**It’s vaccine time**

Tabinda Ashraf Shahid

Wednesday, Apr 24, 2024

Adequate nutritional status and immune function are paramount for health and wellness. Micronutrient deficiencies are a form of malnutrition and a major health problem worldwide, which is also a contributing factor in the aggravation of infectious diseases.

Vaccination programmes in low middle-income countries (LMIC) have upgraded their primary healthcare setups which have aided in, to some extent, decreasing the burden of life-threatening infectious diseases like polio.

However, in the presence of micronutrient deficiencies, the efficacy of vaccines has less been recognized as a vital link. It is imperative to note that 50 per cent of deaths of children under five years old worldwide are due to undernutrition. Studies have shown that young children with nutrient deficiencies have weak immune systems, and they are considerably more prone to infections.

Globally, infectious diseases account for 52 million deaths. This includes 14 million deaths in children under five years. At least 70 per cent of these deaths are preventable through vaccination.

The National Institute of Health, Islamabad recently declared that Pakistan has not been able to defeat the polio virus completely, since two polio cases have been found in Balochistan so far since the start of 2024.

According to the Global Polio Eradication Initiative 2023, Pakistan and Afghanistan are in the category of endemic countries. The two nations reported a total of 11 cases of wild poliovirus type 1 last year. The morbidity and mortality rate due to the polio virus is likely to prevail, owing to the presence of malnutrition, poor health, water and sanitation plus socioeconomic and political factors.

It is important to note that Pakistan started its polio vaccine campaign in 1974, and is still battling for the eradication of this crippling disease along with the burden of childhood malnutrition.

Recently, the Pakistan Health Ministry, Islamabad launched the second nationwide polio vaccination campaign with Unicef and Gavi to administer vaccines to 45.8 million children nationally. It is important to observe that along with vaccines, assessment of nutritional status should also be taken on a priority basis.

The diagnosis of malnutrition is not only a critical component for those who are suffering from growth failure due to micronutrient deficiencies but is also a hurdle in providing full coverage by polio vaccines.

Vaccines improve health; the immune system’s response to the vaccine is different depending on environmental, behavioural and nutritional factors. One such factor is gut health. Our gut is the chief site of immune activity while the food that we eat, plays an important role in defining the type of microbes in our intestines.

These organisms or microbiomes protect our gut from disease-causing bacteria, synthesize vitamins and stimulate the immune system. It also breaks down food into small absorbable nutrients like Vitamins B and K and plays an important role in digestion and defence against diseases.

In 2013, Jeffry I Gorden, a biologist at Washington University, found that the presence of certain gut microbiomes is a factor that decisively affects health outcomes ie changing gut microbiome early in life can reduce malnutrition in infants and young children.

Inflammation or absence of certain gut organisms eventually leads to malabsorption of nutrients and vaccines in the gut. The study indicates that when breast milk was supplemented with B infantis (first gut bacteria produced due to the consumption of human milk), malnourished children absorbed nutrients more effectively, preventing malnutrition that led to the increased efficacy of oral polio vaccines.

Recent studies in the Democratic Republic of Congo 2023 have also indicated that non-administration of micronutrient Vitamin A supplements and being underweight are negatively associated with the success of polio vaccines.

According to the National Nutritional Survey 2018 in Pakistan, only 48.4 per cent of children are exclusively breastfed for the first six months of life. Those who are not exclusively breastfed are more susceptible to various infections which leads to undernutrition and weak immunity.

It is a known fact that infants who are breastfed six to eight months have a profuse amount of B-infantis that helps in nutrient absorption, prevents deficiencies and improves absorption of oral polio vaccine. It implies that the maternal role in breastfeeding plays an important role in the health and development of children, which is also helpful in successful routine immunization.

Notably, where lifesaving vaccines contribute to immune fitness, optimal nutrition also plays a vital role in strengthening immune function. To win this battle, mothers need to be sensitized about the importance of nutrition in daily life and the purpose of vaccination for its success. Policymakers and stakeholders should also be encouraged to spread the benefits of exclusive breastfeeding, and its connection to healthy nutritional status and immunity.

The importance of routine vaccination, Vitamin A supplementation, the use of clean water and improving sanitation should also be encouraged in families and communities in high-risk areas by increasing awareness and their trust in vaccination campaigns. Socioeconomic issues, political barriers and traditional thinking should also be addressed to achieve a polio-free Pakistan.

The writer is a registered dietitian and nutritionist. She can be reached at: tabinda08@gmail.com