

Nutritional status of physically disabled children

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Abstract-

Proper nutrition is crucial for everyone, but it plays a crucial role in childhood as nutrition is directly linked with all aspects of their growth and development. Therefore, all physical, cognitive and psychological capabilities as adults will be determined by the fetal and childhood nutrition. Disabled children, specifically, are in need of higher need of proper nutrition compared to non-disabled children. Malnutrition problems in disabled child will make he/ she highly vulnerable to further morbidities imposing further suffering of the affected child. Consequently, not only the child he/ herself but also the family and the whole community will suffer both emotionally and financially (Neyestani *et al.*, 2010).

Protection of the Rights of Persons with Disabilities Act.1 A in Sri Lanka has defined disability covering both medical and socio-economic aspects of disability as follows. A person with disability means any person who, as a result of any deficiency in his physical or mental capabilities, whether congenital or not, is unable by himself to ensure for himself, wholly or partly, the necessities of life. It has been proven in the literature that disability and poverty are closely interlinked. Further, families having a disabled child suffered with variety of problems such as child care problems, earning, and negative attitudes from the society and etc. Therefore, these children are less likely to receive proper care and nutrition (National policy on disability for Sri Lanka, 2003).

Index Terms- Nutrition, Physical, disabled, Children.

I. INTRODUCTION

Good nutrition is a fundamental requirement for good physical, mental and social development. Further, nutrition plays a vital role not only in growth and development, but also in the prevention and treatment of disease. Basically, nutrition is the major determinant of proper motor and cognitive functionality (Ohlhorst *et al.*, 2013). The term 'Malnutrition' is generally used when nutrition is deficient, excess or imbalanced and cause adverse effects which can be detected and measured as changes in tissue/ body form, functionality and clinical condition (Younis *et al.*, 2015). Malnutrition is basically two forms, namely, under nutrition and over nutrition. Under nutrition is associated with inadequate consumption of foods, or impaired absorption or utilization of the consumed nutrients. Under nutrition includes four different categories including underweight (low weight for age), stunting (low height for age), wasting (low weight for height) and micronutrient deficiencies (insufficiency of important vitamins and minerals). On the other hand, over nutrition leads to overweight, obesity and diet related non-communicable diseases namely cardio vascular diseases, diabetes mellitus, cancer, etc. (Branca *et al.*, 2015).

Branca *et al.* (2015) further explained that malnutrition shows an intergenerational cycle emphasizing the importance of nutrition at different stages of life as well as across generations. According to Tompsett *et al.* (1999), malnourished children will be grown into an adults with lower physical and intellectual capacity and productivity as well as higher rates of chronic illness and disability. At the same time, malnourished mother will give birth to malnourished or disabled children indicating the intergeneration transmission. Following figure illustrate the phenomenon of life stage and intergenerational progress of malnutrition and possible consequences.

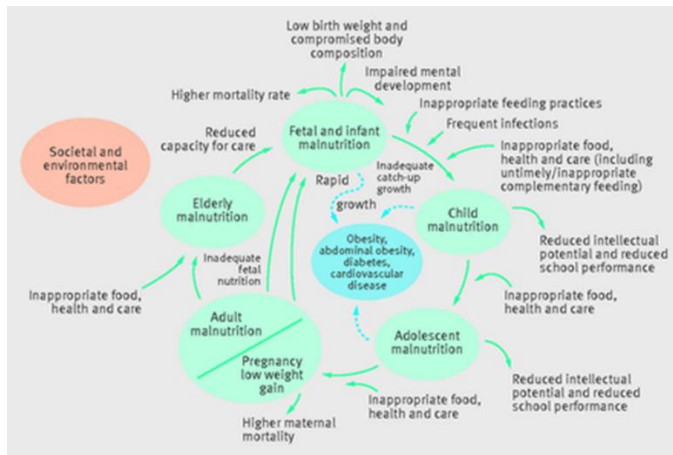


Figure 1: Effects of nutrition through the life stages and generations (Darnton-Hill et al., 2004)

Nutritional status has defined as “Intake of a diet sufficient to meet or exceed the individual requirements in order to keep the composition and function of the otherwise healthy individuals within the normal range” (Jeejeebhoy et al., 1990). Assessment of nutritional status is important to identify individuals or population groups who are at risk of becoming malnourished, identify individuals or population groups who are already malnourished, develop programs to meet the individual/ family nutritional demands identified by the assessment and assess the effectiveness of the nutritional programs and intervention once initiated. According to the authors this equilibrium can be disturbed by three distinct processes including increased demands, decreased intake and altered utilization. A comprehensive assessment of nutritional status includes (1) anthropometric measurements, (2) biochemical assessment, (3) clinical assessment and (4) measurement of dietary intake (Knox et al., 2003).

Anthropometrics assessment measures the body composition, specifically the body muscle and fat and can be used to compare and evaluate the growth of individuals and population groups. Most frequently used anthropometric measurements are height and weight, in addition, body circumferences (head, mid upper arm, thigh, hip, etc.) and skin fold thicknesses of different body parts (triceps, biceps, abdominal, subscapular, suprailliac, and etc.) are also used. Further, these anthropometric measures will be used to calculate variety of growth indices such as Body Mass Index (BMI), weight for age, height for age, weight for height, percent body fat, muscle mass, etc. will be derived from these measurements which are important in determining the body composition and overall nutritional status (Mackey, 2017).

Biochemical tests are to determine the different nutrient and metabolic parameters in blood and urine which indicate the nutritional status such as serum proteins, micronutrient levels, etc. Clinical assessment will provide information about altered nutritional requirements and resulted acute and chronic illnesses. Variety of techniques will be used to assess dietary intake including 24 hour dietary recalls, diet diary, food frequency questionnaire, and etc. However, accuracy and reliability of these dietary assessment methods are questionable compared to other methods as techniques used in these methods (interviews,

observations, records of study participants, etc.) can indirectly change the actual and habitual intake (Mackey, 2017).

According to Branca and colleagues (2015), nearly 50 million children’s lives are at risk every year, due to undernutrition while more than 40 million children are threatened by overweight and obesity at the same time. This point out the simultaneous existence of different forms of malnutrition across the same communities, which is referred to as double burden. Second Global Strategy for Women’s, Children’s and Adolescents’ Health (2015) also warrants the improving nutrition to improve health by paying special attention to the first 1000 days of life, pregnant and lactating women, women of reproductive age, and adolescent girls. According to Younis, Ahmad and Badpa (2015), the hidden causative factor behind more than one third of all child deaths around the world is malnutrition, however it is rarely mentioned as a direct cause. All these facts point out the importance of proper nutrition for children. Therefore, several studies have conducted to assess the nutritional status of children of all age groups across the world.

Disability means the limitations imposed on individuals restricting their capacity to carry out activities of daily living (ADL) and participation in daily life situations. Therefore, disability in general, constrain the individual from ensuring for himself, wholly or partly, the necessities of life. Disability has classified in to number of categories including hearing, visual, speech, intellectual, psychiatric, mobility and disability arising as a result of epilepsy and other causes. Further, people may be suffering from multiple disability in which two or more of these various disabilities present in a single individual (National policy on disability for Sri Lanka, 2003). Therefore, disable children are identified as a group of children with special needs and require specific caring and support. However, studies focused on their nutritional status are quite limited in the literature.

Neyestani and colleagues in 2010 conducted a cross-sectional study to investigate the nutritional status of the Iranian children with physical disability. In this study they used 24 hour dietary recalls and food-frequency questionnaire to assess the dietary pattern of the disabled children. Further, two anthropometric parameters: height and weight was measured and BMI was calculated to assess nutritional status. They found interesting results through this study, for example mean energy intake of disabled children were more than 90% of the required amount. On the other hand, mean calcium intake was approximately half of the recommended intake while calcium intake was 75% of the required recommended intake. More interestingly, protein, calcium and riboflavin intake found to be significantly lower in disabled girls than disabled boys.

The most important finding of the study of Neyestani and colleagues (2010) is that they found 40% of disabled girls and boys were underweight according to Z score of weight. Moreover, they compared these results with anthropometric data from non-disabled children and pointed out underweight condition is more prevalent among disabled children than non-disabled children ($p < 0.001$). They found the similar results with height too, and stated that both disabled boys and girls have significantly shorter statures when compared with the nondisabled counterparts. Finally, they concluded that certain malnutrition conditions including low weight and stunting shows higher prevalent rate among Iranian children with disabilities and

also this situation is more prevalent in girls than in boys. They further pointed out that major contributing factor for this situation is poor food composition than total low calorie intake and recommended further studies.

However, another study found opposite results. Tompsett, Yousafzai and Filteau in 1999 studied the nutritional status of disabled children in Nigeria by applying cross-sectional survey design. In this study, they compared the nutritional status of disabled children in Nigeria with their non- disable counterparts including siblings and neighbor children to determine whether disabled children were nutritionally disadvantaged. In this study, they used anthropometric measurements such as height, weight, mid-upper arm circumference (MUAC), demispan and halfspan and also biochemical measurement of blood hemoglobin level.

The results of the study revealed that mean height for age and weight for age of disabled children under 10 years was significantly lower than the non- disable counterparts. However, they pointed out that these results are mainly due to presence of neurological impairments, polio, feeding difficulties, etc. making them highly nutritionally vulnerable. Based on these results they concluded that there is no significant difference in nutritional status of disabled children who are not nutritionally at risk due to neurological impairments and consequent feeding difficulties when compared with the non-disable children in the same area. More interestingly, they compared the individual impairment groups and pointed out that nutritional status of children with sensory impairment and learning difficulties do not have significant difference from non – disable children.

Conclusion

Children are considered as the most precious group in any kind of society. Growth and development during childhood will determine the future adult, in which nutrition plays a vital role. Especially, children with disabilities do need a special care and attention to fulfil their special needs. Therefore, close relationship of the disability and poverty may lead to nutritional problems among these children and the expected prevalence rate of malnutrition problems among disabled children are higher. Therefore, having a basic idea about the current prevalence rate of malnutrition or other nutrition related problems is vital in order to improve their health considering the equity of the society.

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