The present study entitled “CLINICAL ASSESSMENT OF KOŚṬHA AND ITS RELATION WITH PRAKR̄TI, ANNAVĀHA, PURĪŚAVĀHA SROTO VIKĀRA.” was carried out in the OPDs of Vikṛti Vijñāna and Gastroenterology OPDs, Sir Sunderlal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi-221005. The cases were registered from June 2016 to November, 2016 from OPDs of Vikṛti Vijñāna and Gastroenterology.

KOŚṬHA

KOŚṬha is known in the scriptures as Mahāsrotas (the great channel), Śārīra Madhya (central portion of the body), Mahānimna (the deepest part of the body) and Āmapakvāśaya (stomach and intestines). Diseases of KOŚṬha are included under internal pathway of diseases. Although the concept of KOŚṬha is described at many places but clinically KOŚṬha is classified into three type’s i.e. Mrdu (laxed bowel), Krūra and Madhyama in the context of Sāmśodhana as Snehana, Virecana etc. The term KOŚṬha is expressed in the context of bowel habit and it mostly depends on individual’s Prakṛti. For the assessment of KOŚṬha bowel habit should be examined considering frequency, consistency, straining during defecation, required more time for proper defecation, feeling of lightness, satisfaction etc. previous encounters of diarrhoea and constipation and previous experiences of purgatives and laxatives. The above points regarding the Malapravṛtti were considered for the assessment of KOŚṬha.

Mrdu KOŚṬha

In Āyurveda it has been described that Pitta is predominant in Mrdu KOŚṬha and generally the persons of Pitta dominant Prakṛti persons may belong to Mrdu KOŚṬha.
**Discussion**

**Madhyama Kośtha**

*Kapha* is predominant in *Madhyama Kośtha* and the persons of *Samadoṣic* state or *Kapha* dominant *Prakṛti* or *Samadoṣic Prakṛti* may belong to *Madhyama Kośtha*.

**Krūra Kośtha**

*Vāta* is predominant or *Vāta-Kapha* is predominant in *Krūra Kośtha* and the person *Vāta* dominant *Prakṛti* or *Vāta-Kapha Prakṛti* may belong to *Krūra Kośtha*.

The knowledge of *Kośtha* is important to prescribe appropriate therapeutics. On the basis of *Kośtha* dose of medicine is decided. It also helps to advice suitable appropriate diet and activities as per *Kośtha*. It may also help to predict the risk factor for the type of gastrointestinal disorder with which individual may afflict.

Certain diseases manifest commonly in particular *Kośtha* individuals. Hence accordingly one should advice *Pathyāpathya* regimens to that particular person.

**SROTAS**

Body is composed of numerous *Srotāṃsi*, which play a significant role in the maintenance of equilibrium of body elements. They are responsible for the preservation of health as well as for the development of disease. These are also known as channels through which different elements undergo transformation, metamorphosis, circulation and transportation. The *Srotas* is an integral part of the body, serving as a route to conduct or convey a substance from one place to other. The functions of microscopic or minute channels include nourishment, circulation, excretion and reproduction. Microscopic, macroscopic, anatomical, physiological and pathological consideration of *Srotas* is an important component in respect to health and disease because any alteration in these may be responsible for overall health status of an individual.
ANNAVAHA SROTAS

It is the channel which transports the food from mouth to the anus. *Mūla Sthānas* of Annavaha Srotas i.e. Āmāṣaya is divided in two parts namely Ūrdhva Āmāṣaya and Adho Āmāṣaya and these are the place of *Kapha* and *Pitta* respectively and vitiation of these sites may produce *Vikāra* (diseases) related to vitiation of either *Kapha* or *Pitta* like Ajīrṇa, Amlapitta etc. Ajīrṇa is the state of incomplete process of digestion of ingested food. The main reason for indigestion is the deranged functions of *Agni* which may either vitiation of *Kapha* or *Pitta* or *Vāta*. As Ācārya Caraka has said that *Pitta* present in body is *Agni* and incomplete digestion and metabolism due to disturbed *Agni* (digestive fire) leads to formation of under processed state of food termed as Ajīrṇa

PURĪŚAVĀHA SROTAS

Channel which carries the *Purīṣa* is called *Purīṣavaha Srotas*. *Purīṣavaha Srotas* originates from Pakvāṣaya (large intestines) and Sthūla Guda (rectum).

The first half of the alimentary canal represents the Annavaha Srotas while the latter half is the representative of the Purīṣavaha Srotas. As it has been said that *Mūla Sthānas* of Annavaha Srotas is Āmāṣaya which is the place of place of *Kapha* and *Pitta*, in the same way Pakvāṣaya is the special site of *Vāta*. Pakvāṣaya is site for dehydration and absorption of food and stimulation of *Vāta* due to pungent taste of food. If person indulging more *Vāta* aggravating food may suffer from *Vāta* dominating disorder as Śūla and may vitiates *Agni* as a result disease manifest.

The colon prepares the waste material for controlled evacuation. The colonic mucosa dehydrates the stool, decreasing daily fecal volumes from 1000–1500 mL delivered from the ileum to 100–200 mL expelled from the rectum. The colon terminates in the anus, a structure with volitional and involuntary controls to permit retention of the fecal bolus until it can be released in a socially convenient setting and it may be termed as *Purīṣavaha Srotas* as said during Avasthāpāka when food reaches...
Agni

The term Agni, in common language, means fire. However, in the context of functioning of living organism, which maintains its integrity and performs its vital activities, by converting-in Pākādi Karmās or biophysical and biochemical processes – the foods consumed in various ways- licked, masticated, drunk etc., not only into its various structure and functional constituents but also to provide the energy, necessary for proceeding with its innumerable vital activities. In these sequences, the term Agni comprehends various factors which participate in and direct the course of digestion and metabolism, in a living organism. Hence it is termed as bio digestive fire. Vāta (Prāṇa, Apāṇa, Samāna and Udāna) augments the digestive fire. Power of Agni or normal condition of Agni is responsible for strength, health, longevity and vital breath. Food substances undergo metabolic transformation by the effect of Jaṭāharāgni, Bhūtāgni and Dhātvāgni. Jaṭāharāgni is the main principle substance responsible for disease and health. During its normalcy it is responsible for longevity, complexion, strength, health, enthusiasm, well built, lustre, immunity (Ojas). Jaṭāharāgni is the chief among all types of Agni’s because functions of Bhūtāgni and Dhātvāgni depend on this. Aggravation or diminution of Jaṭāharāgni results in aggravation or diminution of Bhūtāgni and Dhātvāgni. Therefore by all means one has to protect Jaṭāharāgni by consuming suitable wholesome dietetics and behaviour because longevity and strength depends on normal state of Agni.

Types of Agni

Three main types of Agni have been described in Āyurveda namely Jaṭāharāgni, Pācakāgni, Bhūtāgni and Dhātvāgni.

Status of Jaṭāharāgni according to Doṣa: Different functional states of Jaṭāharāgni are produced due to influence of Doṣas.
i. **Mandāgni**: Due to influence of *Kapha* causing Âmājīrṇa.

ii. **Tikṣṇāgni**: Due to influence of *Pitta* causing Vidagdhājīrṇa.

iii. **Viṣamāgni**: Due to influence of *Vāta* causing Viṣṭabdājīrṇa.

iv. **Samāgni**: Equilibrium state of Doṣa.

Except Samāgni remaining three types of Agnis causes development of diseases. Vātika disorders arise from Viṣamāgni; Pittaja disorders arise from Tikṣṇāgni and Kaphaja disorders arise from the Mandāgni.

**Role of Agni in the genesis of diseases**

Healthy state of body and diseased condition is entirely dependent on Agni. Simultaneous and continuous circulation of *Rasa Dhātu* takes place all over the body by the help of Vyāna Vāta. If any abnormality evolved in the Rasavaha Srotas (channels carrying *Rasa*) as a result disease manifest like cloud in the sky brings rain. In the same way abnormality in Doṣa manifest diseases. Doṣa (body humors) get aggravated by the disturbed functions of Agni. That’s why life span, health, strength and nourishment etc. are depends on Agni.

**ĀMA**

Āma is the outcome of improper digestion. Incomplete or partial digestion of food leads to Āma formation. Abnormal Doṣa present in Grahaṇī manifests improperly digestion of food manifesting as increased salivations, constipation, pain, burning sensation, anorexia and heaviness which all are the symptoms of Āma. Due to poor strength of Kāyāgni, the improper Ādhyā Āhāra Dhātu (Rasa Dhātu) formed in Āmāśaya, is known as Āma. Due to hypo-function of the Agni, the undigested food residue is formed. This residue is known as Āma and is said to be the root cause of all the diseases. Some says that Apakva Anna *Rasa* is Āma, while some other quotes that accumulation of Mala is Āma. According to some, the first stage of vitiation of Doṣa

~217~
is Āma. The substances, which remain undigested, disintegrated, foul smelling, excessive in quantity, slimy in nature, and causes stiffness of the whole body is known as Āma. In this definition, the nature and symptoms produced by Āma have been described. Due to poor strength of Agni (Jaṭhārāgni), Ādhyā Dhātu (Rasa) remains undigested and this undigested and vitiated Rasa in Āmāśaya is known as Āma. Initially Āma manifests at gastrointestinal level and later in advanced condition it reaches the systemic circulation by the help of Vāta. Ācārya Cakrapāṇi while commenting on Grahaṇi Cikitsā has mentioned the existence of Āma at different levels. Āma is described to be liquid in nature, heavy (high molecular weight), attaining different colours, etiological factor for almost all diseases, slimy, viscid, thready, sticky, manifesting various kinds of pain, yielding foul smell, having increased sourness, turbidity and obstructing various pathways (Srotas) etc. The previous discussion clearly indicates that Agnimāndhya is root cause in production of Āma. So the factor responsible for malfunctioning of Agni is also responsible for producing Āma. In Caraka Saṃhitā the etiological factors causing Āma have been described in detail. The resulting action of Āma inside the body is called Āma doṣa. Manifestation of certain reactions inside the body due to under processed Anna rasa is called Āma pradoṣa. When Āma amalgamates with Doṣa and Dūṣya, it manifests with various kinds of diseases. Mainly two types of Āma pradoṣa vikāra manifest in the body namely Visūcikā and Alasaka. Further consumption of etiological factors after the development of Mandāgni brings more mildness in Agni’s after whatever is again eaten or drunk by ignoramus person, the same becomes improperly digested and is transformed to sourness in Āmāśaya is called Āmaviṣa. Srotorodha (obstruction in Srotas), Balabhraṇāśa (decrease strength or immunity), Gauravam (heaviness in body and head), Anila mūḍhātā (disturbances in normal movements of Vāta), Ālasya (lethargy), Apakti (indigestion), Niṣṭhīva (excessive salivation), Mala Saṅga (obstruction of urine and stool and other waste product), Aruci (lack of desire towards food) and Klama (exhaustion) are the symptoms of Āma.

Knowledge of Srotas, Agni and Āma is very essential to every physician.
Srotas plays important role in pathogenesis during the genesis of diseases because all the nutrient substrances, transformed Dhātus and Doṣa are transported by Srotas. Healthy Srotas perform their normal function as a result body is free from diseases and unhealthy Srotas become root cause for the development of pathogenesis.

Once the empty spaces (Srotas) become abnormal, it brings abnormality in normal Dhātu by not transporting to required destination; this is because of abnormality of Srotas. Srotas vitiates other Srotas, Dhātu vitiates other Dhātus, for all these happening disturbed Doṣas are responsible. Doṣas get aggravated by the disturbed function of Agni. That’s why life span, health, strength and nourishment etc. are depends on Agni.\textsuperscript{29}

*Cikitsa Sūtra* is different for all the different involved Srotas.

Vitiated Agni causes incomplete or partial digestion of food leads to Āma formation.

**GRAHAṆĪ GADA**

Grahaṇī is the site of the Agni (digestive enzymes) and it is called Grahaṇī due to its function of Grahaṇāt (to restrain) the food for digestion and downward movement of food. It is located above the umbilical region. The Agni, while providing nourishment and support to Grahaṇī, helps in digestion of food placed over it. Normally, it restrains the movement of undigested food and after digestion; it releases food through the sides of its lumen. In the abnormal condition, when it gets vitiated because of weakness of Agni (digestive power), it releases food in undigested form.

Impaired Agni burns the food incompletely which goes either upward or downwards. When it moves downward either in ripe or unripe condition is known as Grahaṇī Gada.
**Discussion**

*Grahaṇi Gada* is synonym to *Grahaṇi Roṇa*. That is ‘*Grahaṇi Doṣa*’ implies the malfunctioning of *Agni* (enzymes responsible for digestion and metabolism). Individual afflicted with *Grahaṇi Gada* passes frequent watery stool or constipated bowel. The symptoms are very similar to irritable bowel syndrome in modern medicine.\(^\text{30}\)

**Irritable bowel syndrome**

Irritable bowel syndrome (IBS) is a functional GI disorder and its causes remain poorly defined but there are some triggers stimulate the reactions inside gastrointestinal tract and these differ from person to person. But there are some common triggers including foods (certain food substances like chocolate, spices, fats, fruits, beans, cabbage, cauliflower, milk, carbonated beverages and alcohol etc), stress, hormones, and illnesses as acute episode of infectious diarrhoea (gastroenteritis) or too many bacteria in the intestines (bacterialoverflow) can trigger IBS.

It may be compared to the etiological factors described in Āyurveda in relation to *Grahaṇi* followed by *Atisāra*.

Pain or abdominal distress is a key symptom for the diagnosis of Irritable bowel syndrome. These symptoms should be improved with defecation and/or have their onset associated with a change in frequency or form of stool. Rome criteria are followed as diagnostic criteria for Irritable bowel syndrome. IBS can also cause symptoms in other parts of body including: low back pain, muscle and joint pain, continuous fatigue, headache, nausea, burping, Bad breath and a frequent and urgent need to urinate. Due to the pain, discomfort and embarrassment that are sometimes associated with IBS, some people also experience feelings of anxiety and gloominess.\(^\text{31}\)
**AJÍRṆA**

Ajírṇa is the state of incomplete process of digestion of ingested food. The main reason for indigestion is the deranged functions of Agni. Incomplete digestion and metabolism due to disturbed digestive fire leads to formation of under processed state of food termed as Ajírṇa. Persons who eat food in excessive quantities recklessly like cattle become prone for the development of Ajírṇa which may lead development of many diseases.\(^{32}\)

**Indigestion**

Indigestion is a nonspecific term that encompasses a variety of upper abdominal complaints including nausea, vomiting, heartburn, regurgitation, and dyspepsia (the presence of symptoms thought to originate in the gastroduodenal region). Some individuals with dyspepsia report predominantly epigastric burning, gnawing discomfort, or pain. Others with dyspepsia experience a constellation of symptoms including postprandial fullness, early satiety (an inability to complete a meal due to premature fullness), bloating, eructation (belching), and anorexia.

**ATISĀRA**

Means passing of stool in large amount is known as Atisāra. Passing of excessive liquid mala in large amount is known as Atisāra.

Atisāra is the symptoms of many diseases but it is described as a separate complete disease also. When there is accumulation of Mala or Āma in abdomen then it is expelled out either in form of vomiting or as diarrhoea.

**Diarrhoea**

Diarrhoea is the reversal of the normal net absorptive status of water and electrolyte absorption to secretion. The augmented water content in the stools (above the normal value of approximately 10 mL/kg/d in the infant and young child, or 200
g/d in the teenager and adult) is due to an imbalance in the physiology of the small and large intestinal processes involved in the absorption of ions, organic substrates, and thus water.

Clinical types of diarrhoea are divided in three categories as acute diarrhoea (extremely common presenting problem and predominant symptom in acute infective gastroenteritis.), acute bloody diarrhoea – also called dysentery; and persistent/chronic/ relapsing diarrhoea – lasts 14 days or longer.

ŚŪLA

Śūla is a special type of disease where pain is dominant feature. Generally Śūla or pain is produced in any part of the body. There are several terminologies being used in Āyurveda viz., ŚīrahŚūla (headache), Karnā Śūla (otitis), Vṛkka Śūla (renal colic), Basti Śūla (cystitis) etc. But when simply ‘Śūla’ is used, it denotes only Udara Śūla where ‘Udara’ means abdominal portion and ‘Śūla’ means pain or tenderness. Common Annavaḥa Srotas diseases described in Āyurveda, associated with pain in abdomen are Vișṭabdhaṉīrṇa, Atisāra, Parināma Śūla, Annadrava Śūla etc.33

Abdominal pain

Abdominal pain is pain that occurs between the chest and pelvic regions. Abdominal pain can be crampy, achy, dull, intermittent or sharp. It’s also called a stomach-ache. Inflammation or diseases that affect the organs in the abdomen can cause abdominal pain. Common inflammatory diseases with pain include peptic ulcer, appendicitis, diverticulitis, inflammatory bowel disease, and infectious enterocolitis. Other intra abdominal causes of pain include gallstone disease and pancreatitis. Noninflammatory visceral sources include mesenteric ischemia and neoplasia. The most common causes of abdominal pain are irritable bowel syndrome and functional dyspepsia.
AMLAPITTA

Amlapitta means Amlībhūtapitta or Pitta of sour taste. Amla Pitta is a condition, in which, whatever is eaten is transformed into Amla Rasa due to pathological Pitta. The Pitta which attains excessive Amlatā because of Vidagdhā Pāka is called Amlapitta. It is diagnosed by Avipāka (indigestion), Klama (exhaustion), Utkleśa (nausea), Tikāmlodgāra (bitter and sour eructation), Gaurava (heaviness), Hṛt Kaṇṭhadāha (burning sensation in chest and throat region) and Aruci (loss of appetite).

It is one of the most common diseases of Annavaha Srotas (gastrointestinal tract). It includes hyperacidity (GERD), acid peptic disease and related diseases.  

Gastroesophageal Reflux Disease

Gastroesophageal reflux resulting in heart burn affects approximately 30% of the general population. Gastroesophageal reflux can result from a variety of physiologic defects. Reduced lower esophageal sphincter (LES) tone is an important cause of reflux in scleroderma and pregnancy; it may also be a factor in patients without other systemic conditions. Many individuals exhibit frequent transient LES relaxations during which acid or nonacidic fluid bathes the esophagus. Occasional episodes of gastroesophageal reflux are common in health. Gastroesophageal reflux disease develops when the oesophageal mucosa is exposed to gastric content for prolonged periods of time, resulting in symptoms and in a proportion of cases, oesophagitis.

Brief review of plan of work

Present clinical study entitled “CLINICAL ASSESSMENT OF KOŚṬHA AND ITS RELATION WITH PRAKRŤI, ANNAVAHA AND PURĪŠAVAHA SROTO VIKĀRA” was carried out in the OPDs of Vikṛti Vijñāna and Gastroenterology OPDs, Sir Sunderlal Hospital, Institute of Medical Sciences,
Discussions

Banaras Hindu University, Varanasi-221005. The cases were registered from June 2016 to November, 2016 from OPDs of Vikṛti Vijñāna and Gastroenterology. Present study was done on 60 healthy volunteers for the assessment of Prakṛti and Kośtha and 140 patients of Annavaha & Puriśavaha Sroto Vikāra.

The following demographic profile namely Name, Age, Sex, Address, Religion, Occupation, Socio-economic status, Diet, Education etc. were studied. Total 140 registered cases of Annavaha & Puriśavaha Sroto Vikāra were divided into five groups according to following diagnostic criteria of various diseases and presenting complaint as described in Āyurveda.

**Group-1:** 40 cases of Grahaṇi Gada

**Group-2:** 20 cases of Ajīrṇa

**Group-3:** 20 cases of Atisāra

**Group-4:** 30 cases of Śūla

**Group-5:** 30 cases of Amlapitta

**AGE**

**Group-1:** Maximum patients were in the range of 26-35 yrs. i.e. 35% followed by 36-45 yrs. i.e. 30%, 16-25 yrs. i.e. 27.5% and 46-55 yrs i.e. (7.5%) respectively.

**Group-2:** Maximum patients were in the range of 26-35 yrs. i.e. 55% followed by 46-55 yrs. i.e. 20%, 36-45 yrs. i.e. 15% and 16-25 yrs. i.e. (10%) respectively.

**Group-3:** Maximum patients were in the range of 26-35 yrs. i.e. 45% followed by 36-45 yrs. i.e. 25%, 16-25 yrs. and 46-55 yrs. i.e. 15% respectively.

**Group-4:** Maximum patients were in the range of 16-25 yrs. i.e. 30% followed by 36-45 yrs. i.e. 26.7%, 26-35 yrs. 23.3% and 46-55 yrs. i.e. 20% respectively.
**Group-5:** Maximum patients were in the range of 36-45 yrs. i.e. 40% followed by 26-35 and 46-55 yrs. i.e. (26.7%) and 16-25 yrs. (6.6%) respectively.

Excessive frequency of GIT disorders is most common during the 2nd and 4th decades of life may be due to predominance of Pitta at this period and most of GIT disorders are developing due to vitiation of Agni. Common clinical pathological changes noted is inflammation in the GIT (as gastritis, colitis etc.) and it is one of the peculiar feature of vitiation of Pitta.\(^{35}\)

Previous studies show that IBS can occur in all age groups, including children and the elderly, with no significant difference seen in the frequency of subtypes by age. However, 50% of patients with IBS report having first had symptoms before the age of 35 years, and prevalence is 25% lower in those aged over 50 years than in those who are younger. This would suggest that symptoms remit over time, and is contrary to the belief that IBS is a chronic lifelong condition, because, if this were the case, then prevalence should remain constant or increase with age. Patients aged over 50 years also report milder pain, but their overall quality of life is worse. Patients aged over 65 years are also likely to have had their symptoms for longer than 1 year before they consult, whilst those under 65 years report significantly shorter duration of symptoms.\(^{36}\)

Patients aged over 50 years also report milder pain, but their overall quality of life is worse may be due to predominancy of Vāta as well as immunosenescence associated with impaired digestion and metabolism. It has been mentioned in our texta that one who is afflicted by Grahaṇī Roga in the old age it will not leave him even after his death. Grahaṇī Roga in children is curable, difficult to manage in young and is incurable in old.\(^{37}\) It also shows that IBS can occur at any age.

Most of the literature of Āyurveda has described Pācana (digestion) to be performed by Pācaka Rasa (digestive juices), which are regulated by Pācaka Pitta or Pācaka Agni. Pācaka Pitta is one of the five types of Pitta responsible for the
digestion of food. When the Pācaka Rasa is reduced in quantity, Mandāgni takes place and causes Śūla (pain) in abdomen.\textsuperscript{38} Mandāgni also causes most of the diseases either Ajīrṇa, Atisāra, Grahaṇi Gada, Amlapitta also.

In case of ulcerative colitis in recent decades, although there has been an increased incidence of UC in different age groups, the majority of patients with UC are in the age group of 30-40 years at diagnosis. It has been observed that the average age at diagnosis is usually slightly higher in Asian countries compared with Western countries.\textsuperscript{39}

Maximum patients of Amlapitta were of 36-45 yrs. age group. Our study support the previous work as a previous national multicenter study, conducted in China showed that the prevalence of reflux esophagitis increased with age. Other study also supports this. (Hai-Yun Wang et al.\textsuperscript{2016})\textsuperscript{40}

**SEX**

**Group-1:** Maximum patients were females i.e. 52.5% followed by 47.5% males.

**Group-2:** Maximum patients were males i.e. 60% followed by 40% females.

**Group-3:** Maximum patients were males i.e. 65% followed by 35% females.

**Group-4:** Maximum patients were males i.e. 60% followed by 40% females.

**Group-5:** Maximum patients were females i.e. 60% followed by 40% males.

In case of irritable bowel syndrome hormonal changes play a role in the development or aggravation of IBS in females because women are twice as likely to have this disease and it has been observed that signs and symptoms are worse during or around their menstrual periods.\textsuperscript{41}

In most populations, women report more IBS symptoms than men, irrespective of the diagnostic criteria employed. Rates in women are approximately 1.5 to 3 fold
Discussion

higher than those seen in men. Internationally, the overall prevalence of IBS in women is 67% higher than in men (odds ratio 1.67 [95% CI 1.53–1.82]).\(^2\) Our study also favors this.

According to our study \(Ajîra\) is more common in male this may be due to outdoor work and frequent journeys of the male as a result persons is taking more outside food and consumption of more foods before sleep.

According to our study \(Sûla\) and \(Atisâra\) is more common in male but such type of description is not described in \(Āyurvedic Saṃhitās\). According to recent researches incidence of ulcerative colitis is most common in male or an equal distribution between genders. In the past, Italian investigators have even suggested that polymorphisms in an enzyme involved in the signal transduction of insulin (cytosolic low-molecular-weight protein tyrosine phosphatase) could increase predisposition to the development of Crohn’s disease (CD) in women and of UC in men.\(^3\)

Diarrhoea is also common in persons performing night job which is done by mostly male society. This is because of, similar to other organ systems, the gastrointestinal tract operates on a 24-hour circadian schedule that anticipates and prepares for changes in the physical environment associated with day and night. These circadian rhythms regulate a number of gastrointestinal functions, ranging from gastric acid production to small intestinal nutrient absorption to colonic motility. These rhythms are also strong regulators of immunologic processes and the gut microbiome (abundance, speciation, and function), which fluctuates in accordance with their influence.

Prolong sleep curtailment and the accompanying stress response invokes a persistent unspecific production of proinflammatory cytokines, which result in a low grade chronic inflammatory state\(^4\).
Our study shows prevalence of *Amlapitta* more in female which support previous study (Hai-Yun Wang et al. 2016).

**MARITAL STATUS**

*Group-1*: Maximum patients were married i.e. 70% followed by 30% unmarried patients.

*Group-2*: Maximum patients were married i.e. 80% followed by 20% unmarried patients.

*Group-3*: Maximum patients were married i.e. 90% followed by 10% unmarried patients.

*Group-4*: Maximum patients were married i.e. 80% followed by 20% unmarried patients.

*Group-5*: Maximum patients were married i.e. 83.3% followed by 16.7% unmarried patients.

The legally or formally recognized union of two people as partners happens at this age. Some of the married couples might experience stress and anxiety due to higher expectations of the society and family members. Probably a psychological factor play a crucial role. In an analysis of data from a study of patients and a population-based study of individuals with these diagnoses, we found 2-fold more patients to receive a diagnosis of a mood or anxiety disorder before an functional gastrointestinal disorders, but equal proportions of individuals in the population to be diagnosed with the mood or anxiety disorder before vs after an functional gastrointestinal disorders. Among patients, the mood or anxiety disorder was on average diagnosed more than 3 years before the functional gastrointestinal disorders, offering opportunity for prevention. Our findings support a role for adverse socioeconomic factors in development of functional gastrointestinal disorders in patients with psychological disorders.\(^{45}\)
\textit{Ayurveda} also describes \textit{Mānaśika Bhāva} (psychological factors) influencing the pathogenesis of diseases either \textit{Grahaṇī}, \textit{Śokaja Atisāra}, \textit{Ajīrṇa} etc.

In Hartono \textit{et al}, the excess prevalence of depression and anxiety was 38.7\% and 6.5\%, respectively, in IBS patients relative to healthy patients (of which 6.5\% and 14.5\% reported scores consistent with depression and anxiety), based on diagnostic criteria of a HADS rating greater than eight. In Uz \textit{et al}, the excess prevalence of depression or anxiety relative to healthy controls was 34\% and 2\%, with 4\% and 8\% of the healthy population reporting scores consistent with depression and anxiety.

One study of UC evaluated the prevalence of depression and anxiety relative to healthy controls.

The traditional brain-gut axis hypothesis suggests that disordered autonomic and neural gut regulation as well as dysregulated visceral feedback lead to IBS. Visceral hyperalgesia is a common finding in IBS subjects, and brain imaging suggests altered responses in IBS compared to controls.\textsuperscript{46}

\textbf{RELIGION}

\textbf{Group-1:} Maximum patients were Hindu i.e. 90\% followed by 10\% Muslim patients.

\textbf{Group-2:} 100\% cases were Hindu.

\textbf{Group-3:} Maximum patients were Hindu i.e. 95\% followed by 5\% Muslim patients.

\textbf{Group-4:} Maximum patients were Hindu i.e. 96.7\% followed by 3.3\% Muslim patients.

\textbf{Group-5:} Maximum patients were Hindu i.e. 83.3\% followed by 16.7\% Muslim patients.
The study cannot be correlated because only a few number of Muslims attended the O.P.D. However, majority of the patients visits SS Hospital were mostly Hindus.

**OCCUPATIONAL STATUS**

**Group-1:** Maximum patients were house wife i.e. 45% followed by 22.5% student, 15% self business and worker category, 2.5% having private job respectively.

**Group-2:** Maximum patients were house wife i.e. 35% followed by 20% self business and worker category, 10% having private job and student and 5% government employee respectively.

**Group-3:** Maximum patients were worker i.e. 50% followed by 25% house wife, 20% student, and 5% having private job respectively.

**Group-4:** Maximum patients were house wife and worker i.e. 30% followed by 23.3% student, 10% self business and 6.7% government employee respectively.

**Group-5:** Maximum patients were house wife i.e. 46.7% followed by 16.7% government employee, 13.3% worker category, 10% self business and, 6.7% having private job and student respectively.

Majority of the house wife are suffering from *Grahaṇi Gada, Ajīṛṇa, Śūla* and *Amlapitta*. This may be due to the struggle in routine life from daytime to night associated with erratic dietetic regimen and lifestyle adopted by housewife may be acting as a risk factors for these diseases, which leads to vitiation of *Agni* and it is the root cause for development of gastrointestinal diseases.

Due to erratic lifestyle adopted and social circumstances most of the females do not pass their natural urges timely. Inhibition of natural urges brings aggravation of *Doṣa*, leads to vitiation of *Agni* i.e. *Mandāgni* which favors the development of Āma. The role of *Vegasamdhāraṇa* in triggering *Doṣa* and its influence on *Agni* is well
described by Ācarya Caraka in Siddhi Sthāna in relation to ‘Sadāturas’. Vegasamdhāraṇa in the sense, Malavegasandhāraṇa (i.e. holding the reflexes of defecation and micturation) viz. accumulation of Malas for longer periods in its Sthāna is itself an Āmaviṣa, affecting the Agni to Mandyāta as an inhibitive reflex, leading further to Āmaviṣa conditions.

Hormonal changes play a role in the development or aggravation of IBS in females because women are twice as likely to have this disease and it has been observed that signs and symptoms are worse during or around their menstrual periods. In case of Atisāra maximum patients were worker and eating food outside and sometimes contaminated.

SOCIO – ECONOMIC STATUS

**Group-1:** Maximum patients were of lower middle class i.e. 57.5% followed by 35% middle-middle class, 5% non working class and 2.5% upper middle class respectively.

**Group-2:** Maximum patients were of lower middle class i.e. 65% followed by 30% middle-middle class, 5% non working class and 0% upper middle class respectively.

**Group-3:** Maximum patients were of lower middle class i.e. 80% followed by 15% middle-middle class, 5 % non working class and 0% upper middle class respectively.

**Group-4:** Maximum patients were of lower middle class i.e. 66.7% followed by 20% middle-middle class, 10% upper middle class and 3.3% non working class respectively.

**Group-5:** Maximum patients were of middle-middle class i.e. 46.7% followed by 40% lower middle class, 13.3% upper middle class and 0% non working class respectively.
Discussion

It can be directly correlated with life of middle class family is very tough, stressful and exposed to various environmental triggers which act as a risk factor for the vitiation of Agni.

Among patients, the mood or anxiety disorder was on average diagnosed more than 3 years before the functional gastrointestinal disorder, offering opportunity for prevention. Findings support a role for adverse socioeconomic factors in development of functional gastrointestinal disorder in patients with psychological disorders.

The intestinal microbiota plays an important role in homeostasis and immune system functioning. Currently, it is believed that different environmental and genetic factors can promote changes in that microbiota. The formation of a pathogenic microflora in genetically predisposed individuals is associated with changes in epithelial function, dysregulation of the immune function of the gastrointestinal tract and persistent intestinal inflammation.

One study suggested that IBS was associated with lower socioeconomic status, a finding supported by the theory that lower income is associated with poorer health care outcomes, lower overall quality of life, and increased life stressors. It is suggested that this is due to the higher level of stress perceived by people working in professional and managerial roles. This may be because those with higher income have greater access to health care and tendency to seek help and hence receive a diagnosis. It could also reflect differing dietary choices or greater internalization of stress in higher earning groups. Our study also supports this concept.

People residing in urban community were more vulnerable to GERD than those in rural community.

EDUCATION

In Group 1 maximum patients belonged to up to graduation education category i.e. 45% followed by up to high school (40%), illiterate category (10%) and above graduation (5%) respectively.
In Group 2 maximum patients belonged to up to high school education category i.e. 45% followed by up to graduation (35%), illiterate category (20%) and above graduation (0%) respectively.

In Group 3 maximum patients belonged to up to high school education category i.e. 55% followed by up to graduation (25%), illiterate category (15%) and above graduation (5%) respectively.

In Group 4 maximum patients belonged to up to high school education category i.e. 50% followed by up to graduation (33.3%), illiterate category (10%) and above graduation (6.7%) respectively.

In Group 5 maximum patients belonged to up to high school education category i.e. 36.7% followed by up to graduation (26.7%), illiterate category (16.6%) and above graduation (20%) respectively.

Other study also showed that subjects with higher educational level (≥13 years) had a lower prevalence of GERD than other. Similarly, those with a lower educational level appeared to have an increased risk of GERD.\textsuperscript{49}

**DIET**

**Group-1:** Maximum patients of mixed diet pattern category i.e. 65% followed by 35% vegetarian diet pattern category.

**Group-2:** Maximum patients of mixed diet pattern category i.e. 55% followed by 45% vegetarian diet pattern category.

**Group-3:** Maximum patients of mixed diet pattern category i.e. 75% followed by 25% vegetarian diet pattern category.

**Group-4 and Group-5** Maximum patients of mixed diet pattern category i.e. 66.7% followed by 33.3% vegetarian diet pattern category.
In modern era lifestyle and diet pattern (food culture) is changing continuously. In origin of *Atisāra* description of meat of cow is available which denotes that meat being *Gurū, Uṣṇa* and unwholesome causes *Atisāra*.\(^5^0\)

Diet is said to be a basis of life, strength, complexion, *Ojas*, growth and development perspicuity of *Indriyas* happiness, clarity of voice, luster, pleasure, increament of *Dhātus*, intellect, health etc. entire life of individuals depends upon the food if taken in proper quantity and proper time accordingly.\(^5^1\)

During the description of quantity of food it has been said that the amount of food which, without disturbing the equilibrium (of *Doṣa* and *Dhātus*), gets digested as well as metabolism in proper time, is to be regarded as proper quantity.

Items of food like *Śāli, Śaṣṭika, and Mudag* etc. even though light in digestion by nature are to be taken according to the measurement prescribed. Similarly preparations of *Gurū* Nature food as meats of marshy and aquatic animals even though heavy in digestion by nature are also required to be taken in proper quantity. Light food articles are predominant in the qualities of *Vāyua* and *Agni*, and heavy food articles are predominant in the qualities of *Prthvi* and *Āpya Mahābhūtās*. Therefore, according to their qualities, light food articles being stimulants of appetite and by nature are considered to be less harmful even if taken in excess amount. On the other hand heavy food articles being by nature suppressor of appetite are exceedingly harmful if taken in excess amount unless there is strong power of digestion and metabolism achieved by physical exercise. Quantity of food depends on the power of digestion including metabolism.

One should not regularly take heavy food as dried meat, meat of diseased animal, pork, beef, meat of buffalo, fish, curd etc.\(^5^2\)

This type of concept is also available in *Viruddhāhara* description in which during description of *Agni Viruddha* (digestive power incompatibilities) it has been said that *Agni Viruddha* means food not taken according to digestive power. This

---234---
includes dietary practices which are not in accordance with the power of digestion (Agni) such as –

A Mandāgni Purūṣa (having mild power of digestion) - Consuming drugs and diet which are Gurū (heavy to digest) leads to formation of Āma. And Parihāra Viruddha means (compensation incompatibilities) intake of substances in contradiction to the proscriptions and prescriptions such as – Intake of hot things after taking pig meat.⁵³

All the above things ultimately lead to formation of Āma in body cause of a lot of diseases.

ADDICTION

Group-1: Maximum patients were non-addicted i.e. 57.5% followed by addiction of tea in 20%, addiction of tobacco in any form in 10%, addiction of alcohol in 7.5%, addiction of tobacco and alcohol and addiction of tobacco and tea in 2.5% cases respectively.

Group-2: Maximum patients were non-addicted i.e. 55% followed by addiction of tobacco in 30%, addiction of alcohol in 15% cases respectively.

Group-3: Maximum patients were non-addicted i.e. 75% followed by addiction of tobacco in 25% cases respectively.

Group-4: Maximum patients were non-addicted i.e. 70% followed by addiction of tobacco in 13.3%, addiction of alcohol in 10%, and addiction of tobacco and alcohol and addiction of tea in 3.3% cases respectively.

Group-5 Maximum patients were addicted to tobacco in 40%, followed by addiction of tea in 26.7%, addiction of alcohol 16.7%, non-addicted to any 10% and addiction of tobacco and alcohol 6.7% cases respectively.
Most of the people belonging to non-addiction group in our study but mostly people are fond of taking frequent tea or coffee or tobacco.

Coffee produces a laxative effect in susceptible people through stimulation of rectosigmoid motor activity, as soon as four minutes after drinking. Even modest doses of coffee can have this effect, whether or not the body is ready to dispose of the feces, resulting in loose stools. Studies show that decaffeinated coffee has a similar stimulant effect on the GI tract proving that the laxative effect is not only due to caffeine.

**Coffee Elevates Stress Hormones**

Caffeine in coffee elevates the stress hormones cortisol, epinephrine (also known as adrenaline) and norepinephrine. These hormones are responsible for increased heart rate, increased blood pressure, and a sense of “emergency alert”. Blood is diverted from the digestive system which can cause indigestion, which causes origin of different gastrointestinal disorders.\(^5^4\)

Cigarette smoking is also considered to be one of the major contributors to ulcer diseases. A large US population-based study (1997–2003) revealed that the prevalence of ulcer disease in current and former smokers (11.43 and 11.52%) is almost doubled that of never smokers (6.00%). It is also clear that the risk of peptic ulcers is associated with the quantity of tobacco use. This increased risk may be due to the adverse effects of smoking on the reduction of antioxidants or the defensive immune system locally present in the gastroduodenal mucosa. All these actions can interfere with the natural defensive mechanisms against *H. pylori* infection in the stomach and duodenum.

Under normal conditions, large amounts of hydrochloric acid exist in the stomach, which help to break down food into smaller particles for further digestion in the digestive tract. Gastric acid is neutralized in the duodenum by sodium bicarbonate produced by the pancreas. The increased secretion of stomach acid and/or a reduction
in sodium bicarbonate production in the pancreas can interfere with the protective mechanisms of the gastric mucosa and the inner layer of the duodenum, where ulcers are normally formed. Sample evidence suggests that smoking can increase the production of gastric acid, accompanied by a reduction in bicarbonate production.

They also found that tobacco smoking over a long period of time stimulated vagus nerves and induced functional parietal cells to increase pentagastrin-induced acid output in smokers.\(^{55}\)

In Group -1, 2, 4 and 5 some patients were also addicted to alcohol. GI tract is the site of alcohol absorption into the bloodstream and, to a lesser extent, of alcohol breakdown and production. Direct contact of alcoholic beverages with the mucosa that lines the upper GI tract can induce numerous metabolic and functional changes. These alterations may lead to marked mucosal damage, which can result in a broad spectrum of acute and chronic diseases.

Alcohol can interfere with the activity of the muscles surrounding the stomach and the small intestine and thus alter the transit time of food through these organs. In humans, alcohol’s effect on gastric motility depends on the alcohol concentration and accompanying meals. In general, beverages with high alcohol concentrations (i.e., above 15 percent) appear to inhibit gastric motility and thus delay the emptying of the stomach. As a result of the increased gastric transit time, bacterial degradation of the food may begin; the resulting gases may lead to feelings of fullness and abdominal discomfort.

Certain bacteria that are a major source of endotoxin may overgrow the normal bacterial flora in the jejunum of alcoholics (Bode and Bode 1992). Together with the altered permeability of the gut induced by alcohol, this process may allow an increased escape of endotoxin from the intestine into the blood vessels leading to the liver, thus increasing the liver’s exposure to these toxins and, consequently, the risk of liver injury. The hypothesis that bacterial overgrowth may be responsible for the
development of alcohol-related organ damage has been supported by the observation that sterilization of the intestine prevents alcohol-induced liver injury in animal experiments (Adachi et al. 1995).

KOŚTHA

Group-1: Maximum cases were of Mrdu Kośtha i.e. 60% followed by Madhyama Kośtha and Krūra Kośtha i.e. 20% each respectively.

Group-2: Maximum cases were of Madhyama Kośtha i.e. 40% followed by Mrdu Kośtha and Krūra Kośtha i.e. 30% each respectively.

Group-3: Maximum cases were of Mrdu Kośtha i.e. 55% followed by Madhyama Kośtha i.e. 30% and Krūra Kośtha i.e. 15% respectively.

Group-4: Maximum cases were of Mrdu Kośtha i.e. 50% followed by Krūra Kośtha i.e. 33.3% and Madhyama Kośtha i.e. 16.7% respectively.

Group-5: Maximum cases were of Mrdu Kośtha i.e. 46.7% followed by Madhyama Kośtha and Krūra Kośtha i.e. 26.7% each respectively.

In Group-1, 3, 4 and 5 the maximum patients belonged to Mrdu Kośtha. It has been described that Pitta is predominant in Mrdu Kośtha and generally the persons suffering from Pitta Pradhāna diseases may belonged to Mrdu Kośtha as Grahaṇī Gada, Atisāra Amlapitta etc.

That’s why during the description of Cikitsā of Atisāra, Pittāpūrvānurūpi Cikitsā is advised along with protection of Agni has been emphasized.

Most of the literature of Āyurveda has described Pācana (digestion) to be performed by Pācaka Pitta or Pācaka Agni. Pācaka Pitta is one of the five types of Pitta responsible for the digestion of food. When the Pācaka Rasa is reduced in quantity, Mandāgni takes place and causes Śūla (pain) in abdomen.
In case of Ajīrṇa maximum patients were of Madhyama Koṣṭha. It may be due to exacerbation and vitiation of Kapha initially in these patients.

**AGNI**

**Group-1:** Maximum cases were of Viṣamāgni i.e. 75% followed by Mandāgni i.e. 22.9 % and Samāgni i.e. 2.5% respectively.

**Group-2:** Maximum cases were of Viṣamāgni i.e. 55% followed by Mandāgni i.e. 45% and Samāgni i.e. 0% respectively.

**Group-3:** Registered cases were of Viṣamāgni and Mandāgni i.e. 50% each.

**Group-4:** Maximum cases were of Viṣamāgni i.e. 50% followed by Mandāgni i.e.36.7% and Samāgni i.e. 13.3% respectively.

**Group-5:** Maximum cases were of Viṣamāgni i.e. 50% followed by Mandāgni i.e.43.3 % and Samāgni i.e. 6.7% respectively.

In all the groups maximum patients were suffering from Viṣamāgni. Four types of Vāta namely Samāna Vāta, Apāna Vāta, Prāṇavāta and Udāna Vāta causes appropriate stimulation of the Agni resulting in appropriate digestion and absorption of food. Any disturbance in vata leads to abnormal digestion, metabolism, absorption and motility of the gut. This type of Viṣamāgni (irregularity) takes place only when this Vāyu in its un-natural state.58

Most of the people nowadays follows erratic diet pattern associated with abnormal activities leading to Viṣamāśana and causing many diseases of Ṡannavaha and Purīṣavaha Srotas.

**ĀMA**

**Group-1:** 92.5% cases had presence of Āma in body and 7.5% cases had absence of Āma in body.
Discussion

**Group-2:** 95% cases had presence of Āma in body and 5% cases had absence of Āma in body.

**Group-3:** 90% cases had presence of Āma in body and 10% cases had absence of Āma in body.

**Group-4:** 80% cases had presence of Āma in body and 20% cases had absence of Āma in body.

**Group-5:** 93.3% cases had presence of Āma in body and 6.7% cases had absence of Āma in body.

In Āyurveda it has been described that Āma is the Sarva Doṣa prakopaṇam i.e. cause of most of the diseases that’s why in most of diseases Āma is present in body.

**PRAKṚTI.**

**Group-1:** 55% cases were of Vāta-Pittaja Prakṛti followed by Pittaja-Kaphaja 25% and Vāta-Kaphaja i.e. 20% respectively.

**Group-2:** 55% cases were of Pittaja-Kaphaja Prakṛti followed by 35% cases of Vāta-Pittaja Prakṛti and 10% of Vāta-Kaphaja Prakṛti respectively.

**Group-3:** 50% cases were of Vāta-Pittaja Prakṛti followed by 30% cases of Vāta-Kaphaja Prakṛti, and 20% Pittaja-Kaphaja Prakṛti respectively.

**Group-4:** 60% cases were of Vāta-Pittaja Prakṛti followed by Pittaja-Kaphaja 33.3%, and Vata-Kaphaja i.e. 6.7% respectively.

**Group-5:** 50% cases were of Vāta-Pittaja Prakṛti followed by Pittaja-Kaphaja 36.7%, and Vāta-Kaphaja i.e. 13.3% respectively.
If a person either of Vāta dominating, Pitta dominating or Kapha dominating Prakṛti indulges either Vāta aggravating factor, Pitta aggravating factor or Kapha aggravating factor causes vitiation of relative Doṣa and leads to origin of diseases.

**SROTODUŚṬI**

**Group-1**: 57.5% had Atipravṛtti followed by Saṅga (42.5%) respectively.

**Group-2**: 85% had Saṅga followed by Atipravṛtti (10%) and Vimārgagamanam (5%) respectively.

**Group-3**: All the cases had Atipravṛtti i.e. 100%.

**Group-4**: 86.7% had Saṅga followed by Vimārgagamanam (10%) and Śīrāñām granthi (3.3%) respectively.

**Group-5**: 66.7% had Vimārgagamanam followed by Atipravṛtti (33.3%) respectively.

In group 1 and 3 maximum patients had Atipravṛtti Srotoduśṭi means improper excessive flow than normal physiology. Grahaṇī Gada has its peculiar feature as Muhurbaḍḍha-sīthilam muhumala pravṛtti (frequent watery stool or constipation) and maximum patient’s registered were in stage of watery stool at that time.

Atisāra denotes its feature with its name means Ati Saraṇam Atisāra means excessive liquid mala in large amount is known as Atisāra.

In group 2 and 4 maximum patients had Saṅga Srotoduśṭi means obstruction in free flow through these channels.

In group 5 maximum patients had Vimārgagamanam Srotoduśṭi means leaving its own path and entering into other path. During normal process of digestion secreted HCl goes downward after mixing with food but when this HCl comes upward due to any reason it is called leaving its own path.
KOŚṬHA AND PRAKR̥TI

i) Annavaha & Purīsavaha Sroto Vikāra Patients

Out of 70 cases of VP Prakṛti maximum cases i.e. 52.9% were of Mrdu Kośṭha followed by 45.7% cases of Krūra Kośṭha and 1.4% cases of Madhyama Kośṭha respectively.

Out of 35 cases of VK Prakṛti maximum cases i.e. 37.1% were of Madhyama Kośṭha followed by 34.3% cases of Krūra Kośṭha and 28.6% cases of Mrdu Kośṭha respectively.

Out of 35 cases of PK Prakṛti maximum cases i.e. 71.4% were of Mrdu Kośṭha followed by 22.9% cases of Madhyama Kośṭha and 5.7% cases of Krūra Kośṭha respectively.

Pitta is located in between Pakvāśaya and Āmāśaya which digests the four types of food by unseen factor, separates the Doṣas, Rasa, Mūtra and Purīṣa and remaining there itself it helps the other sites of Pitta elsewhere in the body by bestowing properties of Pitta, this is known as Pācakāgni. This shows the main culprit in hindrance of all these function is vitiation of Pācakāgni. Maximum cases of Vāta-Pitta Prakṛti were of Mrdu Kośṭha which shows maximum cases Vāta-Pitta Prakṛti has Pitta in Udirṇa Avasthā. In this condition if individual indulges Pitta aggravating food articles, may vitiates Pitta, thus proper functions of Pācakāgni may hampered.

This concept may also be implanted in case of Pittaja-Kaphaja Prakṛti in this study. Purgation is easy for those with laxed bowel, because their Grahaṇī is dominated by Pitta and is least affected by Kapha and Vāta.

Ācaya Hemādri has described that if there is either Vāta-Pitta Prakṛti or Kaphaja- Pittaja or Sannipātaja Prakṛti, in most of cases Kośṭha will be Mrdu.
ii) Control Group

Study reveals that out of 28 cases Mrdu Koṣṭha 57.1% cases were of PK Prakṛti followed by 42.9% cases of VP Prakṛti.

Out of 25 cases Madhyama Koṣṭha 88% cases were of PK Prakṛti followed by 12% cases of VP Prakṛti.

Out of 7 cases Krūra Koṣṭha 71.4% cases were of VP Prakṛti followed by 14.3% cases of VK and PK Prakṛti.

KOŚTHA AND SROTODUŚTI IN ANNAVAHA, PURĪŚAVAHA SROTO VIKĀRA

Out of 55 cases of Atipravyṛti Srotoduśti maximum cases i.e. 65.5% were of Mrdu Koṣṭha followed by 21.8% cases of Madhyama Koṣṭha and 12.7% cases of Krūra Koṣṭha respectively.

Out of 60 cases of Saṅga Srotoduśti maximum cases i.e. 40% were of Mrdu Koṣṭha followed by 35% cases of Krūra Koṣṭha and 25% cases of Madhyama Koṣṭha respectively.

1 case of Śirāṇām Granthi was of Krūra Koṣṭha.

Out of 24 cases of Vīmārgagamanam Srotoduśti maximum cases i.e. 41.7% were of Mrdu Koṣṭha followed by 33.3% cases of Madhyama Koṣṭha and 25% cases of Krūra Koṣṭha respectively.

SĀMĀNYA LAKṢAṆA OF GRAHAṆĪ GADA

Study reveals that Laulya (greediness) was present in 82.5% cases followed by Arocaka, Śaṣṭhiparvarūk and Dāhavāna (80%), Trṣṇā (75%), Aṭisṛṣṭam vibaddham vā dravam (72.5%), Jvara (70%), Vairasya (60%), Tamaka (57.5%), Kṛṣa (47.5%),
Discussion

Chardanam (45%), Praseka (25%), Lohāmagandhitākmla udgāra (15%) and Śūnapādakara (5%) respectively.

SĀMĀNYA LAKṢAṆA OF AMALĀPITTA

Study reveals that Gaurava and Avipāka were present in maximum cases i.e. (90%) followed by Klama (86.7%), Aruci (83.3%), Ḥṛṣṭaṇṭhadāha (80%), Utkleśa and Tiktāmlaudgāra (56.7%) respectively.

SĀMĀNYA LAKṢAṆA OF AJĪRṇA

Study reveals that Sadanam, Arocaka and Avipāka were present in all cases i.e. (100%) followed by Aṅgamarda, Gaurava, Vibandho vā pravṛttir vā (95%), Śirso rūk (85%), Viśtambha (80%) Pryṭhakaṭigraha (70%), Bhrama, Trṣṇā, Mārūta mūḍhatā and Pravāṁnām (65%), Jvara (55%), Chardi (40%) Jṛmbhā (25%) and Mūrcchā (0%) respectively.

OBJECTIVE CRITERIA

Haematological and Serological changes

1) Haemoglobin status in diagnosed Annavaha, Purīṣavaha Sroto Vikāra patients

Mean of hemoglobin is 12.645±0.637 in Group-1, 12.590±2.094 in Group-2, 12.779±1.519 in Group-3, 12.502±1.700 in Group-4 and 12.902±1.451 in Group-5. For the comparison between groups one way variance (ANOVA Test) shows insignificant value (p=0.907) which mean there is no significant difference between hemoglobin mean status of all groups.

But the mean value of Hb is towards lower limits as lower limits of normal of hemoglobin concentration of the blood of adult men and women as assessed by WHO is 13 gm/dl for men and 12 gm/dl for women.
Discussion

Stomach secretes intrinsic factor for vitamin B12 absorption. The small intestine serves most of the nutrient absorptive function of the gut. If there is improper functioning of GIT, may lead to anemia.

*Vāta, Kapha, Āma,* environmental factors and the immune system individually or combined together influence the physiological functions of the body and favors the development of anemia.

2) **Total leucocytes and differential count in diagnosed Annavaha, Purīṣavaha Sroto Vikāra patients**

Mean of Total leukocyte count (TLC) is 7900.5±2178.09 in Group-1, 7254.5±1402.67 in Group-2, 8025.5±1904.60 in Group-3, 8049.7±1495.40 in Group-4 and 7568.0±1337.29 in Group-5. For the comparison between groups one way variance (ANOVA Test) shows insignificant value (p=0.468) which mean there is no significant difference between total leukocyte count mean status of all groups.

*Vāta, Kapha, Āma,* environmental factors and the immune system individually or combined together influence the immune process of the disease resulting into variation of white blood cell count.

3) **Differential count of white blood cells in Annavaha, Purīṣavaha Sroto Vikāra patients**

Out of 140 registered cases, maximum frequency of cases (93.57%) had neutrophil count within normal range but 6.43% cases suffered from neutrophilia.

Out of 140 registered cases, maximum frequency of cases (95.71%) had lymphocyte count within normal range but 4.29% cases suffered from lymphopenia.

Out of 140 registered cases, maximum frequency of cases (85.71%) had monocyte count within normal range but 14.29% cases suffered from monocytopenia.
Discussion

Out of 140 registered cases, maximum frequency of cases (84.29%) had eosinophil count within normal range followed by eosinophilia in 12.85% and 2.86% cases had eosinopenia.

Out of 140 registered cases, maximum frequency of cases (90.71%) had basophil count 0 while 9.29% cases had basophil count equal to 1 i.e. all the cases had basophil count within normal range.60

4) Total bilirubin in diagnosed *Annavaha, Purīṣavaha Sroto Vikāra* patients

Above table reveals that mean of Total bilirubin is 0.910±0.524 in Group-1, 0.705±0.406 in Group-2, 0.763±0.250 in Group-3, 0.743±0.260 in Group-4 and 0.780±0.487 in Group-5. For the comparison between groups one way variance (ANOVA Test) shows insignificant value (p=0.346) which mean there is no significant difference between total bilirubin mean status of all groups.

5) Conjugated bilirubin in diagnosed *Annavaha, Purīṣavaha Sroto Vikāra* patients

Mean of conjugated bilirubin is 0.374±0.189 in Group-1, 0.332±0.224 in Group-2, 0.406±0.198 in Group-3, 0.321±0.134 in Group-4 and 0.306±0.180 in Group-5. For the comparison between groups one way variance (ANOVA Test) shows insignificant value (p=0.261) which mean there is no significant difference between conjugated bilirubin mean status of all groups.

6) Conjugated bilirubin in diagnosed *Annavaha, Purīṣavaha Sroto Vikāra* patients

Mean of unconjugated bilirubin is 0.544±0.414 in Group-1, 0.373±0.207 in Group-2, 0.334±0.193 in Group-3, 0.425±0.209 in Group-4 and 0.473±0.415 in Group-5. For the comparison between groups one way variance (ANOVA Test) shows insignificant value (p=0.133) which mean there is no significant difference between Unconjugated bilirubin mean status of all groups.
7) **SGOT in diagnosed Annavaha, Purīśavaha Sroto Vikāra patients**-

Mean of SGOT is 41.875±17.459 in Group-1, 43.150±18.888 in Group-2, 53.700±19.684 in Group-3, 45.633±30.142 in Group-4 and 39.866±15.810 in Group-5. For the comparison between groups one way variance (ANOVA Test) shows insignificant value (p=0.203) which mean there is no significant difference between SGOT mean status of all groups.

8) **SGPT in diagnosed Annavaha, Purīśavaha Sroto Vikāra patients**-

Mean of SGPT is 41.875±17.459 in Group-1, 41.400±14.379 in Group-2, 52.600±21.009 in Group-3, 41.566±26.892 in Group-4 and 38.000±15.580 in Group-5. For the comparison between groups one way variance (ANOVA Test) shows insignificant value (p=0.120) which mean there is no significant difference between SGPT mean status of all groups.

9) **Alkaline phasphatase in diagnosed Annavaha, Purīśavaha Sroto Vikāra patients**

Mean of alkaline phasphatase is 122.90±52.59 in Group-1, 97.70±32.28 in Group-2, 108.70±36.93 in Group-3, 116.90±59.32 in Group-4 and 110.80±51.37 in Group-5. For the comparison between groups one way variance (ANOVA Test) shows insignificant value (p=0.426) which mean there is no significant difference between alkaline phasphatase mean status of all groups.

10) **Total protein in diagnosed Annavaha, Purīśavaha Sroto Vikāra patients**-

Mean of total protein is 7.584±0.704 in Group-1, 7.325±0.545 in Group-2, 7.535±0.556 in Group-3, 7.489±0.639 in Group-4 and 7.677±0.522 in Group-5. For the comparison between groups one way variance (ANOVA Test) shows insignificant value (p=0.363) which mean there is no significant difference between total protein mean status of all groups.
11) **Stool examination in diagnosed Annavaha, Purīṣavaha Sroto Vikāra patients**

Study reveals that out of 140 registered cases maximum cases i.e. 52.86% had undigested food particle in stool followed by no abnormal finding in 39.29%, undigested food particle and occult blood in 5% and cyst of E.histolytica in 2.85% cases respectively.

**Group-1:** 47.5% had undigested particle followed by no any abnormal finding in 42.5% and undigested particle with occult blood in 10% respectively.

**Group-2:** 65% had undigested particle followed by no any abnormal finding in 35% cases.

**Group-3:** 35% had no abnormal finding followed by undigested particle in 30%, cyst of E. histolytica in 20% and undigested particle with occult blood in 15% respectively.

**Group-4:** 56.7% had undigested particle followed by no any abnormal finding in 43.3%.

**Group-5:** 63.3% had undigested particle followed by no any abnormal finding in 36.7%.

Maximum patients in all five groups had undigested food particles, shows that food is not digested properly due to vitiated Agni and vitiated Agni is the leading cause of formation of Āma in body.

12) **Diagnosis based on modern parameters of Annavaha, Purīṣavaha Sroto Vikāra patients**

Out of 40 cases in Group-1 maximum i.e. 55% cases diagnosed as IBS-A followed by IBS-D 25% and as IBS-C 20% respectively.
Out of 20 cases in Group-2 maximum i.e. 60% cases diagnosed as dyspepsia and as GERD 20% respectively.

Out of 20 cases in Group-3 maximum i.e. 50% cases diagnosed as diarrhoea followed by colitis, amoebiasis 20% each and chronic diarrhoea 10% respectively.

Out of 30 cases in Group-4 maximum i.e. 53.4% cases diagnosed as peptic ulcer disease followed by 30% cases as dyspepsia, 6.7% as colitis and 3.3% cases as crohn disease, IBS and ileatitis respectively.

Out of 30 cases in Group-5 maximum i.e. 43.3% cases diagnosed as GERD followed by 33.3% cases as peptic ulcer disease, 20% as non-ulcer dyspepsia and 3.3% cases as enteritis respectively.

13) Colonoscopy findings in Annavaha, Purīṣavaha Sroto Vikāra patients

Out of 40 cases in Group-1 maximum i.e. 92.5% cases had no any abnormal finding followed by 7.5% cases had colonic ulcers respectively.

Out of 20 cases in Group-2 all i.e. 100% cases had no any abnormal finding.

Out of 20 cases in Group-3 maximum i.e. 75% cases had no any abnormal finding followed by colonic ulcers in 20% cases and colonic stricture in 5% respectively.

Out of 30 cases in Group-4 maximum i.e. 83.3% cases had no any abnormal finding followed by colonic ulcers in 6.7% cases and ileal nodule, ileal ulcers with erosion and inflammation in 3.3% each respectively.

Out of 30 cases in Group-5 all i.e. 100% cases had no any abnormal finding.

14) Endoscopy findings in Annavaha and Purīṣavaha Sroto Vikāra patients
Out of 40 cases in Group-1 maximum i.e. 92.5% cases had no any abnormal finding followed by eosophageal varices, Grade A GERD and Grade B oesophagitis in 2.5% cases each respectively.

Out of 20 cases in Group-2 maximum i.e. 40% cases had no any abnormal finding followed by antral gastritis in 20%, fundal gastritis in 15%, Grade A GERD and fundal and antral gastritis in 10% each and Grade B GERD in 5% cases respectively.

Out of 20 cases in Group-3 maximum i.e. 95% cases had no any abnormal finding followed by inflammatory mucosa in 5%,

Out of 30 cases in Group-4 maximum i.e. 60% cases had no any abnormal finding followed by superficial gastritis in 20%, antral gastritis in 10% and fundal and antral gastritis, inflammation and Lax-LES in 3.3% each respectively.

Out of 30 cases in Group-5 maximum i.e. 30% cases had no any abnormal finding followed by Grade-B GERD in 23.3%, fundal and antral gastritis in 16.7%, Grade-A GERD and fundal gastric duodenitis in 10% each, non-specific chronic duodenitis in 6.7% and multiple duodenal erosions in 3.3% respectively.

15) Ultrasonography/MRI/CT Scan findings in Annavaha and Purishavaha Sroto Vikara patients

Out of 40 cases in Group-1 maximum i.e. 65% cases had no any abnormal finding followed by dilated bowel loops in 15%, mild hepatomegaly in 12.5%, and mild fatty infiltration in 5% and chronic liver disease in 2.5% respectively.

Out of 20 cases in Group-2 maximum i.e. 80% cases had no any abnormal finding followed by fatty liver in 20%.

Out of 20 cases in Group-3 maximum i.e. 65% cases had no any abnormal finding followed by dilated bowel loops in 20%, fatty liver in 10% and Crohn’s disease in 5% respectively.
Out of 30 cases in Group-4 maximum i.e. 66.7% cases had no any abnormal finding followed by dilated bowel loops in 10%, inflammatory bowel in 6.7% and APD, bilateral hemorrhagic cyst, hepatomegaly with mild ascites, mild fatty infiltration and non specific mesenteric lymphadenopathy in 3.3% each respectively.

Out of 30 cases in Group-5 maximum i.e. 86.7% cases had no any abnormal finding followed by dilated bowel loops, inflammatory bowel, fatty liver, bilateral renal calculus and cholelithiasis and cholecystitis in 3.3% each respectively.

In relation to discrimination of Koṣṭha in dissimilar individuals of different Prakṛti may be due to specific characters of Vāta, Pitta and Kapha as described in various literatures. In different types of Prakṛti there may be diversity in gut motility which is regulated by various factors.

There are some hypothesis are given related to gut motility and most of the studies are done over animals.

a) **Intrinsic Gastrointestinal Macrophages: Their Phenotype and Role in Gastrointestinal Motility**\(^6^4\)

According to it macrophages are involved in many processes that control gastrointestinal motility in health and disease. In addition to being the mediators of responses to injury and disease, they appear to have roles in the development and regulation of cells in the healthy GI muscularis propria. This diversity of roles is reflected in many mechanisms for macrophage activation and up-regulation of various phenotypic markers.

b) **Regulation of gastrointestinal motility by Ca\(^{2+}\)/calmodulin-stimulated protein kinase II**\(^6^2\)

Gastrointestinal (GI) motility ultimately depends upon the contractile activity of the smooth muscle cells of the tunica muscularis. Integrated functioning of multiple tissues and cell types, including enteric neurons and interstitial cells of Cajal (ICC) is necessary to generate coordinated patterns of motor activity that control the
movement of material through the digestive tract. Higher regulatory systems (enteric neurons, ICC and hormones) control and coordinate the gut motility. However, GI smooth muscle cells are equipped with intrinsic regulatory pathways that can amplify or oppose signalling from these higher regulatory systems.

c) Nitric Oxide–Sensitive Guanylyl Cyclase Is Dispensable for Nitrergic Signalling and Gut Motility in Mouse Intestinal Smooth Muscle\textsuperscript{63}

Lack of NO-GC in smooth muscle cells does not impair NO-induced relaxation of GI tissues or GI motility. The NO receptor guanylyl cyclase in GI smooth muscle is therefore dispensable for nitrergic signalling in mice. In conclusion, their data indicate that NO-GC in GI smooth muscle cells appears to be dispensable for nitrergic relaxation.

d) A role for O-1602 and G protein-coupled receptor GPR55 in the control of colonic motility in mice\textsuperscript{64}

GPR55 is strongly expressed on myenteric neurons of the colon and it is selectively involved in the regulation of colonic motility. Since activation of GPR55 receptors is not associated with central sedation, the GPR55 receptor may serve as a future target for the treatment of colonic motility disorders.

e) Effects of NT on gastrointestinal motility and secretion, and role in intestinal inflammation\textsuperscript{65}

It is well established that interactions of neuropeptides with several cell types at various parts of the intestine are critically involved in intestinal pathophysiology. Among them, neurotensin has been identified as an important mediator in the development and progress of several gastrointestinal functions and disease conditions, exerting its effects by interacting with specific receptors that exert direct and indirect effects on nerves, epithelial cells, and cells of the immune and inflammatory systems. Studies discussed here point to an important role for NT in the physiology of the GI tract, and the pathophysiology and symptoms associated with several disorders of the small and large bowel. These include gut inflammation due to enterotoxin- mediated
inflammatory diarrhoea, chronic inflammatory bowel disease, irritable bowel syndrome, as well as secretory diarrhoea. Although most of the evidence linking NT to the pathophysiology of GI disorders is based in animal models, recent results from normal or diseased human colon further implicate NT as an important peptide in human disease. Extrinsic ghrelin in the paraventricular nucleus increases small intestinal motility in rats by activating central growth hormone secretagogue and enteric cholinergic receptors. Ghrelin is a brain-gut peptide that regulates gastrointestinal (GI) motility. They hypothesized that the excitatory effect of ghrelin on the paraventricular nucleus (PVN) increases GI motility by activating the central growth hormone secretagogue receptor (GHSR) and central neuropeptide Y(NPY) signalling pathways, leading to increased enteric cholinergic activity. Ghrelin positively regulates GI motility by exciting both central and enteric neurons, including those of the PVN, by activating GHSR and NPY pathways, and peripheral muscarinic acetyl choline receptors.