1. Introduction

Children are the backbone of a nation and development of any nation depends on the health and well-being of its child population. India has the second largest child population in the World. Numbering over 2.2 billion world wide and 263.9 million in India (Census, 2011), they represent boundless potential. So optimum development of children attains special significance in the context of national development.

Child development encompasses the ways in which children acquire skills in a range of domains, including memory, cognition and language, gross and finer motor ability, social interaction and behaviour. The first few years of life, especially infancy, is a dynamic phase of life and is characterized by rapid growth and development. When children do not get the right start, they never catch up or reach their full potential (UNICEF, 2001).

Nutritional status is a sensitive indicator of child’s health. WHO (2010) states that nutrition is an input to and foundation for health and development. While severe child malnutrition had declined substantially in the past 20 years all over India, mild and moderate malnutrition remain widespread. Child malnutrition compromise physical and mental development and weakens immune response, increasing susceptibility to infection.

Due to poor infant feeding practices or because of poor knowledge about the significance of breastfeeding, especially of exclusive breastfeeding, malnutrition of child begins from infancy itself. Most common causes of malnutrition include faulty infant feeding practices, impaired utilization of nutrients due to infections and parasites, inadequate food and health security, poor environmental conditions and lack of proper child care practices (Gosh and Shah, 2004).

Contemporary research in child development also suggests quite convincingly that an optimal level of development occurs with a stimulating environment, especially during the first two to three years of life Gabbard (2008).

Developmental assessment is the process designed to understand the competencies of the child, caregiving and environment which is likely to help a child
in making full use of developmental potential. Systematic developmental assessment provides fairly accurate developmental states of a child (Mundkur, 2000). According to Nisha (2006) a developmental delay occurs when the child has the delayed achievement of one or more of his milestones i.e. child does not attain the specific development milestone at the expected time. This may affect child’s speech and language, fine and gross motor skills and/or his personal social skills.

It is in this background the present theme “Nutritional and other home correlates on growth and development of children under two years” becomes immensely relevant, because healthy childhood leads to healthy future of both child and the society. It is observed that very few studies have been carried out in India on nutrition and other home correlates on growth and development of children under two years of age. Majority of the studies were done in Western countries. This envisages the need to have studies with local relevance on these lines.

1. The specific objectives of the study were:

1.1 To assess the nutritional and health status of under-2 children.

1.2 To find out the socioeconomic status and home environment of the subjects.

1.3 To study the developmental profile of children and

1.4 To examine the relation between nutrition and other home correlates on growth and development of children

2. Methodology

The locale selected for the conduct of the study was Kochi CDP (City Development Plan) area which comes under the administrative purview of Ernakulam district, in the state of Kerala, India. Ernakulam district located in the central Kerala region, has an area of 2407sq Km and a coastal line of 46 Km.

Considering the interdependency of health and nutritional status of mothers and children and also the impact of the child caring practices of mothers on the developmental profile of their offspring; especially in the formative period of their
life; children below the age of two years and their mothers formed the sample population. Purposive Sampling was the technique adopted for the selection of subjects. The study covered 384 children and their mothers.

The data on family composition and socio economic background, living standards and housing conditions, the factors known to influence the health and development of children, was elicited with the help of a questionnaire developed for the purpose. A Home Screening Questionnaire, validated by Trivandrum Child Development Centre, was used to assess the home environment.

Nutritional assessment was done with the help of the most popularly used ones for under-two children, such as anthropometry and dietary assessment. A dietary scoring method cum care index suggested by Ruel et al. (1999) was also adopted in the present study to evaluate the feeding practices of infants below two years of age. The health status of children was also studied in detail and child health index was computed. Similarly nutritional and health status of mothers were also assessed using common techniques including anthropometry, dietary survey and biochemical estimations.

Further the simple development screening test designed and validated by the Child Development Centre, Trivandrum has been used for identifying developmental delay among children. Data on psychosocial development of children was also collected using Indian Council for Medical Research Psychosocial development screening Test battery (Vazir et al., 1994)

The collected data was compiled and statistically analyzed by SPSS (version 11.5). Using correlation analysis, extent of influence of nutrition, health and other home correlates on growth and development of children were computed.

3. Major findings

Fifty percent of the families in the coastal area were nuclear type and more than half of them had two children (52.3%). Among men, skilled workers were 47.1 percent and fishermen (19.5%). Majority (89.1%) of women were unemployed. The educational status was up to high school level for 45.8 percent for women and 35.4 percent for men. Monthly income of nearly half of the families (49.5%) ranged
between Rs 4000/- to ` 6000/-. Regarding land ownership, 48.9 percent owned 3 to 5 cents of land. 63.8 percent belonged to low socioeconomic status. The standard of living index classified the families as medium (5.5 %) and low (94.5 %). None of the families had high standard of living status.

House ownership was reported by 83.9 percent of which 34.4 percent had pucca house with three rooms (50.5%). Other facilities found in the houses included separate kitchen (29.7%), toilet (91.7%), and toilet with water (56.5%). Proper drainage facilities were available only among 44 percent. Almost all houses (92.7%) had electricity connection. Majority (75.8%) of houses were kept clean and tidy. 86.4 percent used tap water for drinking and 91.4 percent stored water in covered container for drinking. Plain boiling was the technique adopted by 71.4 percent of the population to make the water safe for drinking.

Basic community facilities were within the reachable distance. Regarding personal habits 23.9 percent of men had the habit of drinking alcohol and 18.7 percent smoking. Women’s participation in social activities like the Kudumbasree was found among 51.0 percent.

Incidence of malnutrition as a serious problem was observed among 8.1 percent of children. 73.6 percent of the population was given prelacteal feed. All the mothers practiced breastfeeding but initiation of breastfeeding soon after delivery was observed among 43.5 percent of mothers. Demand feeding was adopted by 78.4 percent of mothers and colostrum feeding by 95.8 percent. 45.1 percent of mothers were found still feeding. It was found that 26.0 percent of mothers followed exclusive breastfeeding and 74 percent practiced bottle feeding along with breastfeeding. More than half of them used cow’s milk for bottle feeding. During bottle feeding, cow’s milk was diluted by most of the mothers in the ratio of 1:1 (45.8 %).

Weaning practices when subjected to study revealed that 91.4 percent of the children were already weaned and 8.6 percent yet to wean. The mean age of weaning was found four months. Weaning foods were introduced to the infants at the age of three to six months by most (65.8%) of the mothers.

With regard to nutrient intake serious deficit of all essential nutrients to a
highly significant level (P<0.01) was noticed in the diet of infants (12 to 24 months), with an exception of protein. Maximum deficit was reported in iron intake (-64.8%) followed by fat (-47.8%) and calcium (-45.9%). Energy intake was adequate to meet only 69.2 percent of RDA and zinc 71.5 percent.

Term delivery and type of delivery, the two basic components of the health and well-being of neonates, were studied. It was found that 94.3 percent of mothers had full-term delivery. High prevalence of caesarian delivery (46.4 %) was reported. 79.9 percent of mothers did not have any complications in pregnancy. Majority of the sample (85.2%) had normal birth weight. Most of the mothers in the multigravida group had a birth interval of either two or three years (23.9%) or one year (18.8%).

Among the health problems of neonate, respiratory diseases (9.1%) ranked first. It was also evident from the study that the incidence of vaccine preventable diseases was almost absent among the under-2 children, except measles (1.6%) and mumps (0.8%). Illnesses like cough, cold and fever (20.8%) due to respiratory infection was found to be the commonest type of health problems among under-2 children.

Immunization coverage of the sample showed that 93.2% percent of the subjects were completely covered by immunization up to the present age, while 6.8 percent were partially immunized. But no one was left unimmunized.

Early mother child contact an important factor for the child’s developmental status when studied, revealed that 47.1 percent of children had immediate contact with mother after delivery. Majority of mothers (81.5%) spent more than 8 hours per day with the child where as the time spent by most of the father with the child was one to three hours (56.5%).

Regarding the anthropometric measurements, the height of the majority (63.5%) of mothers ranged between 152cm to 160cm. A low normal weight of 45 to 50kg was reported by 50.8 percent of the mother’s inspite of being in the lactation period. When BMI was computed 72.1 percent of mothers were rated under normal category which included more number of lactating mothers than non pregnant and non lactating mothers (NPNL).
The weight gain in pregnancy and blood hemoglobin level of pregnant women (n= 61) (as per the medical records) indicated that 83.6 percent of the sample had below normal weight gain in pregnancy. And more than half of them (59.01%) had normal hemoglobin level and the remaining sample found to have mild (19.7%) or moderate (21.3%) anaemia.

Regarding the dietary pattern 97.9 percent of mothers practiced non vegetarianism. Traditional food beliefs and taboos were surprisingly low (3.1to 10.9%) among them. And they were hardly found to make any dietary modifications in pregnancy or lactation.

Mean nutrient intake of lactating mothers when compared with RDA indicated that the intake of almost all nutrients, except iron and fat, were significantly (P<0.01) lower than RDA. The percentage deviation computed also revealed grave deficiency in the case of vitamin A (-50.31%) vitamin C (-55.4%) and folic acid (-38.54%). Moderate deficit of 25.8 percent and 21.2 percent were seen in the calcium and protein intake respectively. Total energy intake also fell short of requirement by 17.2 percent.

Regarding the antenatal health status of mothers, more than half of the sample (58.1%) was suffering from minor ailments of more than one type. Mothers (88.3%) in general were devoid of any serious health problems of chronic and / or infectious nature during prenatal and perinatal period. Antenatal medical checkup on regular basis (62.5 %) and immunization coverage (86.5%) were also observed.

Mental stress and poor decision making abilities were shown to have an adverse effect on child rearing practices of mothers. An attempt to study these aspects revealed that nearly half of the mothers (45.1%) reported to have mental stress at moderate level.

Decision making ability of mothers revealed that they were given full freedom to make independent decisions in food related issues such as food preferences in lactation and weaning (96.1%), and in pregnancy (93.2%) and food purchase and intra family food allocation (85.4%). Health related issues were decided jointly (47.4%) or by the head of the family (24.7%). No freedom to decide on this issue was
given to quite a good number of mothers (26.3%). Curtailing of freedom for mothers was seen mostly in cases like budgeting (50%), family expenditure (35.9%), and children’s education (32%). But taking job outside by the mothers (74.2%) and attending social functions (63.8%) were found to be the joint decision by both husband and wife.

The developmental pattern of the under-2 children and the influence of selected home correlates on child’s development were also studied in detail. In the study of home environment, out of the six domains of home screening scale, the maximum attainment was reported in the case of emotional and verbal responsivity of mothers (73.2%). This was followed by opportunity for variety in daily stimulation (67.2%). Acceptance of child behaviour (58.2%) and parental involvement with child (54.3%) found to attain third and fourth position with a percentage score below 60 percent. Provision of play material was the item scored lowest (37.2). In short 64.3 percent of households possessed a good home environment, which was conducive to the development of children and 35.7 percent was rated as having poor home environment.

The developmental assessment with the help of TDSC (Trivandrum Developmental Screening chart) instrument showed that 96.1 percent of the sample had normal development and developmental delay was observed among 3.9 percent only. More girl children (4.9%) than boys (2.8%) exhibited developmental delay.

The extent of delay in each domain of psychosocial development (gross motor, vision and fine motor, hearing, language and concept development, self help skills and social skills), when studied with the help of ICMR screening test, ranged between 1.3 to 8.1 percent; with the least delay in self-help skills and maximum delay in social skills.

A clear-cut gender variation was also recorded in the percentage of delay in psychosocial development, with boys (delay ranged from 2.2 to 10%) being more affected than girls (delay ranged from 0.5 to 6.9%). 4.2 percent of the children screened positive for global developmental delay in the present study and the delay was more among boys (5.0%) compared to girls (3.9%).
Developmental Quotient (DQ) was computed for 214 children in the age range of 12 months to 24 months and 8.7 percent of them showed a DQ less than 90. The normal DQ of 90 to 110 was reported by 86.5 percent and 4.8 percent even exhibited DQ above 110.

Correlation analysis brought out significant correlation of Developmental Quotient and other home correlates such as nutritional status of the child (P<0.01), birth weight of the child (P<0.01), breast feeding beyond one year (P<0.01) and health status of the child (P<0.05), education of the mother (P<0.05), child care practices (P<0.05).

Hence it can be assumed that nutritional status of the child, birth weight, prolonged breast feeding, health of the child, education of the mother, child care practices and number of children takes a toll on the growth and development of children.

Since the nutritional status of the child was found to be a prominent factor influencing the DQ of under-2 children further analysis of variables correlate with nutritional status was done. It was revealed that birth weight of the child (P<0.01), health index (P<0.01), child care index (P<0.01), BMI of mother (P<0.05), and mothers educational level (P<0.05) were positively correlated with nutritional status of under-2 to a significant extent. Similarly the health status of the under-2 was also showed significant correlation with birth weight of the child (P<0.01), health index of the mother (P<0.01), exclusive breast feeding (P<0.05), childcare index (P<0.05) and education of father (P<0.05).

However, the findings of the present study indicated that nutrition, child care practices, health status of the child, and prolonged breast feeding and mothers education are the contributing factors to growth and development of under two children. The quality of the home environment is known to be strongly associated with child characteristics. Together, under nutrition and an under stimulating home environment can be seen as antecedents of children’s physical and mental growth retardation.
4. Conclusions

The conclusions derived from the study were under-2 children in the coastal area of Cochin exhibited developmental delay to an extent of 3.9 percent with more girls affected (4.9%) than boys (2.8%). The extent of delay in various domains ranged between 1.3 to 8.1 percent with lowest delay in self-help skills and highest in social skills. Factors having highly significant correlation with growth and development of the under-2 children included not only the nutritional status of children but also the birth weight of the child, prolonged breast feeding, child care practices, health of the child, mother’s education.

Regarding home environment 64.3 percent of households possessed a good environment conducive to the development of children. The maximum attainment in this respect was on emotional and verbal responsivity of mothers, followed by opportunity for variety in daily stimulation. The least scored item was provision of play materials.

References


