Discussion:
DISCUSSION

Irritable bowel syndrome accounts for more than half of the patients with complaints pertaining to the digestive system (Kirsner and Palmer, 1958).

Though the disease is reported to be relatively commoner in females (Bockus, 1928; Kaiser, 1956; Kirsner and Palmer, 1958; Chaudhry and Truelove, 1962; Hislop, 1971), in the present study, however, only seven out of thirty were female patients with male: female ratio of 3:3:1. This is similar to that reported by another study from India by Pimparker (1970).

The age of the patients varied from 16 to 70 years, with maximum number of patients falling in the age group of 21 to 40 years. The age pattern seen in our cases was similar to what has been reported by other workers (Bockus, 1928; Kaiser, 1956; Chaudhry and Truelove, 1962; Pimparker, 1970).

MEDICAL ASPECTS:

In our study, 60% of the patients had duration of symptoms ranging from one to five years. 20% of the patients had duration of symptoms from six to ten years. This is in
accordance with what is reported by Kaiser (1996),
Chaudhry and Truelove (1962), Pimparker (1970) and
Hialop (1971).

Out of the thirty patients studied, nineteen (63\%) had symptoms intermittently and eleven patients had continuous symptoms. Kaiser (1996) reported 89\% patients of his study to be having intermittent symptoms.
Chaudhry and Truelove (1962) also reported majority of the patients studied by them to be having symptoms intermittently.

Abdominal pain or discomfort is one of the dominant features of irritable bowel syndrome. Twenty three (76.66\%) out of thirty patients in the present series complained of abdominal pain or discomfort. This is comparable with the findings of Ryles (1928), Kaiser (1996), Chaudhry and Truelove (1962), and Pimparker (1970), who described abdominal pain in 78\%, 91\%, 81.54\% and 93\% of their patients respectively. Pain was dull aching in eleven, colicky in nine and colicky becoming dull continuous ache in three patients. The variability in the type of the pain was striking and very similar to what has been described by Chaudhry and Truelove (1962) and Pimparker (1970). The site of the pain was diverse.
Seven patients (29%) complained of abdominal pain or discomfort in the periumbilical region while six and five patients had pain in lower and upper abdomen respectively. Five patients, however, complained of generalised abdominal pain. This is in accordance with what is reported by Pimparkar (1970). In 39% of the patients, abdominal pain was relieved or decreased temporarily after the act of defaecation, similar to the observations of Chaudhry and Truelove (1962), Pimparkar (1970) and Hislop (1971).

Disturbances in bowel habits like diarrhoea and constipation were very frequently observed in our patients. Twenty-four (80%) patients of the present study had disturbed bowel habits. Six (20%) patients did not have any bowel disturbances. Twelve patients had abdominal discomfort associated with usual or intermittent constipation while five had abdominal discomfort along with usual or intermittent diarrhoea. Seven patients suffered from diarrhoea with no abdominal discomfort. This is similar to the reports of Kaiser (1956), Chaudhry and Truelove (1962), Pimparkar (1970) and Hislop (1970).
Thirteen patients (43.33%) complained of passage of mucus along with stools, seven belonging to spastic colon group while out of seven patients having painless diarrhoea, six had passage of mucus along with stools. This is similar to the observations of Beckus (1928), Kaiser (1956) and Hislop (1971).

Heart-burn, borborygmi, backache, headache, indigestion and palpitations were the other symptoms which were commonly found associated with abdominal pain and bowel disturbances, similar to the reports of Chaudhry and Truelove (1962).

POSSIBLE PRE-DISPOSING FACTORS:

In 20 (67%) patients, out of total 30 patients studied, possible predisposing factors could be ascertained. Only in one patient, the symptoms dated from an attack of infective dysentery. It was possible to identify psychological factors which appeared to play a part either in the onset of the condition or in causing exacerbations in nineteen (63%) patients. Five patients had unemployment or job dissatisfaction or loss in business. Four patients
started having symptoms after the death of a close relative. Two patients became symptomatic after separating from their family for studies or job. Four patients gave past history of appendectomy. The results are similar to the reports of White (1940), Kaiser (1956), Kirner and Palmer (1958), Chaudhry and Truelove (1962), Heffernon and Lippincott (1966), Dorfman (1967), Pimparker (1970) and Hislop (1971).

**FINDINGS ON PHYSICAL EXAMINATION**

The general physical examination of all the patients when they attended the hospital was good. There was no evidence of any nutritional deficiency or any other organic disease in any of the patients. Scars of previous abdominal operations were seen in patients who had undergone surgery previously. The only other finding was tenderness over one or more parts of the colon which was present in 19 (63.3%) patients out of thirty patients who were taken up for our study. Colon was palpable in 18 (60%) patients. Similar results have been reported by Chaudhry and Truelove (1962) and Pimparker (1970).
Sigmoidoscopy was performed on every patient, chiefly to exclude organic disease in the rectum and lower colon. Apart from its value in excluding organic disease, sigmoidoscopy revealed colonic spasm particularly in the rectosigmoid area which could be overcome easily by reassurance or with blowing in air. Sigmoidoscopy revealed excessive mucus secretion in 13 (43%) cases, more common in patients having painless diarrhoea. Similar reports were given by Bockus (1928), White (1940) Chaudhry and Truelove (1962) and Pimparker (1970).

Routine blood examination including the haemoglobin and the erythrocyte sedimentation rate revealed no abnormality in any of the patients, studied. Routine stool examination conducted on three consecutive days of all patients revealed no abnormality in the form of ova, cyst or vegetative form of Entamoeba histolytica.

SIGMOTECNOGRAPHIC ASPECTS:

Bar enema examination which was done mainly to exclude the possibility of any organic disease of the colon, in majority of the cases revealed evidences of the irritability of the colon and increased mucus secretion. On Bar enema films, spastic segment and increased haustral markings were seen most commonly
in portions of the sigmoid and the descending colon. The evidence of increased mucus secretion by the colon was given by a deficient mucosal pattern seen in post-evacuation films. The results of barium enema examination in our study are compatible to the reports given by Lumaden (1963).

**Psychological Aspects:**

The abdomen has aptly been called "the sounding board of the emotions". Alexander (1934 and 1941) concluded that the gastrointestinal tract, because of its three major functions of taking in, retaining and eliminating, was specially suitable for the expression of emotional tendencies particularly if their normal expression through the voluntary motor system was inhibited. He found some correlation between certain personality traits and different gastrointestinal disturbances.

Although the irritable colon syndrome has been considered to result from emotional stress (Ryle, 1928; White and Jones, 1940; Chaudhry and Truelove, 1962), its significance in terms of psychological dysfunction has not yet been fully defined. Fatigue, loss of concentration, depression or anxiety were noted in the majority of the 130 cases studied by Chaudhry and Truelove (1962), and they concluded that
psychological factors were prominent in the genesis of the condition. Heffernan and Lippincott (1966) have reported that psychotic depression may be masked by the irritable colon syndrome while Dorman (1967) has suggested that apastic colon may be a symptom of depression. So the present study was conducted bearing in mind the aim of determining the psychological characters and the personality types of the IBS patients.

Every patient so included in this study, was interviewed comprehensively by a psychiatrist and was subjected to a battery of psychological tests by the investigator, thus including:

1. The Hamilton's Rating Scale for Depression by Hamilton.
2. The Maudsley Personality Inventory - modified, Hindi Translation by Sanatan & Wig.
3. The PGI - Health Questionnaire - H2 by Verma and Wig.

On mental examination, 16 (53%) patients were found to be having depressed mood, almost similar proportion of both the spastic colon and painless-diarrhoea patients. Eleven patients were found to be anxious and two patients had mood disturbances in the form of irritability.

"DEPRESSION AND IRRITABLE BOWEL SYNDROME"

Kline (1964) listed the five symptoms most commonly associated with depression as a feeling of sadness, fatigue,
loss of interest in social environment, self-neglect and insomnia. Depressed patients may present with somatic symptoms as their chief complaint (Rosenthal, 1968), and frequently the depression may be masked by psychosomatic or functional disorder (Lisse, 1968). Such somatic symptoms are especially referable to the gastro-intestinal tract and include abdominal pain, nausea, vomiting and constipation (Feldman, 1965). Although some researchers (Heffron and Lippincott, 1966; Hill and Blendis, 1967) have reported an associated depressive state in majority of the patients with the irritable bowel syndrome, others (Diamond, 1964; Dorfman, 1967) have considered the disorder to result from a depressive illness.

In the present study also, out of Hamilton's depressive symptoms, depressed mood was seen in 25 (83%) patients whereas loss of interest in work and insomnia was seen in 16 (60%) and 17 (57%) patients respectively. Symptoms of hypochondriasis, agitation, guilt and suicidal tendencies were seen in 13 (43%), 12 (40%), 9 (10%) and 11 (37%) patients respectively. Similar results were reported by Mielop (1971).
In the present study, the mean values of the scores, on the Hamilton's Depression Scale, of the "Spastic Colon" and the "Painless Diarrhoea" groups were $14.91 \pm 6.42$ and $10.70 \pm 5.39$ respectively and the difference between the two means was found to be statistically significant. Thus, in the light of above said, it may be concluded that the patients constituting spastic-colon group were significantly more depressed as compared to the patients having painless diarrhoea.

The "Pain & Diarrhoea" and "Painless Diarrhoea" sub-group patients have the mean values of the scores on the same scale as $19.20 \pm 4.07$ and $10.70 \pm 5.39$ respectively and these two differ significantly. Hence, the patients having pain and diarrhoea as the predominant symptoms were significantly more depressed as compared to the patients having painless diarrhoea.

The "Pain & Constipation" and "Pain & Diarrhoea" sub-groups have the mean values of the scores on the Hamilton's Depression Scale as $15.75 \pm 7.33$ and $19.20 \pm 4.07$ respectively and these two means do not differ significantly, indicating that the patients of both the sub-groups are almost equally depressed.

The "Pain and Diarrhoea" and "Abdominal Pain" sub-groups have the mean values of the score on the same scale as $15.20 \pm 4.07$ and $13.00 \pm 5.99$ and these two means also do not differ significantly, suggesting that the patients having pain
and diarrhea as predominant symptoms are almost equally depressed as are the patients who are having abdominal pain alone with no bowel disturbance.

The "Pain & Constipation" and "Abdominal Pain" sub-groups have the mean values of the score on the depression scale as 15.75 ± 7.33 and 13.00 ± 5.99 respectively but the difference of these two means, too, was not statistically significant, indicating that the patients of both the sub-groups are almost equally depressed.

From all aforementioned, we arrive at the conclusion that the patients who are having abdominal pain or discomfort are significantly more depressed as compared to the patients who are not having abdominal pain, irrespective of the bowel disturbances. So the present study also confirms that pain is a manifestation of depression. Our study further supports the results of Wilson and Nashold (1970), who emphasized that depression is the most common affective disorder associated with psychogenic pain.
Stengel (1965) and Spear (1967) reported that anxiety is an important factor in the production of psychosomatic or functional disorders. In the present study, 11 (37%) patients had manifestation of anxiety on mental examination. The potentiating effect of anxiety on pain has been pointed out by Engel (1967), and it was stressed by him that over half of his patients noted exacerbation of their symptoms when they became tense or distressed.

As already described that PGI-NQ-N₂ has been found to be highly correlated with Sinha's Anxiety Scale (0.96) and Hamilton's Anxiety Scale (0.82). So the number of neurotic complaints on this scale is a measure of anxiety.

In the present study as per HGN₂ (PGI), the mean values of neurotic complaints of the 'Spastic Colon' and the 'Painless Diarrhoea' patients were 24.43 ± 9.89 and 16.90 ± 3.89 respectively and the difference of these two has been found to be statistically significant, indicating that the 'Spastic Colon' patients have significantly more neurotic complaints as compared to the 'Painless Diarrhoea' group. We can conclude from the above said that 'Spastic Colon' patients are more anxious...
than the 'Painless Diarrhoea' patients. This is contradictory to what was reported by Esler (1973). So the mean values of the scores of the sub-groups were compared with each other for further analysis.

The mean values of neurotic complaints of 'Pain & Diarrhoea' and 'Painless Diarrhoea' patients were 31.20 ± 6.49 and 16.30 ± 3.89 respectively and these two differ significantly indicating that the patients having pain and diarrhoea as predominant symptoms are significantly more anxious as compared to the patients having painless diarrhoea only.

The mean values of neurotic complaints of 'Pain & Diarrhoea' and 'Pain & Constipation' sub-groups were 31.20 ± 6.49 and 23.00 ± 9.81 respectively and these two means also differ significantly indicating that the patients having pain and diarrhoea as predominant symptoms are significantly more anxious as compared to the patients having pain along with constipation.

Similarly, the means of values of neurotic complaints of 'Pain & Diarrhoea' and 'Abdominal Pain' sub-groups i.e. 31.20 ± 6.49 and 21.66 ± 4.67 respectively, also differ significantly indicating that the patients having pain and diarrhoea are significantly more anxious as compared to the patients having abdominal discomfort alone.
The mean values of neurotic complaints of 'Pain & Constipation' and 'Abdominal Pain' sub-groups i.e. 23.00 ± 9.81 and 21.66 ± 4.67 differ insignificantly indicating that the patients having pain and constipation as the predominant symptoms have almost same number of neurotic complaints as have the patients having abdominal pain alone.

From all discussed above, we may conclude that both the symptoms of diarrhoea and pain are related to higher neurotic complaints but the patients having diarrhoea score still more on neurotic complaints as compared to the patients having pain. Hence, the patients having diarrhoea are more anxious than the patients having pain or constipation. This is similar to the results shown by Eales (1973). K.P. Sreedhar (1979) also found that the patients with IBS had morbidity high levels of manifest anxiety.
"PERSONALITY AND IRRITABLE BOWEL SYNDROME"

NEUROTICISM:

As per MPI, the means of score on neuroticism dimension were 50.1 + 11.05 and 27.45 ± 9.04 respectively, of the 'Spastic Colon' and 'Painless Diarrhoea' groups. However, the difference of means was not significant statistically. So the means of scores of sub-groups were compared with each other.

The means of score on neuroticism dimension for 'Pain & Diarrhoea' and 'Painless Diarrhoea' sub-groups were 37.60 ± 4.27 and 27.45 ± 9.04 respectively and the difference between the two has been found out to be statistically significant indicating that the patients having pain and diarrhoea as the predominant symptoms score significantly higher on neuroticism dimension as compared to the patients who had painless diarrhoea.

Similarly the patients having 'Pain & Diarrhoea' as predominant symptoms score significantly higher on neuroticism dimension as compared to the patients having pain and constipation as predominant symptoms, the means of scores of the two sub-groups being 37.60 ± 4.27 and 29.71 ± 13.55 respectively.
Also, the patients having pain and diarrhoea as predominant symptoms score significantly higher on neuroticism dimension as compared to the patients having abdominal pain only without any bowel disturbance, the means of scores of the two sub-groups being 37.60 ± 4.27 and 26.00 ± 4.61 respectively. But the patients having 'Pain & Constipation' do not differ significantly on neuroticism dimension from the patients having abdominal pain only, the means of score being 29.71 ± 13.55 and 26.00 ± 4.61 respectively.

From the above discussion, we conclude that both the symptoms of diarrhoea and pain are related to higher scores on neuroticism dimension of personality, but the patients having diarrhoea score still more on this dimension as compared to the patients having pain. This is similar to the conclusions of Eater (1973) who found that patients having diarrhoea — predominant form of IBS score significantly higher on neuroticism dimension of personality as per Eysenck Personality Inventory.

Comparing the results of the neuroticism dimension of MPI and H₂N₂ (PGI), we observed that the patients who have higher scores on neuroticism dimension of personality
also score high anxiety levels as measured by PSI-HU1. This shows an inter-relationship between neuroticism and anxiety. So our study supports the results of Afzal Kureshi (1979) who reported neuroticism and anxiety correlation to be 0.97. Hence the neurotic patients are highly anxious also and vice-versa.

From the observations, we also come to know that the mean scores on the neuroticism dimension of all the sub-groups of IBS were higher than the normal (19.89 ± 9), thus concluding that all the patients of IBS are more neurotic than the normal population. Similar results were shown by Palmer (1974).
As per HPI, the means of score on extraversion dimension of personality of the 'Spastic Colon' and 'Painless Diarrhoea' groups were 17.65 ± 5.62 and 22.90 ± 7.64 respectively and the difference of means has been found out to be significant statistically. Patients of both the groups scored less than the normal population, (24.91 ± 5). This shows that patients of both the groups are introverted and the 'Spastic Colon' patients are significantly more introverted as compared to the 'Painless Diarrhoea' group patients. Similar results were shown by Eiler (1973) and Palmer (1974).

The means of score on extraversion dimension for 'Pain & Diarrhoea' and 'Painless Diarrhoea' sub-groups were 16.00 ± 2.01 and 22.90 ± 7.64 respectively and the difference between the two has been found out to be statistically significant indicating that the patients having pain and diarrhoea as the predominant symptoms were significantly more introverted as compared to the
patients having painless diarrhoea.

On comparing the mean extraversion scores of
- 'Pain & Constipation' and 'Pain & Diarrhoea'
  sub-groups,
- 'Pain & Diarrhoea' and 'Abdominal Pain'
  sub-groups,
and
- 'Pain & Constipation' and 'Abdominal Pain'
  sub-groups,

the differences of means in all the three cases
were statistically insignificant indicating that the
patients of the 'Pain & Constipation', 'Pain & Diarrhoea'
and 'Abdominal Pain' sub-groups were all almost equally
introverted.

On concentrating at the results of the comparison
of the means of the score on extraversion dimension of
'Spastic Colon' and 'Painless Diarrhoea' groups and
'Pain & Diarrhoea' and 'Painless Diarrhoea' sub-groups,
we can conclude that the patients who are having the bowel
disturbances along with abdominal pain or discomfort are
significantly more introverted than the patients who have
bowel disturbances especially diarrhoea alone. Also the
patients having diarrhoea or constipation along with abdominal pain are more introverted than the patients who have abdominal pain or bowel disturbances alone. Hence affirmatively, the symptom of pain is correlated with introversion dimension of personality.

Thus in sum total, we may conclude that the patients of irritable bowel syndrome studied by us are depressed, anxious, introverted and score high on neuroticism dimension of personality. It would also not be out of place to mention here that the patients who are having the symptom of pain are significantly more depressed and introverted as compared to the patients who have bowel disturbances alone, i.e., pain is related to depression and extraversion dimension of personality. More so, the patients who suffer from diarrhoea are significantly more anxious and score more on neuroticism dimension of personality than the patients having pain or constipation, i.e., diarrhoea is related to anxiety and neuroticism dimension of personality. Hence depression, anxiety and personality structure are contributing factors to the etiology of irritable bowel syndrome.