

## A COMPREHENSIVE STUDY OF CHILD NUTRITION

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## ABSTRACT

The earliest classical *Sanskrit* works on *Ayurveda* describe medicine as being divided into eight components. "The medicine that has eight components" is first found in the *Sanskrit* epic, the *Mahābhārata*, *Kaumarabhrtya* or Pediatrics (Discussions about prenatal and postnatal care of baby and mother, methods of conception, choosing the child's sex, intelligence and constitution, childhood diseases and midwifery) "*Kaumarabhrtya*" the branch which deals with *Balachikitsa* (Pediatric health care), has been given the foremost position among *Ashtangas* of *Ayurveda* by all the *Brihatrayi Acharyas* including *Acharya Kashyapa*. *Kaumarabhrtya* deals with healthy upbringing of infants, purification of mother's milk and also cure for diseases of infants caused by intake of vitiated breast milk or *Balagraha* (evil demons). Early childhood is a critical period in development, as rapid gain in physical, cognitive, and socio-emotional domains constitutes the "building blocks" of children's later growth. Pediatric health care can be brought under the broad concept of *Kaumarabhrtya*. Since a child's health is dependent on the mother's health, *Kaumarabhrtya* also focuses on special aspects of the mother's health as well. Immunity, nutrition, digestion and metabolism are the key concerns in child health. Prevention being the primary tool for health maintenance, the role of immunology in literature is really important. *Ayurvedic* medicines especially *Rasayanas* enhance the body's overall natural resistance to the disease causing agent rather than directly neutralizing the agent itself. The preventive measures like *Swarnprashan* mentioned specially in *Kashyapa Samhita* can be studied as an *Ayurvedic* approach of way of immunization, this plays a key role in the maintenance of health and prevention of disease. This paper provides a bird's eye view of the literary contributions and ancient traditional medical practices in the field of *Balachikitsa* for the healthy growth of a child.

**KEYWORDS:** *Kaumarabhrtya*, Pediatric health care, *Rasayana*, *Swarnprashan*.

## INTRODUCTION

The Principal objectives of *Ayurveda* include maintenance and promotion of health, prevention of disease and cure of sickness. So on the basis of the former objective, this science deals with everyone's well-being.

Children health is very important, as it forms the basis for a healthy adult. As the tissues and organs of kids are new and food and activities are limited, various diseases and conditions commonly affect the kids. Kid's health in *Ayurveda* is well defined. Out of the eight branches of *Ayurveda*, '*Kaumarabhrtya*' branch is dedicated to growth and development of a child, child care, diseases of children and their management. Since a child's health is dependent on the mother's health, *Kaumarabhrtya* also focuses on special aspects of the mother's health as well.

Immunity, nutrition, digestion and metabolism are the key concerns in child health. Since birth to Sixteen years is considered as "*Balyavastha*" (Childhood). *Ahara* (Food) is one of the Most Important *Upstambha* (Supporting Pillar) out of the three. It plays a major role for a being's healthy and disease free existence. Milk is the first food that a new born consumes after birth. It is the perfect food for a baby's digestive system. So *Acharyas* have given a vivid description about "*Stanya*" (Breast feeding). *Acharyas* also told about "*Jatkarma Sanskar*" as a step in "*Shishu Paricharya*" (Neonatal Care). In which they have used specific type of herbs, those are beneficial for a child's overall health. *Acharya Kashyapa* told about "*Lehnam*" with its Indications and contraindications.

## CHILD NUTRITION IN CLASSICS WITH ITS SCIENTIFIC APPROACH

*Acharya Kashyapa* told that there is no medicine like *Ahara* and *Ahara* alone can make people healthy, called it as *Mahabhaishajya*. According to him health depends on *Ahara* completely.<sup>[1]</sup> It strengthens the body, provides sudden energy and also responsible for the enhancement of Age of being healthy, Sharpens the memory and enhances the *Oja*.<sup>[2]</sup> *Ahara* is the cause for a Wellbeing's existence, So here is no other thing than *Ahara*, is responsible for Lifemanship.<sup>[3]</sup> A healthy nutritious diet is an essential component in the growing and developing years of children. It aids in building a strong foundation in the child with regards to staying healthy and imbibing good eating habits right from childhood. The 3 most important benefits of early childhood nutrition are, it helps in building immunity against various infectious diseases, ensures proper development of brain and other vital organs and improves a child's activity levels and cognitive functioning. Therefore, proper nutrition for children is important as it sets the stage for them towards living a healthy and balanced life for the rest of their lives.<sup>[4]</sup> In *Ayurveda*, age classification in children is mainly done on the basis of *Ahara*.

1. *Kshirapa* - the children up to 1 year of age, main diet milk
2. *Kshirannada* - the children up to 2 years of age and on both milk and semisolid *Ahara*.
3. *Annada* - the children who takes solid *Ahara*.<sup>[5]</sup>

### KSHIRAPA

#### *Jatkarma and Stanya*

For new born, *Stanya* is considered as *Amruta* and *Ayurveda* praise *Stanyapana*. Most of the *Acharyas* told exclusive *Stanyapana* from birth to 6 months. The mother should start feeding the child from first day only according to *Acharya Charka*.<sup>[6]</sup> According to *Acharya Sushrut* the mother should start feeding by the day 3<sup>rd</sup> or 4<sup>th</sup> after delivery because the lactating vessels start doing their function properly only at 3<sup>rd</sup> or 4<sup>th</sup> day. He also mentioned that before starting breastmilk, the Newborn should be given different kind of things like first day *Madhu* (honey), *Sarpi* (Cow's milk), *Ananta* (*Swarn Bhasm*) should be given, thrice a day, second day and Third day from the birth, he should be given the "*Lakshmana Siddh Sarpi*". After it he should be given *Madhu* and *Sarpi*, (as the *Madhu* and *Sarpi*) both provides Glucose, Carbohydrate, Fats from the very first day of birth for the two time and after it mother can start breastfeeding.<sup>[7]</sup>

A baby should be feed by breast milk exclusively, because it is best for a children's growth.<sup>[8]</sup> First 3 days there is secretion of *Piyush* or Colostrum, It's very nutritious and contains high levels of antibodies, which are proteins, that fight against the infections and bacteria. Colostrum is rich in vitamins, minerals, low level fats, low carbohydrates, disease fighting proteins, growth hormones and digestive enzymes. It helps to establish a healthy gut by coating the intestines. It also has a

laxative effect that helps the new-born to clear meconium. It is often called "liquid gold" because of its rich Golden Colour and benefits. Immunoglobulin A (an antibody), Lactoferrin (a protein that helps prevent infection), Leukocytes (white blood cells), Epidermal growth factor (a protein that stimulates cell growth) are also present there.

It gets its colour from Carotenoids (an antioxidant) and Vitamin A. Vitamin A plays a vital role in the baby's vision, skin and immune system. Colostrum is rich in magnesium, which supports the baby's heart and bones and copper and zinc, which also support immunity. There are three different stages of breast milk: colostrum, transitional milk and mature milk.

Colostrum: first milk that lasts between two and four days after birth.

Transitional milk: Begins approximately four days after birth and lasts about two weeks.

Mature milk: Milk that lasts from approximately 14 days after birth until you are done producing milk.<sup>[9]</sup>

*Acharya Kashyapa* told that *Stanyapana* results in Good growth, Strength, Longevity and Good health of child as well as not causing any trouble or diseases to child. The benefits of *Stanyapana* are *Jeevaniya* (longevity), *Brhamaniya* (Overall growth of child), *Balakaraka* (Provides Strength), *Satmya* (Suitable), *Sthairyakara* (Stability), *Dosha Shamana* (Maintains *Dosha Samyata*), *Vrisha* (Aphrodite).

If there is lack of breastmilk due to some factors like insufficient glandular tissue, hormonal or endocrine problems, previous breast surgery, using hormonal birth control, taking some medications, certain anatomical issues, then the Newborn should be given Goat's or Cow's milk. According to *Vagbhat*, *Acharya* Cow's milk should be boiled with "*Laghu Panchmool Kalka*" or should be given with "*Sita*" (Mishri), for the consumption of a Newborn baby in the absence of mother's milk.

Recent searches say that the most of the infant formulas which are given to a baby as an alternate of mother's milk are based on cow's milk because of its many similarities to mother's milk, like the both milks have equal amount of water, large amount of Vit.A, minimal Vit. D and equal amount of energy content. But even they both have many of similarities, some dissimilarities are also present, like breast milk contain more niacin, ascorbic acid, low but better absorbable iron (cow's milk contains much more minerals except iron and copper), Contains mainly whey protein (cow's milk: casein).

### *Lehan*

*Acharya Kashyapa* have told about "*Lehan*" for the Children of "*Aksheera* (nonlactating mother) and

*Alpksheera Janani*” (less lactating mother). A child’s happiness and misery depends completely on this “*lehan*”. He also used the term “*Swarnprashan*” for the *lehan*.<sup>[10]</sup>

There are various formulations of gold and even along with herbal drugs explained by different *Acharya* for prolonged usage in Children. *Swarnprashan* in children can be mainly implicated in two contexts of *Ayurveda*: *Lehan* (supplementary feeds) and *Jatakarma Samskara* (newborn care). He explained evidently the administration of *Swarna* (gold) with unequal amount of *Madhu* (honey), *Ghrta* in children for the benefits of improving *Medha* (intellect), *Agni* (digestion and metabolism), *Bal* (Physical strength), Immunity, *Varn* (complexion), *Vrishya* (fertility), and *Ayushya* (life span). Consumption of this *Swarnprashan* for one month makes a child “*Param Medhavi*” (super intelligent) and for six months makes him *Shrutdhar* (who memorize everything after listening once). It is administered orally on an empty stomach, preferably in the early morning. It can be given from birth up to 16 years of age. It is given with clarified butter and honey in a dose of two drops up to 6 months and four drops after 6 months. It can be given daily for a minimum of 30 days and maximum of 180 days. Alternately, it can be given every *Pushya Nakshatra* (every 28 days) for a minimum of 30 doses.<sup>[11]</sup> *Swarna bhasma* has moisturizing and unctuous effect on the body, as its *Madhur Rasa* helps as *Rasayana*, and through detoxification can treat *Vishamjwara*, *Antrajwara* (Enteric fever), weakness, etc. Scientifically, it has been proved that *Swarna bhasma* also possesses antioxidant, antidepressant, anti-cancerous, antibacterial, and anti-rheumatoid property and acts as a nerve stimulant.<sup>[12]</sup> The molecular ingredients are found in Ghee and Honey, Contain Sugars, Amino acids, Proteins, Lipids, Vitamins, and other components. Moreover, these components help in capping the gold particles in *Swarn Prashan*.<sup>[13]</sup> The potential application of *Swarn Prashan* in immunomodulation is the development of both prophylactic and therapeutic vaccine. Ancient scripts have suggested that the colloidal preparation of *Swarna* (gold particles) with Honey and Ghee would significantly induce robust immunity like Vaccines.

*Acharya Kashyap* Used *Ghrta* boiled with *Brahmi*, *Mandukparni*, *Triphala*, *Chitrak*, *Vacha* etc. herbs, *Kalyanak Ghrta*, *Panchgavya Ghrta* and *Brahmi Ghrta* for *Medhavardhan* (For increasing intellectual power). *Acharya Vagbhat* used *Brahmyadi Ghrta*, *Saraswat ghrta*, *Vachadi Ghrta* in *Uttar tantra* for increasing memory and intellectual power. He also mentions “*Vakshuddhikar Yoga*” for clearing the voice of children.<sup>[14]</sup>

### **KSHIRAANNADA**

#### ***Phalaprashana***

Even *Acharyas* consider the *Kshiraannada* age after one year but, at the 6 months of age, now breast milk is not enough to fulfill the requirements of the growing child.

So it is the accurate time to introduction of supplementary feeding as *Phalaprashan* (Juice of fruits) because breast milk lacks in nutrition’s like as iron, calcium and vitamin A, B12, D, K, C, etc.

*Phalaprashan* is the formal procedure of introducing fruits to an infant before introduction of any dietary preparation (*Annaprashana*). It is performed during 6th month and infants are supplemented with different kind of fruits.<sup>[15]</sup> Fruits are high in vitamins, minerals and fibre. The vitamins, minerals, fibre and antioxidants found in fruits provide the benefits like, promote good health and Protect against disease, both now and in the future. The fruits Strengthen a child’s immune system and help fight illnesses. There is strong evidence to show that the nutrients found in fruits can prevent chronic diseases such as cardiovascular diseases. The high-fibre content can aid in the proper function of the digestive system and prevent constipation. The fruits, which are rich in Vitamin C, which is absent in mother’s milk. Should be consumed by Infant because, this Vit C is essential in the development of immune system and has antioxidant property. Fruit juices helps in supplementing extra nutrition along with *Agnivrudhi*, relieve constipation and keeps child hydrated. Freshly prepared juices are always better than packaged juice, which are full of extra sugar, additives and may cause dental caries. There are lots of healthy, baby-friendly fruits out there, but these are recommended by doctors and dietitians.

- Avocados: This fruit-vegetable is rich in healthy unsaturated fats that help boost brain development. In fact, the fat composition of avocados is somewhat similar to that of breast milk.
- Bananas: Known as a good source of potassium, this fruit also contains vitamins B6 and C, fibres, and magnesium.
- Blueberries: Blueberries are bursting with antioxidants. The deep, brilliant blue of these berries comes from flavonoids that benefit the baby's eyes, brain, and even urinary tract.
- Broccoli: This is a rich source of essential nutrients, including fibre, folate, and calcium.
- Lentils: Beans and other legumes pack lots of lean protein and fibre.
- Sweet potatoes: Sweet potatoes are one of the more popular first foods for babies, who are packed with beta-carotene, vitamin C, and minerals, including iron and copper.<sup>[16]</sup>

### ***Annaprashana***

*Annaprashana* (complimentary foods) start after 6 months according to *Acharya Sushrut*. He should be given *Laghu* (light) and *Hitkar* (Beneficial) *Anna* (food). *Acharya Vagbhata* advised that Solid food should be afferent to Child gradually, simultaneously with discontinuing breast milk. After 6 months’ child require concentrated energy dense foods are essential in order to maintain and adequate velocity of growth for infant, child teeth begin to erupt, a biting movements begins and tendency to push solids out of mouth decrease, digestive

system is mature enough to digest food. Alone breast milk is no longer sufficient to meet nutrition as birth weight doubles.<sup>[17]</sup> *Acharya Kashyapa* mentioned in *Khil Sthana*, some kind of food Preparations as an *Avleha* made by old, husk free and well washed *Shali* and *Shashtik* (Specific types of rices) rice mixed with Ghee and Salt. This *Avleha* is *Pushtivardhak* (affirmative) for children. Powder of wheat and barley should also be given according to Suitability. Rice provides the baby, the much-needed energy to stay very active. It is a good source of calcium and magnesium; these both are essential for healthy bones. Rice contains small quantities of micronutrients including Zinc, Copper, and Selenium. These micronutrients play an essential role in Keeping several functions of the body going smoothly. Rice is considered to a very low allergen food and ideal for child. Rice is rich in carbohydrates and good source of Vit. B complex, Easy to digest, rejuvenate the body when used with milk. Wheat is good supply of carbohydrates for energy. Good sources of vitamins and minerals, act as a good natural laxative. Barley is a nutritious and has good amount of dietary fibre, strengthens bone. *Acharya Vagbhata* mentioned some specific type of food preparations called *Modaka*. *Modaka* prepared by using powder of *Priyal*, *Yastimadhu*, *Madhu*, *Laja* and *Sita*. It is a combination of Protein, Carbohydrates and is mentioned in general for improving the infant's nutritional status. *Modaka* prepared by *Bilva*, *Ela*, *Sita*, *Laja*. This preparation is indicated in infants for *Agni deepan* (Increasing digestive fire). A *Ghol* prepared by *Dhataki Pushpa*, *Sharkara*, *Laja*, this preparation is indicated in indigestion and who repeatedly suffer from *Atisara*.<sup>[18]</sup>

#### ANNADA

*Annada* starts from two years onwards. Young children below 5 years should be given bulky foods, rich in energy and proteins such as legumes, pulses, nuts, edible oil / ghee, sugar, milk and eggs, vegetables including green leafy vegetables and locally available seasonal fruits should be part of their daily menu. Older children and adolescents should consume plenty of milk to fulfil the high calcium requirement, oil / ghee should be consumed.<sup>[19]</sup> Goodness of ghee is mentioned by *Acharya Kashyapa* in *Sutra Sthans's Sneha addhyay* that Incorporate ghee in child diet, ghee helps in improving memory, concentration, boosts digestion, relieves constipation, strengthens immunity, complexion, colour. *Acharya Sushrut* also tells the same benefits of consuming ghee.

According to nutritionist Archana Shah, a mother should give dried fruits by soaking them in milk or water to soften them. Dry fruits that are coated with sugar must not be opt, as they can give way to cavities and tooth decay. Dried fruits are a rich source of iron, hence, they promote haemoglobin levels in the blood and good haemoglobin levels prevents the risk of anaemia in the babies. Being a rich source of fibre they prevent constipation. Dried fruits are full of protein, zinc, iron,

and other minerals, so they provide energy. Dried fruits contain a lot of probiotics or good bacteria which keeps the baby's digestive system healthy. They are also rich in Vitamin A and calcium. Vitamin A strengthen and helps to maintain a healthy vision in baby and calcium aids in the development and maintenance of his bones.

The omega-3 fatty acids present in dry fruits and nuts like walnuts help in the brain development of babies.

Vegetables are a great source of essential nutrients that the child needs for development. Vegetables are low in calories and fat. Vegetables benefits child in many ways like improves nutrition, decreases obesity risk, helps the digestive system function properly and prevents constipation.

#### CONCLUSION

Early child development sets the foundation for lifelong learning, behaviour, and health. So his nutrition should be proper from the very first day he born. WHO and UNICEF recommend breastfeeding for a period of minimum 1 year with emphasis on feeding until 2 years with exclusive breastfeeding for the first 6 months of life. A recent meta-analysis by the "Agency for Healthcare Research and Quality" reviewed the evidence in detail that the infants, not being breastfed is associated with an increased incidence of infectious morbidity, including otitis media, gastroenteritis, and Pneumonia, as well as elevated risks of childhood obesity, type 1 and type 2 diabetes, leukemia, and sudden infant death syndrome (SIDS). On time vaccination throughout childhood is essential because it helps provide immunity before children are exposed to potentially life-threatening diseases. *Swarnprashan* is an immune booster used in Pediatrics Practice, it helps the child to grow up with a better immune system and intellectual performance. It is the ancient immunization technique with no adverse effect and provides a good life with physical, mental, and social health. So *Swarnprashan* should be accepted as immunization program. Because their bodies require more nutrition to meet the demands of growth and development, children, particularly infants, are more vulnerable to malnutrition and its repercussions. After six months of age, it becomes increasingly difficult for breastfed infants to meet their nutrient needs from human milk alone. Thus, the consensus is that six months is the appropriate age at which to introduce complementary foods, like fruits are the best choice following breast milk because they are more consistent and well tolerated. Infants lack teeth for mastication and have insufficient salivary secretions to break down starch, which is important for the initial step of digestion. The digestive system of a new-born is very different from the digestive system of an adult. Specific enzymes, such as human GL (Gastric lipase), which are important for fat breakdown during infancy, are unavailable. So the Infant should be introducing with the fruits firstly. When he became habitual with the fruits, the mother should provide plenty of fruits and

vegetables. After two years start normal diet. Add fresh fruits and dry fruits, vegetables, ghee in their routine diet for proper growth and development.

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