



## A CLINICAL STUDY ON THE EFFICACY OF AMRITAPRAASHA GHRITA IN CHILDREN WITH KARSHYA (CHILDHOOD UNDERNUTRITION)

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### ABSTRACT

**Aim of study:** Karsya is very common disease in children of age group 6months to 5 years. In ayurveda Karshya is described as Apararpanjanya vyadhi & Due to Rasavaha Shrotodusti wherevata dosha plays a very important role in the pathogenesis, along with that vitiated Pitta. Aim of article is to review antimicrobial activity against various organisms and nutritional value of drug. **Material and Methods:** Literary review was conducted with help of several important Ayurvedic and Modern text books, Research papers, Journals to collect information on Amritpraasha Ghrita. The description of Karsya clearly correlates with under nutrition. Karshya is described in almost all samhita from both point of view i.e. preventive as well as curative. **Result:** Amritpraasha Ghrita orally is effective in improving anthropometrical measurements like weight, mid arm circumference, Chest circumference and body mass index and in improving the associated complaints of Karshya like Kshudha and appearance. **Interpretation & Conclusion:** Karshya can be coherently and efficaciously managed using Amritpraasha ghrita and thus prevent further complications.

**KEYWORDS:** Karshya, Undernutrition, Malnutrition, Apararpanjanya vyadhi, rasavaha Shrotodusti, Antimicrobial activity, Amritpraasha Ghrita.

### INTRODUCTION

According to Acharya Charaka, over lean (Karshya) persons are described under eight despicable persons (Ashtau-ninditiya) along with over obese (Medasvi) person. An over lean person (Karshya) has dried up buttocks, abdomen, neck (Shushka-sphic, Udar, Greeva), prominent vascular network (Dhamanijala santataha), remnant of skin and bone (Twagasthi shesho, atikrishna), and thick nodes (Sthola parva).<sup>[1]</sup> According to Acharya Shushruta, lean and fattiness of body depends upon Rasa-dhatu.<sup>[2]</sup> Karshya may be correlated with a possible condition of under nutrition or protein energy malnutrition. Malnutrition or impaired nutrition leads to growth retardation low resistance to infections & many other health problems. According to the WHO, malnutrition is a global problem, having adverse effects on the survival, health performance and progress of

population groups. The effects are of the highest order in the resource limited countries such as India.<sup>[3]</sup>

Under nutrition is strongly associated with shorter adult height, less schooling, reduced economic productivity and, for women, lower offspring birth weight. low birth weight and under nutrition in childhood are risk factor for diabetes, hypertension, and dyslipidemias in adulthood.<sup>[4]</sup>

### LITERARY REVIEW

#### Ayurveda Literature

In the Ayurvedic literature, description of Karshya (i.e. under nutrition or protein energy malnutrition) is available from the Ati - Krishta, Balshosha, Phakka Roga & Parigarbhika Roga, Shushka Rewati. Nutritional deficiency can be correlated with Karshya. Other

nutritional deficiency in childhood in which Karshya is present as an early symptom.<sup>[7]</sup>

1. Balshosha - This disease is explained by Acharya Vagbhata. As the name indicates, there will be Shosha i.e., emaciation of the body due to depletion of subcutaneous fat and tissues.
2. Phakka Roga - Phakka-Roga is a unique and the only nutritional disorder or Kuposhana JanyaVyadhi explained by Acharya Kashyapa. No other author has explained this disease. This implies that there will be continuous deterioration of general health status of the child.
3. Parigarbhika Roga - This is a special nutritional disorder explained in Ayurveda, which highlights the development of malnutrition during infancy period.
4. Shushka Rewati - This Graha disease is only explained by Acharya Vagbhata. In this condition, in spite of taking complete or balanced food regularly, the child is unable to gain weight and height as per age and becomes emaciated day by day.

#### Nirukti of Karshya<sup>[8]</sup>

कार्श्य-“कृशस्त्वावःकार्श्य” According to this, Karshya Means a person who is lean and emaciated.

#### Nidana

- Ruksha Anna Pana Sevana (Indulgence in rough food and drinks)
- Langhana (Fasting)
- Pramitashana (Little diet)
- Kriyatiyoga (Excessive subject to evacuating therapy)
- Shoka (Grief)
- Chinta (Worries)
- Bhaya (fear)
- Shrama (excessive physical and mental activity)
- Vega-Nidra-Trusha-Kshudhanigraha (Suppression of natural urges, such as - sleep thirst and hunger)
- Atishrama (Excessive exercise)
- Atisnana Abhyasa (Excess bath)
- Ruksha Udvartana (Excessive non-unctuous anointing to the persons)
- Snana Abhyasa (Indulgence in bath)
- Prakruti (Constitution)
- Beejadosha (heredity)
- Jara (Old age)
- Vikara-Anushaya (Continued disorder)
- Krodha (Anger) make a person lean.

#### Samprapti

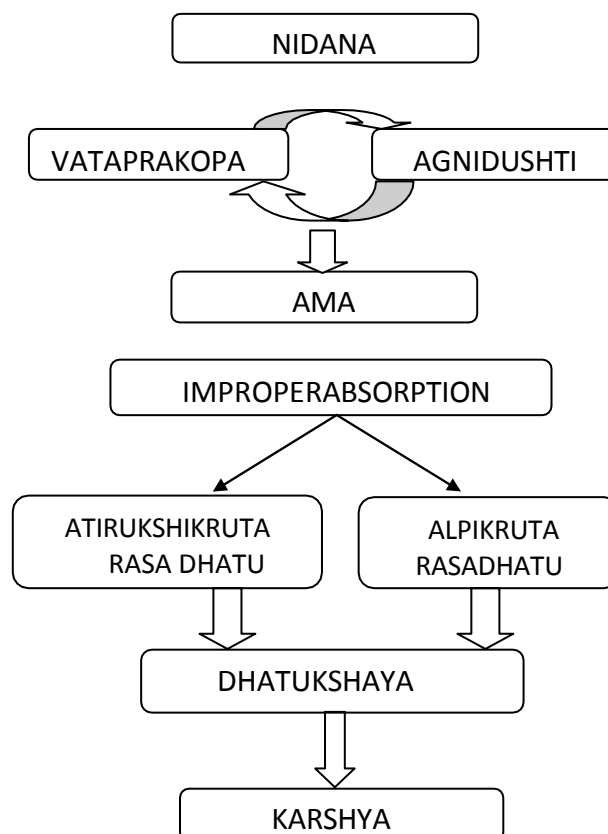


Figure 1: Samprapti of Karshya.

Due to the indulgence in the aetiological factors, Vata Dosha gets vitiated by virtue of its Ruksha Guna. As Vata dosha, Agni and Rasa are interrelated, the vitiation of

Vata dosha leads to Agni dushti or Agni dushti may lead to Vata Prakopa. At this stage, either vata or agni reduce the quantity and unctuousness of the nourishing Rasa

Dhatu which inturn adversely affects the circulation of Rasadhatu in the body. This constrains the proper nourishment of the remaining dhatus, which leads to Dhatukshayaandul timately manifest as Karshya.

### Samprapti Ghataka

- Dosha: VataVridhdi Pittakshaya Kaphakshaya
- Doosha: Ras akshaya a leading to Uttarotara Dhatukshaya especially Mamsa, Meda.
- Agni: Manda & Vishama.
- Aama: Jatharagnijanya & dhatwagnijanyaAma.
- Shrotas: Rasavaha, Mamsavaha, Medovaha & involvementofother Srotasesalso Dushti
- Prakaara: Sanga
- Udbhava Sthaana: Amashaya, Pakwashaya.
- Sanchara Sthaana: SarvaShareera Rasayanees.
- Adhishtaana: Rasavaha Srotas.
- VyatkaSthaana: SarvaShareera
- Vyaadhi Prakaara: Chirakari.
- Sadyaasadyata: Naveenavastha-Sukhasadya, Deergha Kaal anubhandha- Kashtasadya
- Roga Maarga: Baahya (RasaRaktaadi Dhatu)

### Upadrava

- Kasa(cough)
- Swasa(dyspnoea)
- Kshaya(wasting)
- Shosha(emanciation)
- Gulma(Gascious tumour)
- Arsha(piles)
- Udararoga & Grahaniroga(abdomialdiseases)
- Pliharoga(spleen disorders)
- Raktapitta(bleedingdiseases)
- Agnisada(indigestion)
- Jwara(fever)
- Vatavyadhi

### Lakshana of Karshya

The over lean is the person who has dried up buttocks, abdomen and neck, prominent vascular network, only remnant of skin and bone and with prominent joints.

### Karshya Chikitsa

Line of treatment is Nidan parivarsana, Samshodana and Samshamana.

Karshyais treated by laghu Samtarpana and Brimhana medicines for promoting bulk.

### Complications of Karshya

- Karshya is a causative factor (Nidana) and predisposing factor of other diseases like Udara roga, Gambira hikka, Sannipatika Atisara, Gulma, Shosha, Kshyaja Kilaibya.
- Karshya is a pre monitory symptom(Purvarupa) of Arsha and Udara Roga.
- Karshya is a bad prognostic sign of Shvayathu and Hikka.

### Sadyasadyata

From treatment point of view, atikrusha is included among the 8 types of undesirable persons and mentioned that such persons are difficult or impossible to treat.<sup>[40]</sup> But while comparing Sthoulya and Karshya its told that, "sthoulya karshyevaram karshyam" i.e., a Krusha person is easier to treat than a sthula person. In Karshya Roga, Brihmana therapy can be implemented and thus it is easier to treat and is said to be Sukha Sadya.<sup>[41]</sup> Thus when a Krusha or Atikrusha person follows correct method of Dinacharya and Ritucharya and doesnot indulge in ahara-vihara manasika-anya nidanas mentioned for Karshya, then a Krusha person can be treated and live a healthy life. By the use of madhura snigdha ahara a karshya person can be brought into normalcy.<sup>[42]</sup> If the person who is Swabhawatha Atikrisha, Mandagni, Nirbala then the person's Atikrushata will be Asadya for Chikitsa.<sup>[43]</sup>

### Karshya as different Avastha<sup>[39]</sup>

Karshya can be seen as Prakruta, avastain Vata prakruti, garbhini avastha, vruddha avastha, in adana kala and in Jangala desha.

Karshya can function as an etiological factor in Pureeshavaha Srotodushti, Vishama Jwara, Atisara, Jalodara Shotha and Pittaja Pratishyaya.

Karshya presents as a Roopa in diseases like Mamsa-Meda-Asthi Kshaya, Rasa pradoshaja Vyadhi, Krusha parmeha, Vataja Hrudroga, vataja nanatmaja vyaadhi, Pureeshaja Kaphaja Krimi, Sannipatika Jwara, Grahani, UdaraRoga, Vatika Unmada, Vataja Moorcha, Pishachadusta, Raktagata Vata and Jara Shosha.

Karshyacanalsooccuras Upadravain Vataja Gulma, vatikaunmada, Phiranga, Hikka, Swarabheda, Trushna, Kaphaja Grahani, Ashmari, Jwara and chardi.

### Chikitsa of Karshya

As Karshyaisa Vata Pradhan Vyadhioccurrsdueto Dhatukshaya the general line of treatment should be vata shamanaand brimhana hence, Vata Upakrama can be adopted. As specific line of treatment in Karshya is based on Brimhana line of management Acharya Charaka explains that in Karshya it should be Laghu Santarpana in nature. Because in Krisha person Agni, Sharirabala and other related aspects are functioning poorly. The principle line of management of karshya should be in following manner:

- Nidana parivarjana
- Samshamana
- 1) Samshodhana
- 2) Pathyapathya

### 1) Nidana parivarjana<sup>[39]</sup>

The Nidanas like Ruksha Annapana, Vatika Annapana, Alpa Bhojan, Kashaya, Katu, Tikta Rasasevana, Ati Vyavaya etc. should be avoidedand is the first line of treatment in Karshya. Bythis, further progression of

disease will be halted and future relapse of the same disease can be prevented.

## 2) Samshamana<sup>[39]</sup>

### • Agni Deepana

In Karshya, the first line of samshamana chikitsais to improve the proper functioning of Agni through the Aushadhis, Pathya Ahara and Vyayama.

### • Pachana

In Samprapti of Karshyait is observed that the Amahas important role in the manife station of the disease. So to treat Karshya, the prerequisite is to adopt Ama Pachana Chikitsa. After giving the Deepana Dravyas next Pachana Dravyas like Shunti can be administered.

Shamana therapy is conservative treatment. It is mainly employed in the form of drug treatment according to severity of diseases as well as the condition of the Rogi.

Some examples of Samshamana drugs are Aswgandha Churna, Aswagandhaghrita, Karshyahara yoga etc.

## 3) Samshodhana<sup>[39]</sup>

Karshyaisana patarp anajanyavyadhi. Hence Brimhanathera pyisindicated here but mridu Samshodhana can be advised.

Samshodhana therapy is of two types:

- A) Bahir Parimarjana-Taila Abhyanga, Snigdha Udvartana is indicated in Krishna patient.
- B) Antaha parimarjana - In the context of Atikarshya Acharya Charaka quotes that Doshavasechana should be performed. Acharya Susruta and Vagabhat are commended Brimhana Basti having Mridu, Snigdha etc properties.

## Rasayana and Vajeekarana

Ancient Acharyas opines that Rasayana, Vajeekarana, Balya, Brimhaniya, Jeevaniya type of drugs should be administered specially the drugs belonging to Madhura Skanda, Along with that Aswgandha, Shatavari, Bala, Atibala, Vidarikanda, Nagabala etc. are recommended by Acharya Sushruta.

## 4) Pathyapathya

Table: Pathya Aahara and Vihara of Karshya.

<b>PATHYAAHARA</b>	<b>PATHYYA VIHARA</b>
<b>SukaVarga:</b> Shali, Shasthika Shali, Godhuma.	Atimatra Swapna
<b>ShimbiVarga:</b> Mamsa, Rajamamsa, Atmagupta Phala.	Harshana
<b>MamsaVarga:</b> Ajamamsa, Tittira, Varaha, Kravyadi, Gramya, Matsya Mamsa.	Nitya abhyanga
<b>ShakaVarga:</b> Vidarigandha, Tanduliyaka, Munjataka.	Snigdha Udvartana
<b>PhalaVarga:</b> Kharjura, Panasa, Narikela, Badara, Vatama, Draksha.	SnigdhaSnana
<b>DugdaVarga:</b> Godugdha, Srutasheeta Dugda, Ghrita, Dadhi, FreshDugda, Navaneeta.	use of Sugandita Dravyas and Abharanas
<b>TailaVarga:</b> Grhita, Tila taila.	
<b>MadhuVarga:</b> NavaMadhu	
<b>IkshuVarga:</b> Ikshu rasa, Guda, Sharkara	
<b>MadhyaVarga:</b> Madhya, Sura, Maireya.	
<b>Kritanna:</b> Vilepi, Mamsarasa, Siddha Yusha, Nnsankarita Odana, Gaudika.	

Table: Apathya Aahara And Vihara of Karshya.

<b>APATHYA AHARA</b>	<b>APATHYA VIHARA</b>
Vatalahara, rukshaahara, kashaya, alpa- ashana.	Ativyaayama-adhyayana-shoka-dhyaana-ratrijaagarana-pipaasa-kshut

Amritapraasha Ghrita is selected as the Study Drug and an attempt was made in the current study to analyse the effect of the drug in Karshya (Grade 1 & 2 under nutrition) in children. Ghrita is considered as nectar for human beings. Amritapraasha Ghrita when taken with Go Ksheera or mamsa rasa will improve Bala, Pushti and Retas and also promotes mrudutwa and swaravarna prasada. Ghrita is Hita for Rasa and Shukra and is indicated in Kshata Ksheena and Ura Kshata. Thus it might produce the Brimhana effect on the different

tissues of the body. Hence this Ghrita is chosen, as the indications of this Ghrita matches with the clinical conditions of Karshya and Ghrita in general will have Rasayana effect.

## Thepharmaco-dynamics of the ingredients of Amritapraasha Ghrita

SANSKRIT NAME	RASA	GUNA	VIRYA	VIPAKA	DOSHAGH-NATA	KARMA
1)Jivaka (Sub: Vidarikanda)	Madhura	Guru Snigdha	Sheeta	Madhura	VataPitta	Brumhana Balada Jwaraghna
2)Rishabhaka (Sub:Vidarikan da)	Madhura	Guru Snigdha	Sheeta	Madhura	Vata Pitta	Brumhana Balada Jwaraghna
3)Veera	Madhura Tikta Kashaya	Laghu Snigdha	Sheeta	Katu	Tridosha	Medhya Kushtaghna Balya
4)Jivanti	Madhura	Laghu Snigdha	Sheeta	Madhura	Vata Pitta	Balya Kshayahara Brumhana
5)Shunti	Katu	Laghu Snigdha	Ushna	Madhura	KaphaVata	Deepana Rochaka
6)Shati	Katu Tikta Kashaya	Laghu Tikshna	Ushna	Katu	KaphaVata	Kasahara Swasahara
7)Shalaparni	Madhura Tikta	Guru Snigdha	Ushna	Madhura	Tridosha	Angamarda prashamana
8)Prushniparni	Madhura Tikta	Laghu Tikshna	Sheeta	Madhura	Tridosha	Balavardhaka
9)Mudgaparni	Madhura	Laghu Ruksha	Sheeta	Madhura	Vata Pitta	Kshayarogahara
10)Mashaparni	Madhura Tikta	Laghu Snigdha	Sheeta	Madhura	Vata Pitta	Jeevaniya Sukrajanana
11)Meda (Sub:Shatvari)	Madhura Tikta	Guru Snigdha	Ushna	Madhura	VataPitta	Balya Vrushya Shukrala
12)Mahameda (Sub:Shatvari)	Madhura Tikta	Guru Snigdha	Ushna	Madhura	VataPitta	Balya Vrushya Shukrala
13) Kakoli (Sub: Aswagandha)	Kashaya Tikta	Laghu Snigdha	Ushna	Madhura	VataKapha	Kantikara Viryaprada Balaprada/Balya Rasayana Sukrala
14)Ksheera kakoli (Sub: Aswagandha)	Kashaya Tikta	Laghu Snigdha	Ushna	Madhura	Vatakapha	Kantikara Viryaprada Balaprada/Balya Rasayana Sukrala
15)Brihati	Katu Tikta	Laghu Ruksha	Ushna	Katu	KaphaVata	Kasahara Shothahara
16) Kantakari	Tikta Katu	Laghu Ruksha	Ushna	Katu	Kapha	Swasahara
17) Sweta Punarnava						Shothahara Panduhara Mutrala
18)Rakta Punarnava	Madhura Tikta Kashaya	Laghu Ruksha	Ushna	Madhura	Tridosha	Shothahara Panduhara Mutrala
19) Madhuka	Madhura	Guru Snigdha	Sheeta	Madhura	Vata Pitta	Swarya Kasahara
20) Kapikachu	Madhura Tikta	Guru Snigdha	Ushna	Madhura	Vata	Balya Vrushya
21) Shatavari	Madhura Tikta	Guru Snigdha	Ushna	Madhura	VataPitta	Balya Vrushya Shukrala
22) Riddhi (Sub:Varahi kanda)	Katu Tikta Madhura	Laghu Snigdha	Ushna	Katu	Vata Pitta	Balya Rasayana Svarya Varnya Amaghna
23) Vriddhi (Sub:Varahi kanda)	Katu Tikta Madhura	Laghu Snigdha	Ushna	Katu	Vata Pitta	Balya Rasayana Svarya Varnya Amaghna
24) Parushaka	Madhura	Laghu Snigdha	Sheeta	Madhura	Pitta Vatahara	Kshayahara Jwarahara
25) Bharangi	Tikta Katu	Laghu Ruksha	Ushna	Katu	KaphaVata	Yakshmahanti Swasahara
26) Mrudvika	Madhura	Guru Snigdha	Sheeta	Madhura	VataPitta	Brumhana Kshayahara
27)Shringataka	Madhura Kashaya	Guru Ruksha	Sheeta	Madhura	Pitta	Vrushya Balya Dahashamaka
28) Tamalaki	Tikta Kashaya Madhura	Laghu Ruksha	Sheeta	Madhura	KaphaPitta	Balya Rochani
29)Vidarikanda	Madhura	Guru Snigdha	Sheeta	Madhura	VataPitta	Hrudya Vrushya Jwaraghna
30) Pippali	Katu	Laghu Snigdha Tikshna	Anushna Sheet	Madhura	KaphaVata	Kasahara Kshayahara Rasayana



31)Bala	Madhura	Laghu Snigdha Picchila	Sheeta	Madhura	VataPitta	Hrudya Shukrala Balya
32) Badara	Madhura Amla	Guru Snigdha	Sheeta	Madhura	VataPitta	Kshayahara
33) Akshotaka	Madhura	Guru Snigdha	Ushna	Madhura	Vata	Pushtikaraka
34)Kharjura	Madhura	Guru, Snigdha	Sheeta	Madhura	VataPitta	Rakta - prasadana Vrushya
35) Vatama	Madhura	Guru Snigdha	Ushna	Madhura	Vata	Vrushya Balya
36) Abhishuka	Madhura	Guru Snigdha	Ushna	Madhura	Vata	Brumhana
37) Dhatri	Lavana Varjita Pancha Rasa	Guru Ruksha Sheet	Sheeta	Madhura	Tridosha hara	Chakshushya Vrushya Rasayana
38)Ikshu	Madhura	Guru, Snigdha	Sheeta	Madhura	VataPitta	Vrushya Balya
39) Chaaga Mamsarasa	Madhura	Guru Snigdha	Ushna	Madhura	Vata	Kshayahara Balya
40)GoKsheera	Madhura	Laghu Snigdha	Sheeta	Madhura	Pitta	Balya Vrushya
41)GoGhrita	Madhura	Snigdha Saumya Mridu Guru	Sheeta	Madhura	Pitta Vata	Ayurvedhaka Balavardhaka Ojovardhaka Vayasthapak
						a Dhatu-poshaka
42) Madhu	Madhura	Laghu Snigdha	Ushna	Madhura	Tridosha	Dhatu-poshaka
43) Sarkara	Madhura	Guru, Snigdha	Sheeta	Madhura	VataPitta	Vrushya Balya
44)Maricha	Katu	Laghu	Ushna	Katu	VataKapha	Pratishyayah ara Kasahara
45)Twak	Katu, Tikta Kashaya	Laghu Ruksha Tikshna	Ushna	Katu	KaphaVata	Ojovardhaka Raktashodhaka
46) Ela	Katu, Madhura	Laghu Ruksha	Sheeta	Madhura	Tridosha	Chardinigra- hana Balya
45) Patra	Katu, Tikta Kashaya	Laghu Ruksha Tikshna	Ushna	Katu	KaphaVata	Aruchihara
48)Nagakesara	Kashaya, Tikta	Laghu	Ushna	Katu	KaphaPitta	Balya Vajikarana

### Review of Modern Literature

Under nutrition is a condition in which there is inadequate consumption, poor absorption or excessive loss of nutrients. The term malnutrition refers to both Under nutrition as well as Over nutrition. However, sometimes malnutrition and protein energy malnutrition (PEM) are used interchangeably with under nutrition.<sup>[15]</sup> Growing children are most vulnerable to its consequences.

Under nutrition which includes wasting (low weight for height), stunting (low height for age) & under weight (low weight for age).

### Definition

According to WHO definition, "malnutrition involves a cellular imbalance between supply of nutrients & energy & the body's demand for them to ensure normal growth, maintenance & specific tissue functions".

The most common form of malnutrition in children is protein energy malnutrition (PEM).

### Etiology

- Poverty
- LBW (low birth weight)
- Infections
- Population Growth
- Poor Feeding habits
- High pressure advertising of baby foods.

- Social factors and working parents.

### Symptoms of Mild/Moderate Malnutrition

- Weight loss or not growing or putting on weight at the expected rate (faltering growth).
- Low body fat muscle mass.
- Mood swings, anxiety, irritability, learning issues or loss of clarity.
- Weakness or not active like other same age children.
- Anaemia.
- Bone and Joint pain.

### Protein Energy Malnutrition (PEM)

The World Health Organization (WHO) defines PEM as range of pathological condition arising from co-incident lack in varying proportion of protein and calories, occurring most frequent in infants and young children, and commonly associated with infection.

**Aetiology of Protein Energy Malnutrition** Primary PEM:- Primarily due to dietary deficiency. Secondary PEM:- As an effect of some other illness.

### Clinical Classification<sup>[19]</sup>

**Based on relative contribution of protein and energy diet**

- **Kwashiorkor**—Gross deficiency of proteins with an associated energy inadequacy.
- **Marasmus** - Gross deficiency of energy, though

protein deficiency also accompanies.

- **Marasmus Kwashiorkor-** Overlap of clinical picture of kwashiorkor and marasmus.
- **Pre- Kwashiorkor-** Affected children have poor nutritional status and certain features of kwashiorkor but do not have oedema.
- **Nutritional Dwarfism-** Prolonged PEM starting fairly early in life & going on over a number of years in life without developing kwashiorkor or marasmus result in nutritional dwarfism.
- **Under Weight-** The child is malnourished, but does not have any feature of marasmus and kwashiorkor. The weight for age is 60-80% of the expected.
- **Invisible PEM-** Not commonly seen. Toddlers who show breast addiction must be suspected to have invisible Protein energy malnutrition (PEM).

#### Anthropometrical Classification Gomez's Classification

It was the first classification of Protein energy malnutrition (PEM) which came in 1956.

Grade I	90-75% of expected weight(Harvard St.)
Grade II	75-60% of expected weight(Harvard St.)
Grade III	<60% of expected weight(HarvardSt.)

#### Bengoa's Modification of Gomez Classification

Any malnourished child with oedema is considered in Grade III irrespective of weight

#### D. B. Jelliffe's Classification

Nutrition status (PEM)	Weight for age (Harvard) % of expected
Normal	>90
FirstDegree	80-90
SecondDegree	70-80
ThirdDegree	60-70
FourthDegree	<60

#### Indian Academy of Paediatrics Classification

GradeI	70-80% of expected weight(Mildmalnutrition)
GradeII	60-70% of expected weight(Moderatemalnutrition)
GradeIII	50-60% of expected weight(Severemalnutrition)
GradeIV	<50% of expected weight(Veryseveremalnutrition)

IAP classification of malnutrition-This classification is based on weight for age values.

Grade of malnutrition	Weight-for-age of standard(%)
Normal	>80
Grade1	70-80(mildmalnutrition)
Grade2	60-70(moderatemalnutrition)
Grade3	50-60(severemalnutrition)
Grade4	<50(veryseveremalnutrition)

#### Schedule For Meals

**Children of <2years:-** Minimum 3 complimentary food along with breast feeding.

**Children of 2 – 10 years:-** Minimum 4 meals (2 main meals and 2 snacks on demand)

#### Recommendation for prevention of Malnutrition

- Mothers should be advised to initiate breast feeding within one hour of delivery.
- Importance of exclusive breast feeding for the first 6 months of baby's life and proper weaning thereafter should be properly explained to mother.
- Nutritional education has to be imparted to the people regarding consumption of cost effective nutritious diet.
- Special efforts have to be made to improve acceptance of family planning methods for limiting the family and to give adequate spacing between children.
- Environmental sanitation has to be promoted in reducing infection and breaking the vicious cycle of infection leading to under nutrition.
- Socio-economic development among the rural masses needs to be ensured which is the important factor to tackle malnutrition, mainly under nutrition.
- Government should allot more money in health sector for integrated health packages and should ensure proper functioning of health programs.

#### Current Guidelines for prevention of Malnutrition

Care of nutritional needs is required at three stages; Nutrition during pregnancy, nutrition in infancy and nutrition in childhood. Fetal nutrition is totally dependent on maternal nutrition. In fact, intrauterine growth retardation (IUGR) may be due to maternal deprivation and or diseases in pregnancy. Infant nutrition should be through exclusive breast feeding up to 6 months, to meet the nutrition a demands and to prevent morbidity.

Following period is complemented with other foods along with breast feeding to meet the growing needs of the infant. Diet in children needs equal emphasis on both quality and quantity. Toddler needs more than half the portion of food that mother eats. The diet of pre-school children needs special attention to vitamins and minerals varieties; while school going children need ¾th of food that father eats. Children should not miss meals, especially breakfast.

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