DISCUSSION

**Table 1 - Age wise distribution of Breast Cancer patients (Infiltrating Duct Carcinoma)**

Among 150 patients of Breast Cancer (Infiltrating duct carcinoma), maximum number of patients i.e. 102 patients belong to age group of 41 - 60 yrs. This age group represents females in premenopausal, menopausal & post menopausal stage.

As per Sutra in Sushrut Samhita, regular menstrual cycle helps for body purification in females. Thus females are less prone for diseases like Prameha before menopausal age.\(^6\)\(^{329}\)

According to physiology of Ayurved, Stana (Breasts) is the site of Stanya (Breast milk), which is mentioned as Upadhatu of Rasa dhatu.

Stanya & Artava being Upadhatu of Rasa, monthly menstrual cycle helps to prevent dushti of associated Upadhatu of Rasa i.e. Stanya. It ultimately prevents dushti of sthana of Stanya i.e. Stana (Breast).

In this study, not a single girl was observed in the age group between 13 to 20 yrs age group.

This observation is supported by Sutra mentioned in Sushrut Samhita.\(^28\)

The openings of the ducts located in the breasts of girls are closed, thus the doshas can not spread & breast diseases do not occur in this age group.\(^330\)

Sushrutacharya has clearly defined Kanya as a girl before age of 12 years. Observation about age related risk factor of Breast Cancer in this study is similar to that of Surveillance epidemiology & end results - SEER Stat Fact Sheets: Breast, SEER Incidence from 2006-2010. The median age at diagnosis for cancer of the breast was 61 years of age. Approximately 0.0% was diagnosed under age 20; 1.8% between 20 and 34; 9.6% between 35 and 44; 22.2% between 45 and 54; 25.2% between 55 and 64; 20.7% between 65 and 74; 14.8% between 75 and 84; and 5.7% 85+ years of age.\(^324\)
Breast Cancer Factsheet By Preet K. Dhillon South Asia Network for Chronic Disease, Public Health Foundation of India also supports observation about age of onset of Breast Cancer in this study.

Older age increases the risk of breast cancer and most women are over the age of 60 when they are diagnosed although there is evidence that Indian women are more likely to develop breast cancer at earlier ages than their Western counterparts 326 and that breast cancer peaks from ages 45-50 years in India 325.

Age incidence rates in India suggest that the disease peaks at a younger age (eg, 40-50 years) than in Western countries and as a result, the majority of new diagnoses occur in pre-menopausal women.327

Recent data comparing Indians and Caucasians in the US show that 29.9% of Indians/Pakistanis living in the US had pre-menopausal breast cancer compared to 18.9% of Caucasians 326.

**Table 2 - Socio economical status wise distribution of Breast Cancer Patients (Infiltrating Duct Carcinoma)**

Maximum number of patients were observed from middle class (131 patients out of 150) followed by lower middle class (10 out of 150) & higher middle class (9 out of 150). The percentage of patients in higher middle class was low (6 %). This may be due to awareness about cancer & regular health check up.

Previous studies show that incidence rates are higher in the West, the disability-adjusted life years (DALY’s) show the highest burden for breast cancer in middle-income countries (3,144,000 vs. 1,856,000 in high-income and 1,626,000 in low-income countries), where there are increasing incidence rates and a higher proportion with late stage of disease at diagnosis.

Breast cancer in urban areas of India is three times higher than in rural parts of the country 328. This study also shows higher incidence of Breast Cancer in middle-income class (Middle Socio Economical Class) (87.33 %).

As the study was carried out in Urban area - Mumbai, the percentage of Breast Cancer patients in lower middle class was remarkably less (6.67 %).
**Table 3 - Occupation wise distribution of Breast Cancer Patients (Infiltrating Duct Carcinoma)**

150 breast cancer patients were selected randomly. Maximum numbers of patients were House wife (93 out of 150).

**Table 4 – Grade wise distribution of Breast Cancer patients (Infiltrating Duct Carcinoma)**

Out of 150 patients selected for study, maximum number of patients were found in Grade III, i.e 106 (70%). 44 patients were observed in Grade II (30%), while no patient was observed in Grade I.

This observation is due to random selection of the patients.

**Table 5 – Satva wise distribution of Breast Cancer patients (Infiltrating Duct Carcinoma)**

Satva is the special concept of Ayurveda. It resembles the strength of mind.

Breast cancer patients were selected randomly & Satva (Mental strength) was assessed according to designed Satva questionnaire.

In the assessment of Satva, 40 patients were found to be of Pravara Satva, maximum number of patients i.e. 92 patients of Madhyama Satva & 18 patients of Avara Satva.

Satva of an individual is not only responsible for development of disease but also the prognosis of disease.

Madhyam Satva patients were approximately two times more than Pravara Satva patients. This is due to the fact that Pravara Satva patients are less prone to the disease due to their superior mental strength.

Avara Satva patients should be more prone to diseases due to inferior mental strength, which is not supported by the observations in this study.
Tumor grade is a system used to classify cancer cells in terms of how abnormal they look under a microscope and how quickly the tumor is likely to grow and spread. It classifies the cancer as well differentiated (low grade), moderately differentiated (intermediate grade), and poorly differentiated (high grade). The closer the appearance of the cancer cells to normal cells, the slower their growth and the better the prognosis. If cells are not well differentiated, they will appear immature, will divide more rapidly, and will tend to spread. Well differentiated is given a grade of I, moderate is grade II, while poor or undifferentiated is given a higher grade of III or IV (depending upon the scale used).

Among 150 patients diagnosed as breast Cancer, maximum number of patients were of Rajas Pradhan Tamas Prakruti (109 patients), out of which 81 patients (74.31 %) were lying in stage III.

Raja Guna is initiative. Thus Tama Guna is inactive in the absence of Raja Guna.

Role of Raja Guna is Pravartaka ie to initiate / promote. Raja Guna is responsible for Paramanu Bhedana (Cell division) due to its Pravartakatva. Vitiation of Raja Guna is responsible for abnormal cell division leading to Cancer. Raja & Tama Guna are always associated with each other. Thus this phenomenon is more common in Rajasa Pradhan Tamasa Prakriti. This study also documents more incidence of Breast Cancer patients with Rajasa Pradhan Tamasa Prakriti.

Table 7 - Classification of Hetus of Breast Cancer patients (Infiltrating Duct Carcinoma)

Among 150 patients of breast Cancer, Mental stress hetu (Mental stress singly & in combination with other hetus) was found in maximum number of patients i.e in 142 patients (94.66 %) followed by 99 patients (66 %) having Rajovikruti hetu (Singly & in combination with other hetus). Vyasana hetu was found only in 11 (7.33 %) patients (Singly & in combination with other hetus).
While describing health, Acharya Sushrut gives importance to both physical as well as mental health. The WHO constitution also states: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." From this definition, it is clear that Mental health is an integral and essential component of health.

While describing the sites of diseases, Acharya Sushrut mentions Mana (Mind) first & then Sharira (Body). Physical diseases affect mind & Mental disorders affect body. 333

According to Acharya Charak, Mental stress (Chintyanam chati chintana) is one of the major causes of Rasavahasrotodushti. Stanya being a Upadhatu of Rasadhatus, gets vitiated due to Mental stress. It ultimately vitiates site of stanya i.e.the organ Stana (Breast) leading to Stana Vikara like Breast Cancer. 101

Hrudaya (Heart) is the site of Mana, according to Bruhadtrayee. It is also the site of Rasavahasrotas. Thus Mental stress produces vitiation of Rasavaha srotasa. Siragranthi is one of the features of Srotodushti, giving rise to Arbuda. 334

Person who is indulging Vata dosha promoting diet, excessive physical exercise, sexual intercourse, strenuous study, fear, grief, anxiety, keeping awake at night, thirst, hunger, anger, intake of astringents, partial starvation etc., circulating Rasa being reduced in quantity, falls to nourish the tissues due to insufficiency, further leads to kshaya of subsequent Dhatus. This affects Vyadikshamatava of an individual. 335

Oja is the essence of seven dhatus. Manasa bhavas like anger, grief and anxiety are responsible for Apara Oja Kshaya which again affects Vyadhikshamatva. 159

Even the food taken in proper quantity does not get digested due to psychic emotions like passion, anger, greed, confusion, envy, grief, conceit, excitement & fear. It causes vitiation of Ama (Undigested food). Hence the mental disturbances affect digestive power which gives rise to Aama. Aama causes srotorodha. 158,336

The word stress is derived from the Latin word "stringi", which means, "to be drawn tight." In medical terms stress is described as, "a physical or psychological stimulus that can produce mental tension or physiological reactions that may lead to illness."
A woman is one of the major parts of society. She is facing physical & mental stress in each & every walk of life. This stress increases gravity of emotions which affect her health & which remains unnoticed. She is not concerned too much about her health. Due to the prior preferences to family, her health gets neglected. While considering health, we only regard dietary factors, inappropriate & irregular daily life style, but we are not that much concern about mental disturbances do affect the body & have strength of producing disease. In this fast life style, she is unable to give proper attention to her mental health. Though nature has given her the privilege of reproduction but unfortunately considerable attention is not given to female health.

A study on - A Biobehavioral Perspective of Tumor Biology concludes that it is important to note that stress per se does not cause cancer; however, clinical and experimental data indicate that stress and other factors such as mood, coping mechanisms, and social support can significantly influence the underlying cellular and molecular processes that facilitate malignant cell growth.\(^{337}\)

A study done by Chida Y, Hamer M, Wardle J, Steptoe A. Psychobiology Group, Department of Epidemiology and Public Health, University College London\(^{338}\), on the topic “Do stress-related psychosocial factors contribute to cancer incidence and survival?” concludes that the stress-prone personality or unfavorable coping styles and negative emotional responses or poor quality of life were related to higher cancer incidence, poorer cancer survival and higher cancer mortality. These analyses suggest that stress-related psychosocial factors have an adverse effect on cancer incidence and survival, although there is evidence of publication bias and results should be interpreted with caution.

A study on Physiological stress & Cancer done by Artherholt SB, Fann JR. Psychosocial care in cancer\(^{339}\) states that according to Modern science, due to mental stress adrenal gland releases corticosteroids. They are converted to cortisol in the blood stream. Cortisol has an immune suppressive effect in body. Thus the possibility of developing Cancer is multiplied five folds. Evidence from experimental studies suggests that psychological stress can affect a tumor’s ability to grow and spread. For example, some studies have shown that when mice bearing human tumors were kept confined or isolated from other mice—conditions that increase stress—their tumors were more likely to grow and spread. In one set of experiments, tumors transplanted
Studies in mice and in human cancer cells grown in the laboratory have found that the stress hormone norepinephrine, part of the body’s fight-or-flight response system, may promote angiogenesis and metastasis.

Thus the percentage of Mansa Hetu was more as compared to Rajovikruti & Addiction in Breast Cancer patients in our study.

In this study, maximum patients were from Middle class & Higher middle class as compared to lower middle class & maximum number of patients with Madhyama & Pravara Satva.(88%), Thus addiction hetu was found very less.

(A) Study of Manasa Hetu

**Manasa Hetu (Mental stress) were studied with respect to following aspects** –

<table>
<thead>
<tr>
<th>Personality Related Stress</th>
<th>External (Aagantu) mental stress</th>
<th>Trauma</th>
</tr>
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<tbody>
<tr>
<td>Angry – Calm</td>
<td>Single / Multiple type of stress</td>
<td></td>
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<tr>
<td>Timid – Brave</td>
<td>Duration of stress</td>
<td></td>
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<tr>
<td>Introverted – Outspoken</td>
<td>Family, Financial, Social &amp; Occupational stress</td>
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</table>
Table A (a) Study of Nature of Breast Cancer patients (Infiltrating Duct Carcinoma)

(A) (i) Study of Angry & Calm Nature in Breast Cancer patients (Infiltrating Duct Carcinoma)

Among 150 breast cancer patients, patients with Angry (71 patients) & calm nature (79 patients) both were found without any significant difference as per statistical analysis.

In our study, 88 % patients belong to Pravara & Madhyam Satva. Dhira (Calmness) is one of the main characteristics of Pravara Satva & moderate characteristic of Madhyama Satva. Thus significant percentage of patients with Calm nature was expected. On the contrary, 52.66 % patients (approximately half no. of patients) had calm nature. This observation indicates remarkable association of risk factor – Angry nature with incidence of Breast Cancer.

Table A(b) (i) Assessment of Angry Nature with respect to Gradation of disease

Patients of Breast cancer with angry nature were more in Grade III (74.68 %) as compared to Grade II (25.32 %).

The association of severity of Grade of Infiltrating Duct Carcinoma with Angry nature can be well explained on the basis of following principles.

Vata dosha increases emotions like Kama (excessive desire for sex), Shoka (grief) & Bhay (Fear). Anger increases Pitta dosha.

Person who indulging in unhealthy foods & indulge greatly in anger, greed, fear & grief who are not careful about their food, activities & attending to urges of the body (urine, stool etc.) in such persons, all the doshas get aggravated.

Anger (Krodha) aggravates tridoshas predominantly Pitta Dosha & vitiates Rakta Dhatu due to its Ushna & Tikshna property. It gives rise to Dhatupaka Avastha in Dushta Stanarbuda.

In the Chikitsa sthana Rasayan adhyaya, dwitiya pada while describing the disadvantages of unhealthy food, acharya Charak says that along with gramya ahara, psychological emotions like bhaya (fear), Krodha (anger), shoka (grief), lobha(greed),...
moha(confusion) aggravates three doshas – Vata, Pitta & Kapha. Due to which muscles get flaccid, joints get dislocated, blood toxicity & secretions increases, Oja gets decreased.. His body becomes abode for all diseases. 153

Manasa bhava like Krodha bring about Rasa dhatu Kshaya residing in Hrudaya, leads to Kshaya of subsequent Dhatus which affects Vyadhikshamatva. 340

Food is not properly digested if taken by a person who is emotionally upset due to jealousy, fear, anger or greed or who is distressed due to sufferings from other diseases or who has taken food not to his likings. gives rise to Aama which is responsible for srotorodha. 156, 341

Apara Oja get reduced due to anger, hunger, anxiety, grief, over exertion etc. 160

As the breast is the seat of Sadhak Pitta & Rasadhatus, Krodha Vitiates Sadhak Pitta & which again vitiates Rasadhatus & Mansadhatus involved in the pathogenesis of Dushta Stanarbuda. 182

Curable disease usually becomes most difficult to treat in the patients with short temper. 154

From above description, it is clear that Krodha (Anger) increases Dosha – Dushya bala thus becomes responsible for the severity of Gradation of Infiltrating Duct Carcinoma of Breast.

Table A (a) (ii) Study of Timid & Brave Nature in Breast Cancer patients (Infiltrating Duct Carcinoma)

The proportion of breast cancer patients with brave nature (58.66 %) is higher than the proportion of breast cancer patients with timid nature (41.34 %), which is statistically significant.

In our study, 88 % patients belong to Pravara & Madhyam Satva. Samara Vikrant Yodhi (Braveness) is one of the characteristic of Pravara Satva & of Madhyama Satva with the moral support from others. Thus significantly higher percentage of patients with Brave nature was found in the study.

Thus the association of Timid nature with Breast Cancer incidence is not established strongly in this study.
**Table A (b) (ii) Assessment of Timid Nature with respect to Gradation of disease**

Grade III breast cancer patients (74.20 %) with Timid nature were more compared to Grade II breast cancer patients (25.80 %) with Timid nature, which is statistically significant.

The association of severity of Grade of Infiltrating Duct Carcinoma with Timid nature can be well explained on the basis of following principles.

Vata dosha aggravated due to fear & grief. \(^{149,162}\)

Person who indulge greatly in anger, greed, fear & grief who are not careful about their food, activities & attending to urges of the body (urine, stool etc. ) in such persons, all the doshas get aggravated. \(^{150}\)

Timid Nature (Bhaya) aggravates Vata Dosha mainly Vyan Vayu. Hrudaya is the seat of Vyan Vayu. Thus it contributes the pathogenesis of Dushta Stanarbuda. \(^{166}\)

Ayurveda believes that in the absence of Vata Dosha, Pitta & Kapha doshas are Nishkriya. Vata dosha plays an important role in the pathogenesis of disease due to its Chalatva & Gatitva. \(^{342,343}\)

According to Modern sciences, Cancer is the abnormal growth of cells which takes place due to multiple cell divisions. It is not possible in the absence of Vata Dosha aggravated by Bhaya.

According to Sushrut , It also aggravates Pitta Dosha which again vitiates Rakta Dhatu, responsible for Dhatupaka in Dushta Stanarbuda. \(^{344}\)

Fear is one of the cause of Apara Oja kshaya. \(^{175}\)

Person who are suffering with fear, grief, anxiety & anger, circulating Rasa being reduced in quantity falls to nourish further dhatus which affects Vyadhikshamatva (Immunity). Supression of immunity is one of the major cause of Cancer. \(^{168}\)

Even if the wholesome food taken in proper quantity does not get digested due to emotional causes like anxiety, grief, fear & anger. Indigestion is responsible for Aamotpatti, leads to Srotorodha. \(^{122}\)

In brief, the above mentioned factors induced by Bhaya are responsible for the Samprapti of Dushta Stanarbuda by following manner -Vata Prakopa leads to
abnormal cell division, Pitta Prakopa leads to Dhatupaka Avastha, Agnimandya causes Aamotpatti & Apara Oja Kshaya affects Vyadhikshamatva. Hence Timid nature patients are more in Grade III compared to Grade II breast cancer patients.

Table A (a) (iii) Study of Negative & Positive nature in Breast Cancer patients (Infiltrating Duct Carcinoma)

The percentage of breast cancer patients with positive nature (65.34 %) is higher than the percentage of breast cancer patients with negative nature (34.66 %). This is because Pravara & Madhyama Satva breast cancer patients were more (88%) as compared to Avara Satva (12%) breast cancer patients.

In our study, 88 % patients belong to Pravara & Madhyam Satva. Tyakta Vishada (Positivity) is one of the main characteristics of Pravara Satva & moderate characteristic of Madhyama Satva. Only 18 patients belong to Avara Satva. Thus Negativity was mainly expected among this group of patients. On the contrary, it was observed in 52 patients. It indicates modest association of Vishada (Negativity) & incidence of Infiltrating Duct Carcinoma of Breast. Following Sutra explains role of Vishada in the incidence & progression of disease.

Table A (b) (iii) Assessment of Negative nature with respect to gradation of disease

Statistically there is no significant difference of breast cancer patients with negative nature in grade II (33.77 %) & grade III (69.23 %) infiltrating duct carcinoma. Though Vishada (Negativity) is responsible for incidence & progression of disease, our observation in this respect is due to the fact that, among 150 patients, most of the breast cancer patients in our study were found in the category of Madhyama Satva & Pravara Satva (88 %).

Table A (a) (iv) Study of Introverted & Outspoken nature in Breast Cancer patients (Infiltrating Duct Carcinoma)

Statistically there is no significant difference of breast cancer patients with introverted nature (46 %) & outspoken nature (54 %). The percentage of breast cancer patients with introverted nature & outspoken nature was more or less same.
The definition of Introverted is directing of interest inwards towards one's own thoughts and feelings rather than towards the external world or making social contacts. (Psychology)

Mana is described as Ubhayatmaka Indriya.\textsuperscript{346}

Atiyoga of Vishaya with Indriya is also one of the cause of disease.

Inadequate, improper & excessive use of time, intellect & sense objects is the threefold cause of both psychic & somatic disorders.\textsuperscript{347}

The sense organs neither should be exhausted very much nor they should be coaxed very much.\textsuperscript{348}

Introverted nature unables to share thoughts or worries with others. Thus it helps to increase the severity of stress & disturbs mental health. As physical & mental health are interdependent, it affects Vyadhishamatva. Thus it gives rise to disease like Dushta Stanarbuda.

In Atharvaveda it has been mentioned that Just as a person feel relieved and relaxed after the excretion of urine, in a same way, the person becomes comfortable and is at peace after outleting the physical, social and philosophical negativities.\textsuperscript{191}

Role of introverted nature in Samprapti of Breast Cancer is not significantly established in our study. But this factor can be kept under consideration in the context of above mentioned Sutras.

\textbf{Table A (b) (iv) Assessment of Introverted nature with respect to gradation of disease.}

There is no significant difference of breast cancer patients with introverted nature in grade II (34.78 %) & grade III (65.22%) infiltrating duct carcinoma.

The association of severity of Grade of Infiltrating Duct Carcinoma with Introverted nature cannot be well explained in our study.
Table A (a) (v) Study of Anxiety & Non anxiety Nature in Breast Cancer patients (Infiltrating Duct Carcinoma)

Proportion of breast cancer patients with Anxiety nature (74.66 %) is significantly more as compared to proportion of breast cancer patients with No Anxiety nature (25.34 %).

The association of Anxiety with incidence of Infiltrating Duct Carcinoma can be well explained on the basis of following principles.

Excessive mental stress is mentioned as one of the causes of vitiation of Rasavaha strotasa.  

Stana is the site of Stanya. Stanya being a Upadhatu of Rasadhatu, gets vitiated by above mentioned factors including Anxiety.

Vata dosha gets aggravated by sudden fear, grief & anxiety. 

Rasa dhatu residing in heart gets diminished when a person is invaded excessively at heart by grief, anxiety or by envy, fear, excitement, fear etc.

Even if the wholesome food taken in proper quantity does not get digested due to anxiety, grief, fear, anger, uncomfortable bed & keeping awake at night.

Excessive exercise, fasting, anxiety, intake of dry food, diet in small quantity, wind, heat of Sun, fear, grief, ununctuous drinks, keeping awake at night, excessive discharge of mucus, blood, semen & other excreta, old age & injury by organism are the causes of diminution of Apara Oja, the essence of seven dhatus. It further affects Vyadhikshamatva (Immunity) which is responsible for the occurrence of the diseases like Dushta Stanarbuda.

In brief, role of Anxiety in the Samprapti of Dushta Stanarbuda can be explained by following manner – Rasava Srotodushti leads to Sthanasamshraya by means of Rasa Kshaya, Stanyua Dushti & Stana Dushti; Vata Prakopa is responsible for abnormal cell division, Agnimandya causes Rasa & Mansa Dhatwagnimandya & Aamotpatti & Apara Oja Kshaya affects Vyadhikshmatva.
Assessment of Anxiety nature with respect to Gradation of disease.

Anxiety nature was found significantly more in Grade III breast cancer patients (72.33 \%) rather than Grade II breast cancer patients (27.67 \%).

Anxiety was observed in majority of patients i.e 112 out of 150.

As we have seen earlier, Anxiety is one of major Risk factors in the incidence of Breast Cancer, severity of Gradation of Infiltrating Duct Carcinoma of Breast Cancer is also significantly associated with it.

**Table – A (c) Anxiety with relation to Satva**

Satva (Mental strength) is the special concept of Ayurveda. Ayurveda describes Satva in three groups – Pravara, Madhyama & Avara.

The Anxiety nature was observed in all 18 patients of Avara Satva (100 \%) due to inferior mental strength.

While the proportion of Anxious nature patients in Madhyama & Pravara Satva is more or less same i.e 73.91 \% & 65 \% respectively due to moderate & superior mental strength.

Thus the strong cause – effect relationship between Anxiety nature & strength of mind (Satva) is established in this study.

The above mentioned sutra in Charakasamhita Unmad Nidan clearly states that Chinta (Anxiety) is one of the important factors which affects Mana (Satva). 177

**A (d) Study of mental stress with respect to Satva, type of stress & duration of mental stress**

**Table 1 – Classification of mental stress with respect to Satva**

The percentage of mental stress in Madhyama Satva patients was found more (96 \%).

Satva (Mental strength) is the special concept of Ayurveda. Ayurveda describes Satva in three groups – Pravara, Madhyama & Avara. Though Avara Satva patients are
more prone to mental stress due to inferior mental strength, the mental stress was found more in Madhya Satva patients. It is because among 150 patients selected for study, the number of patients belongs to Madhya Satva were more i.e 92 as compared to Pravara Satva (40) & Avara Satva (18) patients.

The percentage of Pravara Satva patients with mental stress was observed less (90 %) as compared to Madhya Satva (96 %) & Avara Satva (94.44) patients. It is because Pravara Satva patients are having superior mental strength to deal with mental stress compared to Madhya Satva & Avara Satva patients.

In the Vimansthana, Acharya Charaka has mentioned features of Pravara Sattva. 349

While describing characteristics of Pravara Satva persons, he has mentioned that they though look thin in appearance; they are capable of enduring any amount of pain caused by diseases or traumatic event. They can with stand all hardships & difficulties. So they are less prone to mental stress.

Table 2 - Comparative Study of Various combinations of mental stress with respect to Satva

Percentage of combination of Personality related stress + Single external stress is highest among all groups i.e Personality related stress, Single external stress, Multiple external stress, Trauma, Personality related stress + Single external stress, Personality related stress + Multiple external stress, Personality related stress + Trauma, Single external stress + Trauma, Multiple external stress + Trauma, Personality related stress+ Single external stress + Trauma & Personality related stress + Multiple external stress + Trauma.

While considering Personality related stress, it itself causes mental stress.

Ayurveda also describes Shoka, Krodha, Bhaya, Chinta as Manovikara, 350

According to the neurologist Walter Cannon recognizing that stressors could be emotional as well as physical. Common psychological stressors are distressing emotions, such as anger, fear, anxiety, depression etc.

External mental stress like family stress, occupational stress, financial stress, social stress affects mental health by causing sorrow. 351
In Ayurveda, while describing Health, the person who is having equilibrium of all three Doshas, Dhatus & Malas & having Prasanna Atma, Indriya, Mana is considered as Swastha.

Mana & Sharir are the main constituents of human being. They both are interdependent. A perfect equilibrium of Tridoshas - Vata, Pitta & Kapha as well as Manas doshas like Raja & Tama is responsible to maintains health & to prevent from diseases.

A human being is an integration of Mana and body. We cannot consider each as separate entity as they accompany each other mutually (Aadharadheya bhava). The roots of the diseases get embedded in these two inseparable aspects of the living being in varying proportions.

Diseases with first onset in Mana will eventually have effect on the body and vice versa.

Mental stress may be personality related or external or traumatic, it disturbs mental health. It affects Physical health as they both are interdependent. Thus Vyadhirikshamatva, gets affected. So it gives rise to diseases like Dushta Stanarbuda.

According to Modern Science, Stressor is a chemical or biological agent, environmental condition, an external stimulus or an event that causes stress to an organism. Anything that can cause pressure, conflict & frustration is a stressor.

Studies with animal models provide the most compelling evidence about the effects of behavioral stress on tumorigenesis and the biologic mechanisms involved.

A study done by Chida Y, Hamer M, Wardle J, Steptoe A. Psychobiology Group, Department of Epidemiology and Public Health, University College London, 1-19 Torrington Place, London 338 on the topic “Do stress-related psychosocial factors contribute to cancer incidence and survival?” concludes that the stress-prone personality or unfavorable coping styles and negative emotional responses or poor quality of life were related to higher cancer incidence, poorer cancer survival and higher cancer mortality. These analyses suggest that stress-related psychosocial factors have an adverse effect on cancer incidence and survival, although there is evidence of publication bias and results should be interpreted with caution.
The combination of Personality related stress with single mental stress was found in more number of patients. It initiates to study further the single mental stress.

**Table 3 - Comparative study of various types of single mental stress with respect to Satva**

Family stress is highest among all types of mental stress i.e Financial stress, Social stress, Occupational stress.

Among 150 breast cancer patients selected for study, maximum numbers of patients i.e 93 patients were House wife. So they are more oriented around their family, Thus Family stress was found more among all types of mental stress.

**Table 4 - Duration of single mental Stress with respect to Satva**

Among 80 breast cancer patients having single external stress, the proportion of single external stress for more than 1 year was found significantly more (97.50 %) than those having single external stress less than 1 year (2.50 %). 

Ayurveda describes Trividha Sutra – Hetu, Linga, Aousadhha.

While describing Hetu, Trividha Karana are described viz - Asatmya Indriyartha Samyoga, Parinama, Kala.

Asatmya Indriyartha Samyoga is divided in 3 Yogas - Ayoga, Atiyoga & Mithya Yoga.

Atiyoga of mental stress increases severity of mental stress. In modern research, it is also proved that Chronic mental stress is more significant than acute stress in disease incidence & progression.\(^\text{126}\)

According to Ayurveda, Atiyoga, Ayoga & Mithyayoga of Artha, Karma & Kala are described as Trvidha Aayatana of Vyadhi. Mana is Ubhayatmaka Indriya. Chronic Mental stress disturbs mental health & further affect on Vyadhikshamatva of an individual leads to diseases like Dushta Stanarbuda.

Similar observation is stated on NCI Fact sheets about Psychological Stress and Cancer - Psychological stress alone has not been found to cause cancer, but psychological stress that lasts a long time may affect a person’s overall health and ability to cope with cancer.\(^\text{354}\)
(B) Study of Rajovikruti

Study of Rajovikruti Hetu with respect to following aspects –

- Age at menarche
- Dosha Dominance
- H/O Menopause

Table 1 - H/O Rajovikruti in Breast Cancer patients (Infiltrating Duct Carcinoma)

Rajovikruti was observed in 99 patients whereas 51 patients were observed without Rajovikruti.

The proportion of breast cancer patients with Rajovikruti (66 %) was highest than the proportion of breast cancer patients without Rajovikruti (34 %).

Acharya Sushruat says, Regular menstrual cycle helps for body purification in females.\textsuperscript{329}

According to physiology of Ayurved, Stana (Breasts) is the site of Stanya (Breast milk), which is mentioned as upadhatu of Rasa dhatu.\textsuperscript{6}

Stanya & Artava being Upadhatu of Rasa, monthly menstrual cycle helps to prevent dushti of associated upadhatu of Rasa ie Stanya. It ultimately prevents dushti of sthana of Stanya ie Stana (Breast).

Hence Rajovikruti leads to Rasa dhatu dushti & vitiates further dhaus like Rakta, Mansa & meda dhatu & site of Rasavaha Srotasa i.e Ura pranta (Breast). As Rasa, Rakta & Mansa dushti are the important objects in the pathogenesis of Dushta Stanarbuda, Rajovikruti plays a significant role.

Table 2 - H/O Rajovikruti with respect to gradation of disease in Breast Cancer patients (Infiltrating Duct Carcinoma)

There is statistically significant difference in proportions of grade III & grade II breast cancer patients with Rajovikruti.

Grade II breast cancer patients with Rajovikruti were 44 (29.34 %) & Grade III breast cancer patients with Rajovikruti were 106 (70.66 %)
As we have discussed earlier that Raja & Stanya are Upadhatus of Rasa dhatu. Rasa dushti plays an important role in the etiology of Dushta Stanarbuda.

Rajovikruti increases the Vyadhibala i.e Grade III breast cancer.

According to modern science, there is also relation between Female menstrual history & Breast Cancer. Factors like Early Menarche (<12 yrs), Late Menopause (> 55), Nulliparous women, Late age at first full-term pregnancy, Menopausal hormone therapy for many years, Lactation for short period increases breast cancer risk.

Thus the role of total duration of exposure to endogenous estrogen is very important in the pathogenesis of Breast Cancer.

**Table 3 - Assessment of Rajovikruti with respect to age of menarche in Breast Cancer patients (Infiltrating Duct Carcinoma)**

The age of menarche above 12 years was observed in maximum number of patients (93.34 %).

This observation is not matching with the documented risk factor of Breast Cancer viz Early age of menarche. This may be due to the fact that most of the patients in our study were in between the age group 50 – 60. The average age of menarche was more than 12 years for the generation of this age group. Early age of menarche is more common in today’s young generation due to adoption of more westernized lifestyle.

Early Menarche (<12 yrs) increases breast cancer risk. Many of the risk factors for breast cancer are associated with increased lifelong exposure to female reproductive hormones, including *in utero* exposure to high concentrations of estrogens. The older the age at menarche, the lower a woman's risk of breast cancer, Hormone levels may be higher throughout reproductive life in women who undergo early menarche than in women with a later occurrence of menarche. Thus, the total duration of exposure to endogenous estrogen or its metabolites appears to be very important in contributing to breast cancer risk.

**Menstrual history: ages at menarche and menopause.** Women who have an early age at menarche (<12 years) have a 30% increased risk of breast cancer while those who have a late age at menopause (>60 years) will have a 20-50% increased risk of disease.
Table 4 - Assessment of Rajochakra with respect to vitiated Dosha in Breast Cancer patients (Infiltrating Duct Carcinoma)

Table 4 (a) Vata Dominant Symptoms

The proportion of Kashtartava (Painful menses) was highest statistically among different Vata dominant symptoms of Rajovikruti like irregular menses, menstrual discharge less than 3 days & more than 5 days, blackish coloured menstrual discharge.

Among tridoshas, Vata dosha is the main dosha due to Chalatva & Gatitva.343 Ayurveda believes that in the absence of Vata Dosha, Pitta & Kapha doshas are Nishkriya. Vata dosha plays an important role in the pathogenesis of disease due to its Chalatva & Gatitva.

Due to these properties, Vata dosha is responsible in the process of abnormal cell division. Among all Vata dominant symptoms, Painful menses symptom was found more. It may be due to lack of following Rajaswala Paricharya in our daily lifestyle described in Ayurveda.

Ayurveda describes Rajaswala paricharya for the maintainance of health. But in today’s world, the diet & rest explained in Rajaswala paricharya is not followed by females due to busy schedule & ignorance about health.

Though this risk factor - “Painful Menstrual Cycle” is not documented in Modern Medical Science, Ayurvedic principles can strongly justify this risk factor & thus need more study in this area.

Table 4 (b) Pitta Dominant Symptoms

Among all Pitta dosha dominant symptoms, more incidence of stained menstrual discharge was found (21.21 % patients) than other symptoms like Peetabha, Neelabha strava & Sadaha strava.
Table 4 (c) Kapha Vata - Dominant symptoms of Rajovikriti

Rajovikruti having clotty discharge (Kapha Vata dominance) was observed in 71 patients. Among them 21 patients were of Grade II & 50 patients were of of Grade III infiltrating duct carcinoma, indicating statistically significant result in Grade III.

Breast (Ura) is the main site of Kapha dosha. Kapha dosha is also important object in the pathogenesis of Dushta Stanarbuda by producing a fixed, big, broad based slow growing non-suppurating and dense elevation (swelling) of mansa i.e arbuda. 53, 356

We have also discussed earlier the importance of Vata dosha in the samprapti of Dushta Stanarbuda. Vata dosha plays an important role in the pathogenesis of disease due to its Chalatva & Gatitva. 343

Thus Grathita artrava was found more in the breast cancer patients of Grade III. From among description, the dominance of Vata & Kapha Dosha in the symptom of clotty discharge may increase Vyadhibala of Dushta Stanarbuda.

Table 4 (d) Study & Comparison of Pitta - Vayu & Rakta Dosha dominant symptoms of Rajovikruti i.e Alpartava & Atyartava

Among 150 patients of Breast Cancer, 99 patients were having Rajovikruti. Out of them 21 patients were suffering from Alpartava & 10 patients were suffering from Atyartava.

Statistically there is no significant difference in proportions of breast cancer patients with Rajovikruti having Alpartava (21.21 %) & those who are having Atyartava (10.10 %).

Table 4 (e) Comparison of Vata Dominant & Pitta Dominant Symptoms found in Rajovikruti i.e Painful menses & Stained menstrual discharge

The percentage of Vata dominant symptoms (Kashtartava – Painful menses) is higher (77.77 %) than Pitta dominant symptoms (Stained menstrual discharge) (21.21 %) in breast cancer patients having Rajovikruti. This again emphasizes the importance of Vata Dosha in the etiology of Dushta Stanarbuda. Due to Chala Guna & Prerakatva, Vata Dosha plays an important role in the etiology of Dushta Stanarbuda. In Modern sciences, Cancer is described as abnormal growth of cells due to multiple cell division. Vata dosha is responsible for this abnormal cell division. Thus the
percentage of Vata dominant symptoms was higher than Pitta dominant symptoms in breast cancer patients having Rajovikruti.

Kapha dominant symptoms like Shwetavarni Strava, Kandu & Pitta Kapha dominant symptoms like Puyayukta, Putigandhi strava were not found in the Breast Cancer patients selected for study.

**Table 5 – Consumption of Painkiller with respect to Satva & gradation of disease**

Among 99 patients of Rajovikruti, 77 patients were having painful menses. Among them 21 patients (27.27 %) were consuming painkillers. Out of these 21 patients, 14 patients were of Grade III (66.66 %) & 7 patients (33.34 %) from grade II were consuming painkillers. Though Kashtartava was found in 77 breast cancer patients, history of consumption of painkiller was found only in 21 patients. This is due to maximum number of patients from Pravara & Madhyama Satva (88 %). Satva denotes mental strength. As Pravara Satva patients due to superior mental strength can tolerate any type of pain. They are capable of enduring any amount of pain caused by diseases or traumatic event. Madhyama Satva patients also tolerate pain compared to Avara Satva.

Statistically there is higher proportion of breast cancer patients having Kashtartav & consuming painkillers in Grade III as compared to Grade II.

**Table 6 (a) - Data Regarding Menopause**

In 16 patients menstrual cycle was stopped due to Hysterectomy. In 20 patients menstrual cycle was stopped due to Chemotherapy. Menopause without treatment was observed in 68 patients. Menstrual cycle was stopped with treatment in 6 patients. 40 patients were still having menses.
Table 6 (b) – Age at Menopause

The proportion of breast cancer patients who are having menopause in 40 – 49 age group was highest than the breast cancer patients who are having menopause at 50 – 59 age group.

As we all know, that late menopause after 55 yrs is a known risk factor in breast cancer patients due to long exposure to endogenous estrogen or its metabolites.

Women who have a late age at menopause (>60 years) will have a 20-50% increased risk of disease.357

But among 150 patients selected for study, 30 patients were having menopause between 50 – 59 yrs. Maximum number of patients i.e 81 had menopause between 40 – 49 yrs.

Table 7 – Duration of Breast Feeding in Breast Cancer patients (Infiltrating Duct Carcinoma)

There is significant difference in proportions of breast cancer patients in two breast feeding duration groups i.e less than 1 yr (65.62 %) & more than 1yr. (34.38 %). The percentage of breast cancer patients who fed their babies less than 1 yr was highest than those who fed more than 1 yr.

The cause – effect relationship of this well documented risk factor can also be justified by Ayurvedic principles & references in Samhitas.

Stanya is the upadhtu of Rasa dhatu. Stana (Breast) is the sthana of Stanya. 6

Stanya is the essence of Rasa dhatu which is sweet of the well digested food getting into the breast from all over the body.

In Modern medicine, it is also proved that possibility of breast cancer is more who are nullipara or who fed babies for less duration. Longer the period of lactation, less the breast cancer risk. During breast feeding estrogen level is low.

Breast feeding may changes to breast cells that make them more resistant for cancer related mutation. Environmental carcinogens that are store in a fat which makes up a great part of breast, can’t be efficiently stored in lactating breasts.
**Breast feeding** - Women who do not breastfeed or breastfeed for shorter durations are at a higher risk of developing breast cancer. Specifically, a 4.3% reduction in risk has been observed for each additional year of breastfeeding.


**Table 8 - Details about known risk factors of breast Cancer about Aartavavaha Strotasa**.

Three known risk factors of breast Cancer i.e. late age of first child birth (30 yrs above), Nullipara & Hormonal treatment were also found significant in our study. Percentage of grade III breast cancer patients was more in these three groups.

Breast Cancer Factsheet By Preet K. Dhillon South Asia Network for Chronic Disease, Public Health Foundation of India also documents following factors as risk factors.

**Age at first child.** Women who have never had children or those who are more than 30 years at the time of their first child’s birth are twice as likely to develop breast cancer as women who had their first child before the age of 20 years. Moreover, women who have five or more children have half the risk of breast cancer as women who have never had a child. These associations are more consistently observed for hormone receptor-positive breast cancer.

**Hormone replacement therapy.** Women who have taken menopausal hormone therapy (estrogen + progestin for at least 5 years) have a 20% greater risk of developing breast cancer.

It has been mentioned in Cancer that compared to nulliparous women, women who have at least one full-term pregnancy have a 25% reduction in their breast cancer risk.

(C) *Study of Vyasana (Addiction)*

**Study of Addiction with respect to following aspects** –

- H/O Addiction with respect to Satva
- Single / Multiple Addiction
Type of Addiction – Tobacco, Non Tobacco, Alcohol
Duration of Addiction

Table 1 – History of Addiction

The proportion of breast cancer patients without addiction (92.67 %) was more than the proportion of breast cancer patients with addiction (7.33 %).

The percentage of Pravara & Madhyama Satva was 26.66 % & 61.33 % respectively, whereas Avar Satva patient’s percentage was only 12 %. Most of the females were from Middle socio economical status (87.33 %) & only 6.7 % females were from lower socio economical status. Thus in our study history of addiction was found only in 7.33 % patients due to superior & moderate mental strength (Pravara & Avara Satva), awareness about addiction, educational & Indian cultural back ground.

As per previous study done in Modern Medical Science abroad, consumption of alcohol is clearly linked to an increased risk of developing breast cancer. The risk increases with the amount of alcohol consumed. Compared with non-drinkers, women who consume 1 alcoholic drink a day have a very small increase in risk. Those who have 2 to 5 drinks daily have about 1½ times the risk of women who don’t drink alcohol. Excessive alcohol use is also known to increase the risk of developing cancers of the mouth, throat, esophagus, and liver. The American Cancer Society recommends that women have no more than 1 alcoholic drink a day.³⁶⁰

On the other hand, Breast Cancer Factsheet by Preet K. Dhillon South Asia Network for Chronic Disease, Public Health Foundation of India do not document addiction as risk factor of Breast Cancer. This is also due to lower incidence of addiction in Indian women due to cultural background.

Table 2 - H/O Single / Multiple Addictions

Out of 11 patients having history of Addiction, 7 patients were having Single addiction & 4 patients were having multiple addiction. Relation between number of addiction & incidence of Breast Cancer could not be established due to less number of patients in this group.
Table 3 - Assessment of Type of Addiction with respect to Gradation of Disease

Out of 11 patients of Breast Cancer having history of Addiction, all were addicted to tobacco (100 %), 3 were Non – tobacco chewers (Betel nut, Betel leaves) (27.33 %) & 1 was addicted to Alcohol (9.09 %).

Tobacco addiction was significantly highest (100 %) compared to remaining 2 groups of addictions. This is due to the fact that Indian women are more habitual to tobacco as compared to alcohol.

Properties of Tobacco (Tamakhu) are explained in Ayurvedic texts. Tobacco possesses properties of Visha like Madakara (Causes narcosis), Agneya (Ushna) & Tikshna. These properties are responsible for Rakta Dushti, Dhatu Paka Avastha & Oja Kshaya which are the main factors involved in Samprapti of Dushta Stanarbuda.

Oja having the properties just opposite to Visha, get affected by excessive & frequent intake of Tobacco. Madakari dravya have the predominance of Tama guna. 361

It has been mentioned in Cancer 359 that tobacco & tobacco smoke contain at least 4000 chemicals of which 55 are known carcinogens identified by the International Agency for research in cancer. The most notable carcinogen classes include polycyclic aromatic hydrocarbons, N – nitrosamines & the miscellaneous organic compounds. Metabolic activation of these agents can incite DNA adduct formation, gene mutations & a sequence of events that can lead cancer.

It is also quoted in Hecht SS. Tobacco smoke carcinogens & lung cancer (Natl Cancer Institute) that the nicotine in the snuff is twice the dose in Cigarettes & whereas the nicotine in chewing tobacco is fifteen times that found in Cigarettes.

Table 4- Assessment of Addiction with respect to Satva

Most of the breast cancer patients having history of addiction are of Madhyama Satva (90.91 %) as compared to that of Avara Satva (9.09 %). History of addiction is not seen in a single patient of Pravara Satva due to their superior mental strength.

A definite relationship between Satva & history of addiction could not be established from this data due to less number of patients in this group (11 patients).
Table 5 - Duration of Addiction

Statistically there is significant difference in proportions of breast cancer patients having addiction for less than 5 yrs (18.18 %) & more than 5 yrs (81.82 %). Thus long term consumption of addiction is more significant in Breast Cancer incidence than short term consumption of addiction.

In Ayurveda, Trividha Karana are described as causative factors of disease i.e. Asatmya Indriyartha Samyog, Pradnyaparadha & Kala. Addiction is the result of Pradnyaparadha. Atiyoga of addiction increases the Vyadhi bala.

(D) Comparative Study of Groups of Hetus individually & in combination in Breast Cancer Patients. (Infiltrating duct carcinoma)

The role of 3 main variables in the form of Hetu i.e Mental stress, Rajovikruti & Addiction were studied individually & in combination in 150 patients of Breast Cancer.

Among them the proportion of 2 Hetus i.e. Mental stress group & Mental stress + Rajovikruti Group was comparatively highest.

These 2 groups of Hetus were again compared statistically to evaluate their strength.

Statistically there is significant difference in proportions of breast cancer patients in two groups of Hetu (Risk factors) i.e. Mental stress group (30 %) & Mental stress + Rajovikruti Group (58.66 %).

The proportion of breast cancer patients in mental stress + Rajovikruti group is higher (58.66 %) than the proportion of breast cancer patients in mental stress group. Hence Mental stress + Rajovikruti group is highest among all groups.

From this data, it is clear that a single hetu among all three hetus is not responsible for the pathogenesis of Dushta Stanarbuda. (Breast Cancer).

The combination of mental stress & Rajovikruti hetu plays an important role in the vitiation of Rasa, Rakta, Mansa dhatu involved in the pathogenesis of Dushta Stanarbuda. (Breast Cancer).
Chintyanam ati chintana is the cause of vitiation of vitiation of Rasa dhatu. Breast is the sthana of Rasavaha srotasa. Raja & Stanya are the Upadhatus of Rasa dhatu described in Ayurveda. So mainly the Rasa dhatu dushti is an important object in the pathogenesis of Dushta Stanarbuda. Addiction hetu is not found significantly strong hetu in the pathogenesis of Dushta Stanarbuda (Breast Cancer).