

Single Arm Clinical Study to Access the Role of Shigru Leaves Powder as A Dietary Supplement In Protein Energy Malnutrition [Pem] In Children

Dr. Shubham Bhupal Dodal¹, Dr. Kalpana K. Jadhav², Dr. Kalpana K. Jadhav

¹PG Scholar, ²Guide, ³HOD

Yashwant Ayurvedic College, post Graduate Training and Research Center, Kodoli

Received : 12 November 2023

Accepted : 22 December 2023

Abstract

Most of the diseases are known to afflict human being these includes infectious, metabolic, genetic and nutritional deficiency disorder. Out of these nutritional diseases are by far the most common throughout the world, among them protein energy malnutrition is the commonest one. It is the most widespread health and nutritional problem in developing countries. A silent and largely invisible emergency malnutrition plays a role in more than half of the nearly 11 million deaths each year among children under age five. WHO identifies malnutrition as the single most important risk factor for diseases. It can be correlated with karshya as per Ayurveda. Karshya is included in Astanindita - eight most unwanted constitutions. It is also described in our classics that if the disease Karshya is not treated in proper time complications like Shwasa, Kasa, Gulma, Pliha, Kshaya, Arsha, Udar roga and Grahani roga occur. This grievous condition especially in children requires immediate medical attention. Shigru is a dravya is having Laghu, ruksha and Teekshna attributes. So it does rochana, deepana and pachana karma in body and helps in increasing nutrition of protein energy. So present study is an attempt to study clinical efficacy of shigru leaves powder in Protein energy malnutrition in Children.

Keywords - Protein, energy, malnutrition, Shigru.

Introduction:

According to WHO malnutrition directly responsible for 3, 00000 deaths per year in children younger than 5 year in developing countries and contributes indirectly to over ½ the deaths in child worldwide. More than 35% of all preschool children in developing countries are underweight. More than 70% of children with

PEM live in Asia, 26% in Africa and 4% in Latin America and Caribbean. Underweight and stunted women are at greater risk of obstetric complication and low birth weight deliveries. Low birth weight infants tends as adults to remain shorter than those of normal birth weight, the result is the cycle of malnutrition carried over to the next generation.¹ On 1 April 2016, the United nations (UN) general Assembly proclaimed 2016 – 2025 the united nations Decade of action on Nutrition.² Karshya is a disease & also a symptom described in many diseases. Malnutrition, Manasika Bhavas,

Author Correspondence

Dr. Shubham Dodal

Yashwant Ayurvedic College, Kodoli

Email : shubhamdodal414@gmail.com

excessive exercise are the main causes of Karshya . Now-a-days lifestyle is so busy that people can't follow Pathyapathya or they don't know about their food quality and quantity, their routine work. So, between very tenseful life, nobody has no time & in fast life fast food is more preferable food to eat, cold drinks are more favourable to drink. So, according to Ayurveda, Agnidushti occur & Bhutagni followed by dhatvagni effected & all the Dhatus do not get proper nourishment. Shigru is a dravya is having Laghu, ruksha and Teekshna attributes. So it does rochana, deepana and pachana karma in body and help in increasing nutrition of protein energy. Protein energy malnutrition can be compared with Karshya. Due to this, the present study entitled "Single arm clinical study to access the role of shigru leaves powder as a dietary supplement in protein energy malnutrition in children" has been selected.

Aims :

To observe the efficacy of shigru leaves powder in Protein energy malnutrition in Children.

Objectives :

1. To study the Protein Energy Malnutrition.
2. To study Shigru.
3. To study the effect of shigru leaves powder in Protein energy malnutrition in Children.

Material and Methods:

Literature review is done through all available Ayurvedic Samhitas, texts, various research papers available in Journals and online data available.

Review of Literature:

Protein Energy Malnutrition³

Protein-energy malnutrition or PEM is the condition of lack of energy due to the deficiency of all the macronutrients and many micronutrients. It can occur suddenly or gradually. It can be graded as mild, moderate or severe. In developing

countries, it affects children who are not provided with calories and proteins. In developed countries, it affects the older generation.

Classification of Protein Energy Malnutrition

- Primary PEM
- Secondary PEM

Primary PEM

This type of protein-energy malnutrition is found in children. It is rarely found in the elders, the main cause being depression. It can also be caused due to child or elder abuse. In children, PEM is primarily of two types:

- Kwashiorkor
- Marasmus

Symptoms of Protein Energy Malnutrition:

- Apathy and irritability
- The patient becomes weak and inefficient.
- Impaired cognition and consciousness.
- Temporary lactose deficiency
- Diarrhoea
- Gonadal tissues atrophy
- Causes amenorrhoea in women
- Causes libido in both men and women
- Weight loss
- Shrinking of muscles
- Protrusion of bones
- The skin gets thin, pale, dry, inelastic and cold

Shigru :

- **Latin Name** - Moringa oleifera Lam.
- **Natural order** - Moringaceae
- **Guna** - Swedopaga, Krimighna, shirovirechanopaga, katuskandha, haritak varga (Ch.), Shirovirechan, varunadi (Su.)
- **Vernacular Name⁴** –
- Saanskrita – Shobhanjana (very beautiful), Sheegru (which have very Tikshna guna), Tikshana gandha (which have very strong odour),

Akshiva (capable to destroy mada), Mochaka (capable to destroy disease).

- Gujarati – Saragavo
- Hindi – Sahinjan
- English – Horse radish, drum stick
- Bangali - Sajina
- Punjabi – Sohajana
- Marathi – Sevaga, Segata
- Tamil - Marvgai
- Telugu - Munaga

- **Habitat** – A beautiful tree wild in the sub himalaya range and commonly cultivated in India and Burma.
- **Parts used** - Bark, root, fruit, flower, leaves, seeds and gum.
- **Properties**⁵ –
 - Rasa – Katu, Tikta
 - Guna – Laghu, Ruksha, Tikshna
 - Virya – Ushna
 - Vipaka – Katu
 - Dosha Karma – Vata Kapha Shamaka
 - Vyadhi Karma – Krimiroga, Udararoga, Vrana, shotha, Vidradhi, Nadidorblaya, Ardita, Pakshaghata, Agnimindya, Shoola, etc.

Morphology of Plant :

A small or middle sized tree; bark corky; wood soft; root pungent; young parts tomentose. Leaves. Usually 3 pinnate, some tie 45 cm. long; rachis slender, thickened and articulated at the base; pinnae and pinnules opposite, deciduous, their rachides very slender, articulated and with a gland at the articulation; ultimate leaflets 12-20 by 6-10 mm., the lateral elliptic, the terminal obviate and slightly larger than the lateral ones; nerves obscure; petiolules of the lateral leaflets 1.5-2.5 mm., those of the terminal 3-6 mm. long. Flowers white, in large puberulous panicles. Calyx-lobes linear lanceolate – reflexed puberulous outside. Petals spathulate, veined. Stamens 5 fertile, alternating with 5-7 antherless ones; filaments villous at the base. Ovary oblong villous; style

cylindric pods reaching 45 cm. long 9-ribbed. Seeds 3 angled, the angles winged.

Constituents :

Seeds yield on simple pressure a clear limpid almost colourless, rather thick at ordinary temperature” fixed oil 36.6% known as Beni or Ben or Moringa oil. It contains 60% of liquid oil and 40% of white solid fat. The gum is in soluble in water Ben oil contents, Myristic acid 7.3%, palmitic acid 4.2% oleic acid 68.8%, stearic acid 10.8%, Behenic acid 8.9% and lignoceric acid 3%, the unsaponifiable matter, occurring to the extent of 3.7% in the oil consisted of 9% of phytosterol. The oil is found to be good source of a Behenic acid in nature. The oil has specific gravity of 0.912 to 0.915 at 60°F and is almost devoid of odour and flavour, sponifies slowly and does not turn rancid.

Material and Methods:

Children were selected from outside patient Department of Institute. All the children were selected for Protein Energy malnutrition (PEM) having symptoms weakness, less fat deposition at buttocks), Less appetite, and Disturbed sleep.

Sample Size: 10 Children selected.

Inclusion Criteria

1. For the study of PEM, children from the age of 5 years to 12 years of either sex with the problem of poor growth & under development according to IAP classification 61 – 80 % (Nutritional grade – I & II) without any chronic diseases were selected from the OPD of our college Hospital.
2. Willing and able to participates in the study.

Exclusion Criteria:

1. Patients under 5 year & above 12 year were excluded.

2. Patients who were seen with the evidence of Krimi & Grahanidosha were first treated with medicine & then they were included in this study.
3. Patients having systemic disorders, congenital anomalies, neurological disorders endocrine disorders & anatomical defects etc. were excluded.
4. According to IAP classification more than 80 % (Normal) and less than 61 % (Nutritional grade III – IV) were excluded.

Withdrawal Criteria:

- Patients which not in regular follow up
- Patients developing any serious adverse effects of the treatment.
- Patients not willing for clinical trial.

Assessment Criteria:

The improvement in patients will be assessed on the basis of relief in the signs and symptoms of the disease. For this purpose main signs and symptoms were given score according to their severity. The details of the score adopted for the main signs and symptoms in this study are as follows:

Table 1: Assessment Criteria

No.	Parameter	Finding	Grades
1	Weakness	Dull	0
		Moderately active	1
		Active	2
		Very Active	3
2	Less fat deposition at buttocks	Deeply seated with extra fat	0
		Covered buttock	1
		Prominent Buttock	2
		Relatively look larges	3
3	Less appetite	Child himself asks food and also takes adequately	0
		Child himself asks food but not take adequately	1
		Child does not ask but takes food considerably by required amount	2
		Child does not take food considerably even by force	3
4	Disturbed sleep	Long \geq 8 hours and sound	0
		short \geq 8 hours but sound	1
		Disturbed	2
		Mostly disturbed sleep	3

Treatment:

Table 2: Treatment

Sr. No.	Treatment	Group
1	Route of Administration	Oral
2	Drug with dosage	Shigru leaves powder 500 mg
	Anupana	Warm water or warm milk
3	Time	twice a day
5	Duration	21 days
6	Evaluation	At 0 th day and 3 rd week
7	Follow up	3 rd week

Statistical Analysis : By Paired 't' test.

Results:

Effect of Shigru leaves powder on clinical symptoms of PEM in Children is as follows

Table 3: Results

Cardinal Symptoms	N	Mean BT	Mean AT	S.D.	S.E.	't'	P value	Result
Dourbalya	10	1.4	0.4	0.667	0.211	4.7393	P<0.001	H.S.
Krusha Parshwa	10	1.9	0.6	0.455	0.143	9.09	P<0.001	H.S.
Alpa Kshudha	10	1.8	0.9	0.322	0.101	8.91	P<0.001	H.S.
Anidra	10	1.8	0.5	0.455	0.143	9.09	P<0.001	H.S.

(BT- Before treatment, AT- After treatment, S.D- Standard Deviation, S.E.- Standard Error of mean)

Discussion and Conclusion:

- In developing countries, most of the children are more prone to Protein Energy Malnutrition which causes due to exposure to sunlight, and infectious diseases, unhealthy food habits, lack of personal attention, and physical strain due to playing.
- It results due to Agnimandya and gives less nutrition to child.
- Shigru is a drug having Laghu, ruksha and Teekshna attributes. So it does rochana, deepana and pachana karma. So it alleviates dhatvagnimandya. As digestive fire is normalised, children gets proper nutrition.
- Shigru leaves powder decreases all assessment criterias of PEM namely weakness, less fat deposition at buttocks, Less appetite and Disturbed sleep. It was proven statistically significant.

References :

1. <https://extranet.who.int/nutrition/gina/en/node/23140>
2. <https://www.who.int/news-room/factsheets/detail/malnutrition>
3. <https://my.clevelandclinic.org/health/diseases/23099-kwashiorkor>
4. Prof. P. V. Sharma, Dravyaguna vijnana, Chaukhambha Bharati Academy, Varanasi, part 2, Reprint edition 2009, page no. 111.
5. Prof. P. V. Sharma, Dravyaguna vijnana, Chaukhambha Bharati Academy, Varanasi, part 2, Reprint edition 2009, page no. 112.