To compare the effectiveness of glycine max fortified mixture versus Hyderabad mixture on health status of under-five children with malnutrition.

Mr. Utalbasha Dhandargi

Abstract

Background: Malnutrition is undoubtedly one of the most serious nutritional problems affecting several thousand young children in India. The problem of Malnutrition assumes much greater magnitude and significance in rural areas of India. The NFHS-4 data indicates that the proportion of underweight children has been higher in the rural areas (38.3 percent) as compared to the urban areas (29.1 percent). One way to curb the global menace of Malnutrition is through fortification of food from plant origin. Use of foods rich in protein is highly essential strategy to bridge the gap between growth of children and their nutrition. As a legume, soybeans/Glycine max is an important global crop that provides oil and protein for users. It is the richest sources of protein among the plant foods. Demonstration and use of Hyderabad mixture has been practiced in nursing discipline since long period. In contrast to this traditional practice the food supplementation can be done by fortifying the usually used foods with Glycine max/Soy bean flour. Aim: To compare the effectiveness of glycine max fortified mixture versus Hyderabad mixture on health status of under-five children with malnutrition. Materials and Methods: The study was done with quantitative research approach using Randomized block design. The population were children between 2 to 5 years of age, suffering with mild or moderate malnutrition. The study was conducted in Muchkandi village of Bagalkot district. The sample
selected by complete enumeration method included 82 children (42 in study group and 40 in comparison group). Tools and Techniques: WHO Anthro software was used to screen the children for enrolment and comparison of dietary interventions. The data regarding socio demographic factors was collected using structured interview schedule. Weight was measured using electronic scale with the child standing barefoot and wearing minimum clothing. Height was measured to the nearest 1 mm using standard measuring techniques; the mean of two readings was calculated for each child.

**Sample and sample size:** The sample included 86 moderately malnourished underfive children, selected by screening with the use of WHO Anthro software. The sample size estimated by the statistician was 62 (31 + 31). Considering attritions, the investigator enrolled all the 86 moderately malnourished children in the setting. Physical examination was done for all the selected 86 children and they were further screened for abnormal vital signs and presence of any other nutritional disorder. 1 child with idiopathic allergic skin disease was excluded from the sample. 43 participants were randomly allocated to study group to receive GMFM and 42 to comparison group to receive HM. There was one drop out from study group and 2 drop outs from comparison group. Hence the final study included total 82 participants, 42 in study group and 40 in comparison group.

**Intervention:** Glycine max fortified mixture was administered to study group and Hyderabad mixture was administered to the comparison group. The dietary interventions were prepared weekly, under supervision of nutritionist, at nutrition lab of Sajjalashree institute of nursing sciences, Bagalkot and packed into new polythene bags (200 gm per bag), sealed and distributed to the second level investigators, who fed the ladoos to the samples. All children additionally continued to receive their normal diets, including the meal provided by the anganawadi.
**Results:** Majority of the subjects in study group (42.85%) and comparison group (42.5%) were in the age group of 3-4 years. In study group 52.4% subjects were females and 47.6% were males. Whereas in comparison group 55% were males and 45% were females. The mean body weight of children in study group at the time of recruitment was 11.514 kg±1.37kg which increased to 12.27±1.35 after 3 month. The mean height of children at the time of recruitment was 88.79±6.48 cms which increased to 91.73±6.2 cms after 3 months.

The mean mid upper arm circumference was 13.19 ± 0.49 cms in study group at the time of recruitment which increased to 13.48 ±0.53 cms after 3 months of consumption of GMFM.

A significant difference was found between the Body weight (X²=124.9, p< 0.0001), Height (X²=118.053, p < 0.0001) and mid arm circumference (X²=106.58 p < 0.0001) before and after the administration of Glycine max fortified mixture.

The mean body weight of children in comparison group at the time of recruitment was 11.62 ±1.3 kg which increased to 12.29 ±1.29 after 3 month. The mean height of children at the time of recruitment was 86.08±5.62 cms which increased to 90.09 ±5.46 cms after 3 months.

The mean mid upper arm circumference was 13 ± 0.45 cms in study group at the time of recruitment which increased to 13.39 ±0.48 cms after 3 months of consumption of Hyderabad mixture. A significant difference was found between the Body weight (X²=110.5, p< 0.0001), Height (X²=117.37, p < 0.0001) and mid arm circumference (X²=103.64 p < 0.0001) before and after the administration of Hyderabad mixture.

Mann Whitney’s U test was used to find the significant difference between the effectiveness of GMFM and HM on health status of under five children. There was no significant difference found between the effectiveness of GMFM and HM on health status of under five children in terms of Body weight (U=760.000, P=0.457), Height (U=685.000, P=0.150) and
UMAC (U=752.500, P=0.400). Both the interventions were equally effective in improving the health status of the under five children.

**Conclusion:** Breast milk is one of the best sources of nutrition for every child. Once the breast milk feeding is stopped at two years of age the children need some highly nutritious diets that sufficiently satisfy their nutritional need. Soybean/ Glycine max fortified mixture and Hyderabad mixture proved to be equally effective in improving the health status of the children. Children below 5 years of age are vulnerable for malnutrition which in turn hinders their physical and mental development hence they must be provided some nutritious supplementary diets, different from routine diets to attract their appetite and balance their nutritional requirements.