

Ayurveda Dietary Management of Certain Malnourishment Diseases

Verma Reetesh Kumar¹, Jain Jinesh Kumar², Dwivedi OP³,
Vishwakarma Pawan Kumar⁴, Sharma Rashmi⁵

¹Assistant Professor, ²Reader & H.O.D, ³Professor & H.O.D, ⁴Assistant Professor, ⁵Ayurveda Medical officer,
¹Department of Kaumarbhritya, Govt. Ayurved College & Hospital, Amkho Gwalior, Madhya Pradesh, India
²Department of Panchakarma, Govt. Auto. Ayurvedic College & Hospital, Rewa, Madhya Pradesh, India
³Department of Rachna Sharir, Govt. Auto. Ayurvedic College & Hospital, Rewa, Madhya Pradesh, India
⁴Department of Kaumarbhritya, Bundelkhand Govt. Ayurvedic College & Hospital, Jhansi, Uttar Pradesh, India
⁵Government Ayurveda Dispensary, Mathura, Uttar Pradesh, India

ABSTRACT

Diet in Ayurveda has also been described as one of the important factor for therapeutic measure for a number of diseases in the form of *pathya*. In Ayurveda the description of different malnutrition disease is under varied headings. A few of the condition which can be grouped under these headings are *krishta* (leaness), *phakka roga* (rundown condition of body), *balasosha* (PEM), *parigarbhika*. So the principles of treatment and dietary modifications vary according to the disease. Malnourishment disorders in modern science are described on the basis of deficiency of any particular nutrient and the symptoms that arise due to the deficiency. The clinical presentation of malnutrition depends on the type of nutrient involved in the pathology of disease and management is done by providing the same nutrient to the child. The principles of dietary management in Ayurveda are based on individual status of *dosha*, *agni* and *vaya*, hence are more adaptive and rewarding.

KEYWORDS: Ayurveda, Kuposhan, Malnourishment, PEM, Diet, Ahara, Pathya

INTRODUCTION

A diet may be defined as the kinds of food on which a person or group lives. A balanced diet is defined as one which contains a variety of foods in such quantities and proportions that the need for energy, amino acid, vitamins minerals, fats, carbohydrate and other nutrients is adequately met for maintaining health, vitality and general well-being and also makes a small provision for extra nutrients to withstand short duration of leaness.¹ A balanced diet has become an accepted means to safeguard a population from nutritional deficiencies.²

The diet in *Ayurveda* has been described under three main aspects:

➤ Firstly General dietetics, where general rules regarding eating food, types of food that are

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beneficial or harmful, classification of different food articles into different classes, process of digestion and tissue formation etc. have been described.

- Secondly the diet has been described as the causative factor of many diseases and avoidance of this has been considered as one of the tactic for managing that disease.
- Thirdly diet has been described as one of the important factor for therapeutic measure for a number of diseases in the form of *pathya*. The ancient scholars have given an immense stress on this aspect of diet and described the palatable and non-palatable food for almost all disorders which they have described.

Although the concept of general diet therapy has not been dealt in detail in ancient *Ayurvedic* texts, but the general guidelines for deciding the palatable food in any disease, importance of palatable food in a particular disease and the principle of dietary food items have been described nicely. There is description of palatable and non-palatable food items for almost all major disorders described in ancient *samhitas*.

Malnourishment disorders in modern science are described on the basis of deficiency of any particular nutrient and the symptoms that arise due to the deficiency. In the broader sense PEM constitutes the major portion of malnourished population, The prevalence of stunting among under five is 48%, wasting is 20% and underweight prevalence is 43%.³ Diet therapy plays a major role in management of these children in acute as well as rehabilitation phase. The principles of diet therapy has been lucidly described in ancient texts, in order to explore the possible dietary management of PEM disorders the present scientific paper has been written.

Guidelines for deciding dietetic regime (*Pathya*) for a particular disease

Although principles regarding dietetic regime for a particular disease has been described along with the treatment of that disease there are a few important general rules on the basis of which a dietetic regime for a particular disease should be decided.

Pathya in any disease should be decided after proper assessment of persons *dosha* (condition of bodily humors), *dushya* (organs involved), *desha* (the dwelling place), *kala* (season), *satmya* (suitableness), *asatmya*, *bala* (strength of body), *ayu* (age), *roga* (type of disease), medicines taken, *agni* (Digestive capacity) and *ahara* (previous dietary habits).⁴

Kuposhana* (Malnutrition) as described in *Ayurveda

There is no single disease described in *Ayurveda* which exactly corresponds to the syndrome of protein energy malnutrition, instead there is a description of different malnutrition disease under varied headings. So the principles of treatment and dietary modifications vary according to the disease. Hence here descriptions of dietary principles in different diseases and common food items which are nourishing in nature and are helpful in managing different deficiency diseases are shortlisted.

***Krishta* (leanness)**

This disorder has been described for adults but the dietary principles stay true for pediatric age group as well. While describing the *aushtonindatiya* (eight forbidden individuals) persons *Charaka* has considered *atikrishta* (excessive lean) as one among

them and described its demerits and problems faced by an excessive thin person. The dietary modifications described are as follows:

The *krisha* person should be prescribed the food items which are *laghu* (light in digestion) and *santarpana* (nourishing) in nature.⁵

The digestive *agni* of a *krisha* (lean) person is suppressed hence he should be given food items which are light in nature, but at the same time they must be *santarpana* i.e. they must provide adequate nutrition to the person.

The person must be treated with all *brimhana* (nourishing) drugs and food items.⁶ All food items which are *madhur* (sweet) in taste are palatable.⁷

***PhakkaRoga* (rundown condition of body)**

This malnourishment syndrome is described by *Kashyapa* and it is of three types depending on the etiology, ultimate result is the rundown condition of body and the baby is unable to achieve a major motor mile stone of walking at one year due to undernourishment. Along with medical and physiotherapy measures to manage the disease the dietary advice given in *Kashyapasamhita* is to use the *balya* (strength providing) food items such as meat soup and processed milk with *shali* rice.⁸ As description of this part of book is not available today, hence the full dietary regime is incomplete. But it gives an indication to use complete protein rich diet along with the regular diet of child, as milk and meat are good source of complete protein.

Balashosha

This disease is described by *Vagabhatta* and is comparable to *sleshamikaphakka* described by *Kashyap*. The main cause of this disease is thought to be the consumption of breast milk vitiated by *sleshama*, which causes blockage of the *srotasas* (micro channels) of body and causing undernourishment. No specific dietary regime is described for this disease in ancient texts but viewing its etiology and similarity with *phakka* the dietary regime of *phakka* is thought to be beneficial in *balsosha* as well. The breast milk gets vitiated with the *sleshma*; the imbalance can be both quantitatively and qualitatively. The secreted breast milk might not be digestible by the child or it may be lacking in any of the essential nutrient, both of these factors contribute for causing *balshosha*. Hence a proper substitution of breast milk should be done to ensure normal nutrition for the child.

Parigarbhika

This malnourishment disease is caused either due to consumption of milk of pregnant mother which may be deficient in few nutrients or in amount and

secondly due to no breast feeding due to pregnancy of mother which again causes starvation to the child.⁹ In any of the two conditions there is improper breast feeding which results in malnourishment of the child.

The management of disease includes drugs which cause *deepana* (increase digestive *agni*) are found to be beneficial in this disease.⁹

Hence the basic of dietary therapy in this disorders must be the food items which cause provocation of *agni* or prescription of diet along with the food items which are *deepana* in nature as- *pippali* (*Piper*

longum), *kutaki* (*picrorrhiza kurro*), *vidanamak* (a type of salt), cumin, *chitraka* (*plumbago*) etc.¹⁰ The food items which are *guru* (heavy) and *snigdha* (demulscent or oily) should be used.

Foods beneficial in case of *krishta*

Although there is description of only food items which are palatable for *krisha* person only, but viewing the ultimate goal of nourishment of the child the foods are fit for consumption in other malnourishment conditions of *balshosha*, *phakka* and *parigarbhika*.

Table No. TD 1 Showing wholesome food for *kuposhana*

| Food groups | Examples |
|----------------|---|
| Cereals | Newly harvested cereals like <i>shali</i> and sathi rice, <i>urad</i> (black gram) and its products, wheat, <i>yava</i> (barley) ^{11,12} |
| Herbs | <i>Ksheerkakoli</i> , <i>Ashwagandha</i> (<i>Withania somniferum</i>), <i>vidarikanda</i> (<i>Peuraria tuberosa</i>), <i>shatavari</i> (asparagus), <i>atibala</i> (<i>Abutilon indicum</i>), <i>nagabala</i> (<i>Grewia hirsuta</i>) ¹² |
| Meat | Meat of animals such as <i>gramya</i> (domesticated), <i>anupa</i> (dwelling nearby water or in marshy places), <i>audaka</i> (aquatic animals) ¹¹ |
| Others | Milk, curd, <i>ghee</i> , sugarcane, products made of jaggery ^{11,12} |

Table no. TD 2 showing few dietary compositions in ancient texts beneficial in *kuposhana*

| Name of composition | Ingredients |
|--------------------------------------|--|
| <i>Vidarikandadi churna</i> | <i>Vidarikanda</i> (<i>Peuraria tuberosa</i>), wheat and <i>yava</i> (barley) in equal proportion cooked in cows <i>ghrit</i> and milk and after cooling honey and sugar are mixed. ¹³ |
| <i>Ashwagandhaghrit</i> | Cow's <i>ghee</i> one part, quarter part paste of <i>ashwagandha</i> (<i>Withania somniferum</i>), eight parts cow's milk cooked with <i>grit paka</i> method ¹⁴ |
| <i>Vidaripipplyadi churna</i> | <i>Vidarikanda</i> (<i>Peuraria tuberosa</i>), wheat, <i>yava</i> (barley) and <i>pippali</i> (<i>Piper longum</i>) consumed with <i>ghrit</i> and milk mixed with <i>madhu</i> (honey) and <i>sharkara</i> (sugar) is drink after it. ¹⁵ |

Protein Energy Malnutrition

Principles

The diet in PEM should be easily digestible and should contain proteins of high nutritive value e.g. milk protein.

Nutritional Requirements

Calories: The calorie requirements should be 1 ½ times more than normal requirements. Approximately 100 Kcal/kg body weight for rapid recovery¹ IAP recommends calorie of 80 Kcal/kg/day. **Protein:** The protein intake should be twice the normal protein requirements i.e. 1-1.5 gm/kg body weight.¹⁶ IAP recommends 0.7gm protein/kg body weight/day **Electrolytes:** Potassium chloride (2-4g) and magnesium chloride (0.5g) should be added daily to the diet for a period of two weeks. **Vitamins:** The daily requirements of all vitamins should be added.¹⁷ If the child is breast fed, continue to breast fed but give starter formula, milk based formula 75 Kcal/100ml providing 0.9 gm protein/100 ml.¹⁶

Diet Preparation and calculation

Either fresh milk or dry milk powder can be used to prepare the formula for feeding. Skim milk powder has low energy content and is devoid of vitamin A, hence it should be fortified with vitamin A and sugar and vegetable oil should be added to it to increase the energy content. One of the preparations can be as follows:

80 gm skim milk + 50gm sugar + 60 gm vegetable oil in 1000 ml water = 100 K cal/100ml. The children can be fed 100- 150 ml/Kg of this formula and the amount can be increased to as much as they can take.¹⁹

Table no. TD 3 IAP recommendations for managing Severe PEM¹⁸

| Days | Frequency | Vol./Kg/feed | Vol./Kg/Day |
|------|-----------|--------------|-------------|
| 1-2 | 2 hourly | 11 ml | 130 ml |
| 3-5 | 3 hourly | 16 ml | 130 ml |
| 6-7+ | 4 hourly | 22 ml | 130 ml |

For Children with a good appetite and no edema this schedule should be completed in 2 to 3 days. In order to increase the energy density of milk IAP has suggested few additions which are given in table no. TD 3

Table no. TD 4 Showing IAP suggestions for increasing energy content of milk¹⁸

| Component | Energy (K cal) | Protein |
|-----------------------|----------------|---------|
| Cow's milk (300 ml) | 198 | 9.6 |
| Sugar (85gm) | 340 | – |
| Vegetable oil (30 gm) | 270 | – |
| Total | 808 | 9.6 |

The amount of water added to this formulation would depend on the desired concentration of the calories and protein required and state of hydration of the individual patient since milk is the only fluid offered to the child. If the volume is made to 1000 ml then 120 ml/kg/day of diluted formula milk will 96 kcal/kg/day and 1.1gm protein/kg/day. Coconut oil is the recommended oil as it is supposed to provide Medium chain triglycerides; however other oils are equally beneficial.

Feeding schedule of a child with severe PEM, whose dehydration has been corrected and diarrhea and vomiting have stopped, as recommended by WHO.

Table no. TD 5 Showing WHO recommendation for managing severe PEM²⁰

| Day | Type of Feed | Number of feeds per day |
|---------------|---|-------------------------|
| Day 1 | Half strength milk feed, (if there is no diarrhea, vomiting or dehydration) | 12 |
| Day 2 | Half strength milk | 12 |
| Day 3 | - do - | 8 |
| Day 4, 5 | Full strength milk feeds | 8 |
| Day 6 onwards | High energy milk feeds | 6 |

Table TD 5 indicates how oral feeding can be started with small frequent feeds of dilute milk in the case of patients who are not dehydrated or in whom dehydration has been corrected. Such feeds would provide some energy and protein and since they are dilute so they would not provoke either vomiting or diarrhea.

IAP recommends the calorie intake in this phase should be increased to approximately 150- 180 Kcal/kg/day and protein intake should be in the range of 1.5 to 2 gm/kg/day. The amount of milk could be gradually decreased and intake of semisolid/solid increased. A few of the energy dense foods are:

Table no. TD 6 showing few energy dense foods²¹

| Name | Constituents | Calorie/100gm | Protein/100gm |
|--------------------------------------|--|---------------|---------------|
| 1. <i>Besan Mix / Laddoo/Panjiri</i> | Bengal Gram Flour Wheat Flour Jaggery, <i>Ghee</i> (1 part each) | 500 | 9 |
| 2. <i>Sooji (Rawa) Kheer</i> | Toned Milk 750 ml Sugar 100gm Sooji 25 gm Oil 5 gm Water 1 liter | 1432 | 28.4 |
| 3. <i>ShaktiAhara</i> | Roasted Wheat 40 gm Roasted gm 20 gm Roasted Peanut 10 gm Jaggery 30 gm | 390 | 11.4 |

Table No. TD 7 Showing some high energy feeds based on milk suggested by WHO²²

| | Ingredients amount or quantity | | |
|---------------------------|--------------------------------|-------|------------------|
| | Milk or Oil | Sugar | Milk preparation |
| Cow's milk | 900 | 55 | 70 |
| Buffalo's milk | 800 | 30 | 65 |
| Skimmed milk powder | 90 | 85 | 65 |
| Evaporated milk | 450 | 50 | 70 |
| K-Mix 2 (unreconstituted) | 120 | 85 | 35 |

Method of preparation

1. The milk/milk powder is mixed with oils to be used and sugar and reconstituted with water so that total volume is 1000 ml.
2. K-Mix 2 is a food mixture produced for and distributed by UNICEF for initiation of treatment of severe PEM.

Composition of K-Mix 2 is as follows: Calcium caseinate 3 parts by weight; skimmed milk powder 5 parts by weight; sucrose 10 parts by weight and a vitamin A preparation, retinal palmitate 2.75 mg (5000 IU vitamin A) per 100 g dry mixture.

Discussion

Kuposhana (malnutrition) refers to the group of diseases which correspond to the syndrome of malnutrition. The clinical presentation of malnutrition depends on the type of nutrient involved in the pathology of disease and management is done by providing the same nutrient to the child. A few of the condition which can be grouped under this heading are *krishta* (leanness), *phakka roga* (rundown condition of body), *balasosha*, *parigarbhika*. The basic dietary management in all these disorders is to combat the deficiency of nutrients by providing the food items which are *balya* (nourishing) in nature and maintain the harmonium of *agni* and *dosha* in child's body by prescribing food items which cause provocation of *agni* or prescription of diet along with the food items which are *deepana* in nature as- *pippali* (Piper longum), *kutaki* (Picrorrhiza kurro), *vidanamak* (a type of salt), cumin, *chitraka* (plumbago) etc²³

The child due to the weak digestive power is unable to utilize the food items which are highly nutritious and heavy to digest, so foods or drugs which help in maintaining his *agni* are used along with the desired food of high nutritive value containing correct amount of protein and calories.

Some of the highly energy dense food items described in ancient texts have been given in table no. TD1 and few dietary compositions in ancient texts beneficial in *kuposhana* are given in table no. TD2. Similarly few energy dense formulas which are proven to be beneficial in PEM and recommended by NIN, Hyderabad have been described in table no. TD6. Here a combined approach of contents of modern energy dense foods and the digestive herbal drugs which will help in better digestion and assimilation will yield the best results.

Conclusion

The principles of dietary management in Ayurveda are based on individual status of *dosha*, *agni* and *vaya*, therefore are more adaptive and rewarding. The concept of inclusion of *agni* (digestive fire) in the

management of malnourishment diseases help in proper assimilation of nutrients given for their treatment and hence result in their prompt recovery. Hence we need to adopt anintegrated approach of ancient ayurvedic principles and modern science concepts of nutrients for best management of malnourishment diseases.

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