



ICMR

BULLETIN

**DETERMINANTS OF THE DEVELOPMENT OF FOOD BEHAVIOURS AND NUTRITION**

During the course of their development young children interact with their environment and learn culturally determined behaviours from constituents of their micro- environment, which include family's belief systems, attitudes, traditions, and food likes and dislikes. It is well known that food behaviour, nutritional status, growth and development are influenced by each other. These factors are synergistically modulated by the socio-economic factors that include the literacy status, income and occupation of parents/caregivers, demographic features of the home, access to quality foods and healthcare, exposure to newer information, and the resultant child care practices. Thus, attempts directed towards improvement of the consumption of nutritious foods by young children, requires multi-pronged interventions based on strong formative research data that can be developed into specific behaviour change strategies. It is therefore important that the conventional nutritional intervention efforts are examined critically and modified on the basis of the dynamics of socio-cultural realities and perceptions of communities. Community participation throughout the processes of planning, implementation and evaluation is necessary for the sustainability of community nutrition intervention.

It is also important that nutrition or food behaviours are viewed in the context of the process of life cycle events. These include, care (including quality of food intake, rest, sharing of workload and family support) of the pregnant and lactating women, breast-feeding (initiation, exclusivity, frequency), complementary feeding (time of introduction, quality, quantity, frequency) and weaning and psychosocial care<sup>1</sup>. The preparation of food, hygiene (personal, environmental) and health seeking behaviours of caregivers are intrinsically involved throughout these life cycle events and hence they are the factors that should be underlined and focused on during intervention.

Several studies undertaken at the National Institute of Nutrition (NIN), Hyderabad have focused on these factors. The salient findings of the relevant studies in this area are reviewed and summarized in the present write-up. The life-cycle framework initially formulated by the UNICEF needs to be used for the development of appropriate interventions that have the flexibility to be modified in the light of the socio-cultural context and practical considerations. Some examples of the same are also included in the write-up.

## Child Care Behaviours

In the 1970s, Wray<sup>2</sup> and Greaves<sup>3</sup> introduced the concept of positive deviance in growth and development of children, which is attributed to mothers belonging to backward communities, who cope and manage to rear healthy and active children. Maternal child rearing behaviours related to positive deviance in growth and development were identified in a study of children 1 to 5 years of age in rural Hyderabad<sup>4</sup>. The caring behaviours of mothers during specific child rearing situations such as feeding, weaning, toilet training, play, sleep and discipline were assessed through in-depth interviews. The ICMR screening test developed and standardized on 13,000 rural and tribal children from Chandigarh, Jabalpur and rural Hyderabad was used to assess psychosocial development of the study children<sup>5-6</sup>.

Heights and weights were measured as indices of nutritional status and expressed as percentage of the 50th percentile of the National Centre for Health Statistics (NCHS) standards. Stepwise multiple regression analysis was conducted with children's developmental quotient (DQ) and nutritional indices as the dependent variables and maternal child rearing behaviours, socio-economic status and other home environmental factors as independent variables. Results indicated significant synergistic influences of these factors on growth and development of boys and girls.

### Salient findings

- The children (boys and girls) who had been breast fed on demand and had been given adult food or rice, with milk or curd and sugar around 7-8 months as complementary food were better nourished with significantly higher height for their age ( $p < 0.05$ ). The common practices in poor homes of breast feeding on schedule and weaning with dilute/thin gruel resulted in comparatively lower height for age of their counterparts.
- Girls who were fed whenever they asked for food and treated kindly and rationally by their mothers when they refused to eat were significantly ( $p < 0.05$ ) taller. On the contrary, their counterparts, who were scolded and asked to wait when they asked for food or were scolded and force-fed, when they refused to eat, were significantly shorter in stature.
- Weaning with different foods introduced gradually was associated with higher body weights in boys.

In contrast, weaning either by the application of a bitter herb paste to the breast to create an aversion or not weaning and continuing to breast feed without introduction of complementary food up to one year of age, was associated with lower weights in boys ( $p < 0.05$ ).

- Washing hands before eating was significantly associated with girls weighing ( $p < 0.05$ ) heavier than their counterparts who were not trained to wash their hands or who had to be scolded to wash their hands before eating.
- The child rearing behaviours, which significantly influenced the children's psychosocial development (Figs.1,2) were also significantly associated with their growth.



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## Sociocultural Beliefs, Attitudes and Practices

Among the rapid assessment procedures (RAP), the focus group discussions (FGD) are the most appropriate when quick assessment of the community beliefs, their points of resistance and insights into facilitating points are needed. The results of FGDs and focussed ethnographic studies in rural areas of Andhra Pradesh, documented interesting cultural habits and practices related to young child feeding. Foods, like papaya, eggs, yellow pumpkin and gogu (a green leafy vegetable) which were considered hot, were avoided during pregnancy. The belief was that hot foods caused abortion due to heat and also edema in the body. Mothers after childbirth, consumed only hot water during the first 24-36 hours to prevent secretion of milk. They believed that the neonate is too weak to suck at the breast and, hence, too much secretion of breast milk cannot be consumed. They reasoned that such a condition would lead to engorgement and breast abscess. As an adaptation to the situation, mothers believed that delaying excessive secretion of breast milk would ensure subsequent successful lactation<sup>7</sup>.

Extensive breast feeding even as long as four years was practiced. Some change was noticed among younger mothers who had heard about the benefits of colostrum from health workers. They believed that it was good for their newborns. Complementary food, initially, was small pieces of bread or biscuits given at about the age of 6-7 months and rice with milk and sugar at the age of 7-12 months. According to mothers' opinion, a child could digest adult food, (including green leafy vegetables) only at the age of about 2 years. They perceived that green leafy vegetables were good for health, tasty and were cooling foods. However, they did not consume them during early lactation in the belief that they caused green stools in young children. Milk and milk products were considered good for health, and especially buttermilk was consumed frequently especially in summer as it was cooling. Eggs were frequently consumed, but avoided in summer in the belief that they were hot food. Yellow pumpkin was disliked because it caused the body to swell up and was bad for health. Carrots were considered fruit for children. Mangoes were the most preferred fruit during the summer season.

Based on this formative research, messages for nutrition education were developed and appropriate

channels of communication were used for reaching the community. The post intervention evaluation indicated significant improvement in the awareness and practice of nutrition related behaviours especially in the target population in the community. There was also significant improvement in their vitamin A status<sup>8</sup>.

## Non-Formal Preschool Education and Stimulation

The Integrated Child Development Services (ICDS) is India's largest multi-package programme consisting of health, nutritional and educational services for expectant and nursing mothers and children below 6 years. The programme operates through the *Anganwadi* Centre. A trained *Anganwadi* worker offers health and nutrition education to mothers, provides a nutritional supplement, carries out growth monitoring and conducts a programme of preschool education for children 3-6 years of age. The benefits of stimulation/ non-formal education and other health and nutritional intervention on the growth and development of children has been recognized. Hence, the evaluation of the non-formal preschool educational component of the ICDS was undertaken in 3 southern states (Andhra Pradesh Karnataka and Tarnilnadu) of the country<sup>9</sup>.

The evaluation indicated higher developmental (motor and mental development scores) benefits to children exposed to the preschool education under the ICDS as compared to controls even after controlling for home environment and socio-economic status. The ICDS beneficiaries with more than or equal to 75 % weight for age (% NCHS) achieved significantly ( $p < 0.001$ ) higher DQs compared to the poorly nourished controls ( $< 75\%$  weight for age, NCHS). However, it was surprising to note that poorly nourished ICDS beneficiaries achieved significantly ( $p < 0.001$ ) higher mental quotients compared to well-nourished controls. This finding suggests that the developmental stimulation offered by the programme could promote their psychosocial development independent of their nutritional status (Fig.3). Since the non-formal education programme offered the same educational inputs to children of age groups 3 to 6 years, only the younger (36-48 months) beneficiaries seemed to benefit. A significant fall in DQ at ages 4 and 5 years suggests that the educational inputs were more suited to the younger than the older age groups (Fig. 3). Therefore, there is a need for developing age appropriate educational inputs for maximum benefit.

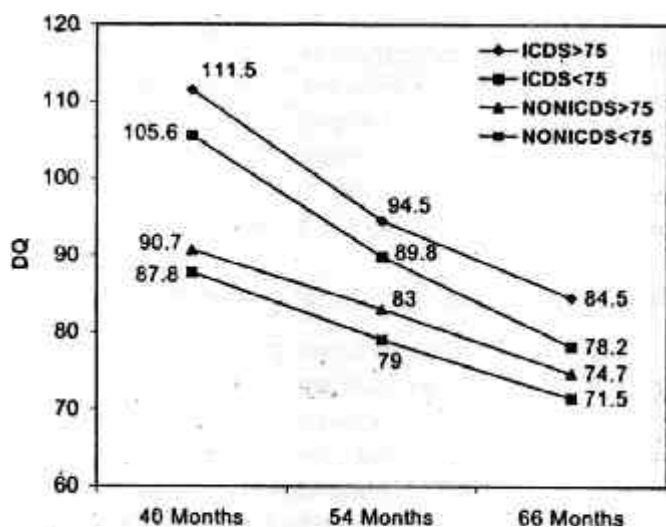


Fig.3. Developmental quotient of ICDS beneficiaries and control children according to age

When the mothers were interviewed about sending the under three year olds to the Anganwadi Centre (AWC), they felt that the programme should be modified so that the facilities offered at the AWC are more suitable for the under three year olds. The present ICDS setup has no facilities for sleep, toilet needs and for keeping young children clean and stimulated. The observations by the mothers suggest that the attendance of under threes can be increased by improving the AWC infrastructure and building confidence among mothers that their children are safe in their absence. The supplement provided at the AWC also needs to be selected in consultation with the mother's committees. Thus, it is obvious that effective utilization through community participation in the programme in larger numbers can be achieved when the AWC is converted into a Day Care Centre for young children of poor working women.

### Life Cycle Approach

Table. Issues, strategies and actions at specific life events

Life cycle event	Issues	Strategies	Actions
Care of pregnant and lactating women	Emotional support.	Education of family members: Rest and care.	Emphasize educating mothers-in-law and spouse.
	Entitlement of extra and nutritious food. Autonomy: Household income. Workload reduction	Priority to women in minimum energy expenditure occupations that provide income, create awareness: Existing Govt. schemes.	Nutrition education. Role of local panchayat.  Involvement of women's groups, TBAs to enhance food and health behaviour.
	Accessible health care and the ability to use it.	Improved access to MCH services.	Flexible timings of the health providers to suit mothers' convenience.
Care during breast feeding	Early initiation	Education of expectant women and nursing mothers.	Mass media: Spread of success stories. Prime media time for public service messages.
	Exclusive and on demand feeding. Encourage the mother to eat nutritious food and feed anorexic/low birth weight (LBW) infant.	Development of maternal skills: protect, support, promote traditional breast feeding practices and food consumption.	TBA training: Baby friendly initiative. Research on LBW and suckling.
Care during complementary feeding	Complementary feeding with sustained breast-feeding.	Timely initiation of complementary food.	Education. Low cost local weaning foods: Community participation.

	Active complementary feeding behaviours.	Enhancing mothers' knowledge, attitude and practice (KAP) regarding need for complementary food, density, feeding anorexic/sick child.	Micronutrient rich foods/ supplementation. Education of adolescent girls and boys: Gender role, childcare.
	Gradual adoption of nutritious weaning foods and family diet.	Family support to the mother to prepare the complement and feed the child and for extra rest.	Sensitization of health functionaries.
Psychosocial care	Responsiveness and consistency in childcare.	More time for working women. Family awareness and support to mother for exclusive breast-feeding on demand. Complementary feeding.	In-depth studies on care related behaviours. Education of mother and family members about exclusive on demand breast-feeding.
Care during food preparation	Early stimulation of milestones of psychosocial development. Preparation of complementary food.	Time for childcare and stimulation of milestones from birth. Emphasis on locally available low cost nutritious complementary foods.	Education and participation of family members in psychosocial stimulation. Linking the complementary food production and supply to income generation activities of women's groups.
Care for hygiene	Food hygiene and storage. Personal hygiene Food hygiene	Improving storage practices to preserve micro-nutrients for lean periods. Participation of women's groups in income generation. Improving maternal hygiene/ childcare Child-to-family/community approach. Primary and secondary school curriculum	Encouraging traditional technologies: Solar drying. Improved food processing. Child-to-family education to improve domestic and peri domestic environment. Training teachers. Role of women's groups/ youth clubs in education.

The first step in the life cycle approach is the strategy for the nutritional care of the pregnant and lactating mothers (Table). Eating behaviour develops as early as the fetal stage, a crucial time, when likes and dislikes of the mother during pregnancy may lay the ground for later food preferences in young children. Breast-feeding, the second step is the strategy aimed at early initiation of breast-feeding soon after birth and increased frequency and duration of lactation. This is the stage when the infant first gets the subtle taste of the foods the mother eats, through the breast milk. It is also the stage when the style of feeding adopted by the mother may have long term consequences on the personality development of the child. During the stage of complementary feeding, the infant actually tastes different foods, becomes familiar

with them over time and this forms the basis for future preferences or dislikes depending on the feeding styles and caregiver's preferences and dislikes. The third step in the life cycle is the strategy aimed at the psychosocial care of the child. There is emerging evidence that psychosocial care in terms of consistency and responsiveness to the infant's cues of hunger, distress and need for affection are linked to growth and development as well as to emotional stability<sup>4</sup>. Food preparation and hygiene are behaviours that become especially important during the stages of complementary feeding as well as weaning because the health and immunocompetence of the child can be compromised. The nutrition- infection cycle, is a major cause of growth failure in the first two years of life.

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## Conclusions

Since growth (nutrition) and development are inter-linked, caring practices for one may also be relevant to the other. Therefore, positive deviance in the growth and development of children depends on caregiver's behaviour and the positive interaction even in the face of multiple socio-economic deprivations. Such mothers are, therefore, different from mothers who fail to cope positively with child rearing under similar conditions. Hence, interventions directed at enhancing the psychosocial care of the child from birth is of crucial importance.

The important strategies and actions during the six life cycle stages have been indicated in the table. The suggested strategies need to consider socio-cultural realities and be based on data from formative research before being implemented. When the community is in an equal partnership at all stages of planning, implementation and evaluation, such programmes will eventually lead to behaviour change that is sustainable. Although it is a slow process, the strategies and actions based on a strong community based framework of the local system can be coordinated to enhance eating behaviours using the life cycle approach. At present, there is piece meal and incomplete understanding of the community perceptions and motivations especially with regard to ground realities for survival, growth and development. In depth research is needed to understand the basis of the development of eating behaviour, its mechanisms and obstacles and, its measurement using scientific principles and methods. Intervention strategies need to be more focused and adequate attention directed at resources being spent and their cost-effectiveness in terms of long-term gains towards enhanced productivity and standard of living.

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