



AN ANALYTICAL STUDY ON BALA

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ABSTRACT

Perfect health is the cherished wish of all individuals. Health is affected by various factors like *Ahara*, *Vihara*, *Vichara* etc. Unhealthy practices and sometimes physiological vitiation of *Dosha* occur in the body resulting disease. The body's defense system which is described as *Bala* or *Vadhikshamatva* in Ayurveda, protects the health and prevents the disease. *Bala* may be obtained as inherited or can be derived from healthy environment, diet and lifestyle. The factors that enhance the *Bala* or *Oja* are called *Oja Vardhaka Bhava* and the factors that diminish *Bala* are known as *Bala kshaya Nidana*. The knowledge on *Bala* and applying those principles can reduce the disease prevalence to a greater extent.

KEYWORDS: *Vyadhikshamatva*, *Sahaja Bala*, *Kalaja Bala*, *Yuktikrita Bala*, Immunoglobulins.

INTRODUCTION

Health is of highest importance for all living beings especially for human beings. सुखार्थः सर्वभूतानां मताः

सर्वाः प्रवृत्तयः^[1] i.e. all the activities of animals are for living a happy life. Good health is the reason behind the happy and long life. A diseased person can never be happy even in a royal set up. Healthy people are more productive, economically sound and they don't need to invest much on health. Along with individual advantage, health has an impact at national or global development. Health contributes towards the human resource development and poverty alleviation. World Health Organization (WHO) defines health in a holistic manner considering physical, mental and social welling in to account. According to WHO: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".^[2]

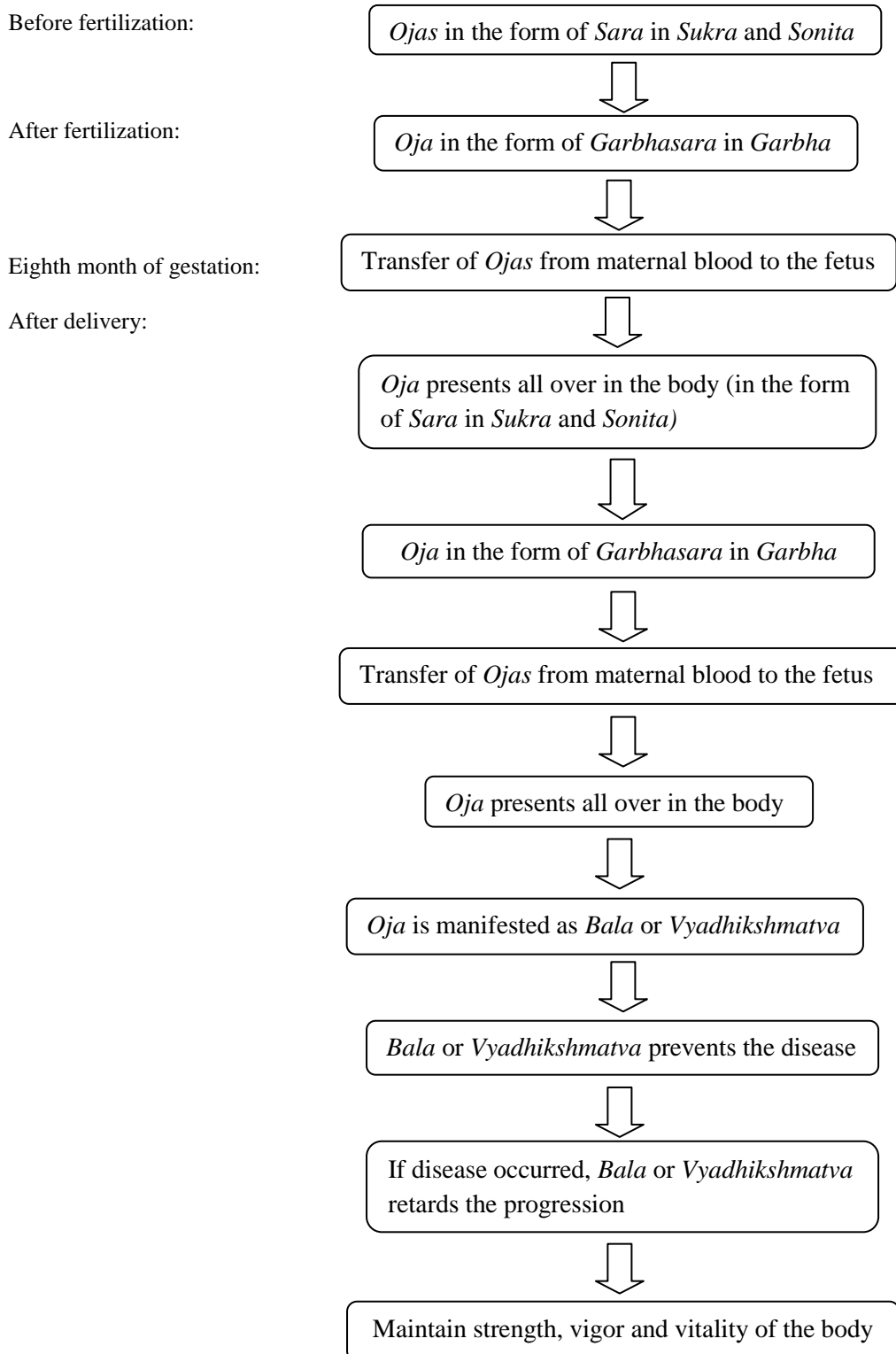
Despite of the availability of better health care services the global disease burden is increasing. A research paper in the Lancet shows that- though the incidence of communicable diseases has decreased to a greater extent, a very large increase in deaths from non-communicable diseases is expected, with a rise in annual mortality from an estimated 28.1 million deaths in 1990 to 49.7 million (48.0 and 53.0) in 2020.^[3] Again the crude death rate has decreased from 28.5 during 1951–1961 to 8.4 in 1996.^[4] Hence rather focusing only on mortality alleviation the attention to be shifted towards curbing morbidity and to improve the quality of life. In Ayurveda, the preventive and curative aspects can be explained under an umbrella

term *Bala*. According to Ayurveda health depends on *Bala* and all the treatment modalities or procedures are for health.^[5]

Concept of Bala

The disease preventing power of the body is called *Bala*.^[6] Disease occurs due to the imbalance in *Doshas*. The *Dosha* eliminating power is also called *Bala*.^[7] Again it is described that, the essence of seven *Dhatus* is *Oja* and the same is called *Bala*.^[8] The factor preventing diseases is also known by the name *Vyadhikshamatva*. Even though *Vyadhikshamatva* is present in all living beings, sometimes this is not sufficient to prevent the disease.^[9] *Vyadhikshamatva* not only prevents the disease, but also helps the body to rejuvenate after disease or to get out of the disease.^[10] *Bala*, *Oja*, *Vyadhikshamatva* is used synonymously in Ayurveda.

Formation of Ojas: The Oja formed in the body in following way.



Types of *Bala*

In *Ayurveda* classics there is description of three types of *Bala*.^[11]

a) *Sahaja Bala*

Sahaja Bala denotes the inborn strength of the body. It is derived from the diet and lifestyle of the mother.

Adoption of healthy diet and lifestyle by the mother results in inheritance of superior *Sahaja Bala* in progeny. Hence the mother should take *Oja Vardhaka* diet and should prevent *Garbhopaghata kara Bhava*

Garbhopaghatakara Bhava means the factors that are harmful for fetus such as – use of excessive heavy, hot

and pungent substances, strenuous activities, use of intoxicating substances, moving by a vehicle on uneven path, unpleasant things along with the things that are

instructed by experienced and old lady.^[12] These *Bhavas* include mostly the unhealthy diet and lifestyle during pregnancy.

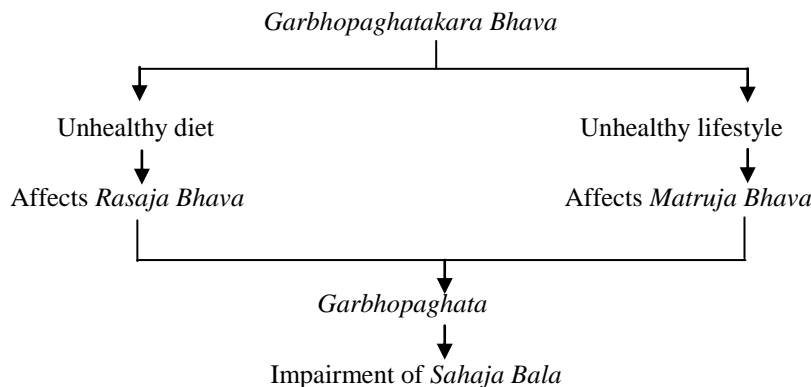


Fig. No. 1: Effect of Garbhopaghatakara Bhava on Bala.

b) Kalaja Bala

Kalaja Bala derives from the environment and life stage. Body strength varies based on the seasons, body strength increases towards *Visarga Kala* (*Sharat*, *Hemanta*, *Shishira*) and decreases in *Adana Kala* (*Vasanta*, *Greeshma*, *Varsha*).^[13] Different stages of life also influence the body strength as in young stage there is good body strength as compared to old age.

Intense heat of summer depletes and dries *Kapha* along with *Saumya Bhava* (fluid principles) in the body, resulting in depletion of *Bala* as *Kapha* in *Prakritavasta* is said to be *Bala*.^[14] Further, *Agni* diminishes during *Grishma Ritu*, causing impairment in digestion and absorption of food consumed consequently resulting in reduced nourishment and decrease in *Bala*. Similarly living beings experience superior level of *Bala* during winter seasons. During cold seasons the *Agni* enhances, leading to consumption of food in more amount and also enhanced digestion, and absorption resulting in good nourishment of tissues and increase of *Bala*. Further, the *Saumya Bhavas* in the environment promote the *Dhatu Pushti* and enhancement of *Bala*. Study by Jangid C. proves that *Hemanta* is the *Ritu* of *Pravara Bala*, *Vasanta* is the *Ritu* of *Madhyama Bala* and *Varsha* is the *Ritu* of *Avara Bala*^[15] this study complements the classical theory of *Bala*.

There is also a reference of Seasonal Affective Disorder in modern science.^[16] A study on animals with seasonal changes revealed that photoperiod has effect on immune function and hormone synthesis which influence the development of opportunistic disease.^[17] Another study proves that glucocorticoid concentrations change in free living animals depending on the time of the year.^[18]

Age also affects the *Bala* or strength. Baseline strength declined with age. Even exercise training doesn't improve muscle strength in elderly due to physiological *Vatavridhi*.^[19] In elderly impairment of *Bala* occurs in *Jnanendriya Bala* (hearing and vision impairment etc.), *Karmendriya Bala* (osteoarthritis, sciatica etc), *Agni*

Bala (indigestion, constipation etc) *Dhatu Bala* (weakness, wrinkles on skin etc.), *Manasa Bala* (Dementia, irritation etc.) etc. Hence *Kala* plays an important role for maintaining strength of the body.

c) Yuktikrita Bala

Yuktikrita Bala derived from the rejuvenating medicine, diet and lifestyle of the individual. If a person takes healthy diet and lifestyle, he possesses good body strength as compared to a person who doesn't follow proper diet and lifestyle. Studies have shown that an adequate nutritional intake and an optimal dietary acid-base balance are important to preserve muscle mass and strength.^[20] Daily bathing induces both *Oja* and *Bala*.^[21] Again exercise has moderate-to-large positive effects on muscle strength, body composition, physical functioning and reducing inflammation in older adults.^[22] Deviation from healthy life style impairs the *Bala* resulting in disease. *Vegadharana* (suppression of urges) causes diseases. *Mithya Yoga* (improper utilization) of *Kala Artha Karma* also induces diseases.^[23] Intake of *Ojovardhaka* and *Rasayana* diet along with healthy lifestyle and code of conduct helps to enhance *Bala* and prevent variety of diseases.

Balavriddhikara Bhava (Factors which enhances Bala)^[24]

The following factors contribute towards the *Sharira Bala*:

1. *Balavat Desha* (Place where inheriting people are strong): Geographical variation of cardio-respiratory fitness (CRF) and musculoskeletal fitness (MSF), body mass index (BMI) occurs.^[25]
2. *Balavat Kala* (Season when body strength is more): *Kala* here can be affected by the following factors:
 - Climatic season
 - Gestation period and age of parents
 - Age of the individual

Adana Kala enhances the *Bala* of an individual where as *Visarga Kala* depletes the *Bala*.^[26,27] Preterm babies spend their life with illness and long-term disability.^[28]

Semen parameters also begin a steady decline as early as age 35yrs.^[29] When under the age of 30yrs, a woman's chances of conceiving may be as high 71%; when over 36, it may only be 41%.^[30] In old age *Dhatu Kshaya* occurs resulting depletion of *Bala*.

3. *Bijakshetra Guna Sampat* (healthy sperm, ovum and implantation bed): Intra-uterine infections trigger premature labour along with.^[31]

4. *Ahara Sampat* (foods that enhances oja and strength): Milk and ghee are regarded as best *Rasayana Dravya* among all (क्षीरघृताभ्यासो रसायनानां).^[32] Macro-elements and microelements should be taken according to the body requirement. The elements have different functions and their targets vary but over all they contribute for a better health. For example: Consuming a diet rich in carbohydrates, fiber, folate, and lycopene.^[33] as well as consuming fruit and vegetables.^[34] correlates with improved semen quality. Consuming lower amounts of both proteins and fats were more beneficial for fertility.^[35]

5. *Sharira Sampat* (robust body): Studies suggest that physiologically fit muscles might boost the innate immune response of an individual.^[36]

6. *Satmya Sampat* (conductive food): Nutrients that have been demonstrated (in either animal or human studies) to be required for the immune system to function efficiently include essential amino acids, the essential fatty acid linoleic acid, vitamin A, folic acid, vitamin B6, vitamin B12, vitamin C, vitamin E, Zn, Cu, Fe and Se.^[37] In Ayurveda milk is regarded as *Satmya* (conductive) to all since birth.

7. *Satwa Sampat* (strong mind): Mind (*Satwa Bala*) affects body (*Sharira Bala*). *Pravara Satwa* individuals can tolerate severe diseases even though having weak physical strength. But the *Avara Satwa* individuals cannot tolerate even mild diseases having robust body.^[38] Studies also prove that Healthy psychological status improves the immune system.^[39]

8. *Swabhava Samsiddha* (activities that enhances *Bala* like exercise): *Vyayama* enhances *Bala*.^[40] Again "व्यायामः स्थैर्यकरणां" i.e. exercise brings stability in the body.^[41] Studies have also proved that exercise enhances the muscle strength, body composition and physical functioning.^[42]

9. Young age: Muscle strength and resistance power is more in case of young people as compared to elderly.

10. *Samharsha* (action that brings pleasantness of mind): "हर्षः प्रीणनानां" i.e. *Harsha* nourishes the *Dhatu*s. On the other hand *Shoka* (sadness) is the cause of emaciation (शोकः शोषणानां).^[43] Studies have also shown that Happiness boosts immunity.^[44] Again Depression or unhappiness is regarded as the stimulating factor for diseases.^[45]

The *Bala Vriddhikara Bhavas* can be classified according to the types of *Balas* as follows:

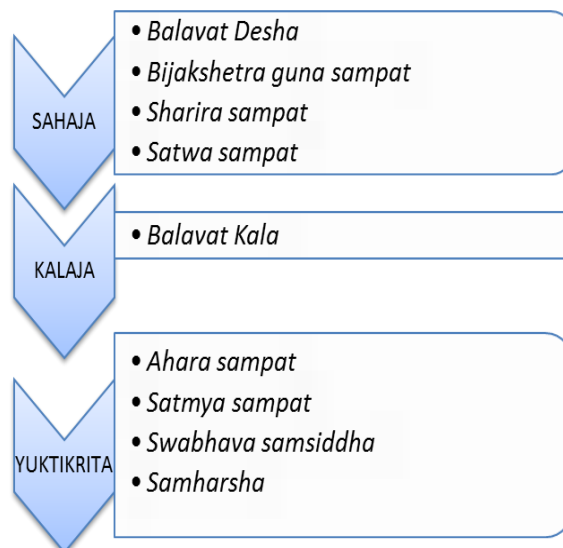


Fig. No. 2: Classification of *Bala Vriddhikara Bhava* according to *Bala*.

Oja Vriddhi Nidanas (factors enhancing *Oja*) will also enhance the *Bala* as *Oja* and *Bala* is same.

***Oja Vardhaka Bhava* (Factors nourishing *Oja*)**

The following factors enhance the *Oja*

- *Mana Prasannata* – Mental satisfaction and happiness.^[46]
- *Madhura* (Sweet), *Snigdha* (Unctous and nutritive), *Shita Veerya* (Calm and not irritating) and *Laghu* (light weighted) dietary regimen.^[47]
- Milk preparation of herbal drugs mentioned in *Jeevaniya gana* like – *Jeevak*, *Rushbhak*, *Ashwagandha*, *Kakoli*, *Ksheer Kakoli*.^[48]
- *Ksheera* (Milk), *Mamsarasa* (Non veg Soup)

***Oja Kshaya Nidana* (Factors depleting *Oja/Bala*)^[49]**

- *Abhighatat* – Trauma or any grievous injury
- *Kshayat* – Emaciation
- *Kopat* – Anger
- *Shokat* – Excessive psychological stress
- *Dhyanat* – Excessive worries
- *Shramat* – Physical workouts beyond the capacity.
- *Kshudha* – Starvation, lack of nutritive diet
- *Ativyayama* – Excessive exercise
- *Atimadyapaan* – Excessive alcohol intake
- *Ativyavaya* – Excessive sexual activities
- Excessive expulsion of *Kapha* (Mucoid secretions), *Shonita* (Blood), *Mutra* (Urine) and *Purisha* (Fecal matter).^[50]

Table No. 6: Classical reference of different states of *Bala*

Sl. No.	Status of <i>Bala</i>	Sign and Symptoms	Co-relation
1	<i>Samanya Bala</i> ^[51] (Normalely state)	<i>Sihropachita Mamsata</i>	Physical Strength
		<i>Sarva Chestasu Apratighata</i>	Activity of the person
		<i>Swara Varna Prasada</i>	Clear voice and Colour and complexion
		<i>Bahya karananam Atmakarya pratipatti</i>	Proper Functioning of <i>Karmendriya</i>
		<i>Abhyantara Karananam Atmakarya Pratipatti</i>	Psychological Ability (<i>Mana Suddhi, Buddhi Suddhi</i>)
2	<i>Bala Vistransd</i> ^[52] (Dislodged Immunity)	<i>Vishlesa Gatranam</i>	Splitting pain in body
		<i>Shrama</i>	Tiredness with little /no work
		<i>Aprachurya Karma</i>	Abnormal functioning of <i>Karmendriya</i>
			Abnormal functioning of <i>Jnanendriya</i>
			<i>Dosha Vriddhi Kshaya</i>
			Impired <i>Agni</i>
			<i>Dhatu Vriddhi Kshaya</i>
<i>Mala Vriddhi Kshaya</i>			
3	<i>Bala Vyapad</i> ^[53] (Immune Disorder)	<i>Guruta</i>	Heavyness
		<i>Stabdhata</i>	Stiffness
		<i>Tandra</i>	Drowsiness/ tiredness at work
		<i>Nidra</i>	Day Sleep/Excessive sleep
4.	<i>Bala Kshaya</i> ^[54] (Immuno-deficiency)	<i>Murchha</i>	Fainting attack
		<i>Mamsakshaya</i>	Emaciation
		<i>Moha</i>	Impaired Decision making capacity
		<i>Pralapa</i>	Delirium
		<i>Ajnana</i>	Impaired psychology

Diseases with *Ojakshaya*

Disease preventing power varies according to the body constitution. Obeys and emaciated body is composed of loose blood, muscle and bone. They are weak and accustomed to unwholesome and inadequate diet. They are psychologically weak. They are prone to diseases and they can't tolerate the disease or disease virulence.^[55] The emaciated persons are often subjected to splenic disease (*Pliha*), cough (*Kasa*), wasting (*Kshaya*), dyspnea (*Shwasa*), lumps (*Gulma*), piles (*Arsha*), abdominal disorders (*Udara Roga*), IBS (*Grahani*).^[56]

- Anemia (Splenic Disorders): Anemia can be correlated with *Rakta Dhatu Kshaya*. According to *Kedarikulya Nyaya* if the *Rakta* formation is impaired then the further *Dhatu* will not get nourishment. In this condition the *Oja* formation will also impair and the *Bala* will diminish. According to classics, in emaciated individuals splenic disease occurs. Hemoglobin synthesis occurs in spleen. Due to the splenic disease hemoglobin synthesis may get impaired resulting anemia.
- Tuberculosis (*Kasa-Shwasa-Kshaya*): *Kasa*, *Swasa*, *Kshaya* are the symptoms of *Bala Kshaya* and these are found in TB.
- Viral Hepatitis (*Udara Roga*)
- IBS (*Samgrahani*): The impairment in *Agni* causes *Grahani*. Due to impairment in *Agni* the digestion and assimilation are impaired causing improper nourishment of the body. The improper nourishment causes *Bala Kshaya*.
- Diabetes (*Madhumeha*): *Oja kshaya* occurs due to diabetes. Hence they are prone for diseases and diseases take long period to get cure.

- AIDS: It is the disease where immune-deficiency occurs. Hence the AIDS patient is very often prone for opportunistic infections.

Ahara, Vihara, Vichara and Ousadha for stabilizing or enhancing *Bala*

- **Ahara:** *Sali* (Rice), *Yava* (Barley), *Masa* (Black gram), *Milk*, *Ghee*, *Honey Meat /Nonveg/Meat soup*, *Dadima* (Pomegranate), *Amla* (Indian goose berry), *Draksha* (grapes), *Munakka* (Raisins), *Kharjura* (dates), *Anjir* (fig), *Coconut*, *Ikshu* (sugar cane), *Til* (sesame), *Sitopala* (sugar candy), *Ardraka / Sonth* (ginger), *Garlic*, *Saindhava Lavana* (rock salt), *Haridra* (turmeric), *Ela* (cardamom).
- **Vihara:** Non-indulgence in wine and excessive sex, pleasant conversations, engagement in meditation, cleanliness, perseverance, charitable, religious, respectful toward teachers, parents and elders, loving and compassionate, balanced in sleep and wakefulness, controlling the senses, keeping the company of elders and the wise.
- **Vichara:** Truthfulness, freedom from anger, nonviolence, calmness, positive attitude, self-control, devoted to Holy Scriptures, aware of time and place.
- **Ousadha:** The drugs of *Jeevaniya Mahakashaya*, *Bruhmaniya Mahakashaya*, *Balya Mahakashaya*, *Bayasthapana Mahakashaya* and *Shramahara Mahakashaya* are advised to enhance the *Bala* or health.

DISCUSSION

Sahaja Bala can be correlated with the innate or non-specific immunity. Innate immunity comprises of different components including physical barriers like the skin, epithelial and mucous membrane, mucus, enzymes (i.e., lysozyme), phagocytes (i.e., neutrophils, monocytes, macrophages), inflammation-related serum proteins (e.g., complement, C-reactive protein, lectins such as mannose-binding lectin, and ficolins), cells that release cytokines and inflammatory mediators (i.e., macrophages, mast cells, natural-killer cells) etc.^[57] This type of immunity present in the body since birth and gives immediate defense to the body until the specific immunity gets activated. **Kalaja and Yuktikrita Bala** can be correlated with acquired immunity. Acquired immunity is again divided into Humoral immunity and Cell mediated immunity. Humoral immunity is derived from B-lymphocyte and cell mediated immunity is derived from T-lymphocyte. After birth when body gets exposed to the pathogen or foreign body, specific immunity develops called immune-globulins. Five broad classification of immunity are – IgG, IgA, IgM, IgE, IgD. IgG may present in the body before the birth as it can cross placental barrier. IgG and IgA present in mother's milk so it may present in infants before direct exposure to the antigen. The rest immune-globulins like IgM, IgE and IgD develop only after the direct exposure to infection. Due to the large molecular size IgM doesn't cross the placental barrier or mother's milk. IgE and IgD are also larger in size as compared to IgG and IgA.^[58]

CONCLUSION

- **Bala** is most essential component for positive health and prevention of diseases along with easy recovery from illness.
- Healthy diet and lifestyle is key factor to enhance **Bala** in general.
- Rejuvenating medicines act as a supportive factor to enhance **Bala** in specific condition.

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