

# Ayurveda Opportunities, Prevention and Awareness-In Infantile Health Issues and Challenges

Amruta M. Deokar<sup>1</sup>, Swapnil Raskar<sup>2</sup> and Sunil P Changle<sup>3</sup>

<sup>1</sup>Dept. of Kaumarbhritya (Pediatrics) Parul institute of Ayurveda Parul University, Limda Vadodara, Gujarat

<sup>2,3</sup>Dept. Of Kaumarbhritya, Parul institute of Ayurveda Parul University, Limda, Vadodara, Gujarat

E-mail : <sup>1</sup>vd. amrutadeokar@gmail.com, <sup>2</sup>neonatecare99@gmail.com, <sup>3</sup>sunilchangle16@gmail.com

**Abstract**—Public health comprises of interventions to improve health and quality of life through prevention and treatment of diseased. Today in adult age, health aspect seems deteriorating and lacks the tools necessary to monitor the impact due to early and frequent exposure to infections, varying nutritional and immune status, lifestyle changes, global travel and misuse of antibiotics have contributed to resurgence of old infections and various age related diseases like Alzheimer's, etc. Now to attain healthy lifestyle throughout, effective measures needed to be implemented through Childhood itself. It characterizes as a unique developmental stage of life, the continuity of child into adult and a distinctive child health care system to justify a separate focus of health services on children. This article highlights Ayurvedic regime in the assessment of pediatric health to build up effective method for overcoming the challenges before they arise. Ayurveda, the science of life and longevity, is the oldest healthcare and naturalistic system which emphasizes on humoral balance. It offers strategies like Dincharya and Ritucharya(daily routine). Along with these measures internal administration of purified and processed gold is a unique practise mentioned in Ayurveda as "Suvarnaprashana" by Acharya Kashyapa. He explained the administration of Suvarna (gold) in children for the benefit of improving intellect, digestion, metabolism, immunity, complexion, fertility and lifespan. As prevention is better than cure, this qualitative practise of Suvarnaprashana as Lehana(supplementary feeds) and Jatakarma Samskara(newborn care)can be beneficial at multiple levels like general health promoter and in specific enhancement of intelligence, digestion, metabolism, immuno-modulator, complexion or fertility. Thus this is an attempt which may prove to be a boon highly effective in comparison to other treatment modality by achieving desired effect in children as health care program.

**Keywords:** Ayurveda, Immunity, Public health issue, Suvarnaprashana

## 1. INTRODUCTION

The dimensions of health encompass a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity as defined by WHO. There are several other factors responsible for promotion of health which include environmental, biological, socio-economic

status, lifestyle changes, availability of health services. <sup>1</sup>These influencing factors play quiet substantial role in improving the health. Public health interventions is to improve health and quality of life through prevention and treatment of diseased and other physical and mental condition. Although there are astounding advancements in medicine and public health, considerable public health challenges persevere. However, today in adult health aspect seems deteriorating and lacks the tools necessary to monitor the impact emerging due to communicable diseases, non-communicable diseases related to life styles, also an infectious diseases have returned with vengeance adding to the burden of diseases. The striking feature is while we diligently take anti-malarial etc. and top up our vaccinations still people don't have access to this. Ever increasing population and changing lifestyle is adding pressure on environmental as well as on nutritional requirement resulting in nutritional deficiency, poor sanitation increasing communicable and non-communicable diseases. etc. <sup>1</sup>As Immunity plays major role here, this can be addressed through an effective health system corporate since beginning i. e. Childhood itself as it contributes to 90% of development considering future aspects. Childhood characterizes as a unique developmental stage of life, the continuity of child into adult and a distinctive child health care system to justify a separate focus of health services on children Child Health is a very important domain of health system because, children are most vulnerable segment of society; excellent child health is a good measures of societal progress, childhood illness contribute substantially to the global burden of disease and childhood illnesses are preventable and treatable with currently available interventions. Among child health issues also under one mortality is major issue among total childhood periods illness. Infantile mortality and morbidity is increases globally despite the drastic improvement in the medicines. Diarrhoea, Pneumonia, Failure to Thrive and other systemic infectious diseases are prevailed more in infantile age group. Infantile growth is internationally recognized as an important public health indicator for monitoring nutritional status and

health in populations. Children who suffer from growth retardation as a poor result of poor diets and or recurrent infections tend to have more frequent episodes of severe diarrhoea and are more susceptible to several infectious diseases, such as malaria, meningitis and pneumonia. A number of studies have demonstrated the association between increasing severity of anthropometric deficits and child mortality. In addition there is strong evidence that impaired growth is associated with delayed mental development, poor school performance and reduced intellectual capacity.<sup>2, 3,</sup>  
<sup>4</sup>According to WHO, 30% of children under five are estimated to be stunted and 18% low weight for height, 43 million overweight. Nearly 9 million die every year from preventable diseases and infections. The largest killer being the Diarrheal disease. 2 million leading cause of Malnutrition and more than 50% cases of all these diseases are infantile cases. On other hand early and frequent exposure to infections, varying nutritional and immune status, lifestyle changes, global travel and misuse of antibiotics have contributed to resurgence of old infections.<sup>6</sup> Thus, improving the well-being of infants and children is an important public health goal. Their well-being determines the health of the next generation According to the concept of fetal origins of adult disease (FOAD) of Dr. David, the events during early development have a profound impact on one's risk for development of future adult disease. Low birth weight is a marker of poor fetal growth and nutrition and is linked to coronary artery disease, hypertension, obesity and insulin resistance. It also includes babies exposed to stress, both nutritional and non-nutritional during different critical periods of development, which ultimately result in a disease state.<sup>7</sup> As childhood offers great impact throughout psychologically, as whatever child goes through remains as print and marks impact on development of an individual into adult and continues to remain the same. Considering this fact, it is the need of hour to implement unique yet effective treatment modality to look over the situation and promote healthy lifestyle.

Ayurveda, the science of life and longevity, is the oldest healthcare and naturalistic system which emphasizes on humoral balance and describes ways to prevent and manage lifestyle disorders. Ayurveda provides better solution in the forms of proper *Aahara - Vihara* (dietary management), *Dinacharya* (lifestyle), *Aushadi* (medicaments) and rejuvenative therapies in lifestyle management. Basically, a particular lifestyle of person is a cumulative product of his/her physical capacity co-ordinated with psychological functioning, displayed in the form of habits, behaviour, dietary and living pattern based on his own training sought from childhood and mimics he gained from his immediate companions including parents, siblings, peers, etc. Thus, it involves a pure psychological and innate control over the physical and sensory activities. When this initiation, control and co-ordination are disturbed, it leads to the derangement of lifestyle and results in disorders. Ayurveda narrated this phenomenon as '*Prajnaparadha*' (intellectual blasphemy) which is one of the

basic cause of disease.<sup>8</sup> For prevention and promotion of health Ayurveda prescribes various regimens i.e. *Dinacharya* (daily routine) and *Ritucharya* (seasonal regimen). The *SadvrittaPalana* (ideal routines) and *AcharaRasayana* (code of conduct) are the utmost important to maintain a healthy and happy psychological perspective which has high impact on childhood thus promoting health throughout life-span. Moreover, this provides enough scope not only for prevention of disease but also for promotion of health and cure of disease too. Ayurveda explained all these protocols not only for adults but also for the children, considering the different physiology of developing systems of children. Thus Ayurveda holistic approach helps in promotion of health, along with the prevention and management of disease. This paper mainly focuses on one such traditional health system Ayurveda - helping to combat the present scenario. Ayurveda highlights specific regime in the assessment of pediatric health to build up effective method for overcoming the challenges before they arise.

## 2. AIMS AND OBJECTIVES:-

1. To emphasize present scenario of health status of infants.
2. To improvise the health measures by implementing Ayurvedic perspectives.

## 3. MATERIALS & METHODS:-

This review was done by compiling the classical Ayurveda literature, Ayurveda Pediatric books, modern pediatric books, magazines, research journals, thesis and dissertations PubMed, different databases, WHO guidelines, AIIMS guidelines, CCRAS database etc.

## 4. DISCUSSION

**Principles to maintain the health:** Ayurveda believes in '*Swasthasya Swastha Rakshanam*' i.e. the first and foremost thing is to maintain one's own health. For these Ayurveda has explained three prime principles for maintaining healthy life style. One is *Dinacharya* (daily routine) right from rising from bed in the morning upto going to sleep at night<sup>9</sup> that includes, *Dantadhavanato*, *Jihwanirlekhana*, *Gandusha & Kavala* (gargling with sesame oil and decoction), *Mukhaprakshalana* (cleaning the face), *Anjana* (application of collirium) and other rest of procedures that to be followed throughout the day for healthy living. All these regimes are coming into the scientific light of evidence based medicine nowadays like -researches have shown that all kinds of *Dantadhavankashta* (chewing sticks) and gargling especially with sesame oil (oil pulling) described in Ayurveda have anti-plaque and antimicrobial activity thus promote oral hygiene.<sup>10</sup> Second is *Ritucharya* (seasonal regimen) dietary regimen according to season so as to maintain health and equilibrium.<sup>11</sup> Third one is *SadvrittaPalana* (behaviour or code of conduct of individual in society under different circumstances in order to follow the moral of culture and society). Along with these

preventive measures, there are two additional procedures has been mentioned to improves the health status according to season. One is the *Panchakarma* for Swasthya Raksha (Seasonal detoxification according to season to maintain the health) and second internal administration of *Rasayana* drugs (herbal or herbomineral or mineral preparations which having antioxidant, free radicle scavenging and rejunivating properties which increase the longevity and strength of different body tissues). For newborn and infants such a strict Dinacharya, Ritucharya, Sadavritta and seasonal detoxification process are not useful. The only way to improve their immunity and longevity is administration of *Rasayana* drugs. Purified and processed gold is said to be very useful *Rasayana* remedy and a very unique practise mentioned in Ayurveda as “*Suvarnaprashana*” by Acharya *Kashyapa*. *Suvarna* means gold and *prashana* means licking. It is practised in two contexts ie. *Lehana*(supplementary feeds) and as *JatakarmaSamskara*(Newborn care). Gold is an important metal and is the least reactive chemical element known after noble gases. <sup>12</sup>In paediatric conventional practice immunization with vaccines against different diseases is recommended. Different vaccines for different diseases are our recent vaccine concept. It can prevent only those diseases which it is made for. As body possess immunity itself, vaccine helps to make immune stronger. The same principles of improving immunity were described in Ayurveda. With sufficient general immunity one can prevent the different infections and illnesses. Therefore, *Suvarnaprashana*for children is suggested to improve immunity of Child.

#### Different procedures to administer the Suvarna Prashana:

**Suvarnaprashana:** *Suvarnaprashana* has been described in Ayurveda classics as *Lehana*(Licking therapeutic) with special rituals to administer *Suvarnaprashana*. Keeping face of child towards east, gold should be rubbed on a washed stone with a little quantity of water then churned with honey and *Ghrita*. Then given to the child for licking. Feeding of gold increases intellect, digestive and metabolic power, strength, gives long life;is auspicious, virtuous, aphrodisiac;increase complexion and eliminates the evil effects of *Grahas*. *Suvarnaprashana* for the duration of one month makes the child extremely intelligent and is not attacked by the diseases and by giving *Suvarnaprashana*for six months, child is able to retain what-so-ever he hears. <sup>13</sup>

**Jatakarma Samskara:** *Acharya Sushruta* prescribe administration of *Suvarna Bhasma* (processed gold powder) with honey and ghee soon after birth mentioning it as one of the procedure of new born care. It is because there will be no adequate secretion of breast milk for the first 4 days after delivery and so as to support the baby with respect to preventive and nutritive aspects such practices are indispensable. <sup>14</sup>

**Recent Administration Policies:** Following are some of the widely used ratios for preparation of *Suvarnabindu*-Large Batch: 2. 4 gm. of *SuvarnaBhasma* is added to 250 ml of

honey and 250 ml processed ghee. Individual Doses: 100mg *Suvarnabhasmas* added to 6 ml of processed ghee and 6ml of honey is kept separately. Honey is mixed with ghee just before the administration. Although large batches are convenient for commercial use, *Suvarnabhasma* may settle down in ghee after some time, thus reducing the concentration of *Suvarna bhasma* per dose. Hence, preparing *suvarnabindu* in smaller batches is desirable. <sup>15</sup>

#### Recent researches on medicinal uses of Gold and probable mode of action of gold in child health:

*Swarnaprashana* signifies the administration of gold alone or along with other herbs in a *Leha/Prasha*(licking) form. *Lehana* is given during healthy state of body<sup>16</sup>. *Lehana* has been indicated for those children who are healthy, but have compromised breastfeeding and are having minor functional problems of metabolism. It is contraindicated in seriously ill children and also on daily basis. <sup>16</sup>This precise mentioning of gold in Ayurveda therapeutics is due to some specific action of gold in particular age group of children, which is observed in different studies. In a study, trace elements including gold were measured in human placenta and newborn liver at birth. <sup>17</sup>A trace elements like zinc, copper and gold were measured in the hair of newborn infants. <sup>18</sup> In a pharmco-clinical study on neonates *Madhu-Ghrita-Swarna-Vacha* combination showed a significant effect of humoral anti-body formation and it acted on immunological system, which was evident by triggering the response of immunological system by a rise in the total proteins and serum IgG levels. <sup>19</sup> It is very obvious in children that even slight negligence in the administered drug can cause serious adverse effects due to their highly sensitive body systems, which are still under rapid growth and development. Acharya's had a very lucid idea regarding the significance of refinement of *Swarna* before internal administration. This is the reason that they have specifically pointed out the adverse effects of gold if administered without proper processing. Depending upon the form to be used, suitable processing should be adopted for administration. The particles of *SwarnaBhasma* were reported as non-cytotoxic. <sup>20</sup> In a study of chronic toxicity of *Suvarnabindu prashana* no cytotoxicity was observed. <sup>21</sup>The amazing effects of *Suvarnaprashana*in infants mentioned in ancient literature are owing to the quick assimilation of gold nanoparticles contained in the *Suvarnabindu*. Research studies on nanoparticles show that they can by-pass digestion and are directly absorbed via the sub-lingual route into the blood stream<sup>22, 23</sup>. Gold nanoparticles have been found to be absorbed in the small intestines and nanoparticles less than 58 nm in size reached the target organs via blood<sup>24</sup>. *Madhu* and *Ghrita* in equal proportions have been considered as a *Viruddha Samyoga* (unwholesome combination). But if given in un-equal proportions, trigger immune responses which helps to strengthen a child's immunity for toxins and allergens. <sup>25</sup>. However, it is a popular belief that giving a low dose of this otherwise toxic combination is believed to trigger immune

responses which helps to strengthen a child's immunity for toxins and allergens.

**Free-radical Scavenging property:** Mitra et al (2002) evaluated the free-radical scavenging activity of Swarna Bhasma using experimental animal model. It was observed that chronic Swarna Bhasma treated animals showed significantly increased superoxide dismutase and catalase activity. These two enzymes reduce free radical concentration in the body. <sup>26</sup>**Analgesic activity-** Swarna Bhasma was reported in one study involving mice. A Unani calcined Gold preparation, kushtatilankalan (KTK), was also used in this study along with the widely used Gold drug Auranofin. The study suggested involvement of opiodergenic mechanism in the observed analgesic activity of Swarna Bhasma. The new Gold compound triethylphosphine Gold (auranofin) inhibits some type of experimental inflammation and the activity of various cells involved in inflammatory processes. In some cases auranofin exerts a higher influence. Following incorporation of Gold in lysosomes, the impairment of macrophage function appears to be most important. Immune Response- Specific and nonspecific immune responses were modified in a positive manner in Swarna bhasmatreated mice. Swarna Bhasma had a stimulatory effect on peritoneal macrophages, which may be helpful to fight against infections. It was suggested that macrophages achieved stimulation possibly due to presentation of the metal to cells in fine emulsified form. The increase in the serum IgG level in the Gold compound group shows the immunological response of the rats against the antigenic material. IgG provides the majority of antibody-based immunity against invading pathogens. And there is a scope of *Suvarnaprashana* needs to be evaluated in Geriatric medicine as a preventive and palliative therapy for degenerative neurological disorders like Alzheimer's disease, Dementia etc. It shows role in glycemic control, *Suvarnaprashana* needs to be evaluated as therapy for juvenile (Type-I) diabetes and early onset Type II diabetes.

## 5. CONCLUSION

There is an increased burden of different childhood illness drastically due to very fast changes in the life style. In addition certain adulthood illness has their pathophysiological origin right from the infancy. Ayurveda measures to increase the longevity and health are not completely applicable for infantile age. Administration of Swarna is very safe, effective and promising measure available to boost the immunity and improves the general health along with the memory and intelligence. As an internal medication, *Swarna* (Gold) is mainly used in form of *Bhasma* (Incinerated form), *SwarnaPrashan/SwarnaLehan*. Classical *Bhasmikiran* process reduces the gold to nanometers particle size, which pharmacologically reveals immunomodulatory, free radical scavenging activity, analgesic activity and anti-stress activity. However there are insufficient scientific evidence to suggest the efficacy and safety of *Swarna Prashan/ swarna lehan* in pediatric population. Therefore further research to establish

*Suvarna Prashana* as palliative treatment modality in infantile age boost immunity and general health.

## REFERENCES

- [1] LS Chauhan, Public health in India: Issues and Challenges, Indian Journal of Public Health, Vol:55, Issue:2, 2011, P. 88-91.
- [2] Victoria CG, Fuchs SC Flores JA, Fonseca W, Kiskwood B. , Risk factors for pneumonia in a Brazilian metropolitan area. Pediatrics 1994;93(6Pt 1):977-85
- [3] Pelletier D, Frongillo EA Jr, Habicht JP, Epidemiologic evidence for a potentiating effect of malnutrition on child mortality. Am J Public Health, 1993;83:1130-33
- [4] Mendez MA, Adair LS, Severity and timing of stunting in the first two years of life affect performance on cognitive tests in late childhood. J Nutr 1999;129:1555-62.
- [5] Child Protection & Child's Rights >> Vulnerable Children >> Children's Issues >> Child Health & Nutrition
- [6] Piyush Gupta, editor, 1. 1 Pediatrics-Yesterday, Today and Tomorrow, Basic Concepts of Child Care, IAP Textbook of Pediatrics, 5<sup>th</sup> Edition, Jaypee Publications, :2013, 01:2
- [7] Kara Calkins, Sherin U. Devaskar, FOAD, Current Problems in Pediatric & Adolescent Healthcare, Vol. 41, Issue 6, July 2011, p. 158-176.
- [8] Dr. Ganesh Krishna Garde, editor, Sarth Vagbhata, 11<sup>th</sup> edition, Anmol Prakashan 2008;02
- [9] Dr. Ganesh Krishna Garde, editor, Sarth Vagbhata, 11<sup>th</sup> edition, Anmol Prakashan 2008;02:2, 4, 6.
- [10] P. Sudhakar Reddy, Beena, Dinacharya Modalities-A review on Evidence Based Research w. s. r to Oral Hygiene. Int. J. Ayur. Pharma Research 2014;2(2):72-78.
- [11] Dr. Ganesh Krishna Garde, editor, Sarth Vagbhata, 11<sup>th</sup> edition, Anmol Prakashan, Pune, 2008;03
- [12] Dutta P K, General and Inorganic chemistry, Vol II, 11th edition, Sarat Book House, Kolkata, 1996, 173
- [13] Prof. P. V. Tewari, Kasyapa Samhita, Chaukhambha Vishvabharti, 2013;1:26-28
- [14] Dalhana, Commentator, Sushruta Samhita, Sharira Sthana 10/13-15. reprinted. Chaukhambha Orientalia, Varanasi, 2005;388-95
- [15] Vasant Patil, Chetali Samant, Umapati Baragi. *Suvarnaprashana* therapy in children; concepts, practice and prospects. J of Ayurveda and Hol Med (JAHM); 2014;2(7):1-3.
- [16] Vridha Jivaka, Kasyapa Samhita, Sutra Sthana, Leha Adhyaya, edited by Shri Satyapal Bhashagacharya, 10<sup>th</sup> ed. Chaukhambha Sanskrit Sansthan, Varanasi, 2005; 4-5.
- [17] Alexiou D, Grimani AP, Grimani M, Papaevangelou G, Koumantakis E, Papadatos C. Trace elements (zinc, cobalt, selenium, rubidium, bromine, gold) in human placenta and newborn liver at birth. Pediatr Res 1977;11:646-8.
- [18] Kauf E, Wiesner W, Niese S, Plenert W. Zinc, copper, manganese and gold content of the hair of infants. Acta Paediatr Hung 1984;25:299-307.
- [19] Gaikwad A. A pharmaco-clinical study of effect of *Madhu-Ghrita* and *Swarna-Vacha-Madhu-Ghrita* on neonates. P. G. Dissertation work. Jamnagar, India: Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University; 2009-2011
- [20] Paul W, Sharma CP. Blood compatibility studies of *Swarna bhasma* (gold bhasma), an Ayurvedic drug. Int J Ayurveda Res 2011;2:14-22.

- [21] Sharma V. Toxicity study of *Swarna bindu prashan* in albino rats. P. G. Dissertation work. Belgaum, India: K. L. E. U. 's Shri B. M. Kankanawadi Ayurved Mahavidyalaya; 2010-2012. .
- [22] Batheja P, Thakur R, Michniak B. Basic biopharmaceutics of buccal and sublingual absorption. In: Touitou E, Barry BW (eds). Enhancement in Drug Delivery. New York: CRC Press; 2007.
- [23] Sonavanea G, Tomoda K, Sano A, Ohshima H, Terada H, Makino K. Colloids And Surfaces B: Biointerfaces. 2008; 65:1.
- [24] De Wall SL, Painter C, Stone JD, Bandaranayake R, Wiley DC, Mitchison TJ, et al. Noble metals strip peptides from class II MHC proteins. Nat Chem Biol. 2006; 2: 197–201.
- [25]. Mitra A, Chakraborty S, Auddy B, Tripathy P, Sen S, Saha AV, Mukherjee B. Evaluation of chemical constituents and free radical scavenging activity of swarna bhasma (gold ash), and ayurvedic drug. J Ethnopharmacol 2002 May;80 (2-3):147-53)