

General Introduction of Kaumarbhritya and it's Clinical Aspect

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JAYOTI VIDYAPEETH WOMEN'S UNIVERSITY, JAIPUR

UGC Approved Under 2(f) & 12(b) | NAAC Accredited | Recognized by Statutory Councils

Printed by :
JAYOTI PUBLICATION DESK

Published by :
Women University Press
Jayoti Vidyapeeth Women's University, Jaipur

Faculty of Ayurvedic Science

Title: A GENRAL INTRODUCTION TO KAUMARBHRITYA & IT'S PRACTICAL AND CLINICAL ASPECT

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Published By: Women University Press

Publisher's Address: Jayoti Vidyapeeth Women's University, Jaipur
Vedaant Gyan Valley,
Village-Jharna, Mahala Jobner Link Road, NH-8
Jaipur Ajmer Express Way,
Jaipur-303122, Rajasthan (INDIA)

Printer's Detail: Jayoti Publication Desk

Edition Detail: I

ISBN: 978-93-90892-26-6

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Chapter 1

INTRODUCTION TO KAUMARBHRITYA

कौमारभृत्य परिचय-

❖ काय बालग्रहोर्ध्वाङ्ग शल्यदंष्ट्राजरावृषान् । अष्टावङ्गानि तस्याहुश्चिकित्सा येषु संश्रिता । । (अ . ह सू . 1 / 5)

- अर्थात् कायचिकित्सा , बालचिकित्सा , ग्रह चिकित्सा , उर्वीग चिकित्सा या शालाक्य तन्त्र , शल्यचिकित्सा , दंष्ट्रा चिकित्सा या अगद तन्त्र , रसायन व वाजीकरण चिकित्सा । इसमें बाल चिकित्सा को कौमारभृत्य या बाल रोग चिकित्सा कहते हैं ।
- कौमारभृत्य शब्द दो शब्दों से मिलकर बना है - कौमार व भृत्य । कौमार का तात्पर्य यहाँ बालक से है । सोलह वर्ष से कम उम्र वाले मनुष्य को बालक कहते तथा इस अवस्था को बाल्यावस्था कहते हैं - " ऊनषोडशवर्षस्तु नरो बालो निगद्यते " बालक के लिए शिशु , कुमार , बच्चा , आदि शब्दों का प्रयोग किया जाता है । सामान्यतया बाल्यावस्था बालक के गर्भ में आने से लेकर 16 वर्ष की अवस्था तक मानी जाती है ।
- आचार्य चक्रपाणि के अनुसार " कुमारस्य भरणमधिकृत्य कृतं तन्त्रं कौमारभृत्यम् । अर्थात् कुमार के भरण के लिए जो अधिकृत तन्त्र है उसे कौमारभृत्य कहते हैं

❖ कौमारभृत्यं नाम कुमार भरण धात्री क्षीरदोष संशोधनार्थं दुष्टस्तन्य ग्रह । समुत्थानाञ्च व्याधिनामुपशमनार्थम् । । " (सु . सू . 1 / 2)

- अर्थात् जिस शास्त्र में बालक का भरण - पोषण , धात्री या माता के क्षीरदोषों का संशोधन कर्म , दूषित स्तन्य से उत्पन्न व्याधियों , ग्रहों से उत्पन्न व्याधियों तथा । उनके शमनार्थ प्रक्रियाओं का वर्णन किया गया हो उसे कौमारभृत्य कहते हैं ।

❖ हारीत संहिता में इस प्रकार व्यक्त किया गया है-

“गर्भोपक्रम विज्ञानं सूतिकोक्रमस्तथा । बालानां रोगशमनी क्रिया बालचिकित्सम्”
। । (हा०स० प्रथम स्थान अ . 2 / 17)

अर्थात् गर्भ विषयक उपक्रम तथा सूतिका काल में किये जाने वाले उपाय ,
बालकों में होने वाले रोगों के शमन का उपाय ,इन सभी का वर्णन बाल
चिकित्सा के अंतर्गत किया गया है।

- आधुनिक चिकित्सा शास्त्र में कौमारभृत्य को Paediatrics कहते हैं जो ग्रीक शब्दों Paediatricetics से मिलकर बना है यहाँ Paedia का तात्पर्य a child or Pertaining to a child अर्थात् शिशु या शिशु स सम्बन्धी । iatrike का तात्पर्य Treatment अर्थात् चिकित्सा तथा ics का तात्पर्य Branch of Science अर्थात् विज्ञान की एक शाखा से है । अतः विज्ञान की वह शाखा जिसमें शिशु या शिशु विषयक चिकित्सा का अध्ययन किया जाता हो , Paediatrics कहते हैं । (Paediatrics is a branch of Science which deals about the child treatment of child)
- कौमारभृत्य का महत्व - कौमारभृत्य का श्रेष्ठ ग्रन्थ काश्यप संहिता है जिसमें बालकों में होने वाले रोगों का विशेष रूप से वर्णन किया गया है । आचार्य काश्यप ने कौमारभृत्य के महत्व पर प्रकाश डालते हुए लिखा है-
- ❖ कौमारभृत्यमष्टानां तन्त्राणामाद्यमुच्यते । आयुर्वेदस्य महतो देवानामिव हव्यपः । । अनेन हि संवर्धितमितरे चिकित्सन्ति । (का० सं० वि० स्थान 1)
- अर्थात् आयुर्वेद के आठ अंगों में कौमारभृत्य श्रेष्ठ अंग है जो स्थान देवताओं में अग्नि देवता का है वही स्थान आयुर्वेद में कौमारभृत्य का है । इसके द्वारा ही संबर्धित या वृद्धि को प्राप्त हुए मनुष्य की चिकित्सा अन्य अंगों के विशेषज्ञ चिकित्सकों द्वारा की जाती है

Chapter 2

वय विभाजन

- काश्यप के अनुसार - महर्षि काश्यप के अनुसार वय का विभाजन इस प्रकार किया गया है
- ❖ गर्भबाल कुमाराख्यमित्येतत्त्रिविधं वयः । यौवनं मध्यमं वृद्धमेतच्च त्रिविधं पुनः । । (का०सं०खिल० 3 / 72)
- अर्थात् मनुष्य की गर्भ , बाल तथा कुमार यह तीन प्रकार की अवस्था होती है । यह यौवन , मध्यम तथा वृद्ध के भेद से पुनः तीन प्रकार की होती है
- उपर्युक्त वय विभाजन को इस प्रकार का इस प्रकार व्यक्त कर सकते हैं

क्र .	अवस्था का नाम	उपभेद	वर्ष मर्यादा
१.	बाल्यावस्था	१. अपरिपक्व धातु २. विवर्धमान धातु	जन्म से 16 वर्ष 16 से 30 वर्ष
२.	मध्यमावस्था	•	30 वर्ष से 60 वर्ष
३.	वृद्धावस्था	•	60 वर्ष से 100 वर्ष तक

- सुश्रुत के अनुसार - आचार्य ने बाल्यावस्था 15 वर्ष तक इस तीन वर्गों में विभाजित किया है-
- ❖ " वयस्त त्रिविधं बाल्यं मध्य वृद्धमिति । तत्रानृषोडशवर्षीया बालाः ते विविधाः क्षीरपाः क्षीरान्नादा , अन्नादा तेषु सवत्सरपराः क्षीरपाः , द्विसंवत्सरपराः क्षीरान्नादाः परतोऽन्नादा इति । (सु . सू . 35 / 29)"

- जन्म से एक वर्ष की अवस्था तक या जब तक वह शिशु दूध पीता है क्षीरप कहते हैं । यह अवस्था बाल अवस्था कहलाती है । इस अवस्था (एक वर्ष की) से लेकर सोलह वर्ष की अवस्था तक अन्नाद शिशु कहते हैं तथा यह अवस्था कौमारावस्था कहलाती है । इसके पश्चात् धातु , सत्व , बल , वीर्य , पराक्रम के द्वारा बढ़ता हुआ व्यक्ति उत्तर परिणाम के अनुसार 34 वर्ष की अवस्था तक युवा कहलाता है तथा यह अवस्था युवावस्था कहलाती है । धातु आदि के स्थिर हा जाने पर मनुष्य के 70 वर्ष की अवस्था को मध्यमावस्था कहते हैं ।

Table no. 1

अवस्था का नाम	उपभेद	कालमर्यादा
१. बाल्यावस्था-	1 . क्षीरप	जन्म से 1 वर्ष तक
	2 . क्षीरान्नाद	दूसरे वर्ष से 3 वर्ष तक
	3 . अन्नाद	चौथे वर्ष से 15 वर्ष तक
2 . मध्यमावस्था-	1 . वृद्धि	16 वर्ष से 20 वर्ष तक
	2 . यौवन	21 वर्ष से 30 वर्ष तक
	3 . सम्पूर्णता	31 वर्ष से 40 वर्ष तक
	4 . हानि	41 वर्ष से 70 वर्ष तक
3 . वृद्धावस्था-	जरा	71 वर्ष से आयुपर्यन्त (मृत्यु तक

Table no. 2

अवस्था का नाम	उपभेद	काल मर्यादा
1 . प्रसव पूर्व अवस्था	1 . बीजावस्था	0 से 14 दिन (Prenatal Period) (Germinal Period)
	2 . भ्रूणावस्था	14 दिन से 9 सप्ताह (Embryonic Period)
	3 . गर्भावस्था	9 सप्ताह से जन्म तक (Fetal Period)
2 . प्रसवकालीन अवस्था		गर्भावस्था के 22वें सप्ताह से लेकर जन्म के 7 दिन (Perinatal Period) बाद तक
3 . प्रसवोत्तर अवस्था	1 . नवजात शिशु	जन्म के 4 सप्ताह तक (Postnatal Period) (New Borm)
	2 . शैशव (Infancy)	(a) सद्योजात अवस्था- जन्म के पश्चात् 15 से (Early Neonate) 30 सेकण्ड तक (b) नवजात अवस्था- गर्भनाल के कटने से (Period of Neonate) (Cutting of the Umblical cord) लेकर दूसरे सप्ताह तक
4 . कुमार (Toddler)		1 वर्ष - 3 वर्ष तक
5 . पूर्व बाल्यावस्था		3 वर्ष - 6 वर्ष तक (Earlychildhood or preschool child)
६ . उत्तर बाल्यावस्था		6 वर्ष - 10 वर्ष तक (Late childhood or (बालिका) School Age child) 6 वर्ष - 12 वर्ष तक (बालक)
7 . किशोरावस्था		10 वर्ष से 19 वर्ष की (Adolescenee) अवस्था तक

Chapter 3

Navjaat shishu Paricharya

Navajata Shishu Paricharya (Care of the newborn) is described by ayurvedic texts in detail. In ancient texts, acharyas gave prime importance to care of newborn (Navajata Shishu Paricharya) which starts from birth to full stability of newborn. Various procedures were advised in the management of newborn child by acharyas with a few differences in opinion regarding the sequences of those procedures.

- In ayurveda, Pranapartayagamana,
 - Snana,
 - Mukha vishodhna,
 - Pichudharna,
 - Garbhodaka
 - vamaana,
 - Nala chedana,
 - Jatakarma, Raksha karma are the procedures involved in the resuscitation of the newborn
1. Acharya advocated the following steps to stabilise the newborn baby - Pranapartayagamana, Snana, Mukha vishodhna, Pichudharna, Garbhodaka vamaana, Nala chedana, Jatakarma, Raksha karma.
 2. Acharya Sushruta (Sushruta Samhita Sharirasthana gave following steps - Ulva parimarjana, Mukha vishodana, Pichudharna, Nala chedana, Jatakarma, Suvarnaprashana, Abhyanga, Snana, Jatakarma, Rakshakarma.

3. Acharya Vagabhata and Astanga Hridayum Uttarantra gave following steps –

Ulva parimarjana,

Abhyanga,

Prana partyagamana,

Nalachedana,

Snana,

Mukha vishodana,

Pichu dharana,

Suvaranaprashana,

Garbhodaka vamaana,

Jatakarma,

Rakshakarma

1. ULVA - PARIMARJANA

- (Cleaning of Vernix caseosa) Acharya Sushruta has advised to first and foremost clear/remove the ulva (vernix caseosa) from the body of newborn baby
- 2 Acharya Vagbhata has advised application a mixture of saindhava & ghrita for ulva parimarjana and further to massage the baby with bala oil which provide relief from stress/pressures undertaken by the baby during the birth process.

- 4 The drug Bala (*Sida cordifolia*), mentioned here, according to Ayurveda, has the following properties – balakaraka (provide strength), grahi & cures (nashnaum) vata, rakatapitta (hemorrhagic/bleeding disorders), raktavikara and vrana.

2. MUKHA VISHODHANA

- (Oropharyngeal cleaning) Acharya Charaka described mukh vishodhana very scientifically, which is also synonymous with the modern day Neonatology practice, where it is advocated that the oral cavity (palate, lips, pharynx, tongue) of the newborn is first of all to be cleaned with nail trimmed finger wrapped with cotton and similar description is given by Vagbhata.
- acharya Sushruta has promoted the use of ghrita (clarified butter) and saindhava (rock salt) to clear the secretions of the oral cavity .
- 2 The method employed for cleaning of airways will depend on the presence or absence of meconium. Generally, oral secretions are be cleared by use of clean cloth wrapped around index finger or by use of suction catheter or with a bulb syringe. The proper order for cleaning an infant's oral cavity is first cleaning the mouth, then the oropharynx and hypopharynx and finally the nasal cavity, using a suction catheter with gentle intermittent suction. This technique involves first cleaning the oropharyngeal cavity and thereafter the nasal cavity to avoid aspiration of secretions

3. PICHUDHARNA

- (Tampon application)
- Acharya Sushruta recommend that put/cover the murdha of the newborn (anterior fontanelle or forehead) with tampon soaked in ghrita .

- 2 Acharya Vagbhata has also counselled the use of sneha-pichhu (a gauze smeared with oil) on talupradesha (anterior fontanelle or forehead).
- 4 This might have been employed to indicate importance which murdha/brhamarandra (anterior fontanelle) holds with regard to the soft intracranial structures of the newborn, which are yet not protected due to unfused cranial sutures. Thus, as a protective mechanism, the acharyas have advised the covering of anterior fontanelle with a sneha-pichhu. This however is not practiced in modern Neonatolog

4. NALA CHEDANA

- (Cutting & care of Umbilical Cord) Acharya Charaka described nalachhedana to be undertaken after Pranapratyagaman (proper revival). Umbilical cord should be cut at eight angula distance from baby's umbilicus by clean and sharp instruments made from metals like swarna (gold), rajat (silver), ayasa (iron) and followed by tying with a clean thread at its cut end. The free end of the clamped cord should be hung onto the neck of the baby
- During initial stage of nabhipaka (omphalitis), oil medicated by drugs as lodhra (Symlocos racemosa), mulethi (Glycyrrhiza glabra), priyangu (Callicarpa macrophylla), devdaru (Cedrus deodara) & haridra (Curcuma longa) is curative in case omphlitis develops¹. Acharya Charaka also described various complications owing to faulty technique of nalachhedana, for example erroneous tying of umbilical cord, and their respective treatment
- Nowadays, umbilical cord is clamped without delay after delivery. The first ligature is tied about 2-3 cm from the abdomen of the baby and second ligature is tied 5 cm from the abdomen. Then the cord is cut by use of clean blade/scissor in between these two ligatures and the cut end is

inspected for presence of normal anatomical contents of umbilical cord i.e. two arteries and one vein.

- A clean autoclaved thread, disposable cord clamp or a sterile rubber band is used for cord clamping. Cord is left as such with an aim to keep it dry and avoiding repeated handling to prevent sepsis. Inspection of the cord is advised at every 15-30 minutes for initial few hours after birth for early detection of any oozing from the cord which may occur due to loosening of ligatures and shrinkage of cord. Generally, the umbilical stump dries and falls off anytime between 5-10 days after birth.

5. PRANPARTYAGAMAN

- (Resuscitation Process) In ancient texts, broadly the process of Pranapartyagaman was discussed in two parts. First, general measures to initiate respiration are discussed and thereafter, specific measures are indicated which may be employed once the initial attempts fail to revive the newborn.
- 1. According to acharya Charaka, the following general measures should be undertaken immediately after the birth of newborn, such as - striking of two stones just near the ears of baby and sprinkling warm or cold water on baby's face. These two steps may prove helpful for the baby to initiate the important act of breathing helpful in respiration and heart functioning, which have been a bit hampered during act of birth through birth canal. If baby does not stabilize/show any activity even after these steps
- then measures to increase air (oxygen) availability to the baby as in by waving a krishankapalika shoopa (a blackened surface broken earthen pot) near it until the baby is fully revived/resuscitated
- 2. Acharya Vagbhata also advocated the striking of two stones near the baby's ears, and chanting certain mantras (mantra is the part of daiva-

vyapashraya chikitsa – a form of treatment advocated in Ayurveda by invoking the Gods through chanting of healing mantras) near its right ear for stabilizing the newborn

- 3. Acharya Vagbhata also described general and specific measures for resuscitation of a newborn until its proper stabilization.
- Acharya Vagbhata first gave the sign & symptoms of an asphyxiated newborn as –
 - a) Child suffering from deep unconsciousness (prabal moha) and fever (javara)
 - b) Unable/weak cry according to severity of pain
 - c) Unsteady state of all the tissues of the body (anavasthita shesha deha dhatus)
 - d) Attainment of youth is doubtful/suspicious about forthcoming youth (asambhava yovanath awastha)
 - e) Touch of hands, cloth, bed etc. gives feeling as being cut by saw
 - f) Abnormal and excessive involuntary movements g) Newborn repeatedly shows distress as in apparent death
- GARBHODAKA VAMANA (Stomach wash) Acharya Charaka advised use of saindhava and ghrita for inducing vama (emesis) to wash out the gastric contents right after carrying out the pichhudharana and Astanga Sangraha Uttaratantra . For enabling this process, Acharya.
- According to Acharya Bhavaprakasha, Saindhava Lavana has following properties - swadu, dipanum, pachanum, sheet, sukshma, netrya, tridoshahara.

- Vacha has following properties – katu and tikta in rasa, ushna virya, vamankarka, dipanum, malamutra shodhaka, and cures vibanda (constipation), adhymana
- 5 Thus, the above stated medications are apt for clearing the stomach of any mucus or secretions
- 7. SNANA (Bathing of baby) Acharya Charaka recommended that after proper stabilisation of newborn (pratayagata prana prakrirti bhuta), snana of newborn is to be undertaken
- 1 Acharya Vagbhata describes snana, the first bathing of the newborn in detail and advised snana to be done only after proper evaluation of the doshas, kala (seasons/periods) and strength/capability of baby. Vagbhata also mentions different dravyas for snana as – lukewarm ksheerivriksha kwatha, sarvagandha dravyas' medicated water, water in which heated rajat (silver) or swarna (gold) have been quenched or in kapith patra kwatha.

8. JATAKARMA (Feeding schedule of neonate)

- Regarding the feeding schedule of the newborn, acharya Charaka has said that on the first day feed the neonate with madhu (honey) and ghrita which has been sanctified with mantras and thereafter the mother should offer her right breast for feeding to the baby after placing by the side of baby's head, an earthen pot filled with water rendered sacred by chanting of mantras
- Charaka has advised breast feeding immediately after birth right from the first day of life which in principle is advocated nowadays as well. Acharya Sushruta advised a concoction of madhu, ghrita and ananta consecrated with mantras to be administered three times a day on the first day of childbirth
- On second and third day Lakshmana medicated ghrita, while on fourth day madhu and ghrita is to be offered to the newborn in amount which is -

shavapanitalasamitta (or amount which fills the neonate palm). Henceforth, the baby can be exclusively breast-fed.

- 2 Acharya Vagbhata follows Sushruta's feeding regimen with a slight variation where on the fourth day, he has advocated offering ghritha (sarpi) and navnita (butter) to the newborn and thereafter initiating breast feeding.

9. **RAKSHAKARMA (Protective measures)**

- In Ayurveda, Rakshakarma has been described as under - 1. Under Rakshakarma, Acharya Charaka gives detailed description related to protection of newborn (rakshakaram) related to antiseptics of beddings, clothing, and aseptic measures to prevent infections from surroundings. All around the labour room (sutikagara), the twigs of adani, khadira, karakndu, pilu, parushaka should be hung, and sarshapa, atasi, tandula, kan-kanika should be scattered on its floor. A packet containing vacha, kustha, kshomka, hingu, sarsapa, atasi, lasuna
- guggulu etc. raksoghana dravyas should be hung on the door and similar dravyas should be tied around the neck of mother and the child. Well wishing care taker women should be remain vigilant and attentive in the sutikagara for the initial 10-12 days
- 2. Acharya Sushruta directed the newborn to be wrapped in kshauma (linen) cloth and made to sleep on a bed covered with soft linen. Twigs of pilu-badar-nimba-parushaka are to be used to gently fan the baby. A tampon impregnated with oil (tailapichu) should be applied over the baby's forehead daily. Fumigation with rakshoghana dravyas should be done in the sutikagara.
- 3. Acharya Vagbhata described similar rakshakarama as described by Charaka ,
- Vagbhata has also counselled use of herbs as brahmi, indryana, jivaka and rishbhaka to be tied around hands or neck of the newborn. Vagbhata

also mentions use of balvacha for it promotes medha, smriti, health and longevity of the baby

- Various propounders of Ayurveda have described the care of newborn in their own measure yet its essence is the same and moreover in its intent heralds the modern day Neonatology. Although, since then a rapid progression in Neonatology owing to technological advances in biological sciences have taken place yet the Ayurvedic acharyas have to be credited for keeping in place a very rational newborn care regimen. The in detail navajata shishu paricharya is surely the precursor of recent neonatology both having the common aim of protecting the newborn and adapting it to the worldly environment

Chapter 4

Stanya

Stanapan vidhi

- (Methods of Breastfeeding) In Ayurveda, there is a concept of the Jatakarma Samskara. According to Acharya Charaka, after following the Navajata shishu paricharya (basic resuscitative procedures), the Jatakarma Samskara is performed by allowing the baby to lick unequal amounts of sacredly enchanted Madhu (honey) and ghrita. Thereafter, the baby is allowed to feed milk from the right breast first. Hence, we can conclude that Charaka also believed that the breastfeeding should be started as soon as the baby is ready to suck and mother is well enough to be suckle.
- We should ensure proper attachment of the baby at the breast to ensure adequate intake by the baby. If baby is calm and relaxed with wide open mouth with everted lips which covers most part of the areola and full cheeks while Breastfeeding then it is sign of good attachment.
- The baby must be fed every 2-3 hourly in general.
- Duration of each feed should be decided by the baby. There is no fix rule or any strict time schedule for feeding as some baby feed repetitively in 1 hour and some in 2 or 3 hours therefore, the baby should be feed on their demand. Both over and inadequate feeding should be avoided.
- Dhatri (Wet Nurse):- Dhatri (wet nurse) are advised in case of absence of the mother, or if the mother is unable to feed the baby. Acharyas has described the qualities of Dhatri in their respective Samhitas as- she should be of Samanvarna (same caste), Anatura (free from diseases), Avyanga (no disability), Avyasani (non-addicted) etc.

- Top feed should be strictly avoided. However, it can be indicated in cases of true lactation failure, unavailability of mother, some serious maternal illness or death. Ayurveda mentioned the substitute for breast milk in case of non-availability of mother milk or wet nurse
- Charaka has advised cow milk in absence of mother milk while Vagbhata advised medicated cow or goat milk in absence of mother milk. Nowadays, many formula feeds are available in market which have nearly same composition as the breastmilk. But it must be used with proper dilution as prescribed by the manufacturer. Composition of cow milk is nearest to human milk except high protein so, it must be used with some dilution to prevent gastric upset of the baby.

Formula-Feeding

- Some parents choose formula-feeding either because of personal preference or because medical conditions of either the mother or the infant make breastfeeding ill-advised.
- Some common reasons for choosing formula-feeding include: There is an inadequate supply of maternal breast milk. The baby is sucking inefficiently. Parents are unable to quantify the amount of breast milk received by the baby. Some parents want to know exactly how much their baby is receiving at each feeding, and formula/bottle-feeding allows exact measurement.

Formula-Feeding

- A significant reason for not breastfeeding is concern about transferring certain drugs the mother is taking through the breast milk to the infant.
- An increasing number of mothers must return to work shortly after their baby's delivery.

- A benefit of bottle-feeding is that the entire family can immediately become intimately involved in all aspects of the baby's care, including feedings.
- Which formula is best for my baby?
- There is no evidence that one brand of formula is better than another. However, you should consider: ü Choosing a formula based on cow's milk, unless there is a cultural, religious or health reason to use a different formula
- If possible, choosing a formula with a lower protein level, which may reduce your baby's risk of being overweight or obese in later life
- Only using special formulas (HA, AR, lactose-free or soy formula) if they are recommended by a doctor
- Taking into account price and affordability

Stanyapnayana (Weaning)

- Weaning or complementary feeding may define as the gradual introduction of semi- solid and solid diet along with breastfeeding to meet the growing nutritional demand of the baby. Usually weaning is started at the age of 6 months.
- Weaning is also explained in Ayurveda, Vagbhata told that gradual weaning should be started after tooth eruption and child should be provided with cow's or goat's milk with Laghu and Bruhan diet.
- 1 According to Astanga-sangraha: Stanyapanayana After the eruption of the teeth, the baby should be taken away from the breast slowly (Over long period). It should then be fed with milk described earlier(the child should drink the milk of a goat or a cow, possessing similar qualities, boiled and drugs of laghu panchamoola or with the two, shaliparni and

prisiniparni and anna(boiled rice or other solid foods). Which is easily digestible and stoutening the body .

2 According to Astanga-hridaya: Stanapanayana With the eruption of the teeth, the child should be gradually weaned from the breast. Other kinds of milk (milk of goats and milk of cow) and boiled rice and such foods which are easily digestible and nourishing should be given

Stanya Sampati

- **a.** According to Charak The excellent milk has normal colour, smell, taste and touch.

Dissolves completely in water if milked in a water pot because of its (watery) nature. Such milk is nourishing and health giving. Thus is the excellence of breast milk. The woman's milk promotes longevity and nourishment. It is wholesome and unctuous. Its nasal instillation cures raktapitta. When used in akshi-tarpana therapy it cures pain in the eyes used in netravisyanda .

- **b.** According to Sushruta The breast-milk, which put in water becomes one with it, is pale, sweet and free from abnormal colour, and should be known as normal. Sushruta says that the pure milk is cold, clean or free from impurities, whitish yellow or white just like the colour of conch-shell, sweet in taste and free from discolouration, when put in water it mixes evenly, neither produces froth nor streaks, neither floats nor settles down. This type of milk produces good health, growth, and development of body as well as gives strength to the child
- According to Kashyapa Kashyapa without mentioning any physical characters says that the pure milk is that which provides unobstructed, easy and good growth of strength, different body. Parts, longevity as well as good health too the child and does not cause any pain or trouble to the child and wet-nurse
- Properties of breast milk

- Balanced diet:
- 1- protein: 70% soluble ; easily digested.
- 2- fat: essential long chain ; needed for brain develop.
- 3- high fat: in hind milk à satiety .
- 4- high cholesterol: myelination of nervous system.
- 5- high lactose galactose à brain growth.
- 2) Anti-anaemic: Lower risk of iron deficiency during the first 6 months of life because: a- Higher iron content (1.5 times cow's milk).
- 2) Antioxidants can be given in first 3 months vit.E,A,C to increase iron and calcium absorption. * Iron should not be given in first 3 months.
- 3) Anti-allergic: It protects against allergic diseases such as infantile eczema , allergic rhinitis , asthma and allergic gastroenteropathy.
- Breast milk has secretory immunoglobulin A (IgA) which lines the GIT and closing the spaces leading to no leakage of lactoproteins into the circulation and no formation of antibodies.
- 4) Laxative effect by enhancing GIT motility leading to prevention of meconium blood formation which is the most common cause intestinal destruction. 5) reducing enterohepatic circulation and prevent hyperbilirubinaemia.
- In summer weather when colostrum is in small amount and due to hot weather dehydration may occur manifested by fever ; when baby is alert and reddish in colour. R: oral hydration ; if severe degree leading to IV fluids should be given.
- 5) Anti-infection property: i.e. protection from GIT and respiratory infections:- Breast milk has a living property ; it contains living cells from the mother i.e. Peyer's patches in the mother circulating blood reach the

bowel of the baby (supplying it with macrophages and lymphocytes). They reach the baby Peyer's patches in the intestine and increasing its cell-mediated immunity.

- Benefits of Breastfeeding
- Breastfeeding provides unique and tremendous health benefits to the baby as well as to the mother.
- Benefits to the baby
- Breast milk is a complete food; so, there is no need of any supplements up to the age of 6 months.
- It is easily digestible and maintains the healthy gut flora.
- It contains number of anti-infective substances, antibodies and friendly lacto-bacilli which protects the baby from many infections and provides immunological benefit to the baby throughout the lifetime.
- • Breastfeeding enhance emotional security and make close bonding between mother and child.
- • Breastfeeding babies are smarter and have more IQ level than top feeding babies, because it contains DHA which helps in brain development. • There is no risk of adulteration, dilution, contamination and infection.
- Benefits to the mother
- • Oxytocin released during breastfeeding promotes involution of uterus, thus reduces risk of PPH and anaemia.
- • Breastfeeding delays the ovulation and onset of menstruation which provides natural spacing. (Lactational amenorrhoea).
- • Mothers who breastfeed the babies have less risk of ovarian and breast cancer.

- • Breastfeeding helps in regaining the pre-pregnancy body weight faster because the energy stores laid down during the pregnancy are consumed faster during lactation.
- Advantages of breast feeding:-
- 1) Balanced diet.
- 2) Anti-anaemic.
- 3) Anti-allergic.
- 4) Anti-rechitic.
- 5) Anti-infective.

FACTORS AFFECTING LACTATION

- Maternal problems:
- — stress(post c/s, stressful vaginal delivery or other psychosocial stresses) opiates and beta-endorphins are released that block the stimulus-secretion coupling thus reducing oxytocin release
- — polycystic ovarian syndrome,
- — theca lutein cysts,
- — obesity,
- — labour analgesia, — dm type 1,
- — placental retention-increased circulating progesterone
- — Alcohol dependence

FACTORS AFFECTING LACTATION.

- Infrequent suckling/failure to empty breast causes Elevated intrammary pressure also disrupts connections between cells and their attachment to the basement membrane disrupting synthesis and secretion of milk components.
- Premature infants-prolactin may not be sufficient
- Advise to the mother to improve lactation
 - — Good health; — Early and sufficient treatment of illnesses;
 - — Proper balance between rest and exercise;
 - — Freedom from worry
 - — Care of the breast /nipples during pregnancy
 - — Post natally frequent breast feeding
 - — Avoid breast engorgement
 - — Plenty of fluids
 - — Adequate nutrition

Chapter- 5

Neonatal Examination (नवजात शिशु परिक्षण)

The new born examination included following points-

Learning Objectives for neonatal examination-

1. Classification of newborn
2. Understand Apgar score for neonatal examination
3. Assess growth measurements of newborn
4. Assess vital signs of newborn
5. Estimate the gestational age
6. Assess the different body systems of newborn
7. Recognize normal findings
8. Recognize common problems related to newborn

Classification of newborn

1. Classification By Birth –

Weight Low Birth Weight	< 2500 g
Very Low birth weight	< 1500 g
Extreme low birth weight	< 1000 g

2. Classification by Gestational Age-

Preterm	<37 wks
Full term	37-42wks
Post term	>42 Wks


3. Small for Gestational Age-

Symmetric	Asymmetric	Combined
HC, Length, weight all <10 percentile – 33% of SGA infants	Weight <10 percentile, HC and length normal – 55% of SGA infants	Symmetric or asymmetric – 12% of SGA infants
Cause	Cause	Cause
Infection, chromosomal abnormalities, inborn errors of metabolism, smoking, drugs.	Uteroplacental insufficiency, Chronic hypertension or disease, Preeclampsia, Hemoglobinopathies, altitude, Placental infarcts or chronic abruption	Smoking, drugs, Placental infarcts or chronic abruption, velamentous insertion, circumvallate placenta, multiple gestation

4. Large for Gestational Age

ETIOLOGIES –

- (A) Infants of diabetic mothers
- (B) Beckwith-Wiedemann Syndrome
 - characterized by macroglossia, visceromegaly, macrosomia, umbilical hernia or omphalocele, and neonatal hypoglycemia
- (C) Hydrops fetalis
- (D) Large mother



The Apgar score rates:

- Respiration, crying
- Reflexes, irritability
- Pulse, heart rate
- Skin color of body and extremities
- Muscle tone

#ADAM

Score	0	1	2
Heart Rate	Absent	<100bpm	>100bpm
Respiratory effort	Absent, irregular	Slow, crying	Good
Muscle tone	Limp	Some flexion of extremities	Active motion
Reflex irritability (nose suction)	No response	Grimace	Cough or sneeze
Color	Blue, pale	Acrocyanosis	Completely pink

EXAMINATION-

Examination of newborn is completely physical examination.

It should be done within 24 hours after birth including the following points:-

1. See Vital signs of new born.
2. Complete physical examination of new born.
3. Neurological examination of new born.
4. Estimation of gestational age.

Other than this regularly monitor Temperature, Heart rate, Respiratory rate, Blood pressure, Capillary refill time.

1. Temperature –

- Temperature should be taken from Axillary region.
- The normal temperature for infant is 36.5- 37-50 C.
- Axillary temp. is 0.5-1 0c lower than rectal temperature.

2. Heart rate

- It should be obtained by auscultation and counted for a full minute.
- Normal heart rate is 120-160 beat /minute.
- If the infant is tachycardic (heart rate >170 BPM), make sure the infant is not crying or moving vigorously.

3. Respiratory rate

- Normal respiratory rate is 40 –60/minute
- Respiratory rate should be obtained by observation for one full minute
- Newborns have periodic rather than regular breathing

❖ Physical examination

1. First of all examine new born in delivery room or as soon as possible after delivery.
2. 2nd and more detailed examination after 24 hours of life.
3. Discharge examination with 24 hours of discharge from hospital.

❖ Measurements

There are three components for growth measurements in neonates-

1. Weight
2. Length
3. Head circumference

All should be plotted on standardized growth curves for the infant's gestational age.

1. Weight –

- Weight of Full Term infants at birth is 2.6– 3.8kilogram.
- Babies less than 2.5 kg are considered low birth weight.
- Babies loose 5 – 10% of their birth weight in the first few days after birth and regain their birth weight by 7 – 10 days.
- Weight gain varies between 15-20 gm/day.

2. Length

- Crown to heel length should be obtained on admission and weekly.
- Acceptable newborn length ranges from 48-52 cm at birth.

4. Head Circumference

- Head circumference should be measured on admission and weekly.
- Using the measuring paper tape around the most prominent part of the occipital bone and the frontal bone.
- Acceptable head circumference at birth in term newborn is 33-38 cm.

Vernix Caseosa

- A lubricant found on the skin or skin fold
- Disappears as the fetus ages
- Almost absent in post- term



3. Head Circumference



GENERAL EXAMINATION-

1. Colour

- **Pallor:-** Associated with low hemoglobin or shock .
- **Cyanosis:-** Associated with hypoxemia
- **Plethora:-** Associated with polycythemia
- **Jaundice:-** Bilirubin level increased.

2. **SKIN**

- Purpura
- Echymosis
- Mottling
- Vernix caseosa
- Edema
- Mongolian spots
- Collodion infant

- **Vernix Caseosa** –

- A lubricant found on the skin or skin fold.
- Disappears as the fetus ages.
- Almost absent in post- term.

- Mongolian spots and Dark blue bruise-

- like macular spots usually over sacrum
- In 90% of blacks and Asians § Disappear by 4 yrs

3. **Rashes**

- Milia
- Erythema toxicum
- Bullous impetigo
- Diaper rash
- Nevi

- Milia and White papules –

- Less than 1 mm in diameter scattered across the forehead, nose, cheeks.
- Sebaceous retention cysts disappear within weeks.

- Erythema toxicum and White vesicles with a red base-

- Contain eosinophils
- 48 hours after birth

- Transient
- Benign
- Bullous impetigo: - Pemphigus neonatorum

4. Head and Neck

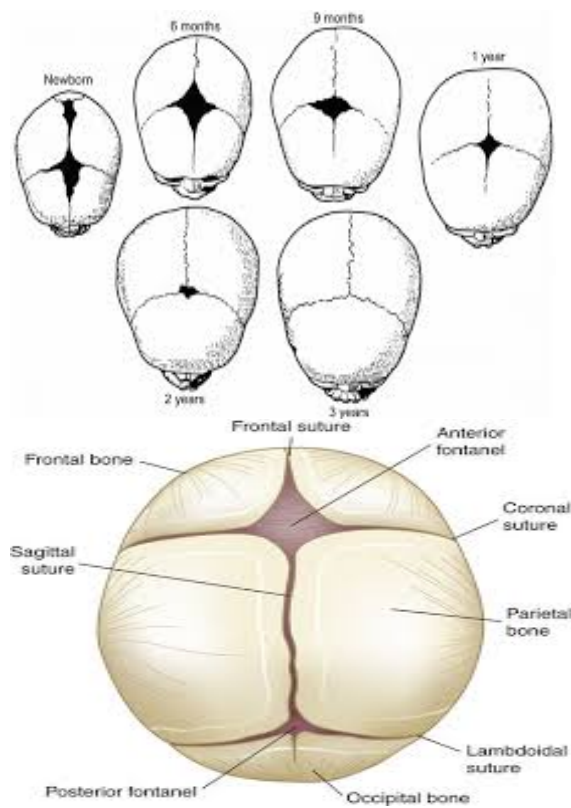
- Skull – Macrocephaly and microcephaly
- Caput succedaneum
- Cephalhematoma
- Subgaleal hemorrhage
- Hydrocephalus

- Caput Succedaneum-
 - Edema of scalp skin, crosses suture lines.
- Cephalhematoma –
 - Subperiosteal
 - Not cross suture lines

Cephalhematoma Complications:

- Underlying linear skull fracture
 - Jaundice
 - Calcification
 - Infection
 - Intracranial Hemorrhage
-
- Subgaleal hemorrhage-
 - Under the aponeurosis of the scalp
 - Cross suture lines
 - Anterior and posterior fontanelle-
 - Large anterior fontanelle is seen in hypothyroidism, osteogenesis imperfecta, hydrocephalus.

- Small ant.fontanelle in microcephaly and craniostenosis.
- Bulging ant. fontanelle in meningitis and hydrocephalus Intracranial hemorrhage.
- Depressed ant.fontanelle in dehydration
- Large post.fontanelle :-suspicious of hypothyroidism



5. Eyes examination-

- Pupils: -equality, reactivity to light.
- Squint
- Cornea, Conjunctiva and Iris

- Subconjunctival hemorrhage- Benign condition Resolve by 2-4 wks
- Congenital cataract:- rubella
- Glaucoma
- Dysconjugate Eye Movements

6. Ear Examination-

- Assess for asymmetry or irregular shape – Note presence of auricular or pre-auricular pits, fleshy appendages, lipomas, or skin tags.
- Low set ears - Below lateral canthus of eye
- Associated with genitourinary anomalies, because these areas develop at same times.
- Malformed ears -Can be associated with Downs or Turners Syndromes
- Ear Tag

7. Nose Examination

- Patency of each nostril:- exclude choanal atresia
- Flaring of nostrils
- Dislocated Nasal Septum

8. Mouth examination –

- Cleft lip and palate
- Tongue tie
- Natal teeth
- Tongue size
- Cleft Lip
 - Unilateral Cleft Lip and cleft palate
 - Bilateral Cleft Lip and cleft palate

Cleft Lip



Unilateral Cleft Lip and cleft palate



- **Ranulas** – small bluish-white swellings of variable size on the floor of the mouth representing benign mucous gland retention cysts.

9. Tongue Examination-

- Ankyloglossia
- Natal Tooth
- Macroglossia
- Oral thrush

10. Neck Examination-

Cysts:-

- Thyroglossal cyst
- Cystic hygroma Masses:- Sternomastoid tumor
- Thyroid Webbing
- Sternomastoid tumor-
 - Hematoma in the middle third of the sternomastoid muscle.
 - Torticolis
 - Limitation of lateral rotation of the neck
- Webbed Neck

11. Muskloskeletal Examination-

Fractures § Dislocations § Polydactyly § Syndactyly § Deformities

12. Erb's Palsy

Erb's Palsy

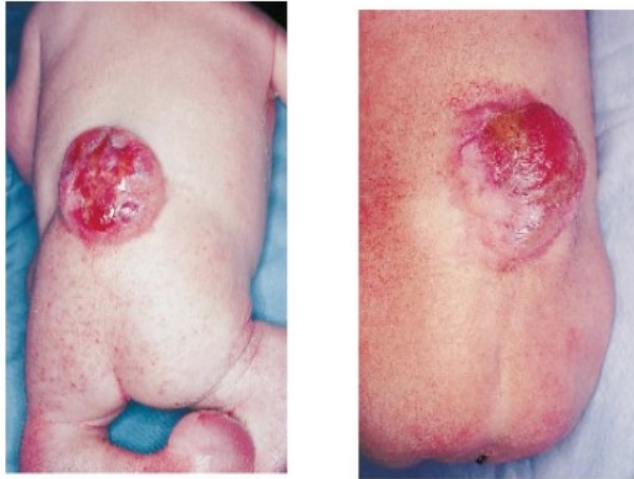


Ankyloglossia

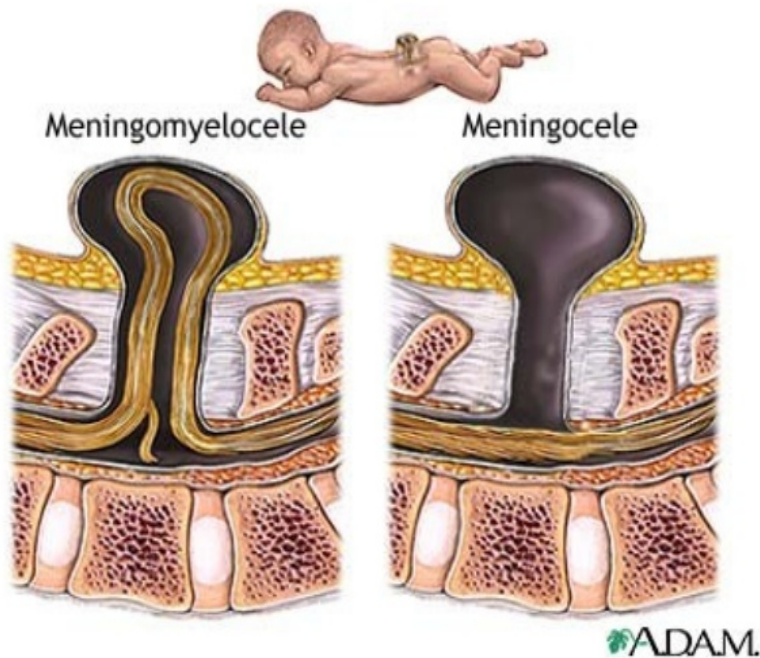


- Polydactyly
- Syndactyly
 - Simple – involves soft tissue attachment only • Complex – involves fusion of bone or nail • Partial - web extends from base partially • Complete - web from base to tip of finger • Radiographs needed to determine degree of fusion. • Should refer to orthopedics.
- Talipes Equinovarius (Clubfoot)
- Spine and hips • Inspect back for meningocele • Examine for dislocation hip: expected if there is asymmetry of skin folds of the thigh and shortening of the affected leg
- Meningomyelocele

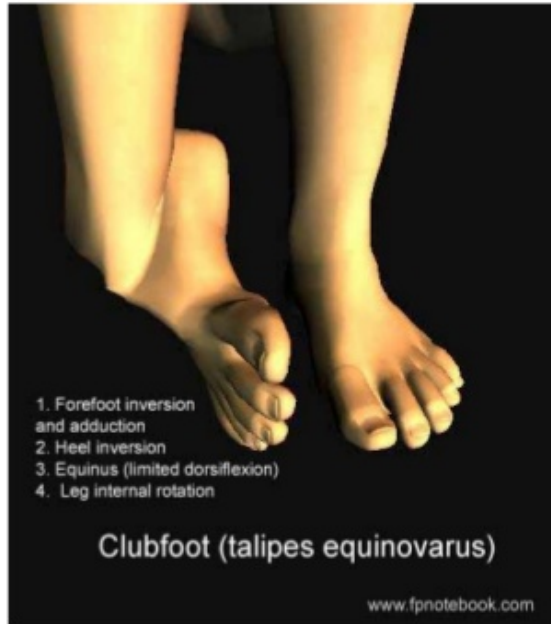
Meningiomyelocele



Meningiomyelocele & meningocele



Talipes Equinovarius (Clubfoot)



- Chest/Lungs
 - Observe – Respiratory pattern
 - Brief periods apnea are normal in transition, called “periodic breathing” – Chest movement
 - Symmetry
 - Retractions and Tracheal tugging
 - Auscultation – Audible stridor, grunting – Wheeze, rales.
- Heart and vascular system
 - Tachypnea, tachycardia

- Increased pericardial activity
- Cyanosis: hyperoxia test
- Auscultation of heart sounds, murmurs or Irregular heart rhythm
- Perfusion: Capillary refill time
- Palpate femoral pulsation: absent in coarctation of the aorta
- Bounding pulses often indicated PDA
- Abdomen
 - Organomegaly: liver may be palpable 1-2 cm below the costal margin
.spleen is at the costal margin § Masses §Distension , scaphoid abdomen
 - Umbilical stump: bleeding , meconium straining, granuloma, discharge, inflammation
 - Omphalocele and Gastroschisis

Abdomen • Cylindrical in Shape

- Normal Umbilical Cord
- Bluish white at birth with 2 arteries & one vein.
- Meconium Stained Umbilical Cord
- Omphalocele Defect covered by amnion, with cord attachment to apex of defect. Herniation through defect: any abdominal organs
- Genitalia and rectum
- In full term,scrotum is well developed,with deep rugae. Both testes are in the scrotum

- In preterm, scrotum is small with few rugae. testes are absent or high in the scrotum abnormalities: • undescended testis • hydrocele, • inguinal hernia • hypospadias
 - Bilateral hydrocele
 - Bilateral Inguinal hernias
 - Hypospadias Meatus opens on the ventral surface of the penis
 - Female genitalia
 - In full term, labia majora completely cover labia minora
 - In preterm, labia majora is widely separated and labia minora protruded
 - A discharge from the vagina or withdrawal bleeding may be observed in the first few days
 - Infant with ambiguous genitalia should not undergo gender assignment until endocrinal evaluation is performed
 - Imperforate Anus The anus is inspected for its location and patency . An imperforate anus is not always immediately apparent. Thus, patency often is checked by careful insertion of a rectal thermometer to measure the baby's first temperature
 - Meconium should pass in the first 48h after birth
 - Delayed passage of meconium may indicate imperforate anus or intestinal obstruction
 - Urine should pass in the first 24h of life
 - Muscle tone §Convulsions §Neonatal reflexes Moro Grasp Tonic Neck Stepping and Placing Rooting & Suckling
 - • Posture

- – Term infants normal posture is hips abducted and partially flexed, with knees flexed.
- – Arms are abducted and flexed at the elbow.
- – Fists are often clenched, with the fingers covering the thumb
- • Tone – To test, support the infant with one hand under the chest. Neck extensors should be able to hold head in line for 3 seconds – There should be no more than 10% head lag when moving from supine to sitting positions.

Neonatal reflexes

- Also known as developmental, primary, or primitive reflexes. § They consist of autonomic behaviors that do not require higher level brain functioning § They can provide information about integrity of C.N.S. Their absence indicate C.N.S depression § They are often protective and disappear as higher level motor functions emerge.
- Moro Reflex § Onset: 28-32 weeks GA § Disappearance: 4- 6 months § It is the most important reflex in neonatal period
- Moro reflex Ø Stimulus : when baby in supine position elevate his head by your hand then allow head to drop suddenly Ø :Response • Extension of the back • Extension and abduction of the UL • Flexion and adduction of the UL with open fingers • Crying
- Significance of Moro Ø Bilateral absence: • CNS depression by narcotics or anesthesia • Brain anoxia and kernicterus • Very Premature baby • Asymmetric response: • Erbs palsy , fracture clavicle or humerus Ø Persistence beyond 6th month: • CNS damage
- Suckling Reflex • When a finger or nipple is placed in the mouth, the normal infant will start to suck vigorously • Appears at 32 w & disappears by 3 – 4 m

Chapter- 6

Nutrition

DEFINITION-

- Nutrition is the science that interprets the interaction of nutrients and other substances in food in relation to maintenance , growth , reproduction , health and illness of an organism .A poor diet may have an injurious impact on health causing deficiency diseases
- Other words:-Nutrition is defined as the process of providing or obtaining the food necessary for health and growth
- In this session, we will learn about each nutrient in more detail. You will learn about the major categories of nutrients, the main sources of these, their function, and how our body uses each of these nutrients for healthy growth and development.
- There are seven main classes of nutrients that the body needs. These are carbohydrates, proteins, fats, vitamins, minerals, fibre and water. It is important that everyone consumes these seven nutrients on a daily basis to help them build their bodies and maintain their health. Deficiencies, excesses and imbalances in diet can produce negative impacts on health, which may lead to diseases.

NUTRIENTS	PRIMARY FUNCTION
WATER	Dissolves and carry nutrients , removes waste and regulates body temperature
PROTEIN	Builds new tissue , antibodies , enzymes hormones and other compounds
CHO	Provides energy
FAT	Provides long term energy insulation and protection
VITAMINS	Facilitate use of other nutrients involved in regulating growth and manufacturing hormones
MINERALS	Helps in growth of bones and teeth , aid in muscle function and nervous system activity

Macronutrients-

- Based on the amount of the nutrients that each person needs to consume on a daily basis, these nutrients are categorised into two groups. These are macronutrients, which should be consumed in fairly large amounts, and micronutrients, which are only required in small amounts.
- 1 Macronutrients**
- 'Macro' means large; as their name suggests these are nutrients which people need to eat regularly and in a fairly large amount. They include carbohydrates, fats, proteins, fibre and water. These substances are needed for the supply of energy and growth, for **metabolism** and other body functions.

- Metabolism means the process involved in the generation of energy and all the 'building blocks' required to maintain the body and its functions.
- Macronutrients provide a lot of calories but the amount of calories provided varies, depending on the food source. For example, each gram of carbohydrate or protein provides four calories, while fat provides nine calories for each gram.
- **micronutrients** are substances which people need in their diet in only small amounts. These include minerals and vitamins.
- Although most foods are mixtures of nutrients, many of them contain a lot of one nutrient and a little of the other nutrients. Foods are often grouped according to the nutrient that they contain in abundance

Foods that contain a lot of protein are called body-building foods or **growing foods**. Foods that contain a lot of fat or carbohydrates and perhaps only a little protein are called **energy-giving foods**.

Foods in which the most important nutrients are vitamins or minerals are called **protective foods**.

Macronutrients- Carbohydrates

- **Carbohydrates** are referred to as energy-giving foods. They provide energy in the form of calories that the body needs to be able to work, and to support other functions.
- Carbohydrates are needed in large amounts by the body. Indeed, up to 65% of our energy comes from carbohydrates. They are the body's main source of fuel because they are easily converted into energy. This energy is usually in the form of glucose, which all tissues and cells in our bodies readily use.

- For the brain, kidneys, central nervous system and muscles to function properly, they need carbohydrates. These carbohydrates are usually stored in the muscles and the liver, where they are later used for energy.
- The main sources of carbohydrates are bread, wheat, potatoes of all kinds, maize, rice, cassava, '*shiro*', pasta, macaroni, '*kocho*', banana, sweets, sugar cane, sweet fruits, and honey. Other foods like vegetables, beans, nuts and seeds contain carbohydrates, but in lesser amounts.
- 2.2.2 Classification of carbohydrates
- Proteins- About 10–35% of calories should come from protein. Proteins are needed in our diets for growth (especially important for children, teens and pregnant women) and to improve immune functions. They also play an important role in making essential hormones and enzymes, in tissue repair, preserving lean muscle mass, and supplying energy in times when carbohydrates are not available.
- Pregnant women need protein to build their bodies and that of the babies and placentas, to make extra blood and for fat storage. Breastfeeding mothers need protein to make breastmilk.
- Sources of protein - The main sources of proteins are meats, chicken, eggs, breastmilk, beans, ground nuts, lentils, fish, cheese and milk.
- All animal foods contain more protein than plants and are therefore usually better sources of body building foods. However, even though plant proteins (see Figure 2.1) are usually not as good for body-building as animal proteins, they can become more effective nutritionally when both are mixed with each other.
- Fats and oils-Fats and oils are concentrated sources of energy and so are important nutrients for young children who need a lot of energy-rich

food. Fats can also make meals more tasty and satisfying. Fat is found in meat, chicken, milk products, butters, creams, avocado, cooking oils and fats, cheese, fish and ground nuts.

-

Classification of fats-

- Fats are classified into saturated and unsaturated fats. The classification is important to enable you to advise your community about which fats can be consumed with less risk to people's health. Saturated fats are not good for a person's health.
- **Saturated fats** are usually solid at cool temperatures. Eating too much saturated fat is not good for a person's health, as it can cause heart and blood vessel problems.
- **Unsaturated fats** are usually liquid at room temperature. These types of fats are healthy fats. Examples include fats from fish, oil seeds (sesame and sunflower), maize oil and ground nut oil and breastmilk.
- As a general rule, plant sources of fats are better for a person's health than the animal sources, because animal fats contain more saturated fats.

Fibre-

- **Fibre** is a mixture of different carbohydrates which are not digested like other nutrients but pass through the gut nearly unchanged. Foods rich in fibre are '*kocho*'; vegetables like cabbage, '*kosta*', carrots, cassava; fruits like banana and avocado; peas and beans; whole-grain cereals like wheat flour and refined maize or sorghum.
- Including fibre in the diet
- Fibre should be included in the diet for the following reasons:

- Fibre makes food bulky or bigger — this can help a person who is overweight to eat less food
 - Fibre makes the faeces soft and bulky; this can help prevent constipation
 - Fibre slows the absorption of nutrients, so it helps nutrients to enter the blood stream slowly. This is important for patients with diabetes mellitus.
-
- Vitamins-Vitamins are groups of related substances present in small amounts in foodstuffs and are necessary for the body to function normally. Vitamins are also called protective foods. They are grouped together because, as their name implies, they are a vital factor in the diet.
 - Classifications of vitamins
 - Vitamins are classified into two groups:
 - **Fat soluble vitamins** (vitamins A, D, E and K) are soluble in fats and fat solvents. They are insoluble in water. So these are utilised only if there is enough fat in the body.
 - **Water soluble vitamins** (vitamins B and C, and folic acid) are soluble in water and so they cannot be stored in the body.

Table 2.1. Functions and sources of vitamins.

Vitamins	Function	Food sources
Vitamin A	Night vision Healing epithelial cells Normal development of teeth and bones	<u>Breastmilk</u> , tomatoes, cabbage, lettuce, pumpkins Mangoes, papaya, carrots Liver, kidney, egg yolk, milk, butter, cheese cream
Vitamin D	Needed for absorption of calcium from small intestines Calcification of the skeleton	Ultra violet light from the sun Eggs, butter, fish Fortified oils, fats and cereals
Vitamin K	For blood clotting	Green leafy vegetables Fruits, cereals, meat, dairy products
B complex	Metabolism of carbohydrates, proteins and fats	Milk, egg yolk, liver, kidney and heart Whole grain cereals, meat, whole bread, fish, bananas

- **Epithelial** cells form the thin layer of tissue lining the gut, respiratory and genitourinary systems.
- **Calcification** refers to the hardening of bones by calcium deposits.
- **Scurvy** is a disease caused by vitamin C deficiency which leads to sore skin, bleeding gums and internal bleeding.
- **Minerals**- Minerals are the substances that people need to ensure the health and correct working of their soft tissues, fluids and their skeleton. Examples of minerals include calcium, iron, iodine, fluorine, phosphorus, potassium, zinc, selenium, and sodium. Table 2.2 outlines the functions of some of these important minerals and examples of sources of food for each of these.
- **Minerals-Calcium**
 - **Function** :Gives bones and teeth rigidity and strength
 - **Food sources** :-Milk, cheese and dairy products
 - **Foods fortified with calcium**, e.g. flour, cereals. eggs, fish cabbage
- **Iron**
 - **Function** :-Formation of haemoglobin
 - **Food sources** :-Meat and meat products
 - Eggs, bread, green leafy vegetables, pulses, fruits
- **Iodine**
 - **Function** :-For normal metabolism of cell
 - **Food sources** :- iodised salt, sea vegetables, yogurt, cow's milk, eggs, and cheese
 - Fish; plants grown in iodine-rich soil
- **Zinc**:-Function:-For children to grow and develop normally; for wound healing
- **Food resource**:-Maize, fish, breastmilk, meat, beans
- **Fluorine**Helps to keep teeth strong
- **Water**

chapter-7

Birth Injury

Definition- An impairment of the infants body function or structure due to adverse influences that occur at birth

• Injuries to the infant may result from mechanical forces (i.e., compression, traction) during the birth process Birth Injuries.

Factors predisposing to injury include the following- Primiparity

- Small maternal stature
- Maternal pelvic anomalies
- Prolonged or unusually rapid labor
- Oligohydramnios
- Malpresentation of the fetus (breech)
- Cephalopelvic disproportion
- Deep transverse arrest of presenting part of the fetus

Fetus anomalies Factors predisposing to injury-

- Use of mid forceps or vaccum extraction
- Versions and extractions
- Very low birth weight or extreme prematurity
- Fetal macrosomia birth weight over about 4,000 grams • Fetal macrocephali (Large head)

CLASSIFICATION OF BIRTH INJURIES-

- Soft tissue injuries
- Head and neck injuries
- Facial injuries • Cranial nerve injuries
- Spinal cord injuries
- Peripheral Nerve injury
- Fractures – Torticollis
- Intra-abdominal injury

4. symptoms-

Most of the time, symptoms appear within minutes of birth. However, they may not be seen for several hours. Symptoms may include:

- Bluish color of the skin and mucus membranes (cyanosis)
- Brief stop in breathing (apnea)
- Decreased urine output
- Nasal flaring
- Rapid breathing
- Shallow breathing
- Shortness of breath and grunting sounds while breathing
- Unusual breathing movement (such as drawing back of the chest muscles with breathing)

CLASSIFICATION OF BIRTH INJURIES-

- **Soft tissue**

- Abrasions
- Erythema petechia
- Ecchymosis - Lacerations
- Subcutaneous fat necrosis

- **Skull**

- - Caput succedaneum
- - Cephalohematoma
- - Subgaleal hemorrhage
- - Linear fractures
- -Intracranial hemorrhages

Face

- Subconjunctival hemorrhage
- Retinal hemorrhage

Cranial nerve & spinal cord injuries

- Facial palsy

Peripheral nerve

- Brachial plexus palsy
- Unilateral vocal cord paralysis
- Radial nerve palsy
- Lumbosacral plexus injury

- **Musculoskeletal injuries**

- Clavicular fractures
- Fractures of long bones
- Sternocleido
- mastoid injury

Intra-abdominal injuries

- Liver hematoma
- Splenic hematoma
- Adrenal hemorrhage
- Renal hemorrhage

Caput succedaneum

- Oedema of the presenting part caused by pressure during a vaginal delivery
- This is a serosanguineous, subcutaneous, extraperiosteal fluid collection with poorly defined margins, non fluctuating

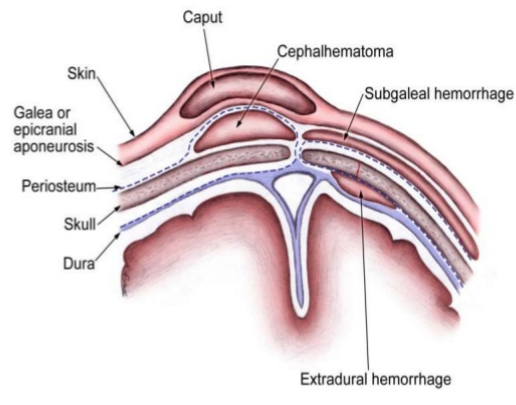


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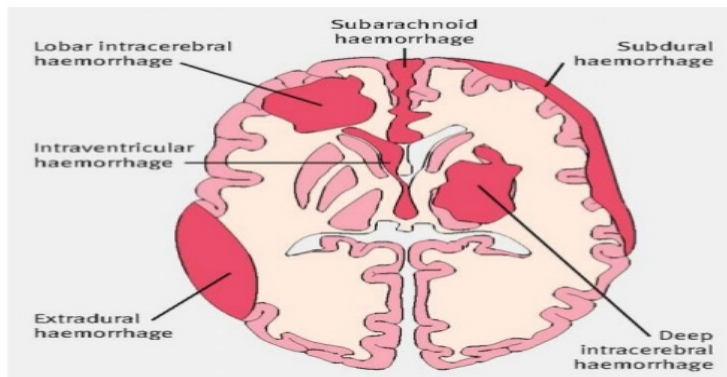
- **Cephalhematoma**

- Subperiosteal collection of blood between the skull and the periosteum.
- It may be unilateral or bilateral, and appears within hours of delivery as a soft, fluctuant swelling on the side of the head.
- A cephalhaematoma never extends beyond the edges of the bone or crosses suture lines



- Intracranial hemorrhages
- Bleeding can occur
 - External to the brain into the epidural, subdural or subarachnoid space
 - In to the parenchyma of the cerebrum or cerebellum
 - Into the ventricles from the subependymal germinal matrix or choroid plexus

Intracranial hemorrhages



- Intracranial haemorrhage
- Epidural hemorrhage
- Subdural hemorrhage
- Subarachnoid hemorrhage

- Intraparenchymal haemorrhage
 - • Germinal matrix hemorrhage / intraventricular haemorrhage
 - Intracranial hemorrhages
 - Extradural (epidural)
 - Subdural
 - (i) Shock and/or anaemia due to blood loss
 - (ii) Neurological signs due to brain compression, e.g. convulsions, apnoea, a dilated pupil or a depressed level of consciousness
 - (iii) A full fontanelle and splayed sutures due to raised intracranial pressure

FACIAL INJURIES

- Subconjunctival hemorrhage
- -Retinal hemorrhage
- -Other ocular injuries
- -Nasal septal dislocation
- Subconjunctival hemorrhage Breakage of small blood vessels in the eyes of a baby. One or both of the eyes may have a bright red band around the iris This is very common and does not cause damage to the eyes. The redness is usually absorbed in a week to ten days

PERIPHERAL NERVE INJURIES

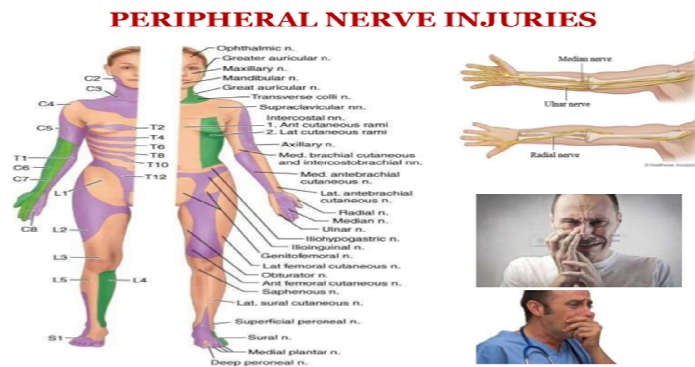
- Brachial plexus palsy
- Phrenic nerve injury
- Laryngeal nerve injury (unilateral vocal cord paralysis)

- Radial nerve palsy

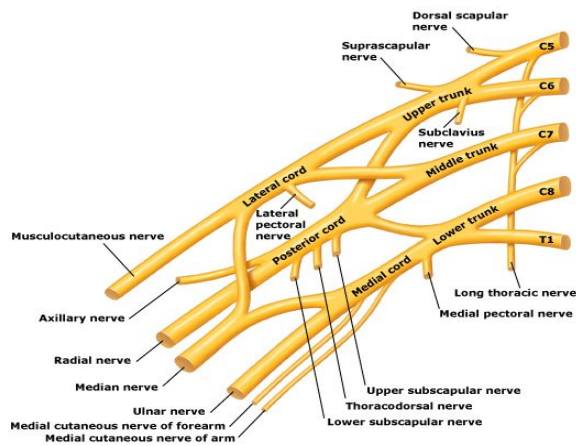
-Lumbosacral plexus injury

Brachial plexus injury

- Erb-Duchenne palsy (C5-C6) common phrenic N (C3-5)
- Klumpke palsy (C7-8, T1)
- Total plexus palsy (Kerer's paralysis) worst



- Brachial plexus injury
- Erb-Duchenne palsy (C5-C6)
- The most common
- Lack of shoulder motion.
- The involved extremity lies adducted, prone, and internally rotated.
- Moro, biceps, and radial reflexes are absent on the affected side.
- Grasp reflex is usually present.
- Erb's palsy may be associated with injury to the phrenic nerve, innervated with fibers from C3-C5



- This baby presents with an asymmetric posture of the arms.
- • The left arm is not flexed and hangs limply. Adduction and internal rotation of the arm with pronation of the forearm.
- • Biceps reflex is absent
- • Moro reflex is absent
- • Grasp reflex is present
- • The involved arm is held in the “waiter’s tip” position, with adduction and internal rotation of the shoulder, extension of the elbow, pronation of the forearm, and flexion of the wrist and fingers. - The baby demonstrates the findings of a left-sided ERB PARALYSIS.
- Physical examination.
- • Radiographs of the shoulder and upper arm
- • Initial treatment is conservative.
- • The arm is immobilized across the upper abdomen vs elevated in abduction external rotation of shoulder during the first week

- • Physical therapy with passive range-of-motion exercises at the shoulder, elbow and wrist should begin after the first week.
- • Infants without recovery by 3 to 6 months of age may be considered for surgical exploration Brachial plexus injury Diagnosis & Management
- Phrenic nerve injury- The phrenic nerve arises from the third through fifth cervical nerve roots.
- Injury to the phrenic nerve leads to paralysis of the ipsilateral diaphragm.
- respiratory distress, with diminished breath sounds on the affected side.
- Chest radiographs show elevation of the affected diaphragm, with mediastinal shift to the contralateral side.
- Ultrasonography or fluoroscopy can confirm the diagnosis by showing paradoxical diaphragmatic movement during inspiration.
- Facial paralysis- Facial palsy -Spinal cord injuries - CRANIAL NERVE & SPINAL CORD INJURIES
- can be caused by pressure on the facial nerves during birth or by the use of forceps during birth. The affected side of the face droops and the infant is unable to close the eye tightly on that side. When crying the mouth is pulled across to the normal side.
- protection of the involved eye by application of artificial tears and taping to prevent corneal injury.
- neurosurgical repair of the nerve should be considered only after lack of resolution during 1 year of observation
- Clinical findings- decreased or absent spontaneous movement
- absent deep tendon reflexes
- absent or periodic breathing
- lack of response to painful stimuli below the level of the lesion.

Spinal cord injury

- Lesions above C4 are almost always associated with apnea
- Lesions between C4 and T4 may have respiratory distress secondary to varying degrees of involvement of the phrenic nerve and innervation to the intercostal muscles

MUSCULOSKELETAL INJURIES-

-Clavicular fractures

- Fractures of long bones

-Sternocleido-mastoid injury

- The clavicle & long bone fracture Clavicle is the most frequently bone injury in the neonate during birth and most often is an unpredictable unavoidable complication of normal birth. The infant may present with pseudoparalysis. Examination may reveal crepitus, palpable bony irregularity, and sternocleidomastoid muscle spasm. Desault's bandage should be used for 7- 10 days.
- Sternocleido-mastoid injury Congenital muscular torticollis
 - atrophic muscle fibers surrounded by collagen and fibroblasts.
 - tearing of the muscle fibers or fascial sheath with hematoma formation and subsequent fibrosis.
 - The head is tilted toward the side of the lesion and rotated to the contralateral side,
 - chin is slightly elevated.
 - If a mass is present, it is firm, spindle-shaped, immobile, and located in the midportion of the sternocleidomastoid muscle, without accompanying discoloration or inflammation.
- Intra abdominal injuries Liver injury is the most common • Three potential mechanisms lead to intra- abdominal injury:

(1) direct trauma,

(2) compression of the chest against the surface of the spleen or liver

(3) chest compression leading to tearing of the ligamentous insertions of the liver or spleen

- 1- Recognition of trauma
- 2- Careful physical and neurologic evaluation
- 3- Establish whether additional injuries exist
- 4- Injury may result from resuscitation
- 5- Assess Symmetry of structure & function
- 6- Specific examination such as cranial nerve, joint range of motion, scalp/skull integrity.

Chapter-8

Balagraha

- *Definition- Balagraha* is a combination of two words *bala* + *graha*. *Bala* is pertaining to children while '*Graha*' means to seize or grasp. In *Revati kalpadhyaya*, *Acharya Kashyapa* has described morphology, habitat and characters of *grahas*.
- *Grahas* are visible only to divine vision i.e *divyachakshu*(microscope). They are fond of *rakta*, *mamsa* and *ojas*. These dwell at water-tanks (*Shitaputana*), ruined houses (*Putana*), cow-sheds (*Mukhamandika*) and bases of the trees (*Pitrigraha*). *Jataharini* which attacks pregnant and *foetii* is highly contagious. These vitiate the breast milk of *dhatrī* too. *Sushruta* cautioned that wounds are to be protected *from grahas* and a neonate shall be nursed like a wounded person.

TYPES OF BALAGRAHAS:-

Charaka- According to *Charaka Samhita* *grahas* were innumerable in number.

Sushruta – *Shusharata* has given much importance of *bala grahas* and given elaborative account on this aspect, These are nine in number, and named as – *Skanda*, *Skandapasmara*, *Shakuni*, *Revati*, *Putana*, *Andhaputana*, *Shitaputana*, *Mukhamandika* and *Naigamesa*.

Vagbhata – *Vagbhata* has added three more *grahas* (*Swagraha*, *Pitrigraha* and *Shushka Revati*) with slight variation in nomenclature thus the total numbers become twelve which have been classified as male and female *grahas* (Gram + ve and Gram -ve microbes) male *grahas* are five – *Skanda*, *Vishakha*, *Mesha*, *Swagraha*, *Pitrigraha*, while female are seven – *Shakuni*, *Putana*, *Shitaputana*, *Andha Putana*, *Mukhamandika*, *Revati* and *Shushka Revati*.

Kashyapa – In *Kashyapa samhita* references of *bala grahas* are scattered at many places viz: -First reference is in *sutra sthana* where monk described vitiation of breast milk of wet nurse by *graha* like *Shakuni*, *Skanda*, *Shashthi* and *Putana* which is the only

contribution of *Kasyapa* however description is incomplete due to extinction of manuscript.

The disorders produced by influence of *Grahas* are not primarily due to vitiation of *doshas* but are external in nature. Children are mostly affected by *grahas*, because they are dependent on other, therefore, are unable to maintain proper hygiene by themselves. Secondly, children are deficient in immunity thus more susceptible for various influences including *bala grahas*. *Sushruta* has imagined very intelligently that how these *Grahas*, enter in the body. He opines that *grahas* enter the body unperceived.

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On the other hand second category is related to psychological aspect of child such as showing misconduct in front of priest, teachers and guests and their movement to lonely and inauspicious places. This refers to bipolar mood disorder wherein immunological break down is possible besides consciousness being lost with regard to hygiene directly of child or wet nurse .

- ETIOLOGY OF BALAGRAHAS- Himsa-First purpose illustrates its pathogenic nature and creates a disease e. g. Bleeding disorders
- Rati -second purpose illustrate microbes enter in the body to complete their life cycle and create a disease e. g. Malaria.
- Bali -Third purpose explain using host by microbes to get their nutrition and non pathogenic, may contribute for anabolism e. g. Worm.
- Thus the scope of *grahas* encroaches to minute virus, bacteria, fungi, parasites to the extent of mites etc. Hence hygiene in terms of *shuhci* and *shuddhi* (asepsis and antisepsis) plays a major role both to prevent and cure *graha rogas*.

Graha and its modern correlation-

Skandagraha- Polio, facial palsy, hemiplegia;

- Skandapasmarā/Vishakha- convulsion, epilepsy;
- Meshagraha-meningitis;
- Shwagraha-Hydrophobia/Rabies;
- Pitrigraha- Diarrhea with dehydration;
- Shakuni-Impetigo, Stomatitis;
- Putana -Diarrhea with Hypokalemia and paralytic ileus;
- Shitaputana- diarrhea with hypocalcemia with hypomagnesemia;
- Andhaputana- diarrhea with vit A deficiency with secondary infection;
- Revati-Diarrhea with anemia;
- Mukhamandika-Childhood cirrhosis, Nephrotic syndrome;
- Shushkarevati-marasmus, Abd TB
- MANAGEMENT OF BALA GRAHAS- The general line of management as mentioned earlier holds good for all graha rogas by giving priority to absolute hygiene and immunity besides symptomatic management.

External use

- Internal Use
- External use - Parisheka (washing) - It should be done with decoction prepared from Agnimantha, Varuna, Haridra, Chitraka, Putika, Rohisha, Paribhadra and Kurabaka etc.
- Abhyanga (oleation) - It should be done with oil prepared from Priyangu, Lochana, Tagara, Jatamamsi, Sariva, Madhuka, Ela and Bhunimba etc.

- Bali and Snanam (Oblation and bath): Oblation and bathing is being administered by Tila, Tandula, Mudga, Mamsa, Matsya etc.
- Dhupana (fumigation): Fumigation has been advocated by Sarpa- Kubusa, Gridhra-Mala, Gaja- Nakha, Ushtra-Roma etc.
- Internal use- Kwatha (decoction) - It should be prepared from Bimbi, Gambhari, Madhuka, Kulattha, Badari, Yava, Laghu- Panchamula.
- Churna (powder) - It should be prepared From Kharjura, Mustaka, Narikela, Kasha, Mridvika, Madhuka etc.
- Ras ausadhies – Kumar Kalayana Rasa, Jayamangalarasa, Rajamriganka Rasa etc.
- Oil- Mahamasha Oil, Kshirabala Oil, Prasarini Oil, Jyotishmati Oil etc.
- Ghrita- Balgrahanasaka ghrita, Balahitakari ghrita, Astamangala ghrita etc.

Conclusion- On the basis of above description it is clear that Bala graha are now compared with various microbial infections which can be treated with a combined approach of therapeutic and psychiatric management. Thus, this arises the importance of cleanliness and hygienic measures to adopt in routine practice. Hence hygiene in terms of Shuchi and Shuddhi (asepsis and Antisepsis) plays a major role to prevent and cure Graha rogas.

Chapter 9

Panchakarma in Pediatrics

Introduction-

- Panchakarma is an integral part of Chikitsa; its practice was on full swing at the time when other medical sciences even not on the germination. As per our classics it is the only method to cure the disease from its roots. Panchakarma process has efficiency to make equilibrium of Dosha which leads to inefficiency to get relapse again .
 - In kashayp samhita- Acharya Kashyapa told that Vasti is Amritam for the children. He wrote Kashyapa Samhita to defining the Kaumarbhritya to the Ayurvedic physician because it is very difficult Vasti procedure in children [6]. He has given full description of diseases and management along with the Panchakarma in pediatrics. When baby takes first breath Acharya advised that baby should be undergone the process of Garbhodaka Vamanam [7a&b] by the use of Saindhava and Ghritam. In other contest he told that those baby are vomiting the milk after breast feed, never suffers with the disease due to expulsion of excessive Kapha Dosha
 - Panchakarma in children: The Panchakarma defined by all Acharya, but specification to the pediatric age for Panchakarma procedure and as Amrita for babies told by Kashyapa . Procedure followed before Panchakarma is Purvakarma and after is known as paschata karma
1. Purvakarma in pediatrics:- Deepana Pachana: The process of improving Agni, has great importance in the normalizing the body physiology. Agni is responsible for Bala, Varna and Ayu [11]. In pediatric cases we can use Musta, Ativisha, Trikatu etc medicine for the Deepana Pachana process.
 2. Snehana: Snehana is very important for the making of Dosha in soluble state and by which they easily get fluidity, made easy removal of Dosha from natural orifices [12]. In pediatrics cases the Abhyangam has great importance to make the baby Snigdha as it helps myelination of the nervous tissue because they are under the process of myelination. Internal Snehana is not needed in every case because they are already Snigdha due to their diet habit as milk, milk product

and sweet items. If internal Snehana is compulsion then Snehana Pravicharana should be used.

3. Swedana: Swedana procedure alleviates the stiffness of body, relieves sense of heaviness, and cures feeling of cold is known as Swedana. It is of two type sagni and niragni. In pediatrics cases, during Swedana process proper care should be taken due to soft, delicate and ill developed sweat gland. Acharya Kashyapa told two specific sudation processes Hasta and Pata Sweda. By using this process we can save the baby from complication as burn, fainting, black reddish patch on skin, Trishna, Jwara etc . In children up to four month Sweda by hand applicable and after six year Sweda by cloth is applicable. Children above one year the Nadi Sweda, Pinda Sweda Avagaha Sweda can be used.

Pradhana karma-

Vamana: Vamana is indicated in pediatrics just after birth as Garbhodaka Vamana by using Vacha (*Acorus calomus*) and Saindhava Churna. In ksheerad baby Vamana Sadhya diseases Vamana done by the apply Madanaphala on nipple along with areola i.e. dose of Madanaphala should not be more than that. Indication of Vamana is in baby above the age of five year. Kabala is more advisable in children as an alternative method of Vamana. Children especially Ksheerada vomits spontaneously even in the presence of small Doshdusti hence they require no forced vomiting

The number of Vamana Vega for expelling Dosha in Kanistha 2-3 , Madhyama 4-5, Uttama 6-7 for children in place of 4,6,8 in adult respectively

- Virechana: Generally Virechana contraindicated in children, if needed used as a last resort; all other measure failing to cure the disease. This procedure should be administered with extreme caution as there lays a potent danger of dehydration which the children more prone to mridu verechnoushadha as trvritta, chaturangula can be logistically used. The Vega of Virechana is 2, 3, and 4, in place of 10, 20, and 30 for adult Kanistha, Madhyama, and Uttama respectively. Vasti can be used as alternative of Virechana

- Vasti: In general of all Shodhana Chikitsa, Vasti is supreme as Amritama. The age of administer of Vasti about one year baby. It is very effective in development of baby as it developed paraneuron (gastro endopancreatic endocrinal system) which stimulate the nervous system for better thriving, now days it is known as gut brain. It is also proved in many research work found to be statistical significant improvement in case of cerebral palsy.
- The Niruha vasti can cause the Karshana in child which leads to the poor development so the Acharya Kashyapa told the Anuvasana vasti or vasti in which oil more than quantity of kashaya should be used. To prevent complication of Vasti Chaturbhadra kalpa [19] should be require. The addition of Gomutra in Vasti leads to the early emulsification oil in water and Srotoshodhana which led to better effect in children

Quantity with Respect to Age of Children:

S/No	Age in year	Vasti Matra
1	1-3	100 ml
2	3-5	120 ml
3	5-8	250 ml
4	8-12	350 ml

- Nasyama: Administration of medicine through nasal route is known as Nasya. “Nasa hi shirasho dwara” so all the disease related to head is best treated by this procedure. Kashyapa told nasyama two types Shodhana and Purana. The indication of Nasyama is 8 to 80 year. Pratimarsha Nasya can be used from the birth and ideal for the children on regular basis it is traditionally practiced by mother during massage with oil to the baby. Its matra is 2 drops.
- Raktamokshana: Sushruta told that Shira vyadha is half of Chikitsa of surgery. In our Shastra the methods of Rakta Mokshana as shriga, jaluka, alabu and shira vyadha mentioned. Children have aparipakwa Dhatu so in first step this procedure not indicated. If disease is not cured by Shamana and other method then Rakta Mokshana is indicated as in Gudakutta, ajagallika , neelika,

mukhapaka, charmadala. The jalauka is the only mean for Raktavasechana in pediatrics cases

- Conclusion: Panchakarma is part of Ayurvedic management, it can't be ignore in pediatric cases. In Ayurvedic literature full description of Panchakarma in pediatrics is available it is not practiced due lack of practical exposure along with improper understanding of principles of Panchakarma in pediatrics.



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Pages : 67
Book Price : ₹ 150/-



Year & Month of Publication- 3/2/2021