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Impact of Health Education on Nutritional Status and Hygiene Among Visual Impaired Preschool Children in Varanasi City

Dr. Poonam Singh Kharwar [1]

[1] *Assistant Professor, Faculty of Education, B.H.U., Kamachha, Varanasi-221010*

Abstract:- **Introduction:** India, being a country in developmental transition, faces the dual burden of pre-transition under-nutrition as well as post-transition obesity. The present study was conducted to assess nutrition and hygiene status and analyze the impact of health education to improve the nutrition and hygiene of preschool children in both standard and visually impaired (V.I.) groups.

Methods: The study was conducted among children going to Nursery schools (average 38, V.I. 26) and home children not going to school (04 regular, 12 V.I.) in Varanasi city by analyzing the data related to nutritional and hygienic status collected on self- constructed questionnaire based on personal hygiene practices and anthropometric examination before and three months after imparting health education.

Results: In addition to desired weight in 47.62% of normal children, 19.05, 28.57 and 4.76% of children had mild, moderate, and severe malnutrition; their nutritional status improved (28.57%, 19.05%, and 4.76%, respectively) after imparting health education. Average weight was found in 57.89% of V.I. children, and 42.11% had moderate malnutrition; their nutritional status improved after health education (mild 31.58%, moderate 10.53%). Malnutrition in both groups was higher than the national figure of 46%, and more than 41.6% of the U.P. home environment was found more favorable for nutrition. A positive impact of health education was also observed on hygiene practices.

Conclusion: The nutrition and hygiene status of ordinary and V.I. children is poor, but health education is essential for improvement. Periodic health/nutrition status monitoring and regular health education are needed to tackle today's dual nutritional problems.

Keywords*: Health education, nutritional status, hygiene, preschool, visual impaired children*.

1. Introduction

Significant advances have been made during the past 50 years in the knowledge of nutrition and the practical application of that knowledge. While attention was concentrated on nutrition-deficiency diseases during the first decades of the century, the science of nutrition extended its influence to other fields such as agriculture, animal husbandry, economics, and sociology. The nutrition problem began to attract international attention as a cause of social problems [1]. This led to a 'green revolution' and a 'white revolution' in India and increased food production. However, studies of the diets and state of nutrition of people in India showed that poorer sections of the population continued to suffer from malnutrition despite increased food production. One of the most extensive and distinctive early childhood care and development programs in the world is the Integrated Child Development Services Scheme, and one of the scheme's main objectives is to reduce malnutrition. It is the foremost symbol of the country's commitment to its children in the age group of 0–6 years and nursing (pregnant women and lactating mothers) as a response to the challenge of providing preschool non–formal education on the one hand and breaking the vicious cycle of malnutrition, morbidity, reduced learning capacity, and mortality on the other [2].

In the 1970s, it was widely held that Protein Energy Malnutrition (PEM) was due to protein deficiency. Still, over the years, the concept of 'protein gap' has given place to the idea of 'food gap,' which means that PEM is due to (a) inadequate intake of food (food gap) both in quality and quantity and (b) infections increase requirement of calories, proteins, and other nutrients while decreases their absorption and utilization [3]. There are numerous other contributory factors in the web of causation, such as poor environmental condition, large family size, poor maternal health, failure of lactation, premature termination of breastfeeding, adverse cultural practices related to child rearing and weaning, for example, use of over-diluted cow's milk, discarding cooking water from cereals and delayed supplementary feeding [4].

The association of nutrition with infection, immunity, fertility, maternal and child health, and family health has engaged scientific attention. More recently, a great deal of interest has been focused on the role of dietary factors in the causation of non-communicable diseases such as heart attack, diabetes, and cancer. Another concept that has emerged in recent years is that nutrition is the cornerstone of socio-economic development, and nutritional problems are not just medical problems but are 'multi-factorial' with roots in many other development sectors, such as education, demography, agriculture, and rural development. A broad inter-sectoral and integrated approach to development sectors is needed to tackle today's nutritional problems [2].

India is in the economic transition phase. While undernutrition continues to be a major problem, the prevalence of overnutrition is emerging as a significant problem, especially in urban areas. The prevalence of overweight/ obesity is higher among women (10.9%) compared to men (7.8%) in rural areas [5]. PEM is a significant health and nutrition problem in India. More than 30 percent of our children today are stunted and suffer from growth failure. Anaemia is still a considerable problem, especially among pregnant women. As many as 25-35 percent of all children are of low birth weight. While we have not yet solved the problems of undernutrition in children, we are now being faced with an escalation in the incidence of nutrition-related degenerative diseases in the adult population. Type II diabetes mellitus now ranks as a significant public health problem. This increase in incidence must be the result of harmful changes in lifestyle (lack of adequate physical activity) and faulty dietary practices, which are a feature of "developmental transition" [6]. Malnutrition is defined as inadequate intake of calories and nutrients, which can lead to illness that might cause death in extreme conditions. Three commonly used anthropometric indicators of nutritional status are weight-for-height (wasting), height-for-age (stunting), and weight-for-age (underweight). WHO defines malnutrition as a weight for age below the median - 2SDs of the National Centre for Health Statistics (NCHS) standard reference population [7].

Undernutrition has got attention globally and is one target among Millennium Development Goals (MDGs). MDG India Country Report (2015) stresses that malnutrition among its citizens is a very severe social problem any country faces, as it affects productivity in many ways. The issue of malnutrition is especially critical in the case of children. Undernutrition not only retards a child's growth but also affects their future productivity and capabilities; thus, adequate nutrition is essential to a child's development. The first 60 months after birth is significant because, at this delicate age, children are vulnerable to growth retardation, micronutrient deficiencies, and common childhood illness. Highlighting the crucial importance of the nutritional status of children, Indicator 4 under target two has been identified as 'Prevalence of underweight children Under five years of age.' In India, data on this indicator for the reference age group are not available for all time points. The National Family Health Survey collected data on underweight children between 0-35 months and 0-47 months of age in 1992-93 (NFHS-1), between 0-35 months in 1998-99 (NFHS-2) and between 0-35 months as well as 0-59 months in 2005-06 (NFHS-3). Thus, the survey results are comparable only for the age group 0-35 months in India. Therefore, target two is measured regarding the nutritional status of children below three years [8].

It is estimated that in 1990, 52% of children below three years were underweight. To meet the target, the proportion of under-weight children should decrease to 26% by 2015. The NFHS shows that the proportion of under-weight children below three years declined from 42.7% (urban 34.1%, rural 45.3%) in 1998-99 to 40.4% (urban 30.1%, rural 43.7%) in 2005-06. At this rate of decline, the proportion of underweight children below three years is expected to reduce to 33% by 2015, which indicates India is falling short of the target. Undernutrition is substantially higher in rural areas than in urban areas. The proportion of under-weight children decreased significantly in the metropolitan areas, but it was marginal in rural areas. In addition to underweight, stunting is

also highly prevalent among children below three years of age. As per NFHS-3, even in urban areas, one in every three children is stunted, which is short in height for age, and in rural areas, almost half of the children are stunted. As per NFHS-3, the prevalence of underweight among children < 3 years of age is significant in most States and varies considerably between the States. The problem is severe in Madhya Pradesh (57.9%), Bihar (54.9%), Jharkhand (54.6%), Chhattisgarh (47.8%), Meghalaya (42.9%), Uttar Pradesh (41.6%), and Gujarat (41.1%), where the proportion of underweight children < 3 years is more than the national level estimate (40.4%) in 2005-06. The prevalence of underweight among children < 3 years of age is lowest in Mizoram (14.2%), followed by Sikkim (17.3%), Manipur (19.5%), Kerala (21.2%) and Goa (21.3%). While most of the States showed a decline in the percentage of underweight children below three years between 1998-99 and 2005-06, in some States, the percentage increased during the period, implying a worsening of the nutrition scenario in those States in contrast to the States which showed substantial reduction in the rate of underweight children [8].

2. Relevance and objectives of the study

India, being a country in developmental transition, faces the dual burden of pre-transition diseases like under-nutrition and infectious diseases as well as post-transition obesity and lifestyle diseases. Malnutrition is a severe problem, and preschool children's nutritional assessment is one of the essential and desirable monitoring components. However, India still needs to catch up to achieve this. Uttar Pradesh is among economically backward states, and the malnutrition problem, especially in the eastern region, is severe, and its nutritional scenario is worsening. Preschool children are more vulnerable to diseases. Although the government is making several efforts to achieve the target, success needs to be visible in the eastern U.P. It highlights the problems of nutrition, health, and hygiene, necessitating a need to unfold the associated factors and impart health education. Studies are reported from other countries, but there is no such information available for preschool children in the eastern U.P. So it appeared desirable to conduct the present study among preschool children, including the visually impaired (V.I.) group in Varanasi city with a view of the assessment of nutrition and hygiene status and to analyze the impact of health education to improve health and nutrition of preschool children. The present study was conducted keeping the following objectives in mind:

1. To assess weight-for-age nutritional status and personal hygiene practice of regular and V.I. male/female, home/school going children in Varanasi city before health education program.
2. To assess weight-for-age nutritional status and personal hygiene practice of regular and V.I. male/female, home/school going children in Varanasi city after health education program.
3. To compare the impact of health education programs on nutritional status and personal hygiene practice among normal and V.I. children.

Submission Review of related studies: Indian Studies: During 1992-93, underweight children were 47%, down to 43% in 2005-06 (NFHS-1 &3). As per the National Family Health Survey (NFHS-3, 2005-06) and UNICEF (2008) report, 46% of preschool children and 30% of adults in India suffer from moderate and severe grades of PEM. Though severe clinical forms of PEM- kwashiorkor and marasmus have become rare, they persist in some less developed states such as U.P. and Orissa.

Studies at Abroad Leenstra et al. (2005) found about 35% of preschoolers are stunted, while 29% are underweight in Sub-Saharan Africa. Okolo et al. (2006) observed that 86% of children aged 1-7 in rural communities were malnourished in Ghana. Benta et al. (2012) noted stunting in 40% of children up to 42 months in a slum area of Nairobi. They also observed the positive impact of the mother's education on the child's nutritional status.

3. Research Methodology:

Sample: The study was conducted using the incidental method, conducted among preschool children going to Nursery schools (average 38 and visually impaired 26) and home children not going to school (normal 4 and 12 V.I.) in Varanasi city.

Tool: A questionnaire consisting of items related to the nutritional and hygienic status of children, personal hygiene practices, and anthropometric examination was used to collect the data. The researchers constructed the

questionnaire after consulting with experts in the relevant field. Questionnaires were administered to the target groups before and three months after imparting health education, and data was analyzed.

Statistical techniques: The data were subjected to rigorous statistical treatment, including percentage and mean.

Ethical considerations: Investigators adhered to all the moral concerns by strict compliance with ethical guidelines and avoided any misconduct in research.

4. Results and Discussion

4.1 Nutritional status of ordinary & V.I. children before & after health education:

Figure 1 presents that in addition to desired standard weight in 47.62% of normal children, 19.05, 28.57 and 4.76 % of children had mild, moderate, and severe malnutrition, and their nutritional status improved (28.57%, 19.05%, and 4.76% respectively) after imparting health education. Similarly, in addition to the desired standard weight in 57.89% of V.I. children, 42.11% had moderate malnutrition, and their nutritional status improved (10.53% moderate and 31.58% mild malnutrition) after imparting health education. Malnutrition in both groups (52.38% and 42.11% on average and V.I.) before health education is higher than the national figure of 40.4% in 2005-06, even more than 41.6% of U.P.; so it reconfirms the worsening state of under-nutrition in eastern Uttar Pradesh. V.I. children were found to be better than normal children in nutritional status, which may be due to better care of disabled groups and reduced physical activity.

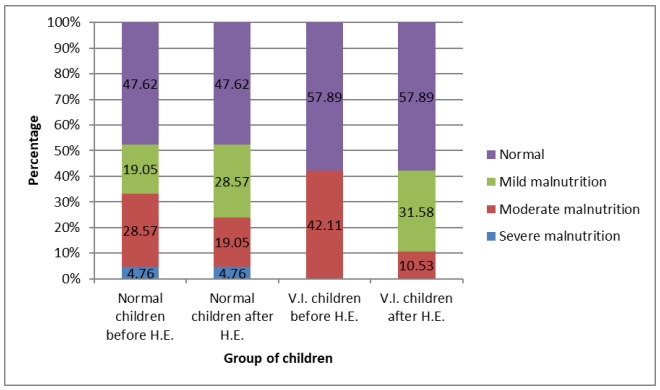

Figure 1. Nutritional status of Normal & V.I. children before & after Health Education

4.2 Nutritional status of normal male/female children before & after health education:

Figure 2 reveals that the nutrition status of female children (moderate malnutrition 33.33%, mild malnutrition 22.22%) is better than that of male children (severe 8.33%, moderate 25%, mild malnutrition 16.67%) and nutrition status of male/female children improved after health education. The positive impact of health education was observed in both sexes.

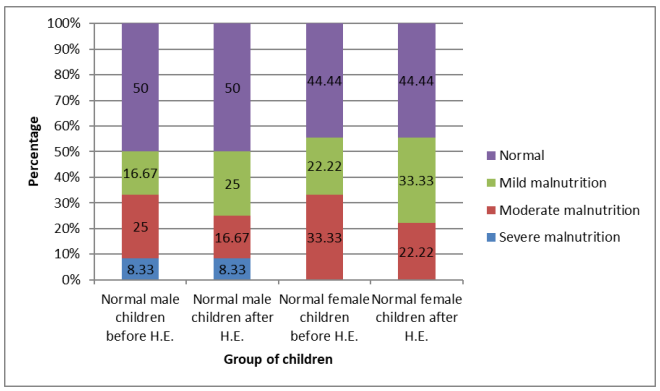

Figure 2. Nutritional status of Normal male & female children before & after Health Education

4.3 Nutritional status of visually impaired male/female children before & after health education:

Figure 3 shows that the nutrition status of V.I. female children (moderate malnutrition 44.44%, normal nutrition 55.55%) is comparable to that of male children (moderate malnutrition 40%, normal nutrition 60%) and nutrition status of female children improved after health education (moderate malnutrition 22.22%, mild malnutrition 22.22%, and normal nutrition 55.55%).

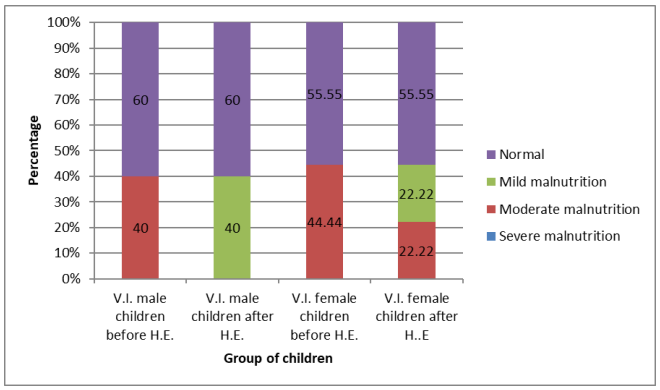

Figure 3. Nutritional status of V.I. male & female children before & after Health Education

4.4 Nutritional status of normal school-going and home children before & after health education:

Figure 4 presents that the nutrition status of home children (moderate malnutrition 50%, normal nutrition 50%) is better than that of school-going children (severe 5.26%, moderate 26.32%, mild malnutrition 21.05% and average nutrition 42.37%) and nutrition statuses of school going children improved after health education.

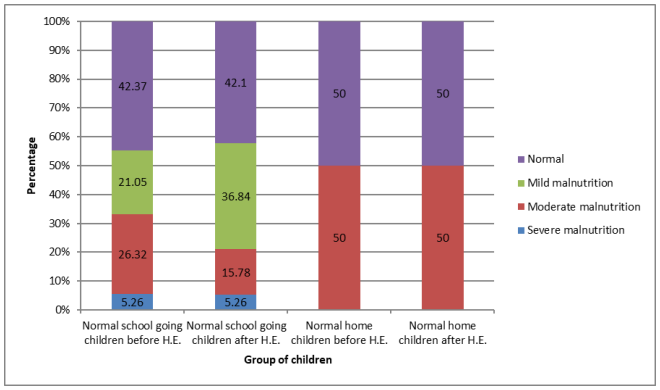

Figure 4. Nutritional status of Normal school going & home children before & after Health Education

4.5 Nutritional status of V.I. school-going and home children before & after health education:

Figure 5 reveals that the nutrition status of V.I. home children (moderate malnutrition 50%, normal nutrition 50%) is comparable to that of school-going children (moderate malnutrition 38.47%, normal nutrition 61.53%) and nutrition status of home children improved after health education. So, the home environment is favorable for both regular and visually impaired groups from a nutrition point of view, and a positive impact of health education was found in both home and school-going children.

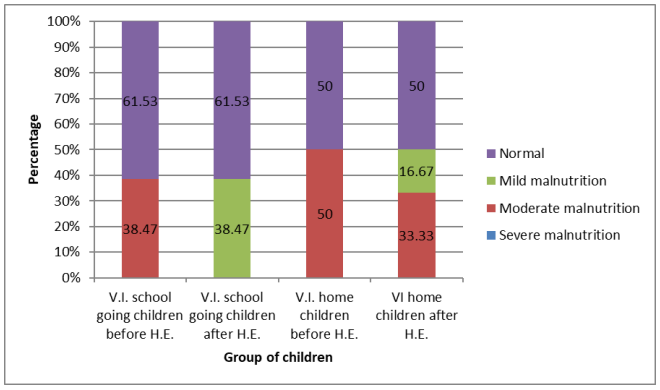

Figure 5. Nutritional status of V.I. school going & home children before & after H.E.

4.6 Personal hygiene status of ordinary & V.I. children before & after Health Education:

Figure 6 shows that only 47.62% of normal and 31.58% V.I. children had well-cut, neat and clean nails, only 42.86% of normal and 42.11% V.I. children used to wear clean clothes, 71.43% of normal and only 47.37% V.I. children had practice of hand wash before eating, 66.67% of normal and 73.68% V.I. children had practice of hand wash after toilet use, 52.38% of normal and only 47.37% V.I. children had separate soaps, and only 42.86% of normal and 36.84% V.I. children had regular baths. These practices improved to almost 100% after health education in both groups, indicating a significant positive impact of health education on personal hygiene practices.

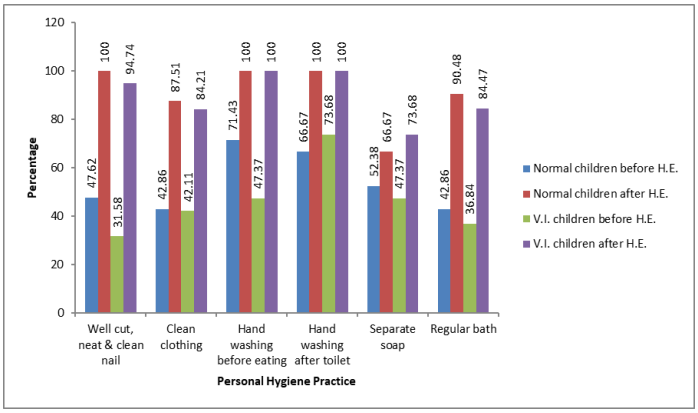

Figure 6. Personal hygiene status of Normal & V.I. children before & after Health Education

The limitation of the study is that it does not monitor nutrition status through clinical examinations, and it is restricted to a study area. Hence, generalizations based on this study should be carefully considered, and further studies on large samples must be undertaken to replicate the findings.

5. Conclusion

Nutrition and hygiene among normal and visually impaired children are poor, but health education plays a vital role in their improvement. Health education is needed to overcome the problem of prevalent malnutrition in preschool children in eastern U.P. with a more conscious and balanced approach among V.I. children in the future, given the modern day's emerging dual nutritional problems in the transition stage of developing India. The persistence of severe malnutrition despite ongoing welfare schemes such as ICDS in the eastern U.P. is a matter of grave concern. Doubts regarding misconceptions about nutrition and nourishment of children must be cleared to save the children from malnutrition, and guardians must be imparted health education on proper dietary sources, especially proteins and vitamins, and adopt nutritious practices in preparing meals. Periodic monitoring of preschool children's health/nutrition status, regular life skills education, and strengthening welfare schemes are needed to tackle today's dual nutritional problems.

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