

Importance of Adequate Nutrients in Influencing Infants Immunity

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Abstract:

Nutrition has a great role to play in providing immunity in infants. Right from conception nutrition has crucial role to play for building shape of normal body. In body there are different types of organs, cells and tissues which require different types of nutrients to grow and develop. Not only for growing and developing but to fight against disease essential nutrients are important. In infants case after birth it is mother's milk which is very important for supporting immunity. It contains all biological compounds that support immunity system in infants. It also protect infants from infectious diseases. For all round growth and development such as mental, physical, cognitive different nutrients are required. To provide energy carbohydrates and fats are needed in required amount, to build body protein is required. Infants are the future of any nation, hence it is very essential to make available good quality and appropriate nutrition to each and every infants through their mother's diet. Nutrition Education should be provided to mothers of child bearing age regarding role of nutrition in supporting immunity in infants.

Keywords: Nutrition, Nutrient, Immunity.

INTRODUCTION

Nutrition sits at the core of global level (The Power of Nutrition). Growth and immunity is influenced by the most important factor that is adequate nutrition. A balanced required amount of carbohydrates, protein, fat, vitamins, minerals, and fibre are needed by body every day. Each of these nutrients have a vital role in the growth, development and immunity system of infants. Nutrients such as folate, vitamin b6 and choline are necessary for functioning of brain because these are neurotransmitters. Inadequate amount of these neurotransmitter may lead to stunted growth in infants and have difficulties in learning in the long run during teenage Jennifer Williams, MPH, a research scientist with Abbot (nutritionnews.abbot). Better performance in sports is also linked with proper nutrition. Adequate, balanced, and varieties of nutrition is a

foundation for good health. The WHO (2019) defines health as a state of “complete, physical, mental, and social well-being and not merely absence of disease and infirmity”. Normal good health is important for all to maintain self -esteem and self-image, and this is acquired by having everyday required amount of nutritious food right from initial age. It so happens that when the immunity system is weak many common illnesses such as cold, cough, typhoid, diarrhoea, dengue, corona, malaria, etc. are going to prevalent among them problems often now and then .It is important to know the concept of food, nutrition, nutrients and immunity which all people should be made aware of it.

Food : Food is any substance or substances that people and animals eat to live.

Nutrition : Nutrition is the science that interprets the nutrients and other substances in food for growth, development, reproduction, health and disease of people. It includes food intake, absorption, assimilation, biosynthesis, and excretion. WHO aims to increase the visibility, efficiency, and effectiveness of nutrition action through training activities fostered by the Nutrition knowledge hub (Nutrition from research and experience sharing).

Nutrients : Nutrients are compounds in foods which are essentials to life and health, providing us with energy , the building blocks for repair and growth of the tissues and substances necessary to regulate chemical processes. There are six major nutrients. 1. carbohydrates, 2. fat or lipid, 3. proteins, 4.vitamins, 5. minerals, 6. water. Carbohydrates, fat or lipid and proteins are Macronutrients. Vitamins and minerals are Micronutrients.

Immunity : A condition of being able to resist a particular disease through preventing development of pathogenic microorganism in body. There are three types of immunity – innate, adaptive and passive. Immunity present by birth is called innate immunity. Adaptive immunity involves specialized immune cells and antibodies that attack and destroy foreign invaders and are able to prevent disease in the future. (<http://www.cancer.gov/def/adap...>). Passive immunity occurs when a person is given antibodies rather than making them through his or her own immune system. Passive immunity occurs when baby receives a mother’s antibodies through the placenta or breast milk. Ready-made immunity.(en.m.wikipedia.org).

RATIONALE BEHIND THE STUDY

Balanced nutrition is important for the growth and development of infants. Poor nutritional status will lead to weight loss, muscle wasting, micronutrient deficiencies. Then the immune system of infants will become weak. This will make infants suffer with more frequent, more severe, and long lasting infections. The most precious wealth of a country is the health of infants. The vital component of health is adequate, proper and balanced nutrition. Adequate feeding is essential in the infant’s period, it boost immune system. So steps should be taken to solve nutrition problem through nutrition education to community. It is mother’s milk which is very important for

supporting immunity in infants after birth. Mothers milk contain all biological compounds that support immunity system in infants. Diet and life style are important factor for both mother and her infant.

Expecting Mothers diet: Mothers diet effects fetus's immunity system (25 Feb 2021, <http://www.hopkinsmedicine.org>>). So pregnant mother should consume balance and appropriate diet to make strong immunity for her baby.

Infant Feeding:

Infants are fed by spoon , breast feeding and bottle feeding. There are two types of feeding breast feeding and formula feeding. Breast feeding is considered as ideal food for infants. Colostrum is the first form of breast milk. It is released after giving birth. It has dense nutrient, high antibodies, and antioxidants to build baby's immune system. Colostrum is often called "Liquid Gold "because it has valuable benefits and it has rich golden colour. It is high in protein and low in sugar and fat. Colostrum is filled with white blood cells that produce antibodies. These antibodies strengthen infants immune system, which protects against infection. Colostrum also contains bioactive compounds that make best possible to start life. Colostrum has laxative effect that helps in passing stool, and it clears all waste product and thus infants are protected from jaundice. Good feeding practices leads to good health in latter year.

IMMUNE-BOOSTING INFANT FOODS:

1. **Whole-Fat Plain Yogurt-** Plain yogurt is good source of good bacteria. Maintain and repair white blood cells(infection fighting cells). Ease side effects.
2. **Sweet Potatoes -** It contains Beta carotene body convert this into vitamin A and this is helpful for healthy immune system. Carrot, squash pumpkins, mangoes, and dark green leafy vegetables are good source of beta carotene.
3. **Avacado –** It is good source of vitamin E and vitamin B6 which helps in building immune cells and also increase immune response. Puree or mash avacado is served. They might even help in teething.
4. **Brown Rice –** It contains essential minerals magnesium and selenium which enhance immunity and bolster resistance to viral infection.
5. **Blueberries –** Blueberries are super source of multiple antioxidants (flavonoids, anthocaynins) which help in fighting all sorts of illness. Blueberries are also good source of vitamin C.

REVIEW OF LITERATURE

Hygiene and Sanitation

Risk of mortality and morbidity increases if faulty hygiene and sanitation practices are their habit and life style (Azupogo et. al. 2019). The most important aspect of community well- being is Sanitation (e.g. toilets, laterines, waste water) (Naughton and Mihelcic 2017). Building a robust immune system requires good health with proper hygiene. Child malnutrition is associated with unsafe water, inadequate sanitation and poor hygiene, and unsafe hygiene practices are so much widespread that it has adverse effects on people's health (The WHO/UNICEF Joint Monitoring Programme monitors and reports on progress on WASH.unwater.org). Good hygiene practices are important, especially during the first few months of life to protect them from infection (Home Hygiene & Health). To maintain proper hygiene for good health, babies face, eyes, head, mouth, nails, umbilical cord must be cleaned properly everyday (Hygiene and daily care for babies). Our surroundings are covered with millions of germs, viruses, and parasites, our body can be a living and breeding space for all these microbes to grow and multiply, due to these reasons many deaths occurs due to infections of these microbes (Training Express).

Breast feeding

Annual death of children under age five years will be stopped and also death from breast cancer will also be stopped. (The Lancet 2016). Many ailments which are going to affect life of infants badly are protected by breast feeding practices. (Breast Feeding Goal by 2025 WHO). Death rates are high in those countries where there are low rates of breastfeeding practices. (WHO 2018). Intellectual level of children will be high in case of children who are breast fed. (Victoria et al. 2016) Many mothers are not aware of first milk (colostrum) and they use to avoid first milk (Katepa-Bwalya et al. 2015). Nutrition education is helpful during breastfeeding, breast milk contains immunoglobulins that will protect the infants against common illnesses and infections (Anderson and Maloney 2013). Malnutrition in young children is contributed by inadequate breastfeeding practices, when feeding practices improved by providing required feeding then nutritional status of infants increased. (Onubogu et al. 2016). Exclusive breastfeeding can reduce infant mortality due to common infectious diseases, help recovery, and increase children immunity, it is also safe method that can protect mothers from the risk of ovarian and breast cancer. (Laksono et al. 2021). Optimal breastfeeding and complementary feeding practices have high impact and prevent infant deaths by nutritional counselling on infant feeding. (Kimani-Murage et al. 2013). The Neonates rely on the innate immune system. The specific regulators of innate immune response are the nutrients present in human milk(Le Boudier et al).

Immunity system

Micronutrients such as iron, Zn, Vit A ,C,D and ,E has great influence on immunity system during the period of neonatal. An immune boosting diet such as Vit C, Vit D, Zn, Selenium, Iron,

and protein, are critical for the growth and activity of immune cells.(Gullion O M, 2019 September). Environmental pollution, poor diet and lack of sleep and rest can depress immune system.(Journal of sleep 2017).Protein has the direct relationship between food and immunity. In case of insufficient protein , infection and inflammation increase.(12 Dec 2013.http:www.foodprocessing.com)

Nutritional Status

Nutrition status of urban children is very poor because the infant feeding practices are faulty. (Ghosh and Shah 2004). Immune system will become strong if the infants are provided with adequate and proper nutrients. (Ford 2015). Lack of nutrition in infants will lead to impairment in health in the long term, when the infants grow to young they become stunted and the height will become several centimeters less. (WHO 2021). In the urban area mother's education is considered as a strong predictors of child's nutritional status. (Abuya et. al. 2012). Physical measurement such as height, weight, arm circumference of infants or children are used to determine the health and nutritional status of the communities. Anthropometric measurement is considered mandatory to assess nutritional status in children. (Srivastava 2012). The mothers with no knowledge of maternal nutrition delivered infants with average weight while mothers with adequate knowledge bore infants with slightly higher than average. (Sur et al. 1997)

Nutritional Care

Well balanced nutrients should be provided to infants when they are recovering during illness (Cameron and Hofvander 1983). Breast feeding is traditional practices and it is very beneficial for infant's health point of view and overall development and well-being of infant and young children. (Wellington 2008). Best infant feeding practices will be very good practices for not having obesity in infants (Russell 2016).

Nutrition Education

Complementary feeding practices will improve through nutritional educational intervention and problem of malnutrition will be solved. (Sharma et al. 2020). Childhood malnutrition can be prevented by community based nutrition education. (Kilara et al. 2005). Growth and development of children will improve when infant's mothers are provided with nutritional and health education. (Zhi 2009). Nutrition education on breastfeeding proves to be a strong tool to lower the high risk of malnutrition and mortality of the low birth weight babies. (S K Thakur et al.2012 March). Nutritional education on complementary foods lead to significant increase in weight and height in children 6-24 months of age. (Imdad et al. 2011). It was observed that 80% demanded continuation of nutrition education so that they would not forget it and could apply it in their home situation. (Sinha 1991).

Summary and Conclusion

The Title “The role of nutrition in supporting immunity in infants ”, has great importance for our Nation to progress in all fields. The knowledge gains by mothers regarding nutritional needs of infants will make infants perfect in respect of mind, body and soul. Their immunity power will become strong and they will be able to fight against many diseases and infections. Their growth and development will become proper by taking adequate, appropriate and balanced nutrition right from small age. Our Prime Minister has also given emphasis on balanced and adequate diet. The knowledge regarding Balanced Nutrition should be spread far

and wide. It should not be just restricted to research paper and journals. It is better to say “Lab to Land” idea must be utilized in Nutrition Education programs. Mothers will gain knowledge of nutrition and infants health will improve. Good nutrition is base and fundamental for infants present and future health. The benefits of having required diet from an early age can positively have impact on infant’s health on later years and throughout their adult lives. The first step to protect infants from diseases and all health related complications is to build strong immune system. The immune system in the infants start in the womb of mother. The baby gets nutrition in the womb through placenta. Immune cells are present in the guts of baby. When the baby is born then it is the mother’s milk that helps in building immunity system. Human milk contains essential good nutritive elements and some bioactive compounds that is beneficial for infants. Through these components good bacteria get environment to develop, which will help in building immunity in infants. Many years of researches has highlighted the health benefits of human milk such as reduces diarrhoea, reduces constipation, reduces allergic illnesses, facilitate frequent and softer stools, decreases use of antibiotics, decreases incidence of cold and fever, improves gut health. Colostrum is rich in antibodies; it helps the immune system to function in right manner to fight against infections. Thus breast milk provide healthy guts and overall good immune system development. Active involvement of community must be encouraged in nutrition education program.

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