Excel
INDIA PUBLISHERS

INCLUSION OF CHILDREN WITH DISABILITIES

Challenges and Concerns

Editor Dr. S. Kavitha Maithily

Department of Home Science
GANDHIGRAM RURAL INSTITUTE, DEEMED UNIVERSITY
Tamil Nadu, India

Development and Quality Assessment of Millet based Food Mixture and Products for Intellectually Disabled Children

P. Magdalene Virjini[1], H. Roshini[2] and Dr. Jagan Mohan[3]
[1]Dept. of Human Nutrition & Nutraceuticals, Fatima College, Madurai–625018
[2]Scientist, Indian Institute of Crop Processing Technology, Thanjavur–613005

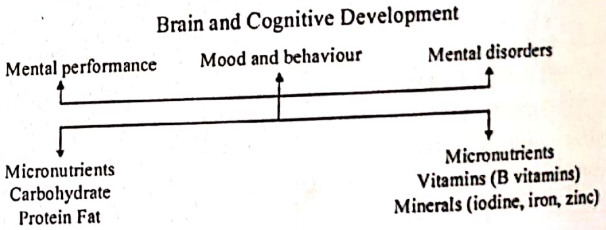
Abstract—Intellectual disability is a genetic disorder manifests in significantly below average overall intellectual functioning and deficits in adaptive behavior. A number of environmental, genetic or multiple factors can cause intellectual disability. It is also believed that malnutrition is one of the etiology factors of intellectual disability. Inadequate nutrition may affect the child's brain functioning and cognitive development with implications for school performance. To date there is a growing body of evidence that, millet is extraordinarily superior to rice and wheat and therefore is the solution for the malnutrition that affects a vast majority of the Indian population especially the Intellectually Disabled, as millets are the storehouse of dozens of major and minor nutrients in large quantities needed by the human body and hence can help people withstand malnutrition. Thus, children with a varied diet of good nutritional content and regular intake may ensure the best possible cognitive development and school performance. The objectives of this research is to develop millet based food mixture and products using the developed mixture and to study their organoleptic qualities and nutrient composition. Millet based food mixture was formulated and developed by using foxtail millet, little millet, roasted bengal gram, almonds, cashew nuts, pumpkin seeds and sunflower seeds. A total of four recipes namely murukku, ladoo, biscuit and diamond cut were developed using the formulated millet based food mixture in the following proportions 30:30:20:5:5:5:5 respectively. Statistical analysis indicates that, the subjects preferred biscuit and murukku over diamond cut and ladoo because the score for murukku based on homogeneous subsets test was 8.4 and biscuit 8.3 which is higher than the diamond cut and ladoo score 7.0 and 7.3 respectively. According to hedonic scale the criteria preference was, like very much for murukku and biscuit (0.851 at 5 % level). The nutrient analysis revealed that, the energy content of millet based food mixture was 373K.cal per 100g and the proximate principles, carbohydrate, protein and fat content were 53.2g, 19.3g and 15.0 respectively. The micronutrient profile of the millet based food mixture was found to be more in the developed mixture with special reference to the nutrients needed for the special children. The carotene content was 50.4mcg and Vit. C 3.0mg. The B-complex vitamins, thiamine, riboflavin, niacin, pyridoxine and folic acid were found to be 0.4mg, 0.1mg, 3.8mg, 0.012mg and 38.0mg respectively. The calcium content was 190.9mg followed by magnesium 130.1mg, iron 14.2mg and zinc 3.1mg. Nutrient estimation of the products developed using the food mixture also revealed that they were a good source of all the nutrients essential for the intellectually disabled children. Thus it is evident from the present study that the developed millet based food mixture can help balance the 1/3rd of the daily nutrient requirements of the intellectually disabled subjects.

Keywords: Millets, Food Mixture, Intectually Disabled Children, Nutrients, Accetability

I. Introduction

Intellectual disability, also known as mental retardation, is a term used when there are limits to a person's ability to learn at an expected level and function in daily life. Intellectual disability could cause a child to learn and develop more slowly than other children of the same age. It could take longer for a child with intellectual disability to learn to speak, walk, dress, or eat without help, and they could have trouble learning in school. Causes of intellectual disability are many and the most common are genetic condition, problems during pregnancy, and problems at birth and health problems. Mental retardation can also be caused by extreme malnutrition (not eating right), not getting enough medical care, or by being exposed to poisons like lead or mercury (Mervyn Fox, 2002). Nutrition is usually considered to be important for physical health but mental health must be taken as equally important. Research in the field has shown that nutrition is one of many factors that potentially influence a child's development besides genetic, socio-economic, environmental and behavioural factor (Associate Parliamentary and Health, 2008 and Bryan *et al.*, 2004).

Nutrition as an influencing factor on brain functioning and cognitive development is given below:



Both groups of nutrients can affect brain and cognitive development which is reflected by outcomes such as mental performance, mood and behaviour as well as mental disorders (Associate Parliamentary and Health, 2008). The first nutrient as an influencing factor on brain functioning and cognitive development is essential fatty acids. Due to its cellular composition, the brain contains a large amount (60%) of lipids (Bryan *et al.*, 2004). Since

The Seminar

India is a signatory to the Declaration on the Full Participation and Equality of People with Disabilities in the Asia Pacific Region. Among the disabled population, Children with Disabilities (CWDs) are the most vulnerable group and they need special attention. Government of India is taking measures to ensure full participation of children with disabilities by providing an enabling environment in the field of education, health and recreation. Full participation of children with disabilities in the all the fields could be achieved only by effective inclusive practices. But still the concept of inclusion is not familiar in India. Policy makers, Administrators, Teachers, Health and Rehabilitation Professionals are not aware of the inclusive strategies to be followed in planning or execution of any programme. To address this gap, this seminar is planned to explore the possible strategies to provide an inclusive environment for children with disabilities in educational settings, health, rehabilitation and recreational services and the alike in India. University Grants Commission and CBM India Trust, Bangalore financially supported the seminar.

Group Excel India
www.groupexcelindia.com

Excel India Publishers
EXCEL INDIA PUBLISHERS
91 A, Ground Floor, Pratik Market, Munirka, New Delhi-110067
Call: +91-11-2671 1755/ 2755/ 3755/ 5755 • Fax: 011-2671 6755
e-mail: publishing@groupexcelindia.com • Web: www.groupexcelindia.com

ISBN
9 789365 777127

₹ 1600 □ US$ 70