

# Clinical Understanding of Failure to Thrive in Ayurveda - A Critical Analysis

Vinod Kumar Swami

Associate Professor, Department of Kaumarbhritya, Post Graduate institute of Ayurveda, Dr. Sarvepalli Radhakrishnan Rajasthan Ayurved University, Jodhpur Rajasthan, India

**Abstract:** Taking care of Kumara Bharana and Poshana, as well as nutrition of the child are the main objectives of Kaumarabhritya. This can be achieved only after ensuring proper nutrition, parental care, love, affection, opportunities, social exposure, reinforcing and environmental factors. Congenital abnormalities, chromosomal disorder, endocrinal disorder, physical and psychological disabilities are also important for child growth. Failure to achieve the same may result in failure to thrive (FTT). When parameters of assessment of growth and development of the child are below the expected level with continuous deterioration of health status of the child, associated with failure and regression of developmental mile stones is called as Failure to thrive. Clinical presentations, mimicking the same is mentioned in Kashyapa Samhita can be seen on critical analysis of disease Phakka which has been the unique contribution of the Acharya Kashyapa. Disease Phakka has been misinterpreted in many ways in the past, by comparing it with a single disease of the contemporary medical sciences. But, Phakka reflects a symptomatic clinical presentation which can be seen in various disorders ultimately ending up as a failure to thrive.

**Keywords:** Bharana, Poshana, Phakka, Nutrition, FTT

## 1. Introduction

Kaumarabhritya has been placed in first position by Kashyapa after understanding the clinical importance of this branch on maintaining the health of the child and society. Kashyapa Samhita is the only authoritative classical text related to Kaumarabhritya which is unfortunately completely not available in present era. As per definition, main aim of Kaumarabhritya is to maintain optimum growth and development as well as nutrition (Bharana, Poshana) of child.<sup>1</sup> Failure to attain the same, may lead to decreased growth velocity chart, decreased parameters of growth assessment, and delayed milestones. With continuous deterioration or running down condition of a child health which may even end up to death. There are numerous causes of failure of growth and development, with continuous deterioration of health in a child, like: nutritional disorder, endocrinal disorder, mechanical, surgical, psychological problems, chromosomal disorder, metabolic, infections, child abuse and laborer, chronic systemic disorders, physical and mental disabilities, environmental factors etc. But in a broad term above pathological entity has been termed as Failure to thrive (FTT). Hence clinical picture of Failure to thrive ranges from simple failure to gain weight to begin with and ends in an immune - compromised or death like condition<sup>2</sup>

### Description

We find a similar explanation in Ayurvedic Kaumarabhritya under the heading of Phakka.<sup>3</sup> The word meaning of Phakka is child who is crippling, i. e. crippling to catch or pick - up the growth and development, growth velocity chart, presented with delayed developmental milestones of locomotors system and stunted growth. Further, while explaining the derivation of Phakka, Kashyapa says continuous running down condition of the child, or continuous deteriorating health status of the child due to various causes, impending in to immuno - compromised state is called as Phakka. Mean while Kashyapa says, in a

normal child, one year of age is the maximum time to attain milestone of walking enabling the child to walk few independent steps. Child failing to attain the same, with delayed motor developmental milestones by one year due to various causes should be considered as victim of Phakka. Hence Phakka indicates a clinical condition as an outcome of many disorders, disabling the baby to have above told situation, just like that which is evidenced in failure to thrive (FTT).<sup>4</sup>

Hence Phakka explained in Kaumarabhritya should be evaluated in broad sense without restricting the same to a particular disease. When we analyze the symptomatology of Phakka it is clear that continuous deterioration of the health status of child with a slowly impending to immune compromised state along with regression of development should be taken as cardinal symptom, which is also called as Phakkatwa, which can be seen in various childhood disorders.<sup>5</sup>

### Classification of Phakka Roga -

Ayurveda mainly attributes three causes for development of clinical condition of Phakka or Phakkatwa as Ksheeraja, Garbhaja and Vyadhija. First two are related to infantile period while last one can occur at any pediatric age. As the name suggests, Ksheeraja Phakka the main causative factor is Ksheera. During infantile period of baby, main food is breast milk, which is also the best milk. Unavailability of the same for the baby due to various causes make the baby deprived from its right, leading to nutritional deficiency and hampered brain growth.<sup>6</sup>

On the other hand breast milk is available but it is vitiated by Kapha which is also called as Phakka Dugdha and if the baby continue to consume it throughout the year may be the victim of Phakka Roga.<sup>7</sup> Breast milk vitiated by Kapha probably suggests breast milk with reduced immune factors, or with immune neutralizing agents. Mean time it may have high contents of abnormal fat with less protein and

carbohydrates, and reducing its caloric value and hampering the absorptions of vitamins and micronutrients, in turn badly affecting the brain growth.

Baby on consumption of such milk, will be immunologically weak, showing reduced growth potential, failure to attain height and weight as per age with a delay in all developmental milestones. Reduced immunity leads to recurrent infection of respiratory, gastrointestinal and dermatological infections which further hampers the growth and development i. e. Primary stage of failure to thrive. This further leads to state of immune compramization which is termed as *Bahuvyadhi* stage. As a matter of fact, baby is prone to certain dangerous infections due to immune - compramization like tuberculosis, mumps, measles, diphtheria, infectious diarrhea, etc which further adds to emaciation and deterioration of the health (*Karshyatwa*). Failure in management of the child, at this stage leads to the stage of *Phakkatwa*.<sup>8</sup>

One more cause of *Phakka* as explained by *Kashyapa* is *Garbhaja Phakka*.<sup>9</sup> This Type of *Phakka* is due to poor spacing of childbirth. Early weaning of baby from breast milk and mother become pregnant again causes physical, psychological, social and emotional disturbances along with gradual decline in the health status of the first baby. Hormonal mechanism responsible for the secretion of the breast milk and maintenance of the pregnancy acts quiet opposite to each other. Increased estrogen and progesterone levels in the body due to pregnancy naturally suppresses the prolactin hormone, further reducing the breast milk secretion compelling the mother for early weaning from the breast. As breast milk feeding and pregnancy both psychologically mediated mechanisms, love, affection, sympathy, security, concern, encouragement offered to the first baby naturally diminished due to increasing focus of the mother on growing fetus in uterus. Hence first baby is nutritionally, psychologically humiliated with disturbed psycho - somatic state. In the mean time early introduction of weaning food, not only create problems related to tolerance but also reduces advantages of breast milk on brain growth. Artificial milk if fed with bottle feeding make the baby vulnerable to episodes of gastrointestinal upsets, further hampering the growth and development. Further Hypo and hyper dilution of top feed has got its own problems.<sup>10</sup>

First child who is gets humiliated by calorific deficit, reduced to maternal bonding and love, parental care, reduced brain growth, feeding hazards of top feed, early weaning, will be the easy victim repeated infections. Repeated infections associated with lowered immunity with existing nutritional deficits leads to an immunocompramised state. This further leads to the first stage of failure to thrive, when continued end up in emaciation, (*Ksheeyate*) death like condition or bed ridden (*Mriyate*) resulting in a stage of *Phakkatwa*.<sup>11</sup>

After explaining the dietic and nutritional causes of *Phakka*, *Kashyapa* explains different disorders which end up in *Phakka*. This has been explained under the heading of *Vydhija Phakka*.<sup>12</sup> Different *Nija Rogas* which arise due to *Dosha* vitiation, i. e. systemic disorders like different types of virulent infectious disorders causing fever, when occurs

repeatedly are the causes of failure to thrive (*Jwaradhibhi*). Different systemic disorders like, neurological, endocrinal, chromosomal, congenital, dermatological disorders causing failure to thrive comes under this heading. Similarly, different *Agantuja Rogas* which arise due to environmental hazards like air, water, pollution, food poisoning, adulteration, chemical poisoning, allergic exposure, autoimmune disorders, academic stress, and different external and internal injuries like surgeries, in due course of time also leads to *Phakkatwa*.

### Pathogenesis

Further, social causes play a very vital role in development of pathogenesis of failure to thrive. Social problems like child abuse, child neglect, female child, orphan child, familial conflicts, divorced parents, low socio - economical status, certain cultural practices, child labor etc play a significant role in development of failure to thrive. Similar explanation depicting all the social causes badly affecting the child has been explained as *Anatha i. e.* orphan child or neglected and humiliated child by *Kashyapa*. Nutritional, physical, psychological, exploitation of the child in due course of time badly trouble the emotional, behavioral, personality development, as well as social interactions along with nutritional deprivation.<sup>13</sup>

### Symptoms and Etiology

Further, nutritional and metabolic disorders like, malnutrition, malabsorption syndrome and different inborn errors of the metabolism causing failure to thrive has been included under the heading of *Pradusta grahani i. e.* different disorders caused by abnormally functioning *Grahani* which is the main pace of digestion and metabolism as per Ayurveda. Crohn's disease, ulcerative colitis, reflux - oesophagitis, gluten hypersensitivity, different inborn errors of metabolism are included in this group, which in due course of time end up in immune compromised state and *Phakkatwa*.<sup>14</sup>

We also come across certain situations in clinical practice that child is having prodigious appetite and also consume well that occurs in primary stages of marasmus, thyrotoxicosis, etc but fails to gain weight up to the expected level. In such conditions modern medical science recommends a trial and error method to evaluate causes of failure to thrive by giving standard food for 2 weeks. After good intake if weight increases, then the cause of FTT is calorific insufficiency, poor response with normal stool suggest, poor utilization as in hormonal problems. Good intake with poor response and abnormal stools suggests malabsorption due to various causes. Standard diet with poor intake suggests different structural and mechanical problems of feeding. This method helps a lot to identify the cause.

Similar explanations are also explained by *Kashyapa* by mentioning certain words like *Bahubhojina*, *Bahumutra Purishina*, *Bahu mutrata* and *Bhuktham Tesham Aparthakam*. In context of *Phakka*, which suggests that child with voracious appetite consumes large amount of the food, but consumed food it not converted in to *Sara bhaga* or *Ahara rasa*, rather gets converted in to excess stool containing unabsorbed contents and excess production of urine resulting in failure to gain weight and slowly develops

*Phakktwa*. *Ahara rasa* is not converted in to *Dhatu*, with less production of *Saptha Dhatu*, also the *Shukra* resulting in less *Ojus* as essence of all. Low amount of *Ojus* result in less immunity its absence leads to destruction of the body.

Body tissues get depleted due to ongoing tissue catabolism and slowly the patient impedes in to the stage of *Phakktwa* or end stage disease with gradual development of cachexia. This is referred as *Dhatu kshaya* in Ayurveda, which leads to abnormal increase in *Dhatu malas*. Hence these abnormal catabolic products get accumulated in the body which is evidenced by words like *Mahanakha*, *Vishirna Roma*, *Singanaka Mala*, which are nothing but *Dhatu Malas*.<sup>15</sup>

Pathogenesis with the sequence of development of cachexic stage which results in end stage disease has been very well explained by *Kashyapa* in the context of *Vyadhija Phakka*. Due to above told causative factors, leading to chronicity of condition, primarily there will be attainment of immuno - compromised stage by the child. Immuno - compromised stage is pool of many disorders with increased vulnerability for infectious disorders and further adding to cachexic state of the child. This will be followed by disturbed cellular metabolism of the body resulting in deficiency of unit structure of metabolism like glucose, amino acids and acetyl co. enzyme etc with production of excess abnormal waste products of cellular metabolism. This results in emaciation of the body, reduction in body immunity, reduced functional capacity of tissues which has been referred as *Ksheena Mamsa Baladhyuthi*. Due to loss of subcutaneous fat, muscle protein, etc skin will be loose and wrinkled and body gives a typical marasmus look which is mentioned as *Drshayamana Asthi panjara*.

To assess the loss of fat and muscle tissue from the body in protein energy malnutrition contemporary science follows a clinical oriented grading system. Loss of fat and muscle tissue from buttock areas is grade one, while along with grade one, loss of same from triceps, biceps and thigh area is grade two. Along with grade one and two, loss of fat from abdomen and groin area is graded as three and all the above along with loss of fat from buccal mucosa area is grade four. Similar type of order of areas of fat and muscle loss has been mentioned by *Kashyapa* also. The *Shloka* which says, *Samshushka Sphik bahu uru mahodara shiromukha* explains the same sequence. *Kashyapa* says loss of body tissue will be progressing gradually from the areas of gluteal region (*sphik*), triceps, biceps and thigh (*bahu, uru*), abdomen and groin (*Udara*) and face and buccal area (*shiro, mukha*). Order exactly matches with present method of grading.<sup>16</sup>

Later as regressive stage continues, it results in a severe macro and micro nutrient deficiency state hampering the cellular metabolism in total, and results in a reduced functioning capacity of all sense organs along with pallor severe anemia, which is indicated by the word *Peethaksha*. Sensory perception of taste, vision, touch, hearing, smell gradually decline following possible nerve degeneration and nutritional deprivation. This will be also associated with horripiliations, tingling sensations, shooting pain suggesting the same.

Baby after reaching the above condition, marked with slow

development of weakness in the lower limbs, which disables the child, hampering his/her day to day activities. Certain skeletal changes due to vitamin D and calcium deficiency leading to rickets like conditions, and other skeletal abnormalities may be responsible for the same. This presentation has been referred as *Pramlana Adhara kayascha* by *Kashyapa*.

This will be followed by pathetic progressive state of failure to thrive where the child is not able to walk and lower limbs become functionless with loss of sensory and motor functions added with lack of interest in the surroundings and child is unable to walk and stand and sit and start Crippling (*Phakktwa*). *Kashyapa* explains the same as '*Nichestha adhara kayova panijanu - gamopi va*'. There will be marked weakness with loss of interest in the surrounding with frustration, and reduced motor activities of the limb and irritability (*Douballya, manda chesta, mandatwath paribhutaka, Krodhi*).<sup>17</sup>

Gradually, child present with the loss of control over urination and defecation, frequently voids the urine in the bed and also stool creating a unhygienic conditions I and around (*nithya mutra purisha krith*), due to same micro and macro organisms like flies, insects are attracted towards the child. Child not even able to appreciate tactile and pain sensation will not do any effort to remove the insect, which suggest complete loss of sensory perception and motor activity (*Makshika krimi keetanam gamya*).<sup>18</sup>

This completely deteriorated cachexic stage of the child with very less body movements and sensory perception with completely bed ridden semiconscious state has been referred as death like condition or *Asannna Mrityu ruk* by *Kashyapa*. Mean while loss of texture and luster of the skin with erect position of the hairs giving rise to Boars appearance is evident (*Vishirna hrustha roma cha sthabda roma*) nails look long due to total loss of body tissue (*Maha nakha*). Poor hygiene and increased catabolic wastes produces foul smell from the body surface.

As this stage of semi consciousness continue, there will difficulty for respiration due wasting of muscles of respiration and respiratory acidosis and alkalosis like conditions, presenting with orthopnea, or chyne - stroke breathing which is referred as *Phakka shwasa*. This further leads to marked hypoxic state and improper aeration of blood, and asphyxia due to which patient becomes unconscious (*Tamyathi*) resulting in death of child and termination of pathology.<sup>19</sup>

## 2. Conclusion

Disease *Phakka* which is mentioned by *Kashyapa* is definitely not limited to a single disease rather it is clinical presentation seen in end stage of many chronic progressive disorders. Further, nutritional and metabolic disorders like, mal nutritional, mal absorption disorders, and different inborn errors of the metabolism causing failure to thrive has been included under the heading of *Phakka*. Clinically any child presented with continuous deterioration of health status and which is crippling and does not pick up the growth velocity chart and with definite regression in the



developmental milestones should be considered as *Phakka*. Cerebral palsy, protein energy malnutrition, skeletal deformities, rickets, tuberculosis like infectious disorders, muscular dystrophies, endocrinal metabolic errors, all ends up as a condition of *Phakka*. This can be very well correlated with failure to thrive as explained in the contemporary medical sciences, which is an umbrella of many disorders.

## References

- [1] “Kashyapa Samhita or Vridha Jeevaka Tantra” Vimana Sthana (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Page no.61
- [2] Nelsons Text Book of Pediatrics”– book 1 16<sup>th</sup> edition by Behrman, Klieg man, Jenson, publishers Harcourt Asia Pvt limited printed in India at Thomas press (I) LTD, NOIDA. Chap - 15 Page no.216 - 235
- [3] “Kashyapa Samhita or Vridha Jeevaka Tantra” Chikitsha Sthana Phakka Chikitshaadhaya (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Phakka Chikitshaadhaya/3 Page no.139
- [4] “Kashyapa Samhita or Vridha Jeevaka Tantra” Chikitsha Sthana Phakka Chikitshaadhaya (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Phakka Chikitshaadhaya/10 - 12 Page no.139 - 141
- [5] “Kashyapa Samhita or Vridha Jeevaka Tantra” Chikitsha Sthana Phakka Chikitshaadhaya (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Phakka Chikitshaadhaya/10 - 12 Page no.139 - 141
- [6] “Kashyapa Samhita or Vridha Jeevaka Tantra” Chikitsha Sthana Phakka Chikitshaadhaya (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Phakka Chikitshaadhaya/4 - 5 Page no.139
- [7] “Kashyapa Samhita or Vridha Jeevaka Tantra” Chikitsha Sthana Phakka Chikitshaadhaya (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Phakka Chikitshaadhaya/4 - 5 Page no.139
- [8] “Kashyapa Samhita or Vridha Jeevaka Tantra” Chikitsha Sthana Phakka Chikitshaadhaya (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Phakka Chikitshaadhaya/4 - 5 Page no.139
- [9] “Kashyapa Samhita or Vridha Jeevaka Tantra” Chikitsha Sthana Phakka Chikitshaadhaya (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Phakka Chikitshaadhaya/11 Page no.140
- [10] “Clinical Pediatrics” by B. Anjaiah; 4<sup>th</sup> edition Published by Paras Medical Publisher, Hyderabad New Delhi. Chap - 24 Page no.345 - 365
- [11] “Kashyapa Samhita or Vridha Jeevaka Tantra” Chikitsha Sthana Phakka Chikitshaadhaya (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Phakka Chikitshaadhaya/11 Page no.140
- [12] “Kashyapa Samhita or Vridha Jeevaka Tantra” Chikitsha Sthana Phakka Chikitshaadhaya (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Phakka Chikitshaadhaya/12 - 17 Page no.140
- [13] “Kashyapa Samhita or Vridha Jeevaka Tantra” Chikitsha Sthana Phakka Chikitshaadhaya (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Phakka Chikitshaadhaya/12 Page no.140
- [14] “Kashyapa Samhita or Vridha Jeevaka Tantra” Chikitsha Sthana Phakka Chikitshaadhaya (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Phakka Chikitshaadhaya Page no.140
- [15] “Kashyapa Samhita or Vridha Jeevaka Tantra” Chikitsha Sthana Phakka Chikitshaadhaya (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Phakka Chikitshaadhaya/16 Page no.140
- [16] “Kashyapa Samhita or Vridha Jeevaka Tantra” Chikitsha Sthana Phakka Chikitshaadhaya (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Phakka Chikitshaadhaya/12 - 13 Page no.140
- [17] “Kashyapa Samhita or Vridha Jeevaka Tantra” Chikitsha Sthana Phakka Chikitshaadhaya (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Phakka Chikitshaadhaya/14 - 15 Page no.140
- [18] “Kashyapa Samhita or Vridha Jeevaka Tantra” Chikitsha Sthana Phakka Chikitshaadhaya (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Phakka Chikitshaadhaya/15 Page no.140
- [19] “Kashyapa Samhita or Vridha Jeevaka Tantra” Chikitsha Sthana Phakka Chikitshaadhaya (Text with English commentary) By Prof. (km.) P. V. Tewari, 1<sup>st</sup> edition Published by Chaukhambha Vishwa Bharathi Varanasi. Phakka Chikitshaadhaya/16 Page no.140