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EFFICACY OF *TAMARINDUS INDICA* IN THE MANAGEMENT OF *PANDU NOEI*

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ABSTRACT

Tamarind is a well-known plant in Sri Lanka. There are many literatures had stated about benefits of tamarind. But the effectiveness of Tamarind on the management of Anemia has not established yet. Hence this research had dealt with Anemia on tamarind leaves.

This quasi experimental study carried out in 10 patients. In this study *Paandu rogam* patients were selected based on inclusion criteria at Rural Siddha Ayurvedic Hospital, Kobalapuram. The selected patients were treated with prepared drug for eight weeks. The Patients of between 18 to 60 years of age, both sexes presenting with the signs and symptoms of Anemia were selected randomly based on randomizations schedule. Hemoglobin level was obtained for conformation of Anemic patients in Rural Siddha Ayurvedhic Hospital, Kobalapuram, Trincomalee. All the selected patients were subjected to the detailed history and physical examination on their first visit to the OPD.

All the selected patients were treated with 1g of Tamarind leaves choornam powder orally thrice a day for 49 days, and then Evaluation visits were made at 7th, 14th, 21st, 28th, 35th, 42th and 49th days. Effect of treatment was evaluated on the basis of changes in the signs and symptoms after the treatment, then Investigation of Hb level made at 14th, 28th and 49th days. After the treatment patient had statistically significant improvement in Hb level and progressive reduction in sign and symptoms. This shows tamarind leaves chooranam place important role in the management of *Paandu rogam*

KEY WORDS

Tamarindus indica , *Pandu noei* , Anemia.

1. INTRODUCTION

This is a Quasi- experimental study to determine the internal administration of ***Tamarindus indica*** in the management of *Pandu noei* patients.

A prominent diagnostic feature of ***Pandu roga*** is the pallor on the skin which occurs due to the quantitative and qualitative deficiency of ***rakta dhatu*** (~blood tissue) caused either in the form of deficiency of hemoglobin and/ or red blood cells (RBCs). Considering ***Panduta*** (pallor) as the predominant sign, the disease is termed as ***Pandu roga***. The nearest correlation of iron deficiency anemia (IDA) can be made with ***Pandu roga***, because of the predominance of ***Panduta*** or pallor in the whole body (Prakashan, 1997).

The most common cause of anemia is iron deficiency. Iron is needed to form hemoglobin. Iron is mostly stored in the body in the hemoglobin. About 30 percent of iron is also stored as ferritin and hemosiderin in the bone marrow, spleen, and liver. According to sources in Ministry of Health 50% of the schoolchildren suffer from iron deficiency. According to a study memory power is diminished and the growth is thwarted and vitality is sapped in boys due to iron deficiency. (Dorland, 2004).

The plant *Tamarindus indica* to the family Fabaceae which popularly known as indigenous to tropical Africa but has been cultivated for so long on the Indian subcontinent that it is sometimes also reported to be indigenous there all the part of the plant have medicinal uses. the plant used in treating constipation, liver and gallbladder problems, and stomach disorders. It is also used to treat colds and fever. Pregnancy - related nausea. Ayurveda this herb is used in Refrigerant, Antibilios, Laxative, and Tonic (Morton, 2004). ***Pandu*** is a disease characterized by pallor of the body, eye, and nail due to lack or diminished of *kuruthi*. (*Sanmugavellu* 2004, *Kuppusami muthaliyar* 1951 & *Rajeshwai*, 2005).

2. TYPES OF *PAANDU NOI*

I. *Valli Paandu noi*

II. *Azhal paandu noi*

III. *Iya paandu noi*

IV. *Mukutra paandu noi*

V. *Nanchu paandu noi* (*Sanmugavellu* 2004).

3. GENERAL SIGNS AND SYMPTOMS OF *PAANDU NOI*

- Tiredness on mild exertion.
- Nausea.

- Loss of appetite.
- Giddiness.
- Palpitation.
- Loss of general health and stamina.
- Loss of weight.
- Pallor of conjunctiva.
- Pallor and thickening of nail bed. (*Sanmugavellu*, 2004).

4. OBJECTIVE OF THE RESEARCH

To identify the effectiveness of leaves of *Tamarindus indica* in *Paandu* (Iron deficiency anaemia).

5. MATERIALS AND METHODS

This is a quasi - experimental study. In this study *Paandu rogam* patients are selected based on inclusion criteria, were selected at Rural Siddha Ayurvedhic Hospital, Kobalapuram. Give the prepared drug to selected patients for eight weeks.

5.1. Study area

The study area was the Kobalapuram in Trincomalee district. The study was carried on Rural Siddha Ayurvedic Hospital, Kobalapuram. Ten patients were selected for this study. Patients were selected based in inclusion criteria.

5.2. Selection of patients

The Patients of between 18 to 60 years of age, both sexes presenting with the signs and symptoms of Anemia were selected randomly based on randomizations schedule, then further conformation patients Hemoglobin level was obtained in Rural Siddha Ayurvedhic Hospital, Kobalapuram, Trincomalee. All the selected patients were detailed history and physical examination on their first visit to the OPD.

They were assurance that all information obtain from them were treated with choornam of Tamarind leaves.

These patients were selected within the study time frame, using inclusion/exclusion criteria based on the signs, symptoms of *Panu noei* in the first phase of the screening procedure. The purpose of the trial was explained to the patients and those who volunteered signed ‘informed consent’ to enroll in the trial

5.3. Inclusion Criteria

1. Patients of both sex
2. Age between 18 to 45 year old

3. Diagnostic patient had significant signs and symptoms of anaemia which indicate above.
4. Hb level between male 13.6(g/dl)- to 17.7 (g/dl), female 12.1(g/dl)-to 15.1(g/dl)
5. Patients who were took the worm treatment around 3monthes before the study.
6. The female patients has regular menstrual history
7. Patient who not following any medications for any other clinical conditions.

5.4. Exclusion Criteria

1. The patients who has the anemic complications
2. The Hb level male below 13.6(g/dl) or above 17.7 (g/dl), female below 12.1 (g/dl) or above 15.1(g/dl).
3. Women who were pregnant, lactating, and having child bearing potential and not following adequate contraceptive measures.
4. Those with history of active peptic ulcer at any time in the preceding six months or bleeding ulcer at any time in the past.
5. Those with evidence of severe renal, hepatic and cardiac disorder as revealed by history.

5.5. Preparation of medicine

Purified dried leaves of *Tamarindus indica* will be powder with the mechanical grinder. Then powder was made into capsules and stored in a labeled air tight container for this study.

5.6. Instruments

Interviewer administrated questionnaire was used to collect the data. Questions were formulated based on the specific objective.

5.7. Method of data collection

According to the inclusion criteria patient will be selected at Rural Siddha Ayurvedhic Hospital, Kobalapuram during April 20, 2015 to June 08, 2015. The purpose of trial was explained to the patients to get their consent. The selected patients were interviewed by the researcher on their first visit to the OPD. The selected patients were subjected to a detailed clinical examination based on proforma specially prepared for this study. Diagnosis was made on the basis of history and clinical examination.

5.8. Treatment

All the selected patients were treated with 1g of Tamarind leaves choornam powder Orally thrice a day for 56 days

5.9. Clinical assessment

- Patient will be selected by clinical method (Extertional tiredness, palpitation & pale conjunctiva) & laboratory evaluation (Hb level, MCV, MCH)

- Then symptomatic patients were introduced & examined by MOIC of Siddha Ayurvedhic Hospital, Kobalapuram
- Prepared medicine was provided to the patients 1g/td daily, progress of the results will be tested once in a fortnight in blood samples
- Evaluation visits were made at 7^{th}, 14^{th}, 21^{st}, 28^{th}, 35^{th}, 42^{th} and 49^{th} days. Effect of treatment was evaluated on the basis of changes in the signs and symptoms after the treatment.
- Investigation of Hb level made at 14^{th}, 28th and 42^{nd} days.

5.10. Assessment criteria

The following signs and symptoms were graded as follows

Fatigue

1. No fatigue except hard work.
2. Fatigue after moderate work for a certain time.
3. Fatigue light work for a certain time.
4. Fatigue after routine activities for certain time.

Weakness

1- No feeling of weakness during daily activities.
2- Sometime feeling of weakness but performs daily activities.
3- Often feeling of weakness but hampers daily activities.
4- always feeling of weakness but unable to perform daily activities,

Giddiness

1- No giddiness.
2- occasionally present (e.g.:- 1 to 2 times per week)
3- Frequently present (e.g. :- 1 to 2 time per week).
4- persistent (throughout the day)

Dyspnoea

1- No dyspnoea
2- Dyspnoea after heavy work, relieved soon, tolerable
3- Dyspnoea after moderate woke, relived soon, tolerable.
4- Dyspnoea after light work, relieved later intolerable.

Palpitation

1- no palpitation
2- palpitation during mild exertion
3- palpitation for sometimes during normal activity
4- palpitation frequently during normal activity

Pallor

1. Pallor absent in three regions.
2. Pallor present in conjunctiva.
3. Pallor present in face.
4. Pallor present in nail.

Grading of blood haemoglobin level

1. Hemoglobin level > 12.1g/ld.
2. Hemoglobin level 11.1 g/ld. to <12.1g/ld.
3. Hemoglobin level 10.1 g/ld. to <11.1g/ld.
4. Hemoglobin level 9.1 g/ld. to <10.1g/ld.

Overall assessment of result

The results were assessed on the basis of observations of clinical features and laboratory findings before, during and after treatment.

Very Good—Improvement 75% and above

Good—Improvement 50% and above but <75%

Fair—Improvement 25% and above but <50%

Poor—No improvement or marginal improvement <25%

6. RESULTS AND DISCUSSION

Statistical value was calculated for the following symptoms as per analysis of variance for completely random designs using statistical analysis system (Microsoft excels 2010) program.

Every symptom was considered for selected 10 patients, once a week in mean value.

6.1 Effect of drug on Fatigue

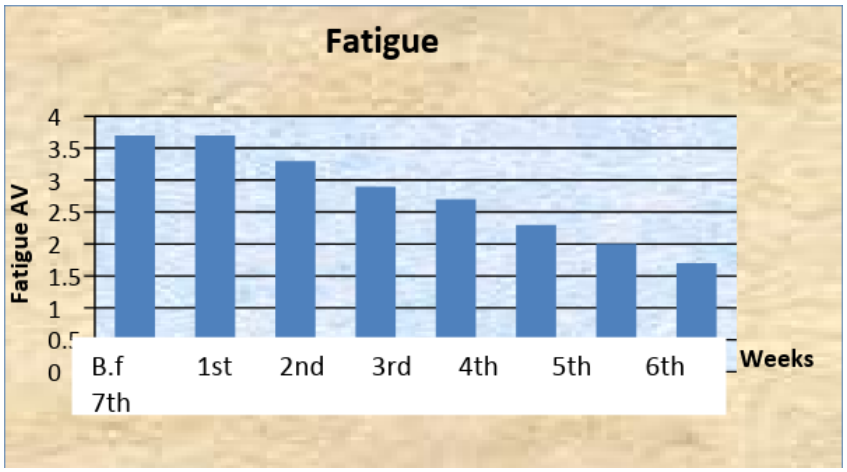

Figure 6.1:- Mean value of fatigue

Severity of symptom was declined gradually after administration of treatment. There was no any change in 1st week, while marked reduction in 2nd, 3rd, & 5th weeks. It's clearly denoted prescribed medicine showed significant improvement on Fatigue.

6.2. Effect of drug on weakness

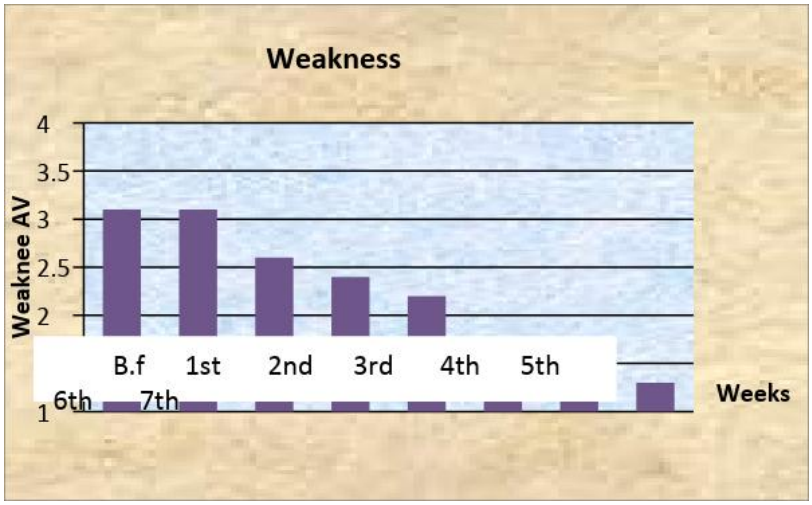

Figure 6.2:-Mean value of Weakness

Severity of symptom was declined gradually after administration of treatment, while marked reduction in 2nd, 5th weeks. It's clearly denoted prescribed medicine showed significant improvement on weakness.

6.3. Effect of drug on Giddiness

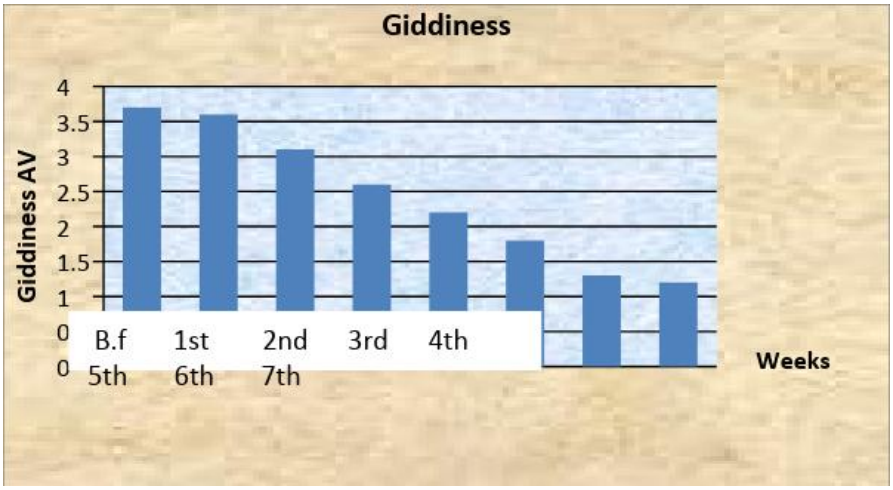

Figure 6.3:- Mean value of Giddiness

Severity of symptom was declined gradually after administration of treatment, while marked reduction in 2nd, 3rd, & 6th weeks. It's clearly denoted prescribed medicine showed significant improvement on giddiness.

6.4. Effect of drug on Dyspnoea

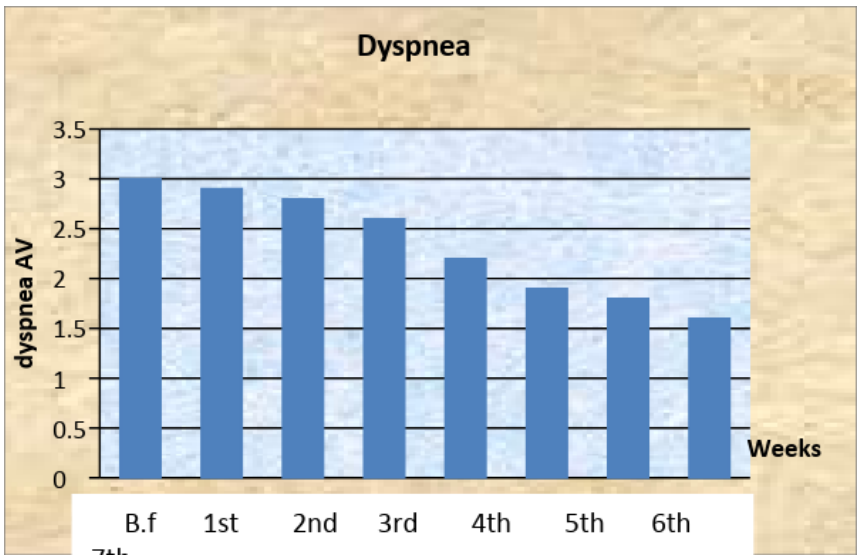

Figure 6.4:- Mean value of palpitation

Severity of symptom was declined gradually after administration of treatment, while marked reduction in 4th week. It's clearly denoted prescribed medicine showed significant improvement on dyspnea.

6.5. Effect of drug on palpitation

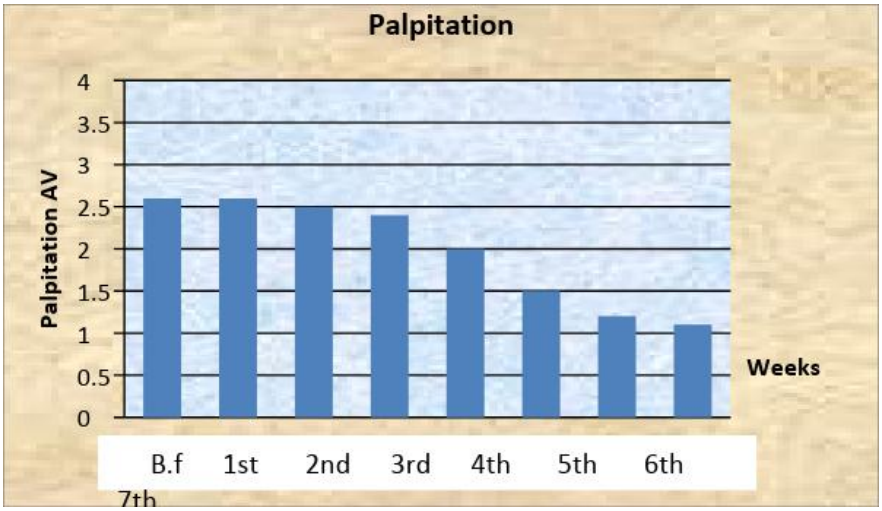

Figure 6.5:- Mean value of palpitation

Severity of symptom was declined gradually after administration of treatment. There was no any change in 1st week while marked reduction in 5th week. It's clearly denoted prescribed medicine showed significant improvement on palpitation.

6.6 Effect of drug on pallor

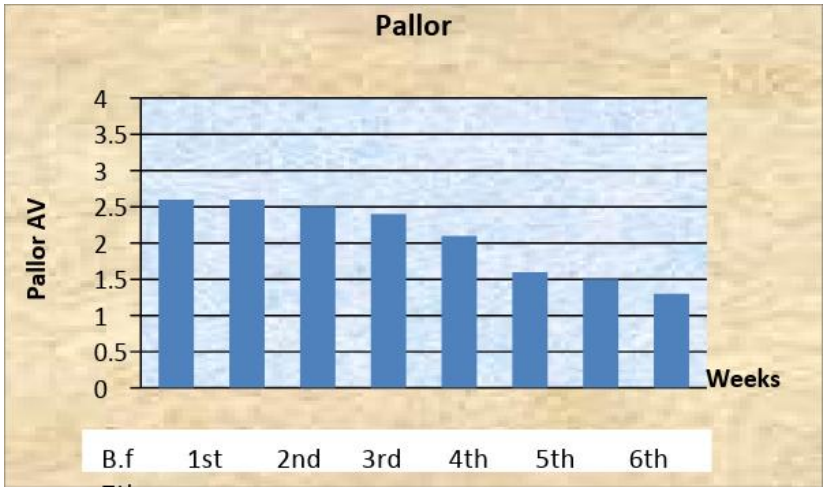

Figure 6.6:- Mean value of pallor

Severity of symptom was declined gradually after administration of treatment. There was no any change in 1st week while marked reduction in 5th week. It's clearly denoted prescribed medicine showed significant improvement on pallor.

6.7. Result of Haemoglobin level

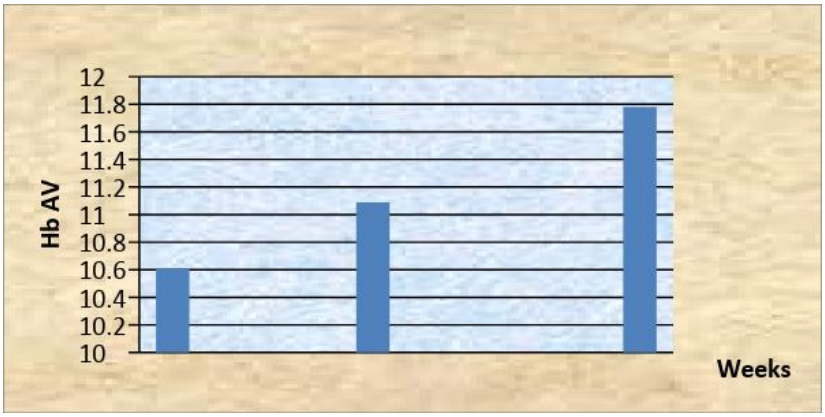

Figure 6.7:- Mean value of Hb

Before treatment the Hb level was moderate afterwards the treatment. It became noteworthy. The drug efficacy is moderately effective in Hb level. It's clearly denoted prescribed medicine showed significant improvement on Hb level.

6.8. Change the anaemic sing & symptom before & after treatment

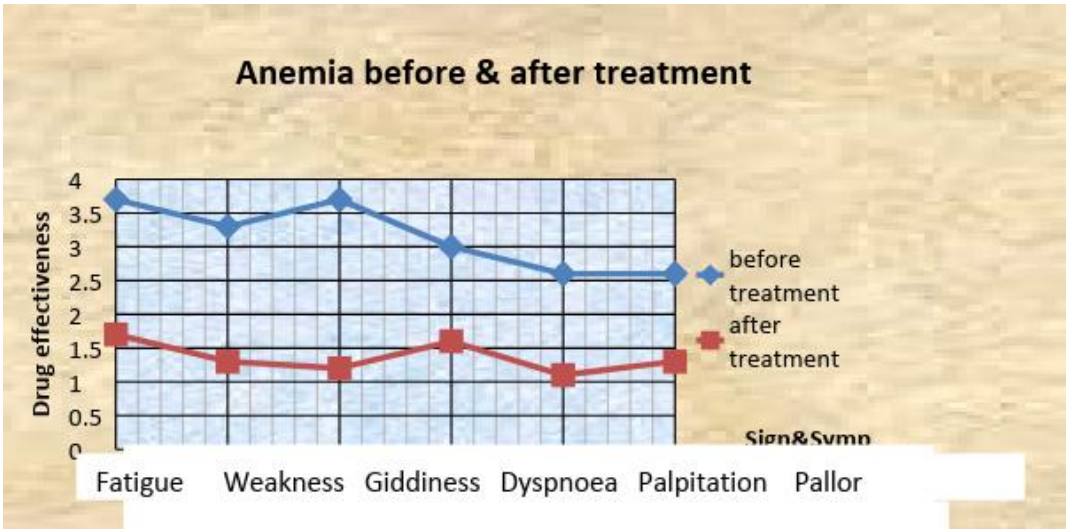

Figure 6.8:- Anemia before & after treatment

6.9. Overall effect of therapy on Anemia

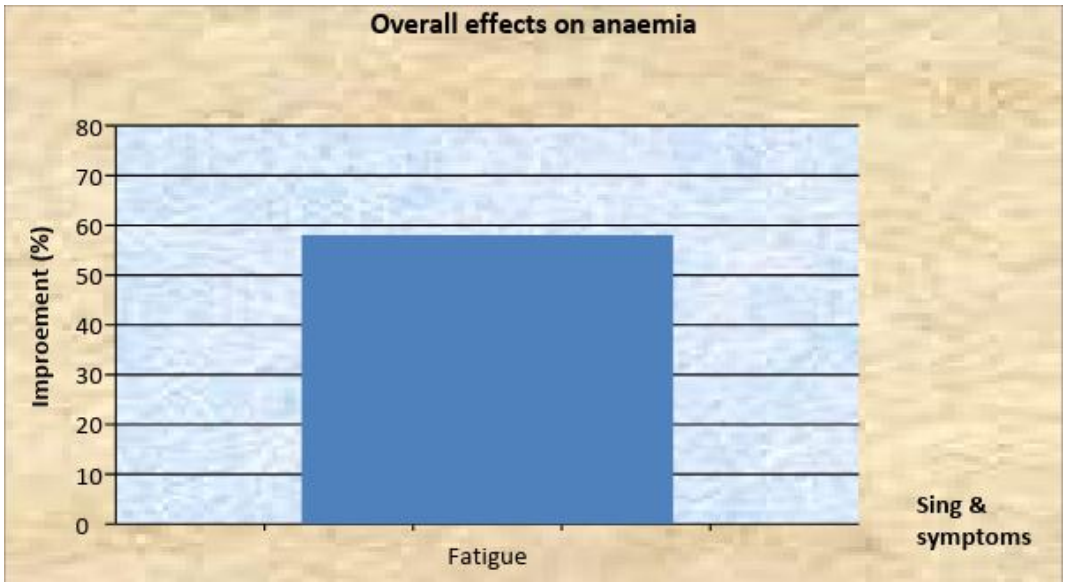

Figure 6.9:- Overall effects of therapy on anaemia

Figure 6.9 noted *Tamarindus indica* was effective to relief the signs & symptoms of fatigue, weakness, giddiness, dyspnea, palpitation, pallor.

6.10. Overall effects of on anaemic Patient

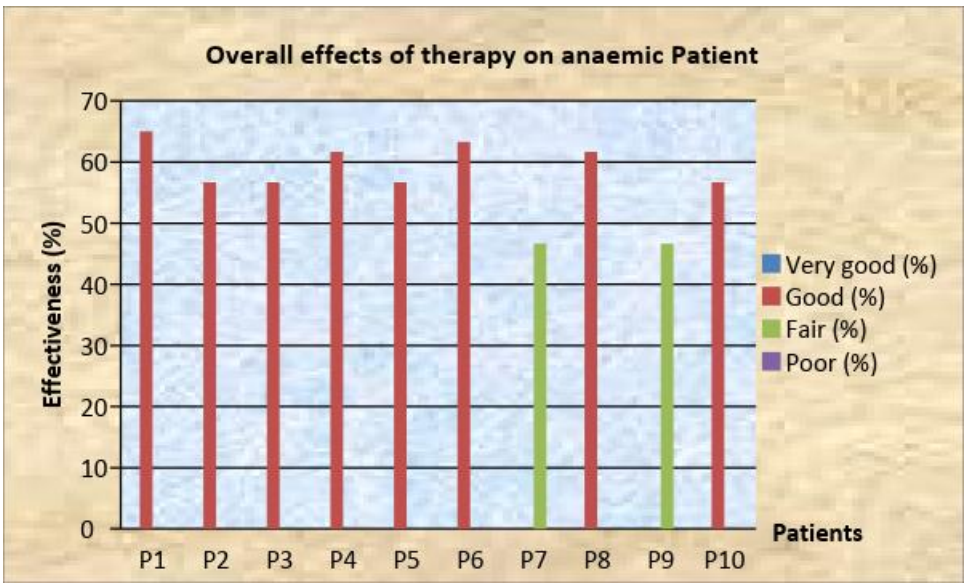

Figure: -6.10 Overall effects of therapy on anaemic Patient

"Good" was found 80% of patients and "Fair was found 20% of patients. No patient found "very good" and "poor".

In summary, based on the research with these results, *Tamarindus indica* leave powder it can be said that serve all the needs which are required for the treatment of "*Pandu noei".* Tamarind possesses sour taste and it contains richest of vitamin-C, which helps in the absorption of iron thus increases its bioavailability. Hence it promotes complexion, Pitta pacifying property and maintains the normal colour of the skin. It also recovers the complaint of anemia. During the clinical study patients commented that after administration of drug they felt little enthusiastic, better concentration, energetic and strengthening of body than earlier. The plant tamarind leaves might have haemopoeitic properties & iron components. This will be proven by further phytochemical studies in future. The powder of Tamarind leaves can be used by any means to treat anemia. No treatment-related adverse effects were reported during the study, and drug administration was found to be safe and well tolerated by all patients during the complete intervention period. Despite few side effects generally reported with the use of Tamarind, patients of the present study did not experience any such side effect that indicates the widely safe nature of the dietary supplement. The available published literature on clinical studies of Tamarind leaves churanam also did not report any significant adverse events at various dosage regimens. Based on the existing scientific evidence and considering the importance of Tamarind as a popular herb, reviewed the safety of the medicinal herb and asserted that the current intake levels of Tamarind products seems to be safe.

7. CONCLUSION

Clinical study reveals that the powder of Tamarind leaves in oral administration, three times per day exhibits marked decrease in symptoms with improvements in selected individuals. Hence, it has been proven that *Tamaridus indica* leaves possess significant improvement in anemia. Hence it may be used in *Pandu noei*.

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