Infancy and early childhood is a time when food preferences of a child develop, which remains more or less constant for the rest of the life. The dietary patterns during this phase can have an impact on diet-related diseases in increasing their risk such as obesity, cardiovascular diseases, and diabetes in later childhood and adulthood. Balanced nutrition can help in making the toddler’s health better, which can be achieved by understanding nutritional requirements, ideal diet, and sources of nutrients.

Toddlers are children during this growing phase, they have specific nutritional requirements. If these specific requirements are not met, they are at an increased risk for multiple nutritional deficiencies or malnutrition. It is, therefore, necessary to have healthy balanced nutrition during infancy and toddlerhood. Growing-up milk (GUM) or nutritious milk for a growing toddler is one such way of making sure that toddlers have the appropriate nutrition in the required amount.

### Nutritional Requirements in Toddlers

Both macro- and micronutrients play an important role in the growth and development of children. Among micronutrients, iron and iodine are especially important for psychomotor development and cognitive function. In India an average of 57% toddlers have vitamin A deficiency and about 69% have iron deficiency. Acquiring micronutrients from just one or two sources may not be adequate to meet the nutrient needs. In the Indian context, cereal and pulse based vegetarian meals are predominantly the sources of micronutrients like, zinc, Vitamin A and folate which are not much derived from flesh food despite popular belief, suggesting a lack of dietary diversity. With respect to vitamin B12 and folic acid, the main sources are animal derived and due to religious and cultural preferences are not consumed by some at all. In a study conducted in India, about 93% of the urban poor population were recorded with folate intakes less than the recommended dietary allowances leading to folate deficiencies from a young age. This was suggestive of economic and social background of the children, as several micronutrient deficiencies do coexist with one another. Similarly, the need for protein in the diet must also be taken care of as presently the protein intake is at 1 g/kg/day which is less than 50% RDA.

### Estimated energy requirements

<table>
<thead>
<tr>
<th>Age</th>
<th>Energy (kcal/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7–9 months</td>
<td>3.2–3.4</td>
</tr>
<tr>
<td>10–12 months</td>
<td>3.6–3.9</td>
</tr>
<tr>
<td>1–3 years</td>
<td>4.9–5.2</td>
</tr>
</tbody>
</table>

### Estimated protein requirements

<table>
<thead>
<tr>
<th>Age</th>
<th>Protein (g/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7–9 months</td>
<td>13.7</td>
</tr>
<tr>
<td>10–12 months</td>
<td>14.9</td>
</tr>
<tr>
<td>1–3 years</td>
<td>14.5</td>
</tr>
</tbody>
</table>

### Causes of Nutritional Inadequacy and Its Effects

Nutrition has been determined as a key factor for optimal growth, development and health throughout life. Deficiencies of key micronutrients such as zinc, magnesium and iron affects growth in children with specific issues related to immune function and brain development, as a result of vitamin deficiencies.
In this regard, deficiency of iodine can lead to slow growth of the brain in children. Vitamin A and zinc deficiency on the other hand weakens the immune system and increases susceptibility to infections like measles and diarrhoea. Deficiency in iron leads to learning difficulties with the children also facing difficulty in social interaction at school along with delayed cognitive development. Therefore, a more holistic approach that involves consuming a diverse range of nutrient-rich foods that includes all micronutrients at a young age could be one way to prevent such deficiencies in children. However, today, lack of awareness on the nutritional requirements, myths and taboos associated with the perception of society, mothers and caregivers, leads to a poor lifestyle. This is characterised by consumption of energy dense foods that are high in fats with low nutritive value. Adding to this, a study by Overby et al., showed that increased intake of added sugar consumption is coupled with a sharp decrease in fruit, vegetable, grain consumption along with reduced intake of micronutrients. Other studies have linked the intake of added sugar to the increased incidence of dental caries, dyslipidaemia, bone loss, and poor diet quality that is devoid of nutrient dense foods. This has led to a rise in the development of several disorders such as heart disease, stroke, obesity, cancer, and diabetes in the adult population. Therefore, consuming a healthy balanced diet that includes fruits, vegetable, grains, and dairy and reduced or no consumption of added sugars is important for toddlers to prevent the onset of non-communicable diseases later in life.

Growing-up milks are milk-based drinks containing vitamins and minerals and are targeted for toddlers or preschoolers. Essentially known as liquid-based nutritional supplements with modified protein content and composition and with other added nutrients such as fatty acids, probiotics, prebiotics or synbiotics. Growing up milk has been developed with an intention to bridge the nutritional gap that may exist from regular meals, which may be due to either method of preparation of food, or lack of dietary diversity or any other issues leading to reduced intake of required nutrition. These not only aid in providing required nutrition to the toddlers, but also helps in providing essential key nutrients which help them in holistic growth and development including, social, emotional, and behavioural development.

While there is need for evidence in the use and need for GUM as part of a balanced diet, it is more obvious that today’s modern dietary habits do not meet the recommended nutrient intakes especially in toddlers. Energy and protein intakes in toddlers are currently very high, whereas the intakes of key nutrients like vitamin D, fibre, and fatty acids are very low. A study depicted that children on GUMs showed a more adequate intake of protein, saturated fat, and vitamin B12, and a higher intake of carbohydrate, dietary fibre, iron, zinc, vitamin C, and vitamin D when compared to cow’s milk intake. The main advantage reported of GUM consumption is that it reduces the risk of inconsistent micronutrient intake of micronutrient inconsistency, especially iron and vitamin D. Another study by Ghisolfi et al., also suggested that using GUM can significantly reduce the risk of high protein intake and insufficient intake of key nutrients like Vitamin C, Vitamin D and iron.

**Conclusion**

Adequate nutrition is of utmost importance for toddlers, as growth and development that impacts lifelong and overall health start at this stage. With an evolving lifestyle, where energy-dense foods that are low in nutrients leads to reduced consumption of micronutrients which affects the quality of life and development leading to long-term consequences and high in protein are consumed, the scope for risk of non-communicable diseases in adulthood has now increased. In order to curb or alleviate the issues of nutritional inadequacy, GUM can be a viable option.
Growing-Up Milks: Nutritional Relevance and Importance

References


