

STUDY OF CORRELATION BETWEEN FUNCTIONS
OF PURISHAVAHA SROTAS AND JATHARAGNI

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In Kriya Sharira subject

Submitted by
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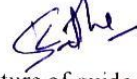
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॥ श्री गणेशाय नमः ॥

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Vd. Neha Dattatraya Gadgil

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Abbreviations

No.	संक्षेप	विस्तृत
1	च.	चरक संहिता
2	सु.	सुश्रुत संहिता
3	अ. सं.	अष्टाङ्गसंग्रह
4	अ. हृ.	अष्टाङ्गहृदय
5	मा. नि.	माधवनिदान
6	शा. सं.	शाङ्गधर संहिता
7	यो. र.	योगरत्नाकर
8	सू.	सूत्रस्थान
9	नि.	निदानस्थान
10	वि.	विमानस्थान
11	शा.	शारीरस्थान
12	चि.	चिकित्सास्थान
13	सि.	सिद्धिस्थान
14	उ.	उत्तरतंत्र / उत्तरस्थान

INTRODUCTION

Srotas is the unique concept of Ayurveda. These are responsible for proper origin, development, functioning and transport of respective Sharira Bhava.

Purishavaha Srotas is one of the Bahirmukha Srotas. As name indicates, it is related with formation and excretion of Purisha. Any malfunctioning of Purishavaha Srotas may lead to abnormality in Purisha. This is applicable to other way also. Any abnormality in Purisha may affect functions of Purishavaha Srotas.

Purisha is the end product of digestion. Digestion is the main function of Jatharagni. So Jatharagni has pivotal role in formation of Purisha. Hampered functioning of Jatharagni leads to many diseases.

Now days, due to change in lifestyle, problems related to digestion are increasing. Along with this, circumstances related to defecation like obstructed defecation syndrome, constipation are increasing. For this also, cause is same, irregularity in daily routine. Proper digestion of ingested food and proper evacuation of waste product have key role in healthy life.

In various Samhita, many ways are described for assessment of different Sharira Bhava. Darshana, Sparshana and Prashna are the tools for these assessments. As well as Pratyaksha Pramana, Anumana Pramana, Yukti Pramana and Aptopadesha Pramana are the foundation of assessments. Like assessment of Agni is done by Jaranashakti, is based on Anumana Pramana. In case of Purishavaha Srotas, there is no direct clue to evaluate the status of functions of Purishavaha Srotas. References are there about Purisha and Purishavaha Srotas Dushti hetu as well as Dushti Lakshana. By considering all related references, here is an attempt to find out the correlation between functions of Purishavaha Srotas and Jathargni.

AIM

Aim –

To study correlation between functions of Purishavaha Srotas and Jatharagni.

**RESEARCH QUESTION AND
HYPOTHESIS**

Research question -

Is there any correlation between functions of Purishavaha Srotas and Jatharagni?

Null hypothesis -

There is no correlation between functions of Purishavaha Srotas and Jatharagni.

Alternate hypothesis -

There is correlation between functions of Purishavaha Srotas and Jatharagni.

REVIEW OF LITERATURE

Previous work done –

- A study of relation between Purishavegadharana and Jatharagni – Vd. NehaDattatrayaGadgil, Vd. Abhijit Vilas Chitnis (at Post Graduate level) under MUHS, Nashik.

This study reveals that, Purishavegadharana causes Jatharagni Vikruti. Purishavega Dharana is one of the causes of Purishavaha Srotodushti. The current study has two factors – Purishavaha Srotas and Jatharagni, which are common in these studies.

- A study of Apanavayu Karma in individuals practicing Atyasana (excessive sitting) – Vd. KetanPatil, Dr. KalpanaSathe (at post graduate level) under MUHS, Nashik.

This study reveals that, Atyasana causes disturbance in Apana Vayu Karma. Excretion of Purisha i.e. Purishavega comes under influence of Apana Vayu. Purishavega is common factor in these studies.

Srotas -

Vyutpatti -

Word Srotas is derived from √सृ धातु.

Srotas are the channels through which Sravana i.e. carrying of Dhatu takes place¹.

Nirukti -

- The space between Sharira Bhava through which transportation takes place and which is not Siara and Dhamani, is called as Srotas².
- Srotas are the channels where transformation and transportation of Dhatu take place³.

Synonyms of Srotas⁴ -

Following are the synonyms of Srotas.

- Srotas – channel or course
- Sira – vessel or tubular structure
- Dhamani - vessel or tubular structure
- Rasayani – canal or channel
- Rasavahini - which carries Rasa
- Nadi - tubular structure
- Pantha - way
- Marga – way or path

¹स्रवणात् स्रोतांसि ।

च. सू. ३० / १२ p.185

²मूलात् खादन्तरं देहे प्रसृतं तु अभिवाहि यत् । स्रोतः तदिति विज्ञेयं सिराधमनिवर्जितम् ॥

सु. शा. ९ / १३ p.387

³ स्रोतांसि खलु परिणमनमापद्यमानानाम् धातूनाम् अभिवाहीनि भवन्ति अयनार्थेन ।

च. वि. ५ / ३ p.249

⁴स्रोतांसि, सिराः, धमन्यः, रसायन्यः, रसवाहिन्यः, नाड्यः, पन्थानः, मार्गाः, शरीरच्छिद्राणि, संवृतासंवृतानि, स्थानानि, आशयाः, निकेताश्चेति शरीरधात्ववकाशानाम् लक्ष्यालक्ष्याणाम् नामानि भवन्ति ।

च. वि. ५ / ३ p.251

- Samvruta and Asamvruta Sharirachidra – covered or uncovered opening of body
- Sthana – accommodation, place
- Ashaya – place, seat
- Niketa – house, habitation

Number of Srotas - According to some, number of Srotas is countable; according to some it is enumerable¹.

Types of Srotas -

There are many types of Srotas². Every Sharirabhava has its own Srotas.

Srotas can be catagerised in many ways -

- Depending upon opening³ -
 - Antarmukha - having internal opening
 - Bahirmukha - having external opening
- Depending upon Sharirabhava -
 - Doshavaha Srotas - related to Dosha. All Srotas are considered as Doshavaha Srotas.
 - Dhatusvaha Srotas - related to Dhatus like Rasavaha Srotas, Raktavaha Srotas etc.
 - Malavaha Srotas - related to Mala like Purishavaha Srotas, Mutravaha Srotas etc.

¹अतिबहुत्वात् खलु केचित् अपरिसंख्येयानि आचक्षते स्रोतांसि, परिसंख्येयानि पुनरन्ये ।

च. वि. ५ / ४ p.250

²यावन्तः पुरुषे मूर्तिमन्तो भावविशेषः तावन्त एवास्मिन् स्रोतसाम् प्रकारविशेषाः ।

च. वि. ५ / ३ p.249

³श्रवणनयनवदनघ्राणगुदमेढ्राणि नव स्रोतांसि नराणां बहिर्मुखानि, ऐतान्येव स्त्रीणां अपराणि च त्रीणि

द्वे स्तनयोः अधस्ताद् रक्तवहं च ।

सु. शा. ५ / १० p.364

धमनीव्याकरणोदितानि तु अन्तर्मुखानि ।

डल्हण टीका सु. शा. ५ / १० p.364

- Manovaha Srotas - related to Manas. There is no direct reference of Manovaha Srotas. But involvement of Manovaha Srotas in diseases is explained.
- Upadhatuvaha Srotas - related to Upadhatu like Stanyavaha Srotas, Artavavaha Srotas.

Swarupa of Srotas¹ -

Srotas are like their respective Sharira Bhava. Some srotas are Vrutta (circular), Sthula (big), Anu (small), having Dirgha Akruti (long), like trailing plant (climber). According to Ashtanga Hrudaya Samhita, Srotas Mukha are Sukshma, spread all over the body and get nourished by Rasa Dhatu².

Samanya Dushti Hetu of Srotas -

Ahara (food) and Vihara (activity) which are similar to Dosha Guna and opposite to Dhatuguna are responsible for vitiation of Srotas³.

Samanya Dushti Lakshana of Srotas -

Atipravrutti (excess flow), Sanga (obstruction), Siaragranthi (obstruction in channels) and Vimrgagamana (deviation from normal path) are common Dushti Lakshana of Srotas⁴.

¹स्वधातुसमवर्णानि वृत्तस्थूलाणि अणुनि च । स्रोतांसि दीर्घाणि आकृत्या प्रतानसदृशानि च ॥

च. वि. ५ / २५ p.252

²बिसानामिव सुक्ष्माणि दूरं प्रविस्तृतानि च । द्वाराणि स्रोतसां देहे रसो यैरुपचियते ॥

अ. हृ.शा. ३ / ४६ p.393

³आहारश्च विहारश्च यः स्यात् दोषगुणैः समः । धातुभिः विगुणश्चापि स्रोतसां स प्रदूषकः ॥

च. वि. ५ / २३ p.252

⁴अतिप्रवृत्तिः संगो वा सिराणां ग्रन्थयोऽपि वा । विमार्गगमनं चापि स्रोतसां दुष्टिलक्षणम् ॥

च. वि. ५ / २४ p.252

Description of Srotas -

Srotas are described on the basis of their Mulasthana as well as abnormality occurring in that Srotas. Mulasthana means originating place¹. In Charaka Samhita, oddity of Srotas is described as Dushti Lakshana and in Sushruta Samhita it is described as Viddha Lakshana.

Mulasthana of Srotas -

Table 1 - Mulasthana of Srotas

मूलस्थान of स्रोतस्	According to चरक संहिता ²	According to सुश्रुत संहिता ³
प्राणवह	हृदय, महास्रोतस्	हृदय, रसवाहिधमनी
अन्नवह	आमाशय, वामपार्श्व	आमाशय, अन्नवाहिधमनी
उदकवह	तालु, क्लोम	तालु, क्लोम

¹मूलमिति प्रभवस्थानम् ।

च. वि. ५ / ८ चक्रपाणि टीका p.251

²तत्र प्राणवहानाम् स्रोतसां हृदयमूलं महास्रोतश्च । उदकवहानां स्रोतसां तालुमूलं क्लोम च । अन्नवहानां स्रोतसां आमाशयो मूलं वामं च पार्श्वम् । रसवहानां स्रोतसां हृदयं मूलं दश च धमन्यः । शोणितवहानां स्रोतसां यकृतमूलं प्लीहा च । मांसवहानां स्रोतसां स्नायुमूलं त्वक् च । मेदोवहानां स्रोतसां वृक्कौ मूलं वपावहनं च । अस्थिवहानां स्रोतसां मेदोमूलं जघनं च । मज्जवहानां स्रोतसां अस्थीनिमूलं सन्ध्यश्च । शुक्रवहानां स्रोतसां वृषणौ मूलं शेषश्च । मूत्रवहानां स्रोतसां बस्तिमूलं वंक्षणौ च । पुरीषवहानां स्रोतसां पक्वाशयो मूलं स्थूलगुदं च । स्वेदवहानां स्रोतसां मेदोमूलं लोमकूपाश्च ।

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³तत्र प्राणवहे द्वे तयोर्मूलं हृदयं रसवाहिन्यश्च धमन्यः । अन्नवहे द्वे तयोर्मूलं आमाशयोऽन्नवाहिन्यश्च धमन्यः । उदकवहे द्वे तयोर्मूलं तालु क्लोम च । रसवहे द्वे तयोर्मूलं हृदयं रसवाहिन्यश्च धमन्यः । रक्तवहे द्वे तयोर्मूलं यकृत्प्लीहानौ रक्तवाहिन्यश्च धमन्यः । मांसवहे द्वे तयोर्मूलं स्नायुत्वचं रक्तवहाश्च धमन्यः । मेदोवहे द्वे तयोर्मूलं कटीवृक्कौ च । मूत्रवहे द्वे तयोर्मूलं बस्तिर्मैद्वं च । पुरीषवहे द्वे तयोर्मूलं पक्वाशयो गुदं च । शुक्रवहे द्वे तयोर्मूलं स्तनौ वृषणौ च । आर्तववहे द्वे तयोर्मूलं गर्भशय आर्तववाहिन्यश्च धमन्यः ।

सु. शा. ९ / १२ p.386

रसवह	हृदय, दश धमनी	हृदय, रसवाहिधमनी
रक्तवह	यकृत, प्लीहा	यकृत, प्लीहा, रक्तवाहिधमनी
मांसवह	स्नायु, त्वचा	स्नायु, त्वचा, रक्तवाहिधमनी
मेदवह	वृक्कौ, वपावहन	कटि, वृक्कौ
अस्थिवह	मेद, जघन	--
मज्जावह	अस्थि, सन्धि	--
शुक्रवह	वृषण, शोफ	स्तन, वृषणौ
आर्तववह	--	गर्भशय, आर्तववहिधमनी
मूत्रवह	बस्ति, वंक्षण	बस्ति, मेदू
पुरीषवह	पक्वाशय, स्थूलगुद	पक्वाशय, गुद
स्वेदवह	मेद, लोमकूप	--

Pranavaha Srotas - According to Charaka Samhita, Mulasthan of Pranavaha Srotas is Hrudaya and Mahasrotas. According to Sushrut Samhita, Mulasthan of Pranavaha Srotas is Hrudaya and Rasavahi Dhamani.

Annavaha Srotas - According to Charaka Samhita, Mulasthan of Annava Srotas is Amashaya and Vamaparshva. According to Sushrut Samhita, Mulasthan of Annava Srotas is Amashaya and Annavahi Dhamani.

Udakavaha Srotas - According to Charaka Samhita and Sushrut Samhita, Mulasthan of Udakavaha Srotas is Talu and Kloma.

Rasavaha Srotas -According to Charaka Samhita, Mulasthan of Rasavaha Srotas is Hrudaya and Dashadhamani. According to Sushrut Samhita, Mulasthan of Rasavaha Srotas is Hrudaya and Rasavahini Dhamani.

Raktavaha Srotas -According to Charaka Samhita, Mulasthan of Raktavaha Srotas is Yakrut and Pleea. According to Sushrut Samhita, Mulasthan of Raktavaha Srotas is Yakrut, Pleea and Raktavahini Dhamani.

Mansavaha Srotas -According to Charaka Samhita, Mulasthana of Mansavaha Srotas is Snayu and Twacha. According to Sushrut Samhita, Mulasthana of Raktavaha Srotas is Snayu, Twacha and Raktavahini Dhamani.

Medovaha Srotas - According to Charaka Samhita, Mulasthana of Medovaha Srotas is Vrukka and Vapavahana. According to Sushrut Samhita, Mulasthana of Medovaha Srotas is Kati and Vrukka.

Asthivaha Srotas - According to Charaka Samhita, Mulasthana of Asthivaha Srotas is Meda and Jaghana. In Sushruta Samhita, Asthivaha Srotas is not mentioned.

Majjavaha Srotas - According to Charaka Samhita, Mulasthana of Majjavaha Srotas is Asthi and Sandhi. In Sushruta Samhita, Majjavaha Srotas is not mentioned.

Shukravaha Srotas - According to Charaka Samhita, Mulasthana of Shukravaha Srotas is Vrushana and Shepha. According to Sushrut Samhita, Mulasthana of Shukravaha Srotas is Stana and Vrushana.

Artavavaha Srotas - According to Sushruta Samhita, Mulasthana of Artavavaha Srotas is Garbhashaya and Artavavahini Dhamani. In Charaka Samhita, Artavavaha Srotas is not mentioned.

Mutravaha Srotas - According to Charaka Samhita, Mulasthana of Mutravaha Srotas is Basti and Vankshana. According to Sushrut Samhita, Mulasthana of Mutravaha Srotas is Basti and Medhra.

Purishavaha Srotas - According to Charaka Samhita, Mulasthana of Purishavaha Srotas is Pakwashaya and Sthulaguda. According to Sushrut Samhita, Mulasthana of Purishavaha Srotas is Pakwashaya and Guda.

Swedavaha Srotas - According to Charaka Samhita, Mulasthana of Swedavaha Srotas is Meda and Lomakupa. In Sushruta Samhita, Swedavaha Srotas is not mentioned.

Vikruti of Srotas -

Table 2 - Vikruti of Srotas

विकृति स्रोतस्	of According to चरक संहिता दृष्टि लक्षण ¹	According to सुश्रुत संहिता विद्ध लक्षण ¹
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¹प्रदुष्टानां तु खलु ऐषां इदं विशेषविज्ञानं भवति, तद्यथा – अतिसृष्टमतिबद्धं कुपितमल्पाल्पमभीक्षणं वा सशब्दशूलमुच्छ्वसन्तं दृष्ट्वा प्राणवहान्यस्य स्रोतांसि प्रदुष्टानीति विद्यात् ।

जिह्वाताल्लोष्ठकण्ठक्लोमशोषं पिपासां चातिप्रवृद्धां दृष्ट्वा उदकवहान्यस्य स्रोतांसि प्रदुष्टानीति विद्यात् । अनन्नभिलषणमरोचकविपाकौ छर्दिं च दृष्ट्वा अन्नवहान्यस्य स्रोतांसि प्रदुष्टानीति विद्यात् ।

अतिसृष्टमतिबद्धं प्रकुपितमल्पाल्पमभीक्षणं वा बहलं सशूलं मूत्रयन्तं दृष्ट्वा मूत्रवहान्यस्य स्रोतांसि प्रदुष्टानीति विद्यात् । कृच्छ्रेणाल्पाल्पं सशब्दशूलमतिद्रवमतिग्रथितमतिबहु चोपविशन्तं दृष्ट्वा पुरीषवहान्यस्य स्रोतांसि प्रदुष्टानीति विद्यात् । अस्वेदनमतिस्वेदनं पारुष्यमतिश्लक्ष्णतामङ्गस्य परिदाहं लोमहर्षं च दृष्ट्वा स्वेदवहान्यस्य स्रोतांसि प्रदुष्टानीति विद्यात् ।

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अश्रद्धा चारुचिचास्यवैरस्यमरसज्ञता । हृल्लासो गौरवं तन्द्रा साङ्मर्दोज्वरस्तमः ॥

पाण्डुत्वं स्रोतसां रोधः क्लैब्यं सादः कृशाङ्गता । नाशोऽग्नेः रयथाकालं वलयः पलितानि च ॥

रसप्रदोषज रोगाः वक्ष्यन्ते रक्तदोषजाः । कुष्ठवीसर्पपीडकारक्तपित्तमसृग्दरः ॥

गुदमेढ्रास्यपाकश्च प्लीहागुल्मोऽथविद्रधिः । नीलिका कामला व्यङ्गः पिप्लवस्तिलकालकाः ॥

दद्रुश्चर्मदलं श्वित्रं पामा कोठास्रमण्डलम् । रक्तप्रदोषात् जायन्ते, शृणु मांसप्रदोषजान् ॥

अधिमांसार्बुदं कीलं गलशालूकशुण्डिके । पूतिमांसालजीगण्डगण्डमालोपजिह्विका ॥

विद्यान्मांसाश्रयान्, मेदः संश्रयास्तु प्रचक्षमहे । निन्दितानि प्रमेहाणां पूर्वरूपाणि यानि च ॥

अध्यस्थिदन्तौ दन्तास्थिभेदशूलं विवर्णता । केशलोमनखश्मश्रुदोषाश्चास्थिप्रदोषजाः ॥

रुक् पर्वणां भ्रमो मूर्च्छा दर्शनं तमसस्तथा । अरुषां स्थूलमूलानां पर्वजानां च दर्शनम् ॥

मज्जप्रदोषात्, शुक्रस्य दोषात् क्लैब्यं अहर्षणम् । रोगि वा क्लीबं अल्पायुर्विरूपं वा प्रजायते ॥

न चास्य जायते गर्भः पतति प्रस्रवत्यपि । शुक्रं हि दुष्टं सापत्यं सदारं बाधते नरम् ॥

च. सू. २८ / ९ – १९ p.179

प्राणवह	अतिसृष्टमतिबद्धं कुपितमल्पाल्पमभीक्ष्णं सशब्दशूलमुच्छ्वसन्तं	आक्रोशनविनमनमोहनभ्रमणवेपनानि मरणं
अन्नवह	अनन्नभिलषणमरोचकविपाकौ छर्दि	शूलोऽन्नद्वेषश्छर्दिः पिपासाऽन्ध्यं मरणं
उदकवह	जिह्वाताल्वोष्ठकण्ठक्लोमशोषं अतिप्रवृद्धं पिपासां	पिपासा सद्योमरणं
रसवह	अश्रद्धा अरुचि आस्यवैरस्य अरसज्ञता हृल्लासो गौरवं तन्द्रा साङ्मर्दोज्वरस्तमः पाण्डुत्वं स्रोतसां रोधः क्लैब्यं सादः कृशाङ्गता अयथाकाले अग्निनाशः, अयथाकाले वलयः पलितानि च	शोषः प्राणविविद्धवच्च मरणं तल्लिङ्गानि
रक्तवह	कुष्ठवीसर्पपीडकारक्तपित्तमसृग्दरः गुदमेढ्रास्यपाकश्च प्लीहागुल्मोऽथविद्रधिः नीलिका कामला व्यङ्गः पिप्लवस्तिलकालकाः दद्रुश्चर्मदलं श्वित्रं पामा कोठास्रमण्डलम्	श्यावाङ्गता ज्वरो दाहः पाण्डुता शोणितागमनं रक्तनेत्रता
मांसवह	अधिमांसार्बुदं कीलं गलशालूकशुण्डिका पूतिमांसालजीगण्डगण्डमालोपजिह्विका	श्वयथुः मांसशोषः सिराग्रन्थयो मरणं
मेदवह	प्रमेहाणां पूर्वरूपाणि	स्वेदागमनं स्निग्धाङ्गता तालुशोषः

¹तत्र विद्धस्य आक्रोशनविनमनमोहनभ्रमणवेपनानि मरणं वा भवति, ... आध्मानं शूलोऽन्नद्वेषश्छर्दिः
पिपासाऽन्ध्यं मरणं च, ... पिपासा सद्योमरणं च, ...शोषःप्राणविविद्धवच्च मरणं तल्लिङ्गानि च, ...
श्यावाङ्गता ज्वरो दाहः पाण्डुता शोणितागमनं रक्तनेत्रता च, ... श्वयथुःमांसशोषःसिराग्रन्थयो मरणं
च, ...स्वेदागमनं स्निग्धाङ्गता तालुशोषः स्थूलशोफता पिपासा च, ... अनद्धबस्तिता मूत्रनिरोधः
स्तब्धमेढ्रता च, ... आनाहो दुर्गन्धता ग्रथितान्नता च, ... क्लीबता चिरात् प्रसेको रक्तशुक्रता च,
.....वन्ध्यात्वं मैथुनासहिष्णुत्वमार्तवनाशश्च, ... ।

		स्थूलशोफता पिपासा
अस्थिवह	अध्यस्थिदन्तौ दन्तास्थिभेदशूलं विवर्णता केशलोमनखश्मश्रुदोषाः	--
मज्जावह	रुक् पर्वणां भ्रमो मूर्च्छा दर्शनं तमसः दर्शनम् अरुषां स्थूलमूलानां पर्वजानां	--
शुक्रवह	क्लैब्यं अहर्षणम् रोगि वा क्लीबं अल्पायुर्विरूपं वा प्रजायते, न चास्य जायते गर्भः पतति प्रस्रवत्यपि, शुक्रं हि दुष्टं सापत्यं सदारं बाधते नरम्	क्लीबता चिरात् प्रसेको रक्तशुक्रता
आर्तववह	--	वन्ध्यात्वं मैथुनासहिष्णुत्वमार्तवनाश
मूत्रवह	अतिसृष्टमतिबद्धं प्रकुपितमल्पाल्पमभीक्ष्णं बहलं सशूलं मूत्रयन्तं	अनद्धबस्तिता मूत्रनिरोधः स्तब्धमेढ्रता
पुरीषवह	कृच्छ्रेणाल्पाल्पं सशब्दसूलमतिद्रवमतिग्रथितमतिबहु चोपविशन्तं	आनाहो दुर्गन्धता ग्रथितान्त्रता
स्वेदवह	अस्वेदनमतिस्वेदनं पारुष्यमतिश्लक्ष्णतामङ्गस्य परिदाहं लोमहर्षं	--

Pranavaha Srotas - According to Charaka Samhita, Lakshana of Vikruta Pranavaha Srotas are Atisrushta, Atibaddha, Kupita, Alpalpa, Sashabda and Sashula Shvasana. According to Sushrut Samhita, Viddha Lakshana of Pranavaha Srotas are Akroshana, Vinamana, Mohana, Bhramana, Vepana and Marana.

Annavaha Srotas - According to Charaka Samhita, Lakshana of Vikruta Annavaaha Srotas are Anannabhilashana, Arochaka, Avipaka and Chhardi. According to Sushrut Samhita, Viddha Lakshana of Annavaaha Srotas are Shula, Annadvesha, Chhardi, Pipasa, Andhya and Marana.

Udakavaha Srotas - According to Charaka Samhita, Lakshana of Vikruta Udakavaha Srotas are Shosha of Jivha, Talu, Kantha and Kloma, Atipipasa. According to Sushrut Samhita, Viddha Lakshana of Udakavaha Srotas are Pipasa and Marana.

Rasavaha Srotas - According to Charaka Samhita, Lakshana of Vikruta Rasavaha Srotas are Ashraddha, Aruchi, Asyavairasya, Arasajnata, Hrullasa, Gourava, Tandra, Angamarda, Jwara, Tama, Pandutva, Srotorodha, Klaibya, Angasada, Krushangata, Agninasha and Ayathakale Vali-Palita. According to Sushrut Samhita, Viddha Lakshana of Rasavaha Srotas are Shosha and similar to Pranavaha Srotas Viddha Lakshana.

Raktavaha Srotas - According to Charaka Samhita, Lakshana of Vikruta Raktavaha Srotas are Kusthha, Visarpa, Pidaka, Raktapitta, Asrukadara, Paka of Guda, Asya and Medhra, Pleea, Gulma, Vidradhi, Nilika, Kamala, Vyanga, Piplu, Tila, Kalaka, Dadru, Charmadala, Shvitra, Pama, Kotha and Asramandala. According to Sushrut Samhita, Viddha Lakshana of Raktavaha Srotas are Shyavangata, Jwara, Daha, Panduta, Shoniyapravrutti and Raktanetrata.

Mansavaha Srotas - According to Charaka Samhita, Lakshana of Vikruta Mansavaha Srotas are Adhimansa, Arbuda, Kila, Galashaluka, Galashundika, Putimansa, Alaji, Ganda, Gandamala and Upajivhika. According to Sushrut Samhita, Viddha Lakshana of Raktavaha Srotas are Shvayathu, Mansashosha, Siragranthi and Marana.

Medovaha Srotas - According to Charaka Samhita, Lakshana of Vikruta Medovaha Srotas are like Purvarupa of Prameha. According to Sushrut Samhita, Viddha Lakshana of Medovaha Srotas are Apravrutti of Sweda, Snigdhanga, Talushosha, Sthulashopha and Pipasa.

Asthivaha Srotas - According to Charaka Samhita, Lakshana of Vikruta Asthivaha Srotas are Adhyasthi, Adhidanta, Bheda and Shula of Danta and Asthi, Vivarnata of Kesha, Loma, Nakha and Shmashru. In Sushruta Samhita, Asthivaha Srotas is not mentioned.

Majjavaha Srotas - According to Charaka Samhita, Lakshana of Vikruta Majjavaha Srotas are Parvaruk, Bhrma, Murchha, Tamasadarshana and Arushi at Sthulaparvamula. In Sushruta Samhita, Majjavaha Srotas is not mentioned.

Shukravaha Srotas - According to Charaka Samhita, Lakshana of Vikruta Shukravaha Srotas are Klaibya, Aharshana, congenital disease, impotency or Virupata, no formation of Garbha, or Garbhapata. According to Sushrut Samhita, Viddha Lakshana of Shukravaha Srotas are Klaibya, Late Pravartana of Shukra and Pravartana of Shukra with blood.

Artavavaha Srotas - According to Sushruta Samhita, Viddha Lakshana of Artavavaha Srotas are Vandhyatva, inability to do Maithuna and absence of Artava. In Charaka Samhita, Artavavaha Srotas is not mentioned.

Mutravaha Srotas - According to Charaka Samhita, Lakshana of Vikruta Mutravaha Srotas are Atisrushta, Atibaddha, Prakupita, Alpalpa, Abhikshna, Bahala and Sashula Mutra Pravrutti. According to Sushrut Samhita, Viddha Lakshana of Mutravaha Srotas are Anaddhabastita, Mutranirodha and Stabdhamedhrata.

Purishavaha Srotas - According to Charaka Samhita, Lakshana of Vikruta Purishavaha Srotas are Krucchrena, Alpalpa, Sashabda, Sashula, Atidrava, Atigrathita, Atibahu and Upavishanta. According to Sushrut Samhita, Viddha Lakshana of Purishavaha Srotas are Anaha, Durgandhi and Grathitantrata.

Swedavaha Srotas - According to Charaka Samhita, Lakshana of Vikruta Swedavaha Srotas are Aswedana, Atiswedana, Parushata and Atishlakshnata and Anga Paridaha. In Sushruta Samhita, Swedavaha Srotas is not mentioned.

Samanya Chikitsa of Srotas Dushti -

Table 3 - Samanya Chikitsa of Srotas Dushti

स्रोतस्	चिकित्सा according to चरक संहिता ¹
प्राणवह	श्वासिकी क्रिया
अन्नवह	आमप्रदोषिकी
उदकवह	तृष्णोपशमनी
रसवह	लङ्घन
रक्तवह	विधिशोणितिक अध्याय ² – रक्तपित्तहरीं क्रिया, विरेकमुपवास, रक्तविस्रावण
मांसवह	शोधन कर्म, शस्त्रक्षाराग्निकर्म
मेदवह	Explained in अष्टौनिन्दितिक अध्याय
अस्थिवह	पञ्चकर्माणि, तित्तरस, क्षीरसर्पि बस्ति
मज्जावह	मधुर, तिक्त रसात्मक आहार, औषध, व्यवाय, व्यायाम, कालिक शोधन
शुक्रवह	मधुर, तिक्त रसात्मक आहार, औषध, व्यवाय, व्यायाम, कालिक शोधन
मूत्रवह	मौत्रकृच्छ्रिकी
पुरीषवह	अतिसारिकी
स्वेदवह	ज्वरचिकित्सकी

¹ प्राणोदकान्नवाहानां दुष्टानां श्वासिकी क्रिया । कार्या तृष्णोपशमनी तथैवामप्रदोषिकी ॥

मूत्रविट्स्वेदवाहानां चिकित्सा मौत्रकृच्छ्रिकी । तथाऽतिसारिकी कार्या तथा ज्वरचिकित्सकी ॥

च. वि. ५ / २६, २८ p.252

रसजानां विकाराणां सर्वं लङ्घनमौषधम् । विधिशोणितिकेऽध्याये रक्तजानां भिषक्जितम् ॥

मांसजानां तु संशुद्धिः शस्त्रक्षाराग्निकर्म च । अष्टौनिन्दितिकेऽध्याये मेदोजानां चिकित्सितम् ॥

अस्थ्याश्रयाणां व्याधीनां पञ्चकर्माणि भेषजम् । बस्तयः क्षीरसर्पिषि तित्कोपहितानि च ॥

मज्जशुक्रसमुत्थानां औषधं स्वादुतिक्तम् । अन्नं व्यवायव्यायामौ शुद्धिः काले च मात्रया ॥

च. सू. २८ / २५ – २८ p.179-180

²कुर्यात् शोणितरोगेषु रक्तपित्तहरीं क्रियाम् । विरेकमुपवासश्च स्रावणं शोणितश्च च ॥

च.सू. २४ / १८ p.125

Pranavaha Srotas - Diseases of Pranavaha Srotas should be treated like Shvasa.

Annavaha Srotas - in case of Annavaaha Srotas Vikruti, treatment should be given like Amadosha.

Udakavaha Srotas -Udakavaha Srotas Vikruti should be treated as Trushna Vyadhi.

Rasavaha Srotas -Langhana is treatment for all Rasavaha Srotas Vikara.

Raktavaha Srotas - In case of Raktavaha Srotas Vyadhi, Chikitsa of Raktapitta, Virechana, Upavasa and Raktamokshana are choice of treatment.

Mansavaha Srotas -Shodhana Karma, Shastrakarma and Ksharakarma are ways to treat Mansavaha Srotas Vikruti.

Medovaha Srotas -Treatment of Medovaha Srotas Dushti is like Atisthula and Atikrusha which is explained in Ashtoinindita Adhyaya.

Asthivaha Srotas -Panchakarma and Basti along with Tiktarasa, Kheera and Sarpi are approaches of Asthivaha Srotas Vyadhi.

Majjavaha Srotas and Shukravaha Srotas -For Vikruti of Majjavaha and Shukravaha Srotas, manner of treatment is same. It consists of Ahara and medicine which contains Madhura and Tikta Rasa, Vyavaya, Vyayama and Shodhana according to Kala.

Mutravaha Srotas -Mutravaha Srotas Vyadhi should be treated like Mutrakruhra.

Purishavaha Srotas -Treatment of Atisara should be followed in case of Purishavaha Srotas Vikruti.

Swedavaha Srotas -Principles of Jwara Chikitsa should be pursued in case of Swedavaha Srotas Vikruti.

Purishavaha Srotas -

Purishavaha Srotas is composed of Pakwashaya and Guda¹. In Charaka Samhita, Sthula Guda word is used. Stula Guda means three Wali of Guda. Wali means kold of skin². These Gudawali are - Pravahini, Visarjini and Samvarani³.

Srotas are responsible for formation and manifestation of respective Sharirabhava. Likewise, formation and manifestation of Purisha takes place in Purishavaha Srotas. Finally, excretion of Purisha takes place under the influence of Apana Vata through Guda.

Causes for Purishavaha Srotas Dushti -

Sandharana, Atyashana, Ajirnahana and Adhyashana are causes for Purishavaha Srotas Dushti⁴.

Sandharana means Vegadharana. Vega is Purishavega i.e. urge of defecation. Purishavegadharana means avoiding urge of defecation. Adhovata (flatus) Vegadharana also affects Purishavaha Srotas. Ayashana means eating excess quantity of food. Ajirnahana means eating when previously ingested food is not digested. Adhyashana means frequent eating.

¹पुरीषवहानां स्रोतसां पक्वाशयो मूलं स्थूलगुदं च ॥ च. वि. ५ / ८ p.251

पुरीषवहे द्वे तयोर्मूलं पक्वाशयो गुदं च । सु.शा. ९ / १२ p.386

²गुदवलीरिति वलिस्तुत्वक्संकोचः । डल्हण टीका सु. नि. २ / ४ p.271

³तस्मिन् वलयस्तिस्त्रोऽर्ध्याङ्गुलसंभूताः प्रवाहणी विसर्जनी संवरणी । सु. नि. २ / ५ p.272

प्रवाहयतीति प्रवाहणी, विसृजतीति विसर्जनी, संवृणोतीति संवरणी ॥

डल्हण टीका सु. नि. २ / ५ p.272

⁴संधारणात् अत्यशनात् अजीर्णाशनाध्यशनात्तथा । वर्चोवाहीनि दुष्यन्ति दुर्बलाग्नेः कृशस्य च ॥

च. वि. ५ / २१ p.252

Purishavaha Srotas Dushti Lakshana -

Krucchrena, Alpalpa, Sashabda, Sashula, Atidrava, Atigrathita, Atibahu and Upavishanta are Lakshana of Purishavaha Srotas Dushti¹.

- Krucchrena means with difficulty or discomfort.
- Alpalpa means small quantity of stool is passed frequently. Satisfaction is not there after bowel movement.
- Sashabda means passage of stool with sound.
- Sashula means with pain.
- Atidrava means consistency of stool liquid.
- Atigrathita means consistency of stool is hard.
- Atibahu means more in quantity.
- Upvishanta means long time is required for passage of stool. Person has to sit for long time for evacuation.

Samanya Chikitsa of Purishavaha Srotas Dushti -

In case of Purishavaha Srotas Dushti, treatment has to be done according to principles of Atisara Chikitsa². I.e. first Langhana³ and Pachana should be done. Then if required Stambhana should be done.

¹कृच्छ्रेणाल्पाल्पं सशब्दसूलमतिद्रवमतिग्रथितमतिबहुं चोपविशन्तं दृष्ट्वा पुरीषवहान्यस्य स्रोतांसि

प्रदुष्टानीति विद्यात् ।

च.वि. ५ / ८ p.251

²तथाऽतिसारिकी कार्या ॥

च. वि. ५ / २६, २८ p.252

³तत्रादौ लघनं कुर्यात् ॥

सु. उ. ४० / २५

Pakwashaya -

The word 'Pakwashaya' is made up from two words - Pakwa + Ashaya. Pakwa means digested (in terms of food) and Ashaya means place¹. So Pakwashaya means the place where Pakwa (Anna) (digested food) stays².

Pakwashaya is listed as one of the Koshtanga³. Pakwashaya is also listed in Ashaya of Sharira⁴. Pakwashaya comes in Abhyantara Rogamarga⁵. Pakwashaya is Matruja Avayava⁶.

Synonyms of Pakwashaya -

- पवनाशय—place of Vayu
- मलाशय—receptacle of feculent matter
- मलाधार—support or place of Mala
- पुरीषाधार—support or place of Purisha
- पुरीषाधान – receptacle of feculent matter
- पक्वाधान – receptacle of digested food

¹आशयो अधिष्ठानम्

सु.शा. ५ / ८ p.364

²पक्व अन्नस्य पुरीषतां प्राप्तस्य यः आधारः स पक्वशब्देन उच्यते ।

अ. हृ. शा. ३ / ११ अरुणदत्त p.387

³ पञ्चदश कोष्ठाङ्गानि, तद्यथा – नाभिश्च, हृदयं चक्लोम च यकृत् च प्लीहा च, वृक्कौ च बस्तिश्च, पुरीषाधारश्च, आमशयश्च, पक्वाशयश्च, उत्तरगुदं च अधरगुदं च, क्षुद्रान्नं च, स्थूलान्नं च वपावहनं चेति ।

च. शा. ७ / १० p.338

⁴सप्त च आधाराः ।

अ. हृ. शा. ३ / ११ p.387

⁵कोष्ठः पुनरुच्यते महास्रोतः शरीरमध्यं महानिम्नम् आमपक्वाशयश्चेति पर्यायशब्दैः तन्ने स रोगमार्ग आभ्यन्तरः।

च. सू. ११ / ४८ p.77

⁶यानि खलु अस्य गर्भस्य मातृजानि, यानि चास्य मातृतः सम्भवतः सम्भवन्ति पुरीषाधानं च आमशयश्च पक्वाशयश्चोत्तरगुदं चाधरगुदं च स्थूलान्नं च ।

च. शा. ३ / ६ p.310

Formation of Pakwashaya -

Pakwashaya is formed from essence of Rakta and Kapha. When the essence of Rakta and Kapha are being digested by Pitta, Vayu runs through it resulting into formation of Antra, Guda and Basti¹.

Relation between Pakwashaya and Dosha -

Vata, Pitta and Kapha are related to Pakwashaya.

- Vata Dosha - Pakwashaya is special Sthana of Vata Dosha². Pakwashaya is said as place of Apana Vata which is one of the subtypes of Vata Dosha³.
- Pitta Dosha - Pitta takes part in formation of Pakwashaya⁴.
- Kapha Dosha - Pakwashaya is formed from the Prasada Bhaga of Kapha⁵.

Relation between Pakwashaya and Dhatu -

Rakta Dhatu, Mansa Dhatu and Meda Dhatu are related to Pakwashaya.

- Rakta Dhatu - Pakwashaya is formed from the Prasada Bhaga of Rakta Dhatu⁴. When Pitta does Pachana Bhaga of Rakta and Kapha, Vayu runs through it. Thus Pakwashaya is formed.

¹असृजः श्लेष्मणश्चापि यः प्रसादो परो मतः । तं पच्यमानं पित्तेन वायुश्चापि अनुधावति ॥

ततोऽस्यान्त्राणि जायन्ते गुदं बस्तिश्च देहिनः । सु. शा. ४ / २६ p.357

² पक्वाशयकटिसक्थिश्रोत्रास्थिस्पर्शनेन्द्रियम् । स्थानं वातस्य तत्रापि पक्वाधानं विशेषतः ॥

अ. हृ. सू. १२ / १ p.192

³ अपानं स्थानं आन्त्रस्य ।

च. चि. २८ / १० p.616

⁴तं पच्यमानं पित्तेन वायुश्चापि अनुधावति । ततोऽस्यान्त्राणि जायन्ते गुदं बस्तिश्च देहिनः ।

सु. शा. ४ / २६ p.357

⁵असृजः श्लेष्मणश्चापि यः प्रसादो परो मतः । ततोऽस्यान्त्राणि जायन्ते गुदं बस्तिश्च देहिनः ।

सु. शा. ४ / २६ p.357

- Mansa Dhatu –Pakwashaya is lined by Twacha which is Upadhatu of Mansa Dhatu.
- Meda Dhatu - Sushira Snayu are at end part of Pakwashaya¹. Snayu are Upadhatu of Meda Dhatu².

Relation between Pakwashaya and Mala -

Purisha, Mutra and Adhovata are related to Pakwashaya.

- Purisha - Pakwashaya is site of Purisha³. Also Pakwashaya is Sthana of Purishadhara Kala⁴ and Purishavaha Srotas⁵.
- Mutra - According to Ayurveda, Pakwashaya is the site of generation of Mutra⁶.
- Adhovata - Aharamala Swarupa Vayu is formed during third stage of Avasthapaka i.e Katu Avasthapaka at Pakwashaya⁷.

Function of Pakwashaya -

Function of Pakwashaya can be summarized as follows -

¹आमपक्वाशयान्तेषु बस्तौ च सुषिराः खलु ।

सु. शा. ५ / ३२ p.367

² मेदसः स्नायुसंभवः ।

च. चि. १५ / १७ p.514

³मलाशयः स च पक्वाशयः कथितः ।

शा. सं. पू. खं. ५ / ८ आढमल्ल टीका

⁴पञ्चमी पुरीषधरा नाम या अन्तःकोष्ठे मलमभिविभजते पक्वाशयस्था ।

सु. शा. ४ / १६ p.356

⁵पुरीषवहानां स्रोतसां पक्वाशयमूलं स्थूलगुदं च ।

च. वि. ५ / ८ p.251

⁶पक्वाशयगताः तत्र नाड्यो मूत्रवहास्तु याः । तर्पयन्ति सदा मूत्रं सरितः सागरं यथा ॥

सु. नि. ३ / २१ p.279

⁷पक्वाशयं तु प्राप्तस्य शोष्यमाणस्य वह्निना । परिपिण्डितपक्वस्य वायुः स्यात् कटुभावतः ॥

च. चि. १५ / ११ p.512

- Malavibhajana - segregation of Mala into Drava Mala and Ghana Mala takes place at Pakwashaya.
- Purishapindikarana - Purisha gets formed form.
- Purishavahana - carrying Purisha from Pakwashaya to Guda for excretion.
- Mutra Utpatti - Mutra gets formed in Pakwashaya.
- Katu Bhava Udirana - As Pakwashaya is site of third stage of Avasthapaaka - Katu Avasthapaaka¹.
- Vayu Utpatti - Aharamala Svarupa Vayu gets ormed in Pakwashaya.
- As Sthana of Vata Dosha specially Apana Vata
- As site of Pradhana Chikitsa of Vata Dosha - Basti which is main treatment of Vata

Vyadhi in which Pakwashaya is involved –

- Atisara
- Pravahika
- Arsha

Large intestine -

The large intestine or colon is the terminal portion of the GI tract. It extends from ileocecal valve up to anus.

Large intestine is divided into following parts¹ -

- Cecum with appendix
- Ascending colon
- Transverse colon
- Descending colon
- Sigmoid colon or pelvic colon
- Rectum
- Anal canal

Functional anatomy of Large Intestine -

- Large intestine is about 1.5 m (5 ft) long and 6.5 cm (2.5 in.) in diameter
- It is attached to the posterior abdominal wall by its mesocolon, which is a double layer of peritoneum
- The opening from the ileum into the large intestine is guarded by a fold of mucous membrane called the ileocecal sphincter(valve), which allows materials from the small intestine to pass into the large intestine.
- Cecum is a small pouch hanging inferior to the ileocecal valve, about 6 cm (2.4 in.) long.
- Appendix or vermiform appendix is a twisted, coiled tube, attached to the cecum, measuring about 8 cm (3 in.) in length.
- The open end of the cecum merges with a long tube called the colon (food passage), which is divided into ascending, transverse, descending, and sigmoid portions.
- The ascending colon ascends on the right side of the abdomen, reaches the inferior surface of the liver, and turns abruptly to the left to form the right colic (hepatic)flexure.

¹(K Sembulingam, Prema Sembulingam, 2012, p. 266)

- The colon continues across the abdomen to the left side as the transverse colon.
- It curves beneath the inferior end of the spleen on the left side as the left colic (splenic) flexure and passes inferiorly to the level of the iliac crest as the descending colon.
- The sigmoid colon (sigm-S-shaped) begins near the left iliac crest, projects medially to the midline, and terminates as the rectum at about the level of the third sacral vertebra.
- The rectum, the last 20 cm (8 in.) of the GI tract, lies anterior to the sacrum and coccyx.
- The terminal 2–3 cm (1 in.) of the rectum is called the anal canal.
- The mucous membrane of the anal canal is arranged in longitudinal folds called anal columns that contain a network of arteries and veins.
- The opening of the anal canal to the exterior, called the anus, is guarded by an internal anal sphincter of smooth muscle (involuntary) and an external anal sphincter of skeletal muscle (voluntary).
- Normally these sphincters keep the anus closed except during the elimination of feces.

Histology of the Large Intestine¹ -

Wall of large intestine is formed by four layers of structures like any other part of the gut - mucosa, submucosa, muscularis, and serosa.

1. Mucosa or mucus layer -

- The mucosa consists of simple columnar epithelium, lamina propria (areolar connective tissue), and muscularis mucosae (smooth muscle)
- The epithelium contains mostly absorptive and goblet cells. The absorptive cells function primarily in water absorption; the goblet cells secrete mucus that lubricates the passage of the colonic contents.
- Both absorptive and goblet cells are located in long, straight, tubular intestinal glands (crypts of Lieberkühn) that extend the full thickness of the mucosa.

¹(Gerard J. Tortora, Bryan Derrickson, 2009, p. 961)

- Compared to the small intestine, the mucosa of the large intestine does not have as many structural adaptations that increase surface area.

2. Submucosa or submucous layer -

- Not well developed
- The submucosa of the large intestine consists of areolar connective tissue.

3. Muscularis mucosa or muscular layer -

- The muscularis consists of an external layer of longitudinal smooth muscle and an internal layer of circular smooth muscle.
- The longitudinal muscle fibers of large intestine are arranged in the form of three long bands called tenia coli.
- The length of the tenia coli is less when compared to the length of large intestine. Because of this, the large intestine is made into series of pouches called haustra, which give the colon a puckered appearance.

4. Serosa or serous layer -

- The serosa of the large intestine is part of the visceral peritoneum.
- Small pouches of visceral peritoneum filled with fat are attached to teniae coli and are called omental (fatty) appendices.

Functions of large intestine¹ -

- 1. Absorptive function** - Large intestine plays an important role in the absorption of various substances such as:
 - Water - Although 90% of all water absorption occurs in the small intestine, the large intestine absorbs enough to make it an important organ in maintaining the body's water balance.
 - Electrolytes
 - Organic substances like glucose
 - Alcohol
 - Drugs like anesthetic agents, sedatives and Steroids.
- 2. Formation and expulsion of feces** - After the absorption of nutrients, water and other Substances, the unwanted substances in the large Intestine form feces. This is excreted out.

¹(K Sembulingam, Prema Sembulingam, 2012, p. 267)

3. **Excretory function** - Large intestine excretes heavy metals like mercury, Lead, bismuth and arsenic through feces.
4. **Synthetic function** - Bacterial flora of large intestine synthesizes folic acid, Vitamin b12 and vitamin k.
5. **Secretory function** - Large intestine secretes mucin and inorganic substances like chlorides and bicarbonates. Large intestinal juice has pH of 8.0, contains 99.5% of water and 0.5% of solids
 - Strong acids formed by bacterial action in large intestine are neutralized by the alkaline nature of large intestinal juice.
 - Mucin present in the secretion of large intestine lubricates the mucosa of large intestine and the bowel contents, so that, the movement of bowel is facilitated.
 - Mucin also protects the mucus membrane of large intestine by preventing the damage caused by mechanical injury or chemical substances.

Mechanical digestion in large intestine¹ -

Mechanical digestion means movements of large intestines are required for mixing, Propulsive and absorptive functions.

- The slow passage of chyme from the ileum into the cecum is regulated by the action of the ileocecal sphincter. As food passes through the ileocecal sphincter, it fills the cecum and accumulates in the ascending colon.
- **Haustral churning** - In this process, the haustra remain relaxed and become distended while they fill up. When the distension reaches a certain point, the walls contract and squeeze the contents into the next haustrum.
- **Peristalsis** - occurs at a slower rate (3–12 contractions per minute) than in more proximal portions of the tract.
- **Mass peristalsis** - A strong peristaltic wave that begins at about the middle of the transverse colon and quickly drives the contents of the colon into the rectum. Mass peristalsis usually takes place three or four times a day, during or immediately after a meal.

¹(Gerard J. Tortora, Bryan Derrickson, 2009, p. 962)

Chemical Digestion in the Large Intestine¹ -

- The final stage of digestion occurs in the colon through the activity of bacteria that inhabit the lumen.
- Bacteria from large intestine ferment any remaining carbohydrates in chyme and release hydrogen, carbon dioxide, and methane gases. These gases contribute to flatus (gas) in the colon, termed flatulence when it is excessive.
- Bacteria also convert any remaining proteins to amino acids and break down the amino acids into simpler substances: indole, skatole, hydrogen sulfide, and fatty acids.
- Some of the indole and skatole is eliminated in the feces and contributes to their odor; the rest is absorbed and transported to the liver, where these compounds are converted to less toxic compounds and excreted in the urine.
- Bacteria also decompose bilirubin to simpler pigments, including stercobilin, which gives feces their brown color.
- Bacterial products that are absorbed in the colon include several vitamins needed for normal metabolism, among them some B vitamins and vitamin K.

Absorption and Feces Formation in the Large Intestine

By the time chyme has remained in the large intestine 3–10 hours, it has become solid or semisolid because of water absorption and is now called feces.

Diseases where Large intestine is involved –

- Colitis
- Ulcerative colitis
- Obstructed bowel syndrome
- Irritable bowel syndrome
- Inflammatory bowel disease

¹(Gerard J. Tortora, Bryan Derrickson, 2009, p. 963)

Guda -

Guda is considered as the end part of Mahasrotas¹. Guda has two parts - Uttara Guda i.e. upper part and Adhara Guda i.e. lower part². Uttara Guda holds Purisha and Adhara Guda excrete Purisha³. Guda is Matruja Avayava⁴. It enlisted in Koshtanga⁵ and Dashapranayatana⁶. Guda is Sadyapranahara Mansa Marma⁷.

Formation of Guda -

Guda is formed from essence of Rakta and Kapha. When the essence of Rakta and Kapha are being digested by Pitta, Vayu runs through it resulting into formation of Antra, Guda and Basti⁸.

Relation between Guda and Dosha -

Vata, Pitta and Kapha are related to Guda.

¹स्थूलान्त्रप्रतिबद्धं वातवर्चोनिस्सनं गुदं नाम ।

सु. शा. ६ / २५ p.373

²उत्तरगुदाधरगुदौ गुदोत्तराधरभागौ ।

चक्रपाणि टीका च.शा. ३ / ६ p.310

³ उत्तरगुदम् – यत्र पुरीषमवतिष्ठते । येन तु पुरीषं निष्क्रामति तदधरगुदं च । चक्रदत्त

⁴यानि खलु अस्य गर्भस्य मातृजानि, यानि चास्य मातृतः सम्भवतः सम्भवन्ति पुरीषाधानं च आमशयश्च पक्वाशयश्चोत्तरगुदं चाधरगुदं च स्थूलान्त्रं च । च. शा. ३ / ६ p.310

⁵पञ्चदश कोष्ठाङ्गानि, ... उत्तरगुदं च अधरगुदं च, ... । च. शा. ७ / १० p.338

⁶दशैवायतनानि आहुः प्राणाः येषु प्रतिष्ठिता । शंखौ मर्मत्रयं कण्ठो रक्तं शुक्रौजसी गुदम् ॥

च. सू. २९ / ३ p.181

⁷तत्र गुद मांसमर्माणि ।

सु. शा. ६ / ७ p.370

..... गुदम् । च घ्नन्ति सद्यो हतानि तु ॥

सु. शा. ६ / ९ p.370

⁸असृजः श्लेष्मणश्चापि यः प्रसादो परो मतः । तं पच्यमानं पित्तेन वायुश्चापि अनुधावति ॥

ततोऽस्यान्त्राणि जायन्ते गुदं बस्तिश्च देहिनः ।

सु. शा. ४ / २६ p.357

- Vata Dosha - Guda is Sthana of Vata Dosha¹, especially of its one of the subtypes Apana Vata².
- Pitta Dosha - Pitta takes part in formation of Guda³.
- Kapha Dosha - Guda is formed from the Prasada Bhaga of Kapha¹.

Relation between Guda and Dhatu -

Rakta Dhatu and Mansa Dhatu are related to Guda.

- Rakta Dhatu - Guda is formed from the Prasada Bhaga of Rakta Dhatu⁴.
- Mansa Dhatu - in the classification of Marma, Guda is categorised as Mansa Marma⁵.

Relation between Guda and Mala -

Guda is related to Aharamala Purisha and Vayu i.e. Adhovata.

- Purisha - Guda is Mulasthana of Purishavaha Srotas⁶.

¹पक्वाशयकटिसक्थिश्रोत्रास्थिस्पर्शनेन्द्रियम् । स्थानं वातस्य तत्रापि पक्वाधानं विशेषतः ॥

अ. हृ. सू. १२ / १ p.192

² अपानोऽपानगः श्रोणिबस्तिमेढोरुगोचरः । शुक्रार्तवसकृन्मूत्रगर्भनिष्क्रमणक्रियः ॥

अ. हृ. सू. १२ / १ p.193

³तं पच्यमानं पित्तेन वायुश्चापि अनुधावति । ततोऽस्यान्त्राणि जायन्ते गुदं बस्तिश्च देहिनः ।

सु. शा. ४ / २६ p.357

⁴ असृजः श्लेष्मणश्चापि यः प्रसादो परो मतः ।..... ततोऽस्यान्त्राणि जायन्ते गुदं बस्तिश्च देहिनः ।

सु. शा. ४ / २६ p.357

⁵तत्र गुद मांसमर्माणि ।

सु. शा. ६ / ७ p.370

⁶पुरीषवहानां स्रोतसां पक्वाशयो मूलं स्थूलगुदं च ॥

च. वि. ५ / ८ p.251

Also excretion of Purisha takes place from Guda under control of Apana Vata¹.

- Adhovata - Adhovata is formed as waste product from digestion during third stage of Avasthapaka i.e. Katu Avasthapaka². Adhovata gets eliminated from body through Guda³ under the influence of Apana Vata⁴.

Structure of Guda -

Guda is last portion of Mahasrotas after Sthulantra. Its Pramana is 5^{1/2} Angula⁴. Guda has three Wali. Wali means fold of skin⁵. These Gudawali are - Pravahini, Visarjini and Samvarani⁶.

Functions of Guda -

Functions of Guda can be summarized as follows -

- As Sthana of Vata Dosha specially Apana Vata
- Pranadharana - as it is one of the Pranayata and Sadyapranahara Marma

¹ अपानोऽपानगः श्रोणिबस्तिमेढोरुगोचरः । शुक्रार्तवशकृन्मूत्रगर्भनिष्क्रमणक्रियः ॥

अ. ह. सू. १२ / ९ p.193

²पक्वाशयं तु प्राप्तस्य शोष्यमाणस्य वह्निना । परिपिण्डितपक्वस्य वायुः स्यात् कटुभावतः ॥

च. चि. १५ / ११ p.512

³..... वातवर्चोनिरसनं गुदं नाम ।

सु. शा. ६ / २५ p.373

⁴तत्र स्थूलान्नप्रतिबद्धं अर्धपञ्चाङ्गुलं गुदमाहुः ।

सु. नि. २ / ५ p.272

⁵गुदवलीरिति वलिस्तुत्वक्संकोचः ।

डल्हण टीका सु. नि. २ / ४ p.271

⁶तस्मिन् वलयस्तिस्त्रोऽर्ध्याङ्गुलसंभूताः प्रवाहणी विसर्जनी संवरणी ।

सु. नि. २ / ५

प्रवाहयतीति प्रवाहणी, विसृजतीति विसर्जनी, संवृणोतीति संवरणी ॥ डल्हण टीका सु. नि. २ / ५

- As a route of administration of Basti, which is the main treatment of Vata Dosha
- Excretion of Aharamala - Purisha and Adhovata

Vyadhi where Guda is involved –

- Arsha
- Atisara
- Gudabhransha
- Bhagandara
- Parikartika

Rectum¹ -

- Rectum is the distal part of gut between sigmoid colon and anal canal. The rectum in man is not straight as the name implies. The distension of rectum causes desire to defecate.
- The three cardinal features of large intestine (sacculations, appendices epiploicae, taeniae) are absent in rectum.
- The rectum lies anterior to the sacrum and coccyx and ends by becoming continuous with anal canal at anorectal junction.
- The rectum is 12cm long. In the upper part it has the same diameter (4cm) as that of sigmoid colon but in the lower part it is dilated to form rectal ampulla.

Nerve supply of the rectum -

- The rectum is supplied by both sympathetic (L1, 2) and parasympathetic (S2,3,4) nerves through the superior rectal (inferior mesenteric) and inferior hypogastric plexuses.
- Sympathetic nerves are vasoconstrictor, inhibitory to the rectal musculature and motor to the internal sphincter. Parasympathetic nerves are motor to the musculature of the rectum and inhibitory to the internal sphincter.
- Sensations of distension of the rectum pass through the parasympathetic nerves, while pain sensations are carried by both sympathetic and parasympathetic.

Functions of rectum -

- According to some authorities, the upper part of the rectum acts as a fecal reservoir which can freely distend anteriorly.

¹B. D. Chourasiya, Eight reprint, 2003

- The lower part is empty in normal individuals, but may contain feces in cases of chronic constipation. Being sensitive its distension causes the desire to defecate.
- However according to other authorities, the sigmoid colon is fecal reservoir and whole rectum is empty in normal individuals.

Anal canal¹ -

- The anal canal is the terminal part of large intestine.
- It is 3.8cm long extends from anorectal junction to anus.
- The anus is the surface opening. The surrounding skin is pigmented and thrown into radiating folds and contains a ring of large apocrine glands.
- The internal of anal canal shows many important features and can be divided into three parts – upper, middle and lower.
- The upper part is lined by mucous membrane and shows 6 to 10 vertical folds called anal columns (of Morgagni). The lower ends of anal valves together form a transverse line that runs all round the anal canal. This is the pectinate line.
- In the middle part (transitional zone or Pectene) the mucosa has bluish appearance because of dense venous plexus.
- The lower part is lined by true skin containing sweat and sebaceous glands.
- Internal anal sphincter is made up of smooth muscle.
- External anal sphincter is composed of skeletal muscle.

Nerve supply of the anal canal -

- The part above pectinate line is supplied by autonomic nerves both sympathetic (inferior hypogastric plexus L1, 2) and parasympathetic

¹B. D. Chourasiya, Eight reprint, 2003

(pelvic splanchnic nerves S2, 3, 4). Pain sensations are carried by both of them.

- The part below pectinate line is supplied by somatic (inferior rectal S2, 3, 4) nerves.
- Internal anal sphincter is innervated by parasympathetic nerve fibers via pelvic nerve.
- The internal sphincter is caused to contract by sympathetic nerves and is relaxed by parasympathetic nerves.
- External anal sphincter is controlled by somatic nerve fibers, which pass through pudendal nerve. Pudendal nerve always keeps the external sphincter constricted and the sphincter can relax only when the pudendal nerve is inhibited.
- The external sphincter is supplied by the inferior rectal nerve and by the perineal branch of fourth sacral nerve.

Functions of anal canal -

Internal and external anal sphincter play role in act of defecation.

Diseases where rectum and anal canal are involved –

- Haemorrhoids
- Fissure
- Fistula
- Rectal prolapse

Purisha -

Nirukti -

- पुरीष – √ पृ

The word purisha is derived पृ Dhatu.

- मलिनीकरणात् आहारमलत्वात् मलाः ।

अ. सं. सू. २० / ५

Paryaya -

- अवस्कर – अवस् अवस् करोति सिद्धयति इति अवस्करः । –
- उच्चार – उच्चार्यते अपानवायुना उत्क्षेप्यते कर्माणि घञ ।
- किट्ट – किट गतौ किटति लोहादि धात्ववयवात् निर्गच्छति इति ।
- गू – गच्छति अपानेन देहात् ।
- गूथ – गू + थक् । विष्ठायाम् । – वाचस्पत्यम् ।
- गू विष्ठायाम् । – वाचस्पत्यम् ।
- पुरीष – पृ । विष्ठायाम् । वाचस्पत्यम् । पृ पालनपोषणयोः ।
- पुरीषण – पुरीति देहात् ईष्यते । – वाचस्पत्यम् ।
ईष् दाने (त्यागे) ।
- वर्चस् – तेजसि विष्ठायाम् । – वाचस्पत्यम् ।
- वर्चस्क- कुत्सितं वर्चः वर्चस्कमन्नमलम् । – सि. कौ.
मलमात्रे च ।
- विष्ठा – विच् + स्था । आन्त्रम् । उदरे । पुरीषे । – वाचस्पत्यम् ।
- शमल – शम् + कलच् । शम = थांबणे, विश्रांती = नाश – गीर्वाणलघुकोश
 - Avaskara – feces
 - Uchchara – feces
 - Kitta – excretion, dirt
 - Gu – Going (out from body)
 - Gutha – feces
 - Purisha , Purishana – feces, dirt, excrement
 - Varchas, Varchaska - excrement, feces

- Vishthha – voiding, excrement

Meanings of all above Paryaya indicate Malinabhava or Tyajyatva of Purisha.

Formation of Purisha -

Purisha is Aharamala¹. After Sara-KittaVibhajana, Sara Bhaga becomes Rasa and KittaBhaga becomes Mala. ShariraPoshana takes place from Sara Bhaga. KittaBhaga does Poshana of Sweda, Mutra, Purisha, Vata, Pitta, Kapha and other Dhatu Mala². Ahara Sara is Rasa and SarahinaMaladrava part becomes Mutra when it reaches Basti.

Purisha is a product of Anna PachanaKriya. It is the Sthula Mala of Ahara. It is formed in Pakwashaya during third stage of Avasthapaka. At this stage, Anna undergoes Shoshana Karma by Agni and obtains its 'Paripindita' form. This Nissara, Pindita form is Purisha. Visarjana of Purisha from Guda is under control of ApanaVayu.

Swarupa of Purisha -

Purisha has Pindita Swarupa³ i.e. it is formed form.

Relation of Panchamahabhuta with Purisha -

According to predominance of Pachamahabhuta, Purisha is Parthiva⁴.

Sthana of Purisha -

¹किट्टमन्नस्य विष्मूत्रं ।

च.चि. १५ / १८ p.515

²तत्राहारप्रसादाख्योरसः किट्टं चमलाख्यम् अभिनिर्वर्तते । किट्टात्स्वेदमूत्रपुरीषवातपित्तश्लेष्मणः कर्णाक्षिनासिकास्यलोमकूपप्रजननमलाः केशश्मश्रुलोमनखादयश्चावयवाः पुष्यन्ति ।

च. सू. २८ / ४ p.175

³परिपिण्डितपक्वस्य ।

च. चि. १५ / १७ p.514

⁴पुरीषम् पार्थिवं ।

सु. सू. १५/८ भानुमति टीका p.68

PurishavahaSrotas ¹ and Purishadhara Kala ² are considered as Sthana of PurishavahaSrotas.

PurishavahaSrotas includes Pakwashaya and Sthulaguda. Sthulaguda includes Guda with its Three Wali – Pravahani, Visarjani and Samvarani. Out of three Avasthapaka, the third Katu Awasthapaka is attributed to PurishavahaSrotas. When properly digested food comes to the Pakwashaya in the form of Mala, function of PurishavahaSrotas starts. Purishavaha Srotas is place for PurishaNirmiti, PurishaDharana and Visarjana i.e. excretion.

Purishadhara Kala is placed near Yakrut, including Antra. Undukastha Mala Vibhajana is done by Purishadhara Kala. Purishadhara Kala separates Mala Bhaga into Drava-Mala and Ghana-Mala.

Pramana of Purisha -

Pramana of Purisha in Sharira is 7 Anjali³.

Purisha Karma -

Avasthambha is function of Purisha⁴. Avasthambha means Shariradharana⁵. Purisha performs this karma till it is present in Sharira. So properly formed Purisha

¹पुरीषवहानां स्रोतसांपक्वाशयमूलस्थूलगुदं च, ... ।

च. वि. ५ / ८ p.251

पुरीषवहे द्वे, तयोः मूलंपक्वाशयगुदं च, ... ।

सु. शा. ९ / १२ p.386

²पञ्चमीपुरीषधरानाम्; याऽन्तःकोष्ठेमलमभिविभजते पक्वाशयस्था ।

यकृत्समन्तात्कोष्ठं च तथाऽन्नाणिसमाश्रिता । उण्डुकस्थं विभजते मलमलधराकला ॥

सु. शा. ४ / १६, १७ p.356

³मज्जमेदोवसामूत्रपित्तश्लेष्मशकृन्त्यसृक् । . . . एकैकाञ्जलिवर्धितम् । अ. ह. शा. ३ / ८० p.402

⁴अवष्टम्भः पुरीषस्य . . . ।

अ. ह. सू. ११ / ५ p.183

⁵अवष्टम्भो – देहधारणशक्तिः, श्रेष्ठं कर्म पुरीषस्य स्मृतम् ।

सर्वांगसुंदर टीका, अ. ह. सू. ११ / ५ p.183

gives strength to body. Acharya Sushruta has quoted that Purisha performs Vayu and Agni Dharana¹. I.e. Purisha gives strength to Vayu and Agni.

Excretion of Purisha -

After performing its Sharira Dharana function, Purisha gets excreted out of body under the influence of Apana Vata².

Purisha Vruddhi Lakshanani -

Table 4 - Purisha Vruddhi Lakshana

According to सुश्रुत संहिता ³	According to अष्टांग हृदय संहिता ⁴
आटोप	आटोप
कुक्षिशूल	कुक्षिशूल
	आध्मान
	कुक्षिगौरव

Purishavruddhi causes Atopa⁵, Kukshi Shula, Adhmana⁶, Kukshi Gourava and Kukshi Shula.

¹पुरीषमुपस्तम्भं वाय्वग्निधारणञ्च (करोति) ।

सु. सू. १५ / ४ p.68

²अपानोऽपानगः श्रोणिबस्तिमेढ्रो रूगोचरः । शुक्रार्तवसकृन्मूत्रगर्भनिष्क्रमणक्रियः ॥

अ. हृ. सू. १२ / ९ p.193

³पुरीषमतिवृद्धम् आटोपं कुक्षिशूलञ्च (आपादयति) ।

सु. सू. १५ / १५ p.70

⁴कुक्षावाध्मानमाटोपं गौरवं वेदनां शकृत् ।

अ. हृ. सू. ११ / १३ p.184

⁵आटोप उदरापूरः ।

सु. उ. ५५ / ८ डल्हण टीका p.777

⁶साटोपमत्युग्ररुजम् आध्मातं ॥

सु. नि. १ / ८८ p.270

Purisha Kshaya Lakshanani -**Table 5 - Purisha Kshaya Lakshana**

According to चरक संहिता ¹	According to सुश्रुत संहिता ²	According to अष्टांग हृदय संहिता ³
आन्त्र पीडा	हृदय पीडा	हृदय पीडा
रुक्षवायोः उन्नमय	पार्श्व पीडा	पार्श्व पीडा
वायुः कुक्षौ उर्ध्वं गच्छति	सशब्दस्यवायोरूर्ध्वगमन	वायुः उर्ध्वम् याति
वायुः कुक्षौ तिर्यक् गच्छति	सशब्दस्यवायोःकुक्षौसञ्चरणंच	वायुः कुक्षौभ्रमति
		वायुरन्त्राणिसशब्दो वेष्टयति

Purisha Kashaya causes Hrudaya Pida, Parshva Pida, Sashabda Urdhvagamana of Vayu, Vayu Sancharana in Kukshi and Antra, Antra Pida.

Sama Purisha Lakshanani⁴ -

Sama means with Ama. Ama means not completely formed. Sama Purisha means incompletely formed Purisha. Sama Purisha has features like with characteristics of vitiated Dosha, sinks in water, with bad odour and sticky in nature.

¹क्षीणेप्रकृतिचान्त्राणि पीडयन्निव मारुतः । रूक्षस्योन्नमयन् कुक्षितिर्यगूर्ध्वं च गच्छति ॥

च.सू. १७ / ७० p.103

²पुरीषक्षये हृदयपार्श्वपीडासशब्दस्यवायोरूर्ध्वगमनं कुक्षौ सञ्चरणंच ।

सु. सू. १५ / ११ p.69

³पुरीषे वायुरन्त्राणिसशब्दो वेष्टयन्निव । कुक्षौ भ्रमतियात्यूर्ध्वं हृत्पार्श्वे पीडयन् भृशम् ॥

अ. ह.सू. ११ / २१ p.103

⁴संसृष्टमेभिर्दोषैस्तु न्यस्तमप्स्वसीदति । पुरीषं भृशदुर्गन्धिपिच्छिलंचामसंज्ञकम् ॥

सु. उ. ४० / १७ p.698

According to Dalhana Tika, Sama Purisha may also have feature like frequent passage of small quantity of stools¹.

Nirama Purisha Lakshanani² -

Purisha having opposite qualities to Sama Purisha, is called Nirama Purisha. It is associated with lightness of Sharira.

Vikrut form of Purisha seen in different Vyadhi³ –

Table 6 - Change in color of stool in various diseases

Types of color	Diseases involved
Krishna Varna (black color)	Vatika Arsha, Vatika Gulma, Kumbha Kamala, Paittaka Atisara, and Vata Prakopa
Shyava, Arunam Varnam (gray and reddish color)	Vatika Udara Roga, Vatika Arsha, Vatika Atisara, Vata Prakopa, Vataja Gulma, Vataja Jvara, and Vataja Pandu
Shukla Varna (white color)	Shlesmika Jwara, Shlesmika Udararoga, Shlesmika Arsha, Shlesmika Pandu, Shakhashrita Kamala, Shlesmika Atisara, Sahaja Arsha, Jalodara, Kaphaja Gulma, and Kaphaja Visarpa
Rakta Varna (red color)	Kamala, Pittaja Atisara, Raktapitta, Sahaja Arsha, and Chhidrodara

Table 7 - Presence of froth in stool in different pathological conditions

Froth	Pathological condition
Presence of froth	Vataja Arsha, Vatika Atisara, Vataja Grahani

¹विच्छिन्नं अल्पाल्पप्रवर्तकम् ।

सु. उ. ४० / १७ डल्हन टीका p.698

²एतान्येवतुलिङ्गानिविपरीतानितुयस्यतु । लाघवंचमनुष्यस्यतस्यपक्वंविनिर्दिशेत् ॥

सु. उ. ४० / १८ p.698

³ Uikey R, Kar AC. A review on Purisha Pariksha in Ayurveda. Ayu 2015;36:125-9.

Table 8 - Changes in consistency of stool in various diseases

Consistency of stool	Diseases involved
Sandra (dense)	Kaphaja Atisara, and Sahaja Arsha
Baddha/ Vibaddha (solid)	Asadhya Pandu, Vataja Prameha, Udararoga, Baddhodara, Purishavrita Vata, Ashuddha Dugdhapana Sevana, Tridosha Dushti, Tikshnagni, Vataja Atisara, Vataja Visarpa, Vataja Jwara, Sahaja Arsha, Vataja Arsha, Mahashvasa, and Malavirita Vata
Drava (watery)	Paittika Arsha, Vatika Grahani, Asadhya Atisara, and Mandagni
Bhinna (loose)	Paittika Arsha, Shlesmika Grahani, Kshayaja Kasa, Kaphavirita Apanavayu, Pittaja Murchha, Vega Sandharanjanya Yakshma, and Arsha Samanya Lakshana
Shushka (dry)	Vataja Grahani and Sahaja Arsha

Table 9 - Change in odor of stool in various diseases

Odor of stool	Diseases involved
Durgandhita (foul smell)	Shleshmika Atisara, Paittika Pandu, Asadhya Sannipataja Chhardi, Ama Purisha, Purishavaha Srotodusti, and Vid Vighata
Visragandhi (smell of raw meat)	Paittika Arsha and Shleshmika Atisara
Atidurgandhita (extremely foul smell)	Paittika Atisara and Paittika Arsha
Amagandhi (smell of Ama)	Amatisara
Kunapagandhi (smell of dead body)	Chhidrodara and Sahaja Arsha
Kunapa, Puya, Ama, Matsyagandhi (smell of dead body, pus, Ama, and fish)	Sannipataja Atisara
Mahatputigandhi (putrefied smell)	Jalodara

Nirgandha or Sagandha (without or with odor)	Agantuja Atisara
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Table 10 - Change in Sparsha (touch) of stool in various diseases

Type of Sparsha	Diseases involved
Sheeta (cold)	Ajirna and Shleshmika Atisara
Ushna (hot)	Paittika Arsha
Snigdha (unctuous)	Shleshmika Arsha and Kaphaja Atisara
Ruksha (rough)	Vataja Jwara and Vataja Atisara

Table 11 - Abnormal quantities/frequency of stool in various diseases

Quantity or frequency of stool	Diseases involved
Alpa (less in quantity)	Sannipataja Jwara, Pandu, Vataja Atisara, Vataja Pakva Atisara, Purishavaha srotodushti, and Devonmatta Purusha
Atipravritti (more frequency and quantity)	Paittika Atisara, Amatisara, Sannipataja Atisara, and Asadhya Atisara
Sanga (less frequency)	Vataja Gulma, Apana Vayuavrudha, Atisara Purva Rupa, Shuska Yoni, Udararoga, Asamyak Virechana, Vata Ashthila, Mutra Jathara, Udararoga, and Baddhodara
Alpa Alpa (less in quantity and frequency)	Vatika Atisara, Shlesmika Atisara, Pravahika, Vatika Grahani, Chhidrodara, and Purishavaha Srotodushti
Muhurmuhu (frequent)	Vataja Grahani and Vataja Atisara
Bheda (loose)	Kshayaja Yakshma, Ayathabala Samarambha Janya Yakshma, and Vegasandharana Janya Yakshma
Krichhra Mala Pravritti	Vataja Ashmari, Vid Vighata, Amashaya Krudha

(passing stool with difficulty)	Vayu, and Pakwashaya Krudha Vayu
Sashabda Mala Pravritti (passing stool with sound)	Vataja Arsha, Ama Atisara, Purishavaha Sroto Dushti, Purisha Kshaya, and Vataja Grahani

Table 12 - Type of pain during defecation in various diseases

Type of pain	Diseases involved
Sashula (with pain)	Amatisara
Sashula Sadaha (with pain and burning)	Paittika Atisara
Parikartika (gripping pain)	Vataja Atisara
Pravahana (tenesmus)	Pravahika
Shula, Gudasrava (discharge from anus with pain)	Jalodara
Chirat Dukham (passing with difficulty)	Vataja Grahani
Sashula Pravahana (tenesmus with pain)	Kaphaja Arsha, Kaphaja Atisara, and Pravahika
Kunthana (painful strain)	Samatisara and Visamagni

Purishavega -

Urge of defecation is called Purishavega.

Vega is natural urge of body like hunger, thirst, micturition, defecation etc¹. Psychological feelings are also considered as Vega. Urges related to Sharira are called Sharirika Vega. These are called as Adharaniya Vega because these are not supposed to be hold². Urges related to mind are considered as Manas Vega. These are called as Dharaniya Vega because these are supposed to be hold³. Purishavega comes under Adharaniya Vega.

Purishavegadharanajanya Lakshana -

According to Charakacharya, Purishavegadharana causes Pakwashaya Shula, Shira Shula (headache), Adhovata and PurishaApravartana (no passage of flatus and stool), Pindikodveshtana (pain in calf region) and Adhmana⁴.

According to Sushrutacharya, Purishavegadharana causes Atopa, Shula, Parikartana (cutting type of pain in Guda, Basti), PurishaSanga (no passage of stool), Urdhvavata (frequent belching), PurishaPravrutti from Mukha⁵.

¹वेगः प्रवृत्ति उन्मुखत्वं मूत्रपुरीषादीनाम् ।

च. सू. ७ / ३ चक्रपाणि p.49

²वेगान्नधारयेत् वातविण्मूत्रक्षवतृटक्षुधाम् । निद्राकासश्रमश्वासजृम्भाश्रुच्छिदिरितसाम् ॥

अ. ह. सू. ४ / १ p.52

³धारयेत्तु सदा वेगान् हितैषी प्रेत्य चेह च । लोभेषाद्वेषमात्सर्यरागादीनां जितेन्द्रियः ॥

अ. ह. सू. ४ / २४ p.57

⁴पक्वाशयशिरःशूलंवातवर्चोऽप्रवर्तनम् । पिण्डिकोद्वेष्टनाध्मानं पुरीषेस्याद्विधारिते ॥

च. सू. ७ / ८ p.49

⁵आटोपशूलौपरिकर्तनंचसङ्गः पुरीषस्यतथोर्ध्ववातः । पुरीषमास्यादपिवानिरेतिपुरीषवेगेऽभिहतेनरस्य ॥

सु. उ. ५५ / ८ p.777

According to Vagbhatacharya, Purishavegadharana causes Pindikodveshtana, Pratishyaya, Shiroruja, Urdhvavayu, Parikartana, Hrudayoparodha, VitPravrutti from Mukha and AdhovatarodhajanyaLakshanani¹. These are Gulma, Udavarta, Ruja, Klama, Adhovata-Mutra-PurishaSanga, Drushtivadha, Agnivadha, Hrudgada².

Table 13 - Purishavegadharana Lakshana

According to चरक संहिता	According to सुश्रुत संहिता	According to अष्टांग हृदय संहिता
पक्वाशयशूल	शूल	शूल
शिरशूल	--	शिरशूल
अधोवात अप्रवर्तन	अधोवात अप्रवर्तन	अधोवात अप्रवर्तन
पुरीष अप्रवर्तन	पुरीष अप्रवर्तन	पुरीष अप्रवर्तन
--	--	मूत्र संग
पिण्डिकोद्वेष्टन	--	पिण्डिकोद्वेष्टन
आध्मान	--	--

आटोपउदरापूरः । परीकर्तनंगुदमेढ्रबस्त्यादिषुकृन्तनमिववेदना । उर्ध्ववातोबहूद्वारता । आस्यात्मुखात् । निरेतिनिर्गच्छति । परिकर्तनंचेतिचकारात् पिण्डिकोद्वेष्टनादयः ।

डल्हणटीका

¹शकृतः पिण्डिकोद्वेष्टप्रतिश्यायशिरोरुजा । ऊर्ध्ववायुः परीकताहृदयस्योपरोधनम् ॥

मुखेनविट्प्रवृत्तिश्चपूर्वोक्ताश्रामयाः स्मृताः ।

अ. ह. सू. ४ / ३ p.53

शकृतोरोधेन पिण्डिकोद्वेष्टदयो जायन्ते । उद्वेष्टनमिवोद्वेष्टः । पिण्डिकयोः उद्वेष्टः पिण्डिकोद्वेष्टः ।

पिण्डिकाजङ्घाकाण्डस्यपश्चिमेभागेपिण्डाकृतिकठिनमांसम् । तत्रोद्वेष्टनेनेव रुग्भवतीत्यर्थः । प्रतिश्यायः

पीनसः । चः समुच्चये । नकेवलमेतएव, यावत्पूर्वोक्ताः – गुल्मादयश्चस्मृताः ।

सर्वाङ्गसुन्दरटीका

पूर्वोक्ताः – अधोवतरोधजाः ।

आयुर्वेदरसायन

²अधोवातस्यरोधेनगुल्मोदावर्तरुक्लमाः । वातमूत्रशकृत्सङ्गदृष्ट्यग्निवधहृद्गदाः ॥

अ. ह. सू. ४/ २ p.53

--	आटोप	--
--	परिकर्तन	परिकर्तन
--	उर्ध्ववात	उर्ध्ववात
--	--	प्रतिश्याय
--	--	हृदयोपरोधन
--	--	मुखेन विट्प्रवृत्ति
--	--	गुल्म
--	--	क्लम
--	--	दृष्टिवध
--	--	अग्निवध

Frequency of Purishavega -

In Svastha individual, frequency of Purisha Vega is two¹. I.e. two times a day PurishaVisarjan Should be there. This can vary according to Prakruti. E.g.in Pitta Prakruti, Purisha Vega will be more.

¹. . . द्विभुज्जानो षण्मूत्री द्विपरीषकः ।

Feces -

Feces are formed in the large intestine. Feces are nothing but the solidification of chyme due to absorption of water.

Components of feces¹ -

- Water
- inorganic salts
- sloughed-off epithelial cells from the mucosa of the gastrointestinal tract
- bacteria
- products of bacterial decomposition
- unabsorbed digested materials
- indigestible parts of food

Colour and odour of feces -

- Odour of feces is contribution of indole and skatole which are byproducts of fermentation of amino acids by intestinal bacteria.
- Colour of feces is input of stercobilin which is decomposed product of bilirubin by intestinal bacteria.

¹(Gerard J. Tortora, Bryan Derrickson, 2009, p. 963)

Defecation reflex -

Voiding of feces is known as defecation. Feces is formed in the large intestine and stored in sigmoid colon. By the influence of an appropriate stimulus, it is expelled out through the anus.

Ordinarily, defecation is initiated by defecation reflexes.

1. Intrinsic myenteric defecation reflex - mediated by the local enteric nervous system in the rectal wall.
2. Parasympathetic defecation reflex - by involvement of the sacral segments of the spinal cord.

Intrinsic myenteric defecation reflex¹ -

This can be described as follows:

- When feces enter the rectum, distention of the rectal wall initiates afferent signals that spread through the myenteric plexus to initiate peristaltic waves in the descending colon, sigmoid, and rectum, forcing feces toward the anus.
- As the peristaltic wave approaches the anus, the internal anal sphincter is relaxed by inhibitory signals from the myenteric plexus; if the external anal sphincter is also consciously, voluntarily relaxed at the same time, defecation occurs.
- The intrinsic myenteric defecation reflex functioning by itself normally is relatively weak.
- To be effective in causing defecation, it usually must be fortified by another type of defecation reflex, a parasympathetic defecation reflex that involves the sacral segments of the spinal cord.

Parasympathetic defecation reflex -

The defecation reflex occurs as follows:

- In response to distension of the rectal wall, the receptors send sensory nerve impulses to the sacral spinal cord via afferent fibers of pelvic nerve.

¹(Arthur C. Guyton, John E. Hall, 2006, p. 789)

- Motor impulses from the cord travel along parasympathetic nerves back to the descending colon, sigmoid colon, rectum, and anus via efferent nerve fibers of pelvic nerve. The resulting contraction of the longitudinal rectal muscles shortens the rectum, thereby increasing the pressure within it to about 20 to 25 cm H₂O.
- This pressure, along with voluntary contractions of the diaphragm and abdominal muscles, plus parasympathetic stimulation, opens the internal anal sphincter.
- The external anal sphincter is voluntarily controlled. Voluntary relaxation of external sphincter is due to the inhibition of pudendal nerve, by impulses arising from cerebral cortex.
- If it is voluntarily relaxed, defecation occurs and the feces are expelled through the anus; if it is voluntarily constricted, defecation can be postponed.
- If defecation does not occur, the feces back up into the sigmoid colon until the next wave of mass peristalsis stimulates the stretch receptors, again creating the urge to defecate.
- Voluntary contractions of the diaphragm and abdominal muscles aid defecation by increasing the pressure within the abdomen, which pushes the walls of the sigmoid colon and rectum inward.
- In infants, the defecation reflex causes automatic emptying of the rectum because voluntary control of the external anal sphincter has not yet developed.
- The amount of bowel movements that a person has over a given period of time depends on various factors such as diet, health, and stress. The normal range of bowel activity varies from two or three bowel movements per day to three or four bowel movements per week.
- Defecation signals entering the spinal cord initiate other effects, such as taking a deep breath, closure of the glottis, and contraction of the abdominal wall muscles to force the fecal contents of the colon downward and at the same time cause the pelvic floor to relax downward and pull outward on the anal ring to evaginate the feces.

When it becomes convenient for the person to defecate, the defecation reflexes can purposely be activated by taking a deep breath to move the diaphragm downward and then contracting the abdominal muscles to increase the pressure in the abdomen, thus forcing fecal contents into the rectum to cause new reflexes.

Reflexes initiated in this way are almost never as effective as those that arise naturally, for which reason people who too often inhibit their natural reflexes are likely to become severely constipated.

In newborn babies and in some people with transected spinal cords, the defecation reflexes cause automatic emptying of the lower bowel at inconvenient times during the day because of lack of conscious control exercised through voluntary contraction or relaxation of the external anal sphincter.

Other autonomic reflexes that affect bowel activity¹ -

Gastrocolic Reflex - Gastrocolic reflex is the contraction of rectum, followed by the desire for defecation caused by distention of stomach by food. It is mediated by intrinsic nerve fibers of GI tract. This reflex causes only a weak contraction of rectum. But, it initiates defecation reflex.

Duodenocolic Reflexes - Appearance of mass movements after meals results from distention of the duodenum.

Peritoneointestinal reflex - It results from irritation of the peritoneum. It strongly inhibits the excitatory enteric nerves and thereby can cause intestinal paralysis, especially in patients with peritonitis.

Renointestinal reflexes - Inhibition of intestinal activity as a result of kidney irritation.

Vesicointestinal reflexes - Inhibition of intestinal activity as a result of bladder irritation.

¹(Arthur C. Guyton, John E. Hall, 2006, p. 790)

Evacuation of gases from gastrointestinal tract¹ -

Normally, gas accumulates in the GI tract either because of entrance of outside air or production of gases in the body. Accordingly, the gases accumulated in GI tract are classified into two groups:

1. Exogenous gases
2. Endogenous gases.

1. Exogenous Gases -

Exogenous gases form about 90% of accumulated gases. These gases enter the GI tract either by swallowing through mouth or drinking carbonated beverages.

2. Endogenous Gases

Endogenous gases form about 10% of accumulated gases. These gases are produced by digestion of food stuffs and interaction between bacteria and food stuffs in the intestine.

Evacuation of accumulated gases -

Evacuation of accumulated gases usually occurs by two processes:

1. Belching
2. Flatulence.

Belching -

Belching is the process by which the gas accumulated in stomach is expelled through mouth. It is also called burping. It occurs because of inflation (distention) of stomach by swallowed air. The distention of the stomach causes abdominal discomfort and the belching expels the air and relieves the discomfort. Most of the gas accumulated in stomach is expelled through mouth. Only a small amount enters the intestine.

Causes for Accumulation of Gases in Stomach

1. Aerophagia: Swallowing large amounts of air due to gulping the food or drink too rapidly
2. Drinking carbonated beverages

¹(K Sembulingam, Prema Sembulingam, 2012, p. 279)

3. During some emotional conditions like anxiety lot of air enters the stomach through mouth.

Act of Belching

Belching is not a simple act and it requires the coordination of several activities such as:

1. Closure of larynx, which prevents entry of liquid or food with the air from stomach into the lungs.
2. Elevation of larynx and relaxation of upper esophageal sphincter. It allows exit of air through
3. Opening of lower esophageal sphincter.
4. Descent of diaphragm, which increases abdominal pressure and decreases intrathoracic pressure.

All these activities are responsible for the expulsion of air from stomach to the exterior via esophagus.

Flatulence -

Flatulence is the production of a mixture of intestinal gases. The mixture of gases is known as flatus(in Latin, flatus = wind). Expulsion of flatus through anus under pressure is called farting or passing gas. Farting is associated with disagreeable odor (due to odorous gases) and sound (due to vibration of anal sphincter).

Quantity of Flatus

Average flatus released by human is about 500 to 1500 mL per day, with 10 to 25 episodes throughout the day.

Source of Gases in Intestine

- Flatulence is the mixture of gases present in the intestine.
- Flatulence by swallowed air is rare.

Common sources of gases in flatulence are:

1. Bacterial action on undigested sugars and polysaccharides (e.g. starch, cellulose)
2. Digestion of some flatulence producing food stuffs such as cheese, yeast in bread, oats, onion, beans, cabbage, milk, etc.

Constituents of Flatus

Major constituents of flatus:

1. Swallowed non-odorous gases
 - i. Nitrogen (major constituent)
 - ii. Oxygen
2. Non-odorous gases produced by microbes
 - i. Methane
 - ii. Carbon dioxide
 - iii. Hydrogen
3. Odorous materials such as
 - i. Low molecular weight fatty acids like butyric acid
 - ii. Reduced sulfur compounds (hydrogen sulfide and carbonyl sulfide).

Agni -

Vyutpatti –

अग्नि – √ अग्

Agni is derived from Aga Dhatu. Meaning of Agni is which has occupied everything¹, which is everywhere.

Paryaya –

वैश्वानर, सर्वपाक, तनूनपाक, अमीवचातन, दमूनस, शुचि, रुद्र, कायाग्नि, देहाग्नि, जाठराग्नि, पाचकाग्नि, देहोष्मा

Types of Agni –

Agni is innumerable because of its presence in each and every dhatu paramanu (cell) of the body. But, enumeration of the number of Agnis varies in various classical Ayurvedic texts, as shown below² –

Charaka has mentioned about 13 Agnis. Jatharagni – 1, Bhutagni – 5, Dhatvagni – 7³.

According to Acharya Sushruta, five types of Agnis are illustrated, viz. Pachakagni, Ranjakagni, Alochakagni, Sadhakagni and Bhrajakagni. However, there is an indirect reference of five Bhutagnis underlying in the brief description made to the transformation of food stuff².

Vagbhata has described different types Agni, viz. – Bhutagnis – 5, – Dhatvagnis – 7, Dhoshagni – 3 and – Malagni – 3⁴.

¹अंगति व्याप्नोति इति अग्निः ।

² Agrawal A. K., Yadav C. R., Meena M. S. Physiological aspects of. Ayu. 2010 Jul-Sep;31(3): 395–398.

³इति भौतिकधात्वन्नपक्वणाम् कर्म भाषितम् ।

च. चि. १५ / ३८ p.516

⁴अन्नस्य पक्ता पित्तं तु पाचकाख्यम् पुरेरितम् । दोषधातुमलादीनामूष्मा इत्येत्रय ... ॥

अ. हृ. ३ / ४९

Trividha Agni - 3 types

- Jatharagni
- Bhutagni
- Dhatvagni

Trayodasha Agni - 13 types

- Jatharagni - 1 in number
- Bhutagni - 5 in number
- Dhatvagni - 7 in number

Agni can be classified as Bhoutika Agni, Dhatvagni and Annapaktru Agni i.e. Jatharagni¹. If their numbers are considered, then thirteen types are of Agni². Out of these types of Agni, Annapaktru is foremost. Annapaktru means who is digesting food i.e. Jatharagni. Any increase or decrease in Bhutagni or Dhatvagni depends upon the strength of Jatharagni³.

Basically Agni is the power of transformation i.e. for conversion of Vijatiya into Sajatiya.

Table 14 - Agni and its site of action

Type of Agni	Site of Action
Jatharagni	Mahasrotas
Bhutagni	Mahasrotas and Dhatuvaha Srotas
Dhatvagni	Dhatuvaha Srotas

¹इति भौतिकधात्वन्नपक्वणाम् कर्म भाषितम् ।

च. चि. १५ / ३८ p.516

²भौतिकाः पञ्च, धात्वग्नयः सप्त, अन्नस्य पक्ता एकः ॥

चक्रपाणि टीका च. चि. १५ / ३८

³अन्नस्य पक्ता सर्वेषां पक्वणामधिपो मतः । तन्मूलास्ते हि तद्वृद्धिक्षयवृद्धिक्षयात्मकः ॥

च. चि. १५ / ३९ p.516

Bhutagni -

Every thing in this universe is made up of Panchamahabhuta¹. Similarly, Sharira and Ahara are made up of Panchamahabhuta. During digestion of Ahara, Bhinnasanghata is done by Bhutagni. Bhinnasanghata means splitting of complex substances into their elemental units. Disintegration of Panchabhoutika food is done by respective Bhutagni². E.g.

- Parthiva Agni acts on Parthiva part.
- Aapya Agni acts of Jaliya part.
- Taijasa Agni acts on Agneya part.
- Vayavya Agni acts on Vayu Mahabhutadhikya part.
- Nabhasa Agni acts on Akashiya part.

Location of Bhoutikagni activity at digestion is breaking complex food in building blocks and at cellular level is as Dhatuskhalana with Urja / Bala production by Bhoutikagni Paka (catabolism)³.

Dhatvagni -

Each Dhatu is having its respective Dhatvagni. Dhatvagni are nothing but the fractions of Jatharagni situated in Dhatusvaha Srotas⁴. Dhatvagni are responsible for

¹सर्वं द्रव्यं पाञ्चभौतिकं अस्मिन्नर्थे ।

च. सू. २६ / १० p.138

²भौमाप्याग्नेयवायव्याः पञ्चोष्माणः सनाभसाः । पञ्चाहारगुणान्स्वास्वान्पार्थिवादीन्पचन्ति हि ॥

यथास्वं स्वं च पुष्णाति देहे द्रव्यगुणाः पृथक् । पार्थिवाः पार्थिवानेव शेषाः शेषांश्च कृत्स्नशः ॥

च. चि. १५ / १३-१५ p.513-514

³ Kalpana D. sathe: Location of physiological activities of Dhatvagni and Bhoutikagni. International Journal of Recent Scientific Research: Vol.7; Issue 2; pp 9133-9136; February 2016

⁴स्वस्थानस्थस्य कायाग्नेः अंशाः धातुषु संस्थिताः । तेषां सादातिदीप्तिभ्याम् धातुवृद्धिक्षयो भवेत् ॥

अ. हृ. सू. ११ / ३४ p.188

generation of Dhatu from Ahararasa¹. When Ahararasa comes to Dhatuvaha Srotas, Dhatvagni converts Poshakansha from Ahararasa into Dhatu. Respective Upadhatu and Dhatumala are also produced by the action of Dhatvagni².

Location of Dhatvagni is especially in their respective tissues of Particular Srotas (system). Correlation of Dhatvagni activity at cellular level is as catalyst of Dhatu Sneha Parampara (anabolism)³.

Jatharagni –

It is also called as Jatharanala and Pachakagni.

Sthana of Jatharagni -

Jatharagni is placed at Grahani and between Amashaya and Pakwashaya⁴. The place between Amashaya and Pakwashaya is Pittadhara Kala⁵. So Grahani and Pittadhara Kala are same⁶.

¹यथास्वेनोष्मणापाकं शरीरायान्ति धातवः । स्रोतसां च यथा स्वेन धातुः पुष्यति धातुतः ॥

च. चि. ८ / ३९p.461

²सप्तभिर्देहधातारो धातवो द्विविधं पुनः । यथास्वमग्निभिः पाकं यान्ति किट्प्रसादवत् ॥

च. चि. १५ / १५p. 514

³ Kalpana D. sathe: Location of physiological activities of Dhatvagni and Bhoutikagni. International Journal of Recent Scientific Research: Vol.7; Issue 2; pp 9133-9136; February 2016

⁴अग्न्यधिष्ठानमन्नस्य ग्रहणात् ग्रहणि मता ।

च.चि. १५ / ५६ p. 517

⁵षष्ठी पित्तधरानाम पक्वामाशयमध्यस्था । सा हि अग्नेः अधिष्ठानतया . . . ।

अ. सं.शा. ५ / ३६ p. 417

⁶षष्ठी पित्तधरानाम कला या परिकीर्तिता । पक्वामाशयमध्यस्था ग्रहणी सा प्रकीर्तिता ॥

सु. उ. ४० / १६९ p. 709

Utpatti and Palana of Jatharagni¹ -

Prana Vata and Apana Vata are responsible for generation of Jatharagni. Jatharagni is generated because of friction between opposite Gati of Prana and Apana Vata. Smana Vata maintains Agni in ignited state.

Guna of Jatharagni -

Tyaktadravatva², Ruksha, Urdhvagati

Karma of Jatharagni -

- Ahara Pachana - digestion of food is the prime function of Jatharagni³.
- Dhatu Poshana - If digestion is proper, Ahararasa is formed properly leading to appropriate formation of Dhatu⁴.
- Sharira Poshana
- Ayu-Baladi Vruddhi⁵

¹प्राणापानसमानैस्तु सर्वतः पवनैस्त्रिभिः । ध्मायते पाल्यते चापि स्वां स्वां गतिमवस्थितैः ॥

सु. सू. ३५ / २८ p. 154

²त्यक्तद्रवत्वं पाकादिकर्मणाऽनलशब्दितम् ॥

अ. हृ. सू. १२ / ११ p. 193

³समानेनावधूतोऽग्निरुदर्यः पवनोद्वहः । काले भुक्तं समं सम्यक् पचत्यायुर्विवृद्धये ॥

एवं रसमलायान्नमाशयस्थमधः स्थितः । पचत्यग्निर्यथा स्थाल्योदनमम्बुतण्डुलम् ॥

च.चि. १५ / ७ - ८ p. 512

⁴यदन्नं देहधात्वोजो बलवर्णादि पोषकम् तत्राग्नि हेतुः आहारात् न हि अपक्वरसादयः ॥

च. चि. १५ / ५ p. 512

⁵समैः दोषैः समो मध्ये देहस्योष्माऽग्नि संस्थितः। पचत्यन्नं तत् आरोग्य-पुष्टि-आयुः-बल-वृद्धये ॥

च. चि. १५ /

- In absence of Ahara, Jatharagni does Pachana of Dosha, Dhatu and finally Jivita¹.

Avasthapaka -

Avastha means stage. Paka means digestion. Three types of Avasthapaka are described - Madhuravasthapaka, Amlavasthapaka and Katu Avasthapaka². Shdrasatmaka Ahara enters Amashaya from mouth by aid of Paravata. In Amashaya, because of prevalence of Madhura Rasa, Phenabhuta Kapha appears. Phenabhuta means Aghana i.e. Drava. This is first Avasthapaka. Then food comes to Pachyamanashaya i.e. Grahani where process of digestion is continued. Because of Amla Bhava, Accha Pitta i.e. Aghana Pitta is produced in Grahani. This is second Avasthapaka. Then digested food comes to Pakwashaya. It's Shoshana (to make dry) is done by heat of Jatharagni resulting into Paripindita Swarupa (formed form) of Purisha. Because of Katu Bhava in Pakwashaya, Vayu (as waste product of digestion of food) is formed i.e. Adhovata. Avasthapaka is also called as Anupaka.

Vipaka -

The final conversion of Rasa by the action of Jatharagni at the end of digestion is called as Vipaka³. Vipaka is of three types - Madhura, Amla and Katu. Most of the

¹आहारमग्निः पचति दोषान् आहारवर्जितः । धातून् क्षीणेषु दोषेषु जीवितं धातुसंक्षये ॥

अ. ह. चि. १० / ११

²अन्नस्य भुक्तमात्रस्य षड्रसस्य प्रपाकतः । मधुराद्यात् कफोभावात् फेनभूत उदीर्यते ॥

परं तु पच्यमानस्य विदग्धस्याम्लभावतः । आशयाच्चावमानस्य पित्तमच्छमुदीर्यते ॥

पक्वाशयं तु प्राप्तस्य शोष्यमाणस्य वह्निना । परिपिण्डितपक्वस्य वायुः स्यात् कटुभावतः ॥

च. चि. १५ / ९ – ११ p. 512

³जाठरेणाग्निना योगात् यदुदेति रसान्तरम् । रसानां परिणामान्ते स विपाक इति स्मृतः ॥

अ. ह. सू. ९ / २० p. 169

times, Vipaka of Madhura rasa and Lavana Rasa is Madhura. Vipaka of Amla Rasa is Amla. Vipaka of Tikta Rasa, Katu Rasa and Kashaya Rasa is Katu¹.

Table 15 - Relation between Rasa and Vipaka

रस	विपाक
मधुर रस, लवण रस	मधुर विपाक
अम्ल रस	अम्ल विपाक
तिक्त रस, कटु रस, कषाय रस	कटु विपाक

Types of Jatharagni -

Jatharagni is categorised into four subtypes depending upon the strength². Sushrutacharya has also described four types of Agni who is responsible for Annapachana³.

1. Tikshnagni
2. Mandagni
3. Samagni
4. Vishamagni

¹स्वादुः पटुश्च मधुरमम्लोऽम्लं पच्यते रसः । तित्तोषणकषयाणां विपाकः प्रायशः कटुः ॥

अ. हृ. सू. ९ / २१ p. 169

²अग्निस्तु शरीरेषु चतुर्विधो बलभेदेन भवति, तद्यथा – तीक्ष्णो, मन्दः, समो, विषमश्चेति ।

च. वि. ६ / १२ p. 255

³स चतुर्विधो भवति –दोषाभिपन्न एकः विक्रियामापन्नस्त्रिविधो भवति –विषमो वातेन, तीक्ष्णः पित्तेन, मन्दः श्लेष्मणा, चतुर्थः समः सर्वसाम्यादिति ।

सु. सू. ३५ / २४ p. 154

Tikshnagni -

Tikshnagni has following features -

- It can tolerate any kind of misconduct related to food¹.
- It is associated with Pitta Dosha².
- It can digest fast even if more quantity of food is consumed.
- When digestion completes, Tikshnagni Produces dryness and burning sensation at Gala(throat), Talu (pallate) and Oshtha (lips) and heat³.
- Tikshnagni can be considered as Prakrut Agni as it offers less chances of Vyadhi.
- This can be considered as Prakrut Jatharagni as it is not responsible for diseases (upto certain extent).

Mandagni -

Mandagni has following features -

- Mandagni is having opposite features as that of Tikshnagni⁴.
- Even if proper quantity of food is consumed, it takes more time for digestion. Also it produces Udaragourava, Shirigourava, Kasa, Svasa, Praseka, Chardi and Gatrasedana⁵.
- Mandagni is associated with Kapha⁶.

¹तीक्ष्णोऽग्निः सर्वापचारसहः ।

च. वि. ६ / १२ p. 255

²तीक्ष्णः पित्तेन, . . . ।

सु. सू. ३५ / २४ p. 154

³यः प्रभूतमपि उपयुक्तं अन्नं आशु पचति, स तीक्ष्णः पाकान्ते च

गलताल्वोष्ठशोषदाहसंतापाञ्जनयति, ... ।

सु. सू. ३५ / २४ p. 154

⁴तद् विपरीतलक्षणस्तु मन्दः ।

च. वि. ६ / १२ p. 255

⁵यस्तु अल्पमपि उपयुक्तमुदरसिरोगौरवकासश्वासप्रसेकच्छर्दिगात्रसदनानि कृत्वा महता कालेन पचति,

स मन्दः ।

सु. सू. ३५ / २४ p. 154

⁶मन्दः श्लेष्मणा ।

सु. सू. ३५ / २४ p. 154

- Mandagni can lead to diseases.
- This can be considered as Vikrut Jatharagni if it is responsible for diseases.

Samagni -

Samagni has following features -

- Samagni can digest when adequate quantity of food is consumed at proper time¹.
- Samagni can not tolerate any kind of misconduct related to food. If it is exposed to misconduct, it becomes Vikrut. If it is not exposed to misconduct, it functions correctly².
- It is associated with Samadosha.
- Samagni is responsible for no disease i.e. healthy status³.
- This can be considered as Prakrut Jatharagni as it is not responsible for diseases.

Vishamagni -

Vishamagni has following features -

- Vishamagni is having opposite features as that of Samagni.⁴
- Sometimes it can digest, or sometimes it produces Adhmana (distension), Shula (pain in abdomen), Udavarta (Gati Vilomata of Vayu), Atisara (loose

¹यो यथाकालमुपयुक्तमन्नं सम्यक् पचति स समः, समदोषैः । सु. सू. ३५ / २४ p. 154

²समस्तु खलु अपचारतो विकृतिमापद्यतेऽनपचारस्तु प्रकृतौ अवतिष्ठते ।

च. वि. ६ / १२ p. 255

³समस्य हि प्राधान्यं निर्विकारत्वेन एव सुव्यवस्थितम् ।

चक्रपाणि

⁴समलक्षणविपरीतलक्षणस्तु विषम इति ।

च. वि. ६ / १२ p. 255

stools), Jatharagourava (heaviness in abdomen), Antrakujana (increased peristalsis) and Pravahana (straining) during digestion¹.

- It is associated with Vata².
- Vishamagni can be prone to diseases.
- This can be considered as Vikrut Jatharagni if it is responsible for diseases.

Jaranakala -

Jaranakala means time required for digestion of food. It is the from food intake to excretion of waste product.

Jaranakala of Ahara - Jarnakala of Samagni for food is four Yama (1 Yama $\approx$ 3 hours) i.e. 12 hours³. Tikshnagni requires less than 4 Yama, Mandagni requires more than 4 Yama. Nature of Samagni is uncertain. Sometimes it's like Samagni and sometimes it's like Mandagni.

Jaranakala of Bhesaja - Jarnakala of Samagni for medicine is two Yama (1 Yama $\approx$ 3 hours) i.e. 12 hours³. Tikshnagni requires less than 2Yama, Mandagni requires more than 2 Yama. Nature of Vishamagni is uncertain. Sometimes it's like Samagni and sometimes it's like Mandagni.

Four types of Jathargni can be summarized as follows -

Table 16 - Types of Jatharagni

Type of Jatharagni	Tikshnagni	Mandagni	Samagni	Vishamagni
Apachara-Sahatva	Can tolerate	Can not	Can not	Sometimes

¹यः कदाचित् सम्यक् पचति, कदाचित् आध्मानशूलोदावर्ततिसार जठरगौरवान्त्रकूजनप्रवाहणानि कृत्वा (पचति) । सु. सू. ३५ / २४ p. 154

²विषमो वातेन । सु.सू. ३५ / २४ p. 154

³यामैश्चतुर्भिः द्वाभ्यां च भोज्यभैषज्ययोः समे । पाकोऽग्नौ युक्तयोः प्राक् च तीक्ष्णे मन्दे पुनः चिरात्॥

अ. सं. सू. ११ / ५३ p. 151

(misconduct)		tolerate	tolerate	Can tolerate
Time required for digestion of food	< 4 Yama	> 4 Yama	4 Yama	Uncertain
Time required for digestion of medicine	< 2 Yama	> 2 Yama	2 Yama	Uncertain
Relation with Dosha	Pitta	Kapha	Sama Dosha	Vata
As cause of disease	No (upto certain extent)	Yes	No	Yes
As Prakrut and Vikrut	Prakrut	Vikrut	Prakrut	Vikrut

Jatharagni and Pachaka Pitta - similarities and differences -

According to some references, Jatharagni and Pachaka Pitta are same entities¹. Because -

- Agni is in synchronization with Pitta². Agni is Ashrita of Pachaka Pitta.
- Also their functions are alike³.
- In Lokapurusha Samya Siddhanta, Agni in Universe is compared with Pitta in Sharira.

¹..... न खलु पित्तव्यतिरेकात् अन्यो अग्निः इति ।

सु. सू. २१ / ९ p. 100

²अग्निरेव शरीरे पित्तान्तर्गतः कुपिताकुपितः शुभाशुभानि करोति ।

च. सू. १२ / ११ p. 80

पित्तान्तर्गत इति वचनेन शरीरे ज्वालादियुतवह्निनिषेधेन पित्तोष्मरूपस्य वन्देः सद्भावं दर्शयति । न तु पित्तादभेदं, पित्तेनाग्निमान्द्यस्य ग्रहण्यध्याये वक्ष्यमाणत्वात्, तथा पित्तहरस्यसर्पिषोऽग्निवर्धनेनोक्तत्वात् ।

चक्रपाणि टीका च. सू. १२ / ११

³तच्चादृष्टहेतुकेन विशेषेण पक्वामाशयमध्यस्थं पित्तं चतुर्विधमन्नपानं पचति, विवेचयति च

दोषरसमूत्रपुरीषाणि । तत्रस्थमेव चात्मशक्त्या शेषाणां पित्तस्थानानां शरीरस्य चाग्निकर्मणाऽनुग्रहं

करोति, तस्मिन् पित्ते पाचकोऽग्निरिति संज्ञा ॥

सु. सू. २१ / १०

- Agni and Pitta are having Teja Mahabhuta predominance¹.

According to some references, Agni and Pitta are not same. Because -

- Ghruta does Agni Deepana and Pitta Shamana².
- Pitta has Drava Guna and Agni has Tyakta Dravatva (left liquidity) Guna³.

Differences in Agni and Pitta can be summarized as follows -

Table 17 - Differences between Jatharagni and Pachaka Pitta

Jatharagni	Pachaka Pitta
Tyaktadravatva	Dravatva
Ruksha	Snigdha, Tikta, Katu, Amla Rasa
Urdhvagati	Adhogati
Ghruta – Agnidipana	Ghruta – Pittashamana
Aja Paya - Na Agnivardhana	Aja Paya - Pittavardhana
Divasvapa – Agnimandya	Divasvapa - Pittaprakopa
Ashrita of Pitta	Ashraya of Agni
Dushya	Dosha
Action results into Vipaka	Action results into Awasthapaka

The Pitta as a whole itself can not be considered as Agni. Only the Agneya portion of Pitta can be considered as Agni. This is balanced and controlled by the Apya portion of Pitta. The doctrine of Agni-Soma may be remembered in this aspect. Whenever this Apya portion increases; Agni is in a state of diminution; In spite of the aggravation of Pitta. This is observed in Pittaja Grahani. As Hemadri commented when due to predominancy of Tejasa Mahabhuta, Apyamsa (water part) of Pachaka Pitta gets ruined, it performs digestive functions and named as Pacakagni. Bhela

¹ यत्तैजसगुणोदयात् ।

अ. ह.सू. १२ / ११ p. 193

²न तु पित्तादभेदं, पित्तेनाग्निमान्दस्य ग्रहण्यध्याये वक्ष्यमाणत्वात्, तथा पित्तहरस्य

सर्पिषोऽग्निवर्धनेनोक्तत्वात् ।

चक्रपाणि टीका च. सू. १२ / ११

Samhita has explained using the terms Agni and Soma the present in the Suryamandala of Nabhi, covered with Somamandala which regulates Agni. This is quite in accordance with the concept of Pittosma. The concept of Pittosma can be correlated with the modern concept of enzymes required for any reaction along with the energy which combinedly digest the food. Thus, Ayurvedic concept of Jatharagni is best explained in the terms of Pittosma, unlike the Usma form of Agni in the animate world, because Pitta is a speciality of the living body. In Astanga Samgraha Vrুদ্ধha Vagbhata quotes that according to a group of Acaryas; Agni is nothing but combined heat of Dosa, Dhatu and Malas¹.

Importance of Jatharagni -

- Ayu, Varna, Bala Swasthya, Utsaha, Upachaya, Prabha, Oja, Teja, other types of Agni and Prana are dependent upon Jatharagni. If Agni becomes Shanta i.e. inactive, then person dies. If Agni becomes Vikruta, then it leads to various diseases. If Agni is correct, then person lives long healthy life².
- Agni achieves appropriate formation and functioning of Dhatu, Ojas, Bala, Varna etc. by proper digestion of Ahara³.
- Dosha Shama (Samyavastha) and Dosha Prakopa (vitiation) depends on Agni. So one should care for Agni and should not follow the causes for Agni Dushti⁴.

¹ Kamath Nagaraj ET&All:Concept Of Relationship Between Jatharagni, Pitta, Dhatwagni -An Appraisal. IAMJ: Volume 2; Issue 6; November- December - 2014

²आयुर्वर्णो बलस्वास्थ्यमोत्साहोपचयो प्रभा । ओजस्तेजोऽग्नयः प्राणाश्चोक्ता देहाग्नि हेतुकाः ।
शान्तेऽग्नौ म्रियते युक्ते चिरं जीवति अनामयः । रोगी स्याद् विकृते मूलं अग्निः तस्मात् निरुच्यते ॥

च. चि. १५ / ३, ४ p. 512

³यदन्नं देहधात्वोजो बलवर्णादि पोषकम् । तत्राग्निः हेतुराहारात्, नहि अपक्ववसादयः ॥

च. चि. १५ / ५ p. 512

⁴शमप्रकोपौ दोषाणाम् सर्वेषामग्निसंश्रितौ । तस्मादग्निं सदा रक्षेत् निदानानि च वर्जयेत् ॥

च. चि. ५ / १३६ p. 442

अग्न्यादि समतया एव दोषाः समाः लक्ष्यन्ते ।

चक्रपाणि च. चि. ५ / १३६

Causes of Agni Dushti -

For living healthy life, one should avoid the causes leading to Agni Dushti. These causes are Abhojana, Ajirashana, Atibhojana, and Vishamashana, consumption of Asatmya, Guru, Atishita, Atiruksha and Dushita Bhojana. Inappropriately done Shodhana Karma, Snehapana, after diseases, misbehavior according to Rutucharya and Vegadharana hamper the strength of Jatharagni¹.

Jatharagni Pariksha -

Assessment of Agni is done by Jaranashakti². Jaranashakti means capacity of digestion.

As digestion progresses, certain signs are reflected which denote the phase of digestion. These signs are called as Jirnahara Lakshana.

Jirnahara Lakshana -

Table 18 - Jirnahara Lakshana

No.	According to चरक संहिता	According to सुश्रुत संहिता	According to अष्टांग हृदय संहिता	According to अष्टांग संग्रह संहिता
1	विशुद्धे उद्वारे	विशुद्धे उद्वारे	विशुद्धे उद्वारे	उद्वारशुद्धिः
2	---	देहे च सुलघौ	देहे च सुलघौ	लघुता
3	---	क्लमपरिगमे	---	---
4	स्वस्थानस्थेषु दोषेषु	---	दोषे स्वपथगते	---

¹अभोजनातजीर्णातिभोजनात् विषमाशनात् । असात्म्यगुरुशीतातिरूक्षसंदुष्टभोजनात् ॥

विरेकवमनस्नेहविश्रमात् व्याधिकर्षणात् । देशकालतुर्वैषम्यात् वेगानां च विधारणात् ॥

च.चि. १५ / ४२ – ४४ p. 517

²अग्निं जरणशक्त्या परीक्षेत् ।

च.वि. ४ / ८ p. 248

5	---	कुक्षौ च शिथिले	---	---
6	अग्नौ चोदीर्णे	---	अग्नावुद्रिक्ते	---
7	जातायां च बुभुक्षायां	तथान्न श्रद्धायाम्	क्षुदुपगमने	क्षुत्
8	---	---	---	पिपासा
9	विसृष्टेषु वातमूत्रपुरीषवेगेषु	विसृष्टे विण्मूत्रे	प्रसृष्टे विण्मूत्रे	वेगोत्सर्गो यथोचित (वातमूत्रपुरीषाणाम्)
10	वातानुलोम्ये	वातेऽनुसरति	वातेऽनुसरति	---
11	विवृतेषु स्रोतसां मुखेषु	---	---	---
12	---	विशदकरणे	विशदकरणे	---
13	हृदये विशुद्धे	हृदि सुविमले	हृदि सुविमले	---
14	---	---	---	उत्साहः (आलस्य निरासः)

According to Charaka Samhita, Svasthanagata Dosha (Dosha at their place), Agni Udirana (Ignition of Jatharagni), Kshut Bodha (feeling of hunger), Vivruta Srotas Mukha (free channels), Shuddha Udgara (clear belching), Vishuddha Hrudaya (Alertness of all senses), Vatanulomana, Visrushta Vata-mutra-purisha Vega (free excretion of waste products) are described as Jirnahara Lakshana¹.

¹जीर्णे तु भुञ्जानस्य स्वस्थानस्थेषु दोषेषु अग्नौ चोदीर्णे जातायां च बुभुक्षायां विवृतेषु च स्रोतसां मुखेषु विशुद्धे चोद्वारे हृदये विशुद्धे वातानुलोम्ये विसृष्टेषु च वातमूत्रपुरीषवेगेषु अभ्यवहृतमाहारजातं सर्वशरीरधातूनप्रदूषयत् आयुः एव अभिवर्धयति केवलं तस्मात् जीर्णे अशनीयात् ।

च. वि. १ / ४ p. 231

According to Sushrut Samhita, Srushta Mala-Mutra, Laghuta in Deha (feeling of lightness in body), Vishuddha Udgara, Suvimala Hrudaya, Vatanulomana, Annayam Shraddha (liking towards food), Klamaparigama (freshness), Shithila Kukshi (feeling of lightness in flanks) are explained as Jirnahara Lakshana¹.

According to Ashtanga Hrudaya Samhita, Prasrushta Mala-Mutra, Suvimala Hrudaya, Svapathaga Dosha, Vishuddha Udgara, Kshut Uapagamana, Vatanulomana, Agni Udirana, Vishadakarana, Laghuta in Deha are elucidated as Jirnahara Lakshana.

According to Ashtanaga Hrudaya Samhita, Svasthanagatam Dosha, Vatanulomana, Utsrushta Mutra-Purisha Vega, Vishuddha Udgara, Vishuddha Hrudaya, Vishuddha Srotas Mukha, Vishadakarana, Laghu Sharira, Kshut Bodha are expressed as Jirnahara Lakshana².

According to Ashtanaga Sangraha Samhita, Udgarashuddhi, Utsaha (enthusiasm), Vegotsarga (excretion of waste products), Laghuta, Kshut, Pipasa (thirst) are considered as Jirnahara Lakshana³.

Udgarashuddhi (clear belching) -

Other terms used to denote this is Vishuddhe Udgare. Basically Udgara is Karma of Prana Vayu.

Laghuta (lightness) -

Similar terms used to indicate Laghutaare Dehe Cha Sulaghou, Klamaparigame.

¹विसृष्टे विण्मूत्रे विशकरणे देहे च सुलघौ विशुद्धे चोद्वारे हृदि सुविमले वाते च सरति ।

तथाऽन्नश्रद्धायां क्लमपरिगमे कुक्षौ च शिथिले प्रदेयस्त्वाहारो भवति भिषजां कालः स तु मतः ॥

सु. उ. ६४ / ८४ p. 814

²प्रसृष्टे विण्मूत्रे हृदि सुविमले दोषे स्वपथगे विशुद्धे चोद्वारे क्षुदुपगमने वातेऽनुसरति ।

तथाऽनावुद्रिक्ते विशदकरणे देहे च सुलघौ प्रयुञ्जीताहारं विधिनियमितं कालः स हि मतः ॥

अ. हृ. सू. ८ / ५५ p. 160

³उद्वारशुद्धिः उत्साहो वेगोत्सर्गो यथोचितः । लघुता क्षुत्पिपासा च जीर्णाहारस्य लक्षणम् ॥

अ. सं.सू. ११ / ५८

Kshut (hunger) -

Similar terms used to show Kshut are Agnou Chodirne, Jatayam Bubhukshayam, Shithila Kukshi, Udrikta Agni, Annayam Shraddha, and Kshutupagama.

Pipasa (thirst) -

Other term used to denote Pipasa is Trushna.

Vegotsarga (excretion) -

Parallel terms used to symbolize Vegotsarga are Visrushteshu Vatamutrapurishvegeshu, Vatanulomana, Svasthanastheshu Dosheshu, and Doshe Svapathagate. Vatanulomana or Adhovata means passage of flatulence. Mutrotsarga means excretion of urine. Malotsarga means defecation.

Utsaha (enthusiasm) -

Utsaha term can be correlated with Vivruta Srotas Mukha, Vishadakarana, and Vishuddha Hrudaya.

Vyadhi where Jathargni Vikruti is invoved –

- Grahani
- Atisara
- Arsha
- Udara
- Jwara

Outline and neural innervations of GIT -

Digestive system is made up of two parts -

1. Gastrointestinal (GI) tract
2. Accessory digestive organs.

Gastrointestinal (GI) tract - The gastrointestinal (GI) tract, or alimentary canal, is a continuous tube that extends from the mouth to the anus through the thoracic and abdominopelvic cavities. The length of the GI tract is about 5–7 meters (16.5–23 ft) in a living person.

Organs of the gastrointestinal tract -

- Mouth
- most of the pharynx
- esophagus
- stomach
- small intestine
- large intestine

Accessory digestive organs -

- Teeth
- Tongue
- Salivary glands
- Liver
- Gallbladder
- Pancreas

Teeth aid in the physical breakdown of food, and the tongue assists in chewing and swallowing. The other accessory digestive organs, however, never come into direct contact with food. They produce or store secretions that flow into the GI tract through ducts; the secretions aid in the chemical breakdown of food.

The GI tract contains food from the time it is eaten until it is digested and absorbed or eliminated. Muscular contractions in the wall of the GI tract physically break down the food by churning it and propel the food along the tract, from the esophagus to the anus. The contractions also help to dissolve foods by mixing them with fluids secreted into the tract. Enzymes secreted by accessory digestive organs and cells that line the tract break down the food chemically.

Overall, the digestive system performs six basic processes:

- 1. Ingestion.** This process involves taking foods and liquids into the mouth (eating).
- 2. Secretion.** Each day, cells within the walls of the GI tract and accessory digestive organs secrete a total of about 7 liters of water, acid, buffers, and enzymes into the lumen (interior space) of the tract.
- 3. Mixing and propulsion.** Alternating contractions and relaxations of smooth muscle in the walls of the GI tract mix food and secretions and propel them toward the anus. This capability of the GI tract to mix and move material along its length is called motility.
- 4. Digestion.** Mechanical and chemical processes break down ingested food into small molecules. In **mechanical digestion** the teeth cut and grind food before it is swallowed, and then smooth muscles of the stomach and small intestine churn the food. As a result, food molecules become dissolved and thoroughly mixed with digestive enzymes. In **chemical digestion** the large carbohydrate, lipid, protein, and nucleic acid molecules in food are split into smaller molecules by hydrolysis. Digestive enzymes produced by the salivary glands, tongue, stomach, pancreas, and small intestine catalyze these catabolic reactions. A few substances in food can be absorbed without chemical digestion. These include vitamins, ions, cholesterol, and water.
- 5. Absorption.** The entrance of ingested and secreted fluids, ions, and the products of digestion into the epithelial cells lining the lumen of the GI tract is called absorption. The absorbed substances pass into blood or lymph and circulate to cells throughout the body.
- 6. Defecation.** Wastes, indigestible substances, bacteria, cells sloughed from the lining of the GI tract, and digested materials that were not absorbed in their journey through the digestive tract leave the body through the anus in a process called defecation. The eliminated material is termed feces.

Neural innervations of the GI tract -

The gastrointestinal tract is regulated by an intrinsic set of nerves known as the enteric nervous system and by an extrinsic set of nerves that are part of the autonomic nervous system.

Enteric Nervous System - “brain of the gut,”

It consists of about 100 million neurons that extend from the esophagus to the anus. The neurons of the ENS are arranged into two plexuses: the myenteric plexus and submucosal plexus.

The myenteric plexus or plexus of Auerbach -

- Located between the longitudinal and circular smooth muscle layers of the muscularis.
- Motor neurons of the myenteric plexus supply the longitudinal and circular smooth muscle layers of the muscularis, this plexus mostly controls GI tract motility (movement), particularly the frequency and strength of contraction of the muscularis.

The submucosal plexus or plexus of Meissner -

- found within the submucosa
- The motor neurons of the submucosal plexus supply the secretory cells of the mucosal epithelium, controlling the secretions of the organs of the GI tract.

The plexuses of the ENS consist of motor neurons, interneurons, and sensory neurons.

Interneurons -

- Interconnection between the neurons of the myenteric and submucosal plexuses.

Sensory neurons -

- Supply the mucosal epithelium
- Some function as chemoreceptors, that are activated by the presence of certain chemicals in food located in the lumen of a GI organ.
- Others function as stretch receptors that are activated when food distends (stretches) the wall of a GI organ.

Autonomic Nervous System -

Parasympathetic nerves -

- By Vagus and parasympathetic fibers from sacral spinal cord
- Form neural connections with the ENS.
- In general, stimulation of the parasympathetic nerves that innervate the GI tract causes an increase in GI secretion and motility by increasing the activity of ENS neurons.

Sympathetic nerves -

- By nerve fibers from the thoracic and upper lumbar regions of the spinal cord
- Form neural connections with the ENS.
- In general, the sympathetic nerves that supply the GI tract cause a decrease in GI secretion and motility by inhibiting the neurons of the ENS.
- Emotions such as anger, fear, and anxiety may slow digestion because they stimulate the sympathetic nerves that supply the GI tract.

Digestive juices and enzymes -

There are five digestive juices -

- Saliva
- Gastric juice
- Pancreatic juice
- Succus entericus
- Bile

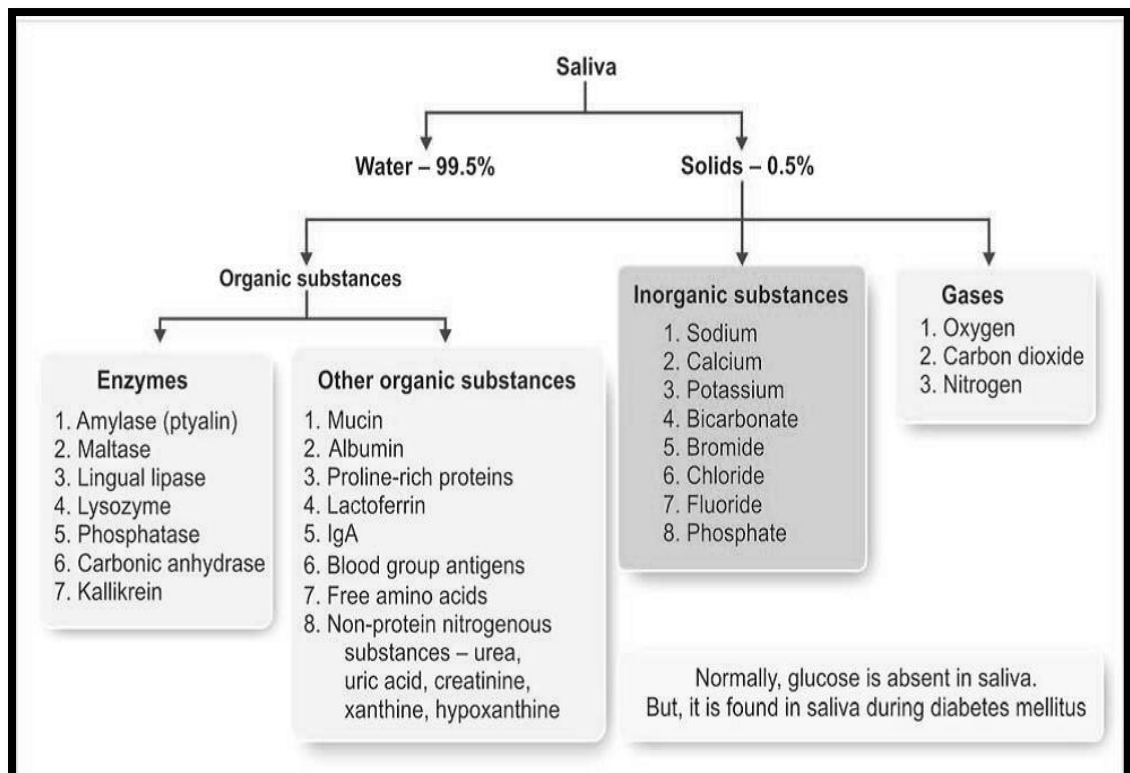
The necessity for so many digestive juices is -

- One juice does not contain all enzymes necessary for digesting all different types of foodstuffs.
- One particular digestive juice can not digest a particular type of food upto completion.

Saliva -

Composition of saliva -

Figure 1 Composition of saliva



Characteristics of saliva -**Table 19 - Characteristics of saliva**

Total volume	1000 mL to 1500 mL of saliva is secreted per day and it is approximately about 1 mL/minute.
Reaction	Slightly acidic
pH	6.35 to 6.85
Specific gravity	between 1.002 and 1.012
Tonicity	between 1.002 and 1.012
Consistency	Slightly cloudy due to presence of cells and mucin
Freezing point	0.07 - 0.34°C

Digestive function of saliva -

Saliva has three digestive enzymes, namely salivary amylase, maltase and lingual lipase.

1. Salivary Amylase -

- Salivary amylase is a carbohydrate-digesting (amylolytic) enzyme. It acts on cooked or boiled starch and converts it into dextrin and maltose.
- Though starch digestion starts in the mouth, major part of it occurs in stomach because, food stays only for a short time in the mouth.
- Optimum pH necessary for the activation of salivary amylase is 6.
- Salivary amylase cannot act on cellulose.

2. Maltase -

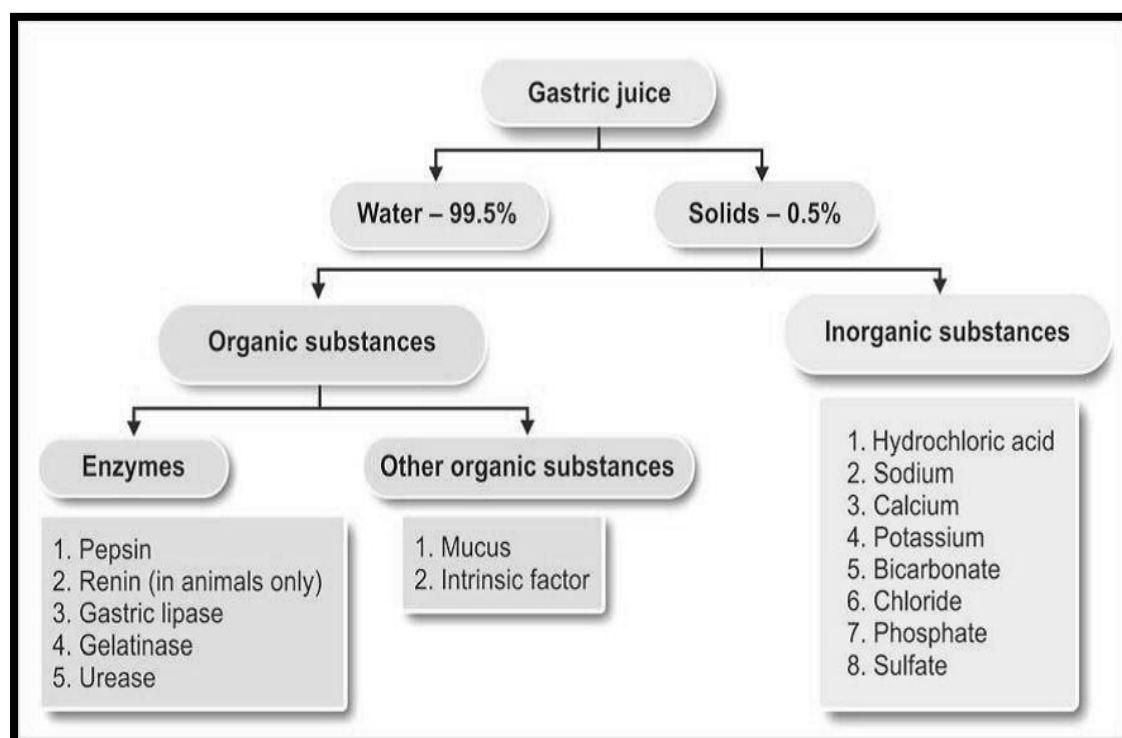
- Maltase is present only in traces in human saliva and it converts maltose into glucose.

3. Lingual Lipase -

- Lingual lipase is a lipid-digesting (lipolytic) enzyme.
- It is secreted from serous glands situated on the posterior aspect of tongue.
- It digests milk fats (pre-emulsified fats). It hydrolyzes triglycerides into fatty acids and diacylglycerol.

Table 20 - Enzymes of saliva

Enzyme	Source of secretion	Activator	Action
Salivary Amylase	All salivary glands	Acid medium	Converts starch into maltose
Maltase	Major salivary glands	Acid medium	Converts maltose into glucose
Lingual Lipase	Lingual glands	Acid medium	Converts triglycerides of milk fat into fattyacids and diacylglycerol

Gastric juice -**Composition of gastric juice -****Figure 2 Composition of gastric juice**

Characteristics of gastric juice -**Table 21 - characteristics of gastric juice**

Total volume	1200 mL/day to 1500 mL/day.
Reaction	Highly acidic, due to the presence of hydrochloric acid.
pH	0.9 to 1.2.
Specific gravity	1.002 to 1.004
Freezing point	0.59°C

Digestive function of gastric juice -

- Gastric juice acts mainly on proteins. Proteolytic enzymes of the gastric juice are pepsin and rennin.
- Gastric juice also contains some other enzymes like gastric lipase, gelatinase, urase and gastric amylase.

1. Pepsin

- Pepsin is secreted as inactive pepsinogen.
- Pepsinogen is converted into pepsin by hydrochloric acid.
- Optimum pH for activation of pepsinogen is below 6.

Action of pepsin

- Pepsin converts proteins into proteoses, peptones and polypeptides. Pepsin also causes curdling and digestion of milk (casein).

2. Gastric Lipase

- Gastric lipase is a weak lipolytic enzyme when compared to pancreatic lipase.
- It is active only when the pH is between 4 and 5 and becomes inactive at a pH below tributyrin (butter fat) into fatty acids and glycerols.

Actions of Other Enzymes of Gastric Juice

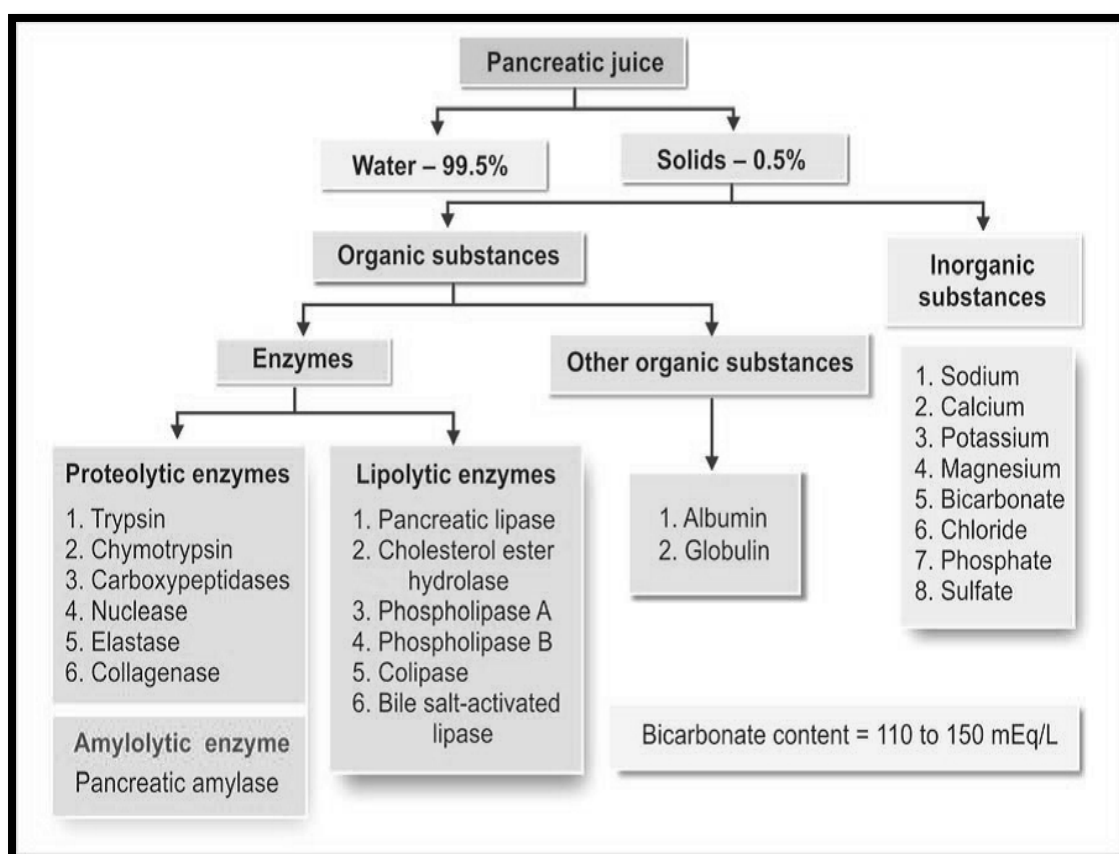
- Gelatinase: Degrades type I and type V gelatin and type IV and V collagen (which are proteoglycans in meat) into peptides
- Urase: Acts on urea and produces ammonia
- Gastric amylase: Degrades starch (but its action is insignificant)
- Rennin: Curdles milk (present in animals only)

Table 22 - Enzymes of gastric juice

Enzyme	Activator	Substrate	End product
Pepsin	Hydrochloric acid	Proteins	peptones and polypeptides
Gastric lipase	Acid medium	Triglycerides of butter	Fatty acids and glycerols
Gastric amylase	Acid medium	Starch	Dextrin and maltose (negligible action)
Gelatinase	Acid medium	Gelatin and collagen of meat	Peptides
Urase	Acid medium	Urea	Ammonia

Pancreatic juice -

Composition of pancreatic juice -

Figure 3 - Composition of pancreatic juice

Characteristics of pancreatic juice -**Table 23 - Characteristics of pancreatic juice**

Total volume	500 to 800 mL/day
Reaction	Highly alkaline
pH	8 to 8.3
Specific gravity	1.010 to 1.018

Digestive functions of pancreatic juice -

Pancreatic juice plays an important role in the digestion of proteins, lipids and carbohydrates.

Digestion of proteins -

- Major proteolytic enzymes - trypsin and chymotrypsin.
- Other proteolytic enzymes - carboxypeptidases, nuclease, elastase and collagenase.

1. Trypsin

- Digestion of proteins: Trypsin is the most powerful proteolytic enzyme. It is an endopeptidase and breaks the interior bonds of the protein molecules and converts proteins into proteoses and polypeptides
- Curdling of milk: It converts caseinogen in the milk into casein
- Blood clotting: It accelerates blood clotting
- It activates the other enzymes of pancreatic juice, viz.
 - Chymotrypsinogen into chymotrypsin
 - Procarboxypeptidases into carboxypeptidases
 - Proelastase into elastase
 - Procolipase into colipase
- Trypsin also activates collagenase, phospholipase A and phospholipase B
- Autocatalytic action: Once formed, trypsin itself converts trypsinogen into trypsin.

2. Chymotrypsin

- Digestion of proteins: Chymotrypsin is also an endopeptidase and it converts proteins into polypeptides.

- ii. Digestion of milk: Chymotrypsin digests caseinogens faster than trypsin. Combination of both enzymes causes rapid digestion of milk
- iii. On blood clotting: No action.

3. Carboxypeptidases - Carboxypeptidases are carboxypeptidase A and carboxypeptidase B.

- i. Carboxypeptidases are exopeptidases and break the terminal bond of protein molecules.
- ii. Exopeptidases split the polypeptides and other proteins into amino acids.
- iii. Carboxypeptidase A splits the proteins into amino acids having aromatic or aliphatic side chains.
- iv. Carboxypeptidase B converts the proteins into amino acids having basic side chains.

4. Nucleases - Nucleases of pancreatic juice are ribonuclease and deoxyribonuclease.

- i. Responsible for the digestion of nucleic acids
- ii. Convert the ribonucleic acid (RNA) and deoxyribonucleic acid (DNA) into mononucleotides.

5. Elastase

- i. Digests the elastic fibers.

6. Collagenase

- i. Digests collagen.

Digestion of lipids -

Lipolytic enzymes present in pancreatic juice are pancreatic lipase, cholesterol ester hydrolase, phospholipase A, phospholipase B, colipase and bilesaltactivated lipase.

1. Pancreatic lipase

- i. It digests triglycerides into monoglycerides and fatty acids.
- ii. Digestion of fat by pancreatic lipase requires two more factors:
 - Bile salts, which are responsible for the emulsification of fat, prior to their digestion
 - Colipase, which is a coenzyme necessary for the pancreatic lipase to digest the dietary lipids.

- iii. About 80% of the fat is digested by pancreatic lipase.
- iv. Deficiency or absence of this enzyme leads to excretion of undigested fat in feces (steatorrhea).

2. Cholesterol ester hydrolase

- i. Converts cholesterol ester into free cholesterol and fatty acid by hydrolysis.

3. Phospholipase A

- i. Digests phospholipids, namely lecithin and cephalin and converts them into lysophospholipids.
- ii. It converts lecithin into lysolecithin and cephalin into lysocephalin.

4. Phospholipase B

- i. It converts lysophospholipids (lysolecithin and lysocephalin) to phosphoryl choline and free fatty acids.

5. Colipase

- i. Colipase facilitates digestive action of pancreatic lipase on fats.

6. Bile-salt-activated lipase or carboxyl ester lipase or cholesterol esterase

- i. This enzyme has a weak lipolytic action than pancreatic lipase.
- ii. It hydrolyses a variety of lipids such as phospholipids, cholesterol esters and triglycerides.
- iii. Human milk contains an enzyme similar to bile-salt-activated lipase.

Digestion of carbohydrates -

1. Pancreatic amylase

- i. Converts starch into dextrin and maltose.

Table 24 - Enzymes of pancreatic juice

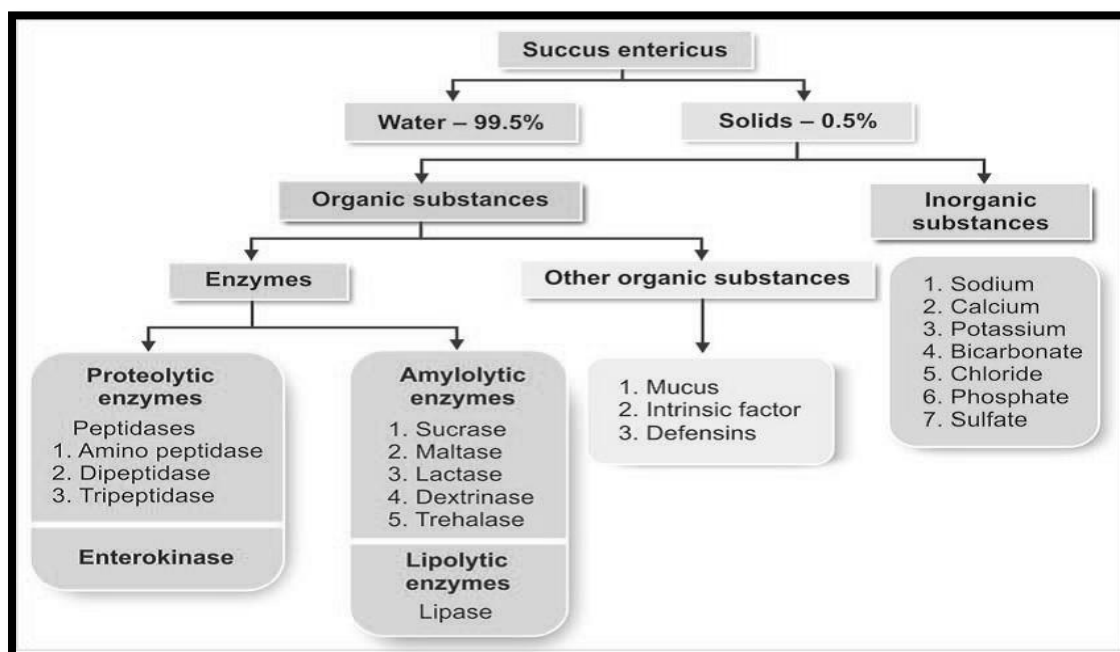
Enzyme	Activator	Substrate	End product
Trypsin	Enterokinase, Trypsin	Proteins	Proteoses and polypeptides
Chymotrypsin	Trypsin	Proteins	Polypeptides
Carboxypeptidases	Trypsin	Polypeptides	Amino acids
Nucleases	Trypsin	RNA and DNA	Mononucleotides
Elastase	Trypsin	Elastin	Amino acids
Collagenase	Trypsin	Collagen	Amino acids
Pancreatic lipase	Alkaline	Triglycerides	Monoglycerides and fatty

	medium		acids
Cholesterol ester hydrolase	Alkaline medium	Cholesterol ester	Cholesterol and fatty acids
Phospholipase A	Trypsin	Phospholipids	Lysophospholipids
Phospholipase B	Trypsin	Lysophospholipids	Phosphoryl choline and free fatty acids
Colipase	Trypsin	Facilitates action of pancreatic lipase	–
Bilesalt activated lipase	Trypsin	Phospholipids	Lysophospholipids
		Cholesterol esters	Cholesterol and fatty acids
		Triglycerides	Monoglycerides and fatty acids
Pancreatic amylase	–	Starch	Dextrin and maltose

Succus entericus or intestinal juice -

Composition of succus entericus -

Figure 4 - Composition of succus entericus



Characteristics of succus entericus -**Table 25 - Characteristics of succus entericus**

Total volume	1800 mL/day
Reaction	Alkaline
pH	8.3 (6.3 - 9.0)
Specific gravity	1.010

Digestive function of succus entericus -**1. Proteolytic Enzymes**

- i. Proteolytic enzymes are peptides which convert peptides into amino acids.

2. Amylolytic Enzymes

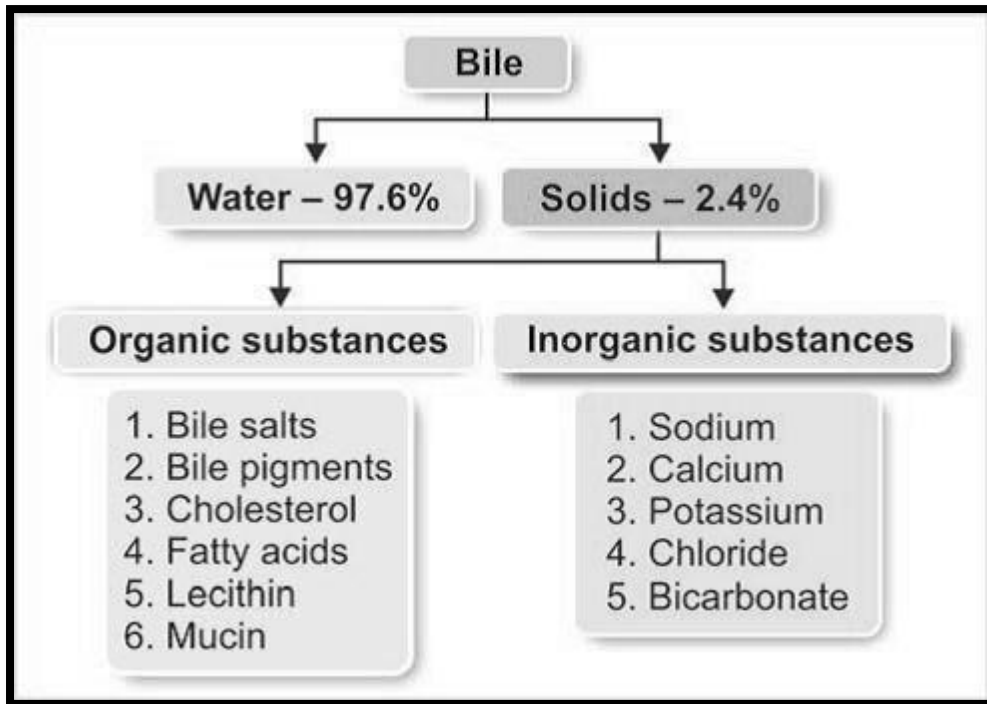
- i. Lactase, sucrase and maltase convert the disaccharides (lactose, sucrose and maltose) into two molecules of monosaccharides.
- ii. Dextrinase converts dextrin, maltose and maltriose into glucose.
- iii. Trehalase or trehalose glucohydrolase causes hydrolysis of trehalose (carbohydrate present in mushrooms and yeast) and converts it into glucose.

3. Lipolytic Enzyme

- i. Intestinal lipase acts on triglycerides and converts them into fatty acids.

Table 26 - Enzymes of succus entericus

Enzyme	Substrate	End product
Peptidases	Peptides	Amino acids
Sucrase	Sucrose	Fructose and glucose
Maltase	Maltose and maltriose	Glucose
Lactase	Lactose	Galactose and glucose
Dextrinase	Dextrin, maltose and maltriose	Glucose
Trehalase	Trehalose	Glucose
Intestinal lipase	Triglycerides	Fatty acids

Bile -**Composition of bile -****Figure 5 - Composition of bile****Characteristics of bile -****Table 27- Characteristics of bile**

Total volume	800 to 1,200 mL/day
Reaction	Liver bile - Alkaline Gall bladder bile - neutral or slightly alkaline or slightly acidic
pH	Liver bile - 7.7 (8 to 8.6) Gall bladder bile - 6.8 - 7.6
Specific gravity	1.010 to 1.011
Color	Golden yellow or green
Consistency	Viscid, mucoid liquid
Taste	Bitter

Digestive function of bile -

Bile salts are required for digestion and absorption of fats in the intestine. The functions of bile salts are:

1. Emulsification of Fats

- i. Emulsification is the process, by which the fat globules are broken down into minute droplets and made in the form of a milky fluid called emulsion in small intestine, by the action of bile salts.
- ii. Bile salts emulsify the fats by reducing the surface tension due to their detergent action.
- iii. Emulsification of fats by bile salts needs the presence of lecithin from bile.

2. Absorption of Fats

- i. Bile salts help in the absorption of digested fats from intestine into blood.
- ii. Bile salts combine with fats and make complexes of fats called micelles. The fats in the form of micelles can be absorbed easily.

Hormones of gastrointestinal tract¹ -**Table 28 - Hormones of gastrointestinal tract**

Hormone	Source of secretion	Actions
Gastrin	• G cells in stomach • TG cells in GI tract • Islets in fetal pancreas • Anterior pituitary • Brain	• Stimulates gastric secretion and motility • Promotes growth of gastric mucosa • Stimulates release of pancreatic hormones • Stimulates secretion of pancreatic juice • Stimulates secretion of pancreatic hormones
Secretin S cells of small	• intestine	• Stimulates secretion of watery and alkaline pancreatic • secretion • Inhibits gastric secretion and motility • Constricts pyloric sphincter • Increases potency of cholecystokinin action
Cholecystokinin	• I cells of small intestine	• Contracts gallbladder • Stimulates pancreatic secretion with enzymes • Accelerates secretin activity • Increases enterokinase secretion • Inhibits gastric motility • Increases intestinal motility • Augments contraction of pyloric sphincter • Suppresses hunger • Induces drug tolerance to opioids

¹(K Sembulingam, Prema Sembulingam, 2012, pp. 282-283)

Gastric inhibitory peptide (GIP)	• K cells in duodenum and jejunum • Antrum of stomach	• Stimulates insulin secretion • Inhibits gastric secretion and motility
Vasoactive intestinal polypeptide (VIP) Inhibits Hcl secretion in gastric juice	• Stomach • Small and large intestines • Dilates splanchnic (peripheral) blood vessels	• Stimulates secretion of succus entericus • Relaxes smooth muscles of intestine • Augments acetylcholine action on salivary glands • Stimulates insulin secretion
Glucagon	• α-cells in pancreas • A cells in stomach • L cells in intestine	• Increases blood sugar level
Glicentin	• L cells in duodenum and jejunum	• Increases blood sugar level
Glucagon-like polypeptide-1 (GLP-1)	• α-cells in pancreas • Brain	• Stimulates insulin secretion • Inhibits gastric motility
GLP-2	• L cells in ileum and colon	• Suppresses appetite
Somatostatin	• Hypothalamus • D cells in pancreas • D cells in stomach and small intestine	• Inhibits secretion of growth hormone • Inhibits gastric secretion and motility • Inhibits secretion of pancreatic juice • Inhibits secretion of GI hormones
Pancreatic polypeptide	• PP cells in pancreas • Small intestine	• Increases secretion of glucagons • Decreases pancreatic secretion
Peptide	• YY L cells of	• Inhibits gastric secretion and motility

	ileum and colon	• Reduces secretion of pancreatic juice • Inhibits intestinal motility and bowel passage • Suppresses appetite and food intake
Neuropeptide Y	• Ileum and colon • Brain and autonomic nervous system(ANS)	• Increases blood flow in enteric blood vessels
Motilin	• Mo cells in stomach and intestine • Enterochromoffin cells in intestine	• Accelerates gastric emptying • Increases movements of small intestine • Increases peristalsis in colon
Substance P	• Brain • Small intestine	• Increases movements of small intestine
Ghrelin	• Stomach • Hypothalamus • Pituitary • Kidney • Placenta	• Promotes growth hormone (GH) release • Induces appetite and food intake • Stimulates gastric emptying

Bristol stool chart¹ -

The Bristol stool scale, Bristol stool chart (BSC), Bristol stool form scale, or BSF scale is a medical aid designed to classify the form of human feces into seven categories. Sometimes referred to in the UK as the Meyers scale, it was developed by Dr. Stephen Lewis and Dr. Ken Heaton at the University of Bristol and was first published in the Scandinavian Journal of Gastroenterology in 1997. The authors of that paper concluded that the form of the stool is a useful surrogate measure of colon transit time. That conclusion has since been challenged as having limited validity, and only in types 1 and 2 when the subject is not constipated. However, it remains in use as a research tool to evaluate the effectiveness of treatments for various diseases of the bowel, as well as a clinical communication aid.

The Bristol stool scale is part of the diagnostic triad for irritable bowel syndrome: pain/discomfort (quality and quantity); bowel habit (quality and quantity); and bloating (in women).

The seven types of stool are:

- Type 1: Separate hard lumps, like nuts (hard to pass)
- Type 2: Sausage-shaped, but lumpy
- Type 3: Like a sausage but with cracks on its surface
- Type 4: Like a sausage or snake, smooth and soft
- Type 5: Soft blobs with clear cut edges (passed easily)
- Type 6: Fluffy pieces with ragged edges, a mushy stool
- Type 7: Watery, no solid pieces, entirely liquid

Types 1 and 2 indicate constipation, with 3 and 4 being the ideal stools (especially the latter), as they are easy to defecate while not containing excess liquid, and 5, 6 and 7 tending towards diarrhoea.

¹https://en.wikipedia.org/wiki/Bristol_stool_scale 1/13/2017, 4.43.pm

Gastrointestinal Symptom Rating Scale (GSRS)¹ -

A rating scale for gastrointestinal symptoms in patients with irritable bowel syndrome and peptic ulcer disease. Circle the number which best represents the current severity of the symptom.

1. Abdominal pains. Representing subjectively experienced bodily discomfort, aches and pains. The type of pain may be classified according to the patient's description of the appearance and quality of the pain as epigastric, on the basis of typical location, association with acid-related symptoms, and relief of pain by food or antacids; as colicky when occurring in bouts, usually with a high intensity, and located in the lower abdomen; and as dull when continuous, often for several hours, with moderate intensity.

Rate according to intensity, frequency, duration, request for relief, and impact on social performance.

0 No or transient pain

1 Occasional aches and pains interfering with some social activities

2 Prolonged and troublesome aches and pains causing requests for relief and interfering with many social activities

3 Severe or crippling pains with impact on all social activities

2. Heartburn. Representing retrosternal discomfort or burning sensations. Rate according to intensity, frequency, duration, and request for relief.

0 No or transient heartburn

1 Occasional discomfort of short duration

2 Frequent episodes of prolonged discomfort; requests for relief

3 Continuous discomfort with only transient relief by antacids

3. Acid regurgitation. Representing sudden regurgitation of acid gastric content. Rate according to intensity, frequency, and request for relief.

0 No or transient regurgitation

1 Occasional troublesome regurgitation

2 Regurgitation once or twice a day; requests for relief

3 Regurgitation several times a day; only transient and insignificant relief by antacids

¹www.meridianinstitute.com/reports/headache/Appendix%20N.pdf 1/13/2017,

4. Sucking sensations in the epigastrium. Representing a sucking sensation in the epigastrium with relief by food or antacids. If food or antacids are not available, the sucking sensations progress to ache, and pains. Rate according to intensity, frequency, duration, and request for relief.

0 No or transient sucking sensation

1 Occasional discomfort of short duration; no requests for food or antacids meals

2 Frequent episodes of prolonged discomfort, requests for food and antacids between meals

3 Continuous discomfort; frequent requests for food or antacids between meals

5. Nausea and vomiting. Representing nausea which may increase to vomiting. Rate according to intensity, frequency, and duration.

0 No nausea

1 Occasional episodes of short duration

2 Frequent and prolonged nausea; no vomiting

3 Continuous nausea; frequent vomiting

6. Borborygmus. Representing reports of abdominal rumbling. Rate according to intensity, frequency, duration, and impact on social performance

0 No or transient borborygmus

1 Occasional troublesome borborygmus of short duration

2 Frequent and prolonged episodes which can be mastered by moving without impairing social performance

3 Continuous borborygmus severely interfering with social performance

7. Abdominal distension. Representing bloating with abdominal gas. Rate according to intensity, frequency, duration, and impact on social performance.

0 No or transient distension

1 Occasional discomfort of short duration

2 Frequent and prolonged episodes which can be mastered by adjusting the clothing

3 Continuous discomforts seriously interfering with social performance

8. Eructation. Representing reports of belching. Rate according to intensity, frequency, and impact on social performance.

0 No or transient eructation

1 Occasional troublesome eructation

2 Frequent episodes interfering with some social activities

3 Frequent episodes seriously interfering with social performance

9. Increased flatus. Representing reports of excessive wind. Rate according to intensity, frequency, duration, and impact on social performance

0 No increased flatus

1 Occasional discomfort of short duration

2 Frequent and prolonged episodes interfering with some social activities

3 Frequent episodes seriously interfering with social performance

10. Decreased passage of stools. Representing reported reduced defecation. Rate according to frequency. Distinguish from consistency.

0 Once a day

1 Every third day

2 Every fifth day

3 Every seventh day or less frequently

11. Increased passage of stools. Representing reported increased defecation. Rate according to frequency. Distinguish from consistency.

0 Once a day

1 Three times a day

2 Five times a day

3 Seven times a day or more frequently

12. Loose stools. Representing reported loose stools. Rate according to consistency independent of frequency and feelings of incomplete evacuation.

0 Normal consistency

1 Somewhat loose

2 Runny

3 Watery

13. Hard Stools. Representing reported hard stools. Rate according to consistency independent of frequency and feelings of incomplete evacuation.

0 Normal consistency

1 Somewhat hard

2 Hard

3 Hard and fragmented, sometimes in combination with diarrhea

14. Urgent need for defecation. Representing reports of urgent need for defecation, feelings of incomplete control, and inability to control defecation. Rate according to intensity, frequency, and impact on social performance.

0 Normal control

1 Occasional feelings of urgent need for defecation

2 Frequent feelings of urgent need for defecation with sudden need for a toilet interfering with social performance

3 Inability to control defecation

15. Feeling of incomplete evacuation. Representing reports of defecation with straining and a feeling of incomplete evacuation of stools. Rate according to intensity and frequency.

0 Feeling of complete evacuation without straining

1 Defecation somewhat difficult; occasional feelings of incomplete evacuation

2 Defecation definitely difficult; often feelings of incomplete evacuation

3 Defecation extremely difficult; regular feelings of incomplete evacuation

Modified ODS Longo Score¹ -**Figure 6 - Modified ODS Longo score**

S. No.	QUESTIONS	SCORES [†]			
1	Medication to evacuate (enemas or suppositories)	0	1	2	3
2	Difficulties to evacuate	0	1	2	3
3	Digitation to evacuate	0	1	2	3
4	Return to toilet to evacuate	0	1	2	3
5	Feeling of incomplete evacuation	0	1	2	3
6	Straining to evacuate	0	1	2	3
7	Time needed to evacuate	0	1	2	3
8	Lifestyle Alteration	0	1	2	3

†Each point is scored according to frequency of the symptom. Questions 1-6: 0 = never, 1 = less than once weekly, 2 = 1–6 times weekly, 3 = every day; question 7: 0 = less than 5 min, 1 = 6 – 10 min, 2 = 11–20 min, 3 = more than 20 min; question 8: 0 = no alteration of lifestyle, 1 = mild alteration, 2 = moderate alteration, and 3 = significant alteration of lifestyle. The total score is in the range of 0 (best) to 24.

Currently Modified ODS (MODS) Longo score is the most commonly used scoring system to decide treatment strategy for ODS patients as well as to see percent and total change in ODS symptom score from baseline after intervention in short term and long term follow up trials at various intervals. Some authors have taken 9 as cut off score for intervention in ODS patients while others have taken 7 as cut off point. There is no consensus till date on cut off score.²

¹ Rashid A, Khuroo S (2014) Obstructed Defecation Syndrome: A Treatise on Its Functional Variant. Intern Med S1: 005. doi:10.4172/2165-8048.S1-005

² Shruti Sharma, Brij B Agarwal (2012) Scoring Systems in Evaluation of Constipation and Obstructed Defecation Syndrome (ODS). JIMSA Vol.25 No.1

Interpretation on Review of literature -

Correlation between Functions of Purishavaha Srotas and Jatharagni –

Functions of Purishavaha Srotas mainly represented in the form of Purisha and Purishavega. Purisha is formed by the action of Jatharagni on Ahara. Therefore Paripindita Swarupa of Purisha depends upon Jatharagni. If Purisha is formed normal, then its propulsion becomes easy. As a result, Purishavega turns regularly.

If Jatharagni becomes Vikrut, then first of all oddity will be there in Purisha. If Hetusevana continues, then later there will be Vikruti in Purishavega and appearance of Purishavaha Srotas Dushti Lakshana.

Because of Agantu Hetu like Purishavegadharana, Gativilomata of Vayu will be there resulting into Jatharagni Vikruti and Purisha Vikruti.

Purisha Karma -

Avashthambha¹ i.e. Shariradharana is function of Purisha². Also, Vayu and Agni Dharana is described as function of Purisha³.

Sharira Dharana means Purisha gives strength to Sharira. In case of Kshaya of all Dhatu, Purisha is the only source of support of Sharira⁴.

If Purisha is formed properly, its excretion will be proper. It adds to proper movement of Vayu in Sharira. Also, if the Adho Gati (downwards) of Apana is appropriate then Dhmapana of Jatharagni is proper⁵. Thus Purisha contributes to good functioning of Vayu and Agni.

¹ अवष्टम्भः पुरीषस्य . . . ।

अ. ह. सू. ११ / ५ p.183

² अवष्टम्भो – देहधारणशक्तिः, ... ।

सर्वांगसुंदर टीका, अ. ह. सू. ११ / ५ p.183

³ पुरीषमुपस्तम्भंवाय्वग्निधारणञ्च (करोति) ।

सु. सू. १५ / ४ p.68

⁴ सर्वधातुक्षयार्तस्य बलं तस्य हि विड्बलम् ॥

च. चि. ८ / ४२ p.461

⁵ प्राणापानसमानैस्तु ... गतिमवस्थितैः ॥

सु. सू. ३५ / २८ p. 154

Form of Purisha and Bristol stool chart -

Bristol stool chart is categorization of form of stool. According to Ayurveda Paripindita (formed) is normal form of Purisha¹. Paripindita Purisha states proper functioning of Jatharagni and Purishavaha Srotas. There are 7 types of stool mentioned in Bristol chart. Types 1 and 2 indicate constipation, with 3 and 4 being the ideal stools (especially the latter), as they are easy to defecate while not containing excess liquid, and 5, 6 and 7 tending towards diarrhea².

The formation of seven types of stool can be explained in following ways -

- Type 1 and type 2 - These denote more Shoshana (absorption of water) because of increased Ushna Guna (of Jatharagni) or decreased Chala Guna (of Vata). If Chala Guna is decreased, there will be less peristaltic movement required for passage of fecal matter which is needed for defecation.
 - Type 3 and type 4 - These denote normalcy i.e. coordination between Ushna Guna of Jatharagni and Chala Guna of Vata. These can be seen in case of Samagni and Tikshnagni (upto certain extent)
 - Type 5, type 6 and type 7- These denote decreased Ushna Guna as well as increased Chala Guna. Because of decreased Ushna Guna Shoshana will not be proper, resulting into loose stools. If Chala Guna is increased, it can result into excess movements of gut resulting into increased passage of loose stools.
- Thus form of stools can be correlated with types of Jatharagni as follows -

Table 29 – Types of Jatharagni and form of stools

Types of Jatharagni	Form of stools
Samagni	• Type 3 and 4
Tikshnagni	• Type 3 and 4 • Sometimes type 1 or 2 may be there (if Ushana Guna is more)

¹पक्वाशयं तु प्राप्तस्य शोष्यमाणस्य वह्निना । परिपिण्डितपक्वस्य वायुः स्यात् कटुभावतः ॥

च. चि. १५ / ११ p.512

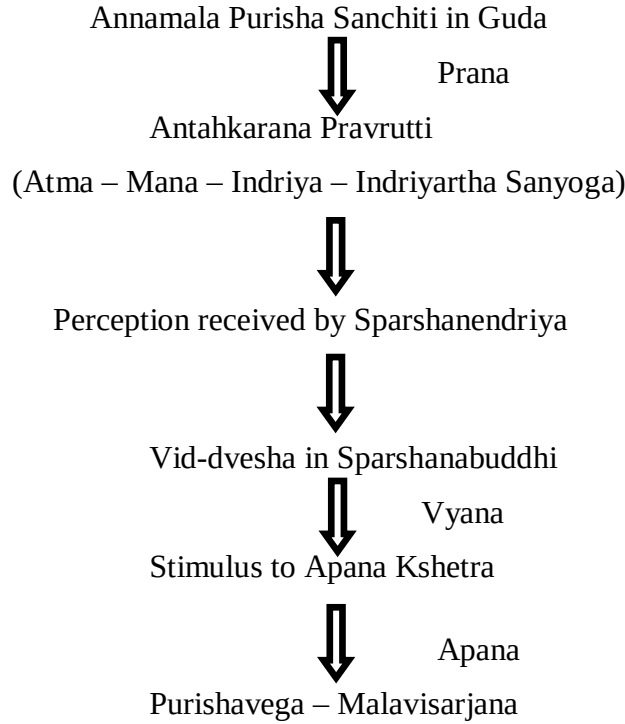
² https://en.wikipedia.org/wiki/Bristol_stool_scale_1/13/2017, 4.43.pm

Mandagni	• Type 3 and 4 but time for digestion is more • Type 5, 6 or 7 in case of diseases
Vishamagni	• Varies from type 1 to 7

Process of Purishavega -

In Ayurveda, process of Vega is not directly mentioned. With the help of supplementary references from compendia it can be fashioned. Purisha (feces) is the end product of digestion¹. It has to be eliminated out of body. The urge for excretion of Purisha is called Purishavega (defecation reflex)². Initiation from Atma, Indriya, and Manas in conjunction with Sparshanendriya and Vata Dosha Process of Purishavega takes place.

This process can be summarized as follows.



¹ किट्टमन्नस्य विण्मूत्रं ।

च. चि. १५ / १८ p.515

² वेगः प्रवृत्ति उन्मुखत्वं मूत्रपुरीषादीनाम् ।

च. सू. ७ / ३ चक्रपाणि p.49

❖ **Role of Prana Vata in Purishavega –**

The action of Vid – Visarjana is initiated and control by Prana as Indriyadharana is function of Prana¹.

Sthana of Prana and Indriya is Shira². In case of Shirobhighata, Vega Nirmana Prakriya is not proper. Cheshtanasha is described in Shirobhighata Lakshanani³.

❖ **Role of Sparshanendriya and Chetas in Purishavega –**

Utsarga of Purisha by Karmendriya Guda does not take place without Indriyajnana. Sparshanendriya covers all parts of body. It is in Samavaya Sambandha with Chetas. So Chetas is also present everywhere in body⁴. The Lakshana of Panchamahabhuta as well as their opposite Lakshana are Sparshanendriya Gamy⁵. Sukha-Dukha Vedana Pravartana is done by Sparsha⁶. When fecal matter is collected in rectum, it is percept by Sparshanendriya by Pratyaksha Jnana in following steps⁷.

¹ . . . प्राणोऽत्र मूर्धगः । उरःकण्ठचरो बुद्धिहृदयेन्द्रियचित्तधृक् ॥ अ. ह. सू. १२ / ४

² प्राणाः प्राणभृतां यत्र श्रिताः सर्वेन्द्रियाणि च । यदुत्तमाङ्गमङ्गानां शिरस्तदभिधीयते ॥

च. सू. १७ / १२

³ शिरस्यभिहते . . . चेष्टानाश . . . ।

च. सि. ९ / ६

⁴ तत्रैकं स्पर्शनमिन्द्रियाणामिन्द्रियव्यापकं, चेतः समवायि, स्पर्शनव्याप्तेः व्यापकमपि च चेतः . . . ।

च. सू. ११ / ३८

⁵ खरद्रवचलोष्णत्वं भूजलानिलतेजसाम् । आकाशस्याप्रतिघातो दृष्टं लिंगं यथा क्रमम् ॥

लक्षणं सर्वमेवैतत् स्पर्शनेन्द्रियगोचरम् । स्पर्शनेन्द्रियविज्ञेयः स्पर्शो हि स विपर्ययः ॥

च. शा. १ / २९, ३०

⁶ स्पर्शनेन्द्रियसंस्पर्शः स्पर्शो मानस एव च । द्विविधः सुखदुःखानां वेदनानां प्रवर्तकः ॥

च. शा. १ / १३३

⁷ प्रत्यक्षज्ञानहेतुः इन्द्रियार्थसन्निकर्षः षड्विधः । संयोगः संयुक्तसमवायः संयुक्तसमवेतसमवायः

समवायः समवेतसमवायः विशेषणविशेषभावश्चेति । चक्षुषा घटप्रत्यक्षजनने संयोगः सन्निकर्षः ।

घटरूपप्रत्यक्षजनने संयुक्तसमवायः सन्निकर्षः । चक्षुः संयुक्ते घटे रूपस्य समवायात् ।

- Sanyogasannikarsha – Sannikarsha of Vid-Dravya with MansadharaTvacha
- Sanyuktasamavaya Sannikarsha – Sparsha of Vid-dravya and its TyajyatvaJnana to MamsadharaTvacha
- Sanyukta Samaveta Samavaya Sannikarsha – Dukhadayaka - Sparshajnana and its Unupayuktata is perceived by Mamsadhara Tvacha
- Vid-dvesha in Sparshanabuddhi after Vishaya – Indriya – Mana – Atma Sannikarsha.

Thus Sparshanendriya plays important role in Purishavega.

❖ **Role of other subtypes of Vata Dosha in Purishavega -**

Payu Karmendriya is stimulated by Sparshanabuddhi via Vyanavayu to perform Vid-Vibhaga. Vyana is responsible for all types of Gati in Sharira¹. Karmendriya Payu, with the help of Sthanika Vayu Apana brings about the action of Vega – Vid–Visarjana.

Different terminologies used in relation with Purishavega –

- Vega - urge
- Visarjana - defecation
- Nishkramana – expelled out
- Bhedana – strong purgative
- Virechana – liquefaction and expulsion of fecal matter
- Sransana – scrubbing and propulsion of fecal matter
- Anulomana – soft purgative

रूपत्वसामान्यप्रत्यक्षे संयुक्तसमवेतसमवायः सन्निकर्षः । चक्षुः संयुक्ते घटे रूपं समवेतं तत्र रूपत्वस्य समवायात् । . . . तर्कसंग्रह

¹ व्यानो हृदि स्थितः कृत्स्नदेहचारी महाजवः । गत्यपक्षेपणोत्क्षेपनिमेषोन्मेषणादिकाः ॥

प्रायः सर्वाः क्रियाः तस्मिन् प्रतिबद्धाः शरीरिणाम् ।

अ. ह. सू. १२/ ६, ७

Correlation of Purishavaha Srotas Dushti Lakshana -

- ❖ Kruchchhrena - Kruchchhrena means with difficulty. Following points mentioned in Modified ODS Longo score can be correlated to Kruchchhrata.
 1. Medication to evacuate
 2. Difficulties to evacuate
 3. Straining to evacuate
 4. Digitation to evacuate
- ❖ Alpalpa - Alpalpa means less quantity of stool or unsatisfactory evacuation. Following points from Modified ODS Longo score can be correlated to Alpalpa.
 1. Return to toilet to evacuate
 2. Feeling of incomplete evacuation
- ❖ Sashabda - Sashabda means with sound. It is difficult to assess this Lakshana as
 1. This is subjective observation
 2. volunteers get confused with flatulence
 3. This symptom is unnoticed most of the times.
- ❖ Sashula - Sashula means pain with defecation. This can be assessed by Visual analogue Scale.
 1. No pain
 2. Mild, annoying pain
 3. Nagging uncomfortable, troublesome pain
 4. Distressing, miserable pain
 5. Intense, dreadful horrible pain
 6. Worst possible, unbearable, excruciating pain
- ❖ Atidrava - Atidrava means loose stools.
- ❖ Atigrathita - Atigrathita means hard stools.
- ❖ Atibahu - Atibahu means increased passage of stools.
- ❖ Upavishanta - Upavishanta means have to sit longer. This can be correlated with point from Modified ODS Longo score as Long time needed for evacuation.

Thus Purishavaha Srotas Dushti can be assessed as above.

Effect of Purishavaha Srotas Dushti Hetu on Sharira -

Sandharana i.e. Purishavega Dharana, Atyshana, Ajirashana and Adhyashana are said to be causes of malfunctioning of Purishavaha Srotas¹. In Purishavega Dharana, Gativilomata may results into Jatharagni Mandya. Atyashana means taking food in excess quantity. Ajirashana means eating food before earlier ingested food is digested completely. Atyshana i.e. Atibhojana and Ajirashana are also listed as Agni Dushti hetu². So Atyashana and Ajirashana result into improper function of Jatharagni. Adhyashana is eating more frequently³. Adhyashana may result in inadequate function of Jatharagni as enough time is not there for proper digestion.

All the causes of Purishavaha Srotas Dushti are hampering the function of Jatharagni. Purisha is the end product of Ahara Pachana done by Jatharagni. If Jatharagni is not working properly, Purisha will not be formed properly. Ultimate result of these is Purishavaha Srotas Dushti. Also consequences of Jatharagni Dushti may be seen along with.

Jirnahara Lakshana -

Jirna means old. In relation with Ahara it refers as Digested food. It is supposed that one should not consume next food (full meal) until previously taken food is digested completely⁴. Jirnahara Lakshana reflects process of digestion. In addition it tells about completion of digestion, like the end stage of digestion is formation and excretion of waste product. After which one is supposed to consume next food (full meal). Also any variation in Jirnahara Lakshana gives idea about abnormality. So knowing Jirnahara Lakshana is important.

¹ संधारणात् अत्यशनात् अजीर्णाशनाध्यशनात्तथा । वर्चोवाहीनि दुष्यन्ति दुर्बलाग्नेः कृशस्य च ॥

च. चि. १५ / २१

² अभोजनात्तजीर्णातिभोजनात् विषमाशनात् । असात्म्यगुरुशीतातिरूक्षसंदुष्टभोजनात् ॥

विरेकवमनस्नेहविभ्रमात् व्याधिकर्षणात् । देशकालर्तुवैषम्यात् वेगानां च विधारणात् ॥

च. चि. १५ / ४२ – ४४

³ भुक्तं पूर्वान्नशेषे तु पुनरध्यशनं मतम् ।

च. चि. १५ / २३६

⁴ जीर्णेऽश्नीयात्..... ।

च. वि. १ / २५

❖ **Udgarashuddhi** (clear belching) -

Vayu is responsible for any kind of movement in body. Likewise, as ingested food moves from Amashaya to Pachyamanashaya, Vayu is accountable for that. As food moves into Pachyamanashaya, the cavity inside that is occupied by food, resulting into displacement of Vayu which was positioned in Pachyamanashaya. So the displaced Vayu tries to move through nearest way from Pachyamanashaya, i.e. mouth in terms of belching. As food has undergone first stage of Avasthapaka in Amashaya, the displaced Vayu does not have any smell of ingested food. That's why it is called as Udgarashuddhi.

❖ **Laghuta** (lightness) -

Feeling of lightness is subjective. After ingestion of food, related increase of weight is there. After action of Jatharagni, assimilation takes place and increased weight comes to base line consequently. As a result lightness is felt.

❖ **Kshut** (hunger) -

Kshut is symbol of gastric emptying time. As food moves from Amashaya to Pachyamanashaya, stomach becomes empty. So hunger is felt during or at the end of Second Avasthapaka. it can be correlated with gastric emptying time.

❖ **Pipasa** (thirst) -

Thirst is felt when Ushna and Tikshna Guna are functioning at their crest during the process of digestion. At that time body demands for Sheeta, Mrudu and Snigdha Guna to compensate in terms of Jala which is reflected as Trushna or Pipasa. So thirst is there during or at the end of Second Avasthapaka.

❖ **Vegotsarga** (excretion) -

Vegotsarga is indication of completion of digestion. Adhovata, Mutra, Purisha are considered as Aharamala¹. Mala are going to form at the end of digestion.

Adhovata i.e. Aharamala Svarupa Vayu is formed at third stage of Avasthapaka². Its elimination is the function of Apana Vata.

According to Ayurveda, Mutra Nirmana takes place in Pakwashaya³. When Ahara comes to Pakwashaya during third stage of Avasthapaka, separation of Mala part is done in two forms Drava Mala and Ghana Mala. Drava Mala is turned into Mutra and is excreted by Apana Vata⁴. Ghana Mala is converted into Purisha and is excreted out of body by Apana Vata¹¹.

Svasthanastheshu Dosheshu or Doshe Svapathagame means after completion of digestion all Sharira Bhavas - Dosha, Dhatu, and Mala are placed at their appropriate place. Vata, Pitta and Kapha are formed during third, second and first stage of Avasthapaka respectively. After Sara-Kitta Vibhajana, Ahararasa is carried to Hrudaya and is circulated all over the body. There by Dhatu Poshana is achieved. Mala are excreted out.

❖ **Utsaha** (enthusiasm) -

Enthusiasm is quite subjective sensation. When digestion completes, formed Mala are going to be excreted from body. After excretion, person feels

¹ तत्राहारप्रसादाख्यो रसः किट्टं च मलाख्यमभिनिर्वर्तते । किट्टात् स्वेदमूत्रपुरिषवातपित्तश्लेष्माणः

.... ।

च. सू. २८ / ४

² पक्वाशयं तु प्राप्तस्य शोष्यमाणस्य बन्दिना । परिपिण्डितपक्वस्य वायुः स्यात् कटुभावतः ॥

च. चि. १५ / ११

³ पक्वाशयगताः तत्र नाड्यो मूत्रवहास्तु याः । तर्पयन्ति सदा मूत्रं सरितः सागरं यथा ॥

सु. नि. ३ / २१

⁴ आहारस्य रसः सारः सारहीनो मलद्रवः ।

शा. सं. पू. खं. ६ / ६

lightness, energetic which is termed as Utsaha. When Mala are excreted out, cleanness is experienced by all Srotas. It is termed as Vivruta Srotas Mukha. Because of pooled outcome of excretion, enthusiasm and cleanness in channels of body, purity is felt at Hrudaya which is coined as Vishuddha Hrudaya. Here meaning of Hrudaya is not limited to heart. According to Ayurveda, Hrudaya is seat for Manas, Indrya, Atma and Ojas¹. Thus it has broad spectrum. So Vishuddha Hrudaya means proper functioning of Manas, Indriya will be very good and person will be attentive.

Correspondence of Jirnahara Lakshana with types of Jatharagni -

❖ For Udgarashuddhi, Utsaha, Laghuta, Kshut and Pipasa -

Yogaratkara elaborated the fact as one should not consume any food before one Yama i.e. three hours and should not stay away from food for more than two Yama i.e. six hours². This is the ideal Kshut-Pravartana-Kala in Swastha Purusha. I.e. one to two Yama is the appropriate time for generation of Jirnahara Lakshana like Udgarashuddhi, Utsaha, Laghuta, Kshut and Pipasa for Samagni. Tikshnagni can digest fast³. So time required for Tikshnagni to generate above Jirnahara Lakshana should be less than one Yama. Mandagni digests slowly⁴. So time required for Mandagni to generate above Jirnahara Lakshana should be more than two Yama. Because of uncertain behavior of Vishamagni, prediction of time of Jirnahara Lakshanaotpatti cannot be appropriate.

- For Samagni - between 1 to 2 Yama (approximately between 3 to 6 hous)

¹ यद्धि तत् स्पर्शविज्ञानं धारि तत्तत्र संश्रितम् । तत् परस्यौजसः स्थानं तत्र चैतन्यसंग्रहः ॥

हृदयं महदर्थश्च तस्मादुक्तं चिकित्सकैः ॥

च. सू. ३० / ६-७

² याममध्ये न भुक्तव्यं यामयुग्मं न लङ्घयेत् । याममध्ये रसोत्पत्तिः यामयुग्मात् बलक्षयः ॥

यो. र. नित्यप्रवृत्ति प्रकार

³ यः प्रभूतमपि उपयुक्तमन्नं आशु पचति ।

सु. सू. ३५ / २४

⁴ यः तु अल्पमपि उपयुक्तं कृत्वा महता कालेन पचति ।

सु. सू. ३५ / २४

- For Tikshnagni - less than 1 Yama
- For Mandagni - more than 2 Yama
- For Vishamagni - uncertain

❖ **For Mutravega and types of Jatharagni -**

Mutra is Aharamala. According to Ayurveda, Pakwashaya is the Sthana of Mutrotpatti. After Sara - Kitta Vibhajana, Sara Bhaga is carried to Hrudaya by Samana Vata and Kitta Bhaga is pushed to Pakwashaya i.e. Maladhara Kala. At Pakwashaya, Mala Bhaga is divided into Drava Mala and Ghana Mala. Drava Mala is carried to Basti by Sira¹. Then it is converted to Mutra. Production of Mutra represents separation of Mala Bhaga is over.

In Kshemakutuhala, number of Mutra Vega in healthy individual is described as six². It can be considered for Samagni.

- For Samagni - 6 Mutravega per day
- For Tikshnagni - more than 6 Mutravega per day. As 'Prabhuta Ashana Pana' is associated with Tikshnagni.
- For Mandagni - less than 6 Mutravega per day. Because Mandagni has feature as 'Mahata Kalena Pachati'.

❖ **For Purishavega and types of Jatharagni -**

Assessment of Jatharagni is done by Jaranashakti. Jaranashakti means digestive capacity. The Jatharagni which digests Anna in four Yama (approximately 12 hours) is Samagni³. It is the duration from ingestion to defecation. Also, number of Purishavega in healthy individual is described as

¹ आहारस्य रसः सारः सारहीनो मलद्रवः । शिराभिः तज्जलं नीतं बस्तौ मूत्रत्वमाप्नुयात् ॥

शा. सं. पू. खं. ६ / ६

² . . . द्विभुञ्जानो षण्मूत्री द्विपुरीषकः ।

क्षेमकुतूहल ५ / ९३

³ यामैश्चतुर्भिः द्वाभ्यां च भोज्यभैषज्ययोः समे णाकोऽनौ युक्तयोः प्राक् च तीक्ष्णे मन्दे पुनः चिरात् ॥

अ. सं. सू. ११ / ५३

two per day by Kshemakutuhala². So in case of Purishavega following factors can be assumed.

- For Samagni - Total time required for complete digestion is four Yama (approximately 12 hours). Number of Purishavega per day is two.
- For Tikshnagni - Total time required for complete digestion is less than four Yama. Number of Purishavega per day is more than two as 'Prabhuta Srushta Mutra Purisha' is feature associated to Pitta.
- For Mandagni - Total time required for complete digestion is more than four Yama. Number of Purishavega per day is less than two as Mandagni is described as 'Mahata Kalena Pachati'.
- For Vishamagni - Nature of Vishamagni is uncertain. Sometimes it can digest fast, sometimes it can digest slowly. So Vishamagni should be decided on the behavior or nature of the Jatharagni.

Correlation of concepts in Ayurveda with modern physiology related to GIT –

Table 30 - Correlation of concepts in Ayurveda with modern physiology related to GIT

Concept in Ayurveda	Correlation with modern physiology
Formation of Paripindita form of Purisha in Pakwashaya	Feces are nothing but the solidification of chyme due to absorption of water.
Vayu Utpatti in Pakwashaya due to Katu Bhava	Bacteria from large intestine ferment any remaining carbohydrates in chyme and release hydrogen, carbon dioxide, and methane gases. These gases contribute to flatus (gas) in the colon
Purishavega	Defecation reflex
Madhuravasthapaka	Chemical digestion in stomach
Amlavasthapaka	Chemical digestion in small intestine
Katu Avasthapaka	Chemical digestion in large intestine

Assessment of functions of Purishavaha Srotas -

There is no direct reference for the method for assessment of functions of Purishavaha Srotas. So assessment of functions of Purishavaha Srotas were done on the following basis -

- Purisha Pariksha – form of Purisha on the basis of Bristol stool chart and Sama – Nirama Purisha.
- Purishavega Pariksha – with the help of questionnaire.
- Presence or absence of Purishavaha Srotas Dushti Lakshana – with the help of points from modified ODS Longo score and GSRS

In addition, presence or absence of Purishavaha srotas Dushti Hetusevana was checked.

Srotas is channel in which transformation as well as transportation of Sharira Bhava takes place¹. Purishavaha Srotas is associated with Purisha. I.e. formation and excretion of Purisha takes place in Purishavaha Srotas. So functions of Purishavaha Srotas should be assessed on the basis of form of Purisha and nature of Purishavega. Since Purisha is the end product, any abnormality in Purisha enlightens about malfunctioning of Purishavaha Srotas as well as Jatharagni. Also, any oddity in Purishavega informs about improper function of Purishavaha Srotas². In addition to these, presence of any of the Purishavaha Srotas Dushti Lakshana makes clear to inappropriate role of Purishavaha Srotas.

Thus to assess functions of Purishavaha Srotas, form of Purisha, nature of Purishavega and presence of Purishavaha srotas Dushti Lakshana were checked.

¹ स्रोतांसि खलु परिणाममापद्यमानानां धातूनाम् अभिवाहीनि भवन्ति अयनार्थेन ॥

च. वि. ५ / ३ p.249

² तेषाम् प्रकोपात् स्थानस्थाश्चैव मार्गगाश्च शरीरधातवः प्रकोपमापद्यते, इतरेषां प्रकोपात् इतराणि च ॥

च. वि. ५ / ९ p.259

MATERIAL AND METHOD

Working definitions in methodology –

Prakrut and Vikrut Purisha –

Purisha Pariksha was done with the help of Bristol stool chart and Sama – Nirama Purisha. Bristol stool chart tells about normal form of Purisha. Form number 3, 4 and 5 were considered as Prakrut forms of Purisha as they resemble ‘Paripindita swarupa’ of Purisha. Sama and Nirama of Purisha were decided with the help of score depending upon presence of Sama Purisha Lakshana. Score 0 to 6 were considered as Nirama Purisha and 7 to 18 were considered as Sama Purisha.

Stool form number 3, 4 and 5 along with Nirama Avastha of Purisha were considered as Prakrut Purisha. Rests were considered as Vikrut Purisha.

Prakrut and Vikrut Purishavega –

Purishavega was assessed with the help of questionnaire with score.

Score 0 to 5 were considered as Prakrut Purishavega and 6 to 15 were considered as Vikrut Purishavega.

Purishavaha Srotas Dushti Lakshana –

Purishavaha Srotas Dushti Lakshana were decided with the help of presence or absence of Purishavaha Srotas Dushti Lakshana.

Presence of more than two Lakshana was considered as Purishavaha Srotas Dushti.

Prakrut and Vikrut Jatharagni –

Jatharagni Pariksha was done with the help of format consisting of Abhyavaharana Shakti and Jarana Shakti supported by score. Interpretation of Abhyavaharana Shakti was done with the help of score as 10 to 16 for Heena, 17 to 23 for Madhyama, 24 to 30 for Uttama. Interpretation of Jarana Shakti was done with the help of score according to types of Jatharagni and its nature. Interpretation of score

was as 8 to 13 for Mandagni, 14 to 18 for Samagni, 19 to 24 for Tikshnagni. Nature of Jatharagni was done as score 8 to 12 for Vishama i.e. uncertain nature and 13 to 16 or certain nature. Mandagni along with certain nature was considered as Mandagni. Samagni with certain nature was considered as Samagni. Tikshnagni along with certain nature was considered as Tikshnagni. Vishama i.e. uncertain nature irrespective of types of Jatharagni was considered as Vishamagni.

After decision of type of Jatharagni, Samagni and Tikshnagni were considered as Prakrut Jatharagni as Samagni represents Swasthya and chances of diseases in Tikshnagni are very rare. Mandagni and Vishamagni were considered as Vikrut Jatharagni as they can cause diseases.

Methodology –

This was a survey study.

Study of correlation between functions of Purishavaha Srotas and Jathargni was done with the help of following formats

- Purisha Pariksha – Purisha Swarupa Pariksha (based on Bristol stool Chart) and Sama – Nirama Purisha
- Purishavega Pariksha – with the help of questionnaire
- Modified ODS Longo score
- Presence or absence of Purishavaha Srotas Dushti Lakshana
- Jatharagni Pariksha

Place of work - hospital of our institute – SDM College of Ayurveda & Hospital, Hassan, Karnataka

Sample size:

- Sample size required for this observational survey study was calculated with respect to the total population of the place of work at 95% confidence interval¹.
- Sample size was set as 385.

Inclusion criteria:

- Age: 18 to 60 years
- Gender: either

Exclusion criteria:

- Pregnancy
- Neurological disorders where sphincter control is reduced or lost
- Non ambulatory persons

¹ <https://www.hassan.nic.in/>
<https://www.surveysystem.com/sscale.htm>

Study design –

This was a survey study which was done in following manner -

- Functions of Purishavaha Srotas were assessed with the help of following points –
 - Purisha Pariksha – form of Purisha on the basis of Bristol stool chart and Sama – Nirama Purisha.
 - Purishavega Pariksha – with the help of questionnaire.
 - Purishavaha Srotodushti Hetusevana Pariksha – with the help of questionnaire.
 - Modified ODS Longo Score
 - Presence or absence of Purishavaha Srotas Dushti Lakshana – with the help of points from modified ODS Longo score and GSRS
- Assessment of Jatharagni was done with the help of format.
- Collected data was categorized in following manner to assess the functions of Purishavaha Srotas -
 - Purisha - Prakrut and Vikrut
 - Purishavega - Prakrut and Vikrut
 - Purishavaha Srotas Dushti - Present and absent
- Collected data was categorized in 2 groups to assess the status of Jatharagni -
 - Jatharagni – Prakrut and Vikrut
- Analysis of the collected data was done to see the correlation between functional aspect of Purishavaha Srotas and Jatharagni.
- Pearson Chi-square test was used.

Pearson Chi-square test	Purisha - Prakrut	Purisha - Vikrut
Jatharagni - Prakrut	a	b
Jatharagni - Vikrut	c	d

Pearson Chi-square test	Purishavega - Prakrut	Purishavega - Vikrut
Jatharagni - Prakrut	a	b
Jatharagni - Vikrut	c	d

Pearson Chi-square test	Purishavaha Sotas Dushti - present	Purishavaha Sotas Dushti - absent
Jatharagni - Prakrut	a	b
Jatharagni - Vikrut	c	d

OBSERVATIONS & RESULTS

Sample size -

Sample size required for this observational survey study was calculated with respect to the total population of the place of work at 95% confidence interval.

Sample size was set as 385.

Total 397 volunteers were interviewed.

General observations -

Table 31 - Observations related to age

Age	Years
Mean	26.8866
Median	24.0000
Mode	20.00
Standard deviation	9.49374

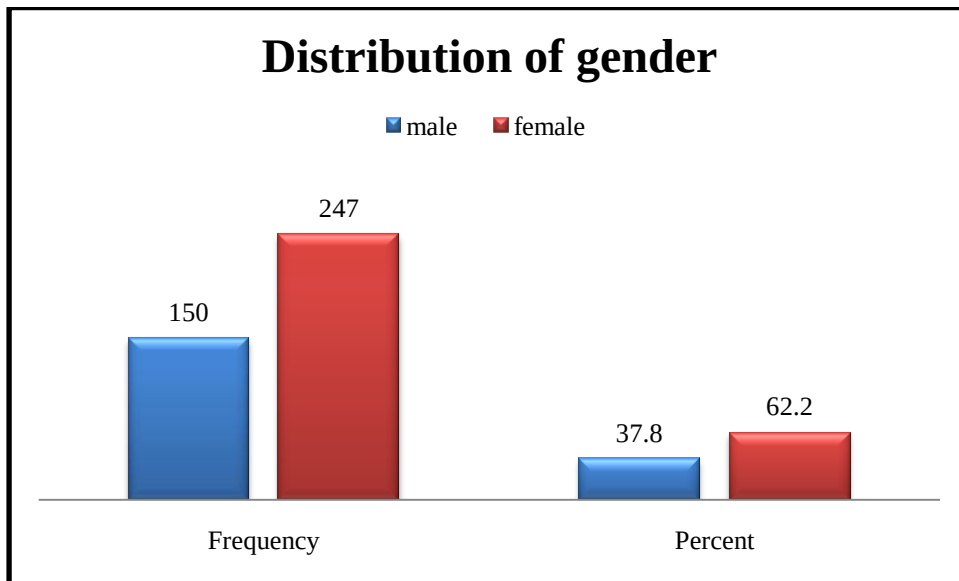
The mean of age was 26.88 years, median of age was 24 years and mode was 20 years.

Distribution of gender -

Table 32 - Distribution of gender

Gender	No. of respondents	Percentage
Male	150	37.8
Female	247	62.2
Total	397	100.0

Chart 1 - Distribution of gender



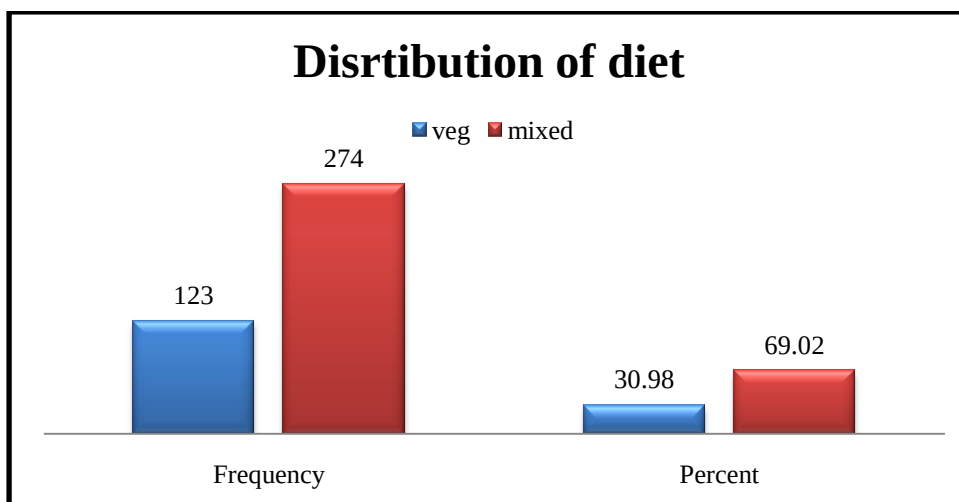
Out of 397 respondents, 150 (37.8%) were males and 247 (62.2%) were females.

Distribution of diet -

Table 33 - Distribution of diet

Diet	Frequency	Percentage
Vegetarian	123	30.98
Mixed	274	69.2
Total	397	100

Chart 2 - Distribution of diet



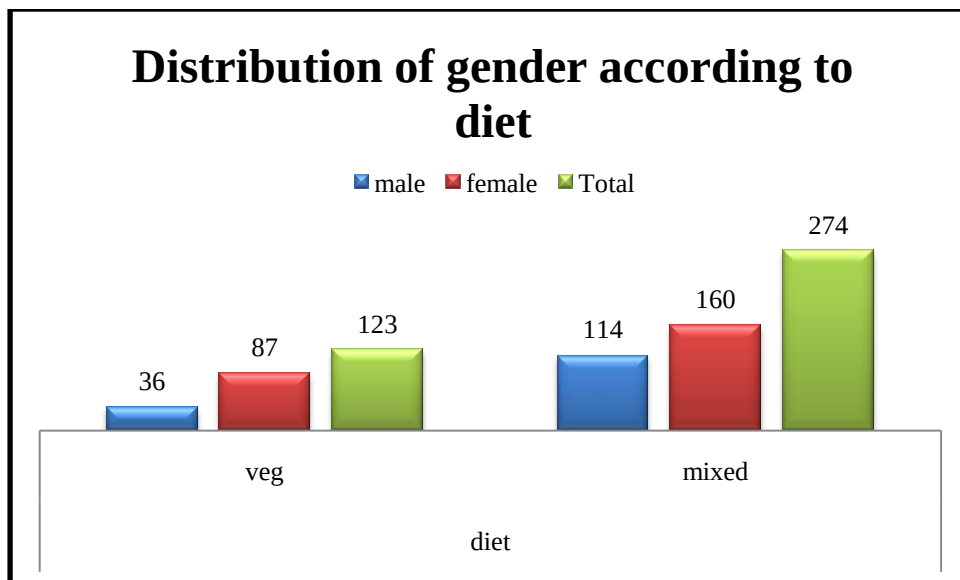
Out of 397 observed respondents, 123 (30.98%) were having vegetarian diet and 274 (69.2%) were having mixed diet.

Distribution of gender in diet -

Table 34 - Distribution of gender in diet

Gender	Diet		Total
	Vegetarian	Mixed	
Male	36	114	150
Female	87	160	247
total	123	274	397

Chart 3 - Distribution of gender in diet



Out of 123 vegetarian respondents, 36 (29.26%) were males and 87 (70.74%) were females. Out of 274 of mixed diet respondents, 114 (41.60%) were males and 160 (58.40%) were females.

Out of 150 total male respondents, 24% were having vegetarian diet and 76% were having mixed diet. Out of 247 females, 35.22% were having vegetarian diet and 64.77% were having mixed diet.

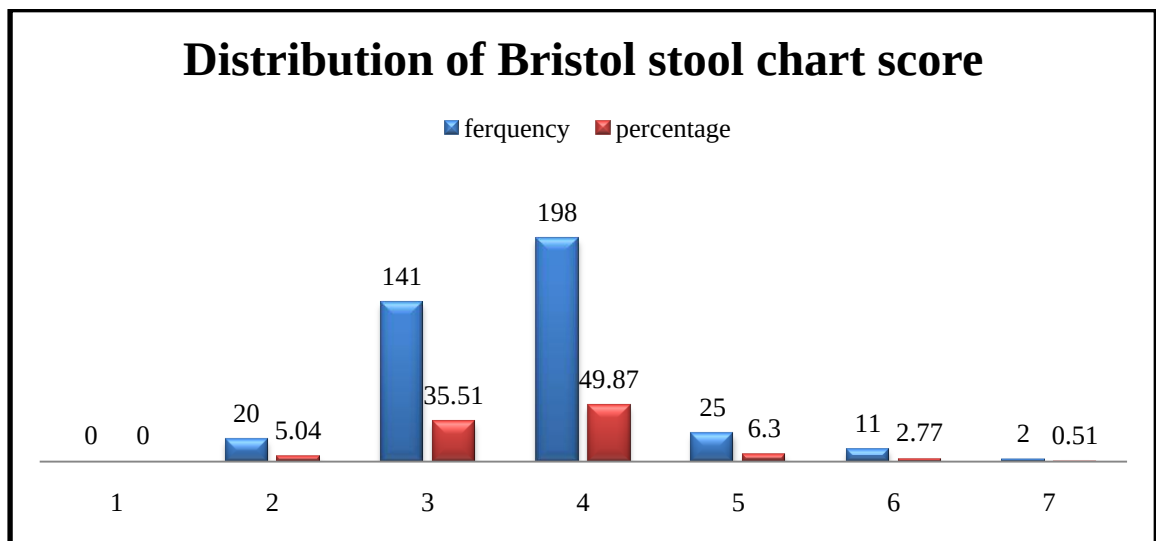
Observations related to Purisha -

Distribution of Bristol stool chart score -

Table 35 - Distribution of Bristol stool chart score

Bristol stool chart score	Frequency	Percentage
1	0	0
2	20	5.04
3	141	35.51
4	198	49.87
5	25	6.3
6	11	2.77
7	2	0.51

Chart 4 - Distribution of Bristol stool chart score



The frequency of observed respondents with respect to Bristol stool chart was as follows.

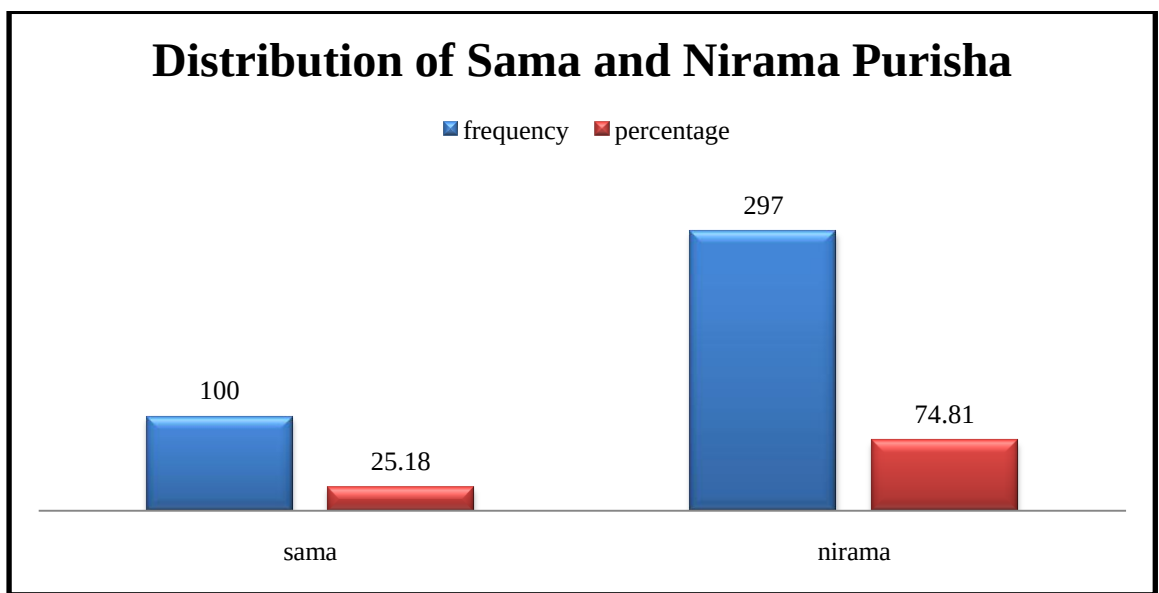
Out of 397 respondents, no one was having score 1, 20 (5.04%) respondents were having score 2, 141 (35.51%) respondents were having score 3, 198 (49.87%) respondents were having score 4, 25 (6.3%) respondents were having score 5, 11 (2.77%) respondents were having score 6, 2 (0.51%) were respondents were having score 7.

Distribution of Sama and Nirama Purisha -

Table 36 - Distribution of Sama and Nirama Purisha

Purisha	Frequency	Percentage
Sama	100	25.18
Nirama	297	74.81
Total	397	100

Chart 5 - Distribution of Sama and Nirama Purisha

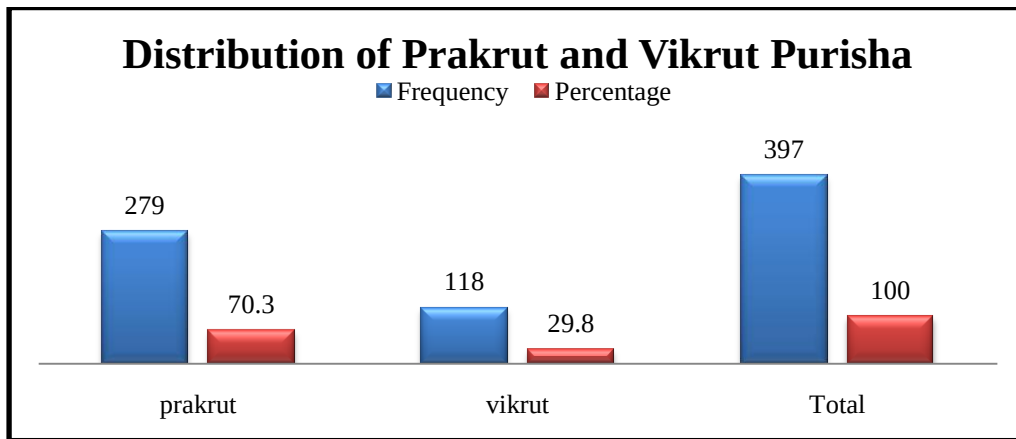


Out of 397 respondents, 100 (25.18%) were having Sama Purisha and 297 (74.81%) were having Nirama Purisha.

Distribution of Prakrut and Vikrut Purisha -

Table 37 - Distribution of Prakrut and Vikrut Purisha

Purisha	Frequency	Percentage
Prakrut	279	70.3
Vikrut	118	29.7
Total	397	100

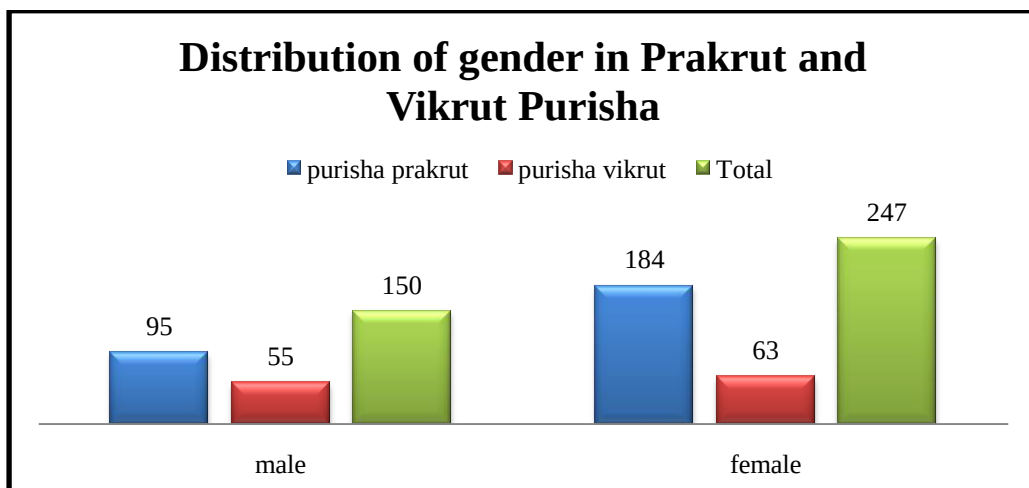
Chart 6 - Distribution of Prakrut and Vikrut Purisha

Out of 397 observed respondents, 279 (70.3%) were having Prakrut Purisha and 118 (29.8%) were having Vikrut Purisha.

Distribution of gender in Prakrut and Vikrut Purisha -

Table 38 - Distribution of gender in Prakrut and Vikrut Purisha

Gender	Prakrut Purisha	Vikrut Purisha	Total
Male	95	55	150
Female	184	63	247
Total	279	118	397

Chart 7 - Distribution of gender in Prakrut and Vikrut Purisha

Out of 397 observed respondents, 95 (63.33%) males were having Vikrut Purisha and 55 (36.66%) were having Vikrut Purisha. 184 (74.5%) females were having Prakrut Purisha and 63 (25.5%) females were having Vikrut Purisha.

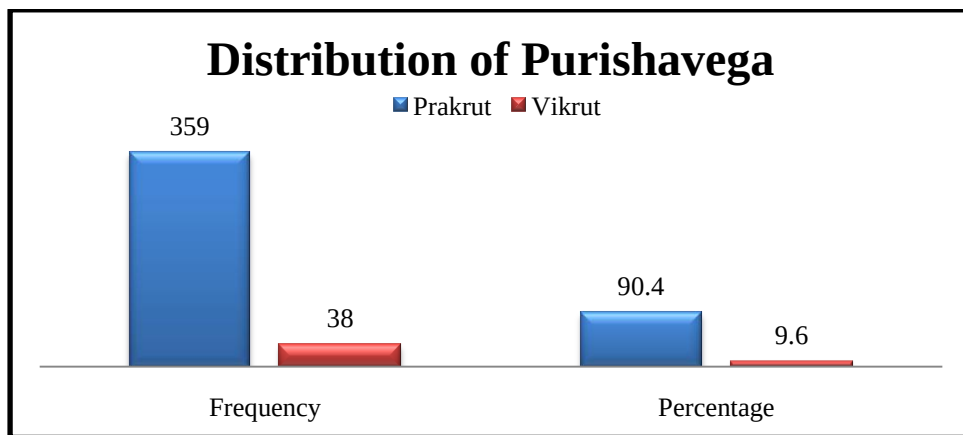
Observations related to Purishavega -

Distribution of Purishavega -

Table 39 - Distribution of Purishavega

Purishavega	Frequency	Percentage
Prakrut	359	90.4
Vikrut	38	9.6
Total	397	100

Chart 8 - Distribution of Purishavega



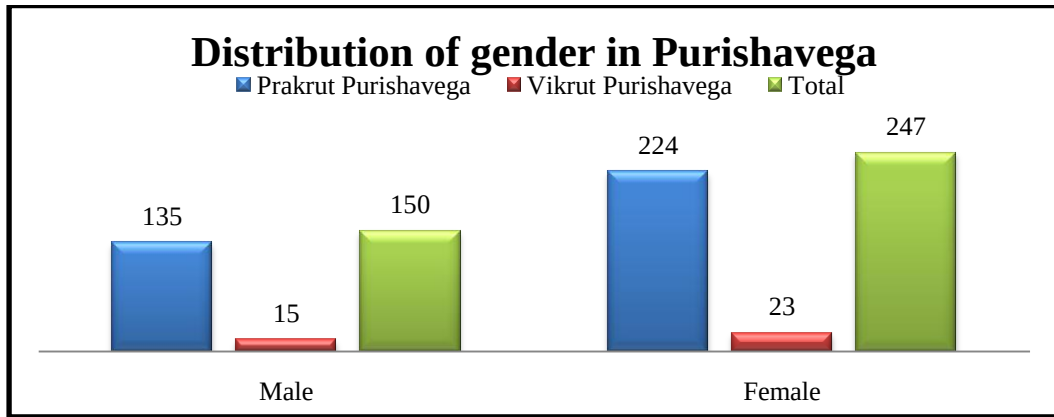
Out of 397 observed respondents, 359 (90.4%) were having Prakrut Purishavega and 38 (9.6%) were having Vikrut Purishavega.

Distribution of gender in Purishavega -

Table 40 - Distribution of gender in Purishavega

Gender	Prakrut Purishavega	Vikrut Purishavega	Total
Male	135	15	150
Female	224	23	247
total	359	38	397

Chart 9 - Distribution of gender in Purishavega



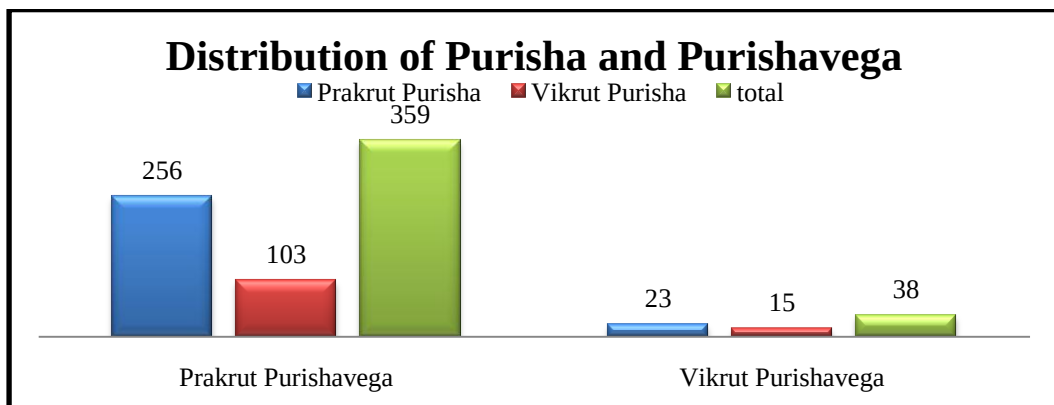
Out of 150 males, 135 (90%) were having Prakrut Purishavega and 15 (10%) were having Vikrut Purishavega. Out of 247 females, 224 (90.7%) were having Prakrut Purishavega and 23 (9.3%) were having Vikrut Purishavega.

Distribution of Purisha in Purishavega -

Table 41 - Distribution of Purisha in Purishavega

Purisha	Prakrut Purishavega	Vikrut Purishavega	Total
Prakrut Purisha	256	23	279
Vikrut Purisha	103	15	118
total	359	38	397

Chart 10 - Distribution of Purisha in Purishavega



Out of 359 respondents having Prakrut Purishavega, 256 (71.30%) were having Prakrut Purisha and 23 (28.7%) were having Vikrut Purisha. Out of 38 respondents having Vikrut Purishavega, 23 (60.52%) were having Prakrut Purisha and 15 (39.48%) were having Vikrut Purishavega.

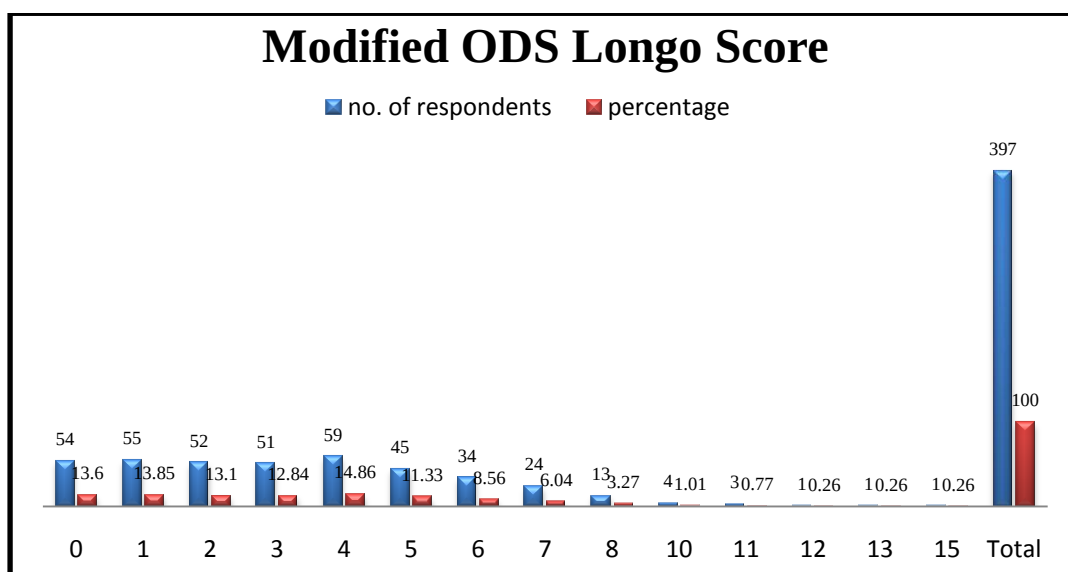
Observations related to Purishavaha Srotas Dushti -

Distribution of Modified ODS Longo score –

Table 42 - Distribution of Modified ODS Longo score

Modified ODS Longo Score		
Score	No. of respondents	Percentage
0	54	13.6
1	55	13.85
2	52	13.1
3	51	12.84
4	59	14.86
5	45	11.33
6	34	8.56
7	24	6.04
8	13	3.27
10	4	1.01
11	3	0.77
12	1	0.26
13	1	0.26
15	1	0.26
Total	397	100

Chart 11 - Distribution of Modified ODS Longo score



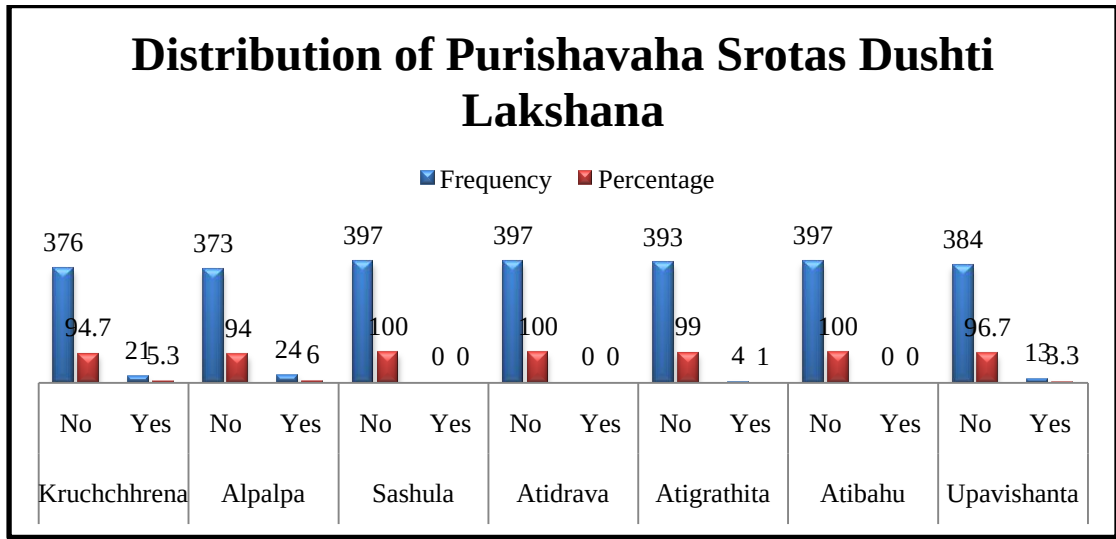
Out of 397 observed respondents, 54 (13.6%) respondents were having score 0, 55 (13.85%) respondents were having score 1, 52 (13.1%) respondents were having score 2, 51 (12.84%) respondents were having score 3, 59 (14.86%) respondents were having score 4, 45 (11.33%) respondents were having score 5, 34 (8.56%) respondents were having score 6, 24 (6.04%) respondents were having score 7, 13 (3.27%) respondents were having score 8, 4 (1.01%) respondents were having score 10, 3 (0.77%) respondents were having score 11, 1 (0.25%) respondents were having score 12, 1 (0.25%) respondents were having score 13, 1 (0.25%) respondents were having score 15. Score 9, 14, 16, 17, 18, 19, 20, 21, 22, 23 and 24 were not observed.

Distribution of Purishavaha Srotas Dushti Lakshana –

Table 43 - Distribution of Purishavaha Srotas Dushti Lakshana

Purishavaha Srotas Dushti Lakashana		Frequency	Percentage
Kruchchhrena	No	376	94.7
	Yes	21	5.3
Alpalpa	No	373	94
	Yes	24	6
Sashula	No	397	100
	Yes	0	0
Atidrava	No	397	100
	Yes	0	0
Atigrathita	No	393	99
	Yes	4	1
Atibahu	No	397	100
	Yes	0	0
Upavishanta	No	384	96.7
	Yes	13	3.3

Chart 12 - Distribution of Purishavaha Srotas Dushti Lakshana



Each Purishavaha Srotas Dushti Lakshana was observed as follows -

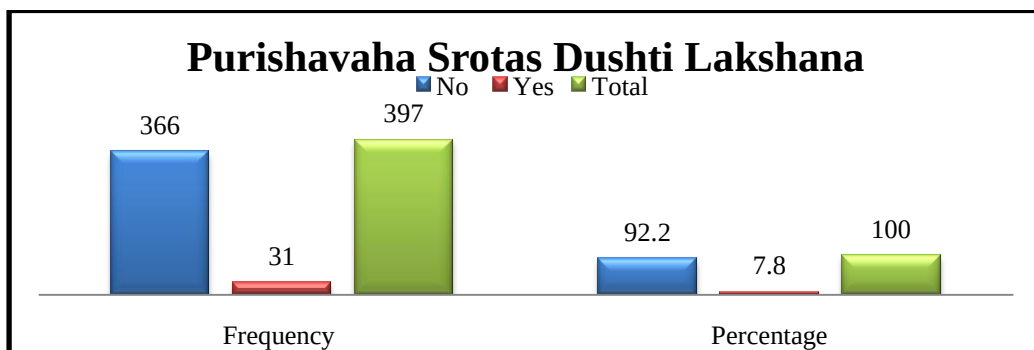
Kruchchhrena was seen in 21 (5.3%) respondents. Alpalpa was seen in 24 (6%) respondents. Atigrathita was seen in 4 (1%) respondents. Upavishanta was seen in 13 (3.3%) respondents. Sashula, Atidrava and Atibahu were not observed in respondents.

Distribution of presence or absence of Purishavaha Srotas Dushti Lakshana -

Table 44 - Distribution of presence or absence of Purishavaha Srotas Dushti Lakshana

Purishavaha Srotas Dushti Lakshana	Frequency	Percentage
No	366	92.2
Yes	31	7.8
Total	397	100

Chart 13 - Distribution of presence or absence of Purishavaha Srotas Dushti Lakshana



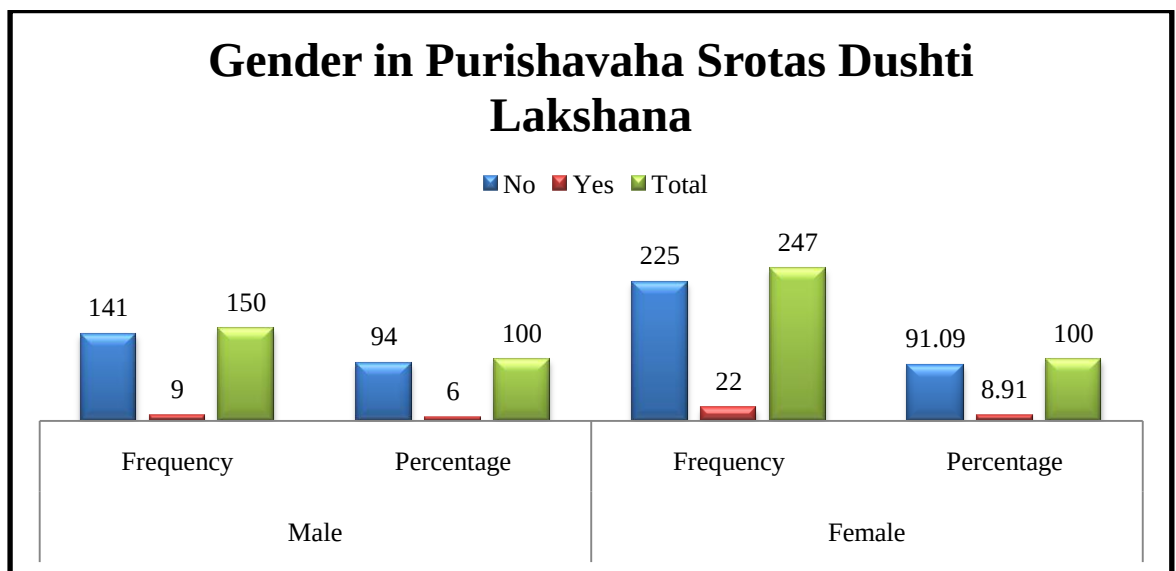
Out of 397 observed respondents, 366 (92.2%) were not having Purishavaha Srotas Dushti Lakshana and 31 (7.8%) were having Purishavaha Srotas Dushti Lakshana.

Distribution of gender in Purishavaha Srotas Dushti Lakshana -

Table 45 - Distribution of gender in Purishavaha Srotas Dushti Lakshana

Purishavaha Srotas Dushti Lakshana	Male		Female	
	Frequency	Percentage	Frequency	Percentage
No	141	94	225	91.09
Yes	9	6	22	8.91
Total	150	100	247	100

Chart 14 - Distribution of gender in Purishavaha Srotas Dushti Lakshana



Out of 150 male respondents, 141 (94%) were not having Purishavaha Srotas Dushti Lakshana and 9 (6%) were having Purishavaha Srotas Dushti Lakshana.

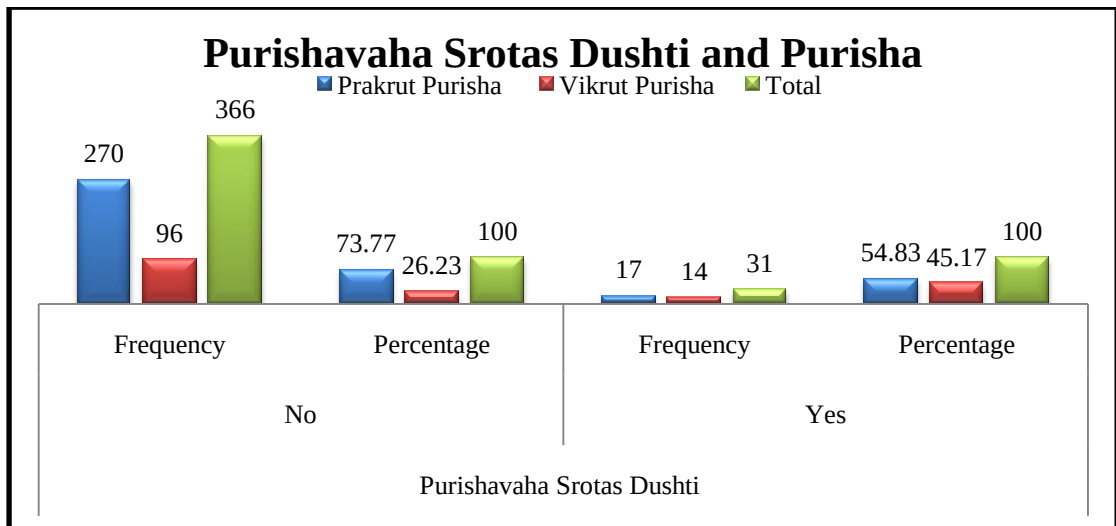
Out of 247 female respondents, 225 (91.09%) were not having Purishavaha Srotas Dushti Lakshana and 22 (8.91%) were having Purishavaha Srotas Dushti Lakshana.

Relation between Purishavaha Srotas Dushti and Purisha -

Table 46 - Relation between Purishavaha Srotas Dushti and Purisha

Purisha	Purishavaha Srotas Dushti			
	No		Yes	
	Frequency	Percentage	Frequency	Percentage
Prakrut	270	73.77	17	54.83
Vikrut	96	26.23	14	45.17
Total	366	100	31	100

Chart 15 - Relation between Purishavaha Srotas Dushti and Purisha



Out of 366 respondents with absence of Purishavaha Srotas Dushti Lakshana, 270 (73.77%) were having Prakrut Purisha and 96 (26.23%) were having Vikrut Purisha. Out of 31 respondents with presence of Purishavaha Srotas Dushti Lakshana, 17 (54.83%) were having Prakrut Purisha and 14 (45.17%) were having Vikrut Purisha.

There is relation between Purishavaha Srotas Dushti and Purisha as Pearson Chi-square test significant ($p=0.024$).

Mantel-Haenszel common odds ratio estimate is 2.316 (lower bound - 1.10, upper bound - 4.878).

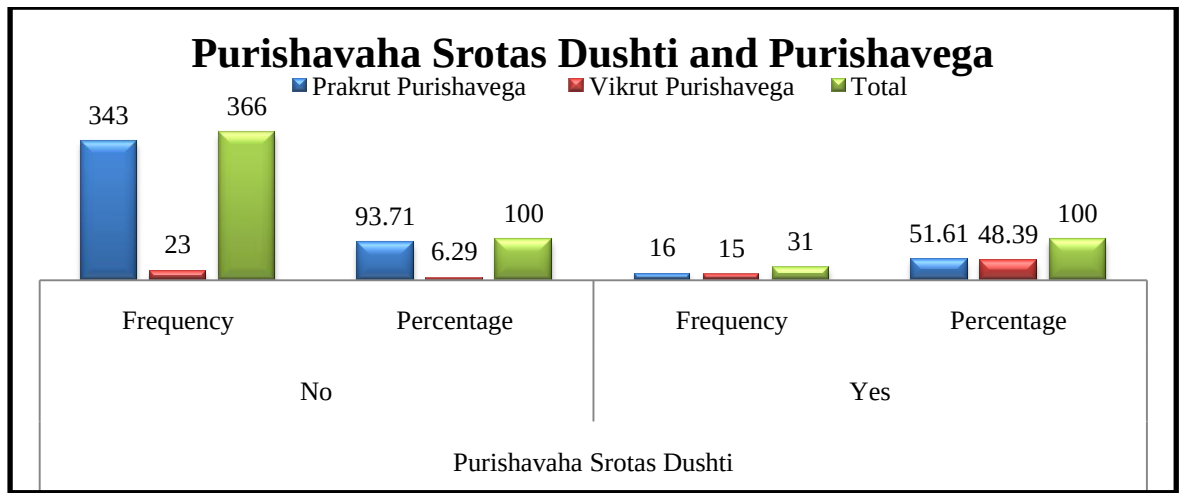
This indicates that presence of Purishavaha Srotas Dushti Lakshana is related with Vikrut Purisha and absence of Purishavaha Srotas Dushti Lakshana is related to Prakrut Purisha. Also presence of Purishavaha Srotas Dushti Lakshana is 2.316 times more associated with Vikrut Purisha than Prakrut Purisha.

Relation between Purishavaha Srotas Dushti and Purishavega -

Table 47 - Relation between Purishavaha Srotas Dushti and Purishavega

Purishavega	Purishavaha Srotas Dushti			
	No		Yes	
	Frequency	Percentage	Frequency	Percentage
Prakrut	343	93.71	16	51.61
Vikrut	23	6.29	15	48.39
Total	366	100	31	100

Chart 16 - Relation between Purishavaha Srotas Dushti and Purishavega



Out of 366 respondents having absence of Purishavaha Srotas Dushti, 343 (93.71%) were having Prakrut Purishavega and 23 (6.29%) were having Vikrut Purishavega. Out of 31 respondents having presence of Purishavaha Srotas Dushti, 16 (51.61%) were having Prakrut Purishavega and 15 (48.39%) were having Vikrut Purishavega.

There is relation between Purishavaha Srotas Dushti and Purishavega as Pearson Chi-square test significant ($p=0.000$).

Mantel-Haenszel common odds ratio estimate is 13.981 (lower bound - 6.150, upper bound - 31.783).

This indicates that respondents having Vikrut Purishavega are 13.981 times more prone to have Purishavaha Srotas Dushti than respondents having Prakrut Purishavega.

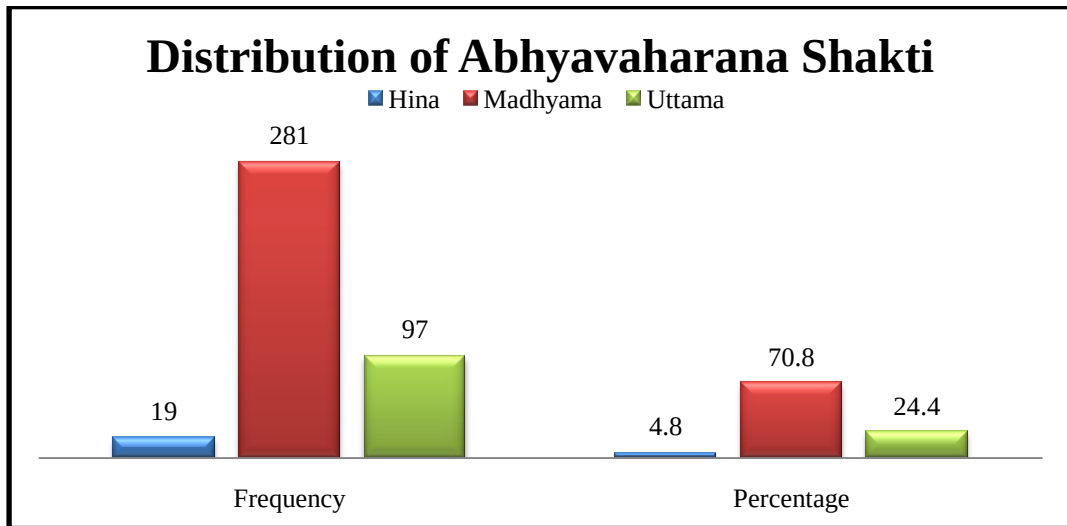
Observations related to Jatharagni -

Distribution of Abhyavaharana Shakti -

Table 48 - Distribution of Abhyavaharana Shakti

Abhyavaharana Shakti	Frequency	Percentage
Hina	19	4.8
Madhyama	281	70.8
Uttama	97	24.4
Total	397	100

Chart 17 - Distribution of Abhyavaharana Shakti



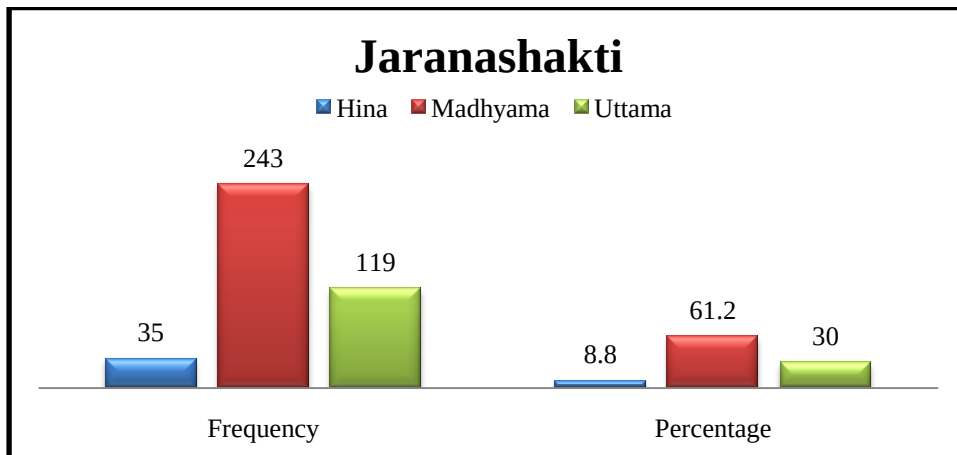
Out of 397 observed respondents, 19 (4.8%) were having Hina Abhyavaharana Shakti, 281 (70.8%) were having Madhyama Abhyavaharana Shakti and 97 (24.4%) were having Uttama Abhyavaharana Shakti.

Distribution of Jaranashakti -

Table 49 - Distribution of Jaranashakti

Jaranashakti	Frequency	Percentage
Hina	35	8.8
Madhyama	243	61.2
Uttama	119	30.0
Total	397	100

Chart 18 - Distribution of Jaranashakti



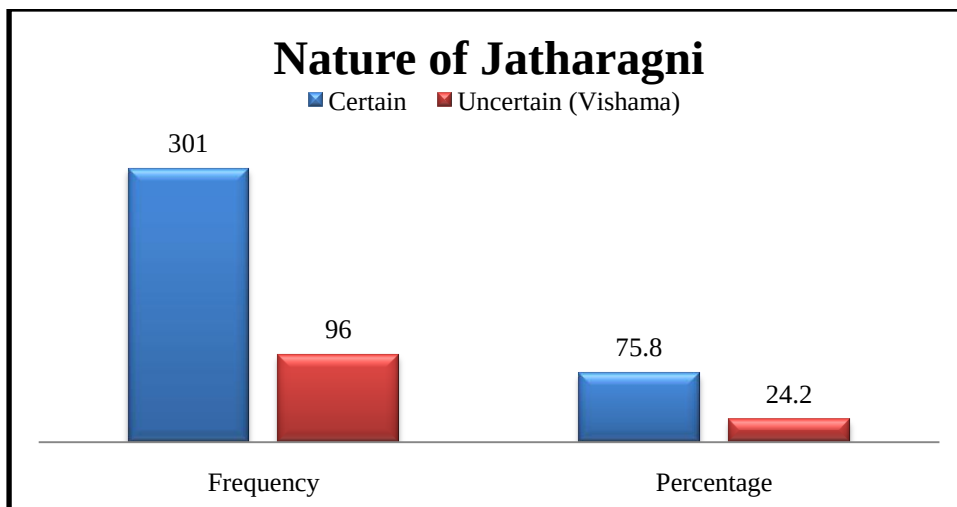
Out of 397 observed respondents, 35 (8.8%) were having Hina Jaranashakti, 243 (61.2%) were having madhyama Jaranashakti and 119 (30%) were having Uttama Jaranashakti.

Distribution of nature of Jatharagni -

Table 50 - Distribution of nature of Jatharagni

Nature of Jatharagni	Frequency	Percentage
Certain	301	75.8
Uncertain (Vishama)	96	24.2
Total	397	100

Chart 19 - Distribution of nature of Jatharagni



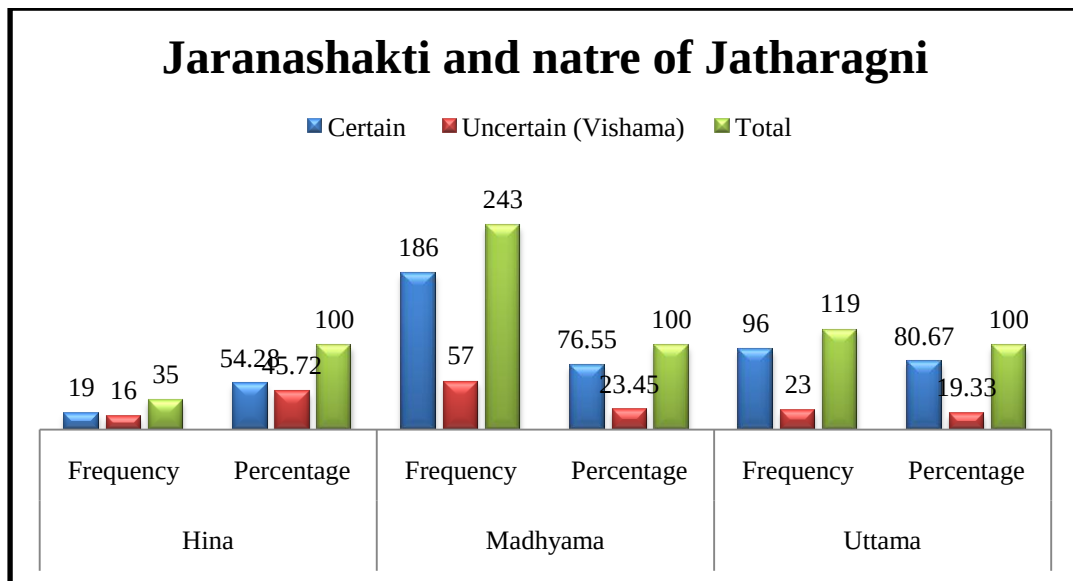
Out of 397 observed respondents, 301 (75.8%) were having certain nature of Jatharagni and 96 (24.2%) were having uncertain i.e. Vishama nature of Jatharagni.

Distribution of Jaranashakti and nature of Jatharagni -

Table 51 - Distribution of Jaranashakti and nature of Jatharagni

Jaranashakti		Certain	Uncertain (Vishama)	Total
Hina	Frequency	19	16	35
	Percentage	54.28	45.72	100
Madhyama	Frequency	186	57	243
	Percentage	76.55	23.45	100
Uttama	Frequency	96	23	119
	Percentage	80.67	19.33	100

Chart 20 - Distribution of Jaranashakti and nature of Jatharagni



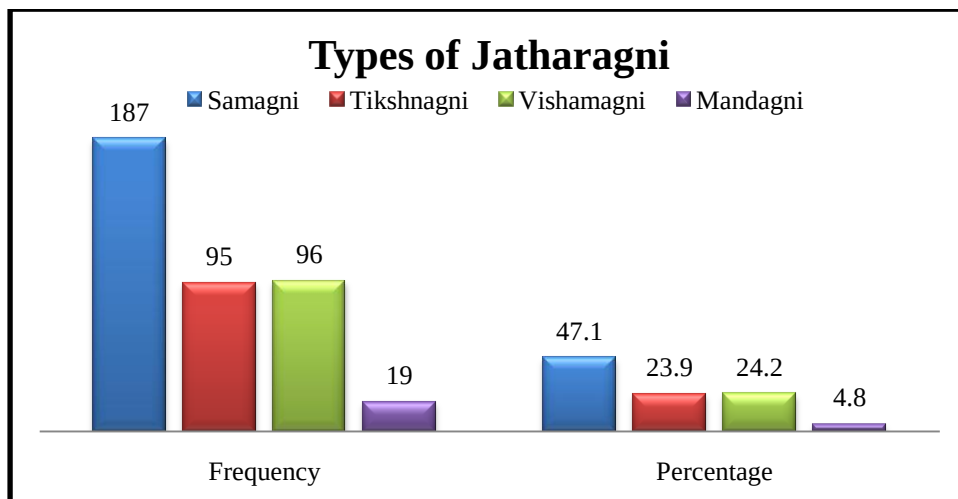
Out of 35 respondents having Hina Jaranashakti, 19 (54.28%) were having certain nature of Jatharagni and 16 (45.72%) were having uncertain i.e. Vishama nature of Jatharagni. Out of 243 respondents having Madhyama Jaranashakti, 186 (76.55%) were having certain nature of Jatharagni and 57 (23.45%) were having uncertain i.e. Vishama nature of Jatharagni. Out of 119 respondents having Uttama Jaranashakti, 96 (80.67%) were having certain nature of Jatharagni and 23 (19.33%) were having uncertain i.e. Vishama nature of Jatharagni.

Distribution of Jatharagni types -

Table 52 - Distribution of Jatharagni types

Jatharagni type	Frequency	Percentage
Samagni	187	47.1
Tikshnagni	95	23.9
Vishamagni	96	24.2
Mandagni	19	4.8
Total	397	100

Chart 21 - Distribution of Jatharagni types



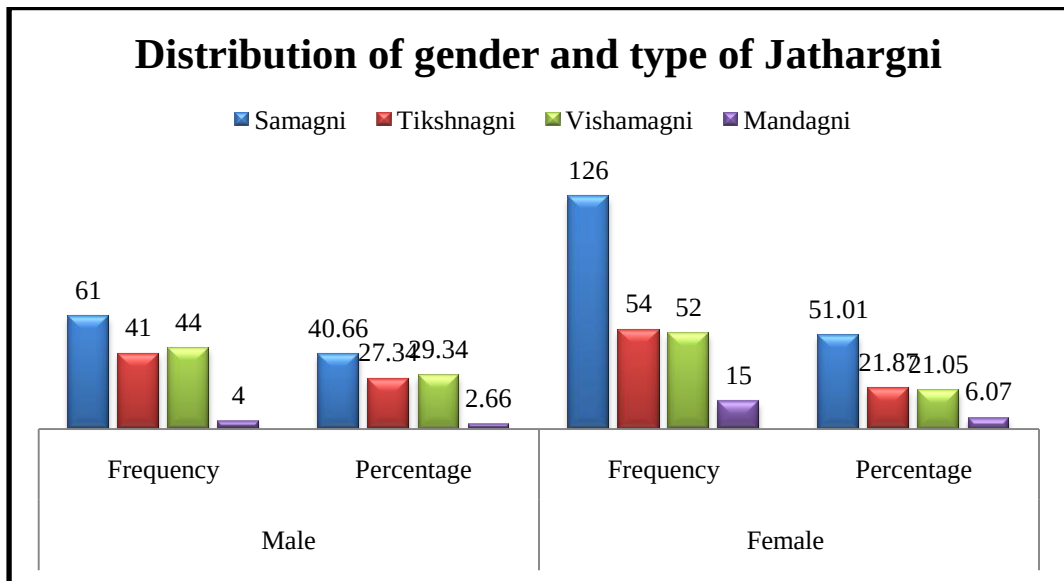
Out of 397 observed respondents, 187 (47.1%) were having Samagni, 95 (23.9%) were having Tikshnagni, 96 (24.2%) were having Vishamagni and 19 (4.8%) were having Mandagni.

Distribution of gender and Jatharagni type -

Table 53 - Distribution of gender and Jatharagni type

Jatharagni type	Male		Female	
	Frequency	Percentage	Frequency	Percentage
Samagni	61	40.66	126	51.01
Tikshnagni	41	27.34	54	21.87
Vishamagni	44	29.34	52	21.05
Mandagni	4	2.66	15	6.07
Total	150	100	247	100

Chart 22 - Distribution of gender and Jatharagni type

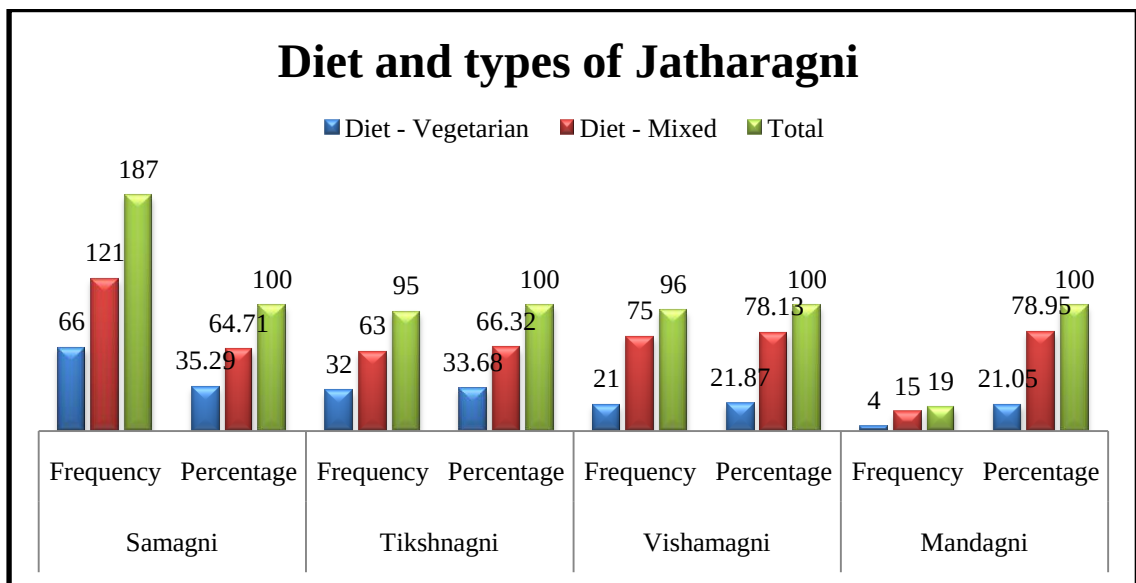


Out of 150 male respondents, 61 (40.66%) were having Samagni, 41 (27.34%) were having Tikshnagni, 44 (29.34%) were having Vishamagni and 4 (2.66%) were having Mandagni. Out of 247 female respondents, 126 (51.10%) were having Samagni, 54 (21.87%) were having Tikshnagni, 52 (21.05%) were having Vishamagni and 15 (6.07%) were having Mandagni.

Distribution of diet and type of Jatharagni -

Table 54 - Distribution of diet and type of Jatharagni

Types of Jatharagni		Diet - Vegetarian	Diet - Mixed	Total
Samagni	Frequency	66	121	187
	Percentage	35.29	64.71	100
Tikshnagni	Frequency	32	63	95
	Percentage	33.68	66.32	100
Vishamagni	Frequency	21	75	96
	Percentage	21.87	78.13	100
Mandagni	Frequency	4	15	19
	Percentage	21.05	78.95	100

Chart 23 - Distribution of diet and type of Jatharagni

Out of 187 respondents having Samagni, 66 (35.29%) were having vegetarian diet and 121 (64.71%) were having mixed diet. Out of 95 respondents having Tikshnagni, 32 (33.68%) were having vegetarian diet and 63 (66.32%) were having mixed diet. Out of 96 respondents having Vishamagni, 21 (21.87%) were having vegetarian diet and 75 (78.13%) were having mixed diet. Out of 19 respondents having Mandagni, 4 (21.05%) were having vegetarian diet and 15 (78.95%) were having mixed diet.

Relation between Vishamagni and diet -

There is relation between Vishamagni and mixed diet as Pearson Chi-square test is significant (p value is 0.027).

Mantel-Haenszel common odds ratio estimate is 1.831 (lower bound - 1.067, upper bound - 3.140).

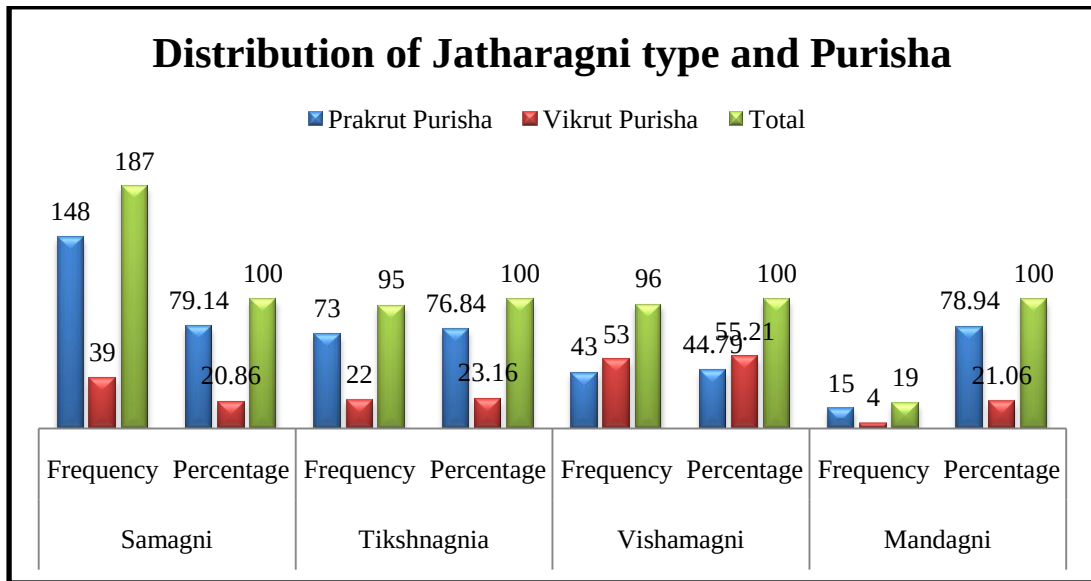
This indicates that mixed diet is 1.831 times more leading to Vishamagni than vegetarian diet.

Distribution of Jatharagni type and Purisha -

Table 55 - Distribution of Jatharagni type and Purisha

Jatharagni type		Prakrut Purisha	Vikrut Purisha	Total
Samagni	Frequency	148	39	187
	Percentage	79.14	20.86	100
Tikshnagnia	Frequency	73	22	95
	Percentage	76.84	23.16	100
Vishamagni	Frequency	43	53	96
	Percentage	44.79	55.21	100
Mandagni	Frequency	15	4	19
	Percentage	78.94	21.06	100

Chart 24 - Distribution of Jatharagni type and Purisha



Out of 187 respondents having Samagni, 148 (79.14%) were having Prakrut Purisha and 39 (20.86%) were having Vikrut Purisha. Out of 95 respondents having Tikshnagnia, 73 (76.84%) were having Prakrut Purisha and 22 (23.16%) were having Vikrut Purisha. Out of 96 respondents having Vishamagni, 43 (44.79%) were having Prakrut Purisha and 53 (55.21%) were having Vikrut Purisha. Out of 19 respondents having Mandagni, 15 (78.94%) were having Prakrut Purisha and 4 (21.06%) were having Vikrut Purisha.

Relation between Samagni and Purisha -

There is relation between Samagni and Prakrut Purisha as Pearson Chi-square test is significant (p value is 0.000).

Mantel-Haenszel common odds ratio estimate is 2.289 (lower bound - 1.459, upper bound - 3.589).

This indicates that Samagni is 2.289 times more likely to have Prakrut Purisha.

Relation between Vishamagni and Purisha -

There is relation between Vishamagni and Vikrut Purisha as Pearson Chi-square test is significant (p value is 0.000).

Mantel-Haenszel common odds ratio estimate is 4.475 (lower bound - 2.750, upper bound - 7.283).

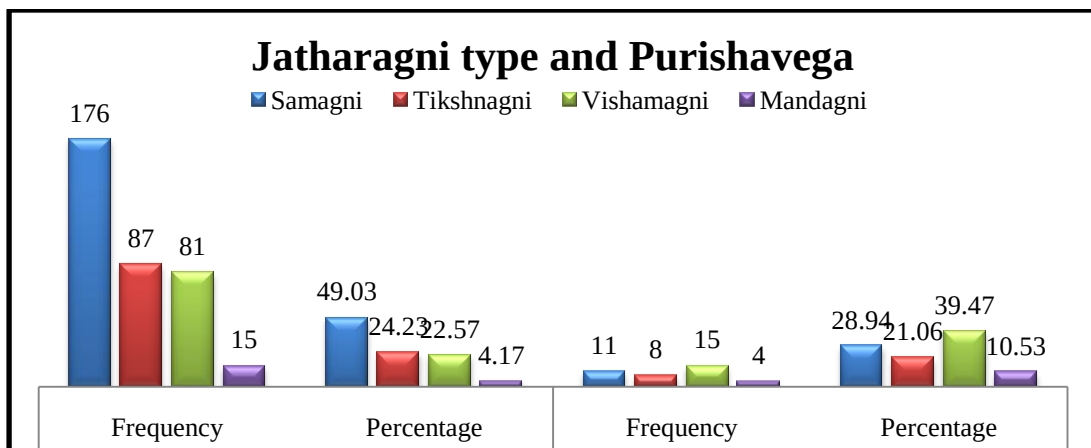
This indicates that Vishamagni is 4.475 times more likely to have Vikrut Purisha.

Distribution of Jatharagni type and Purishavega -

Table 56 - Distribution of Jatharagni type and Purishavega

Jatharagni type	Prakrut Purishavega		Vikrut Purishavega	
	Frequency	Percentage	Frequency	Percentage
Samagni	176	49.03	11	28.94
Tikshnagni	87	24.23	8	21.06
Vishamagni	81	22.57	15	39.47
Mandagni	15	4.17	4	10.53
Total	359	100	38	100

Chart 25 - Distribution of Jatharagni type and Purishavega



Out of 359 respondents having Prakrut Purishavega, 176 (49.03%) were having Samagni, 87 (24.23%) were having Tikshnagni, 81 (22.57%) were having Vishamagni, 15 (4.17%) were having Mandagni. Out of 38 respondents having Vikrut Purishavega, 11 (28.94%) were having Samagni, 8 (21.06%) were having Tikshnagni, 15 (39.47%) were having Vishamagni, 4 (10.53%) were having Mandagni.

Relation between Samagni and Purishavega -

There is relation between Samagni and Prakrut Purishavega as Pearson Chi-square test is significant (p value is 0.021).

Mantel-Haenszel common odds ratio estimate is 2.238 (lower bound - 1.116, upper bound - 4.489).

This indicates that Samagni is 2.238 times more likely to have Prakrut Purishavega.

Relation between Vishamagni and Purishavega -

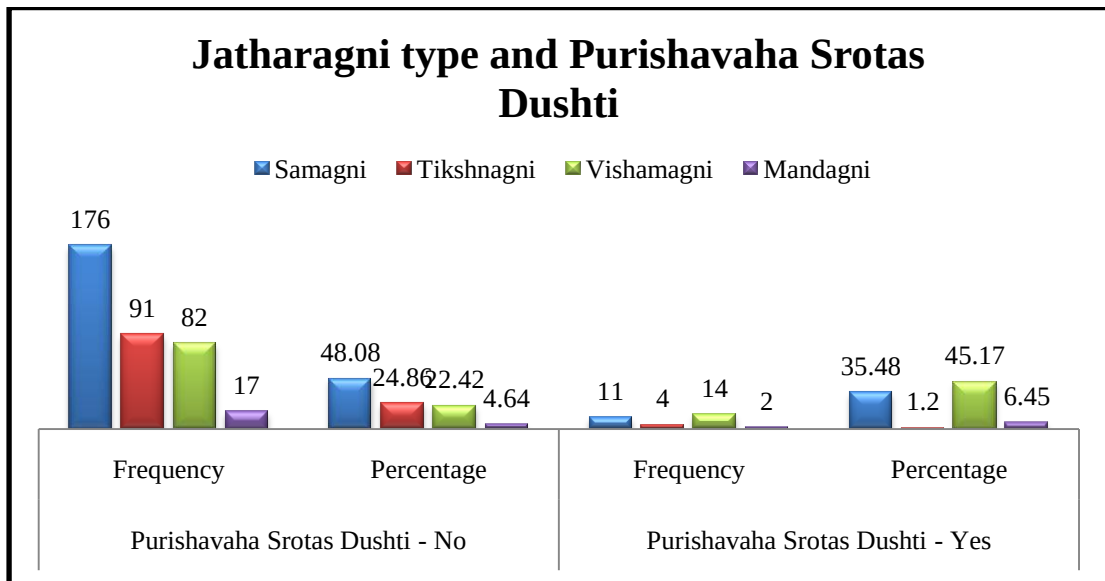
There is relation between Vishamagni and Vikrut Purishavega as Pearson Chi-square test is significant (p value is 0.018). Mantel-Haenszel common odds ratio estimate is 2.361 (lower bound - 1.137, upper bound - 4.903).

This indicates that Vishamagni is 2.361 times more likely to have Vikrut Purishavega.

Distribution of Jatharagni type and Purishavaha Srotas Dushti -

Table 57 - Distribution of Jatharagni type and Purishavaha Srotas Dushti

Jatharagni type	Purishavaha Srotas Dushti - No		Purishavaha Srotas Dushti - Yes	
	Frequency	Percentage	Frequency	Percentage
Samagni	176	48.08	11	35.48
Tikshnagni	91	24.86	4	1.20
Vishamagni	82	22.42	14	45.17
Mandagni	17	4.64	2	6.45
Total	366	100	31	100

Chart 26 - Distribution of Jatharagni type and Purishavaha Srotas Dushti

Out of 366 respondents having absence of Purishavaha srotas Dushti, 176 (48.08%) were having Samagni, 91 (24.86%) were having Tikshnagni, 82 (22.42%) were having Vishamagni, 17 (4.64%) were having Mandagni. Out of 31 respondents having presence of Purishavaha srotas Dushti, 11 (35.48%) were having Samagni, 4 (1.20%) were having Tikshnagni, 14 (45.17%) were having Vishamagni, 2 (6.45%) were having Mandagni.

Relation between Vishamagni and Purishavaha Srotas Dushti -

There is relation between Vishamagni and presence of Purishavaha Srotas Dushti as Pearson Chi-square test is significant (p value is 0.004).

Mantel-Haenszel common odds ratio estimate is 2.282 (lower bound - 1.349, upper bound - 6.031).

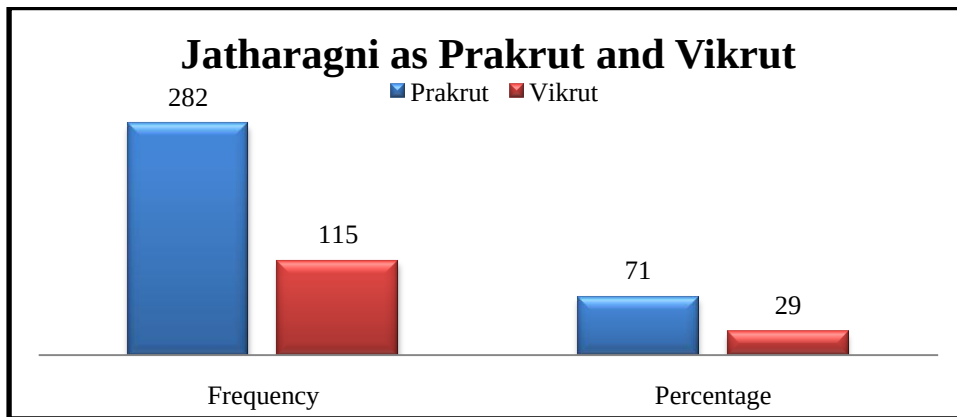
This indicates that Vishamagni is 2.282 times more likely to have Purishavaha Srotas Dushti.

Distribution of Jatharagni as Prakrut and Vikrut -

Table 58 - Distribution of Jatharagni as Prakrut and Vikrut

Jatharagni	Frequency	Percentage
Prakrut	282	71
Vikrut	115	29
Total	397	100

Chart 27 - Distribution of Jatharagni as Prakrut and Vikrut



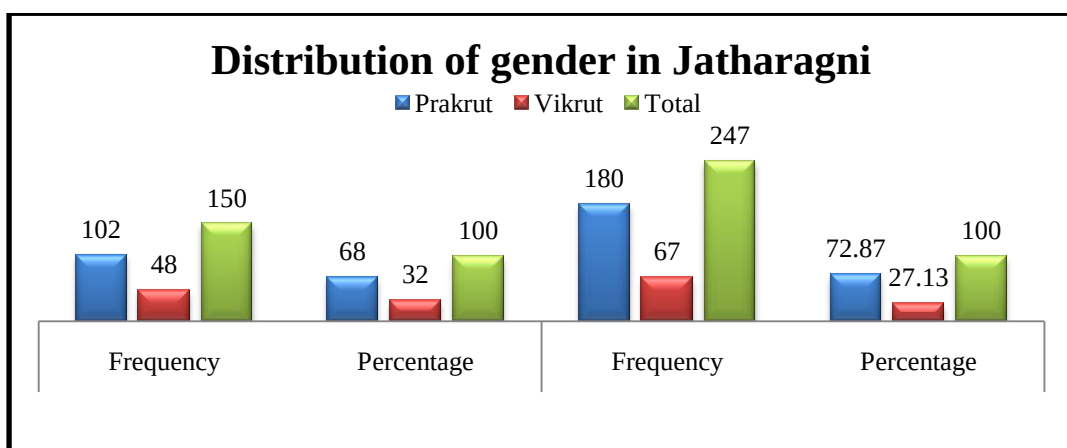
Out of 397 observed respondents, 282 (71%) were having Prakrut Jatharagni and 115 (29%) were having Vikrut Jatharagni.

Distribution of gender and Jatharagni as Prakrut and Vikrut -

Table 56 - Distribution of gender and Jatharagni as Prakrut and Vikrut

Jatharagni	Male		Female	
	Frequency	Percentage	Frequency	Percentage
Prakrut	102	68	180	72.87
Vikrut	48	32	67	27.13
Total	150	100	247	100

Chart 28 - Distribution of gender and Jatharagni as Prakrut and Vikrut



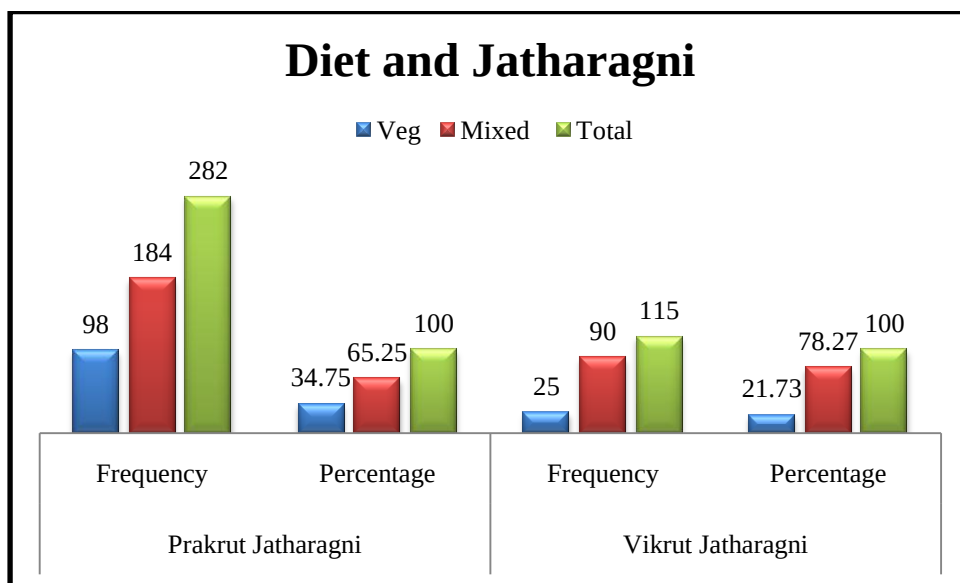
Out of 150 male respondents, 102 (68%) were having Prakrut Jatharagni and 48 (32%) were having Vikrut Jatharagni. Out of 247 female respondents, 180 (72.87%) were having Prakrut Jatharagni and 67 (27.13%) were having Vikrut Jatharagni.

Distribution of diet and Jatharagni as Prakrut and Vikrut -

Table 57 - Distribution of diet and Jatharagni as Prakrut and Vikrut

Diet	Prakrut Jatharagni		Vikrut Jatharagni	
	Frequency	Percentage	Frequency	Percentage
Veg	98	34.75	25	21.73
Mixed	184	65.25	90	78.27
Total	282	100	115	100

Chart 29 - Distribution of diet and Jatharagni as Prakrut and Vikrut



Out of 282 respondents having Prakrut Jatharagni, 98 (34.75%) were having vegetarian diet and 184 (65.25%) were having mixed diet. Out of 115 respondents having Vikrut Jatharagni, 25 (21.73%) were having vegetarian diet and 90 (78.27%) were having mixed diet.

Relation between diet and Jatharagni -

There is relation between diet and Jatharagni as Pearson Chi-square test is significant (p value is 0.011).

Mantel-Haenszel common odds ratio estimate is 1.917 (lower bound - 1.156, upper bound - 3.181).

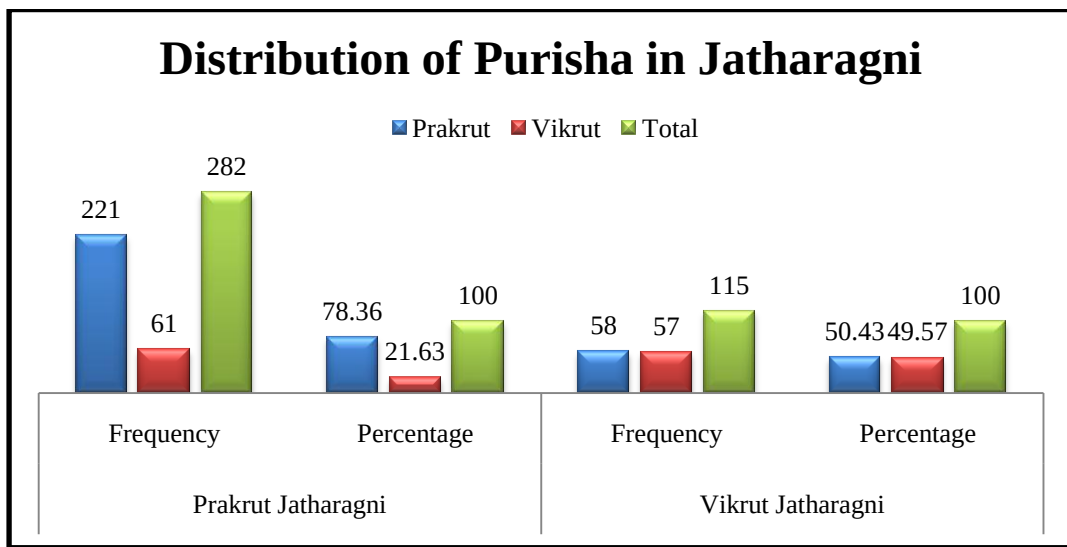
This states that mixed diet leads to Vikrut Jatharagni. The chances of getting Vikrut Jatharagni in mixed diet are 1.917 times more than vegetarian diet.

Distribution of Purisha and Jatharagni -

Table 61 - Distribution of Purisha and Jatharagni

Purisha	Prakrut Jatharagni		Vikrut Jatharagni	
	Frequency	Percentage	Frequency	Percentage
Prakrut	221	78.36	58	50.43
Vikrut	61	21.63	57	49.57
Total	282	100	115	100

Chart 30 - Distribution of Purisha and Jatharagni

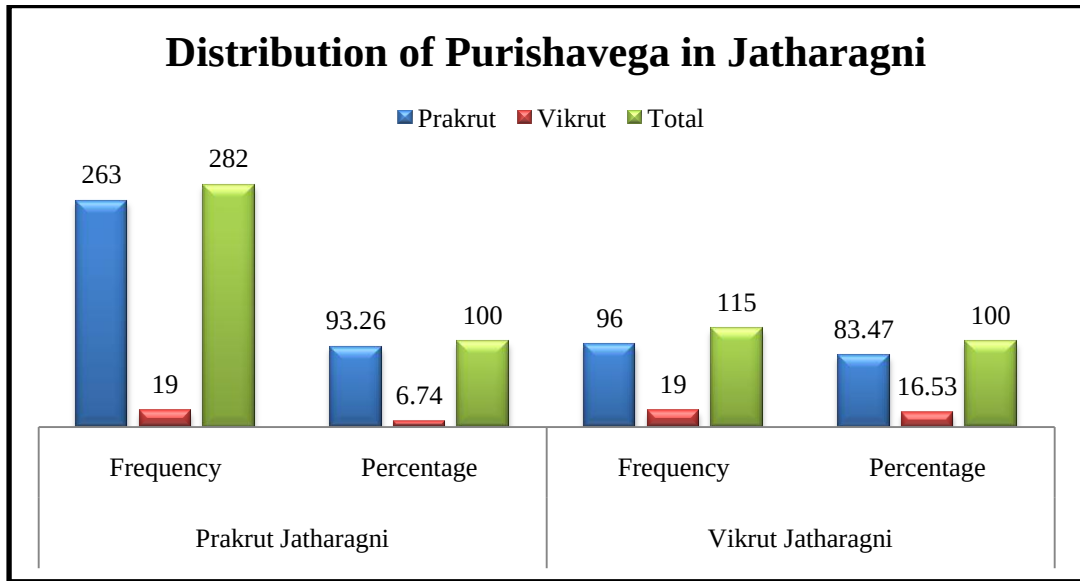


Out of 282 respondents having Prakrut Jatharagni, 221 (78.36%) were having Prakrut Purisha and 61 (21.63%) were having Vikrut Purisha. Out of 115 respondents having Vikrut Jatharagni, 58 (50.43%) were having Prakrut Purisha and 57 (49.57%) were having Vikrut Purisha.

Distribution of Purishavega and Jatharagni as Prakrut and Vikrut -

Table 62 - Distribution of Purishavega and Jatharagni as Prakrut and Vikrut

Purishavega	Prakrut Jatharagni		Vikrut Jatharagni	
	Frequency	Percentage	Frequency	Percentage
Prakrut	263	93.26	96	83.47
Vikrut	19	6.74	19	16.53
Total	282	100	115	100

Chart 31 - Distribution of Purishavega and Jatharagni as Prakrut and Vikrut

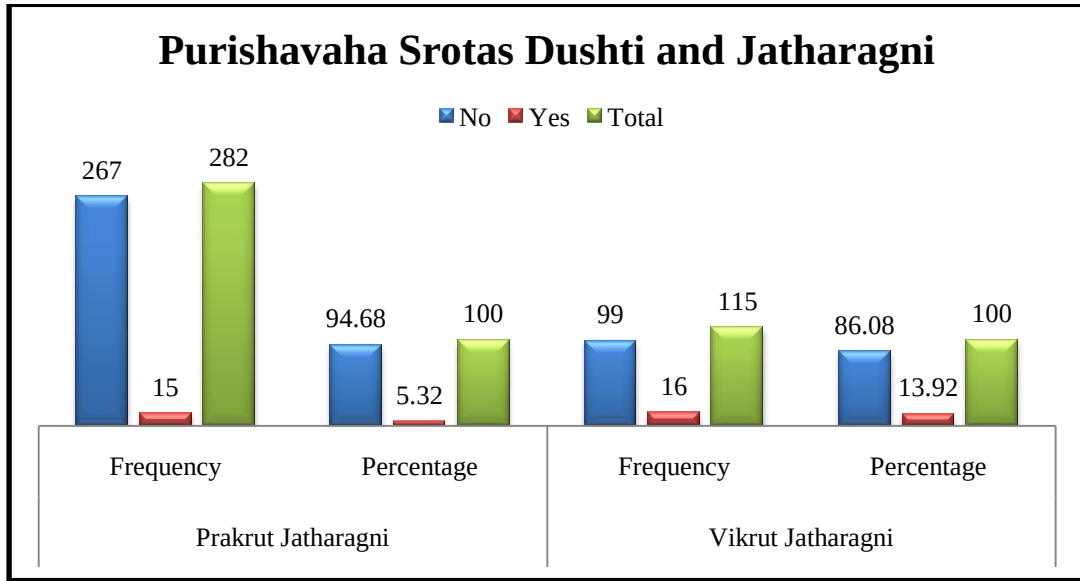
Out of 282 respondents having Prakrut Jatharagni, 263 (93.26%) were having Prakrut Purishavega and 19 (6.74%) were having Vikrut Purishavega. Out of 115 respondents having Vikrut Jatharagni, 96 (83.47%) were having Prakrut Purishavega and 19 (16.53%) were having Vikrut Purishavega.

Distribution of Purishavaha Srotas Dushti and Jatharagni as Prakrut and Vikrut -

Table 63 - Distribution of Purishavaha Srotas Dushti and Jatharagni as Prakrut and Vikrut

Purishavaha Srotas Dushti	Prakrut Jatharagni		Vikrut Jatharagni	
	Frequency	Percentage	Frequency	Percentage
No	267	94.68	99	86.08
Yes	15	5.32	16	13.92
Total	282	100	115	100

Chart 32 - Distribution of Purishavaha Srotas Dushti and Jatharagni as Prakrut and Vikrut



Out of 282 respondents having Prakrut Jatharagni, 267 (94.68%) were having absence of Purishavaha Srotas Dushti and 15 (5.32%) were having presence of Purishavaha Srotas Dushti. Out of 115 respondents having Vikrut Jatharagni, 99 (86.08%) were having absence of Purishavaha Srotas Dushti and 16 (13.92%) were having presence of Purishavaha Srotas Dushti.

Results related to hypothesis -**Relation between Purisha and Jatharagni -****Table 64 - Relation between Purisha and Jatharagni**

	Prakrut Jatharagni	Vikrut Jatharagni	Total
Prakrut Purisha	221	58	279
Vikrut Purisha	61	57	118
Total	282	115	397

There is relation between Purisha and Jatharagni as Pearson Chi-square test is significant (p value is 0.000).

Mantel-Haenszel common odds ratio estimate is 3.560 (lower bound - 2.242, upper bound - 5.655).

This states that Purisha becomes Vikrut if Jatharagni becomes Vikrut.

Vikrut Purisha was found 3.560 times more in Vikrut Jatharagni than in Prakrut Jatharagni.

Relation between Purishavega and Jatharagni -**Table 65 - Relation between Purishavega and Jatharagni**

	Prakrut Jatharagni	Vikrut Jatharagni	Total
Prakrut Purishavega	263	96	359
Vikrut Purishavega	19	19	38
Total	282	115	397

There is relation between Purishavega and Jatharagni as Pearson Chi-square test is significant (p value is 0.003).

Mantel-Haenszel common odds ratio estimate is 2.740 (lower bound - 1.391, upper bound - 5.394).

This states that Purishavega becomes Vikrut if Jatharagni becomes Vikrut.

Vikrut Purishavega was found 2.740 times more in Vikrut Jatharagni than in Prakrut Jatharagni.

Relation between Purishavaha Srotas Dushti and Jatharagni -

Table 66 - Relation between Purishavaha Srotas Dushti and Jatharagni

	Prakrut Jatharagni	Vikrut Jatharagni	Total
Purishavaha Srotas Dushti - No	267	99	366
Purishavaha Srotas Dushti - Yes	15	16	31
Total	282	115	397

There is relation between Purishavaha Srotas Dushti and Jatharagni as Pearson Chi-square test is significant (p value is 0.004).

Mantel-Haenszel common odds ratio estimate is 2.877 (lower bound - 1.371, upper bound - 6.037).

This states that Purishavaha Srotas Dushti is there if Jatharagni becomes Vikrut.

Chances of getting Purishavaha Srotas Dushti are 2.877 times more in Vikrut Jatharagni than in Prakrut Jatharagni.

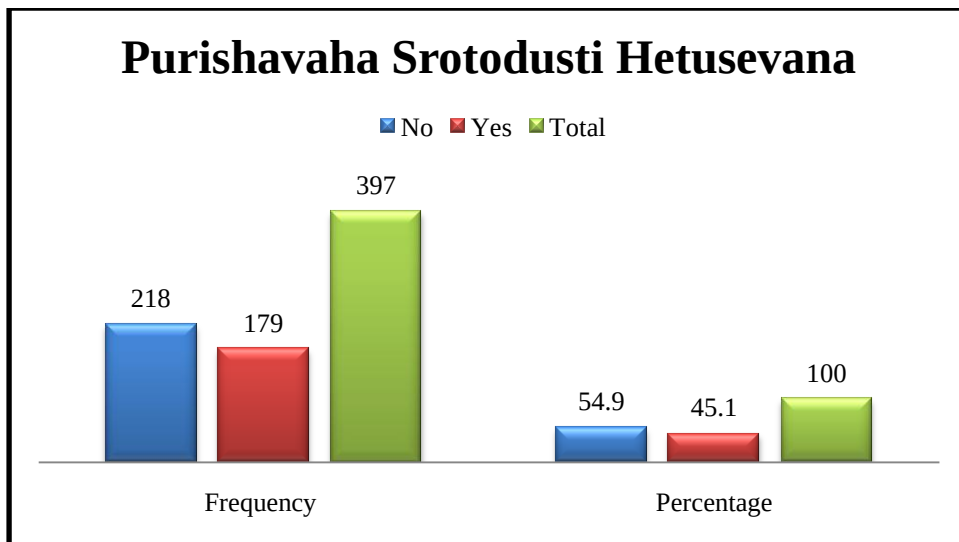
In addition, observation regarding Purishavaha Srotas Dushti Hetusevana was done in this study. Following findings were found.

Distribution of Purishavaha Srotodushti Hetusevan -

Table 67 - Distribution of Purishavaha Srotodushti Hetusevan

Purishavaha Srotodushti Hetusevana	Frequency	Percentage
No	218	54.9
Yes	179	45.1
Total	397	100

Chart 33 - Distribution of Purishavaha Srotodushti Hetusevan



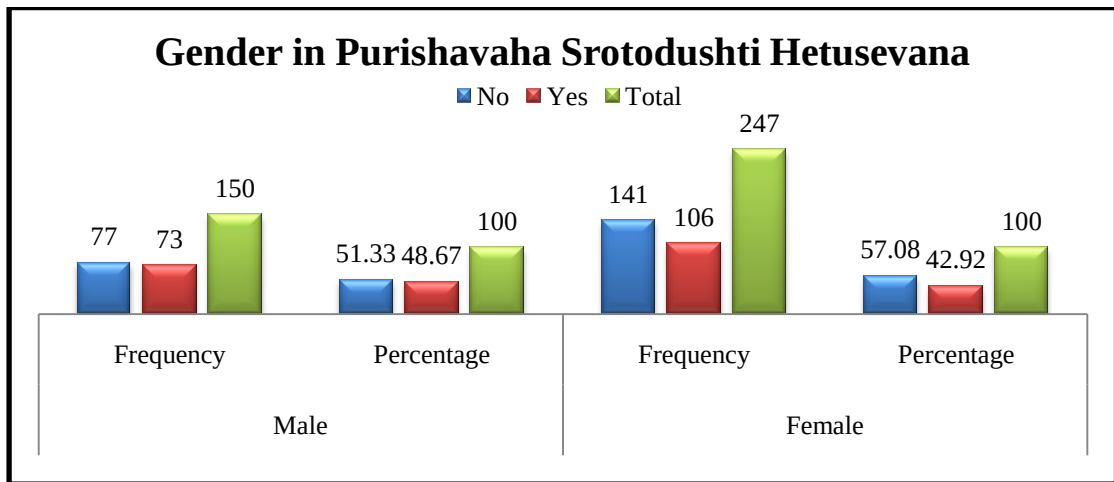
Out of 397 observed respondents, 218 (54.9%) were not doing Purishavaha Srotodushti Hetusevana and 179 (45.1%) were doing Purishavaha srotodushti Hetusevana.

Distribution of gender in Purishavaha Srotodushti Hetusevana -

Table 68 - Distribution of gender in Purishavaha Srotodushti Hetusevana

Purishavaha Srotodushti Hetusevana	Male		Female	
	Frequency	Percentage	Frequency	Percentage
No	77	51.33	141	57.08
Yes	73	48.67	106	42.92
Total	150	100	247	100

Chart 34 - Distribution of gender in Purishavaha Srotodushti Hetusevana



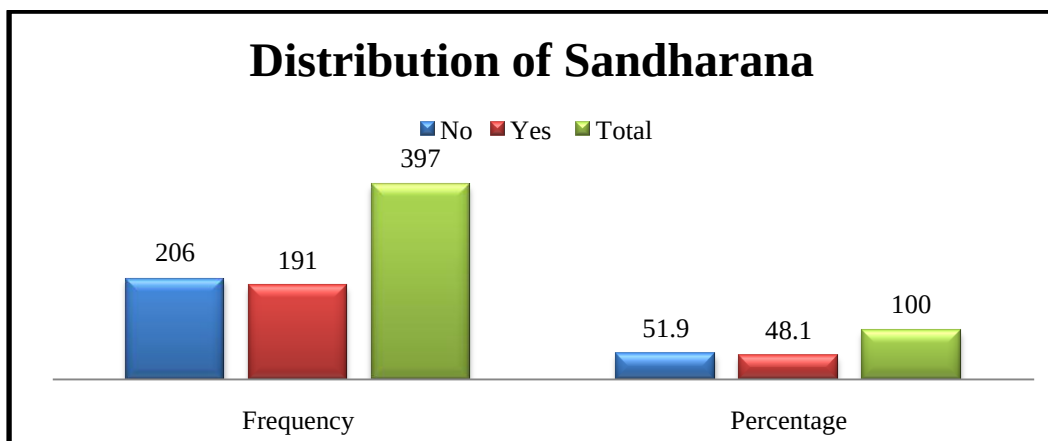
Out of 150 male respondents, 77 (51.33%) were not doing Purishavaha Srotodushti Hetusevana and 73 (48.67%) were doing Purishavaha Srotodushti Hetusevana. Out of 247 female respondents, 141 (57.08%) were not doing Purishavaha Srotodushti Hetusevana and 106 (42.92%) were doing Purishavaha Srotodushti Hetusevana.

Distribution of Purishavaha Srotodushti Hetusevana - Sandharana -

Table 69 - Distribution of Purishavaha Srotodushti Hetusevana - Sandharana

Sandharana	Frequency	Percentage
No	206	51.9
Yes	191	48.1
Total	397	100

Chart 35 - Distribution of Purishavaha Srotodushti Hetusevana - Sandharana



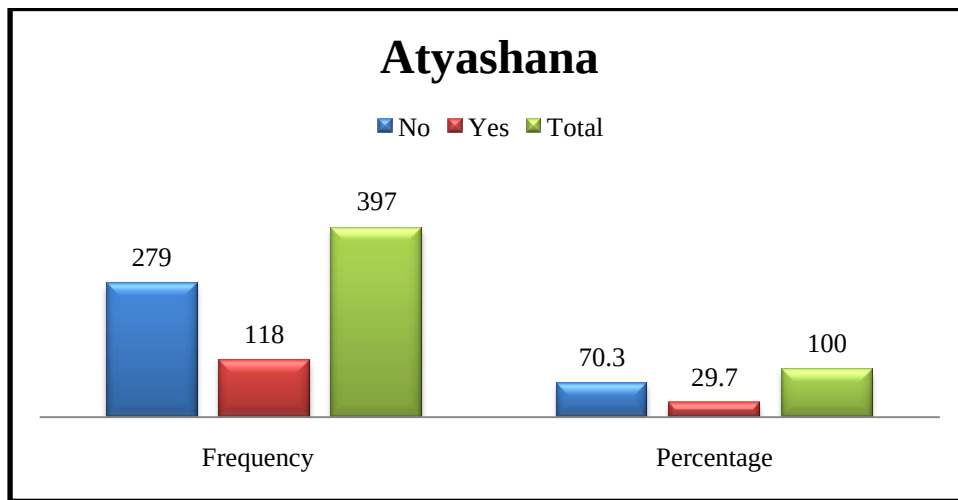
Out of 397 observed respondents, 206 (51.9%) were not doing Purishavega Dharana and 191 (48.1%) were doing Purishavega Dharana.

Distribution of Purishavaha Srotodushti Hetusevana - Atyashana -

Table 70 - Distribution of Purishavaha Srotodushti Hetusevana - Atyashana

Atyashana	Frequency	Percentage
No	279	70.3
Yes	118	29.7
Total	397	100

Chart 36 - Distribution of Purishavaha Srotodushti Hetusevana - Atyashana



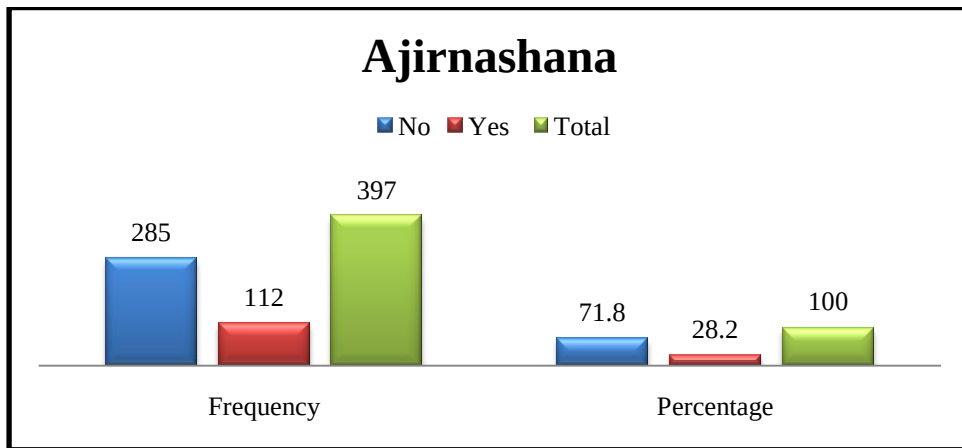
Out of 397 observed respondents, 297 (70.3%) were not doing Atyashana and 118 (29.7%) were doing Atyashana.

Distribution of Purishavaha Srotodushti Hetusevana - Ajirnashana -

Table 71 - Distribution of Purishavaha Srotodushti Hetusevana - Ajirnashana

Ajirnashana	Frequency	Percentage
No	285	71.8
Yes	112	28.2
Total	397	100

Chart 37 - Distribution of Purishavaha Srotodushti Hetusevana - Ajirnashana



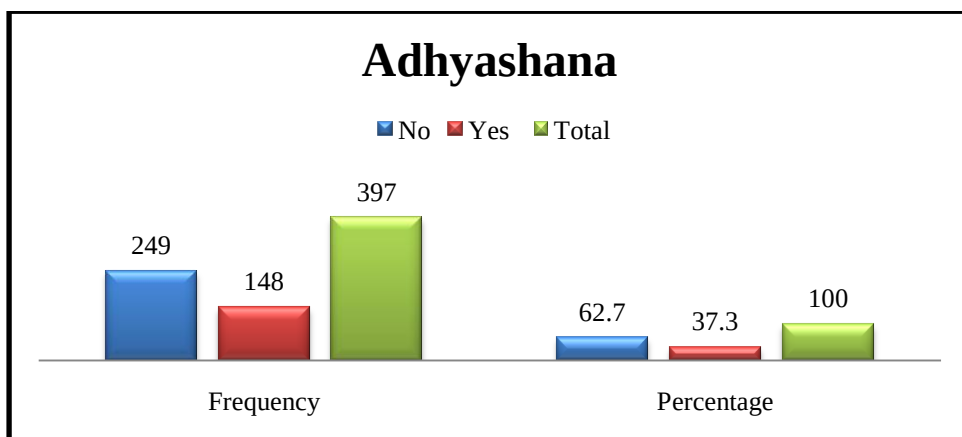
Out of 397 observed respondents, 285 (71.8%) were not doing Ajirnashana and 112 (28.2%) were doing Ajirnashana.

Distribution of Purishavaha Srotodushti Hetusevana - Adhyashana -

Table 72 - Distribution of Purishavaha Srotodushti Hetusevana - Adhyashana

Adhyashana	Frequency	Percentage
No	249	62.7
Yes	148	37.3
Total	397	100

Chart 38 - Distribution of Purishavaha Srotodushti Hetusevana - Adhyashana



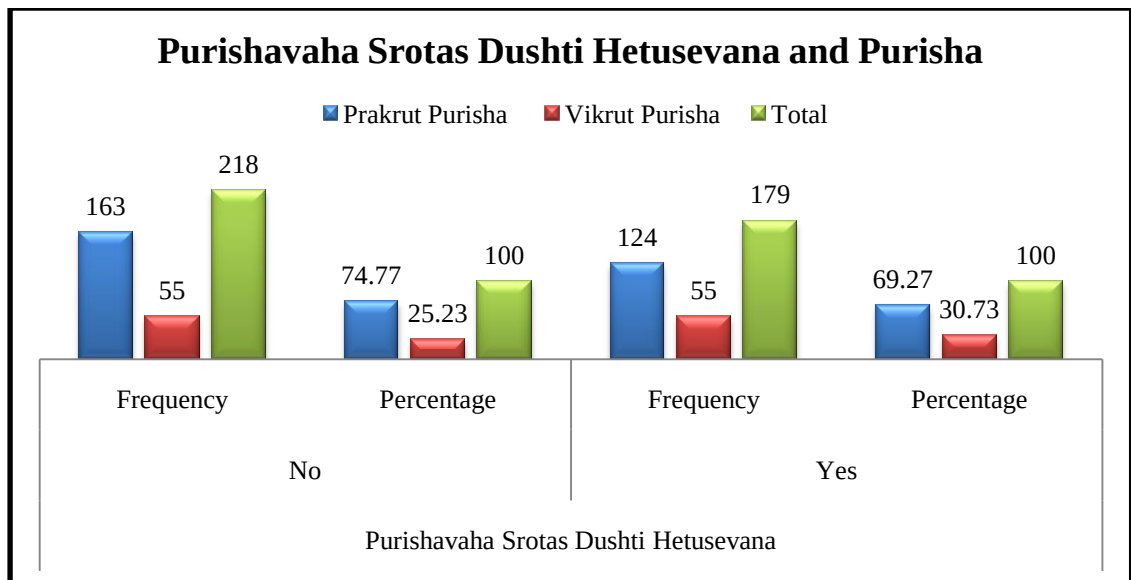
Out of 397 observed respondents, 249 (62.7%) were not doing Adhyashana and 148 (37.3%) were doing Adhyashana.

Purishava Srotas Dushti Hetusevana and Purisha -

Table 73 - Purishava Srotas Dushti Hetusevana and Purisha

Purisha	Purishavaha Srotas Dushti Hetusevana			
	No		Yes	
	Frequency	Percentage	Frequency	Percentage
Prakrut	163	74.77	124	69.27
Vikrut	55	25.23	55	30.73
Total	218	100	179	100

Chart 39 - Purishava Srotas Dushti Hetusevana and Purisha



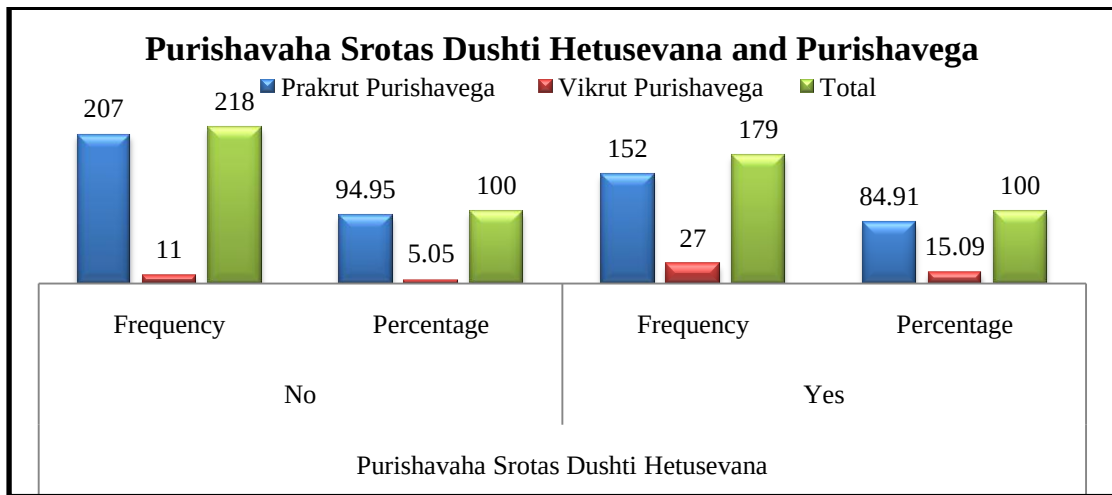
Out of 218 respondents who were not doing Purishavaha srotas Dushti Hetusevana, 163 (74.77%) were having Prakrut Purisha and 55 (25.23%) were having Vikrut Purisha. Out of 179 respondents who were doing Purishavaha Srotas Dushti Hetusevana, 124 (69.27%) were having Prakrut Purisha and 55 (30.73%) were having Vikrut Purisha.

Relation between Purishava Srotas Dushti Hetusevana and Purishavega -

Table 74 - Relation between Purishava Srotas Dushti Hetusevana and Purishavega

Purishavega	Purishavaha Srotas Dushti Hetusevana			
	No		Yes	
	Frequency	Percentage	Frequency	Percentage
Prakrut	207	94.95	152	84.91
Vikrut	11	5.05	27	15.09
Total	218	100	179	100

Chart 40 - Relation between Purishava Srotas Dushti Hetusevana and Purishavega



Out of 218 respondents who were not doing Purishavaha srotas Dushti Hetusevana, 207 (94.95%) were having Prakrut Purishavega and 11 (5.05%) were having Vikrut Purishavega. Out of 179 respondents who were doing Purishavaha Srotas Dushti Hetusevana, 154 (84.91%) were having Prakrut Purishavega and 27 (15.09%) were having Vikrut Purishavega.

There is relation between Purishavaha Srotas Dushti Hetusevana and Purishavega as Pearson Chi-square test significant ($p=0.001$).

Mantel-Haenszel common odds ratio estimate is 3.343 (lower bound - 1.608 and upper bound - 6.948).

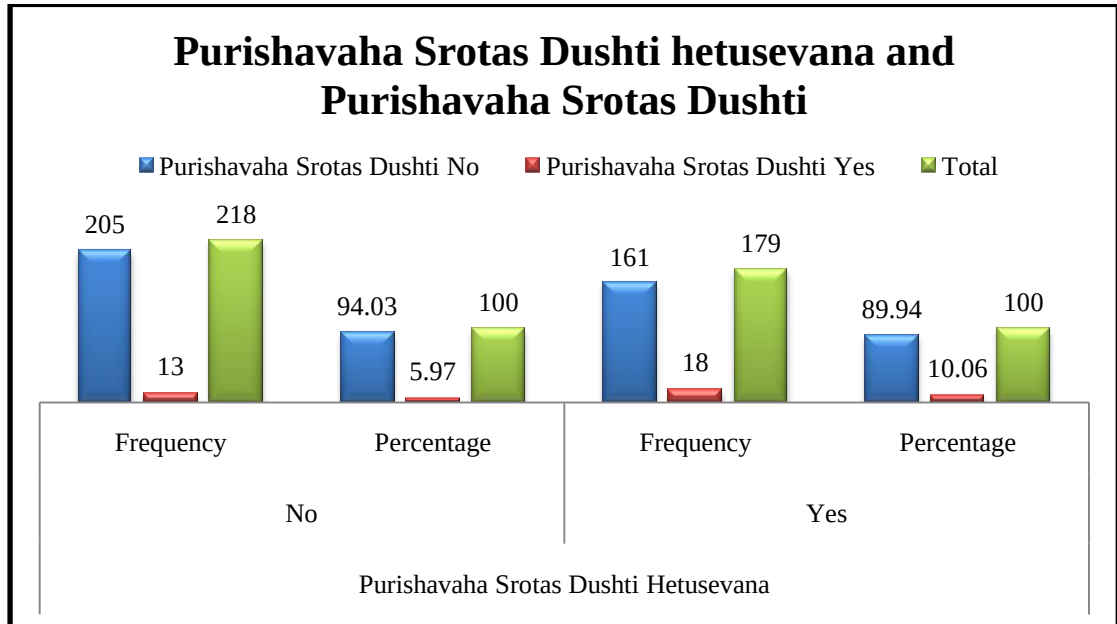
This indicates that respondents doing Purishavaha Srotas Dushti Hetusevana are 3.343 times more prone to have Vikrut Purishavega than respondents who are not doing Purishavaha Srotas Dushti Hetusevana.

Distribution of Purishava Srotas Dushti Hetusevana and Purishavaha Srotas Dushti -

Table 75 - Distribution of Purishava Srotas Dushti Hetusevana and Purishavaha Srotas Dushti

Purishavaha Srotas Dushti	Purishavaha Srotas Dushti Hetusevana			
	No		Yes	
	Frequency	Percentage	Frequency	Percentage
No	205	94.03	161	89.94
Yes	13	5.97	18	10.06
Total	218	100	179	100

Chart 41 - Distribution of Purishava Srotas Dushti Hetusevana and Purishavaha Srotas Dushti



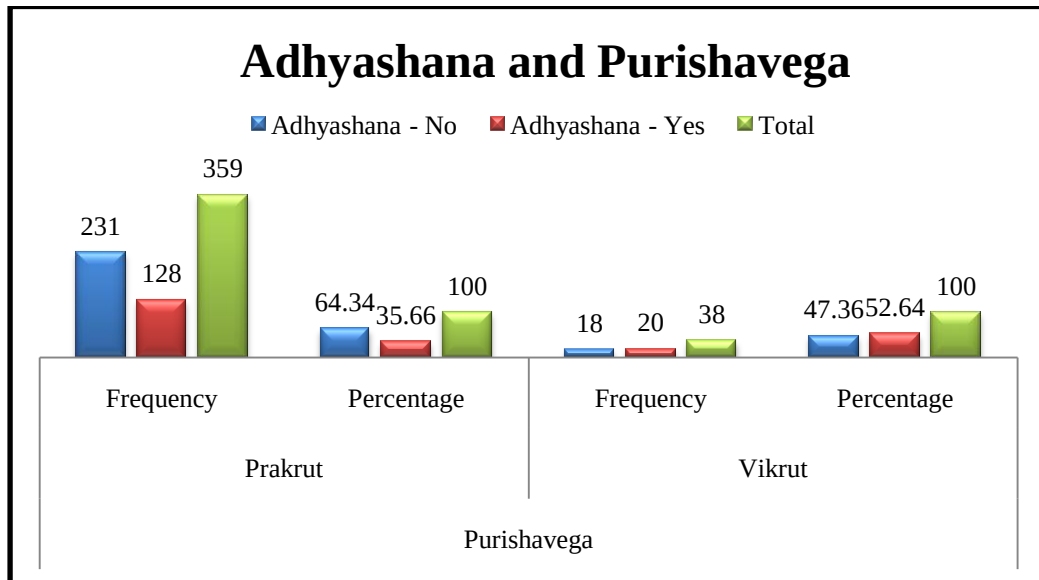
Out of 218 respondents who were not doing Purishavaha srotas Dushti Hetusevana, 205 (94.03%) were not having Purishavaha Srotas Dushti and 13 (5.97%) were having Purishavaha Srotas Dushti. Out of 179 respondents who were doing Purishavaha Srotas Dushti Hetusevana, 161 (89.94%) were not having Purishavaha Srotas Dushti and 18 (10.06%) were having Purishavaha Srotas Dushti.

Relation between Adhyashana and Purishavega -

Table 76 - Relation between Adhyashana and Purishavega

Adhyashana	Purishavega			
	Prakrut		Vikrut	
	Frequency	Percentage	Frequency	Percentage
No	231	64.34	18	47.36
Yes	128	35.66	20	52.64
Total	359	100	38	100

Chart 42 - Relation between Adhyashana and Purishavega



Out of 359 respondents having Prakrut Purishavega, 231 (64.34%) were not doing Adhyashana and 128 (35.66%) were doing Adhyashana. Out of 38 respondents having Vikrut Purishavega, 18 (47.36%) were not doing Adhyashana and 20 (52.64%) were doing Adhyashana.

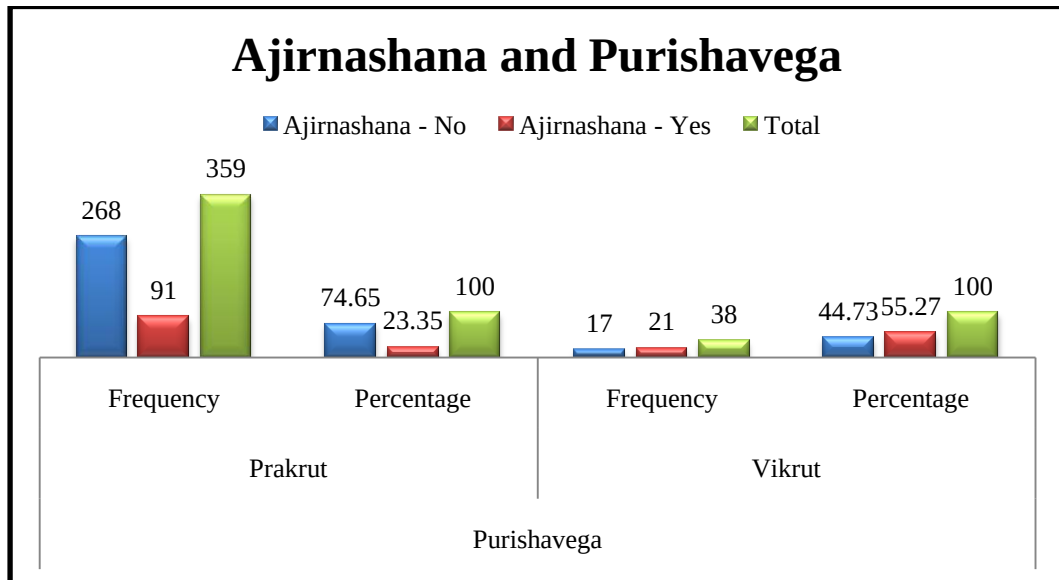
There is relation between Adhyashana and Vikrut Purishavega as Pearson Chi-square test significant ($p=0.040$).

Mantel-Haenszel common odds ratio estimate is 2.005 (lower bound - 1.024 and upper bound - 3.928).

This states that, Adhyashana leads to Vikrut Purishavega. Chances of getting Vikrut Purishavega are 2.005 times more if Adhyashana is done.

Relation between Ajirhashana and Purishavega -**Table 77 - Relation between Ajirhashana and Purishavega**

Ajirhashana	Purishavega			
	Prakrut		Vikrut	
	Frequency	Percentage	Frequency	Percentage
No	268	74.65	17	44.73
Yes	91	23.35	21	55.27
Total	359	100	38	100

Chart 43 - Relation between Ajirhashana and Purishavega

Out of 359 respondents having Prakrut Purishavega, 268 (74.65%) were not doing Ajirhashana and 91 (23.35%) were doing Ajirhashana. Out of 38 respondents having Vikrut Purishavega, 17 (44.73%) were not doing Ajirhashana and 21 (55.27%) were doing Ajirhashana.

There is relation between Ajirhashana and Vikrut Purishavega as Pearson Chi-square test significant ($p=0.000$).

Mantel-Haenszel common odds ratio estimate is 3.638 (lower bound - 1.839 and upper bound - 7.197).

This states that, Ajirhashana leads to Vikrut Purishavega. Chances of getting Vikrut Purishavega are 3.638 times more if Ajirhashana is done.

DISCUSSION

Discussion on observed facts -**Relation of Purisha and Purishavaha Srotas Dushti -**

- There is relation between Purishavaha Srotas Dushti and Purisha as Pearson Chi-square test significant ($p=0.024$). This indicates that presence of Purishavaha Srotas Dushti Lakshana is related with Vikrut Purisha and absence of Purishavaha Srotas Dushti Lakshana is related to Prakrut Purisha.
- Presence of Purishavaha Srotas Dushti Lakshana is 2.316 times more associated with Vikrut Purisha than Prakrut Purisha.

Justification - Srotas has key role in the formation of respective Sharira Bhava. So any abnormality in Srotas will result into abnormality in its product. As discussed earlier, Purisha is formed in Purishavaha Srotas as the end product of Ahara Pachana by Jatharagni. So Purishavaha Srotas and Jatharagni have role in formation of Purisha. Paripindita is normal form of Purisha. It indicates normal functioning of Purishavaha srotas and Jatharagni. Thus association of presence of Purishavaha Srotas Dushti with Vikrut Purisha can be explained.

Relation of Purishavega with Purishavaha Srotas Dushti –

- There is relation between Purishavaha Srotas Dushti and Purishavega as Pearson Chi-square test significant ($p=0.000$). Vikrut Purishavega was associated with presence of Purishavaha Srotas Dushti Lakshana and Prakrut Purishavega was associated with absence of Purishavaha Srotas Dushti Lakshana.
- Respondents having Vikrut Purishavega are 13.981 times more prone to have Purishavaha Srotas Dushti than respondents having Prakrut Purishavega.

Justification - Along with formation of Purisha, excretion of Purisha takes place via Purishavaha Srotas. Excretion of Purisha is Purishavega. Any abnormality in Purishavega may result in anatomical or physiological impairment of Purishavaha Srotas. Once impairment has occurred, its effect on its Bhava is inevitable. Thus relation between Purishavega and Purishavaha Srotas Dushti can be explained.

Relation between diet and Jatharagni -

- There is relation between diet and Jatharagni as Pearson Chi-square test is significant (p value is 0.011). This states that mixed diet leads to Vikrut Jatharagni.
- Mixed diet leads to Vikrut Jatharagni. The chances of getting Vikrut Jatharagni in mixed diet are 1.917 times more than vegetarian diet.
- There is relation between Vishmaggni and mixed diet as Pearson Chi-square test is significant (p value is 0.027). Mixed diet leads to Vishmaggni.
- Mixed diet is 1.831 times more leading to Vishmaggni than vegetarian diet.

Justification - mixed diet means both vegetarian and non vegetarian diet. Non vegetarian diet is Guru i.e. heavy to digest. If Ashtouharavidhivisheshayana and Aharavidhividhan are followed, digestion occurs easily. Now days it is very difficult to follow the said rules about Ahara because of changed life style. This may be the reason behind the relation between mixed diet and Vikrut Jatharagni.

Relation between Purisha and Jatharagni -

- There is relation between Purisha and Jatharagni as Pearson Chi-square test is significant (p value is 0.000). This states that Purisha becomes Vikrut if Jatharagni becomes Vikrut.
- Vikrut Purisha was found 3.560 times more in Vikrut Jatharagni than in Prakrut Jathargni.
- There is relation between Samagni and Prakrut Purisha as Pearson Chi-square test is significant (p value is 0.000).
- This indicates that Samagni is 2.289 times more likely to have Prakrut Purisha.
- There is relation between Vishmaggni and Vikrut Purisha as Pearson Chi-square test is significant (p value is 0.000).
- Vishmaggni is 4.475 times more likely to have Vikrut Purisha.

Justification - Purisha is Aharamala. Jatharagni plays important role in the formation of Purisha. Status of Jatharagni affects form of Purisha. If Jatharagni is Functioning properly, Purisha is formed normal i.e. Paripindita as well as Niarama Purisha is formed. This is observed in case of Samagni. If Jatharagni becomes Vikrut, Purisha is not formed properly. Thus Association of Samagni with Prakrut Purisha and Vishmaggni with Vikrut Purisha can be clarified.

Relation between Purishavega and Jatharagni -

- There is relation between Purishavega and Jatharagni as Pearson Chi-square test is significant (p value is 0.003). Purishavega becomes Vikrut if Jatharagni becomes Vikrut.
- Vikrut Purishavega was found 2.740 times more in Vikrut Jatharagni than in Prakrut Jatharagni
- There is relation between Samagni and Prakrut Purishavega as Pearson Chi-square test is significant (p value is 0.021).
- Samagni is 2.238 times more likely to have Prakrut Purishavega.
- There is relation between Vishamagni and Vikrut Purishavega as Pearson Chi-square test is significant (p value is 0.018).
- Vishamagni is 2.361 times more likely to have Vikrut Purishavega.

Justification - Jatharagni is dependent on proper Gati of Prana Vata, Apana Vata and Samana Vata¹. Dhmapana i.e. ignition of Agni is done by Prana and Apana Vata. Prana has Urdhva Gati, Apana has Adhogati. Because of friction of these two opposite Gati, Dhmapana of Jatharagni takes place. Palana i.e. maintenance of Agni is done by Samana Vata.

Any obstruction or Gati Vaishamya i.e. any deviation from normal Gati of these Vata affects Jatharagni. Purishavega is under control of Apana Vata². So as far as Purishavega is Prakrut, Jatharagni tends to be Prakrut.

Purishavega is an urge of defecation. Purisha is formed as the end product of digestion. Digestion is done by Jatharagni. So if Jatharagni is Prakrut, Purisha will be formed Prakrut and Purishavega will be Prakrut. Thus the relation between Purishavega and Jatharagni can be justified.

¹ प्राणापानसमानैस्तु सर्वतः पवनैस्त्रिभिः । ध्मायते पाल्यते चापि स्वां स्वां गतिमवस्थितैः ॥

सु. सू. ३५ / २८

² अपानोऽपानगः श्रोणिबस्तिमेढ्रोरुगोचरः । शुक्रार्तवसकृन्मूत्रगर्भनिष्क्रमणक्रियः ॥

अ. ह. सू. १२ / ९

Relation between Purishavaha Srotas Dushti and Jatharagni -

- There is relation between Purishavaha Srotas Dushti and Jatharagni as Pearson Chi-square test is significant (p value is 0.004). Purishavaha Srotas Dushti is there if Jatharagni becomes Vikrut.
- Chances of getting Purishavaha Srotas Dushti are 2.877 times more in Vikrut Jatharagni than in Prakrut Jatharagni.
- There is relation between Vishamagni and presence of Purishavaha Srotas Dushti as Pearson Chi-square test is significant (p value is 0.004).
- This indicates that Vishamagni is 2.282 times more likely to have Purishavaha Srotas Dushti.

Justification - Purishavaha Srotas Dushti will be there if Purisha and Purishavega are not properly formed. As explained earlier, both Purisha and Purishavega are dependent on Jatharagni. Thus association of Presence of Purishavaha Srotas Dushti Lakshana with Vikrut Jatharagni and absence of Purishavaha Srotas Dushti Lakshana with Prakrut Jatharagni can be understood. In case of Vishamagni, nature of Jatharagni is uncertain. As a result, mutilation is seen in Purisha and Purishavega, ultimately resulting into Purishavaha Srotas Dushti.

Relation between Purishavaha Srotas Dushti Hetusevana and Purishavega -

- There is relation between Purishavaha Srotas Dushti Hetusevana and Purishavega as Pearson Chi-square test significant (p=0.001).
- Respondents doing Purishavaha Srotas Dushti Hetusevana are 3.343 times more prone to have Vikrut Purishavega than respondents who are not doing Purishavaha Srotas Dushti Hetusevana.
- There is relation between Adhyashana and Vikrut Purishavega as Pearson Chi-square test significant (p=0.040). Adhyashana leads to Vikrut Purishavega. Chances of getting Vikrut Purishavega are 2.005 times more if Adhyashana is done.
- There is relation between Ajirashana and Vikrut Purishavega as Pearson Chi-square test significant (p=0.000). Ajirashana leads to Vikrut Purishavega. Chances of getting Vikrut Purishavega are 3.638 times more if Ajirashana is done.

Justification - Purishavegadharana, Atyashana, Ajirashana and Adhyashana are Purishavaha Srotas Dushti Hetusevana. These factors are associated with Jatharagni Vikruti. If Jatharagni becomes Vikrut, Purisha and Purishaveha become Vikrut. Thus the connection between Purishavaha Srotas Dushti and Purishavega can be believed.

SUMMARY

The present study ‘Study of correlation between functions of Purishavaha Srotas and Jathargni’ was survey study. Volunteers of age group between 18 to 60 years of either gender were included in the study. Individuals who are pregnant and non ambulatory, which have neurological disorders where sphincter control is reduced or lost, were excluded from the study. Functions of Purishavaha Srotas were evaluated with the help of case record form for assessment of Purisha, assessment of Purishavega and presence or absence of Purishavaha Srotas Dushti Lakshana. Evaluation of Jatharagni was done with the help of format based on Jaranashakti Pariksha. Collected data was analyzed in three ways - relation between Purisha and Jathargni, relation between Purishavega and Jathargni and relation between presence and absence of Purishavaha Srotas Dushti and Jathargni.

From this study following facts were found -

Table 78 - Summary

Functions of Purishavaha Srotas		Prakrut Jatharagni		Vikrut Jatharagni		Chi-square test P value
		Number	%	Number	%	
Purisha	Prakrut	221	78.36	58	50.43	0.000
	Vikrut	61	21.63	57	49.57	
	Total	282	100	115	100	
Purishavega	Prakrut	263	93.26	96	83.47	0.003
	Vikrut	19	6.74	19	16.53	
	Total	282	100	115	100	
Purishavaha Srotas Dushti	Absent	267	94.68	99	86.08	0.004
	Present	15	5.32	16	13.92	
	Total	282	100	115	100	

Relation between Purisha and Jathargni -

There is relation between Purisha and Jatharagni as Pearson Chi-square test is significant (p value is 0.000). Mantel-Haenszel common odds ratio estimate is 3.560 (lower bound - 2.242, upper bound - 5.655).

This states that Purisha becomes Vikrut if Jatharagni becomes Vikrut. Vikrut Purisha was found 3.560 times more in Vikrut Jatharagni than in Prakrut Jathargni.

Relation between Purishavega and Jatharagni -

There is relation between Purishavega and Jatharagni as Pearson Chi-square test is significant (p value is 0.003). Mantel-Haenszel common odds ratio estimate is 2.740 (lower bound - 1.391, upper bound - 5.394).

This states that Purishavega becomes Vikrut if Jatharagni becomes Vikrut. Vikrut Purishavega was found 2.740 times more in Vikrut Jatharagni than in Prakrut Jathargni.

Relation between Purishavaha Srotas Dushti and Jatharagni -

There is relation between Purishavaha Srotas Dushti and Jatharagni as Pearson Chi-square test is significant (p value is 0.004). Mantel-Haenszel common odds ratio estimate is 2.877 (lower bound - 1.371, upper bound - 6.037).

This states that Purishavaha Srotas Dushti is there if Jatharagni becomes Vikrut. Chances of getting Purishavaha Srotas Dushti are 2.877 times more in Vikrut Jatharagni than in Prakrut Jatharagni.

Other additional particulars were found in this study. These are as follows -

- The presence of Purishavaha Srotas Dushti Lakshana is related with Vikrut Purisha and absence of Purishavaha Srotas Dushti Lakshana is related to Prakrut Purisha. Also presence of Purishavaha Srotas Dushti Lakshana is 2.316 times more associated with Vikrut Purisha than Prakrut Purisha.
- Respondents having Vikrut Purishavega are 13.981 times more prone to have Purishavaha Srotas Dushti than respondents having Prakrut Purishavega.
- Mixed diet is 1.831 times more leading to Vishamagni than vegetarian diet.
- Samagni is 2.289 times more likely to have Prakrut Purisha.
- Vishamagni is 4.475 times more likely to have Vikrut Purisha.
- Samagni is 2.238 times more likely to have Prakrut Purishavega.
- Vishamagni is 2.361 times more likely to have Vikrut Purishavega.
- Vishamagni is 2.282 times more likely to have Purishavaha Srotas Dushti.
- Mixed diet leads to Vikrut Jatharagni. The chances of getting Vikrut Jatharagni in mixed diet are 1.917 times more than vegetarian diet.

- Respondents doing Purishavaha Srotas Dushti Hetusevana are 3.343 times more prone to have Vikrut Purishavega than respondents who are not doing Purishavaha Srotas Dushti Hetusevana.
- Adhyashana leads to Vikrut Purishavega. Chances of getting Vikrut Purishavega are 2.005 times more if Adhyashana is done.
- Ajirashana leads to Vikrut Purishavega. Chances of getting Vikrut Purishavega are 3.638 times more if Ajirashana is done.

CONCLUSION

From the observations and discussion, it is concluded that -

- There is relation between Purisha and Jatharagni (P value of Pearson Chi-square test is 0.000). Purisha becomes Vikrut if Jatharagni becomes Vikrut.
- There is relation between Purishavega and Jatharagni (P value of Pearson Chi-square test is 0.003). Purishavega becomes Vikrut if Jatharagni becomes Vikrut.
- There is relation between Purishavaha Srotas Dushti and Jatharagni (P value of Pearson Chi-square test is 0.004). Purishavaha Srotas Dushti is there if Jatharagni becomes Vikrut.
- Thus there is correlation between functions of Purishavaha Srotas and Jatharagni.

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Annexure I

Study of correlation between functions of Purishavaha Srotas and Jatharagni

Informed written consent

Name - _____ M /F Age - _____ Years

1. I confirm that I have read & understood the information for the study & have the opportunity to ask the questions.
2. I understand that my participation in the study is voluntary & I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected.
3. I understand that the sponsors of the clinical trial are working on the sponsor's behalf, the ethical committee & the regulatory authority will not need my permission to look at my health records that may be conducted in relation to, even if I withdraw from trial. I agree to this access. However I understand that my identity will not be revealed in any information released to third party or published.
4. I agree not to restrict the use of any data or result that arises from this study provided such a use is only for scientific purpose.
5. I agree to take part in this study.

Name & Signature
investigator

Name & Signature
witness

Name & Signature
volunteer

Date:

Place:

CASE RECORD FORM

Name: _____ Date: _____

Age: _____ Sex: F/M

Kala: _____

Address: _____

Phone no: _____

Occupation: _____ Nature of work: _____

Physical exercise: yes / no _____ regular / irregular

Diet: vegetarian / non-vegetarian (frequency of non-veg food - _____ days / week)

Height: _____ cm Weight: _____ kg

Family history: _____

Maternal: _____

Paternal: _____

Self: _____

History of previous illness: _____

Disease: _____

Surgery: _____

Treatment: _____

On examination: _____

Pulse: _____ /min

Mala: _____

Mutra: _____

R.R: _____ /min

Jivha: _____

Prakruti: _____

Nidra: _____

Menstrual history: _____

Do you have any mental stress: yes / no

Purisha Pariksha –

Purisha Swarupa -

Bristol stool chart	Frequency			
	Always	Most of the times	Some times	rarely
Type 1  Separate hard lumps, like nuts (hard to pass)				
Type 2  Sausage-shaped but lumpy				
Type 3  Like a sausage but with cracks on the surface				
Type 4  Like a sausage or snake, smooth and soft				
Type 5  Soft blobs with clear-cut edges				
Type 6  Fluffy pieces with ragged edges, a mushy stool				
Type 7  Watery, no solid pieces. Entirely Liquid				

Lakshana / Guna of Purisha	Frequency			
	Always	Most of the times	Some times	rarely
	3	2	1	0
Bhrusha Durgandhi (fowl smell)				
Pichchhila (sticks to the pan)				
More in quantity				
Less in quantity				
Apsu nimajjana (sinks in water)				
Presence of undigested food particle in Mala ¹⁰				

Total Score –

0 to 6 = Nirama Purisha

7 to 18 = Sama Purisha

Purisha – Sama /Nirama

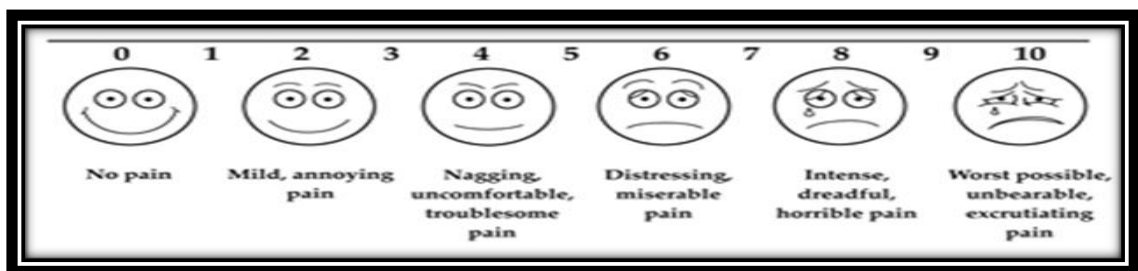
PurishavegaPariksha –

1. How many times you go for Malapravrutti in a day?
 - 0 - Twice a day
 - 1 - As many urges that I get
 - 2 - Every alternate day
 - 3 - No necessity to go every day
2. How do you feel after Malapravrutti every day?
 - 0 - Satisfactory
 - 1 - Depends upon change in diet
 - 2 - Unsatisfactory
 - 3 - Associated with pain & discomfort
3. How your Malapravrutti occurs?
 - 0 - With ease without any straining
 - 1 - With ease but sometimes need to strain
 - 2 - Often need to strain
 - 3 - Always need to strain
4. What you do when you do not feel urge for Malavisarjana any day?
 - 0 - Nothing, I do my daily work and attends toilet after getting urge
 - 1 - Do some exercise/consume tea/hot water/cold water
 - 2 - Give pressure/consume tobacco, cigarette, etc.
 - 3 - Consume laxatives
5. How often you feel an incomplete emptying sensation after a bowel movement?
 - 0 -Never
 - 1 - 1-2 times/week
 - 2 - 3-4 times/week
 - 3 - Almost everyday

Total score =

0 to 5 = Prakrut Purishavega

6 to 15 = Vikrut purishavega

Pain on defecation – yes / no

Purishavaha SrotodushtiHetusevanaPariksha-

Sandharana -

1. How frequently you with hold your urge for defecation?
 - 0 - Not at all
 - 1 - Rarely
 - 2 - Sometimes
 - 3 - Most of the times
2. For how long time you with hold your urge for defecation?
 - 0 – not at all
 - 1 - Less than 10 minutes
 - 2 - Up to an hour
 - 3 - More than an hour

Atyashana –

1. Whether you eat more frequently when compared to your age group?
 - 0 – not at all
 - 1 - Rarely
 - 2 - Sometimes
 - 3 - Most of the times
2. Whether the quantity of food you are taking is more when compared to your age group?
 - 0 – not at all
 - 1 - Rarely
 - 2 - Sometimes
 - 3 - Most of the times

Ajeernashana –

1. Whether you take your meal even if you feel that your previously taken meal is undigested?
 - 0 – not at all
 - 1 - Rarely
 - 2 - Sometimes
 - 3 - Most of the times

Adhyashana –

1. The time interval between any two (food) intake is less than three hours –
 - 0 – not at all
 - 1 - Rarely
 - 2 - Sometimes
 - 3 - Most of the times

Total score =

0 to 6 = Hetusevan yes

7 to 18 = Hetusevan no

Purishavaha SrotodushtiHetusevana – yes / no

Modified ODS Longo score –

1. Medication to evacuate –
0 - never
1 – less than once weekly
2 – 1 to 6 times weekly
3 – Every day
2. Difficulties to evacuate –
0 - never
1 – less than once weekly
2 – 1 to 6 times weekly
3 – Every day
3. Digitation to evacuate –
0 - never
1 – less than once weekly
2 – 1 to 6 times weekly
3 – Every day
4. Return to toilet to evacuate –
0 - never
1 – less than once weekly
2 – 1 to 6 times weekly
3 – Every day
5. Feeling of incomplete evacuation –
0 - never
1 – less than once weekly
2 – 1 to 6 times weekly
3 – Every day
6. Straining to evacuate –
0 - never
1 – less than once weekly
2 – 1 to 6 times weekly
3 – Every day
7. Time needed for evacuation –
0 – less than 5 minutes
1 – 6 to 10 minutes
2 – 11 to 20 minutes
3 – more than 20 minutes
8. Life style alteration –
0 – no alteration of life style
1 – mild alteration
2 – moderate alteration
3 – significant alteration of life style

Total score =

Interpretation – 0 = best

PurishavahaSrotododushtiLakshana –

No.	DushtiLakshna	Presence	
		Yes	No
1	Kruchchhrena -		
	Medication to evacuate		
	Difficulties to evacuate		
	Straining to evacuate		
	Digitation to evacuate		
	Urgent need for defecation		
2	Alpalpa -		
	Return to toilet to evacuate		
	Feeling of incomplete evacuation		
3	Sashula -		
4	Atidrava -		
	Loose stools		
5	Atigrathita -		
	Hard Stools		
6	Atibahu -		
	Increased passage of stools		
7	Upavishanta -		
	Long time needed for evacuation		

PurishavahaSrotodushti – yes / no

Jatharagni Pariksha –**Abhyavaharana Shakti Pariksha**

Sr. No.	Name of food item	Quantity per day			Frequency per week		
		3	2	1	3	2	1
1	Ashita solid - quantity in no. chapati / roti / bread / idali / dosa / puri / paratha	≥ 6	3 to 5	≤ 2	≥ 5 days	2 - 4 days	< 2 days
2	Pita Liquids - quantity in cups tea / milk / coffee / buttermilk	≥ 4	2 to 3	≤ 1	≥ 5 days	2 - 4 days	< 2 days
3	Lidha semisolid - quantity in spoons ghee / pickle / chatani / souce	≥ 3	1 to 2	< 1	≥ 5 days	2 - 4 days	< 2 days
4	Khadita solid / semisolid - quantity in bowls rice / dal / sabji / upama / kheera / sheera	≥ 6	3 to 5	≤ 2	≥ 5 days	2 - 4 days	< 2 days
5	water - in liters	> 2	1 to 2	< 1	≥ 5 days	2 - 4 days	< 2 days

Total score =

Interpretation -

10 to 16 = Heena

17 to 23 = Madhyama

24 to 30 = uttama

Abhyavaharana Shakti = Heena / Madhyama / Uttama

Jaranashakti Pariksha -

Sr. No.	JirnaharaLakshana	Type of Agni			Nature / Frequency	
		3	2	1	2	1
1	UdgaraShuddhi - How many hours after food intake you get clear belching?	< 3 hours	3 to 6 hours	> 6 hours	mostly	some times
2	Utsaha - How many hours after food intake you feel enthusiasm?	< 3 hours	3 to 6 hours	> 6 hours	mostly	some times
3	Purisha Vega - no. of Mala Vega in a day	> 2	2	1 or once in two day	mostly	some times
4	Purisha Vega - how many hours after food intake you get Purisha Vega?	< 12 hours	12 hours	> 12 hours	mostly	some times
5	Mutra Vega - no. of Mutra Vega in a day	7 to 8	5 to 6	< 4	mostly	some times
6	Laghuta - how many hours after food intake you feel lightness in body?	< 3 hours	3 to 6 hours	> 6 hours	mostly	some times
7	Kshut - how many hours after food intake you feel hungry?	< 3 hours	3 to 6 hours	> 6 hours	mostly	some times
8	Pipasa - After how many hours from food intake you feel thirsty?	< 3 hours	3 to 6 hours	> 6 hours	mostly	some times
Total score						

Interpretation -

type of Agni -

8 to 13 = Mandagni

14 to 18 = Samagni

19 to 24 = Tikshnagni

Jatharagni Vinishchaya -

behavior / Nature -

8 to 12 = Uncertain, Vishama

13 to 16 = Certain

Annexure II

Study of correlation between functions of Purishavaha Srotas and Jatharagni

ಒಪ್ಪಿಗೆ ಪತ್ರ

ಹೆಸರು -

ಗಂಡು/ಹೆಣ್ಣು

ವಯಸ್ಸು -

ವರ್ಷ

1. ನಾನು, ಕೊಟ್ಟಿರುವ ಮಾಹಿತಿಯನ್ನು ಓದಿದ್ದೇನೆ ಮತ್ತು ಅರ್ಥಮಾಡಿಕೊಂಡಿದ್ದೇನೆ ಹಾಗೂ ನನಗೆ ಪ್ರಶ್ನೆ ಕೇಳುವ ಅವಕಾಶವಿದೆ ಎಂದು ಖಚಿತಪಡಿಸುತ್ತೇನೆ.
2. ನಾನು ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ಸ್ವಇಚ್ಛೆಯಿಂದ ಒಪ್ಪಿಕೊಂಡಿರುವೆ ಮತ್ತು ನಾನು ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ಯಾವುದೇ ಕಾರಣಗಳನ್ನು ಕೊಡದೆ ಅಧ್ಯಯನದಿಂದ ಹೊರಗೆ ನಡೆಯಲು ಸ್ವಾತಂತ್ರ್ಯವಿದೆ ಹಾಗೂ, ಹಾಗೆ ಹೊರ ನಡೆದಲ್ಲಿ, ನನ್ನ ವೈದ್ಯಕೀಯ ಆರೈಕೆ ಅಥವಾ ಕಾನೂನು ಹಕ್ಕುಗಳಿಗೆ ಪರಿಣಾಮವಾಗುವುದಿಲ್ಲ ಎಂದು ತಿಳಿದುಕೊಂಡಿದ್ದೇನೆ.
3. ವೈದ್ಯಕೀಯ ಪರೀಕ್ಷೆ ಪ್ರಾಯೋಜಕರು, ಪ್ರಾಯೋಜಕರ ಪರವಾಗಿ ಅಧ್ಯಯನ ಮಾಡುತ್ತಿದ್ದಾರೆ ಎಂದು ನನಗೆ ತಿಳಿದಿದೆ. ಒಂದು ವೇಳೆ ನಾನು ಅಧ್ಯಯನದಿಂದ ಹೊರ ನಡೆದರೆ ನೈತಿಕ ಕಮಿಟಿ ಮತ್ತು ನಿಯಂತ್ರಕ ಅಧಿಕಾರದವರಿಗೆ ನನ್ನ ಆರೋಗ್ಯ ದಾಖಲೆಗಳನ್ನು ನೋಡಲು ನನ್ನ ಅನುಮತಿ ಅಗತ್ಯವಿಲ್ಲ ಎಂದು ಒಪ್ಪಿಕೊಂಡಿರುತ್ತೇನೆ. ನನ್ನ ಗುರುತು ಮತ್ತು ಮಾಹಿತಿಯನ್ನು ಯಾವುದೇ ತೃತೀಯ ಪಕ್ಷದವರಿಗೆ ಬಹಿರಂಗ ಪಡಿಸುವುದಿಲ್ಲವೆಂದು, ಹಾಗೂ ಪ್ರಕಟಿಸುವುದಿಲ್ಲವೆಂದು ನನಗೆ ತಿಳಿದಿರುತ್ತದೆ.
4. ಈ ಅಧ್ಯಯನದ ಸಂಬಂಧಪಟ್ಟ ಯಾವುದೇ ಮಾಹಿತಿ ಮತ್ತು ಫಲಿತಾಂಶವನ್ನು ಕೇವಲ ವೈಜ್ಞಾನಿಕ ಉದ್ದೇಶಕ್ಕಾಗಿ ಮಾತ್ರ ಬಳಸಲು ನನ್ನ ಅನುಮತಿ ಇದೆ.
5. ಈ ಎಲ್ಲ ಮಾಹಿತಿಯೊಂದಿಗೆ ನಾನು ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ಒಪ್ಪಿರುತ್ತೇನೆ.

ಹೆಸರು ಮತ್ತು ಸಹಿ

ಪರೀಕ್ಷಕರು

ಹೆಸರು ಮತ್ತು ಸಹಿ

ಸಾಕ್ಷಿ

ಹೆಸರು ಮತ್ತು ಸಹಿ

ಅಭ್ಯರ್ಥಿ

ದಿನಾಂಕ:

ಊರು:

CASE RECORD FORM

ಹೆಸರು:

ದಿನಾಂಕ:

ವಯಸ್ಸು:

ಲಿಂಗ : ಹೆಣ್ಣು/ ಗಂಡು

ವಿಳಾಸ:

ದೂರವಾಣಿ ಸಂಖ್ಯೆ:

ವೃತ್ತಿ:

ದಿನ ನಿತ್ಯದ ಕೆಲಸಗಳಲ್ಲಿ ವಹಿಸುವ ದೈಹಿಕ ಶ್ರಮ - ಸಾಧಾರಣ/ ಸ್ವಲ್ಪ ಹೆಚ್ಚು/ ಅತಿ ಹೆಚ್ಚು

ದಿನ ನಿತ್ಯದ ಕೆಲಸಗಳನ್ನು ಬಿಟ್ಟು ಯಾವುದಾದರೂ ದೈಹಿಕ ವ್ಯಾಯಾಮ ಮಾಡುತ್ತಿರಾ? ಹೌದು /ಇಲ್ಲ

ಹಾಗೆ ಮಾಡಿದಲ್ಲಿ ವಾರದಲ್ಲಿ ಎಷ್ಟು ದಿನಗಳು

ಆಹಾರ: ಶಾಖಾಹಾರಿ/ ಮಿಶ್ರ (ವಾರದಲ್ಲಿ ಎಷ್ಟು ದಿನ ಸೇವಿಸುತ್ತೀರಿ? - ದಿನಗಳು/ವಾರ)

ಎತ್ತರ: cm

ತೂಕ: kg

ಕುಟುಂಬದ ಅರೋಗ್ಯದ ಬಗ್ಗೆ ಹೆಚ್ಚಿನ ಮಾಹಿತಿ - ಯಾವುದಾದರೂ ಅರೋಗ್ಯ ಸಮಸ್ಯೆ ಇದ್ದಲ್ಲಿ ತಿಳಿಸುವುದು

ಖಾಯಿಲೆ:

ಶಸ್ತ್ರ ಚಿಕಿತ್ಸೆ:

ನಿಮ್ಮ ಅರೋಗ್ಯದ ಬಗ್ಗೆ ಹೆಚ್ಚಿನ ಮಾಹಿತಿ - ಯಾವುದಾದರೂ ಅರೋಗ್ಯ ಸಮಸ್ಯೆ ಇದ್ದಲ್ಲಿ ತಿಳಿಸುವುದು

ಖಾಯಿಲೆ:

ಶಸ್ತ್ರ ಚಿಕಿತ್ಸೆ:

ಮಲ:

(ಒಂದು ದಿನದಲ್ಲಿ ಎಷ್ಟುಬಾರಿ)

ಮೂತ್ರ:

(ಒಂದು ದಿನದಲ್ಲಿ ಎಷ್ಟುಬಾರಿ)

ಪ್ರಕೃತಿ:

ನಿದ್ರಾ: (ಒಂದು ದಿನದಲ್ಲಿ ಎಷ್ಟುಘಂಟೆ)

ತೃಪ್ತಿಕರ ನಿದ್ರೆ :

ರಜೋ ವೃತ್ತಾಂತ:

ನಿಮಗೆ ಯಾವುದೇ ಬಗೆಯ ಮಾನಸಿಕ ಒತ್ತಡ ಇದೆಯೇ? : ಹೌದು/ಇಲ್ಲ

ಪುರೀಷ ಪರೀಕ್ಷೆ -

ಸೂಕ್ತವಾದ ಜಾಗದಲ್ಲಿ ಸಹಿ ಗುರುತು (✓) ಹಾಕಿ.

ಮಲ ಸ್ವರೂಪ -

ಬ್ರಿಸ್ಟಾಲ್ ಸ್ಕೋಲ್ ಚಾರ್ಟ್ ²	ವೇಗ			
	ಯಾವಾಗಲೂ	ಬಹಳ ಸಲ	ಕೆಲವೊಮ್ಮೆ	ವಿರಳವಾಗಿ
Type 1  Separate hard lumps, like nuts (hard to pass)				
Type 2  Sausage-shaped but lumpy				
Type 3  Like a sausage but with cracks on the surface				
Type 4  Like a sausage or snake, smooth and soft				
Type 5  Soft blobs with clear-cut edges				
Type 6  Fluffy pieces with ragged edges, a mushy stool				
Type 7  Watery, no solid pieces. Entirely Liquid				

ಮಲದ ಲಕ್ಷಣ	ವೇಗ			
	ಯಾವಾಗಲೂ	ಬಹಳ ಸಲ	ಕೆಲವೊಮ್ಮೆ	ವಿರಳವಾಗಿ
	3	2	1	0
ದುರ್ಗಂಧ/ ವಾಸನೆ				
ಪ್ಯಾನ್ ಗೆ ಅಂಟುತ್ತದೆ				
ಪ್ರಮಾಣ ಹೆಚ್ಚು				
ಪ್ರಮಾಣ ಕಡಿಮೆ				
ನೀರಿನಲ್ಲಿ ಮುಳುಗುತ್ತದೆ				
ಜೀರ್ಣಗೊಳ್ಳದ ಆಹಾರ ಮಲದಲ್ಲಿ ಇರುತ್ತದೆಯೇ ⁰				

Total Score -

0 to 6 = ನಿರಾಮ ಪುರೀಷ

7 to 18 = ಸಾಮ ಪುರೀಷ

ಮಲ- ಸಾಮ/ನಿರಾಮ

ಮಲವೇಗ ಪರೀಕ್ಷೆ-

ಸೂಕ್ತವಾದ ಜಾಗದಲ್ಲಿ ಸಹಿ ಗುರುತು (✓) ಹಾಕಿ.

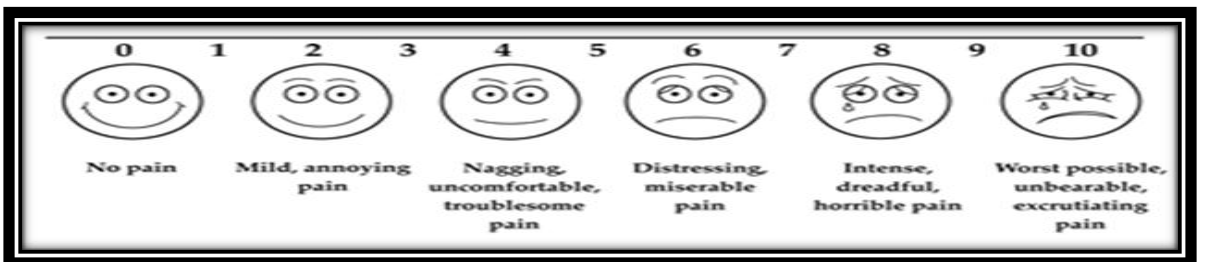
1. ದಿನದಲ್ಲಿ ಎಷ್ಟು ಬಾರಿ ಮಲ ವಿಸರ್ಜನೆಗೆ ಹೋಗುವಿರಿ?
 - 0 - ದಿನಕ್ಕೆ ಎರಡು ಬಾರಿ
 - 1 - ವೇಗದ ಅನುಸಾರ/ ದಿನಕ್ಕೊಂದು ಬಾರಿ.
 - 2 - ದಿನ ಬಿಟ್ಟು ದಿನ
 - 3 - ದಿನ ನಿತ್ಯ ಹೋಗುವ ಅವಶ್ಯಕತೆ ಇಲ್ಲ
2. ವಿಸರ್ಜನೆ ನಂತರದ ಅನಿಸಿಕೆ ಏನು?
 - 0 - ತೃಪ್ತಿಕರ
 - 1 - ಆಹಾರದ ವ್ಯತ್ಯಾಸದ ಮೇಲೆ ಅವಲಂಬಿಸಿರುತ್ತದೆ.
 - 2 - ಅತ್ಯಪ್ತಿಕರ
 - 3 - ನೋವು ಮತ್ತು ಕಷ್ಟದಿಂದ ಕೂಡಿರುತ್ತದೆ.
3. ಮಲಪ್ರವೃತ್ತಿ ಹೇಗೆ ಇರುತ್ತದೆ?
 - 0 - ಸರಳ ಮತ್ತು ಒತ್ತಡದಿಂದ ಕೂಡಿರುವುದಿಲ್ಲ
 - 1 - ಸರಳ ಮತ್ತು ಕೆಲವೊಮ್ಮೆ ಒತ್ತಡದಿಂದ ಕೂಡಿರುತ್ತದೆ.
 - 2 - ಕೆಲವೊಮ್ಮೆ ಒತ್ತಡದಿಂದ ಕೂಡಿರುತ್ತದೆ.
 - 3 - ಯಾವಾಗಲೂ ಒತ್ತಡದಿಂದ ಕೂಡಿರುತ್ತದೆ.
4. ಮಲ ವೇಗ ಬಾರದ ಸಮಯದಲ್ಲಿ ಏನು ಮಾಡುವಿರಿ?
 - 0 - ಏನೂ ಇಲ್ಲ, ದಿನನಿತ್ಯದ ಕೆಲಸ ನಿರ್ವಹಿಸುವುದು, ಮಲ ವೇಗ ಬಂದಾಗ ಹೋಗುವುದು.
 - 1 - ವ್ಯಾಯಾಮ ಮಾಡುವೆ/ಚಹಾ/ ಬಿಸಿನೀರು/ ತಣ್ಣೀರು ಕುಡಿಯುವೆ.
 - 2 - ಒತ್ತಡ ಕೊಡುವುದು/ತಂಬಾಕು, ಧೂಮಪಾನ ಸೇವನೆ, ಇತ್ಯಾದಿ.
 - 3 - ಮಲವಿಸರ್ಜನಕಾರಕ ಔಷಧಗಳನ್ನು ತೆಗೆದುಕೊಳ್ಳುವುದು.
5. ಮಲವಿಸರ್ಜನೆಗೆ ನಂತರ ಎಷ್ಟು ಬಾರಿ ನಿಮಗೆ ಅಪೂರ್ಣ ಮಲವಿಸರ್ಜನೆ ಆಗಿದೆ ಅನ್ನಿಸುತ್ತದೆ?
 - 0 - ಇಲ್ಲ
 - 1 - 1-2 ಬಾರಿ/ವಾರದಲ್ಲಿ
 - 2 - 3-4 ಬಾರಿ/ವಾರದಲ್ಲಿ
 - 3 - ಬಹುಶಃ ಪ್ರತಿದಿನ

Total score =

0 to 5 = ಪ್ರಾಕೃತ ಮಲ ವೇಗ

6 to 15 = ವಿಕೃತ ಮಲ ವೇಗ

ನೋವಿನೊಂದಿಗೆ ಮಲವಿಸರ್ಜನೆ- ಹೌದು/ಇಲ್ಲ



ಪುರೀಷವಹ ಸ್ತೋತೋದುಷ್ಟಿ ಹೇತುಸೇವನ ಪರೀಕ್ಷಾ⁵- ಸೂಕ್ತವಾದ ಆಯ್ಕೆಗೆ ಸಹಿ ಗುರುತು (✓) ಹಾಕಿ.

ಸಂಧಾರಣ -

1. ನೀವು ಆಗಾಗ್ಗೆ ಮಲವಿಸರ್ಜನೆ/ ಮಲವೇಗವನ್ನು ತಡೆಹಿಡಿಯುತ್ತೀರಾ?

- 0 - ಇಲ್ಲವೇ ಇಲ್ಲ
- 1 - ವಿರಳವಾಗಿ
- 2 - ಕೆಲವೊಮ್ಮೆ
- 3 - ಬಹಳ ಬಾರಿ

2. ನೀವು ಎಷ್ಟು ಸಮಯದವರೆಗೆ ಮಲವೇಗವನ್ನು ತಡೆಹಿಡಿಯುತ್ತೀರಿ

- 0 - ಇಲ್ಲವೇ ಇಲ್ಲ
- 1 - 10 ನಿಮಿಷಗಳಿಗಿಂತ ಕಡಿಮೆ
- 2 - 1 ಗಂಟೆಯ ವರೆಗೂ
- 3 - 1 ಗಂಟೆಗಿಂತ ಹೆಚ್ಚು

ಅತ್ಯಶನ-

1. ನೀವು ನಿಮ್ಮ ವಯಸ್ಕರಿಗಿಂತ ಹೆಚ್ಚು ಬಾರಿ ಆಹಾರ ಸೇವಿಸುತ್ತೀರಾ?

- 0 - ಇಲ್ಲವೇ ಇಲ್ಲ
- 1 - ವಿರಳವಾಗಿ
- 2 - ಕೆಲವೊಮ್ಮೆ
- 3 - ಬಹಳ ಬಾರಿ

2. ನೀವು ನಿಮ್ಮ ವಯಸ್ಕರಿಗಿಂತ ಹೆಚ್ಚು ಪ್ರಮಾಣದ ಆಹಾರ ಸೇವಿಸುತ್ತೀರಾ?

- 0 - ಇಲ್ಲವೇ ಇಲ್ಲ
- 1 - ವಿರಳವಾಗಿ
- 2 - ಕೆಲವೊಮ್ಮೆ
- 3 - ಬಹಳ ಬಾರಿ

ಅಜೀರ್ಣಾಶನ-

1. ಹಿಂದಿನ ಆಹಾರ ಜೀರ್ಣವಾಗದ ಸಮಯದಲ್ಲೂ ನೀವು ಆಹಾರ ಸೇವಿಸುತ್ತೀರಾ?

- 0 - ಇಲ್ಲವೇ ಇಲ್ಲ
- 1 - ವಿರಳವಾಗಿ
- 2 - ಕೆಲವೊಮ್ಮೆ
- 3 - ಬಹಳ ಬಾರಿ

ಅಧ್ಯಶನ-

1. ಎರಡು ಆಹಾರ ಸೇವನೆಗಳ ಕಾಲದ ಮಧ್ಯೆ 3 ಗಂಟೆಗಳಿಗಿಂತ ಹೆಚ್ಚು ಅಂತರ ಇರುತ್ತದೆಯಾ? -

- 0 - ಇಲ್ಲವೇ ಇಲ್ಲ
- 1 - ವಿರಳವಾಗಿ
- 2 - ಕೆಲವೊಮ್ಮೆ
- 3 - ಬಹಳ ಬಾರಿ

Total score =

0 to 6 = ಹೇತುಸೇವನೆ ಇಲ್ಲ

7 to 18 = ಹೇತುಸೇವನೆ ಹೌದು

ಪುರೀಷವಹ ಸ್ತೋತೋದುಷ್ಟಿ ಹೇತುಸೇವನ - ಹೌದು/ಇಲ್ಲ

Modified ODS Longo score –

ಸೂಕ್ತವಾದ ಆಯ್ಕೆಗೆ ಸಹಿ ಗುರುತು (✓) ಹಾಕಿ.

1. ಮಲವಿಸರ್ಜನೆಗೆ ಔಷಧಿ ಸೇವನೆ-
 - 0 - ಇಲ್ಲವೇ ಇಲ್ಲ
 - 1 - ವಾರಕ್ಕೆ ಒಂದು ಬಾರಿ
 - 2 - ವಾರದಲ್ಲಿ 1 ರಿಂದ 6 ಬಾರಿ
 - 3 - ಯಾವಾಗಲೂ
2. ಕಷ್ಟಯುಕ್ತ ಮಲ ವಿಸರ್ಜನೆ-
 - 0 - ಇಲ್ಲವೇ ಇಲ್ಲ
 - 1 - ವಾರಕ್ಕೆ ಒಂದು ಬಾರಿ
 - 2 - ವಾರದಲ್ಲಿ 1 ರಿಂದ 6 ಬಾರಿ
 - 3 - ಯಾವಾಗಲೂ
3. ಬೆರಳುಹಾಕಿ ಮಲ ವಿಸರ್ಜನೆ-
 - 0 - ಇಲ್ಲವೇ ಇಲ್ಲ
 - 1 - ವಾರಕ್ಕೆ ಒಂದು ಬಾರಿ
 - 2 - ವಾರದಲ್ಲಿ 1 ರಿಂದ 6 ಬಾರಿ
 - 3 - ಯಾವಾಗಲೂ
4. ಪುನಃ ಪುನಃ ಮಲವಿಸರ್ಜನೆಗೆ ಹೋಗುವುದು -
 - 0 - ಇಲ್ಲವೇ ಇಲ್ಲ
 - 1 - ವಾರಕ್ಕೆ ಒಂದು ಬಾರಿ
 - 2 - ವಾರದಲ್ಲಿ 1 ರಿಂದ 6 ಬಾರಿ
 - 3 - ಯಾವಾಗಲೂ
5. ಅಪೂರ್ಣ ಮಲವಿಸರ್ಜನೆಯ ಭಾವನೆ-
 - 0 - ಇಲ್ಲವೇ ಇಲ್ಲ
 - 1 - ವಾರಕ್ಕೆ ಒಂದು ಬಾರಿ
 - 2 - ವಾರದಲ್ಲಿ 1 ರಿಂದ 6 ಬಾರಿ
 - 3 - ಯಾವಾಗಲೂ
6. ಒತ್ತಡದೊಂದಿಗೆ ಮಲ ವಿಸರ್ಜನೆ-
 - 0 - ಇಲ್ಲವೇ ಇಲ್ಲ
 - 1 - ವಾರಕ್ಕೆ ಒಂದು ಬಾರಿ
 - 2 - ವಾರದಲ್ಲಿ 1 ರಿಂದ 6 ಬಾರಿ
 - 3 - ಯಾವಾಗಲೂ
7. ಮಲವಿಸರ್ಜನೆಗೆ ಬೇಕಾಗುವ ಸಮಯ-
 - 0 - 5 ನಿಮಿಷಗಳಿಗಿಂತ ಕಡಿಮೆ
 - 1 - 6 ರಿಂದ 10 ನಿಮಿಷ
 - 2 - 11 ರಿಂದ 20 ನಿಮಿಷ
 - 3 - 20 ನಿಮಿಷಗಳಿಗಿಂತ ಹೆಚ್ಚು ಸಮಯ
8. ಜೀವನ ಶೈಲಿಯಲ್ಲಿ ವ್ಯತ್ಯಾಸ/ ಬದಲಾವಣೆ-
 - 0 - ವ್ಯತ್ಯಾಸವಿಲ್ಲ/ ಬದಲಾವಣೆ ಇಲ್ಲ
 - 1 - ಸೌಮ್ಯ ಬದಲಾವಣೆ
 - 2 - ಮಧ್ಯಮ ಬದಲಾವಣೆ
 - 3 - ತೀವ್ರ ಬದಲಾವಣೆ

ಪುರೀಷವಹ ಸ್ತೋತೋದುಷ್ಟಿ ಲಕ್ಷಣ -
ಸೂಕ್ತವಾದ ಆಯ್ಕೆಗೆ ಸಹಿ ಗುರುತು (✓) ಹಾಕಿ.

No.	ದುಷ್ಟಿ ಲಕ್ಷಣ	Presence	
		ಹೌದು	ಇಲ್ಲ
1	ಕೃಚ್ಛೇಣ-		
	ಮಲವಿಸರ್ಜನೆಗೆ ಔಷಧಿ		
	ಕಷ್ಟಯುಕ್ತ ಮಲ ವಿಸರ್ಜನೆ		
	ಒತ್ತಡದೊಂದಿಗೆ ಮಲವಿಸರ್ಜನೆ		
	ಬೆರಳು ಹಾಕಿ ಮಲವಿಸರ್ಜನೆ		
	ಮಲವಿಸರ್ಜನೆ ಅವಸರ		
2	ಅಲ್ಪಾಲ್ಪ-		
	ಪುನಃ ಮಲವಿಸರ್ಜನೆಗೆ ಬರುವುದು		
	ಅಪೂರ್ಣ ಮಲವಿಸರ್ಜನೆಯ ಭಾವನೆ		
3	ನೋವಿನೊಂದಿಗೆ-		
4	ಅತಿದ್ರವಯುಕ್ತ-		
	ಸಡಿಲ ಮಲವಿಸರ್ಜನೆ		
5	ಅತಿಗ್ರಾಹಿತ-		
	ಕಠಿಣ ಮಲವಿಸರ್ಜನೆ		
6	ಅತಿಬಹು-		
	ಹೆಚ್ಚಿನ ಮಲ ಪ್ರವೃತ್ತಿ		
7	ಉಪವಿಶಂತ-		
	ದೀರ್ಘಕಾಲದ ಮಲವಿಸರ್ಜನೆ		

ಪುರೀಷವಹ ಸ್ತೋತೋದುಷ್ಟಿ - ಹೌದು/ಇಲ್ಲ

ಜಾರರಾಗ್ನಿ ಪರೀಕ್ಷೆ-

ಅಭ್ಯವಹರಣ ಶಕ್ತಿ ಪರೀಕ್ಷೆ

ಸೂಕ್ತದಾದ ಆಹಾರದ ಪ್ರಮಾಣ ಹಾಗೂ ವೇಗ ಎರಡೂ ಕಡೆ ಸಹಿ ಗುರುತು (v) ಹಾಕಿ.

Sr. No.	ಆಹಾರ ಪದಾರ್ಥದ ಹೆಸರು	ಪ್ರತಿದಿನದ ಪ್ರಮಾಣ			ವಾರದ ವೇಗ		
		3	2	1	3	2	1
1	ಘನಯುಕ್ತ ಆಹಾರ solid - ಪ್ರಮಾಣ ಸಂಖ್ಯೆಯಲ್ಲಿ ಚಪಾತಿ/ ರೋಟಿ/ ಬ್ರೆಡ್/ ಇಡ್ಲಿ / ದೋಸಾ/ ಪೂರಿ/ ಪರಾಠಾ	≥ 6	3 to 5	≤ 2	≥ 5 ದಿನ	2 - 4 ದಿನ	< 2 ದಿನ
2	ದ್ರವಯುಕ್ತ ಆಹಾರ Liquids - ಪ್ರಮಾಣ (cups) ಚಹಾ/ ಹಾಲು / ಕಾಫಿ / ಮಜ್ಜಿಗೆ	≥ 4	2 to 3	≤ 1	≥ 5 ದಿನ	2 - 4 ದಿನ	< 2 ದಿನ
3	ಅರೆ ಘನ ಆಹಾರ semisolid - ಪ್ರಮಾಣ - ಚಮಚದಲ್ಲಿ (spoons) ತುಪ್ಪ / ಉಪ್ಪಿನಕಾಯಿ / ಚಟ್ನಿ / ಸಾಸ್	≥ 3	1 to 2	< 1	≥ 5 ದಿನ	2 - 4 ದಿನ	< 2 ದಿನ
4	ಖಾದ್ಯಗಳು solid / semisolid - ಬಟ್ಟಲು ಪ್ರಮಾಣ (bowls) ಅನ್ನ/ ದಾಲ್ / ಪಲ್ಯಾ / ಉಪ್ಪಿಟ್ಟು / ಪಾಯಸ / ಶೀರಾ	≥ 6	3 to 5	≤ 2	≥ 5 ದಿನ	2 - 4 ದಿನ	< 2 ದಿನ
5	ನೀರು - ಲೀಟರ್ ಪ್ರಮಾಣ	> 2	1 to 2	< 1	≥ 5 ದಿನ	2 - 4 ದಿನ	< 2 ದಿನ

Total score =

Interpretation -

10 to 16 = Heena

17 to 23 =

Madhyama

24 to 30 = uttama

Abhyavaharana Shakti = Heena / Madhyama
/ Uttama

ಜರಣಶಕ್ತಿ ಪರೀಕ್ಷೆ-ಸೂಕ್ತವಾದ ಭೇದ ಹಾಗೂ ವೇಗ ಎರಡೂ ಕಡೆ (✓) ಹಾಕಿ

Sr. No.	ಜೀರ್ಣಾಹಾರ ಲಕ್ಷಣ	ಅಗ್ನಿ ಭೇದ ⁷			ವೇಗ / ರೀತಿ	
		3	2	1	2	1
1	ಉದ್ಗಾರಶುದ್ಧಿ - ನಿಮಗೆ ಆಹಾರ ಸೇವಿಸಿದ ಎಷ್ಟು ಸಮಯದ ನಂತರ ತೇಗು ಬರುತ್ತದೆ?	< 3 ಗಂಟೆ	3 to 6 ಗಂಟೆ	> 6 ಗಂಟೆ	ಹೆಚ್ಚಾಗಿ	ಕೆಲವೊಮ್ಮೆ
2	ಉತ್ಸಾಹ - ನಿಮಗೆ ಆಹಾರ ಸೇವಿಸಿದ ಎಷ್ಟು ಸಮಯದ ನಂತರ ಉತ್ಸಾಹವಿರುತ್ತದೆ?	< 3 ಗಂಟೆ	3 to 6 ಗಂಟೆ	> 6 ಗಂಟೆ	ಹೆಚ್ಚಾಗಿ	ಕೆಲವೊಮ್ಮೆ
3	ಮಲವೇಗ - ದಿನಕ್ಕೆ ಎಷ್ಟು ಬಾರಿ ಮಲವಿಸರ್ಜನೆಗೆ ಹೋಗುವಿರಿ?	> 2	2	1 ಅಥವಾ ಎರಡು ದಿನಗಳಿಗೊಮ್ಮೆ	ಹೆಚ್ಚಾಗಿ	ಕೆಲವೊಮ್ಮೆ
4	ಮಲವೇಗ - ನಿಮಗೆ ಆಹಾರ ಸೇವಿಸಿದ ಎಷ್ಟು ಸಮಯದ ನಂತರ ಮಲವೇಗ ಬರುತ್ತದೆ?	< 12 ಗಂಟೆ	12 ಗಂಟೆ	> 12 ಗಂಟೆ	ಹೆಚ್ಚಾಗಿ	ಕೆಲವೊಮ್ಮೆ
5	ಮೂತ್ರ ವೇಗ - ದಿನಕ್ಕೆ ಎಷ್ಟು ಬಾರಿ ಮೂತ್ರ ವಿಸರ್ಜನೆಗೆ ಹೋಗುವಿರಿ?	7 to 8	5 to 6	< 4	ಹೆಚ್ಚಾಗಿ	ಕೆಲವೊಮ್ಮೆ
6	ಹಗುರ - ನಿಮಗೆ ಆಹಾರ ಸೇವಿಸಿದ ಎಷ್ಟು ಸಮಯದ ನಂತರ ಶರೀರದ ಹಗುರ ಅನಿಸುತ್ತದೆ?	< 3 ಗಂಟೆ	3 to 6 ಗಂಟೆ	> 6 ಗಂಟೆ	ಹೆಚ್ಚಾಗಿ	ಕೆಲವೊಮ್ಮೆ
7	ಹಸಿವು - ನಿಮಗೆ ಆಹಾರ ಸೇವಿಸಿದ ಎಷ್ಟು ಸಮಯದ ನಂತರ ಹಸಿವು ಅನಿಸುತ್ತದೆ?	< 3 ಗಂಟೆ	3 to 6 ಗಂಟೆ	> 6 ಗಂಟೆ	ಹೆಚ್ಚಾಗಿ	ಕೆಲವೊಮ್ಮೆ
8	ಬಾಯಾರಿಕೆ - ನಿಮಗೆ ಆಹಾರ ಸೇವಿಸಿದ ಎಷ್ಟು ಸಮಯದ ನಂತರ ಬಾಯಾರಿಕೆ ಆಗುತ್ತದೆ?	< 3 ಗಂಟೆ	3 to 6 ಗಂಟೆ	> 6 ಗಂಟೆ	ಹೆಚ್ಚಾಗಿ	ಕೆಲವೊಮ್ಮೆ
Total score						

Interpretation -

type of Agni -

8 to 13 = Mandagni

14 to 18 = Samagni

19 to 24 = Tikshnagni

Jatharagni Vinishchaya -

behavior / Nature -

8 to 12 = Uncertain,
Vishama

13 to 16 = Certain