

Comparative Efficiency Testing of Gudharitaki Awaleha in Pandu Roga Iron Deficiency Anemia and Kitchen Garden's Parasbag Dietary Supplement

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Abstract

Background: Panduroga is a pitta-dominant Raktapradoshaja vyadhi. The similarity of the symptoms makes iron deficiency anemia a possibility. A diet deficient in iron-rich foods can lead to iron deficiency anemia related to inadequate dietary iron consumption. Fruits and cruciferous vegetables have the highest concentrations of vitamins and minerals. One of the easiest ways to guarantee that everyone has access to a balanced diet with appropriate micronutrients is to grow a range of foods in the kitchen garden.

Aim and objectives: Comparing the efficacy of nutritional supplements from Kitchen Garden (Parasbag) and Gudharitaki Awaleha is the goal of this study, which is being carried out in collaboration with Mission Samridhi (MS).

Methodology: A total of 60 patients were chosen, divided equally into two groups. While group B patients had 90 days of treatment with Gudharitaki Awaleha, group A patients also received nutritional supplements from the (Parasbag) Kitchen Garden. Prior to and following treatment, subjective and objective criteria were evaluated. Conclusion and Discussion Both groups' subjective and objective criteria showed a significant improvement. But more patients in group A than group B showed signs of improvement. Conclusion- Because organically cultivated vegetables and fruits are rich in nutrients that aid in the avoidance of nutritional inadequacies, nutritional supplements derived from Kitchen Garden and Gudharitaki Awaleha enhance hemoglobin percentage.

Keywords: Fruits and vegetables, Gudharitaki Awaleha, Iron deficiency Anemia, Kitchen garden (KG), Panduroga, Parasbag.

Introduction

Tridoshaja with a dominant Pitta dosha is Pandu Roga. A decrease in rasa and rakta, which are principally in charge of sustaining and nourishing big activities, is what causes the symptoms. Aggravated Pitta Dosha has a negative impact on all the other doshas, including Kapha, Vayu, Rakta, Twaka, Mamsa, and Ojas. The Twaka Vivarnya (Panduta/skin discolouration) is what distinguishes Pandu. Other signs of pandu roga include Agnimandya (lower appetite), Aruchi (tastelessness in food), Daurbalya (general weakness), and Bhrama (elation) (1). It might be compared to iron deficiency anemia due to the comparable symptoms.

Iron deficiency anemia caused by insufficient dietary iron intake arises from eating a diet low in foods rich in iron. It is a condition when the body's hemoglobin concentration (Hb percent) is low and the red blood cell count is insufficient to meet physiological needs (2). A serious health problem that affects people all around the world is iron deficiency anemia. The WHO acknowledged that iron deficiency is one of the most prevalent nutritional deficiencies in the world today, notably affecting the population of women and children (3). Nutritional and nonnutritional variables are among the many causes of anemia. Deficits in iron, vitamin A, folate, vitamin B12, ascorbic acid, and zinc are responsible for nutritional anemia. These nutrient deficiency conditions could be brought on by inadequate food intake and low micronutrient bioavailability. Iron deficiency anemia (IDA) is the most widespread nutritional deficiency that is known to exist globally. The recommended daily consumption of iron for adults is 8 mg for post-menopausal women and men, and 18 mg for pre-menopausal women. In order to meet the demand, improved bioavailability strategies and iron-rich food choices are crucial. Iron is one of the minerals required for the production of hemoglobin (4).

Fruits and green leafy vegetables are among the abundant sources of minerals and vitamins. The average productivity of these crops (48.6 q/ha) is much lower than the averages for the state (52.4 q/ha) and the nation (171.1 q/ha). One of the easiest ways to guarantee that everyone has access to a balanced diet with appropriate micronutrients is to grow a range of foods in the kitchen garden. This is essential, especially in rural areas where people's purchasing power is low and markets are spread out. Kitchen gardening immediately helps to food and nutritional security by providing family members with access to food that can be promptly gathered, processed, and served on a daily basis or as required. We also receive taste, customer acceptance, better digestion, and an increase in hunger from these vegetables. A person should eat 300 grams of vegetables daily, including leafy greens, root and tuber crops, and other vegetables, per the Recommended Dietary Allowances. These are typically short-lived crops that are well-developed in kitchen gardens so that family members can eat them all year long from home gardens (5).

A kitchen garden is a small plot of land next to a house where different seasonal fruits and vegetables are planted. It can be used to produce clean, fresh, pure, organic, reasonably priced, and nutritious fruits and vegetables, especially those that are a good source of micronutrients.

Additionally, they are free of any chemicals and poisons thanks to the provision of organic manure and kitchen garbage. Directly providing food and nutritional security, kitchen gardening provides family members with healthful food that is easily available, processed, and served on a regular basis or as required (6).

Dietary supplements taken from the kitchen garden at (My Home Indore), which mostly grows fruits and vegetables. The kit of Kitchen Garden consists climbers like cucumber, pumpkin, ridge gourd, bottle gourd, bitter gourd; root and tubers include beet, carrot and radish, fruits like papaya and vegetables like drumsticks, brinjal, tomato, lady finger, Cluster beans, green chilli, Long beans/Cow-pea beans, and green leafy vegetables like spinach, fenugreek, White amaranth, Red amaranth, White Goosefoot, and Green Cori. In order to avoid anemia in rural India, this helps to increase nutritional awareness and promote the consumption of foods high in iron through dietary supplements derived from kitchen gardens. Haritaki is suggested for the treatment of pandu roga in all Ayurvedic scriptures. Guda-haritaki yoga is one of the main treatments for panduroga suggested in Bharat Bhaisajya Ratnavali (7). The study investigations utilizing GudaHaritaki yoga in Panduroga demonstrated its efficacy in reducing Pandu symptoms, which have the features listed in Table no. 2.

Need of the study

According to the National Family Health Survey 53.2 percent of women aged 15 to 49 who were not pregnant and 50.4 percent of women who were found to be pregnant to have anaemic status, but only 22.7 percent of men in this age range (8). The majority of anemias brought on by iron shortage are moderate and don't have any negative effects. However, a protracted lack can have major negative effects on both children and adults' and adults' productivity over the world. Treatment options for iron deficiency include blood transfusions, oral and parenteral iron formulations, and iron-rich dietary supplements. However, all have restrictions because of the adverse effects (9).

In order to prevent and treat iron deficiency, it is essential to choose a diet high in iron. India is the second-largest producer of fruits and vegetables in the world, yet its populace consumes very little of them, particularly in rural areas. This can be the result of ignorance, illiteracy, a lack of access to fresh produce, and low household income.

Increasing the intake of fruits and vegetables is one of the most straightforward and affordable ways to improve health. Foods rich in dietary bioactive components include fruits and vegetables. Fruits and vegetables are cultivated organically in Kitchen Garden without the use of dangerous pesticides, yet there is a lack of knowledge and experience. Traditional vegetable consumption—both cultivated and wild—could significantly boost the availability of micronutrients and be linked to lower incidence of anemia and mineral shortage in populations with limited resources (10, 11). To effectively address the multifactorial causes of anaemia, there needs to be close coordination and cooperation between the numerous related sectors, including poverty alleviation, agriculture, industry, and education, as well as groups like government agencies, nongovernmental organizations (NGOs), and the private sector. A social impact group called Mission Samriddhi (MS) has been working in Madhyapradesh for the past three years on the issues of panchayat empowerment, health, education, and livelihood. MS aspires to achieve comprehensive rural development that is sustainable.

Gram Daloda Tq. Indore has been selected by Mission Samriddhi (MS) as the target village for their pilot initiative to make one community anemia-free. Located 15 kilometers from Indore on the Indore-Khandwa highway, it has a population of 1026. They have been encouraging the use of kitchen gardens for the past three years with the help of MSRLM. To stop anaemia from occurring in the hamlet, they have distributed seeds and provided training sessions for kitchen gardens. It is crucial to encourage and increase awareness about the consumption of organically grown fruits and vegetables in order to preserve good health and combat nutritional deficiency disorders like Iron Deficiency Anemia. This study is being carried out in collaboration with Mission Samriddhi (MS) to examine the efficacy of dietary supplements acquired from Kitchen Garden and Gudharitaki Awaleha.

Aims and objectives

Aim

Evaluation of the effectiveness of the nutritional supplement acquired from the (My Home) Kitchen Garden combined with Gudharitaki Awaleha on Complete Blood Count for eradicating anemia (iron deficiency) in the village Daloda.

Objectives

1. To evaluate the impact of Gudharitaki Awaleha, a nutritious supplement derived from the (My Home) Kitchen Garden, on both subjective and objective metrics.

2. To evaluate the impact of Gudharitaki on both subjective and objective metrics.
3. To contrast the outcomes of both in the case of iron deficiency anemia, or Pandu Roga.

Materials and Methods

Locus of study

The Subjects from Daloda Village (Tal. Indore,) were registered and investigated

Methodology

Study was started after approval of Institutional Ethics Committee Ref. No. SAMC/IEC/ 10-2020/149. Only after receiving each patient's written agreement was the study able to proceed. The confidentiality of the patients was protected throughout the study.

Type of Study: Interventional

Study design: Randomized open reference standard controlled clinical study.

Drug collection/ Authentication: The raw material was procured from authentic shop and authenticated by experts from Dravyaguna Department at SAMC Indore.

Storage: Stored in plastic containers.

Detail of Drug Preparation:

Using the normal operating procedure described in the Sharangadhara Samhita, Gudharitaki, which contains the ingredients Haritaki and Gud as given in table 1, was made in the form of an awaleha in the Dattatreya Rasashala of SAMC & RC, Indore (M.P.).

Mission Samruddhi gave families seeds and instruction in gardening while advising them to eat more organically grown fruits and vegetables as a dietary supplement from the kitchen garden.

Table 1: Ingredients of Gudharitaki Awaleha-(12)

SN	Ingredients	Botanical nomenclature	Part utilized	Quantity
1	Haritaki	<i>Terminalia chebula.</i> Retz.	Fruits	One part
2	Gud	Jaggery	-	One part

Table 2: Properties of drug

SN	Drug	Rasa	Guna	Virya	Vipaka	Doshghnata	Rogaghnata
1	Haritaki (13)	Kashaya, Madhura, Amla, Katu, Tikta	Laghu, Ruksha	Ushna	Madhura	Tridoshaghna	<i>Kushtha, Krimi, Grahani, Arsha, Amlapitta, Jwar, Pandu, Kamla</i>
2	Gud (14,15)	Madhura	Snigdha, laghu	Natiushna	Madhura		<i>Vatapittaghna, Asrukprasadana Pandu, Balya</i>

Toxicity study

Haritaki (*Terminalia chebula* Retz.) (16)

According to animal studies on Haritaki's acute and sub-chronic toxicity, at a dose level of 5000 mg/kg, the animals displayed normal behavioral patterns, breathing patterns, cardiovascular characteristics, motor functions, reflexes, and changes in their skin and fur that were consistent with normal aging.

Sampling procedure: Computerized Randomized chart

Sample size (Including sample size calculation): 60 (30x2)

Table 3: Grouping and Posology (As per PICO model)

Group	Sample size	Intervention	Dose and Frequency	Anupana	Duration	Follow-up
A	30	Dietary supplement acquired from KG and Gudharitaki Awaleha	5gm BD	Water	90days	On day 0 and 90
B	30	Gudharitaki Awaleha	5gm BD	Water	90days	On day 0 and 90

Inclusion criteria

- Patients having age between 16 to 50 years of both the sexes.
- Patients with hemoglobin percentage between the range of 7 - 11gm/dl.
- Patients with deficiency of iron due to other causes of Anemia.
- Patients willing to give written informed consent.

Exclusion criteria

- Diagnosed patients of Sickle cell, Sideroblastic, Aplastic anemia, Thalassemia, Malignancies causing anemia and hemolytic anemia.
- Pregnancy & lactating mothers.
- Diagnosed patients of hemorrhagic diseases.
- Menstrual disorders

Withdrawal criteria

- Patients not ready to continue the treatment
- Patients suffered from any adverse effects.
- Disease progresses during treatment.

Assessment Criteria

a) Subjective Assessment

Table 4: showing gradation method of Subjective parameters

SN	Parameter	Grade 0	Grade 1	Grade 2	Grade 3
1	<i>Vaivarnata</i> of (Tvaka, Nakha, Netravartma, Jihva, Hastapadataala (Pallor)	Absent	Present in any 1-2 of these	Present in any 3-4 of these	Present in all of these
2	<i>Agnimandyata</i> (reduction of digestive fire)	No agnimandya	Delayed digestion of heavy meals	Delayed digestion of light meal	Cannot digest even light meals
3	<i>Daurbalya</i> (weakness)	Not Present	After heavy work, relieved soon and tolerate	After moderate work relieved later and tolerate	After little work relieved later but beyond tolerate
4	<i>Shwasa</i> (dyspnoea)	No dyspnoea	Dyspnoea on heavy work	Dyspnoea on light work	Dyspnoea on heavy work

Before and after therapy, the following symptoms—*Vaivarnata* (skin pallor), *Agnimandyata* (decrease of digestive fire), *Daurbalyata* (weakness), and *Shwasa* (dyspnea)—were graded according to their severity as given in Table no. 4.

b) Objective Assessment

The following assessment were done before & after the treatment

- Hb % -Percentage of Haemoglobin
- RBC - Red blood cell count
- MCV- Mean corpuscular volume
- MCH- Mean corpuscular hemoglobin
- MCHC- Mean corpuscular hemoglobin concentration

Investigations: Screening investigations (base line):

Complete Blood Count (CBC)

Observation and results

Data were examined. The analysis was conducted statistically using chi square test, student's paired and unpaired t test, and Mann Whitney U test. SPSS 27.0 and Graph Pad Prism 7.0 versions of the software were used, and p0.05 is deemed to be the threshold of significance.

Demographic Data

The age distribution of the patients revealed that group A's mean age was 37.6310.31 and group B's was 34.039.78, with a non-significant p value of 0.17 indicating that both groups were comparable. In this study, the distribution of patients by gender revealed that the majority of patients—50 (83.33%)—were female and the majority—53 (88.33%) were married, with family history absent in 43 (71.66%) of the patients. According to this study, the majority of patients—41, or 68.33 percent—were not regular drinkers, while only few patients had tobacco or tea habits. The distribution of patients by occupation revealed that 20 housewives and 27 farmers, respectively, made up the majority of patients. The distribution of patients according to their prakriti revealed that 20 (33.33%) had Vatapittaja Prakriti, 16 (16.66%) had Kaphapittaja, and 12 (20%) had Vatakaphaja Prakriti. The distribution of koshtas revealed that Madhyam koshta was detected in a maximum of 49 (81.66%) patients. Agni was observed to be Manda in 35 (58.33%) of the patients, and 50% of the patients' eating habits were mixed and vegetarian.

Table 5: Effect of therapy on subjective parameters in group A

Parameter	Mean BT	Mean AT	%	SD	SE	t-value	p-value
Vaivarnya	1.3	0.3	76.92	0.47	0.09	14.74	<0.05
Agnimandya	0.8	0.13	79.16	0.81	0.15	4.82	<0.05
Daurbalya	1.86	0.3	83.92	0.57	0.10	17.02	<0.05
Shwasa	0.3	0.03	88.8	0.47	0.09	2.80	<0.05

Table 6: Effect of therapy on subjective parameters in group B

Parameter	Mean BT	Mean AT	%	SD	SE	t-value	p-value
Vaivarnya	1.46	0.36	68.18	0.57	0.10	10.42	<0.05
Agnimandya	1.03	0.33	67.74	0.83	0.15	7.16	<0.05
Daurbalya	1.76	0.73	58.49	0.61	0.11	13.67	<0.05
Shwasa	0.56	0.1	82.35	0.63	0.11	5.03	<0.05

Table 7: Comparison of Hb% in two groups before and after treatment

Hb%	Mean BT	SD	Mean AT	SD	t-value	p-value
Group A	10.66	±1.26	11.53	±1.40	8.72	0.0001,S
Group B	10.44	±1.28	10.83	±1.37	5.23	0.0001,S
p-value	0.63,p=0.52,NS		1.94,p=0.057,NS			

Table 8: Comparison of RBC million/cu.mm in two groups before and after treatment

RBC	Mean BT	SD	Mean AT	SD	t-value	p-value
Group A	4.22	±0.62	4.57	±0.47	3.52	0.001,S
Group B	4.31	±0.58	4.38	±0.56	0.66	0.51,NS
p-value	0.51,p=0.58,NS		1.40,p=0.16,NS			

Table 9: Comparison of MCV(cu micron) in two groups before and after treatment

MCV	Mean BT	SD	Mean AT	SD	t-value	p-value
Group A	83.40	±14.32	84.70	±10.59	0.75	0.45,NS
Group B	81.83	±10.07	81.96	±9.08	0.10	0.90,NS
p-value	0.49,p=0.62,NS		1.07,p=0.28,NS			

Table 10: Comparison of MCH(pico-gm) in two groups before and after treatment

MCH	Mean BT	SD	Mean AT	SD	t-value	p-value
Group A	24.36	±4.88	25.23	±4.20	0.75	p=0.45,NS
Group B	23.92	±3.72	24.06	±3.50	0.10	,p=0.90,NS
p-value	0.39,p=0.69,NS		1.17,p=0.24,NS			

Table 11: Comparison of MCHC (%) in two groups before and after treatment

MCHC	Mean BT	SD	Mean AT	SD	t-value	p-value
Group A	29.18	±1.48	29.85	±1.65	2.58	0.015,S
Group B	29.07	±1.88	29.16	±1.88	0.45	0.65,NS
p-value	0.26,p=0.79,NS		1.65,p=0.10,NS			

Table 12: Comparison of RDW (%) in two groups before and after treatment

RDW(%)	Mean BT	SD	Mean AT	SD	t-value	p-value
Group A	14.30	±1.59	15.12	±1.82	4.27	0.0001,S
Group B	14.94	±1.86	14.36	±1.73	2.39	0.023,S
p-value	1.41,p=0.16,NS		1.69,p=0.09,NS			

Table 13: Comparison of HCT(%) in two groups before and after treatment

HCT(%)	Mean BT	SD	Mean AT	SD	t-value	p-value
Group A	36.73	±3.42	38.69	±3.98	4.79	0.0001,S
Group B	35.93	±3.73	36.68	±4.23	2.33	0.023,S
p-value	0.86,p=0.39,NS		1.89,p=0.06,NS			

Discussion

In Pandu Roga (Iron Deficiency Anemia), which includes a total of 60 patients, a comparison study was undertaken to evaluate the effectiveness of nutritional supplements derived from (Parasbag) Kitchen Garden and Gudharitaki Awaleha. As stated in table no.3, they received treatment for 90 days with dietary supplements purchased from KG and Gudharitaki Awaleha in group A and just Gudharitaki Awaleha 5gm twice a day in group B. Patients were assessed before and after treatment for subjective

parameters like Vaivarnata (skin pallor), Agnimandata (reduction of digestive fire), Daurbalya (weakness), Shwasa (dyspnoea on exertion) as per gradation as shown in table 4 and Objective parameters like hemoglobin percentage (Hb%), Red blood cell count (RBC), Mean corpuscular volume (MCV), Mean corpuscular Haemoglobin (MCH) and Mean corpuscular hemoglobin concentration (MCHC). According to table no. 5, Vaivarnya, Agnimandya, Daurbalya, and Shwasa improved in group A by 76.92%, 79.16%, 83.92%, and 88.8%, respectively. According to table no.6, Vaivarnya, Agnimandya, Daurbalya, and Shwasa improved in group B by 68.18%, 67.74%, 58.49%, and 82.35%, respectively.

In both groups, there was a noticeable improvement in Vaivarnya, Agnimandya, Daurbalya, and Shwasa. However, more patients in group A who received nutritional supplements from (Parasbag) Kitchen Garden and Gudharitaki Awaleha showed improvement than patients in group B who received only Gudharitaki Awaleha. Both groups showed significant improvements in Hb%, RDW, and HCT%, and a comparison between the two groups was not significant, but group A showed a greater improvement than group B as shown in tables nos. 7, 12, and 13. According to tables 8 and 11, group B experienced a non-significant improvement in RBC and MCHC (%) while group A experienced a significant improvement. Both the MCV and MCH groups did not significantly improve, as seen in tables 9 and 10. Thus, it is clear from the foregoing data that group A treated with nutritional supplement from (Parasbag) Kitchen Garden and Gudharitaki Awaleha improved more than group B treated with Gudharitaki Awaleha alone.

Probable mode of action of Gudharitaki Awaleha

Gud (jaggery) and Haritaki (*Terminalia chebula*. Retz.) make up Gudharitaki Awaleha. The Bharat Bhaishajya Ratnavali formulation mentioned in Panduroga. All Acharyas advise Haritaki for the treatment of Pandu roga. The primary etiological factor for Panduroga is Mandagni. With the aid of Haritaki's deepana and pachana qualities, it can be cured. Pandu roga (17) mostly contains vitiated rasa and rakta dhatu. Haritaki, a Rasayana medication, aids in restoring balance to vitiated Dhatu and encouraging the manufacture of healthy Dhatu. Haritaki has antibacterial, antihelminthic, antioxidant, and immunomodulatory effects, according to modern pharmacology (18). Minerals like Iron and calcium are prevalent in jaggery (Gud), a sugarcane product. Jaggery contains 10–13 mg of iron per 100 g. For men and women, respectively, the Recommended Dietary Allowances (RDA) for iron are 17 mg and 21 mg (19). Studies on iron deficiency anemia have shown that jaggery is good at increasing Hb %. 50 patients were randomly chosen and treated with Haritaki Churna with Guda (20gm) for 15 days in a clinical research done by Tayade et al. The level of hemoglobin increased noticeably, and Pandu's clinical characteristics responded favorably to the medication. Gudharitaki is statistically significant in this study (20). 35 children were divided into 3 groups for the study by Shailendra Kumar et al. Patients in one group received Gudharitaki 500 mg/kg/day, while patients in the other group received Punarnava mandura 500 mg twice daily, before meals, and patients in the third group received both medications in a similar dosage for 4 weeks. Panduta demonstrated a 58.82 percent improvement in the Gudharitaki group, a 65% improvement with Punarnava Mandura, and a 67% improvement when both medications were administered simultaneously. The experimental medications had no negative side effects. From this, they deduced that Punarnava mandura, when combined with Gudharitaki, improved iron deficiency anemia in children more than when used alone (21). I. Hudedmani and S. P. Mangoli conducted a study to compare the effectiveness of Haritaki Churna and Amalaki Churna in treating

panduroga (iron deficiency anemia). In one group, they administered Haritaki Churna 1.5g twice daily along with honey prior to food, and in the other group, Amalaki Churna 1.5g twice daily along with honey. Both groups exhibited significant improvement, although Amalaki Churna showed marginally more improvement than Haritaki Churna across the board. Pallor, dyspnea, effort, anorexia, vertigo, weakness, hairfall, bodyaches, glossitis, and improvements in hemoglobin %, Red cell count, and serum all showed improvement. Levels of ferritin (22). In a 45-day single-arm research study, 30 patients were given 12 gms of gudharitaki after meals and lukewarm water by V. Mohan G and R. Shastry V. V. S. All measures showed highly substantial improvement, and they came to the conclusion that Gudharitaki is more beneficial when the related doshas are mostly Vata and Kapha. They discovered that taking 12 grams of gudharitaki orally every day for 15 days reduced symptoms such as dourabalyata, aruchi, asyavairasya, kasa, shwasa, atinidrata, and shotha while gradually raising hemoglobin and RBC levels. (23).

Probable mode of action of organically grown vegetables and fruits acquired from Kitchen Garden

Anaemia can be brought on by nutritional deficits such as those in iron, folate, vitamin B12, and vitamin A. A kitchen garden is very practical and advantageous. A kitchen garden ensures an affordable, reliable, and practical source of fresh vegetables, which are crucial for a balanced diet. Green veggies include vitamins and minerals that aid in illness prevention. Due to a lack of intake of vegetables, especially green leafy vegetables, malnutrition causes issues like anaemia and night blindness. The Kitchen Garden offers nutrient-dense produce that is also free of dangerous chemicals. One of the advantages is that you can spend less money on fruits and vegetables. Fruits and vegetables picked from the kitchen garden are more flavorful than those bought at the store. It results in the effective utilization of kitchen waste products and waste water. The kitchen's waste contains starch, rice hulls, and other organic materials and is heavily organic in nature. It also contains beneficial elements for the soil, like nitrogen, potassium, phosphorus, and others. The organic material in the kitchen wastewater aerates the roots and keeps the soil wet. Water from the kitchen sink can be used to directly water plants. Dishwashing detergent and other harsh chemicals should not be used to water food plants because they may leak into the soil and contaminate the fruits and vegetables (24). The study's conclusions showed that okra may be irrigated with sink water without further purification. A very good supply of water for irrigating homesteads is household kitchen waste water (25). As a result, it aids in the recycling of kitchen waste. Without the possibility of contamination or pesticide use, the items cultivated in the kitchen garden are nutrient-rich, particularly in phytochemicals, antioxidants, vitamin C, vitamin A, vitamin B, and folate.

It aids in health promotion. They include a lot of nutrients and vitamins. Iron and vitamins, especially vitamin B, are crucial for the synthesis of RBCs and hemoglobin. Therefore, these nutritional supplements, which are conveniently accessible from Kitchen Garden (Parasbag), showed greater improvement. Meena Shelgaonkar, et. al. In 2018, this correlation study was carried out by Aamhi Aamchya Aarogyasathi (AAA), the implementing and knowledge partner of AFIF, with the assistance of The Sahayak Trust, in order to comprehend the impact of an Organic Kitchen Garden for Nutrition (OKGN) to address nutritional deficiency anemia. The research reveals a considerable rise in Hb of 1.25gm following regular ingestion of organic veggies from OKGNs. This is a big advancement, and it has also been shown that OKGNs are a far more palatable and successful method of treating nutritional deficiency anemia than the conventional administration of Fe+Folic acid tablets, which are frequently

avoided due to unpleasant side effects. Additionally, AAA studied the Hb of 906 women over the course of 18 months and discovered that 33.44% of them had an increase of 1.1 to 2 gm and that 39% of them had a small improvement of less than 1 gm. This has to start with education about anemia and frequent vegetable eating (26).

Conclusion

From this study, it can be inferred that Panduroga is associated to iron deficiency anemia, which, according to modern science, is the primary cause. In this study, married women who had Mandagni and worked as farmers were more likely to develop Panduroga. According to the study's findings, group A treated with nutritional supplement made from Parasbag Kitchen Garden (Parasbag) and Gudharitaki Awaleha improved more than group B treated with Gudharitaki Awaleha alone. This is due to the fact that produce grown organically is rich in nutrients, preventing nutritional deficits. It assists in raising the hemoglobin percentage. The villagers' understanding of the proper eating of fruits and vegetables grown organically and purchased from KG would be raised by this study. It is advised that more communities adopt it to eradicate anemia (iron deficiency) like Kelapur did.

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Conflict of Interest:

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