Dissertation on

AN ANALYTICAL STUDY TO TEST THE VALIDITY OF NEW QUESTIONNAIRE FOR THE DIAGNOSIS OF IRRITABLE BOWEL SYNDROME

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CERTIFICATE

This is to certify that this dissertation entitled **'AN ANALYTICAL STUDY TO TEST THE VALIDITY OF THE NEW QUESTIONNAIRE FOR THE DIAGNOSIS OF IRRITABLE BOWEL SYNDROME'** submitted by **Dr. J. KAYALVIZHI** appearing for Part II M.D. Branch I General Medicine Degree examination in March 2010 is a bonafide record of work done by her under my direct guidance and supervision in partial fulfillment of regulations of the Tamil Nadu Dr. M.G.R. Medical University, Chennai. I forward this to the Tamil Nadu Dr.M.G.R. Medical University, Chennai, Tamil Nadu, India.

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DECLARATION

I solemnly declare that this dissertation ‘ An Analytical study to test the validity of the proposed questionnaire for the diagnosis of Irritable Bowel Syndrome ‘ was prepared by me at Govt. General Hospital and Madras Medical College , Chennai under the guidance and supervision of Prof. Dr. T. Manivel, M.D , Professor of Medicine, Govt. General Hospital and Madras Medical College , Chennai

This dissertation is submitted to the Tamilnadu Dr. M.G.R Medical University, Chennai in fulfillment of the university regulations for the award of the degree of M.D Branch I General Medicine.

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INTRODUCTION

Irritable bowel syndrome (IBS) is a functional bowel disorder in which abdominal pain or discomfort is associated with defecation or a change in bowel habit. Bloating, distension, and disordered defecation are commonly associated features.

IBS is a common condition, affecting approximately 3% to 15% of the general population based on various diagnostic criteria. There seem to be differences in disease epidemiology between the eastern and the western world. As data from larger Asian epidemiological studies begin to surface, however, such differences appear to be less marked.

Irritable bowel syndrome is a relapsing functional bowel disorder defined by symptom-based diagnostic criteria, in the absence of detectable organic causes. The symptomatic array is not specific for IBS, as such symptoms may be experienced occasionally by almost every individual. To distinguish IBS from transient gut symptoms, experts have underscored the chronic and relapsing nature of IBS and have proposed diagnostic criteria based on the occurrence rate of symptoms.

The global picture of IBS prevalence is far from complete, with no data available from several regions.(1) The prevalence of IBS is

increasing in countries in the Asia–Pacific region, particularly in countries with developing economies. Estimates of the prevalence of IBS (using theRome II diagnostic criteria) vary widely in the Asia–Pacific region. (2) In addition, comparisons of data from different regions are often problematic due to the use of different diagnostic criteria, as well as the influence of other factors such as population selection, inclusion or exclusion of co morbiddisorders (e.g., anxiety), access to health care, and cultural influences.

Several attempts have been made to define the diagnostic criteria for IBS. Each attempt implies shortcomings in the previous ones.

So , is the new questionnaire[2] proposed by the WGO for diagnosis for Health Care Professionals to diagnose IBS.

Present study was undertaken to find the usefulness of this questionnaire against the existing Rome III criteria.

AIMS AND OBJECTIVES

1. To study the validity of the questionnaire in patients with IBS

2. To compare against Rome III criteria.

3. To study the usefulness in delineating patients with IBS and other bowel diseases like IBD, Colonic cancer when compared with Rome III criteria.

REVIEW OF LITERATURE

Irritable bowel syndrome (IBS) is important because of its high prevalence, substantial morbidity, and enormous costs. [3] [4] [5]

The diagnosis of IBS rests on making a positive clinical diagnosis from the history; that tests often are not needed represents an important conceptual advance.[6] There is increasing evidence that at least a subset of IBS has an organic gastrointestinal tract basis. [7]

Some characteristics of IBS are:

1. It is not known to be associated with an increased risk for the development of cancer or inflammatory bowel disease, or with increased mortality.

2. It generates significant direct and indirect health-care costs.

3. No pathophysiological substrate has been demonstrated in IBS.

4. A transition of IBS to, and overlap with, other symptomatic gastrointestinal disorders (e.g., gastroesophageal reflux disease, dyspepsia, and functional constipation) may occur.

5. The condition usually causes long-term symptoms.

6. May occur in episodes.

7. Symptoms vary and may be meal-related.

8. Symptoms interfere with daily life and social functioning in many patients.

9. Symptoms sometimes seem to develop as a consequence of a severe intestinal infection or to be precipitated by major life events, or in a period of considerable stress.

In general, there is a lack of recognition of the condition; many patients with IBS symptoms do not consult a physician and are not formally diagnosed. IBS generates significant direct and indirect health-care costs.

PATHOPHYSIOLOGY

A number of different mechanisms have been implicated in the pathogenesis of IBS including abnormal motility, visceral hypersensitivity, low-grade inflammation, and stress. [5] [9] [10] Genetic factors could modulate the processing of gut signals centrally and the inflammatory and immune responses locally, possibly predisposing to IBS. It seems reasonable to postulate that for IBS to manifest, several abnormalities (multiple “hits”) may need to occur. Some authors, therefore, conceptualize IBS as “a discrete collection of organic bowel

diseases,"[9] whereas other experts are concerned about "organification" of IBS because it may reduce the emphasis on the biopsychosocial model [12] [13] and imply that biologic factors are not sufficient to cause the disease. It seems likely in IBS that an understanding of the individual, including his or her psychosocial nature and response to environmental factors influences the expression of any biologic determinants.

Regardless, further major therapeutic advances in the field seem unlikely to occur until the specific biologic basis for symptoms is identified better.

1. ALTERED COLONIC AND SMALL BOWEL MOTILITY
2. VISCERAL HYPERSENSITIVITY
3. ABNORMAL GAS PROPULSION AND EXPULSION
4. LOCAL INFLAMMATION
5. FOOD INTOLERANCE AND ALLERGY [31,37]
6. ABNORMAL COLONIC FLORA AND BACTERIAL OVERGROWTH
7. CENTRAL DYSREGULATION
8. PSYCHOLOGICAL FACTORS [71,72]
9. GENETICS [14]

Figure 2

Schematic illustration of functional organization of central neuroaxis inprocessing and modulation of visceral afferent signals.

(A) Hierarchical organization of reflex responses to visceral afferent stimuli. (B) Modulation of visceral afferent input by cognitive and emotional factors within the central neuroaxis. PAG, periaqueductalgrey; RVLM, rostroventrolateral medulla; VMM,ventromedial medulla; ANS, autonomic nervous system; hypoth, hypothalamus; Amy, amygdala; orbFC, orbitofrontal cortex.

DIAGNOSIS OF IBS

Clinical history

In assessing the patient with IBS, it is important not only to consider the primary presenting symptoms, but also to identify precipitating factors and other associated gastrointestinal and extra gastrointestinal symptoms. It is vital also to seek and directly question for the presence of alarm symptoms. The history is critical and involves both the identification of those features regarded as typical of IBS and the recognition of “red flags” that suggest alterative diagnoses. Accordingly, the patient should be asked about the following (features marked with an asterisk * are compatible with IBS):

1. The pattern of abdominal pain or discomfort:

2. Chronic duration*

3. Type of pain: intermittent* or continuous

4. Previous pain episodes*

5. Location of pain. In some individuals, pain may be well-localized (to the lower quadrant of the abdomen, for example), while in others the pain location tends to move around.

6. Relief with defecation or passing of flatus*

7. Nocturnal pain is unusual and is considered a warning sign

8. Other abdominal symptoms:

- Bloating
- Distension
- Borborygmi
- Flatulence

9. Nature of the associated bowel disturbance:

- Constipation [65]
- Diarrhea

10. Alternation

11. Abnormalities of defecation:

- Diarrhea for >2 weeks
- Mucus in the feces
- Urgency of defecation
- Feeling of incomplete defecation

Other information from the patient's history and important warning signs:

1. Unintended weight loss
2. Blood in stool
3. Family history of:

- Colorectal malignancy
- Celiac disease [24,25]
- Inflammatory bowel disease

4. Fever accompanying lower abdominal pain
5. Relation to menstruation
6. Relation to Drug therapy
7. Consumption of foods (especially milk), artificial sweeteners, dieting products, or alcohol [17,18,19]
8. Visiting the (sub-)tropics
9. Abnormal eating habits

- Irregular or inadequate meals
- Insufficient fluid intake [23,24]
- Excessive fiber intake
- Obsession with dietary hygiene[20,21]

10. Family history of IBS. IBS clearly aggregates within families, although its genetics are poorly understood

11. Nature of onset (sudden onset in relation to exposure to gastroenteritis suggests PI-IBS)

PSYCHOLOGICAL ASSESSMENT

Psychological factors have not been shown to cause or influence the onset of IBS [66, 68]. IBS is not a psychiatric or psychological disorder. However, psychological factors may:

- Play a role in the persistence and perceived severity of abdominal symptoms [69,70,71]

- Contribute to impairment in the quality of life and excessive use of health-care services

The following may be useful in providing an objective assessment of psychological features:

1. Hospital Anxiety and Depression Scale (HADS). This is a simple 14-item questionnaire to measure the level of anxiety and depression [71, 72].

2. The Sense of Coherence (SOC) test can be used to identify patients with a low SOC who respond to cognitive behavioral therapy [74, 75].

3. The Patient Health Questionnaire (PHQ-15). This is a 15-item questionnaire that helps identify the presence of multiple somatic symptoms (somatization). The PHQ-15 should be validated in a given country before it is used in clinical practice in that location [73].

PHYSICAL EXAMINATION

A physical examination reassures the patient and helps to detect possible organic causes. A general examination is carried out for signs of systemic disease.

- Abdominal examination: Inspection , Auscultation , Palpation
- Examination of the perianal region: Digital rectal examination

IBS DIAGNOSTIC ALGORITHM

IBS diagnostic cascade

Level 1

1. History, physical examination, exclusion of alarm symptoms, consideration of psychological factors
2. Full blood count (FBC), erythrocyte sedimentation rate (ESR) or C-reactive protein (CRP), stool studies (white blood cells, ova, parasites, occult blood)
3. Thyroid function, tissue transglutaminase (TTG) antibody
4. Colonoscopy and biopsy
5. Fecal inflammation marker (e.g., calprotectin)

Level 2

1. History, physical examination, exclusion of alarm symptoms, consideration of psychological factors
2. FBC, ESR or CRP, stool studies, thyroid function
3. Sigmoidoscopy

EVALUATION OF IBS

A diagnosis of IBS is usually suspected on the basis of the patient's history and physical examination, without additional tests. Confirmation of the diagnosis of IBS requires the confident exclusion of organic disease in a manner dictated by an individual patient's presenting features and characteristics. In many instances (e.g., in young patients with no alarm features), a secure diagnosis can be made on clinical grounds alone [36, 37].

Diagnostic criteria (Rome III)

1. Onset of symptoms at least 6 months before diagnosis

2. Recurrent abdominal pain or discomfort for > 3 days per month during the past 3 months

3. At least two of the following features:

- Improvement with defecation
- Association with a change in frequency of stool
- Association with a change in stool form

In clinical practice, whether in the setting of primary or specialist care, clinicians usually base a diagnosis of IBS on their evaluation of the whole patient (often over time) and consider a multiplicity of features that support the diagnosis (apart from pain and discomfort associated with defecation or change in stool frequency or form).

Symptoms common in IBS and supportive of the diagnosis:

- Bloating
- Abnormal stool form (hard and/or loose)
- Abnormal stool frequency (less than three times per week or over three times per day)
- Straining at defecation
- Urgency
- Feeling of incomplete evacuation
- The passage of mucus per rectum

Behavioral features helpful in recognizing IBS in general practice:

- Symptoms present for > 6 months
- Stress aggravates symptoms
- Frequent consultations for nongastrointestinal symptoms
- History of previous medically unexplained symptoms

- Aggravation after meals [28, 29]
- Associated anxiety and/or depression

Non-colonic complaints that often accompany IBS:

- Dyspepsia—reported in 42–87% of IBS patients
- Nausea
- Heartburn

Associated non-gastrointestinal symptoms:

- Lethargy
- Backache and other muscle and joint pains
- Headache

Urinary symptoms:

- Nocturia
- Frequency and urgency of micturition
- Incomplete bladder emptying

Other non specific symptoms include:

- Dyspareunia, in women
- Insomnia
- Low tolerance to medication

Additional tests or examinations:

In the majority of cases of IBS, no additional tests or examinations are required. An effort to keep investigations to a minimum is recommended in straightforward cases of IBS, and especially in younger individuals.

HISTORY OF THE CRITERIA

1978 – Manning et al., found, from questionnaire data, that IBS sufferers reported four common symptoms. The Manning Criteria was established to distinguish organic causes for symptoms from those of IBS.

1992 – Rome I Criteria was established by a multinational committee of specialists, which further refined the Manning Criteria.

1998 – Rome Working Team proposed changes to the definition and diagnostic criteria for IBS to reflect new research data, and to improve clarity. They produced the Rome II Criteria.

2006 – Rome II criteria was further defined by the expanded Rome Working Team into what is now known as the Rome III Criteria.

Table 1 -- Comparison of the Major Diagnostic Criteria for the Irritable Bowel Syndrome

Manning Criteria	Rome I Criteria	Rome II Criteria	Rome III criteria
• Abdominal pain that is relieved after a bowel movement	≥3mo of continuous or recurrent symptoms of abdominal pain or discomfort relieved with defecation or associated with change in frequency or consistency of stool and Disturbed defecation (≥ 2 of the following):	≥12wk, which need not be consecutive, in the preceding 12mo of abdominal discomfort or pain that has at least 2 of the 3 following features:	At least 3 months, with onset at least 6 months previously of recurrent abdominal pain or discomfort associated with 2 or more of the following:
• Looser stool at pain onset	• Altered stool frequency	• Relieved with defecation	• Improvement with defecation; *and/or*
• More frequent stools at pain onset	• Altered stool form (hard or loose/watery)	• Onset associated with a change in frequency of stool	• Onset associated with a change in frequency of stool; *and/or*
• Abdominal distention (visible)	• Altered stool passage (straining or urgency, feeling of incomplete evacuation)	• Onset associated with a change in stool form	• Onset associated with a change in form (appearance) of stool
• Sensation of incomplete rectal evacuation	• Passage of mucus		
• Passage of mucus	• Bloating or feeling of abdominal distention		

According to the Rome III criteria, and on the basis of the patient's stool characteristics:

- IBS with diarrhea (IBS-D):

— Loose stools > 25% of the time and hard stools < 25% of the time

— Up to one-third of cases

— More common in men

- IBS with constipation (IBS-C):

— Hard stools > 25% of the time and loose stools < 25% of the time

— Up to one-third of cases

— More common in women

DIFFERENTIAL DIAGNOSIS

1. Celiac sprue/ gluten enteropathy [24, 26]

- Chronic diarrhea
- Failure to thrive (in children)
- Fatigue
- Estimated to affect ± 1% of all Indo-European populations
- To be considered in the differential diagnosis in regions of high prevalence

2. Lactose intolerance

- Symptoms (bloating, flatulence, diarrhea) acutely related to consumption of dairy products [32, 33, 34, 35]
- Can be identified by a lactose breath hydrogen test, after a positive milk-drink test

3. Inflammatory bowel disease (Crohn's disease, ulcerative colitis)

- Diarrhea has persisted for > 2 weeks
- Rectal bleeding
- Inflammatory mass, weight loss, perianal disease, fever

4. Colorectal carcinoma

- Older patients who develop IBS-type symptoms for the first time
- Passage of blood in the feces
- Unintended weight loss
- Pain may be obstructive in type for left-sided lesions
- Anemia or iron deficiency for right-sided lesions

5. Lymphocytic and collagenous colitis

- Accounts for 20% of unexplained diarrhea in patients over 70 years of age.
- Typically painless
- Most common in middle-aged females
- Diagnosed on colonic biopsies [52, 53]

6. Acute diarrhea due to protozoa or bacteria

- Acute onset of diarrhea [38, 39, 40]
- Stool examination or duodenal biopsy

7. Small-intestinal bacterial overgrowth (SIBO)

- The classical features of SIBO are those of maldigestion and malabsorption [41, 43].
- Some of the symptoms of SIBO (bloating, diarrhea) may overlap with those of IBS, which has led to the suggestion that SIBO is common in IBS [42].
- The bulk of evidence suggests that SIBO is not common in IBS.

8. Diverticulitis

The relationship between IBS and so-called “painful diverticular disease” is unclear [44, 45]. In diverticulitis, the classical symptoms and/or findings are episodic and acute to subacute during an episode, featuring:

- Left-sided abdominal pain
- Fever
- Tender inflammatory mass in the left lower quadrant

9. Endometriosis

- Cyclical lower abdominal pain
- Enlarged ovaries or nodules dorsal to the cervix (on digital vaginal examination)

10. Pelvic inflammatory disease

- Non acute lower abdominal pain
- Fever
- Upward pressure pain or adnexal tenderness and swollen adnexa (on digital vaginal examination)

11. Ovarian cancer

- Abdominal size
- Bloating
- Urinary urgency
- Pelvic pain

MATERIALS AND METHODS

This study is an analytical study conducted in a major public hospital from June 2009 to September 2009 and included a total of 52 patients. The reference population is Tamil speaking population belonging to lower and low middle socio – economic status attending government hospitals. The study population was taken from the Medical Gastroenterology out patient department and wards.

Inclusion criteria

Males and females with chronic abdominal pain / discomfort with duration of >3 months associated with disturbed defecation.

Exclusion criteria

1. Those with known Ulcerative Colitis

2. Those with known Crohn's disease

3. Those with known thyroid dysfunction.

4. Those with known abdominal malignancy.

5. Those with known abdominal tuberculosis

6. Pregnant women

The questionnaire released by the World Gastroenterology Organization consists of 21 questions with points for questions 1 -16.

The questions were translated into Tamil with the help of a team consisting of two non medicos with proficiency in Tamil, two non medicos with proficiency in English and two medicos.

The questions were asked from the Tamil version to patients. And literate persons who volunteered to fill the questionnaire themselves were also encouraged to do so.

A standardized pro forma was used to cover the subject's age, education, duration of illness, past medical & surgical illness and concurrent medications. Also included were history of upper GI symptoms like bloating, dyspepsia & nausea. History of passing worms in stools was also elicited.

PHYSICAL EXAMINATION

Physical examination included:

i. Measurement of height/ weight and calculation of BMI using the formula Ht in m2/wt in kg

ii. Pulse rate and blood pressure

iii. General examination

iv. Examination of Abdomen

v. Other system examination

INVESTIGATIONS

i. Complete blood count Total count, differential count , Hemoglobin%, Platelet count, PCV, ESR

ii. Fasting Blood sugar

iii. Stool examination for ova, cyst, blood

iv. Urine analysis

v. Serum TSH

vi. ELISA HIV

vii. Ultrasound Abdomen

viii. Colonoscopy

DEFINING CRITERIA

i. Duration for minimum 3 months

ii. Altered stool frequency

iii. Altered stool consistency

iv. Altered stool form

v. Abdominal discomfort, improving with defecation

vi. No red flag sign bleeding PR, weight loss, loss of appetite, sleep disturbance

vii. Normal colonoscopy

viii. Normal TSH

ix. ELISA HIV Negative

x. Normal Fasting Blood sugar (<100 mg/ dl)

Based on the above criteria patients were confirmed to have IBS

OBSERVATION AND RESULTS

Total no of Patients	52
Those with IBS	46
Those without IBS	6

ROME III CRITERIA

Those fulfilling ROME III Criteria	50
Those not fulfilling ROME III Criteria	2

QUESTIONNAIRE

Total no of patients with a likely score	6
Total no of patients with possible score	38
Total no of patients with an unlikely score	8

ANALYSIS OF ROME III CRITERIA

True Positives	45
True Negatives	1
False Positives	5
False Negatives	1
Total no of patients	52

ROME III CRITERIA

ROME CRITERIA	Those with IBS	Those without IBS
Positive	46	6
Negative	1	1

Sensitivity = 97.8%

Specificity = 14.28%

Predictive value of a positive test = 88.46%

Predictive value of a negative test = 50%

Percentage of false positives = 85.7%

Percentage of false negatives = 2.12%

ANALYSIS OF QUESTIONNAIRE

True Positives	43
True Negatives	5
False Positives	1
False Negatives	3
Total no of patients	52

QUESTIONNAIRE

QUESTIONNAIRE	Those with IBS	Those without IBS
Positive	43	1
Negative	3	5

Sensitivity = 93.4%

Specificity = 83.3%

Predictive value of a positive test = 97.72%

Predictive value of a negative test = 62.5%

Percentage of false positives =16.6%

Percentage of false negatives = 6.52%

COMPARISION OF SENSITIVITIES OF ROME III CRITERIA & QUESTIONNAIRE

Sensitivity of Questionnaire	93.40%
Sensitivity of Rome III	97.80%

COMPARISION OF SPECIFICITIES OF ROME III CRITERIA & QUESTIONNAIRE

Specificity of Questionnaire	83.30%
Specificity of Rome III	14.28%

COMPARISION OF PREDICTIVE VALUE OF A POSITIVE TEST OF ROME III CRITERIA & QUESTIONNAIRE

Predictive value of a positive test of Questionnaire	97.72%
Predictive value of a positive test of Rome III	88.46%

COMPARISION OF PERCENTAGE OF FALSE POSITIVES WITH ROME III CRITERIA & QUESTIONNAIRE

Percentage of false positives of Questionnaire	16.6%
Percentage of false positives of Rome III	85.7%

COMPARISION OF PERCENTAGE OF FALSE NEGATIVES WITH ROME III CRITERIA & QUESTIONNAIRE

Percentage of false negatives of Questionnaire	6.52%
Percentage of false negatives of Rome III	2.12%

DISCUSSION

Out of 52 patients who were taken up for final statistical analysis , the prevalence of IBS was 88% and 12% had other organic diseases.

Fifty patients were diagnosed to be IBS when the ROME III criteria was applied. But of them only 45 were truly IBS. 5 patients had organic bowel disease. One patient with IBS did not fit into the criteria of ROME III. And one patient with drug related constipation was correctly diagnosed by the ROME III criteria as non –IBS.

The questionnaire was a quantitative and qualitative assessment when compared to the Rome. It quantitated the relation between abdominal pain with bowel movements, bloating sensation and flatulence and also their interaction with activities of daily life. Also the addition of age, and giving a score of 0 for > 50 yrs of age makes it advantageous in the context of colonic cancer.

When the questionnaire was asked to patients, those with a likely score of 25 – 30 were 6 in number. All six patients had normal colonoscopic findings and normal lab findings.

And the number of patients with a score 15-24, where IBS is possible although other conditions are also possible was 37. Amongst them one patient had colitis.

And those with a score <15 which is suggestive of non-IBS were 8. Amongst them 5 patients were non – IBS, the causes being hemorrhoids, Ulcerative colitis, Crohn's disease and non specific Colitis. 3 patients had normal colonoscopic and lab findings suggestive of IBS.

Comparing this questionnaire with ROME III criteria, the sensitivity of Rome (97%) was slightly higher than questionnaire (93%). The specificity was much higher for questionnaire (83%) than Rome (14%). The predictive value of a positive test and negative test were definitely higher with the questionnaire (98% and 62%) as against the Rome (88% and 50%). The percentage of false positives was low with questionnaire (16%) against (86%) Rome. The percentage of false negatives was only slightly higher in questionnaire (6%) than Rome (2%).

The additional non scoring questions in this questionnaire which were not included in the ROME III criteria were:

1. Family history of colonic cancer / celiac disease /IBS.

2. Recent treatment with antibiotics.

3. Unintentional weight loss.

4. Blood on stools.

5. Nocturnal symptoms

One patient had a family history (elder brother) had colonic cancer. Two patients with IBS were 50 yrs father and 18 yrs old son. And one patient's mother had IBS.

Only one patient gave a history of recent treatment with antibiotics for upper respiratory tract infection.

Weight loss was given by 5 patients with IBS, of whom 4 had diarrhea predominant IBS and 1 had constipation predominant IBS. Only one patient with IBD reported weight loss.

Regarding blood loss in stools, almost 90 % patients with IBS reported passing blood in stools at some point. And all non IBS patients including those who had drug related constipation had blood loss in stool.

In one study by Cash, Schoenfeld and Chey, the investigators identified that the alarm features of age greater than 50 years and hematochezia were independent predictors of lower GI organic disease. Most importantly, they found that symptom-based diagnostic accuracy for differentiating between IBS and organic disease was enhanced when alarm features were considered along with non-alarm features (such as gender and pain frequency and severity) and the Manning criteria.

This is contrasting to our Indian population where most patients with IBS report having passed blood in stools. But at the time of this study, the stool examination did not reveal blood.

And 70 % patients had threadworms in stool. But their stool examination was inconclusive, except for 3 patients who had E.histolytica in stool.

Sleep disturbance in the form of nocturnal diarrhea was present in 21 IBS patients. 4 non IBS patients had sleep disturbances.

LIMITIATIONS OF STUDY

1. Tissue Transglutaminase antibodies were not done which would help to identify celiac disease.

2. CRP would have been a better inflammatory marker than ESR.

SUMMARY AND CONCLUSIONS

1. Comparing this questionnaire with ROME III criteria , the sensitivity of Rome(97%) was slightly higher than questionnaire(93%).

2. The specificity was much higher for questionnaire(83%) than Rome (14%).

3. The predictive value of a positive test and negative test were definitely higher with the questionnaire(98% and 62%) as against the Rome (88% and 50%).

4. The percentage of false positives was low with questionnaire (16%) against (86%) Rome.

5. The percentage of false negatives was only slightly higher in questionnaire (6%) than Rome (2%).

Thus it is concluded that,

The new questionnaire is definitely useful in identifying patients with IBS.

Also it is more specific for IBS, reducing the need for invasive and costly procedures.

And with this questionnaire the disadvantage of missing organic bowel disease is eliminated making this recommendable in patients with bowel disturbance of all age group.

And this questionnaire can be used by primary care physicians and also paramedical staff and thereby guide those patients who will need further assessment by a Gastroenterologist.

Therefore, the new questionnaire released by the WGO is better than the currently existing Rome III criteria.

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ABBREVIATIONS

IBS – Irritable bowel syndrome

IBD – inflammatory bowel disease

TSH – thyroid stimulating hormone

HIV – human immunodeficiency virus

PAG –peri aqueductal grey

RVLM- rostro ventro lateral medulla

VMM –ventro medial medulla

ANS - autonomic nervous system

HCP –Health care professional

WGO – World Gastroenterology Organization

ISG – Indian Society of Gastroenterology

HADS -Hospital Anxiety and Depression Scale

SOC -Sense of Coherence

PHQ- Patient Health Questionnaire

PRO FORMA

Name : Age : Sex: Marital Status:

Occupation: Income : Education:

Address:

Duration of illness:

Past hisrory: DM SHT CAD TB

Drug history:

History of : 1. Dyspepsia

2. Heartburn

3 . Nausea

4. Worms in stool

5. Abdominal surgery

Diet : veg Non – veg

Precipitant meal :

Habits : smoking alcohol tobacco betel nut

PR BP Ht Wt BMI

Per Abdomen

Per Rectum

Investigations

4. CBC : Hb TC DC ESR PCV Pl. count
5. Stool : ova cyst blood
6. Serum TSH
7. ELISA HIV
8. USG ABDOMEN
9. Random Blood Sugar
10. Urine : Sug alb dep
11. Colonoscopy

12. Biopsy

13. Score : IBS questionnaire ROME III