9
	>65	1	1.0	7	6.7
Gender	Male	42	43.8	41	39.0
	Female	54	56.3	64	61.0
Residency	Urban	61	63.5	77	73.3
	Rural	35	36.5	28	26.7
Occupation	Paid employee	41	42.7	46	43.8
	Unemployed	4	4.2	4	3.8
	Retired	1	1.0	6	5.7
	Housewife	34	35.4	39	37.1
	Student	16	16.7	10	9.5
Education	Illiterate/ read and write	3	3.1	8	7.6
	Primary	16	16.7	11	10.5
	Intermediate	16	16.7	18	17.1
	Secondary or higher	61	63.5	68	64.8
Smoking	Non smoker	66	68.8	62	59.0
	Smoker	23	24.0	31	29.5
	Ex-smoker	7	7.3	12	11.4
BMI	Under weight	12	12.5	3	2.9
	Normal	52	54.2	52	49.5
	Over weight	20	20.8	36	34.3
	Obese	12	12.5	14	13.3
Total		96	100.0	105	100.0

More than half of CD (61.5%) and UC (51.4%) patients were Class A according to SGA score, as seen in table 2.

Table 2. Distribution of patients by their IBD type according to SGA nutritional assessment

IBD type	SGA rating	
	Class A Well nourished	Class B Mildly/moderately malnourished
Crohn's disease	59(61.5%)	37(38.5%)
Ulcerative colitis	54(51.4%)	51(48.6%)
Total	113(56.2%)	88(43.8%)

In regard to food avoidance, the study showed a similar pattern of food avoidance in CD and UC patients, as seen in figure 1.

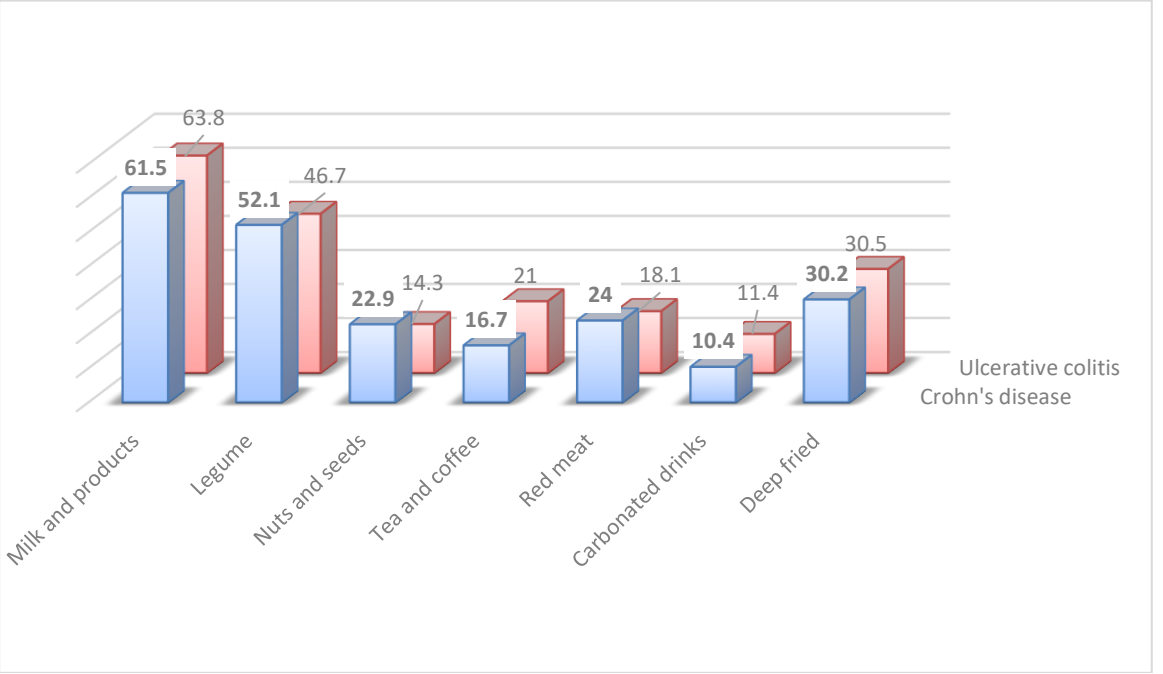

Figure 1. Types of food avoidance expressed by patients according to type of IBD

When patients were asked for the reasons of such dietary avoidance, eight-one (40.3%) patients stated that its due to GIT upset, forty-nine (24.4%) said that if not avoided it may cause flaring of symptoms and fifty-seven (28.4%) reported that they avoided food based on a professional advice.

Eighty-four (41.8%) of IBD patients believed in the need for a modified dietary plan, ninety-five (47.3%) stated that receiving advice about diet is highly needed and 114 (56.7%) were very keen to get professional nutritional help.

The current study showed a significant difference in total calorie, fat, protein, and carbohydrate intake between the two SGA classes in CD patients.

Table 3. distribution of CD patients according to recall diet history by their SGA

	Crohn's disease		P value
	Class A	Class B	
	Mean (SD)	Mean (SD)	
Total Calories	1730.3±513.1	1453.7±383.6	0.006
Fat intake (in grams)	49.7±19.0	41.1±12.1	0.017
Fat calories	447.7±171.6	370.7±109.7	0.017
Protein intake (in grams)	69.3±22.0	58.4±17.9	0.013
Protein calories	277.5±88.1	233.8±71.7	0.013
Carbohydrate (in grams)	251.2±83.6	212.2±70.0	0.020
Carbohydrate calories	1005.0±334.7	849.1±280.1	0.020

The study also showed a significant difference in total calorie, fat and carbohydrate intake between the two SGA classes in UC patients. Protein intake didn't show a significant difference.

Table 4. Distribution of UC patients according to recall diet history by their SGA

	Ulcerative colitis		P value
	Class A	Class B	
	Mean (SD)	Mean (SD)	
Total Calories	1621.07±496.7	1370.05±395.6	0.005
Fat intake (in grams)	43.9±15.3	36.2±10.1	0.003
Fat calories	395.6±137.7	326.2±91.0	0.003
Protein intake (in grams)	62.5±21.0	57.3±17.2	0.174
Protein calories	250.2±84.2	229.5±69.0	0.174
Carbohydrate (in grams)	243.7±85.8	203.5±72.4	0.011
Carbohydrate calories	975.1±343.4	814.1±289.7	0.011

Over-intake of energy and protein were low in both types of IBD; as seen in figure 2 down below. Around one third of the patients had balanced diets for energy intake balanced intake was seen in 38.5% and 37.1% in CD and UC respectively, as for balanced protein intake it was reported in 30.2% CD and 24.8% UC patients. The remaining two thirds had low energy and protein intake compared to their daily requirements.

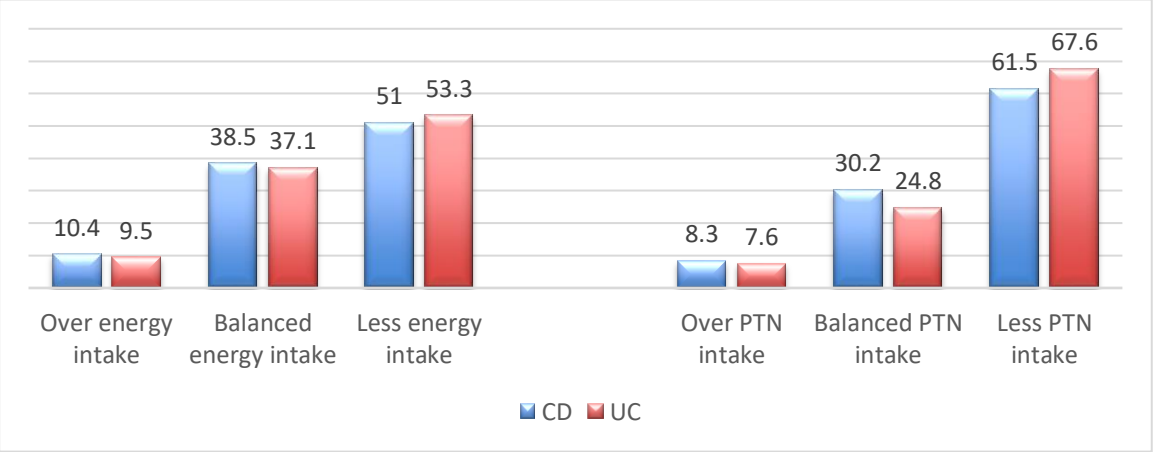

Figure 2. Distribution of IBD patients according to energy and protein intake and requirements

Discussion

With recent surge of IBD incidence, Iraq has not past the worst from the increasing burden of IBD, part related to the modernization and western diet style, change in pattern of behavior and society habits. Hence the presenting age

younger than 45 years. Patients with UC were on average older than those with CD (37 vs 32 years). Agreeing with previous published works. [1,4, 12-17]

While the age of involvement was among older groups compared with published results from Australia (52 years). [18] Which might indicate the difference on the population constitution and demographical pyramid.

Less than half of IBD patients were malnourished. The decrease of oral food intake is one of the most important reasons for malnutrition in patient with IBD. Two main mechanisms are reported. The first is connected to the disease itself: patients avoid eating due to symptoms such as nausea, abdominal pain, vomiting, and diarrhea during disease inflammatory activity. The second is connected to fasting due to hospitalization or prolonged restrictive diets [8] The study showed a similar pattern of food avoidance in IBD patients. Agreeing with a study by Taylor L et al in which patients reported food choices that promote a more restricted nutrient intake. [12]

The main reason for food avoidance was to decrease GIT symptoms, and remaining followed formal or informal advices they heard agreeing with different studies. [19,20]

High prevalence of avoidance of nutritious foods, the absence of an Iraqi dietary guidelines and the lack of proper professional dietetic advice amongst people with IBD is of concern, that is translated clearly in patients' beliefs, the study showed that the majority of IBD patients were very keen to get professional nutritional advice; since diet plays a crucial role in the onset and course of disease and believed in an urgent need for it. That can open a new horizon for chronic patients such as IBD patients. Several studies demonstrated an improved disease activity and prolonged time to relapse following precise dietary regimens, yet the effectiveness of these diet protocols has not been fully tested and illuminated. [21] In this context; building trust and ensuring that patients are provided with evidence-based nutrition recommendations to manage their symptoms whilst optimizing nutritional quality of their diet. [19, 22]

The current study showed a significant difference in total calorie, fat and carbohydrate intake between the two SGA classes in CD and UC patients. Protein intake didn't show a significant difference. This is might be depending on the type of IBD since the involvement of the small intestine is accompanied by a higher incidence of protein–energy malnutrition and micronutrient and/or vitamin deficiencies. Moreover, patients with CD generally develop malnutrition over a longer period of time, whereas patients with UC tend to present a rapid nutritional deficiency during severe acute flare of the disease or in case of hospitalization.
[21]
the current study showed a need for proper nutritional consultation in those depleting diseases as nearly two thirds of IBD patients have a low energy and protein intake.

Conclusions

The study demonstrated a need for proper nutritional consultation in IBD as early recognition and management of malnutrition in clinical practice can spare patients from many complications.

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