

# A STUDY ON AETIOPATHOGENESIS OF *PANDU* ROGA IN *GARBHINI*

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## Abstract

*Garbhavasthajanya Pandu* occurs due to the foetal demands & improper functioning of the *Rasa Dhatu* leading to malnourishment of the body. Acharya Charak has also described “*Pandutva*” as a *Rasa Pradoshaja Vikara* and it is a *Santarpanotha Vikara*. According to Acharya Charaka & Kashyapa, 5th month onwards *Garbhini* becomes emaciated and suffers from *Balavarnahani*. It is due to lack of nourishment of maternal *Dhatu*s as the *Rasa* is driven to nourish more and more the flesh and blood of fetus. *Rakta* has been considered as a key factor for the *Jeevana*, *Prinana*, *Dharana* and *Poshana karma* of the body. Many a times it is seen that *Rakta* gets vitiated by *Doshas*, mainly by *Pitta dosha* as *Rakta* is *Pittavargiya* and disease like *Pandu* appear. Here the aetiopathogenesis of *Pandu* in *Garbhini Avastha* is tried to be studied for which total 30 patients were selected for study. The patients were selected in the clinical study on the basis of clinical symptoms as well as Hb%. The result was assessed on the basis survey of questioner. Pallor, General weakness, fatigue and dyspnoea are cardinal features of *Garbhini Pandu*. Among them anorexia, palpitation, body ache, pain in upper and lower extremities, lethargy etc were chiefly found in *Garbhini Pandu*. Common aetiological factors that enhances *Pandu roga* in *Garbhini* were based on Dietary habits (*Aaharaja nidana*), Living habits (*Viharaja*), Socio-economic causes along with Psychological factors.

**Keywords:** *Garbhini Pandu*, Anaemia during pregnancy, *Samprapti*, *Aetiopathogenesis*

## INTRODUCTION

The woman is considered as one of the most essential factors for the continuity of the human race. According to Manusmriti “*Stri* is root for reproduction”<sup>1</sup> and as per Sabdakalpadruma “*Stri* is the creation of the nature in which the foetus develops”.<sup>2</sup> “The woman is the origin of the progeny” (Acharya Charaka). God has given this magnanimous gift only to the women. She has to protect, nourish and care for each and every need of the growing foetus. In order to meet this demand, there is an additional burden on her body. These physiological demands of foetus affect almost all the systems of the female body, particularly the reticulo endothelial or transport system of the body, as this is the only system which is actively involved in nourishing the foetus by diffusion and osmosis phenomena in early foetal stage and at a later stage the nourishment is derived through the umbilical cord. Maternal diet and maternal tissues store supply nutrient to foetus. No mother will be able to meet the extra demand of nutrients by diet alone. This leads to certain disease conditions in pregnant woman. Among them *Pandu*/ anaemia during pregnancy is very common. *Pandu* is a disease characterized by pallor of body which strikingly resembles with ‘Anaemia’ of modern science. Anemia is a blood disorder characterized by abnormally low levels of healthy RBCs or reduced levels of hemoglobin (Hb), the iron-

bearing protein in RBCs that delivers oxygen to tissues throughout the body. The reduction of any or all of these blood parameters reduces the essential delivery of oxygen through the bloodstream to the organs of the body. Iron is a mineral found in the bloodstream that is essential for growth, enzyme development and function, a healthy immune system, energy levels, and muscle strength. It is an important component of hemoglobin and myoglobin, the type of hemoglobin in muscle tissue. *Rakta* has been considered as a key factor for the *Jeevana*, *Prinana*, *Dharana* and *Poshana karma* of the body. Many a times it is seen that *Rakta* gets vitiated by *Doshas*, mainly by *Pitta dosha* as *Rakta* is *Pittavargiya* and disease like *Pandu* appear.<sup>3</sup>

One of the most important and most numerous cell types is the red blood cell. The purpose of the red blood cell is to deliver oxygen to the body. Anemia describes the condition in which the number of red blood cells in your blood is low. Anemia is defined as a deficiency in the blood's ability to supply tissues and organs with adequate oxygen. It is associated with decreased levels of hemoglobin or decreased packed red blood cell volume (PCV) and may also be precipitated by the presence of abnormal hemoglobin. The commonest type of Anaemia that is met with in practice is Iron Deficiency Anaemia. Children, Adult, Male and Females suffer the most form of this malady. Large number of these patients could be easily and cheaply treated with single oral iron preparation those are also available in Ayurvedic Classical books.

When the haemoglobin percentage decreases to less than 11gm/dl in 1st trimester and 3rd trimester, less than 10.5gm/dl in 2nd trimester in peripheral blood the condition is called anaemia.<sup>4</sup> In Asia and South Africa about 20% pregnant females die due to iron deficiency anaemia.<sup>5</sup> In India, anaemia in pregnancy is the commonest cause for high-risk pregnancy having an incidence of 40-80%. In western countries this incidence is 10 to 20%.<sup>6</sup>

Ayurvedic text have described six *Garbhauptattikar Bhavas* like *Rasaja*, *Matruja*, *Pitruja*, *Atmaja*, *Satvaja* and *Satmyaja*.<sup>7</sup> The growing foetus is nourished by the *Rasa*.<sup>8</sup> So, mother needs a better and more nourishing diet. Acharya Kashyap has described that *Ahara Rasa* of mother is divided into 3 parts. First part nourishes her own body, second part nourishes the *Garbha* and the third part is utilised for the nourishment of *Stana*.<sup>9</sup> Kashyapa has described *Pandu* is a symptom of *Garbhini* when he explains *Rakta Gulma*.<sup>10</sup> Acharya Harita has described *Vivarnatva* as out of eight *Garbhopadravas*. *Vivarnatva* may be taken as *Pandu*.<sup>11</sup> “*Rasastustim Prinam Raktapusti chh*” (Su.Su.-15/7)<sup>12</sup> It is clear that *Garbhavasthajanya Pandu* occurs due to the foetal demands & improper functioning of the *Rasa Dhatu* leading to malnourishment of the body. Acharya Charak has also described “*Pandutva*” as a *Rasa Pradoshaja Vikara* and it is a *Santarpanotha Vikara*.<sup>13,14</sup> According to Acharya Charaka & Kashyapa, 5th month onwards *Garbhini* becomes emaciated and suffers from *Balavarnahani*.<sup>15,16</sup> It is due to lack of nourishment of maternal *Dhatu*s as the *Rasa* is driven to nourish more and more the flesh and blood of fetus.

## SAMPRAPTI OF GARBHAVASTHAJANYA PANDU

The *Samprapti* of *Garbhavasthajanya Pandu* is slightly different than *Samprapti* of *Pandu*. As mentioned earlier, the maternal blood is utilized for the maintenance of the foetus and that the extra use of blood bearing mother is mentioned earlier. This is very well evident in Charaka's description *Rasajashchayam Garbha* meaning the foetus is produced out of *Rasa*. Charaka further mentioned that without *Rasa* even mother cannot survive and therefore there is no question of the survival of the foetus. This *Rasa* means first *Dhatu* that is *Rasa Dhatu*. In the description of foetal nourishment Charaka says that with the normalcy of all six factors of conception and use of appropriate diet along with mode of life by pregnant women, the foetus obtaining its nourishment from *Rasa* by the process of *Upasneha* and *Upaswedana* and influenced by time factor along with its own nature on desires grows normally. The foetus is devoid of hunger and thirst and is totally dependent upon the mother. In initial stage when its specific body parts though present are not explicit, it obtains its subsistence by attracting moisture and osmosis. Afterwards, when body parts are conspicuous, a part of nourishment is obtained by *Upasnehana* permeating through pores of skin situated in hair-roots of the body and a part through the passage of umbilical cord. The foetal umbilicus is attached to the umbilical cord, umbilical cord to the placenta and placenta to the mother's heart. The mother's heart immerses the placenta through running and oozing vessels. Mother's diet contains all the *Rasas*, thus the *Rasa* derived from this diet gives strength and complexion to the foetus, and the foetus deriving its sustenance from the *Rasa* remains

alive and developed in the uterus. Charaka further explains the point that what diet the pregnant women consumes, the *Rasa* formed from this performs three functions:

1. Nourishment of the women's body.
2. Formation of milk.
3. Nourishment to the foetus.

Alike Charaka, Kashyapa has also mentioned about the three division of maternal diet but he has attributed one part of diet to the nourishment of breasts not to the milk as given by Charaka.

Sushruta explained that the foetal umbilical cord is attached to the maternal *Rasavaha Nadi* carrying the essence of mother's diet and the foetus grows through *Upasneha*.<sup>15</sup> From the time of conception upto the period until the body parts of foetus are not fully conspicuous, it gets its substance by *Upasnehana* through the Vessels running obliquely into all body parts. All these quotations state that the foetus gets nourishment from maternal blood. According to Charaka in *Pandu Roga* due to *Nidana Sevana Pitta* situated in *Hridaya* is vitiated. That Vitiated *Pitta* is drawn to the periphery of the body through the *Dhamanis* by vitiated *Vyana Vayu*. That vitiated *Pitta* also vitiates the *Vata*, *Kapha* and *Asrik* means *Rakta*. By vitiating them all, the *Sthana Samshraya* of *Pitta* takes place in between *Twacha* and *Mamsa* means especially in *Rakta*. Thus, it leads to the change in complexion like *Pandu*, *Krishna*, *Harita*, *Haridra* etc. and ultimately signs and symptoms of *Pandu* are manifested and *Pandu Roga* occurs.<sup>16</sup> On the other hand, in pregnant women, as mentioned before, the umbilical cord i.e. *Nabhi Nadi* of foetus is always attached with *Rasavaha Nadis* of mother which carries the *Rasa Rakta* to the foetus from mother and it provides the nutrition to the foetus with the help of *Upasnehana* and *Upasvedana Prakriya*. In this way, the requirement of blood is increased for mother due to particular stage of pregnancy, one for her own nutrition and another for the foetal nutrition. During this stage of pregnancy, if mother consumes the *Nidana* like *Abhojana*, *Pramitabhojana* or *Dauhrivadavastha*, *Amlatisevana*, *Katvatisevana* etc. *Vata* and *Pitta* get vitiated. Thus, *Vata* and *Pitta* along with *Rasa* take its *Sthana Samshraya* in *Rakta* which leads to discolouration of *Twacha*. At particular stage of pregnancy during fourth to seventh month foetus demands more and more blood for its own development. Thus, the utilization of maternal blood is increased and so gradually the women possessing a foetus goes to the anaemic condition i.e. *Pandu Roga – Garbhavasthajanya Panduroga*. The etiology of *Pandu Roga* as described earlier, clearly indicates that this disease is necessarily associated with *Dhatukshaya*. However, it is not very clear whether they are just inter-related or one condition is responsible for the other. Charaka, Sushruta and Vagbhatta have mentioned the role of *Dhatukshaya* in the etiology of *Pandu Roga*. *Dhatushaithilya* indicates either a change in composition or in metabolic activities of various *Dhatus*. Charaka has stated that *Dhatukshaya* i.e. any qualitative or quantitative change in the *Dhatus*, is responsible for *Pandu*. This view gains the necessary confirmation in the fact that *Raktadhatukshaya* is responsible for *Pandu* mainly because any change in the different *Dhatus* is dependent for the supply of nutrients in the blood. It would also be relevant to point out here that the *Dhatukshaya* or *Dhatuvridhi* are brought about by the vitiation of *Doshas*. Thus, any quantitative or qualitative change in *Dosha*, *Dhatu* or *Mala* can result in a disease or such changes could also be brought about the disease itself.

## MATERIAL AND METHOD

### Aims and Objectives of Clinical Study

Current clinical study aimed at finding out the contributory factors / aetiopathogenesis of anemia in pregnant women due to some physiological changes and many other possible reasons.

Selection of subject- 30 patients attending the Kayachikitsa O.P.D. & I.P.D. of Major SD Singh PG Ayu. College & Hospital, Bewar Road, Fatehgarh were selected in the age group of 20 years to 50 years irrespective of race, caste and religion.

- It was an open trial method with Single group only.
- Written & informed consent of patients was taken before trial.

- A detailed proforma (case history sheet form) was prepared and filled to note down all the details of patients and the disease.

**Ethical Approval** This study was approved by the authorities of the of Major SD Singh PG Ayu. College & HosPittal, Bewar Road, Fatehgarh.

### Inclusion Criteria

The inclusion criterion was only choosing pregnant women diagnosed with *Pandu* / Anemia having haemoglobin % 6 to 11 for the study.

### Exclusion Criteria

- All non-pregnant women were excluded from the current study.
- Haemoglobin percentage below 6 gm%
- Pregnancy related complications like hyperemesis, gravidarum, antepartum haemorrhage, eclampsia etc.

### Data Collection

An epidemiological questionnaire was developed. The questionnaires were distributed to patients. The questionnaires were filled by face-to-face interview. Close ended questionnaire was used and level was that of for layman's understanding. A non-probability sampling technique was used to collect the data.

### Parameter for Assessment:

Assessment of aetiopathogenesis of *Pandu roga* in *Garbhini* was done according to the detailed analysis of result on the basis of questionnaire.

### Questionnaire about aetiopathogenesis of anemia in pregnant women.

#### 1 Age of the respondent

- a. 15 - 20      b. 21 - 25      c. 26 - 30      d. 31 - 35      e. Above 35

#### 2 Age at the time of marriage

- a. Less than 15      b. 16 - 20      c. 21 - 25      d. 26 - 30      e. Above 30

#### 3 Education of the respondent

- a. Illiterate      b. Primary      c. Middle      d. Matric      e. Intermediate

#### 4 Number of children you have?

- a. 1 - 3      b. 4 - 7      c. above 7

#### 5 Type of pregnancy

- a. Single      b. Twin      c. Triple      d. Quarterplet

#### 6 Hb% of the respondent

- a. 3 - 4 g/dl      b. 5 - 6 g/dl      c. 7 - 10 g/dl      d. above 10 g/dl

#### 7. Rasa Dominant

- a. *Madhur*      b. *Amla*      c. *Lavana*      d. *Katu*      e. *Tikta*      f. *Kashaya*

#### 8. Obesity

- a. obese      b. non obese

#### 9 LFTs of the respondent

- a. <Normal      b. Normal      c. More than normal

#### 8 Gestational months

- a. 1 - 3 months      b. 4 - 5 months      c. 6 - 7 months      d. 8 - 9 months

#### 9 Age of last children born

- a. <1 year      b. 1 year      c. 2 years      d. Above 2 years

#### 10 Type of family you have?

- a. Nuclear      b. Joint      c. Extended      d. any other

**11 Monthly income of the household?**

- a. <10,000      b. 11,000 - 15,000      c. 16,000 - 20,000      d. Above 20,000

**12 Current status of the respondent?**

- a. House wife      b. Doing job      c. Both A and B

**13 Eating habits of the respondent?**

- a. 2 times a day      b. 3 times a day      c. 4 times a day      d. More frequently

**14 Daily tea intake of the respondent?**

- a. Once a day      b. Twice a day      c. Thrice a day      d. More frequent

**15 How often you eat fresh fruits, vegetables and milk?**

- a. Daily      b. 2 times week      c. Weekly      d. Very rare

**16 Are you using any sort of iron supplement?**

- a. Yes      b. No

**17 Are you suffering from frequent nausea and vomiting?**

- a. Yes      b. No

**18 Your daily eating habits are:**

- a. Just like previous      b. Double then previous      c. Less than previous

**19 Do you know that pregnant women need double diet?**

- a. Yes      b. No

**20 Your average hour of rest per day?**

- a. 5 - 6 hours      b. 7 - 8 hours      c. Above 8 hours

**21 Do you know about cheap alternatives of healthy diet?**

- a. Yes      b. No

**22 Do you have previous history of miscarriage?**

- a. Yes      b. No

**23 Are you suffering from any sort of hemorrhagic disease (APH)?**

- a. Yes      b. No

**24 Nature of work you daily done?**

- a. Light and normal      b. Exhaustive

**25. Suffering from any sort of stress or worry?**

- a. Yes      b. No

**26 Regular visits to doctor**

- a. Yes      b. No

**OBSERVATION**

Clinical study was carried out to study the aetiopathogenesis of *Pandu Roga* in *Garbhini*. Iron deficiency is the main cause of *Pandu*. But besides this causative factors also include *Aahara* and various *Vihara* with Psychological state of patients. A detailed questionnaire was prepared having broad views regarding aetiopathogenesis of *Panduroga* in *Garbhini*. This Performa was distributed to 30 diagnosed patients of *Garbhini Pandu*. Direct communication with patients was made.

- Age wise distribution has shown that maximum patients 33.33% were in age group 21-25 followed by 26.67 of the patients were above 35 % of the age years, 20.00 % in age group 26-30 years, 20 % in age group of 31 to 35 year of age.

**Table 1 Age wise distribution of patients**

<i>Age (in years)</i>	<i>Total Patients</i>	<i>Percentage</i>
21-25	10	33.33
26-30	6	20.00
31-35	6	20.00
Above 35	8	26.67
Total	30	100.00

The probable cause for increased in this age group might be that younger age group patients are prone to mental stress, excessive exercises, irregularity in diet and improper *viharas* (*Atapa sevana*, *Ratrijagarana*



etc.) due to their professional responsibilities. *Pandu roga* in younger age group mostly develop due to *asatmya ahara*, *vihara*, so in this age, mostly we find deficiency Anaemia. *Pandu roga* in elder age group may develop due to *krodha*, *chinta*, *bhaya* etc. the psychic factors along with imbalanced diet.

- Distribution of patients according to the age at the time of marriage reveals that maximum 40 % of the patients married below the age of 20. 20 % each of the patients married in between 21 to 25 and 26 to 30 years of age. 10 % each of the patients married in between 31 to 35 and above 35 years of age. This is along same line as of age wise distribution of patients with probably same reason.

**Table 2 Distribution of patients according to the age at the time of marriage**

<i>Age (in years)</i>	<i>Total Patients</i>	<i>Percentage</i>
Less than 20	12	40.00
21 – 25	6	20.00
26-30	6	20.00
31 – 35	3	10.00
Above 35	3	10.00
Total	30	100.00

- Education wise distribution has shown there is linear but negative relationship between education and anemia. Illiterate (30%) are more anemic whereas prevalence of anemia decreases with increase in education.
- Patients having already more children are more anemic in compare with those having less number of kids. This may be due to the reason that smaller families can bear more healthy diet.

**Table 3 show the number of children patient have**

<i>Number of child</i>	<i>Total Patients</i>	<i>Percentage</i>
0	3	10.00
1	6	20.00
2	9	30.00
3	6	20.00
Above 3	6	20.00
Total	30	100.00

- Hb % wise distribution has shown that Hb of 30.00% patients were in between 6 to 8. 50% in between 9 to 10. Hb of 20.00% patients were in between 10 to 11.

**Table 4 show the haemoglobin of the patients**

<i>Hb %</i>	<i>Total Patients</i>	<i>Percentage</i>
6 to 8	9	30.00
9 to 10	15	50.00
10 to 11	6	20.00
Total	30	100.00

- 10% patients were *Madhur Rasa* predominant, 20.00 % were *Amla* dominant, 20.00 % were *Lavana Rasa* dominant, 10.00 %, 10.00 % and 30 % were respectively *Katu*, *Tikta* and *Kashaya Rasa pradhan*. *Kashaya Rasa pradhan* patients are more anemic than others. Our ancient Acharyas had told *Kashaya Rasa* as main *aaharaja* causative factors of anemia.

**Table 5 Distribution of patient according to the *Rasa* dominance**

<i>Rasa</i>	Total Patients	Percentage
<i>Madhur</i>	3	10.00
<i>Amla</i>	6	20.00
<i>Lavana</i>	6	20.00
<i>Katu</i>	3	10.00
<i>Tikta</i>	3	10.00
<i>Kashaya</i>	9	33.33
Total	30	100.00

- Gestational month wise distribution of patients reveals maximum 40% patients are from IIInd trimester.

**Table 6 shows gestaional month of the patients**

Gestational month	Total Patients	Percentage
1 – 3months	9	30.00
4 – 5 months	12	40.00
6 – 7 months	9	30.00
8 – 9 months		
Total	30	100.00

- Age of last children born data reveals 33.33 % of patient became pregnant within a year of previous birth. 40 % patient gave birth to the child within 2 year and 27.67 became pregnant after more than 2 years of their previous pregnancy.

**Table 7 shows age of last child born of the patients**

Age of last children born	Total Patients	Percentage
Less than 1 year	10	33.33
1 to 2 years	12	40.00
More than 2 years	8	27.67
Total	30	100.00

- Monthly Income wise distribution of patients reveals that maximum 40 % patients belonged to the family having income less than 10000/ month. 30 % from having income in between 11000to 20000. 20 % from families having monthly income from 21000 to 30000. Minimum 10 % were from the families having monthly income more than 30000. Thus, it may be concluded that monthly income is inversely proportional to anemia. Patients having more monthly income are less anemic in compare to those having less income. The cause for the former may be the ignorance to diet due to much more mental tensions, this group people have. The reason of poor income group is again inability to afford the proper diet and due to improper and imbalanced diet they may get the disease.

**Table 8 reveals monthly income of household**

Monthly Income	Total Patients	Percentage
Less than 10000	12	40.00
11000 to 20000	9	30.00
21000 to 30000	6	20.00
Above 30000	3	10.00
Total	30	100.00

- 60 % of the patients were housewife and 40 % were doing job. The reason might be excessive labour and improper diet as well as inadequate diet. In house wives another reason might be improper post-natal care.

**Table 9 Current status wise distribution of Patients**

<b>Current Status</b>	<b>Total Patients</b>	<b>Percentage</b>
House wife	18	60.00
Doing Job	12	40.00
Total	30	100.00

- Eating habits of the patients reveals that maximum 33.33 % patients used to eat twice a day. 30 % thrice a day whereas 27.67 % of patients ate 4 times per day. Minimum 10 % of patients ate more than 4 times per day.

**Table 10 shows eating habit of patients**

<b>Eating habit</b>	<b>Total Patients</b>	<b>Percentage</b>
2times a day	10	33.33
3 times a day	9	30.00
4 times a day	8	27.67
More than 4 times	3	10.00
Total	30	100.00

- Use of fresh vegetable / fruits during pregnancy was less. Only 20 % women used it daily whereas another 20 % twice a week. 40 % women ate fresh vegetable / fruits weekly and 20 % used it rarely.

**Table 11 Shows eating habit of fresh fruits, vegetables and milk of patients**

<b>Eating habit of fresh</b>	<b>Total Patients</b>	<b>Percentage</b>
Daily	6	20.00
2 times per week	6	20.00
Weekly	12	40.00
Very rare	6	20.00
Total	30	100.00

- Distribution of patients according to use of Iron supplement shows that 40 % patients took it regularly and 60 % didn't use it.

**Table 12 Shows that patient use iron supplement or not**

<b>Iron supplement</b>	<b>Total Patients</b>	<b>Percentage</b>
Yes	12	40.00
No	18	60.00
Total	30	100.00

- Study for the change in daily eating habits reveals that in 50.00% there is no change in eating habit of patients during pregnancy. Only 10 % doubled their previous diet. 40% ate less than previous.

**Table 13 shows change in eating habit of patients during pregnancy**

<b>Eating habit</b>	<b>Total Patients</b>	<b>Percentage</b>
Just like previous	15	50.00
Double then previous	3	10.00
Less than previous	12	40.00
Total	30	100.00

- Study of patients regarding their knowledge that in pregnancy women need double diet shows that 66.67 % have no knowledge about this. Only 33.33% patients have knowledge regarding this.



**Table 14 Shows that patient know that in pregnancy women need double diet or not**

Patient knowledge that in pregnancy women need double diet	Total Patients	Percentage
Yes	10	33.33
No	20	66.67
Total	30	100.00

- Above 5 points clearly stated that patients who are more cautious regarding dietary needs and iron supplements are less anemic vice – versa.
- 20.00 % patients used to drink tea twice a day. 40 % thrice a day whereas 40.00 % of patients drink tea frequently. These all are mainly of *Kashaya-Rasa* predominance and helps in vitiating *Vata* and *Pitta Doshas* which may destroyed *Dhatuposhana kriya*, leads to Anaemia

**Table 15 Shows daily tea intake**

Daily tea intake	Total Patients	Percentage
Once a day	00	00.00
Twice a day	6	20.00
Thrice a day	12	40.00
Frequent	12	40.00
Total	30	100.00

- Average hour of rest per day data shows that 30 % of patients took rest only for 5 to 7 hours. 50 % took rest for 7 to 8 hours and 20 % of patients for more than 8 hours.

**Table 16 Shows average hours of rest of patients**

Average hours of rest	Total Patients	Percentage
5 – 7 hour	9	30.00
7 to 8 hours	15	50.00
More than 8 hours	6	20.00
Total	30	100.00

- History of bleeding disorders reveal that unnecessary blood loss from body also leads to anemia during pregnancy. 10 % of patients had history of miscarriage in previous pregnancy. Distribution of patients regarding history from suffering any sort of hemorrhagic disease (APH) reveals that 33.33 % patients had this kind of history

**Table 17 Reveals patient's previous history of miscarriage**

Previous history of miscarriage	Total Patients	Percentage
Yes	3	10.00
No	27	90.00
Total	30	100.00

**Table 18 Reveals patient's history of APH**

History hemorrhagic disease (APH)	Total Patients	Percentage
Yes	10	33.33
No	20	67.67
Total	30	100.00

- 70 % of patients were suffered from any kind of stress whereas 30 % were relaxed. This fixes that stress is directly proportional to anemia.

Table 19 Reveals patient's history of stress

patient's history of stress	Total Patients	Percentage
Yes	21	70.00
No	9	30.00
Total	30	100.00

## DISCUSSION

*Garbhini Pandu* is composed of two words i.e. *Garbhini* and *Pandu*. It indicates to a state of pallor discoloration of body of the pregnant woman. There is no direct reference of *Pandu* or its treatment during the state of pregnancy in our classics. However, many indirect references are available in ancient texts, so there is no doubt that the ancient teacher were very well aware of the importance of *Pandu* during pregnancy. Acharya Harita has described *Vivarnatva* as one of the eight *Garbhopadravas*. Kashyapa has described *Pandu* is a symptom of *Garbhini* when he explains *Rakta Gulma*.

In pregnancy physiological demands of foetus affect almost all the systems of the female body particularly the reticuloendothelial or transport system of the body. The nourishment of fetus is provided through the medium of mother's *Rasa Dhatu*. Charaka is very precise in standing the three fundamental roles of *Rasa*, they are-

1. Nourishment of her own body
2. Lactation
3. Growth of foetus

These extra demand leads to *Garbhavastha janya Pandu*. Moreover, *Dauhridotpatti* is an important cause for the excessive desire of *Nidana Sevana* like *Amla*, *Lavana*, *Katu Rasa*, *Abhojana*, *Pramitabhojana* etc. Besides these, *Chinta*, *Bhaya*, *Krodha* etc. mental impulses are found excessive in the pregnant women who are from low-income group which are the *Nidanas* of *Pandu Roga*. *Pandu Roga*, a disease due to *Rasa-Rakta Dhatu Kshaya* can manifest in *Garbhini*, in physiological or pathological forms.

*Pandu Roga* can be effectively compared with Anemia on the ground of its similar signs & symptoms. Both the red cell mass and the plasma volume expand from the first trimester of pregnancy. The expansion of 30 – 40 % in plasma volume exceeds the 20 – 25 % increase in red cell mass. These disproportionate ratio leads to the haemodilution and drop in haemoglobin concentration. These all conditions along with extra demand of iron during pregnancy lead to physiological anaemia during pregnancy.

Four types of deficiency anaemia namely iron deficiency, folic acid deficiency; Vit. B12 deficiency and protein deficiency anaemia are found. Out of these, iron deficiency anaemia is found in more than 80% due to nutritional deficiency with extra demand, poor absorption & utilization etc.

The cardinal symptoms of *Garbhini Pandu* are *Panduta*, *Daurbalya*, *Shrama*, *Hridrava*, and *Pindikodvestana*. Associated to these *Gatramarda*, *Agnisada*, *Padasotha* and *Shirahshula* are clearly marked with iron deficiency anaemia in pregnancy.

*Loha Rajas* has been indicated as the best drug in the management of *Pandu* in the classics of Ayurveda which shows that the ancient scholars were aware of the role of iron deficiency in the pathogenesis of the disease. On the other hand when we analyze the formulations mentioned in the context of *Pandu* it is evident that they contain herbal ingredients like *Sunthi*, *Maricha* etc. that are known correctors of metabolism and enhancers of bioavailability of nutrients irrespective of the factor whether they contain metallic iron or not. 102 formulations are mentioned in the treatment of *Pandu* in Ayurvedic Formulary of India among which 72 do not contain metallic iron. All these indicate that more emphasis was given in the text books of Ayurveda for factors affecting metabolism, perhaps including that of iron than iron supplementation in the management of *Pandu*.

Though metallic and non-metallic preparations are indicated in management of *Pandu*, *Pandughni Vati* has been selected, which can improve the metabolism & *Agni* & thus improve the *Pandu* and *Dhatri Lauha Vati* has been selected as a metallic preparation. The drugs were prepared in *Vati* form for easy administration. The complications of anaemia in pregnancy affect both mother and baby. The mother may suffer from preterm labour, pre-eclampsia, uterine inertia, postpartum haemorrhage, cardiac failure, puerperal sepsis, failing lactation etc. On baby prematurity, IUGR etc. are marked. *Garbhini Paricharya* described in the various Shastras helps in proper development of foetus and imparts good health to mother. If a *Garbhini* does not follow the *Paricharya* it may result in many problems regarding the health of both mother and foetus and May also lead to various complications like *Garbha Vyapadas* etc. In the present study, one patient in Group A, presented with preterm labour. No any other complication was found, may be because less number of patients came for delivery here.

## CONCLUSION

- There is no direct reference of *Pandu* or its treatment during the state of pregnancy in our classics. *Garbhini Pandu* is described as a symptom. Acharya Harita has described *Vivarnatva* among eight *Garbhopadravas*. *Vivarnatva* may be taken as *Pandu*. Kashyapa has described *Pandu* is a symptom of *Garbhini* when he explains *Rakta Gulma*.
- *Garbhini Pandu* may be taken as a *Rasa Pradoshaja Vyadhi* and it is a *Santarpanotha Vikara*, which is common in *Garbhavastha*.
- The consumable objects having excessive *Amla*, *Lavana*, *Katu* etc. *Rasa*, *Abhojana*, *Pramitabhojana* etc. consumed abundantly by the pregnant woman during pregnancy due to *Dauhrivadastha* and *Manasika Bhava* like *Chinta*, *Shoka*, *Krodha* etc and other condition like multiple and repeated pregnancies were found as etiological factors for *Garbhini Pandu*.
- *Garbhini Pandu* may be correlated with iron deficiency anaemia in pregnancy.
- It observed more in second trimester because the demands of feto-maternal nutrition are high. Foetus is subsequently grown up with heart manifestation, growth of *Rakta* and *Mamsa Dhatu* etc. So requirement of nutrition is increased in this period.
- Total 30 patients were selected for study.
- The patients were selected in the clinical study on the basis of clinical symptoms as well as Hb%.
- The result was assessed on the basis survey of questionnaire.
- Pallor, General weakness, fatigue and dyspnoea are cardinal features of *Garbhini Pandu*. Among them anorexia, palpitation, body ache, pain in upper and lower extremities, lethargy etc. were chiefly found in *Garbhini Pandu*.
- Common aetiological factors that enhances *Pandu roga* in *Garbhini* were based on Dietary habits (*Aaharaja nidana*) , Living habits (*Viharaja*) , Socio – economic causes along with Psychological factors.

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