



Mini-review Article

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Value of microgreens and their importance in child nutrition – A review

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Abstract

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Nutrition and diet are two very important parameters for determining the public health. These two parameters are associated with a vast number of diseases. Henceforth, understanding the food choices of people is considered crucial towards promoting global health. Our life, in one way or other, depends on the energy we get by metabolisation of foods. Various factors like hunger, satiety, health motivations, economic factors, mental factors affect the choices of our foods. Food choices and food eating behaviors play a huge role in deciding the fate of your health. When you're eating behaviors or food choices are not structured and systematic, you will land up in acquiring non-communicable diseases like cardiovascular diseases, diabetes, obesity, and cancer. Given the priority and seriousness that unhealthy food choices, obesity and overweight lead to a plethora of chronic diseases, planning an individual's dietary health and wellbeing has gained huge importance. Not only is it important to understand the differences in food choice incentives, but also to know about various food choice determinants, globally. Concerning the above, it is very essential to produce low-cost nutrients and food products, and make them available for all masses of population. Microgreens are vegetable greens and are harvested after sprouting as shoots that are used both as a visual and flavor components in restaurants. Fine dining chefs use microgreens to enhance the attractiveness and taste of their dishes with their delicate textures and distinctive flavors. They are also known for their various colors and textures. Among upscale markets, they are now considered a specialty genre of greens that are good for garnishing salads, soups, plates, and sandwiches. Even though microgreens are small in size, they have good concentrations of antioxidants, vitamins, bioactive compounds and nearly 40% of vital nutrients than their mature greens. Microgreens are emerging fast as a functional food with abundant nutritional and therapeutic benefits.

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Introduction

The Importance of Nutrition

Survival of a woman and her child, their growth and development mainly depend on health and nutritional care and status. Therefore, adequate nutrition is a prerequisite and a non-negotiable element for the

mother and the child. On a global note, malnutrition among children and women in rural areas is a very important public health concern with various consequences like disturbing the cognitive and the physical development among children and the economic productivity of individuals and societies. Children who weigh less than 2.6 times less likely to go on to higher education or graduate. On an average, eliminating

malnutrition betters has benefits like improving national productivity by 11% in Africa and Asia, preventing the occurrence more than 1/3 of child deaths per year (health), decreasing poverty, improving the education and school attainment, empowering women and breaking the inter-generational cycle of poverty (Black, Robert et al., 2013).

Nutrition of primary school children determines their life time health, strength and intellectual vitality. This span of life is a dynamic stage of physical growth and mental development. But still now in India, the position of health and nutritional status of the school-age children are not satisfactory level. Currently, India on its way to meet two targets for maternal, infant and young child nutrition (MIYCN). Till date, no commendable progress has been made towards achieving the target of reducing anemia, wasting and stunting.

Today, 51.4% of women aged between 15 and 49 years stand affected with malnutrition. 58.0% of infants aged 0 to 5 months exclusively breastfed and 34.7% of children under 5 years of age are still affected with stunting. This is higher than the average for the Asia region (21.8%). 17.3% of children under 5 years of age are wasted, which is higher than the average for the Asia region (9.1%) and among the highest in the world. Anaemia and micronutrient deficiencies are common among Indian schoolchildren.

However, past studies have narrowly focused on only a few micronutrients and have not carefully evaluated the association between socio-demographic factors and nutritional status of school children. Living at higher altitude has been associated with low serum levels of ferritin, retinol, and vitamin B12. There were no associations between any socio demographic variables and serum zinc or folate. Growth impairment and micronutrient deficiencies are prevalent among schoolchildren in Himalayan villages of India.

Status of nutrition in India

The national family health survey (NFHS-4) data reported that 37.5% of children were underweight in India out of which 29.1% in urban and 38.3% in rural and it varies across the states. The survey data also reported that stunting and wasting was 38.4% and 21.0% in respectively. There are no any other efforts to supplementary feeding program for school children in

age group 5-14 years except mid-day meal programme. (Rahaman et al., 2019).

In the Asia region, there has been slight progress towards achieving global nutrition targets. The global target for overweight among children under 5 years of age has 16 countries on course to meet it, stunting among children under 5 years of age has 14 countries on course, wasting among children under 5 years of age has 13 countries on course, exclusive breastfeeding among infants aged zero to five months has ten countries on course, diabetes among women has six countries on course, while low birth weight and diabetes among men each have one country on course. However, not a single country in the region is on course to meet the targets for anaemia in women of reproductive age (aged 15 to 49 years), obesity among men, and obesity among women.

Thirty countries in the region have insufficient data to comprehensively assess their progress towards these global targets. The latest data shows that anaemia affects an estimated 36.7% of women of reproductive age. Some 17.3% of infants have a low weight at birth in the Asia region. The estimated average prevalence of infants aged 0 to 5 months who are exclusively breastfed is 45.3%, which is higher than the global average of 44.0%. (Fanzo, Jessica et al., 2018).

Status of nutrition in Asia

The Asia region experiences a malnutrition burden among children aged less than 5 years. The average prevalence of overweight is 4.8%, which is lower than the global average of 5.6%. The prevalence of stunting is 21.8%, which is higher than the global average of 21.3%. The Asia region's prevalence of wasting is 9.1%, which is also higher than the global average of 6.9%. The Asia region's adult population also faces a malnutrition burden: an average of 9.6% of adult (aged 18 and over) men lives with diabetes, compared to 8.5% of women. Meanwhile, 8.7% of women and 6.0% of men live with obesity.

More than half of the world's children impacted by wasting (26.9 million) live in South Asia. Of the three countries that are home to almost half (47.2%) of all stunted children, two are in Asia: India (46.6 million) and Pakistan (10.7 million). Of the 38.3 million children globally overweight, 5.4 million and 4.8 million are in South and East Asia respectively (26.6% of the total).

The prevalence of adult obesity in Hong Kong rose from 10.4% in 2015 to 10.6% in 2016 (overweight from 40.5% to 40.9%). The whole region is undergoing significant growth in the consumption of packaged foods.

The health consequences of overweight and obesity contribute to an estimated four million deaths, while under nutrition explains around 45% of deaths among children under five. No country is on course to meet all nine global nutrition targets assessed in 2018. In Asia, only 4 countries are on track to meet more than 2 targets – Armenia, Kazakhstan, Kuwait, and Palestine. Out of Asia's 48 countries, only 11 countries are on track to meet the child overweight target and only 10 countries are on track to meet the targets in child stunting. (Fanzo, Jessica et al., 2018).

Consequences of poor nutrition during elementary school education

Considering the poor knowledge, attitude, and performance of students regarding the junk foods intake and the positive effect of education on the above-mentioned construct, it seems that education as one of the most important influencing factors can supply necessary grounds for increasing the knowledge, attitude, and performance of the students and so the society. Besides, considering the important role of girls as the future mothers and low cost of preventive activities like nutrient education as compared with the treatment activities, it seems necessary to generalize such educational programs to all other related groups and populations.

Research studies suggest, parental participation is otherwise essential for the achievement of long-term benefits of the enhancement of the program for implementation during their stay at home. Long-term value of the improvement needs to be confirmed by further studies because improved junk food consumption in children may exist only during the program or a short period thereafter. School personnel's and teachers should be involved. Coordinating efforts should be made between school personnel, health professionals, and parents to ensure long-term benefits of such programs. In addition to the above, any investments made on a child's growth and development with adequate care and nutrition will yield benefits for the country's future generation and will augment growth, economic development and prosperity for the

country. Nutrition transition as they say, includes a change from consumption of tradition and modern foods to nutrients which contain high-energy density and low nutrient diversity.

Landscape: Nutrition insecurity and the burden of malnutrition

Malnutrition is a major contributor to disease burden in India. To inform subnational action, we aimed to assess the disease burden due to malnutrition and the trends in its indicators in every state of India in relation to Indian and global nutrition targets. Malnutrition continues to be the leading risk factor for disease burden in India. It is encouraging that India has set ambitious targets to reduce malnutrition through the National Nutrition Mission (NNM).

Zero hunger adequate nutrition have the capacity to transform and commission the current and future societies. Zero hunger and good nutrition have the power to transform and empower the present and future generations. Stunted growth, anemia and other micronutrient deficiencies impede productivity, proper cognitive development and various other health outcomes. With a dire focus in initiatives related to nutrition; the country can go forward on the development path with healthy, skilled human resources.

In India, malnutrition was the principal cause for deaths in children younger than 5 years of age in every state accounting to more than 65% deaths, a major risk factor for loss of health in all ages, and responsible for nearly 15% of the total disability-adjusted life years (DALYs). By the year 2022, POSHAN Abhiyaan, India's flagship programme to improve nutritional outcomes for children, pregnant women and lactating mothers aims to reduce stunting, wasting and underweight by 2% and anemia by 3% per annum.

According to the data of national family health survey (NFHS), the widespread presence of stunting, underweight and wasting among the under-5 children in India is 38.4%, 35.8% and 21% respectively. At least 53.1% women between 15-49 years and 58.6% children between 6-59 months of age are anemic in the country. It is a matter of concern that adult obesity and overweight is also increasing in India. 20.6% women and 18.9% men are obese (Sharma, Himani et al., 2020).

Food security at household level

Children's eating and feeding habits are strongly influenced by and informed by their families' preferences, traditions, and backgrounds. Many families are unable to afford or obtain adequate amounts of nutritious foods such as fresh fruits and vegetables, legumes, nuts, meat, and milk. Parents may also lack knowledge of suitable foods and feeding habits for their child's age, as well as awareness and/or resources to address these issues. There are several problems with the PDS, such as the lack of ration cards, shortages of various materials, and the ration type PDS is only good for two weeks or less. In such a situation, nutri-garden is a much-needed long-term sustainable solution that addresses the household's food security and diversity. The current Covid-19 scenario has a significant impact on household food security and diversity, and providing a nutri-garden not only ensures food security and diversity for the family, but also provides a livelihood opportunity.

Children need the right kind of nutrition for optimum growth. Parents always try to ensure that their children consume a diet which is rich in nutrients. Some children are selective about their food choices while others enjoy eating everything. The main concern is about essential nutrients getting lost in the process of cooking a dish. Microgreens help fill up the nutritional gap in our daily diet. Microgreens have been gaining popularity in recent years as a super food. You can introduce new life on your child's plate by using microgreens in their diet.

But, on and off the flipside to this, the deficiency of micronutrients is intensely rising in developing countries. These square measures are indeed silent epidemics of vitamins and mineral deficiencies and are considered frustratingly irritating factors in

communicable and chronic diseases, impacting morbidity, mortality and quality of life among population while not gender distinction. Within the previous few years small greens have gained quality as a result of changes in customary of living patterns and health awareness. Because of their high concentration of antioxidants, vitamins and minerals and low nitrate content, that square measure related to well-being of fine human health. The elevated levels of minerals in microgreens can be used as health promoting approach to fulfill the provisions for elementary dietary intake.

Comprehensive analysis is required to characterize improved matter standing in microgreens. Data on essential matter mechanism and their bio accessibility for effective health advantages from microgreens, green leafy vegetables, vegetables and fruits remains distributed in Indian perspective. There's associate degree rising ought to target this space and need furnishing stress towards food security, food safety, food property and nutrition security in India.

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