ISSN 2229-3566
Research Article

IJRAP
www.ijrap.net

CLINICAL EVALUATION OF MODIFIED SIRODHARA PROCEDURE & KUKSHI BASTI IN THE MANAGEMENT OF PAKVASAYAGATA VATA ROGA (IBS)

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Received on: 12/09/11 Revised on: 06/10/11 Accepted on: 14/10/11

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ABSTRACT
Irritable Bowel Syndrome is a clinical entity recently identified with a set of symptoms related to gastrointestinal tract. These symptoms essentially pertain to the diathesis of gut motility disorder. The characteristic clinical features are abdominal pain, altered bowel habit, psychiatric symptoms such as anxiety or depression in the absence any detectable organic pathology. It is a persistent syndrome intractable to all kinds of treatment and presentation often appears intermingled with a range of personality factors. IBS seems to be apparently comparable to two classicals Ayurvedic syndromes described in Samhita texts of Ayurveda viz. (1) Vataja Grahani roga (2) Pakvasayagata vata. On further conceptual analysis, it may be concluded that IBS may not be truly comparable with Vatika Grahani roga because Grahni is a disease of "Grahani" organ, which relates to small bowel while IBS as known in Western modern medicine is predominantly a disease of colon. Further Grahni roga is essentially characterized by depletion of Agni i.e. Pachaka pitta while is case of IBS the basic pathology is not of digestive nature; rather it is more of psychoneurological nature. In view of this, it seems logical to correlate IBS with Pakvasayagata vata vyadhi as described in all Samhitas and is essentially psychoneurotic diatheses. However, there is a need of constructing the samprapti of this disease identifying its components like dosha, dushya and adhisthana etc. Present clinical study designed to know more about the aetiopathogical nature and clinical profile of Irritable Bowel Syndrome as seen in Indian settings. Hence, it was decided to launch an epidemiological and clinical study on IBS through the patients reporting for treatment at University Hospital, Banaras Hindu University. The Present study is based on randomly selected 45 patients. The Ayurvedic formulation, which was tried in these patients, with a view of their probable role as ENS sedative (jatiphaladi tail) and CNS sedative (medhya kasaya) effects. In addition to the systemic administration of the classical drug, it was considered useful to give a trial to a special Kukshi Basti along with shirodhara in this patients.The present trial, which is essentially an open clinical trial, has exhibited interesting results in terms of the therapeutic efficacy of the trial treatment given. Thus, the present study has been conducted entirely from a new angle and it yields interesting observations, which open never vistas of further investigation in this subject.
Key words: IBS, Pakvasayagata vata vyadhi, jatiphaladi tail, medhya kasaya, Kukshi Basti, shirodhara

INTRODUCTION

Irritable bowel syndrome (**IBS** or **spastic colon**) is a diagnosis of exclusion. It is a functional bowel disorder characterized by chronic abdominal pain, discomfort, bloating, and alteration of bowel habits in the absence of any detectable organic cause. In some cases, the symptoms are relieved by bowel movements. Diarrhea or constipation may predominate, or they may alternate (classified as **IBS-D**, **IBS-C** or **IBS-A**, respectively). IBS may begin after an infection (post-infectious, **IBS-PI**), a stressful life event, or onset of maturity without any other medical indicators. Although there is no cure for IBS, there are treatments that attempt to relieve symptoms, including dietary adjustments, medication and psychological interventions. Patient education and a good doctor-patient relationship are also important. Several conditions may present as IBS including coeliac disease, fructose malabsorption, mild infections, parasitic infections like giardiasis, several inflammatory bowel diseases, bile acid malabsorption, functional chronic constipation, and chronic functional abdominal pain. In IBS, routine clinical tests yield no abnormalities, although the bowels may be more sensitive to certain stimuli, such as balloon insufflation testing. The exact cause of IBS is unknown. The most common theory is that IBS is a disorder of the interaction between the brain and the gastrointestinal tract, although there may also be abnormalities in the gut flora or the immune system. IBS does not lead to more serious conditions in most patients. However, it is a source of chronic pain, fatigue, and other symptoms and contributes to work absenteeism. Researchers have reported that the high prevalence of IBS, in conjunction with increased costs, produces a disease with a high social cost. It is also regarded as a chronic illness and can dramatically affect the quality of a sufferer's life[1]. Vata gets localised in the Pakvasaya and causes the following symptoms-antrakujanam(gurgling sounds from intestines), sula(abdominal pain), atopa(increased peristaltic movements), kricchra mutra purisa(painful micturition and defecation), anaha(flatulence), trika vedana(pain in the sacral region), trika pristha kati graha(stiffness in trika,pristha and kati)and malarodha(constipation)[2-4]. Apart from the symptomatology being similar in both the entities, the seat of the disease i.e. lower GIT is also the same in both Pakvashayagata Vata and IBS. Hence Pakvashayagata Vata can be the possible Ayurvedic correlate for Irritable Bowel Syndrome. In case of Pakvashayagata Vata the important Dosa vitiated is certainly Vata, but because this vitiated Apana, Vata is moving upwards (i.e. in an abnormal direction) in imparts imbalance in other sub-types of Vata especially in Samana Vata and also impairs Agni. Mandagni leads to Ama formation leading to elimination of Apakwa Amayukta mala from the Mahasrotas. Hence while treating the disease; all these factors should be taken into consideration before planning line of treatment. Sneha virechana and basti should be administered for the management of pakwashayagatavata[6].Treatment of Udavarta is prescribed to manage Pakwashayagata vata[7& 8]. The present clinical study has been designed to evaluate the effect of Kukshi Basti with jatiphaladi taila and Shirodhara with medhya kasaya in the management of Pakvashayagata Vata (IBS).

MATERIALS AND METHODS

Database collection on proper scientific grounds and their careful analysis has become a great need of today's research. So in the present study research was done on methodological grounds giving emphasis on those aspects of methods necessary for the clear interpretation, the measures of efficacy and the ability to generalize the findings and also on statistical aspects.

Inclusion Criteria

1. Presence of three or more of the cardinal feature of IBS viz. pain abdomen, feeling of incomplete evacuation, abdominal distension and mucus is stool.
2. Symptoms present for a minimum period of 6 months.
3. Normal findings with clinical examination, hematology and inconclusive radiological findings in lower and upper gastro intestinal tract.

Exclusive Criteria

1. Symptoms compatible with IBS but having organic pathology.

2. Presence of other systemic diseases or mental disorders requiring treatment.
3. Cases of active dysentery.
4. Patients who are on psychotropic drugs or under the influence of drug abuse.

Demographic Profile

Under the demographic profile the following points were noted viz. patient's name, age, sex, full address, religion, education, occupation, marital status, family status, family status, socioeconomic status, habitat (rural/urban), duration of illness. All patients after preliminary registration were subjected to detailed medical history and clinical examination and the same were recorded in proforma specially designed for the present study.

Selection of cases

45 cases recruited under the present study were selected from the Kayachikitsa O.P.D and I.P.D., Sir Sunderlal Hospital, I.M.S., B.H.U., Varanasi between Sept. 2007 and Feb 2009. Case selection was random irrespective of Age, Occupation and Socioeconomic considerations. The patients were screened for the diagnosis clinically.

The study groups

All the 45 patients who were selected for the study, after carefully examining their clinical presentation and fulfilling the inclusion criteria were registered for this study. All the 45 patients, turned up for full follow-ups. They were categorized into three groups.

a) The first group comprised of 15 patients who were put on the drug Kutajadivishesh yoga (Kutaj, Syonak, Bilvagiri, Mochrasa, Nagarmotha, Shunthi, Amraasthi, Anarpushpa, Lodhra, each 1-1 kg in equal quantity and Ativisha 1/2 kg).
b) The second group consisted of 15 patients who were given kukshi basti and Sirodhara for 15 days followed by Kutajadivishesh yoga.
c) The third group comprised of 15 patients who were put on kukshi basti and Sirodhara for 15 days.

Therapeutic Procedures

Kukshi basti

Kukshi basti is unique therapeutic procedure for IBS patient, which is very safe and effective. In this procedure, an herbal paste (black gram) boundary is made over the abdominal region and the luke warm jatiphaladi Tail is put in it. This process is continued for 45 minutes and then the oil is removed gently along with boundary made of herbal past. A gentle clock wise massage over the whole abdominal region for ten minutes is done. It helps in improving local blood circulation as well as tones up the intestinal and abdominal musculatures[5].

Sirodhara

Sirodhara is also a miraculous treatment for psychosomatic diseases. In this procedure, we use decoction of medhya kasaya and pour it on forehead of patients in a regular flow for 30 minute. Sirodhara blanaces mind, which indirectly helps to fight IBS. These two procedures should be continued, for 15 days and they are very effective in management of IBS. Kukshi basti balances the elevated vata, acts on ENS and Sirodhara acts on brain and entire nervous system so that these are synergistically effective in psychosomatic diseases in general and IBS in particular. GRADING OF SYMPTOMS (Symptom grade Assessment Scale) was adopted for following symptoms to assess the efficacy of present clinical study.Abdominal Pain, Constipation, Diarrhoea, Tenesmus, Mucoid Stool, Depressive Feature and Insomnia[5].

OBSERVATION AND RESULTS

The observation and results have been made in the present study on the demographic and constitutional profile of 45 cases of Pakvasayagata vata vis-a-vis I.B.S. associated with Anxiety. The result have been presented on following headings:

1. Study of demographic profile in 45 cases of Pakvasayagata Vata (including constitutional profile i.e. deha prakrati of the patient).
2. Study of clinical profile of 45 cases of Pakvasayagata Vata.
3. The result of therapeutic trial in 45 cases of Pakvasayagata Vata.

Demographic profile

Incidence of Age in 45 patients of I.B.S.

Out of 45 patient, it is evident that maximum incidence i.e. 53.33% was seen in the age group 18-30 yr. i.e. young adults. The second age group which shows maximum incidence is 31-45 yr. The least incidence was observed in the 61-70 years i.e. elderly.(Refer **Table 1)**

Incidence of age in 45 patients of I.B.S.

It is clear from the present clinical study that males (64.44%) are more affected than female (35.55%). (Refer **Table 2).**

Incidence of Marital Status

It is clear from the present clinical study that married (62.22%) are more affected than Unmarried (37.77%). (Refer **Table 3).**

Incidence of Habitat

It is clear from the present clinical study that among the registered cases 71.11% of population affected belonged to urban area and28.88% belonged to rural area.(Refer **Table 4).**

Incidence of Family Status

It is clear from the present clinical study that Nuclear family (84.44%) are more affected than Joint family (15.55%). (Refer **Table 5).**

Incidence of Educational Status

Out of 45 patient, it is evident that maximum incidence i.e. 42.22% was seen in Graduate. The second group which shows 26.66% below 10^{th} standard. The least incidence was observed in the Post graduate and Illiterate group. (Refer **Table 6).**

Incidence of Occupational Status

It is clear from the present clinical study that Office staff are 44.44%, and followed by Businessman , Unemployed, Labour/former, Student and House wife. (Refer **Table 7).**

Incidence of Economic Status

It is evident from the table that maximum no. of patients belonged to economically Lower middle class (57.77%) followed by upper and lower class. The disease is more easily affected in lower middle economic status. (Refer **Table 8).**

Incidence of Addiction

It is evident from the table that maximum no. of patients registered had tobacco addiction (40.00%) followed by Smoking then non addicted persons and Alcohol. (Refer **Table 9).**

Incidence of Food Habits

It is evident from the table that maximum no. of patients registered had Mixed (77.77%) followed by veg. 22.22%. (Refer **Table 10).**

Incidence of Weight

It is evident from the table that maximum no. of patients registered had 56-60 kg weight (26.66%) followed by 51-56 kg then >60 kg and least was 41-45kg weight group.(Refer **Table 11).**

Incidence of Duration of Illness

It is evident from the table that 37.77% of registered cases with clinical feature of I.B.S. with duration of 4-6yr, followed by 22.22% with 7-10yr and least with >10yr. (Refer **Table 12).**

Incidence of Decrease Appetite

It is evident from the table that 66.66 % of registered cases with clinical feature of I.B.S. with poor appetite, followed by 17.77% with normal and least was increase appetite. (Refer **Table 13).**

Incidence of Symptoms

It is clear from the present clinical study that 75.55% of registered cases with clinical feature of I.B.S. with constipation predominant, followed by 20.00% with diarrhea and least was pain predominant. (Refer **Table 14).**

Incidence of Deha Prakriti

It is clear from the present clinical study that 66.66% of registered cases, with clinical feature of I.B.S. with Vatapitta prakrati, followed by 20.00% with Vatakapha and least was Kaphapitta. (Refer **Table 15).**

Incidence of Manas Prakriti

It is clear from the present clinical study that 71.11% of registered cases with, clinical feature of I.B.S. Rajatamsika, followed by 20.00% with Rajasic and least was Rajasatvika. (Refer **Table 16).**

Evalution of the response of kukshi basti

The response of kukshi basti has been evaluated in 45 patients. 15 patient of Group 'A' patients were subjected to with Kutjadivishes yoga. 15 patient of Group 'B' patients were subjected to Kukshi Basti and shirodhara with Kutjadivishes yoga. 15 patients of group 'C' has been subjected to Kukshi Basti and shirodhara . The additional effect of kukshi basti and shirodhara has been evaluated by inter-group comparison in these three groups A, B & C. The result was assessed fortnightly. Subjective criteria were adopted for the assessment of the response as under:

Subjective assessment

Effect on Abdominal Pain

In group A, χ^2 (Chi square) value was 8.57 ($p<0.02$) in group B, χ^2 was 5.58 ($p>0.05$), and in group C, χ^2 was 4.24 ($p<0.05$), In group A effect of treatment was significantly better compared to group B & C. (Refer **Table 17).**

Effect on Constipation

In group A, χ^2 (Chi square) value was 5.89 ($p>0.05$), in group 'B' χ^2 was 12.00 ($p<0.01$), and in group 'C' χ^2 (Chi square) value was 6.77 ($p<0.05$), group B show significant improvement. In group B effect of treatment was significantly better compared to group A and C. (Refer **Table 18).**

Effect on Diarrhea

In group A, χ^2 (Chi square) value was 3.42 ($p<0.05$), in group B, χ^2 was 4.47 ($p<0.05$), in group C, χ^2 (Chi square) was 7.90 ($p<0.02$), group C show significant improvement. In group 'B' and 'A' effect of treatment was significantly poor compared to group 'C'. (Refer **Table 19).**

Effect on Tenesmus

In group A, χ^2 (Chi square) value was 2.90 ($p<0.05$) in group B, χ^2(Chi square) was 4.80 ($p>0.05$), and in group C, χ^2 (Chi square) was 11.70 ($p<0.02$), group C show significant improvement. In group Band A the effect of treatment was not significantly different.(Refer **Table 20).**

Effect on Mucoid Stool

In group A, χ^2 (Chi square) value was 1.80 ($p<0.03$) in group B, χ^2(Chi square) was 11.00 ($p<0.05$), and in group C, χ^2 (Chi square) was 11.00 ($p<0.02$), group C show significant improvement. In group A effect of treatment was significantly better compared to group B. (Refer **Table 21).**

Effect on Depressive feature

In group A χ^2 (Chi square) was 13.00 ($p<0.01$), in group B, χ^2(Chi square) was 10.90 ($p<0.04$), and in group C, χ^2 (Chi square) was 10.50 ($p<0.05$), group A shows significant improvement. In both group B & C the effect of treatment was not significantly different. (Refer **Table 22).**

Effect on Insomnia

In group A χ^2 (Chi square) was 7.80 ($p<0.01$), in group B, χ^2 (Chi square) was 8.00 ($p<0.01$), and in group C, χ^2(Chi square) was 7.50 ($p<0.02$), group A and B shows significant improvement. Improvement in group C was less significantly than group A & B. (Refer **Table 23**)

Inter-group comparison of subjective parameters in I.B.S. cases

From the above table it can be conclude that before treatment there was no significant difference in the presence of symptoms in groups A, B & C. The effect of treatment in group 'C' compared to group 'A' & 'B' was found significantly better for Diarrhea, Mucoid stool and insomnia. Significant results were observed for insomnia, mucus. Thus, overall effect of treatment on symptoms is better in group 'C'. (Refer **Table 24).**

DISCUSSION

The present clinical study has been designed to under take a critical clinical study of IBS to evaluate the effect of Kukshi Basti with jatiphaladi taila and Shirodhara with medhya kasaya. Now a day's cases of IBS are going on increasing due to disturbed life style, food habit, and stress. Reassurance and careful explanation of the functional nature of the disorder and of how to avoid obvious food precipitants are important first steps in patient counseling and dietary change. Occasionally, a meticulous dietary history may reveal substances (such as coffee, disaccharides, legumes, and cabbage) that aggravate symptoms. Excessive fructose and artificial sweeteners, such as sorbitol or mannitol, may cause diarrhea, bloating, cramping or flatulence. As a therapeutic trial, patients should be encouraged to eliminate any foodstuffs that appear to produce symptoms. However patients should avoid nutritionally depleted diets[9]. However, in Ayurveda multidirectional acting drugs and procedures are being to used, which are going to be effective in management of disease. Ayurveda has explained multiple drugs, which are used to treat the IBS and a lot of work has also been done on them but this procedure is the first time done in this institution. In this work, I have evaluated the effect of Kukshi Basti and Shirodhara in case of IBS, Because Kukshi Basti and Shirodhara as a Samsamana Karma is treatment procedure, which is used to treat the Pakvasaya gata vata rogas. In this work three group, group A, group B and group C has been made. In group A is using Kutjadivishesa Yoga for samsamana, group B is using Kukshi Basti with Kutjadivishesa Yoga and group C using only Kukshi Basti. Evaluation of effect has been done on subjective parameters such as sign & symptom. After 15 days of study the effect of Kukshi Basti and Shirodhara was found to be more effective for decreasing symptoms than medicine. After the completing Kukshi Basti and Shirodhara procedure, patient have been followed up on Samsamana drug as per concerned physician is using. In this way the patient, which taken Kukshi Basti and Shirodhara as Pradhana Karma in its initial treatment was better improved than the person using medicine.

CONCLUSION

Irritable Bowel Syndrome is a clinical entity recently identified with a set of symptoms related to gastrointestinal tract. These symptoms essentially pertain to the diathesis of gut motility disorder. The characteristic clinical features are abdominal pain, altered bowel habit, psychiatric symptoms such as anxiety or depression in the absence any detectable organic pathology. It is a persistent syndrome intractable to all kinds of treatment and presentation often appears intermingled with a range of personality factors.IBS may be correlated to with Pakvasayagata vata vyadhi as described in all Samhitas and is essentially psychoneurotic diatheses. All the 45 patients, turned up for full follow-ups. They were categorized into three groups.The first group comprised of 15 patients who were put on the drug Kutajadivishesh yoga (Kutaj, Syonak, Bilvagiri, Mochrasa, Nagarmotha, Shunthi, Amraasthi, Anarpushpa, Lodhra, each 1-1 kg in equal quantity and Ativisha 1/2 kg).The second group consisted of 15 patients who were given kukshi basti and Sirodhara for 15 days followed by Kutajadivishesh yoga and the third group comprised of 15 patients who were put on kukshi basti and Sirodhara for 15 days. It is considered as oil is a best drug for vitiated vata. So that slight luke warm oil triturated with Jatiphaladi drugs are going to be used for pouring around umbilicus. In this case due to opposite characteristic of oil against vata, it pacifies and

normalize the vata in Pakvasaya and physiological function of vata get stabilized. As per our modern view, we can understand, that luke warm oil is helpful for reliving disturbed mesenteric circulation and also spasmodic condition of intestinal muscle, so that again proper peristalsis is going to be stabilized along with proper circulation and proper intestinal floral environment, which cause proper digestion and assimilation of diet during management of patient. IBS is a psychosomatic disease Shirodhara acts on anxiety, stress, as well as acts on entire nervous system so that these are synergistically effective in psychosomatic diseases in general and IBS in particular.

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Table 1 : Showing the incidence of Age in 45 patients of I.B.S.

Age group	No. of patient	Percentage
18-30	24	53.33
31-45	11	24.44
46-60	8	17.77
61-70	2	4.44
Total	**45**	**100**

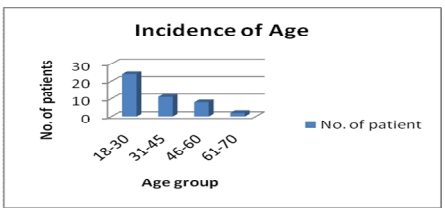

Table 2 : Showing the incidence of age in 45 patients of I.B.S.

Sex	No. of patient	Percentage
Male	29	64.44
Female	16	35.55
Total	**45**	**100**

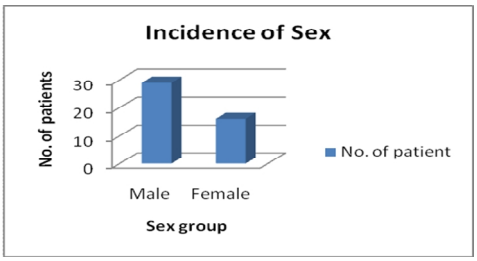

Table 3 : Showing the incidence of age in 45 patients of I.B.S.

Marital Status	No. of patient	Percentage
Married	28	62.22
Unmarried	17	37.77
Total	**45**	**100**

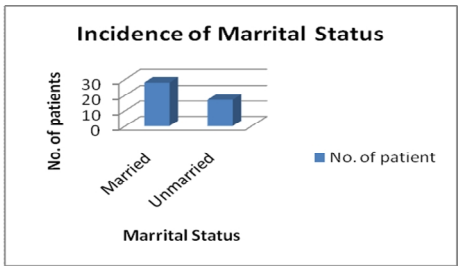

Table 4 : Showing the incidence of habitat in 45 patients of I.B.S.

Habitat	No. of patient	Percentage
Rural	13	28.88
Urban	32	71.11
Total	**45**	**100**

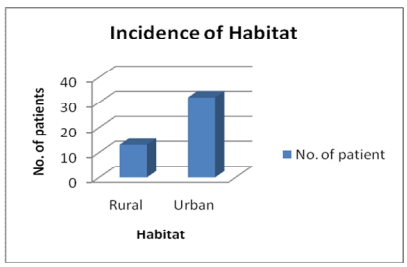

Table 5 : Showing the incidence of Family Status in 45 patients of I.B.S.

Family Status	No. of patient	Percentage
Nuclear	38	84.44
Joint	7	15.55
Total	**45**	**100**

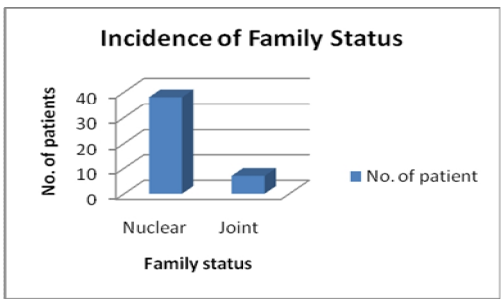

Table 6 : Showing the incidence of Educational Status in 45 patients of I.B.S.

Educational Status	No. of patient	Percentage
Illiterate	7	15.55
Below 10th standard	12	26.66
Graduate	19	42.22
Post graduate	7	15.55
Total	**45**	**100**

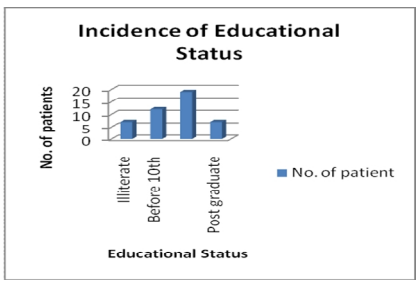

Table 7 : Showing the incidence of Occupational Status in 45 patients of I.B.S.

Occupational	No. of patient	Percentage
Office staff	20	44.44
Unemployed	5	11.11
Businessman	10	22.22
Student	4	8.88
Labour/former	5	11.11
House wife	1	2.22
Total	**45**	**100**

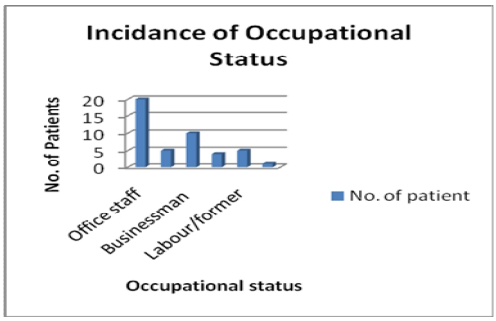

Table 8 : Showing the incidence of Economic Status in 45 patients of I.B.S.

Economic group	No. of patient	Percentage
Lower	9	20.00
Lower middle	26	57.77
Upper middle	10	22.22
Total	**45**	**100**

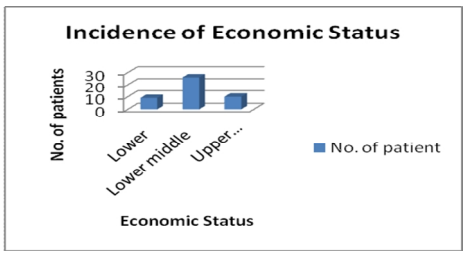

Table 9 : Showing the incidence of Addiction in 45 patients of I.B.S.

Addiction	No. of patient	Percentage
Alcohol	6	13.33
Smoking	13	28.88
Pan/Tobacco	18	40.00
No Addiction	8	17.77
Total	**45**	**100**

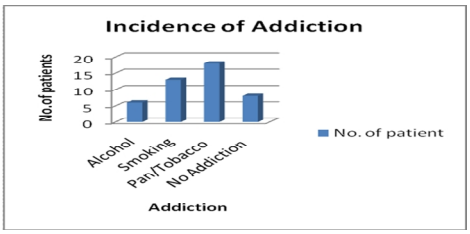

Table 10 : Showing the incidence of Food Habits in 45 patients of I.B.S.

Food Habits	No. of patient	Percentage
Veg.	10	22.22
Mixed	35	77.77
Total	**45**	**100**

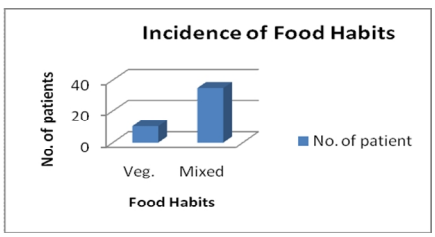

Table 11 : Showing the incidence of Weight in 45 patients of I.B.S.

Weight	No. of patient	Percentage
35-40	5	11.11
41-45	4	8.88
46-50	6	13.33
51-56	11	24.44
56-60	12	26.66
>60	7	15.55
Total	**45**	**100**

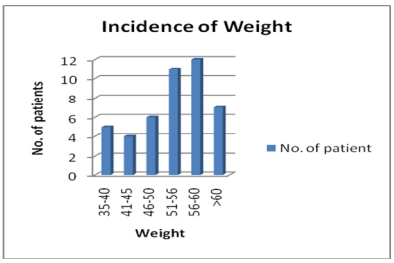

Table 12 : Showing the incidence of duration of symptomatology in patients of I.B.S.

Duration	No. of patient	Percentage
<1yr.	6	13.33
1-3 yr.	8	17.77
4-6 yr.	17	37.77
7-10 yr.	10	22.22
>10 yr.	4	8.88
Total	**45**	**100**

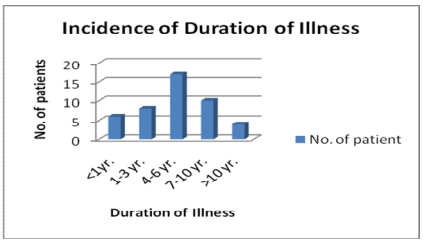

Table 13 : Showing the incidence of Decrease Appetite in 45 patients of I.B.S.

Appetite	No. of patient	Percentage
Poor	30	66.66
Normal	8	17.77
Moderate	5	11.11
Increased	2	4.44
Total	**45**	**100**

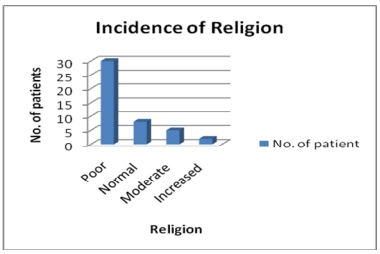

Table 14: Showing the incidence of different from of IBS in 45 patients of I.B.S.

From of IBS	No. of patient	Percentage
Pain predominant	2	4.44
Diarrhea predominant	9	20.00
Constipation predominant	34	75.55
Total	**45**	**100**

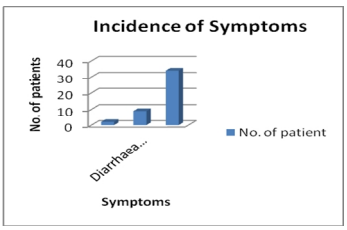

Table 15 : Showing the incidence of Deha Prakrit in 45 patients of I.B.S.

Deha Prakrit	No. of patient	Percentage
Vata pitta	30	66.66
Vata kapha	9	20.00
Kapha pitta	6	13.33
Total	**45**	**100**

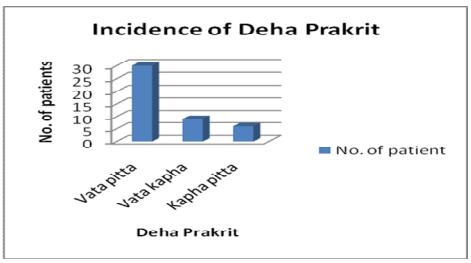

Table 16 : Showing the incidence of Manas Prakrit in 45 patients of I.B.S.

Manas Prakrit	No. of patient	Percentage
Rajasika	9	20.00
Rajatamsika	32	71.11
Rajasattvika	4	8.88
Total	**45**	**100**

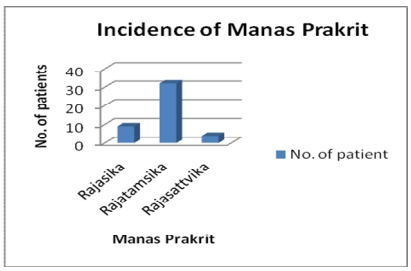

Table 17 : Effect on Abdominal Pain

Group	Score	BT	AT	χ^2 value (Intra-group comparison between BT & AT)
A	0	4	10	8.57
	1	5	5	
	2	5	0	p<0.02
	3	1	0	
B	0	6	11	5.58
	1	5	4	
	2	3	0	p>0.05
	3	1	0	
C	0	6	12	4.24
	1	4	2	
	2	2	1	p<0.05
	3	2	0	

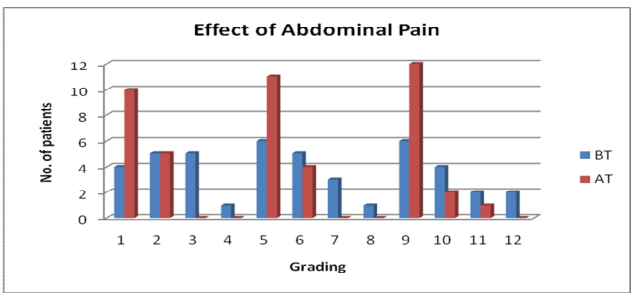

Table 18 : Effect on Constipation

Group	Score	BT	AT	χ^2 value (Intra-group comparison between BT & AT)
A	0	2	7	5.89
	1	4	5	
	2	6	3	p>0.05
	3	3	0	
B	0	1	9	12.00
	1	5	5	
	2	7	1	P<0.01
	3	2	0	
C	0	2	9	6.77
	1	4	6	
	2	6	0	p<0.05
	3	3	0	

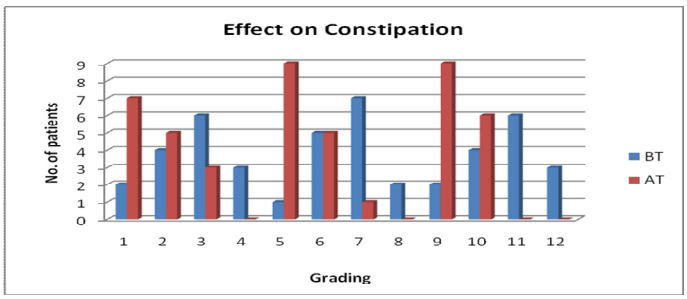

Table 19 : Effect on Diarrhea

Group	Score	BT	AT	χ^2 value (Intra-group comparison between BT & AT)
A	0	9	12	3.42
	1	3	3	
	2	3	0	P<0.05
	3	0	0	
B	0	8	13	4.47
	1	5	2	
	2	2	0	P<0.05
	3	0	0	
C	0	7	14	7.90
	1	6	1	
	2	1	0	p<0.02
	3	1	0	

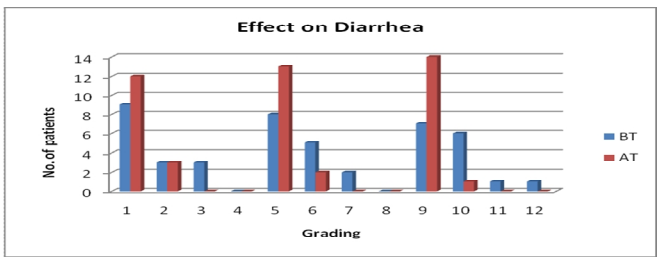

Table 20 : Effect on Tenesmus

Group	Score	BT	AT	χ^2 value (Intra-group comparison between BT & AT)
A	0	5	9	2.90
	1	5	6	
	2	2	0	P<0.05
	3	0	0	
B	0	6	11	4.80
	1	6	4	
	2	3	0	P>0.05
	3	0	0	
C	0	4	13	11.70
	1	6	2	
	2	3	0	p<0.02
	3	2	0	

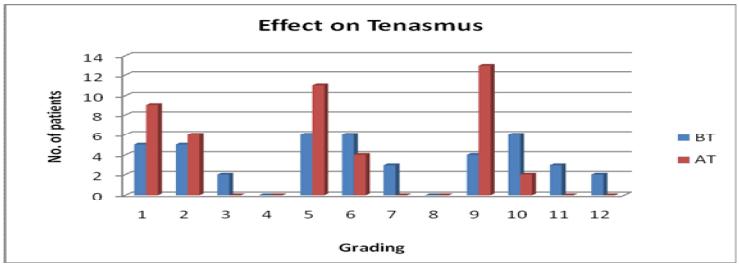

Table 21 : Effect on Mucoid Stool

Group	Score	BT	AT	χ^2 value (Intra-group comparison between BT & AT)
A	0	3	7	1.80
	1	4	8	
	2	7	0	P<0.03
	3	1	0	
B	0	2	10	11.00
	1	8	5	
	2	5	0	P<0.05
	3	0	0	
C	0	3	10	11.00
	1	4	5	
	2	6	0	p<0.02
	3	2	0	

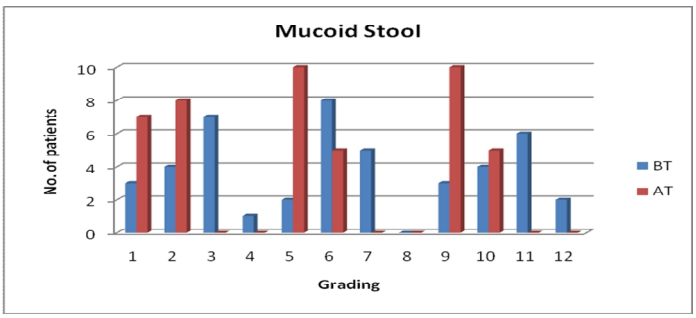

Table 22 : Effect on Depressive feature

Group	Score	BT	AT	χ^2 value (Intra-group comparison between BT & AT)
A	0	2	11	13.00
	1	7	4	
	2	5	0	P<0.01
	3	1	0	
B	0	3	11	10.90
	1	6	4	
	2	5	0	P<0.04
	3	1	0	
C	0	4	12	10.50
	1	5	3	
	2	4	0	p<0.05
	3	2	0	

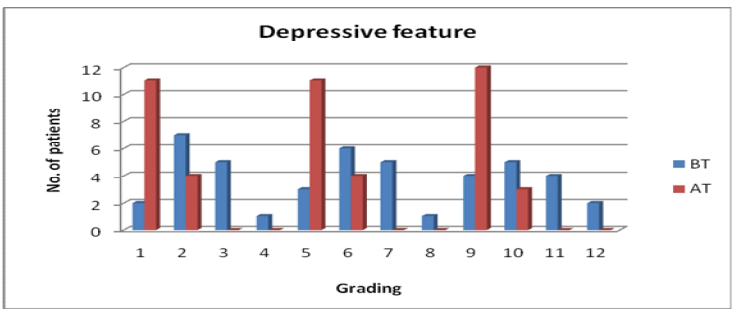

Table 23 : Effect on Insomnia

Group	Score	BT	AT	χ^2 value (Intra-group comparison between BT & AT)
A	0	3	7	7.80
	1	6	8	
	2	6	0	P<0.01
	3	0	0	
B	0	4	11	8.00
	1	7	4	
	2	4	0	P<0.01
	3	0	0	
C	0	6	13	7.50
	1	6	2	
	2	2	0	p<0.02
	3	1	0	

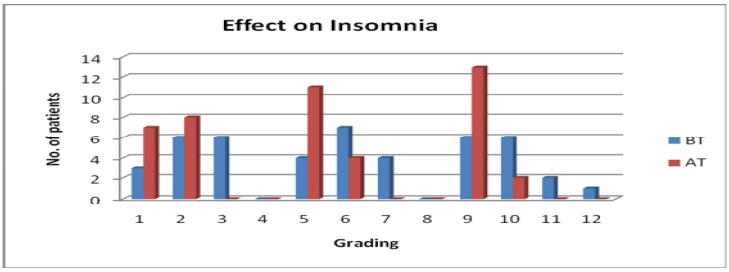

Table 24 : Inter-group comparison of subjective parameters in I.B.S. cases

Symptoms	χ^2 value (Intergroup comparison between groups A, B & C)			
	BT		AT	
Abdominal pain	$\chi^2 = 1.16$	P > 0.05	$\chi^2 = 0.68$	P > 0.05
Constipation	$\chi^2 = 0.35$	P > 0.05	$\chi^2 = 0.35$	P > 0.05
Diarrhea	$\chi^2 = 2.10$	P > 0.03	$\chi^2 = 2.30$	P < 0.05*
Tenesmus	$\chi^2 = 1.00$	P > 0.05	$\chi^2 = 1.60$	P > 0.05
Mucoid stool	$\chi^2 = 3.10$	P > 0.5	$\chi^2 = 6.10$	P < 0.01*
Depressive feature	$\chi^2 = 1.00$	P > 0.05	$\chi^2 = 1.00$	P > 0.05
Insomnia	$\chi^2 = 2.00$	P > 0.05	$\chi^2 = 7.40$	P < 0.01*