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Anibera Neelima
Research Associate, Community Science, KVK, Rastakuntubai, Andhra Pradesh, India

Koppolu Sudarsana
Young Professional – II, ICAR – CTRI - KVK, Kandukur, Andhra Pradesh, India

Corresponding Author
Anibera Neelima
Research Associate, Community Science, KVK, Rastakuntubai, Andhra Pradesh, India

Malnutrition and its consequences: A review

Anibera Neelima and Koppolu Sudarsana

Abstract
Malnutrition is the deficiency of intake or uptake of nutrients, which eventually results in altered body composition, leading to reduced physical function and worse clinical consequences. There is significant evidence to demonstrate that protein-energy malnutrition from inadequate dietary intake can increase the risk of infectious diseases. Malnutrition is associated with number of diseases and imfact on immunity system of human body. Leads to number of diseases such as Diabetes, cold, cough, and moreover internal organs working mechanism will be affected and other health problems have been notified in humans. In this paper, we have reviewed the malnutrition and its complications in human body, and consequences on health issues were reviewed.

Keywords: Malnutrition, protein-energy, organs working mechanism, health issues

Introduction
The stunting levels are 38.4 per cent and underweight numbers are 35.8 percent as reported in the National Family Health Survey 4 (NFHS-4). There has been only a marginal betterment over the years. Undernutrition leads to long-term effects, including cognitive and growth deficits and reduced immunity to infections. It is the underlying cause of nearly half of all deaths amongst children under five years of age in India. Food security proceeds to be a subject of grave concern for India. In spite of being the second-largest producer of food, India is home to the world's second-largest undernourished population (195.9 million). A review of studies examining the link between food security and malnutrition reveals a direct association with undernutrition in children in middle-income countries. It concludes that undernutrition/stunting is a consequence of household food insecurity. To add to the burden of malnutrition, more than half (53.1 per cent) of women (15–49 years) in India are anaemic, which has lasting effects on future pregnancies and is also one of the causes for the high rate of low-birth-weight babies (Aparna, 2010). The situation worsens when infants are fed inadequate diets. According to the World Health Organization (WHO), an unbalanced diet and lack of food (other than mother's milk), are directly linked to high rates of stunting, excessive weight, and death in children under five years of age. It is therefore essential to break this intergenerational cycle of malnutrition. A deterioration in minimum adequacy of diet is observed, which is a cause of interest.

Consequences of malnutrition
The research studies revealed that the up to 50% patients to be at the risk of malnutrition (Meyer *et al*., 2021) [4]. Globally, new trend is going on about food supplementation and plant based foods, meat analogues. Recently, Penchalaraju and John Don Bosco (2022) [5] isolated the protein concentrates from pulses such as green gram, horse gram and cowpea to prepare meat analogues.
There is significant evidence to demonstrate that protein-energy malnutrition from inadequate dietary intake can increase the risk of infectious diseases. Reciprocally, any exposure, including infectious diseases, that impairs immune function and causes malabsorption increased catabolism, or decreased nutrient intake can increase the risk of malnutrition. Exploratory studies indicate that patients infected with coronavirus disease 2019 (COVID-19) experience some or any of the following symptoms: fever, cough, shortness of breath, muscle ache, confusion, headache, sore throat, chest pain, pneumonia, diarrhoea, nausea and vomiting, and loss of taste and smell; all of which can influence nutrition status and ultimately immune function (USD, 2020) [6].
Recent proof peering adults infected with coronavirus disease 2019 (COVID-19) has exhibited a significant impact of malnutrition on health consequences.

Individuals with multiple comorbidities are older adults or malnourished, are at increased risk of being admitted to the intensive care unit and of mortality from COVID-19 infections. Therefore, nutrition care to identify and address malnutrition is critical in treating and preventing further adverse health outcomes from COVID-19 infection (Handu *et al*., 2021) [3]. Malnutrition is the deficiency of intake or uptake of nutrients, which eventually results in altered body composition, leading to reduced physical function and worse clinical consequences. Malnutrition is a significant risk factor affecting postoperative complications and mortality of major abdominal surgery (Xu *et al*., 2022) [7].

Malnutrition is associated with poor prediction in a wide range of chronic diseases; however, the effect of malnutrition on long-term consequences of patients at developed stages of atherosclerosis, coronary chronic artery occlusion (CTO) is not known (Cheng *et al*., 2021) [1, 3].

Malnutrition is a pivotal factor in surgery as it is frequently a cause of postoperative complications. Moreover, malnutrition is quite prevalent in older patients in hospitals, reaching 50% in Western European countries. In general surgery, the prevalence of malnutrition risk ranges between 20 and 50%. More than 80% of the patients undergoing major hepatobiliary/pancreatic (HPB) and bowel surgery might be at risk of malnutrition or malnourished. This condition has been invariably associated with dismal surgical outcomes. Moreover, malnutrition is considered a potentially modifiable risk factor and a pillar of modern rehabilitation programs with the aim to ameliorate postoperative morbidity (Venianaki *et al*., 2021) [8]. Malnutrition can increase the frequency of postoperative complications in cancer patients at advanced stages, resulting in reduced life quality and decreased survival rate (Yan *et al*., 2021) [9]. Childhood malnutrition remains far too common around the world today. As a triple threat, malnutrition presents in 3 forms—undernutrition, hidden hunger (micronutrient deficiencies), and overnutrition. Here we discuss pediatric malnutrition in the context of protein-energy undernutrition and hidden hunger (single or multiple micronutrient deficiencies). As undernutrition and hidden hunger, pediatric malnutrition is defined as an imbalance between nutrient needs and nutrient intake, which results in a cumulative deficit of energy, protein, or micronutrients (Murray *et al*., 2021). The causes of malnutrition in infants and children vary widely. Pediatric malnutrition occurs in high-, middle-, and low-income countries alike, with some causes common to all and others very different. Eating and feeding disorders as well as poor diet quality cause malnutrition in children everywhere. Likewise, neurological abnormalities, specific diseases, and severe injuries put all infants and children at high risk of malnutrition, eg, gastrointestinal, heart, and kidney defects, cerebral palsy, cystic fibrosis, short bowel syndrome, solid tumor cancers, and third-degree burns (Price *et al*., 2020) [2].

Conclusion

The research studies revealed that the up to 50% patients to be at the risk of malnutrition. The causes of malnutrition in infants and children vary widely. Pediatric malnutrition occurs in high-, middle-, and low-income countries alike, with some causes common to all and others very different. Eating and feeding disorders as well as poor diet quality cause malnutrition in children everywhere. Likewise, neurological abnormalities, specific diseases, and severe injuries put all infants and children at high risk of malnutrition, eg, gastrointestinal, heart, and kidney defects, cerebral palsy, cystic fibrosis, short bowel syndrome, solid tumor cancers, and third-degree burns. Recent proof peering adults infected with coronavirus disease 2019 (COVID-19) has exhibited a significant impact of malnutrition on health consequences. Individuals with multiple comorbidities are older adults or malnourished, are at increased risk of being admitted to the intensive care unit and of mortality from COVID-19 infections. It depends on nutritional imbalance and food intake, adsorption of body metabolisms.

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