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PSYCHOLOGICAL ASPECTS OF IRRITABLE BOWEL SYNDROME

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ABSTRACT

Psychological aspects of Irritable Bowel Syndrome have been well investigated in Western countries, but there is a paucity of Indian studies focussing on this area. A series of fifty patients with the Irritable Bowel Syndrome were studied with respect to their depressive symptoms, anxiety symptoms and their personality traits. Patients had a mean score of 14.68 on Hamilton's depression rating scale and 11.22 on Hamilton's anxiety rating scale, and were more introverted and more neurotic than the general population. No association was found between psychological symptoms and severity of gastrointestinal symptoms. These findings suggest that psychological symptoms are a concomitant part of the Irritable Bowel Syndrome.

Key words : irritable bowel syndrome, functional colonic disease, anxiety, depression.

INTRODUCTION

The term "Irritable Bowel Syndrome" (IBS) refers to a well recognized symptom complex arising from interactions among the psyche, the digestive tract and luminal factors (Camilleri & Prather, 1992). IBS is the most common gastrointestinal disorder encountered by primary care physicians; prevalence figures range from 13% to 52% of new referrals to gastrointestinal clinics (Ferguson et al, 1977). It been reported to be common in India (Kotwal et al, 1978) though its exact incidence is hard to assess; it appears that those attending gastroenterology clinics represent only the tip of the iceberg (Sharma & Chawla, 1983). The symptoms include abdominal pain related to bowel movement, a sensation of distention, altered bowel habits, passage of mucus and a sense of incomplete evacuation after defecation (Manning et al, 1978).

The prevalence of psychological symptoms in patients with IBS has been reported to be above average. Right from the earliest report by Bockus, Bank and Willkinson in 1928, who reported that 46% of patients with "Neurogenic Mucous Colitis" had depression and 46% had 'marked emotional instability' (Young et al, 1976), other authors have consistently reported an increased prevalence of psychological symptoms, notably depressive and anxiety symptoms (Sreedhar, 1979; Whitehead et al, 1980; Welch et al, 1984; Svedlund et al 1985; Rose et al, 1986; Kumar et al, 1990; Arun et al, 1993).

Studies have also highlighted the presence of high levels of neuroticism and introversion (Palmer et al, 1974; Robertson et al, 1989; Yadav et al, 1990; Dinan et al, 1991). A recent study (Arun et al, 1993) reported increased neuroticism, psychoticism and decreased extroversion among IBS patients. These psychological characteristics not only predispose the sufferers to present to their doctors, but also probably worsen the actual symptoms and are likely to interfere with the response to conventional treatment.

A higher prevalence of psychiatric illness has been reported in patients with IBS with figures ranging from 42% to 72% (Young et al, 1976; McDonald & Bouchier, 1980; Creed & Guthrie, 1987). Walker et al (1990a) reported a greater lifetime diagnoses of major depression, somatization disorder, generalized anxiety disorder, panic disorder and phobic disorder among IBS patients. These findings were later replicated in the general population by the NIMH

Epidemiologic Cachment Area (ECA) study (Walker et al, 1992).

Thus, there is ample evidence to suggest an association between psychological symptoms, certain personality factors, psychiatric illness and the Irritable Bowel Syndrome. A male preponderance of IBS patients has been consistently reported in other Indian studies (Pimparkar, 1970; Sreedhar, 1979; Arun et al, 1993; Vij et al, 1991). These are in contrast to reports from the West where most patients were females. In view of the different demographic characteristics of Indian patients presenting with IBS, as well as the paucity of studies from India focussing on psychological aspects, we undertook an investigation to evaluate personality traits as well as the prevalence of anxiety and depressive symptoms. We further proposed to correlate the above variables with clinical symptoms to look for any causal factors.

MATERIALS AND METHODS

All patients who attended the Gastroenterology Department, Christian Medical College and Hospital, Vellore between 1st December 1991 and 30th September 1992 and on whom a diagnosis of Irritable Bowel Syndrome was made, were considered for inclusion in the study. The diagnosis of IBS was made by a senior Gastroenterologist, based on the report by Kruis et al (1984), using the clinical criteria proposed by the International Congress on Gastroenterology in Rome (Walker et al, 1990b).

After informed consent was obtained, all efforts were made to exclude any other organic diseases; all patients had relevant baseline investigations along with endoscopic procedures. In order to obtain as homogenous a sample as possible, the following inclusion criteria were applied: all patients had to be symptomatic for a minimum period of one year and had to have symptoms for al least three days in a week. Patients had to be between the ages of twenty one and sixty five, to be literate in either English, Tamil or Telugu and were also required to reside within 150 kilometers of Vellore. They were to be off all medication for at least two weeks and to be free from any other major medical or psychiatric illnesses. These inclusion criteria were enforced in order to obtain a sample of adult patients who had chronic, persistent symptoms, who were literate enough to answer a personality questionnaire and who lived close enough to the hospital to ensure follow up.

Once the diagnosis of IBS was made, eligible patients were asked to maintain a self reported symptom diary for a week. This would provide the baseline values for stool frequency, number of satisfying motions per week, presence of pain or flatulence. At the end of the first week they were assessed by the psychiatrist using a semi-structured psychiatric interview. During the course of the interview, patients were assessed objectively for anxiety and depressive symptoms using the Hamilton Anxiety Rating Scale (HAM-A) (Hamilton, 1959) and the Hamilton Depressive Rating Scale (HAM-D) (Hamilton, 1960). They were administered the Eysenck Personality Questionnaire (EPQ) (Eysenck & Eysenck, 1976) at the end of the session; the whole assessment took an average of 90 minutes per patient. Patients were then assessed by the gastroenterologist regarding overall well being, abdominal pain, bowel disturbance and other clinical symptoms.

The data was analyzed for the prevalence of anxiety, depressive symptoms and personality traits and correlated with socio-demographic and clinical variables. All statistical tests were done using the Statistial Package for Social Sciences (SPSS/PC)$^+$. Student's two tailed t test, chi square test, Analysis of Variance (ANOVA) and Pearson'sProduct Moment Correlation Coefficient were used wherever indicated (Meinert, 1986).

RESULTS

Fifty patients met the inclusion criteria and formed the study sample; the majority were male (66%) and in the 21 to 30 age group. The mean age of all patients was 33.5 years, with no significant difference between the sexes. Marginally

more patients were from a rural background (58%) and over 76% had an education of at least 6th standard or more. The majority (70%) were married. There was a spread of patients across various occupational categories.

The mean duration of symptoms was 39.9 months and the most predominant symptom was bowel disturbance (54%); abdominal pain (28%) and flatulence (18%) were less common. Watery stools (40%) were more common than hard (24%) or well formed stools (36%). Subjective well being was reported on only 1.3 days in a week, and patients were troubled by abdominal pain on 5.2 days a week. Ten patients (20%) had a past history of psychiatric illness: 5 with anxiety disorders, 2 with depressive episodes and 3 with alcohol dependence. Two patients (4%) had first degree relatives with IBS.

TABLE-1
HAMILTON SCALE SCORES FOR ANXIETY AND DEPRESSION

SCORE	ANXIETY (n = 50)	DEPRESSION (n = 50)
0 - 5	4	0
6 - 10	19	9
11 - 15	19	21
16 - 20	7	15
21 - 25	1	5

Presence of anxiety and depressive symptoms as measured by Hamilton's Anxiety and Depression scales are given in Table 1. The mean depression score was 14.68 and the mean anxiety score was 11.22. Patients scored highly on depressed mood, psychic anxiety, somatic gastrointestinal symptoms and hypochondriasis on HAM-D, and on anxious mood, tension, depressed mood and gastrointestinal symptoms of anxiety on HAM-A. In the absence of local norms on a healthy population for the two scales, it is not possible to comment on the severity of anxiety or depressive symptoms among IBS patients.

TABLE 2
EYSENCK PERSONALITY QUESTIONNAIRE

TRAIT	General population	TOTAL (n = 50) IBS patients
EXTROVERSION	12.6	11.2
Critical Ratio	2.60 p <.05	
NEUROTICISM	10.8	14.6
Critical Ratio	5.19 p <.001	
PSYSCHOTICISM	4.8	5.4
CRITICAL RATIO	1.30 NS	

Population means were obtained from Abraham et al, 1990 ; NS = not significant.

The Eysenck Personality Questionnaire Scores were compared with normals for the Indian population (Abraham & Verghese, 1990) using the 't' test between two means (Table 2). IBS patients tended to be more introverted and more neurotic than the general population. Psychoticism scores did not show any significant difference for either sex.

The various demographic, clinical and psychological variables were analyzed as a function of sex, residence, education, occupation, predominant symptom and stool type ; no significant differences were found. Table 3 illustrates the coefficient of correlation between various clinical and psychological items. Depression and anxiety scores have a very high positive correlation ($p < 0.001$) with each other. Age correlates negatively with extroversion and neuroticism scores on the EPQ, while extroversion and neuroticism scores correlate positively with each other and with anxiety symptoms. There is also a positive correlation between depessive symptoms

and neuroticism. None of the clinical features (including duration of illness and intensity of symptoms) correlated with any of the three psychological measures (HAM-A, HAM-D, EPQ).

DISCUSSION

The average age of patients in this study (33.5 years) is in keeping with other studies, (Sreedhar, 1979; Tripathi et al, 1983; Dinan et al, 1991), validating the finding that IBS patients who usually present for treatment are in their late twenties or early thirties. The male preponderance of this sample (66%) has been reported in other Indian studies with the proportion ranging from 70% to 87% (Pimparkar, 1970; Sreedhar, 1979; Vij et al, 1991; Arun et al, 1993). These are in contrast to reports from the West where women constitute larger numbers, ranging from 66% to 79% (Young et al, 1976; Greenbaum et al, 1987; Dinan et al, 1991).

There could be four possible resons for this finding: (a) The prevalence of IBS amongst the sexes in developing countries is significantly different from that of the more industrialized nations. (b) There could be differing patterns of health care seeking behavior between males and females (Creed & Guthrie, 1987; Smith et al, 1990). However, the sex profile of patients attending the Gastroenterology clinic at our hospital does not reveal any male preponderance. (c) The need for literacy as an inclusion criteria may have led to a number of female patients being excluded due to the widely divergent literacy rates among males (53.48%) and females (28.04%) in the district (Director of Census Operations, 1981). (d) Most Western studies used the criteria of Manning et al (1978), which have recently been shown to be of less diagnostic value in males (Smith et al, 1991); this could cause an under reporting of the prevalence of IBS in male patients in the West.

A majority (70%) of patients were married, similar to Arun et al (1993) and Young et al (1976). Due to the inclusion criteria applied (need for literacy and proximity) the other variables such as residence, education etc., cannot be

TABLE3: PEARSON'S PRODUCT MOMENT CORRELATION COEFFECIENT

VARIABLE	AGE	WELL	PAIN	GAS	DURN	FREQ	SATS	HAMD	HAMA	EPQE	EPQN	EPQP
AGE	*	*	*	*	*	*	*	*	*	-.41	-.39	*
WELL- DAYS	*	*	*	*	*	*	*	*	*	*	*	*
PAIN - DAYS	*	*	*	*	*	*	*	*	*	-.41	-.39	*
GAS - DAYS	*	*	*	*	*	*	*	*	*	*	*	*
DURATION	*	*	*	*	*	*	*	*	*	-.41	-.39	*
STOOL FREQ	*	*	*	*	*	*	*	*	*	*	*	*
SATIS DAYS	*	*	*	*	*	*	*	*	*	-.41	.39	*
HAM - D	*	*	*	*	*	*	*	*	-.71 △	*	.38	*
HAM - A	*	*	*	*	*	*	*	.71 △	*	.42	.41	*
EPQ - E	-.41	*	*	*	*	*	*	*	.42	*	.42	*
EPQ - N	-.39	*	*	*	*	*	*	.38	*	.41	*	*
EPQ - P	*	*	*	*	*	*	*	*	*	*	*	*

The above table indicates the correlation coefficient for clinical and psychological variablels for 50 patients.

* Indicates absence of correlation. Numbers alone indicate a significant correlation P< 0.01

△ Indicates a highly signficant correlation : P< 0.001.

taken as representative of the general population. The duration of clinical symptoms (39.9 months) is again likely to be skewed in view of the minimum duration of one year used as inclusion criteria. In other Indian studies, the mean duration ranged from 2 years to 13.5 years (Chadda et al, 1983; Golechha et al, 1982); in Western studies, the range was 6 to 11 years (Drossman et al, 1988; Whitehead et al, 1980; Svedlund et al, 1985).

Bowel disturbance was the main symptom (54%) of the studied group, similar to a mean of 60% from the west (Young et al, 1976), while Indian figures range between 68% and 100% (Vij et al, 1991; Golechha et al, 1982). There were fewer (28%) patients reporting abdominal pain as the main symptom in our sample, compared to a mean of 88% in other western studies (Young et al, 1976) and 57% in an Indian study (Golechha et al, 1982). Nonetheless, the ECA study (Walker et al, 1992) reported a prevalence of abdominal pain in 25.3% of their sample.

A past history of psychiatric diagnosis was present in 20%, which is similar to that (20%) reported by Dinan et al (1991) and 30% by Golechha et al (1982). Most other studies included only current psychiatric diagnosis and hence could not be compared. A family history of depression was present in four patients (8%) and alcohol dependence in one patient (2%). These figures are similar to the 10% reported by Dinan et al (1991).

There were significant depressive symptoms in almost all patients. Forty percent had scores of 16 or more on HAM-D; these are similar to the 45% reported by Young et al (1976), 40% by Rose et al (1986) and 42% (Creed & Guthrie, 1987). Myren et al (1982) reported a figure of 70%. The mean HAM-D score of 14 is significantly lower than the mean score of 26 reported by Grenbaum et al (1987). These are lower than the mean score of 26 reported by Greenbaum et al (1987). These lower figures could be due to the existence of an active consultation-liaison system in operation in this hospital; patients with prominent psychiatric symptoms may have been referred directly to the psychiatric unit rather than gastroenterology by their primary physicians. Moreover, patients with a major psychiatric disorder were excluded from the study.

Anxiety symptoms were present in 92% of the sample (HAM-A score more than 6) and 16% of patients had marked anxiety (score more than 16). These figures are in keeping with those reported elsewhere (Sreedhar, 1979; Whitehead et al, 1980; Svedlund et al, 1985; Kumar et al, 1990; Walker et al, 1990a; Arun et al, 1993). Both the HAM-A and HAM-D scales rate depressed mood, psychic anxiety, insomnia, agitation and numerous somatic symptoms. As might be expected, due to their item overlap the two scales correlated highly with one another.

Personality factors, as measured by the EPQ reveal increased introversion and neuroticism among IBS patients. These findings are in concordance with those of Palmer et al (1974), Dinan et al (1991) and Arun et al (1993). Yadav et al (1990) reported the presence of neuroticism in 51% of patients with IBS. These high levels of neuroticism in IBS patients along with introversion may result in an inability to cope adequately with stress. Higher stress, may in turn, play a role in the developing pathophysiology and maintenance of IBS. If this is the case, a cognitive approach aimed at improving the individual's capacity to cope with stress may have an important role in the management of the IBS.

The presence of significant depressive and anxiety symptoms, coupled with an increased prevalence of a family history of depressive spectrum disorders (unipolar depression, alcohol dependence) or anxiety disorders raise the possibility of IBS being genetically associated with depressive diseases. Further studies are needed to explore this relationship; if one is found to exist, this could have significant implications for the management of this often difficult to treat condition. However, in view of the various inclusion criteria which were applied in this study, these

findings may not be generalizable to other centers.

A significant finding has been the lack of an association between the clinical symptoms and any of the psychological measures or socio-demographic variables; this is in contrast to the finding of Kotwal et al (1978), who reported an increased prevalence of psychologial factors among women, students and businessmen. Our findings question the hypothesis that the psychiatric symptoms of IBS are a result of the gastrointestinal disturbance, since, if such a relationship exists, psychological factors should correlate positively with either an increasing intensity or a longer duration of symptoms. In the absence of such a finding, one would be more inclined to agree with Whitehead and Crowell (1991) and favor the hypothesis that psychological symptoms are a concomitant of the Irritable Bowel Syndrome.

REREFENCES

Abraham, A. & Verghese, A. (1990) Translation of the Eysenck Personality Questionnaire into three south Indian languages and their standardisation. *Indian Journal of Clinical Psychology,* 17, 37-45.

Arun, P., Vyas, J.N., Rai, R., Kanwal, K. & Sushil, C.S. (1993) Psychological and sociodemographic correlates of the Irritable Bowel Syndrome. *Indian Journal of Psychiaty,* 35, 4, 193-196.

Camilleri, M. & Prather, C.M. (1992) The Irritable Bowel Syndrome-mechanisms and a practical approach to management. *Annals of Internal Medicine,* 116, 12 pt 1, 1001-1008.

Chadda, V.S., Joshi, K.G. & Chadda, S. (1983) A double blind crossover study of diphenyl hydantoin in Irritable Bowel Syndrome. *Journal of the Association of Physicians of India,* 31, 7, 425-427.

Creed, F. & Guthried, E. (1987) Psychological factors in the Irritable Bowel syndrome. *Gut,* 28, 1307-1318.

Dinan, T.G., O'keane, V., O'Boyle, C., Chua, A. & Keeling, P.W.N. (1991) A comparison of the mental status, personality profiles and life events of patients with Irritable Bowel Syndrome and peptic ulcer disease. *Acta Psychiatrica Scandinavica,* 84, 1, 26-28.

Director of Census Operations (1981) *Census of India 1981* - Series 20, Tamil Nadu Part XIIIA District Census Handbook, North Arcot, pages 1-2. Government Central Press.

Drossman, D.A., McKee, D.C., Sandler, R.S., Mitchell, C.M., Cramer, E.M., Lowman, B.C. & Burer, A.L. (1988) Psychosocial factors in the Irritable Bowel Syndrome: A multivariate study of patients and non-patients with the Irritable Bowel Syndrome. *Gastroenterology,* 95, 701-708.

Eysenck, H.J. & Eysenck, S.B.G. (1976) *Psychoticism as a measure of personality.* London: Hodder and Stoughton.

Ferguson, A., Sircus, W. & Eastwood, M.A. (1977) Frequency of 'functional' gastrointestinal disorders. *Lancet,* 2, 613-614.

Golechha, A.C., Chadda, V.S., Chadda, S., Sharma, S.K. & Mishra, S.N. (1982) Role of isphagula husk in the mangement of Irritable Bowel Syndrome (A randomized double blind crossover study). *Journal of the Association of Physicians of India,* 30, 6, 353-355.

Greenbaum, D.S., Mayle, J.E., Vanegeren, L.E., Jerome, J.A., Mayor, J.W., Greenbaum, R.B., Matson, R.W., Stein, G.E., Dean, H.A., Halvorsen, N.A. & Rosen, L.W. (1987) Effects of desipramine on Irritable Bowel Syndrome compared with atropine and placebo. *Digestive Diseases and Sciences,* 32, 257-266.

Hamilton, M. (1959) The assessment of anxiety states by rating. *British Journal of Medical Psychology,* 32, 50-55.

Hamilton, M. (1960) Rating scale for depression. *Journal of Neurology Neurosurgery and Psychiatry,* 23, 56-62.

Kotwal, M.R., Durrani, H.A. & Shah, S.N. (1978) Chronic colonic diarrhoea in North-west India (A clinical study with special reference to the syndrome of the Irritable Colon). *Journal of*

the Indian Medical Asociation, 70, 4, 77-80.

Kruis, W., Thieme, C.H., Weinzieri, M. & Schussler, P. & Holl, J. & Paulus, W. (1984) A diagnostic score for the Irritable Bowel syndrome: It's value in the exclusion of organic disease. *Gastroenterology,* 87 1-7.

Kumar, D., Pfeiffer, J. & Wignate, D.L. (1990) Role of psychological factors in the Irritable Bowel Syndrome. *Digestion,* 45, 80-87.

Manning, A.P., Thompson, W.G., Heaton, K.w. & Morris, A.F. (1978) Towards positive diagnosis of the Irritable Bowel. *British Medical Journal,* 2,653-654.

McDonald, A.J. & Boucheir, P.A.D. (1980) Non- organic gastrointestinal illness, a medical and psychiatric study. *British Journal of Psychiatry,* 136, 276-283.

Meinert, C.L. (1986) Data Analysis and Interpretation. In *Clinical trials - Design, Conduct and Analysis.* New york: Oxford University Press.

Myren, J., Groth, H., Larssen, S.E. & Larsen, S. (1982) The effect of trimipramine in patients with the Irritable Bowel Syndrome. *Scandinavian Journal of Gastroenterology,* 17, 871-875.

Palmer, R.L., Stonehill, E., Crisp, A.H. & Waller, S.L. & Misiewicz, J.J. (1974) Psychological characteristics of patients with the Irritable Bowel Syndrome. *Postgraduate Medical Journal,* 50, 416-419.

Pimparkar, B.D. (1970) Irritable Colon Syndrome. *Journal of Indian Medical Association,* 54, 95-102.

Robertson, D.A.F., Ray, J., Diamond, I. & Edwards, J.G. (1989) Personality profile and affective state of patients with inflammatory bowel disease. *Gut,* 30, 623-626.

Rose, J.D.R., Troughton, A.H., Harvey, J.S. & Smith, P.M. (1986) Depression and functional bowel disorders in gastrointestinal outpatients. *Gut,* 27, 1025-1028.

Sharma, M.P. & Chawla, Y. (1983) Irritable Bowel syndrome. *Journal of the Association of Physicians of India,* 31, 3, 163-166.

Smith, R.C., Greenbaum, D.S., Vancouver, J.B., Henry, R.C., Reinhart, M.A., Greenbaum, R.B., Dean, H.A. & Mayle, J.E. (1990) Psychosocial factors are associated with health care seeking rather than diagnosis in Irritable Bowel syndrome. *Gastroenterology,* 98, 2, 293-301.

Smith, R.C., Greenbaum, D.S., Vancouver, J.B., Henry, R.C., Reinhart, M.A., Greenbaum, R.B., Dean, H.A. & Mayle, J.E. (1991) Gender differences in the Manning criteria in the Irritable Bowel Syndrome. *Gastroenterology,* 100, 3 591-595.

Sreedhar, K.P. (1979) Manifest anxiety in the Irritable Bowel Syndrome. *Indian Journal of Clinical Psychology,* 6, 195-198.

Svedlund, J., Sjodin I., Dotevall, G. & Gillberg, R. (1985) Upper gastrointestinal and mental symptoms in the Irritable Bowel Syndrome. *Scandinavian Journal of Gastroenterology,* 20, 5, 595-601.

Tripathi, B.M. Misra, N.P. & Gupta, A.K. (1983) Evaluation of tricyclic compound (trimipramine) vis-avis placebo in Irritable Bowel Syndrome. *Journal of the Association of Physicians of India,* 31, 4, 201-203.

Vij, J.C., Jiloha, R.C., Kumar, N., Madhu, S.V., Malika, V. & Anand, B.S. (1991) Effect of antidepressant drug (doxepin) on Irritable Bowel Syndrome patients. *Indian Journal of Psychiatry,* 33, 3, 243-246.

Walker, E.A., Roy-Byrne, P.P., Katon, W.J., Li, L., Amos, D. & Jiranek, G. (1990a) Psychiatric illness and Irritable Bowel Syndrome: A comparison with Inflammatory Bowel Disease. *American Journal of Psychiatry,* 147, 12, 1656-1661.

Walker, E.A., Roy-Byrne, P.P. & Katon, W.J. (1990b) Irritable Bowel Syndrome and psychiatric Illness. *American Journal of Psychiatry,* 147, 565-572.

Walker, E.A., Katon, W.J., Jemelka, R.P. & Roy-Byrne, P.P. (1992) Comorbidity of gastrointestinal complaints, depression, and anxiety in the Epidemiologic catchment Area (ECA)

study. *American Journal of Medicine,* 92(IA), 265-295.

Welch, G.W., Stace, N.H. & Pomare, E.W. (1984) Specificity of psychological profiles of Irritable Bowel Syndrome patients. *Australia and New Zealand Journal of Medicine,* 14, 101-104.

Whitehead, W.E., Engel, B.T. & Schuster, M.M. (1980) Irritable Bowel Syndrome - physiological and psychological differences between diarrhea - predominant and constipation-predominant patients. *Digestive Diseases and Sciences,* 25, 6, 404-413.

Whitehead, W.E. &Crowell, M. (1991) Psychologic considerations in the Irritable Bowel Syndrome. *Gastroenterology Clinics of North America,* 20, 249-267.

Yadav, S.K., Jain, A.K., Bahre, P.B. & Gupta, J.P. (1990) Neuroticism in patients with Irritable Bowel Syndrome. *Indian Journal of Gastroenterology,* 9, , 29-31.

Young, S.J., Alpers, D.M. Norland, C.C. & Woodruff, R.A. (1976) Psychiatric aspects of the Irritable Bowel Syndrome - practial implicatons for the primary physician. *Gastroenterology,* 70, 2, 162-166.

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