ASSESSMENT OF HEALTH STATUS OF CHILDREN IN ANGANWADIS

By

SUSAN J. MATHEW

A Thesis submitted to the University of Madras in Partial Fulfilment of the Requirements for The Degree of Master of Science

MAY, 1983

ACKNOWLEDGEMENT

The author records her heartfelt gratitude to Dr.(Mrs.) Rajammal P.Devadas, M.A., M.Sc., Ph.D.(Ohio State), D.Sc.(Madras), Dean of Post Graduate Studies and Director of Sri Avinashilingam Home Science Autonomous College forWomen, Coimbatore for giving an opportunity to be her advisee and for the valuable suggestions and incessant guidance given throughout the course of the study. Her deep insight and sustained interest were of immense value for the successful accomplishment of the research.

She records her sincere thanks to Selvi G.Baracha, M.Sc.,B.Ed.(Madras), Assistant Professor of the Department of Child Development for constant encouragement and continuous worthwhile advice rendered throughout the study. The author wishes to express her thanks to Dr.(Mrs.)Godavari Kamalanathan, M.S.(Cornell),Ph.D.(Madras), Principal, Sri Avinashilingam Home Science Autonomous College for Women, Coimbatore and Dr.(Mrs.) N. Jaya, M.Sc.,Ph.D.(Madras), Professor of the Department of Child Development for all the help given to her in the course of the preparation of this Dissertation.

The investigator is grateful to Mr.Masaampillai, the Child Development Project Officer of Mettuchery Block and the Medical Consultant Dr. KurianThomas, M.D., Associate Professor of Kottayam Medical College for the facilities and

help provided during the course of the study. She also records her thanks to the Anganwadi workers, children and parents for their cooperation to carry out the study.

LIST OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

I. INTRODUCTION

"I wish you could realise that destiny of our beloved land lies not in us, the parents, but in our children".

(Mahatma Gandhi).

India is the second most populous and the seventh largest country in the world, with only 2.4 per cent of the world's total land area. She has to support 15 per cent of the world's total population, that is, 684 millions (1981 Census). One of the salient demographic features of our country is that it has a sizeable proportion of young population. According to the 1981 estimation, there are about 121 million children in the age group 0 - 6 years constituting about one sixth of the total population; of whom about 89.7 million in rural areas, 7.3 million in tribal areas and 24 million in urban areas (National Institute of Public Cooperation and Child Development, 1983 and Bhatnagar, 1982). These children are our country's most valuable, national resources (Eliot, 1979).

Specialists in the field of child care and child development are unanimous in acknowledging the functional significance of the preschool age not only from the view point of health and nutrition, but also for the all round

development of the child's educational, psychological, social and emotional. Spurgeon (1982) and Muralidharan (1980) opine that preschool years are considered crucial in all different cultures. The foundation for later development is laid at this stage. Damage or impoverishment suffered at this stage is likely to be inseparable and irrepairable however hard we try later.

In the view of Trivedi (1982), every child has the undeniable right to the best possible conditions for its growth and development. Arunachalam (1977) proclaims that good health is a prerequisite for a rich, abundant and satisfying life. The Raginiprem (1977) the word health indicates the fitness or the proper work efficiency of the human machine. It is defined as a state of complete physical, mental and social well being and not merely absence of disease or infirmity (WHO, 1982 and Devadas, et al, 1977). The growth and survival of the young child requires adequate nutrition (Gyorgy, 1979). Endorsing Gyorgy's view Murthy (1979) states that the basic requirement for happy life is good health which largely depends upon good nutrition.

NIPCCD (1982) apprehends that India's developmental efforts through successive Five Year Plans, have contributed a great deal towards commendable improvements in the health

indices of the country. Children who constitute the most vulnerable section of the population have also benefitted and infant mortality has also been brought down from as high as 220 per 1000 live births in 1921 to 123 per 1000 live births in 1981. Despite all these achievements, it is readily conceded that ours is far from a healthy nation.

Shankaranand (1980) puts forth that these high rates of infant and child mortality result in wastage of human resources as development of human resources is vital for the economic and social development of the nation. Hence, Devadas et al (1980) suggest that reduction in the high rates of infant and child mortality and morbidity becomes a vital task of social development planners. To Ghosh (1981), low income, inadequate housing, over crowding, poor environmental sanitation and wide spread illiteracy are the various constraints for the high mortality and morbidity rate in our country. Theeffects of poverty are most severe and adverse on growing children. Health cannot be achieved where poverty and misery abound, food and safe water is scarce, housing is inadequate and health and community services are lacking. The worst sufferers of such deprovation are mothers and small children (WHO, 1980 and Ghosh, 1980).

Vasudeva (1982) and Rao (1980) exhort that health and nutrition are perhaps the most important aspects of child welfare. But malnutrition lingers on as a dominant behind the scene cause of death and disability. It reduces the resistance of child which makes the child prone to common childhood ailments. Disease in childhood in turn precipitates malnutrition.

It has been estimated that a good percentage of people live below the poverty line and even after spending 80 per cent of their income on food they are not in a position to have a balanced diet. Inspite of significant progress in the economic sphere since independence, these sections of population are even today not in a position to provide care and security needed for the normal growth of their children (NIPCCD, 1983).

Trivedi (1982) has aptly said that these health problems cannot be remedied by any specific health programme in isolation, while a comprehensive effort needs to be for the attainment of health for all. The major element responsible for ensuring a healthy future for children is the health education of parents with regard to all aspects of child care.

While recognising the basic needs of children the Government of India adopted a resolution on the national policy for children which is a land mark in the field of child welfare and marked a water shed in the child welfare movement in India (Singh, 1981). In this connection Chowdhary (1982) views that in the three and half decades since Independence, there has been a growing awareness of the pivotal role of child development and welfare in the development of human resources and economic and social progress of the country. However the services have developed in a sectoral and fragmented manner, those covering health and other aspects more or less unrelated to each other (Swaminathan, 1982).

Chodhary (1982) and Swaminathan (1982) espound that with the passage of time, social welfare planners became increasingly aware of the need for a change from sectoral pattern of services to an integrated programme, covering the entire gamate of childhood services such as health, nutrition, preschool education, recreation and other welfare aspects. It was felt that if the appropriate range of mother and child related social services were provided, specially to the weaker sections of the society, the national wastage of children in terms of IMR, school dropouts, illiteracy, etc. could be avoided and the all round development of children

ensured. Thus Integrated Child Development Service Scheme was envisaged as an investment in the future of the nation's man power in the year 1975 (Migalani, 1982).

Sharma (1982) tells that this scheme aimed at integrated delivery of package of health, nutrition and educational services to the child below the age of six years as also to pregnant women and nursing mothers. Tandon and Mamtani (1982) state that this programme is a unique programme, has demonstrated how some of the essential health services in an integrated manner can be reached to the most unprivileged group of people. In this context Swaminathan (1980) also emphasis that the underlying concepts of the ICDS are laudable and such programme are of utmost importance to the cause of national development.

Surveys, research, evaluation and programme monitoring are the integral component of ICDS. Each of these vital processes is indispensable for the wholesome progress of the ICDS. Surveys are widely required to see the impacts as well as drawbacks of this nation's biggest child welfare scheme. Hence this study on the "Assessment of Health Status of Children in Anganwadis" was undertaken with the hope that the findings will throw light on the impact of ICDS on the betterment of the children, and the hurdles in its implementation, so that necessary remedial measures could be taken by the concerned planners and implementers.

II. REVIEW OF LITERATURE

The review of literature pertaining to this study on the "Assessment of Health Status of Children in Anganwadis" is presented under the following headings:

A. Significance of children to the family and nation

B. Needs of children with special reference to food and health needs

C. Necessity for child welfare schemes

and D. Integrated Child Welfare Service Scheme

A. Significance of Children to the Family and Nation

Healthy and happy children - A nation's pride (UNICEF, 1979). Reddy (1979) exhort that children are our most precious national asset and our future very largely depends on how they are brought up. They are the mostcherished possession of any society, leaders and statesman of tomorrow (Radhakrishnan, 1981).

Delure (1980) views that the child is a modern invention. This statement is at once paradoxial and true. It is paradoxial because children have always been with us. At the same time it is only in recent times, that the value of children as potential human

resources for the future of the nation is being realised. No issue touches us more closely or has more direct bearing on the future of the world than of our children (Salim, 1981; Gunaratne, 1979 and Bhattacharya, 1976).

According to Lonseco (1981), Dey (1981) and WHO (1979) the formitive years of childhood are of crucial importance as the basis for the health and quality of life of present and future generations. Desai (1979) and Asuri (1972) affirm that if we wish to lay firm foundation of a fast and happier world, we have to take care of generations of children who need to be nursed and nourished, helped and equipped to play their role in the world of tomorrow.

B. Needs of Children with Special Reference to Food and Health Needs

Jain (1981) and Miller (1973) define that children are the blooming flowers of the garden of society, and so it is our duty to protect these flowers from damaging effects of excessive exposure to heat, cold and rain.

UNICEF (1979) expounds that provision of basic services to needy communities will go a long way towards improving the lives of children who are now struggling against hunger, disease, unhealth surroundings,

lack of educational services and overall neglect. The basic services to be rendered to the children are listed below:

1. Health care (primary health care for mothers, infants and children, health education and disease control);

2. Clean water supply (safe water for drinking cooking and bathing, to prevent the spread of diseases caused by lack of sanitation);

3. Nutrition (enough of the right kind of food to prevent malnutrition and to aid physical and mental growth);

4. Education (elementary schooling and out of school learning, to rescue children from illiteracy and ignorance);

5. Training (to provide health workers, school teachers, social workers, nutritionists and others needed for developmental tasks);

and 6. Welfare services (day care centres, youth and women's groups and self help projects to improve family and community life).

Devadas (1979) apprehends that every single child in the world needs and has a right to adequate health care, nutrition, education and social services.

Food needs:

Devadas (1983) and Kaul (1977) opine that adequate nutrition during the preschool age is of paramount importance for fostering the all round development, to the optimum level. While good nutrition is important throughout childhood, it is crucial during the first five years of life (Barrosh, 1979 and Ghosh, 1977).

Therefore existence of the problems of malnutrition and undernutrition during this period pose a serious threat to their future growth and development (Pellet and Mamerbach, 1979). Singh's (1980) study on nutrition intakes in boys from areas of Himalayan range clearly indicate that the first important thing to combat malnutrition is to provide food with adequate energy. Research findings of Devadas et al (1978) and Desai (1975) also reveal that malnutrition among preschool children has been recognised as a major public health problem in many developing countries including India. Soni et al (1980) in a rural area near Jodhpur and WHO (1976) found that 72.8 per cent of under five children were malnourished with vitamin deficiencies being present in 22.9 per cent of children.

Gopalan et al (1977) conducted a comprehensive country wide survey of 18,256 pre-school children of six different regions in India. The findings of the study revealed that the major nutritional problems encountered among the Indian pre-schoolers were protein calorie malnutrition, vitamin A deficiency, anaemia and deficiencies of the B complex vitamins.

Gopalan et al (1977) and Rao (1976) observed that angular stomatitis was the major deficiency sign of the B-complex vitamin. Its prevalence increased with increasing age from 1.6 per cent in the age group 1 - 2 years to 75 per cent in the age group of 4 - 5 years with an average percentage prevalence of 5.3 per cent for the entire preschool children's population. The incidence of angular stomatitis was higher among boys than girls. Glossitis and cheilosis were other deficiency symptoms present. Yushal et al (1975) in their study on some etiological aspects of PCM, pointed out that socio-economic level, and the type of supplementary food are some of the contributing factors which have an important role in the etiology of PCM.

Health needs

Health is not the absence of illness but a growing

vitality of feeling of wholeness with a capacity for continuous intellectual and spiritual growth (Indira Gandhi, 1981). According to Mahler (1981) health is the personal state of well being, not just availability of health services, a state of health that enables a person to lead a socially and economically productive lives. The United Nations Declaration on the Rights of the child commands that, "Every child is entitled to grow and develop in health for the full and harmonious development of the personality (UNICEF, 1979).

A longitudinal study of morbidity in children in a rural area of Punjab was conducted by Gupta (1980). His study shows that the main causes of morbidity in descending order were skin infections, respiratory infections, diarrhoeal diseases, fevers of miscellaneous origin, eye infection and ear discharge. This study clearly demonstrates that a rural child suffers from numerous illness in a year and none of the existing services are sufficiently effective.

Basu (1979) opines that in India a large number of children in the three years of age die from common infectious diseases. This happens despite the fact that these diseases are preventable by immunisation. Dey (1981) exhorts that today only one child in ten in the

developing world is immunized properly and this is closely related to the high infant mortality rates in these countries.

In this context, Ravichandran (1979) also stresses that immunisation is a vital link in the chain of services planned to bring down the morbidity rate. Manderson (1978) says that 10 per centof the 80 million children born each year in developing countries receive the benefits of immunization against six killer diseases of childhood - measles, pertusis, tuberculosis, poliomyeliti s and diptheria. Even in urban Delhi, where the health inputs are vastly superior to the rest part of India and socio-economic status and literacy is higher, only about one third of the children have been found to be covered by immunisation (Hooja et al, 1976). Enquiries have been made by Soria et al (1975) to the status of immunization of 2,249 children under 10 years from 1,000 randomly selected families of different communities of Jabalpur contonment. While the number vaccinated against small pox was satisfactory (97.3 per cent) that for BCG, triple, OPV and TAB/TABC was poor (23, 11.9, 9.7 and 1.2 per cent) respectively. The staute of immunisation and parental awareness of the need for vaccinations was significantly related to higher socio-economic status, community,

maternal literacy, nuclear family and the infant delivery at a private nursing home (Gupta and Walia, 1981 and Ghosh et al, 1980). Poor health and nutritional status coupled with inadequate facilities, untrained birth attendants or medical coverage, high parity, maternal age being under 20 or over 35 years, and poor spacing of births, are primarily responsible for excessive fertility(Bhatnagar, 1982).

Keeping in perspective the above profile of the child it is decided to have an integrated approach to the child welfare. Thus the national level schedule of immunisation had been evolved and followed in ICDS Project areas, which is given below.

greatly loved in India. If we regard him as an economic entity, he is vital to the development of human resources and to safeguard the countries' future. Even marginal investment in child welfare brings manifold returns. Child care must be the corner stone of all our activities (Indira Gandhi, 1980).

Deodhar (1980) stresses that the chronic condition of the poorest billion of the world population perpetuates their ill-health. Primary health care, in order to succeed must link up with honest and comprehensive anti-poverty programmes.

Studies on the incidence of malnutrition among selected preschool children indicated morbidity pattern included large number of nutritional deficiency cases (Devadas et al. 1978; Rao, 1978 and ICMR, 1977). Hence, good nutrition in childhood is of paramount importance, to determine the normal growth and development of the individual. The need for a nutrition programme arises when there are large number of children at risk and their needs must be met in some organised manner which is more efficient than reliance on nutritional input which may or may not be part of routine health care programmes(Jelliffe, 1973).

The child welfare had therefore been defined by the working group of social welfare (1980) as the total well

TABLE I

IMMUNISATION SCHEDULE

Age of children	Vaccination to be given
3 - 9 months	i) Triple Vaccine (APT against diptheria, whooping cough and tetanus - 3 dose at an interval of 1 - 2 months;
	ii) Polio Vaccine - 3 doses at an interval of 1 - 2 months
	iii) BCG Vaccine
9 - 12 months	Measles Vaccine - one dose (where available)
12 - 34 months	i) Triple Vaccine (DPT) Booster ii) Oral Polio - Booster dose

C. Necessity for Child Welfare Schemes:

Mahler (1977) apprehends that in the developing countries there are 80 million children born eacy year who require, but do not receive protection. Chowdhary (1980) views that child welfare is an investment in human capital welfare services whether preventive or curative, preserve and make human material more preserve and more useful which is an important factor in economic planning. Children are

being of the child. It comprises the totality of measures - administrative, technical, educational or social, intended to give each individual an opportunity of growth and development. In this context Baroosh (1979) rightly opines that child welfare has been an important word in the Indian context, with the increasing interest, a lot of welfare agencies specially for the child development in almost all spheres of child welfare emerged. Agreeing this view, Trivedi (1982) puts forth that provision of an appropriate range of integrated services to children, as opposed to providing different services in isolation, contributes to the betterment of the individual and is thus an investment in the future economic and social progress of the country.

D. Integrated Child Welfare Service Scheme:

Realising the importance of organising early childhood integrated services for future development of the child, in 1972, the then Minister of Planning had first rooted the idea of a scheme for Integrated Child Care Services (ICCS). Subsequently, eight inter ministerial study teams were constituted by the Planning Commission. These studies lead to the proposal for integrated child care services for preschool children covering supplementary nutrition/feeding, immunisation, health care including referral services, nutrition education of mothers, pre-school education and recreation, family planning and

provision of safe drinking water. On an experimental basis 33 ICDS projects were initiated in 1975-76 and its results were heartening enough to expand the scheme to 300 projects till 1981-82. The original target of the VI Plan was 600 projects, which was subsequently raised to 1000. This programme is now part of new 20 point programme - Point 15. The number of ICDS projects sanctioned during 1982-83, 1983-84 was 320 and 380 respectively (NIPCCD, 1982).

Objectives of the scheme:

The objectives of ICDS scheme are to:

i) Improve the nutritional and health status of children in the age group of 0 - 6 years;

ii) Lay the foundation for psychological, physical and social development of the child;

iii) Reduce the incidence of mortality and morbidity, malnutrition and school drop-out;

iv) Achieve effective coordination of policy and implementation amongst the various departments to promote child development and

v) Enhance the capability of the mother to look after the normal health and nutritional needs of the child through proper nutrition and health education.

The package of services:

To achieve the above objectives, the ICDS scheme

aims at providing the following package of services:

Beneficiaries		Service
1. Expectant and nursing mothers	i)	Health check up
	ii)	Immunisation of expectant mothers against
	iii)	Supplementary nutrition
	iv)	Nutrition and health education
2. Other women 15 - 45 years		Nutrition and health education
3. Children less than 1 year	i)	Supplementary nutrition
	ii)	Immunisation
	iii)	Health check up
	iv)	Referral services
4. Children 1 - 2 years	i)	Supplementary nutrition
	ii)	Immunisation
	iii)	Health check up
	iv)	Referral services
5. Children between 3 - 5 years	i)	Supplementary nutrition
	ii)	Immunisation
	iii)	Health check up
	iv)	Referral services
	v)	Non-formal pre-school education

The focal point for the delivery of ICDS package of services will be an Anganwadi in every village or urban slum sub-unit. Immunisation, administration of iron and folic acid tablets and vitamin A solutions, health check-up and referral services is being delivered at the Anganwadi through the net work of health services in the project area. The services of supplementary nutrition feeding, nutrition and health education and non-formal pre-school education is being provided through the Anganwadi with support from the functionaries of community development, health and other departments.

Financial provisions:

In the Fifth Five Year Plan, the scheme of ICDS has been classified as a centrally sponsored programme, to be implemented by the State Government/Union Territory Administrations with 100 per cent financial assistances from the Central Government.

Job responsibilities of the Anganwadi worker in health services:

The acceptance of the concept of community level health worker as the peripheral link in the health delivery system has expanded the scope of the Anganwadi worker who is now expected to play a more positive role in assisting the health delivery. Her specific responsibilities in the

delivery of health services are as follows:

The Anganwadi worker

i) Assists the PHC staff in the implementation of the health component of the ICDS scheme viz., immunisation, health check-up, family planning and referral services and for this purpose, she will maintain effective liaison with ANM and the community health guide of her area;

ii) Takes height and weight measurements of children (0 - 5) and record these accurately on the growth cards and will classify children according to weight and identify the 'at-risk' children;

iii) Arranges for periodic health check-up of children and expectant and nursing mothers by keeping a close liaison with the ANM and other PHC staff;

iv) Renders first aid and medication for common ailments to Anganwadi children as well as non Anganwadi children and women wherever need arises;

v) Keeps a check on the immunization of children, inform the families about the immunization schedule and do necessary follow up in this regard;

vi) Refers cases of severely malnourished and sick children and pregnant and nursing women to the PHC and follow them up;

vii) Keeps a watchful eye on the out break of any epidemic disease in her area and report about the same to the health staff;

viii) Assists the health personnel in prevention of diseases and in isolation of a infected persons;

ix) Detects infants and toddlers with childhood impairments and disabilities and refer them to ANM/LHVS for necessary follow up action.

Thus the ICDS scheme of the Government of India envisages delivery of a package of minimum services to cater to the psychological, physical and social needs of the vulnerable section of the child population in the project areas (NIPCCD, 1983 and Miglani, 1982).

Tandon (1982) views that it may be noted thatICDS selectively is being implemented in socio-economically backward areas and by a crude calculation, it is estimated that nearly 50 per cent of this selected population will be covered by this national programme, by the end of the present plan.

Advantages of ICDS Schemes

Delivery of nutrition and health services to pregnant women, lactating mothers and pre-school children and their impacton the health status of pre-school children has been evaluated in various ICDS Projects. A stratified random sample of 17,904 pre-school children, 1,220 pregnant women and 3,482 nursing mothers was drawn from 5 rural, 7 tribal and 3 urban projects, both baseline and follow up study was done. After 20 months of utilisation of ICDS package of services, considerable improvement was registered in all the three categories of beneficiaries in the utilisation of supplementary nutrition, vitamin A, iron and folic acid and immunization with the scheduled vaccines and toxoid. Even younger pre-school children below 3 years of age showed a marked rise in coverage with all these services. Impact of this was noted as a significant positive change in the nutritional status of pre-school children. Base line study registered severe malnutrition (Grade III and IV) in about 22 per cent children which was reduced to 11, 5 and 6 per cent in the rural, tribal and urban projects respectively. Children below 3 years of age also showed a considerable, improvement in their nutritional status. The proportion of children with normal and near normal nutritional status (Grade I) increased on follow up study from 46 to 58 per cent in rural, 46 to 58

in rural, 46 to 58 per cent in tribal and 43 to 73 per cent in the urban project areas (Central Technical Committee, 1981).

Gupta and Srivastava (1983) did a study in the period, October 1980 - June 1982 with the objective of ascertaining the health status of children below 6 years in the ICDS and non ICDS blocks, to study the impact of the ICDS scheme and suggest measures for effective implementation of the programme. Results of the study revealed that height, weight and chest circumference of children was found to be lower in non ICDS group than in children of the ICDSblock. The overall prevalence of protein energy malnutrition was significantly higher in non ICDS (77.1 per 100) as compared to ICDS (44.2 per 100). It was observed that there was higher incidence of diarrhoea and dysentry, eye and skin infections in the non ICDS group. Infant mortality rate in ICDS block was found to be 74.1 compared with 111 in the non ICDS area. This study concludes that health status of children in the ICDS block was better than those of the non ICDS.

Vasudeva et al (1983) studied 171 children from ICDS block Beri and 164 non ICDSBlock Beri. Their immunization status was determined from the records available at the Anganwadis and sub-centres. This study indicates that immunisation coverage in ICDS block is

better than in non ICDSblocks.

Vasundara in his study compared the data on some of the variables from the surveys done in 1975 and 1981 in the Navasipura rural block in Karnataka.

Variables	1975	1981
BCG coverage	4.2%	43.00%
DPT coverage	0.1%	76.82%
Prevalence of severe malnutrition	7.7%	1.09%
Infantmortality Rate	93.75%	27.53%

The above figures indicate successful intervention by ICDS programme improving the nutritional and health status of children in the block.

Similarly, the impactof ICDS had been analysed periodically by Devi and Yaima (1983) in Imphal, Mathur et al (1983) in Gorakpur and Sad (1981) in Tirupathi and unanimously voiced that there is a considerable improvement in the health status of the beneficiaries of ICDS Scheme.

III. METHODOLOGY

The methodology pertaining to the study on the "Assessment of health status of children in Anganwadis" involved the following steps:

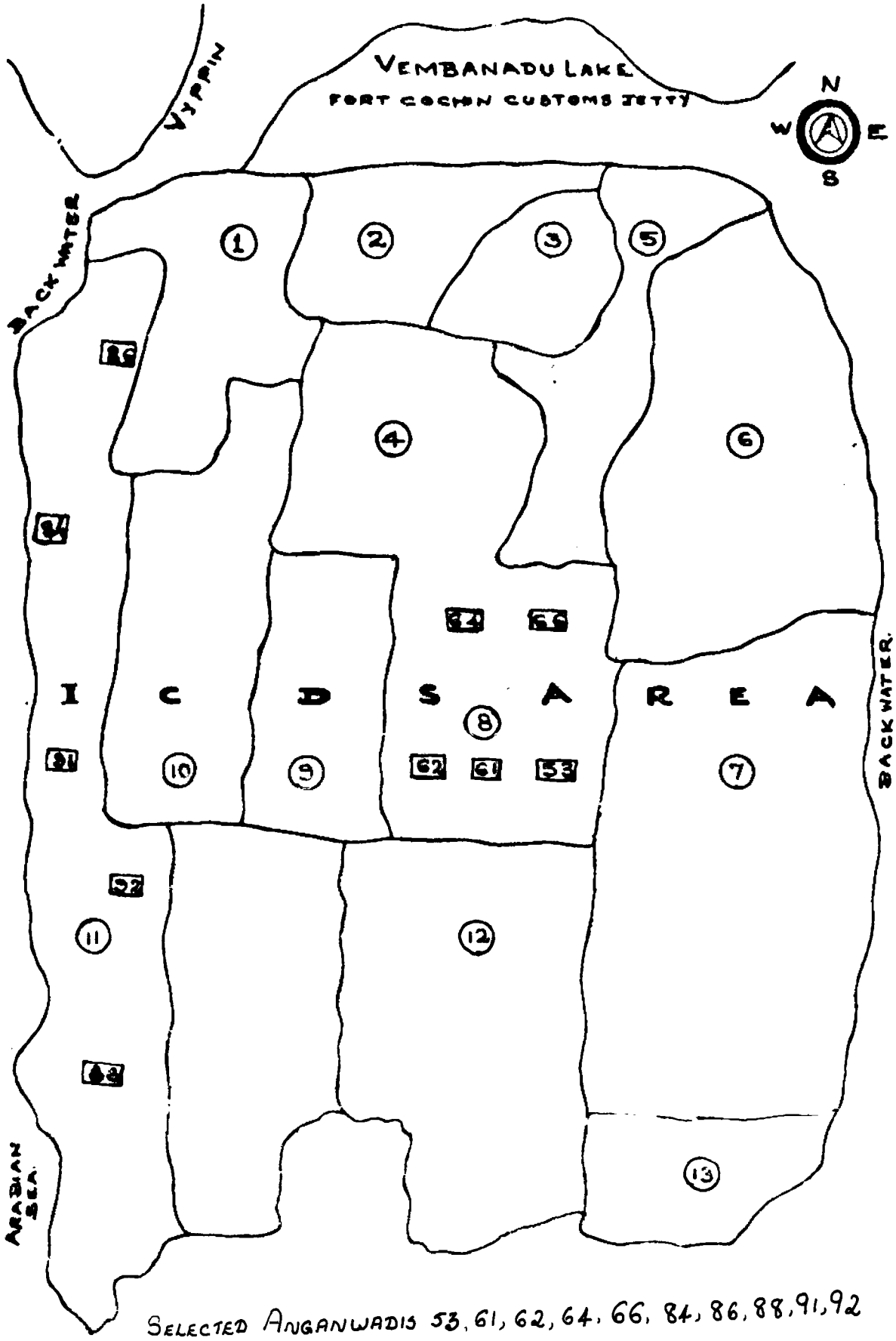
A. Selection of the area
B. Selection of the sample
C. Selection of the methods
and D. Conduct of the study

A. Selection of the Area:

Integrated Child Development Service Scheme is being operated through 24 projects in Kerala. Anganwadis situated in Mattancherry Taluk of Ernakulam district were selected to carry out the study for the easy approachability to the investigator. The map of the area is given in Figure 1.

B. Selection of the Samples:

The subjects for the study comprised of two hundred children in the age group of 2 to 5 years with equal sex representation from 10 Anganwadis of coastal and interior areas of Mattancherry.



SELECTED ANGANWADIS 53, 61, 62, 64, 66, 84, 86, 88, 91, 92

CORPORATION DIVISION (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13)

FIGURE I

The investigator approached the Director of Social Welfare, Trivandrum and CDP of Nattancherry Block and explained the purpose of the study to get their approval to carry out the study. Then she met the Anganwadi workers and briefed the objectives of the study and the help needed from her to complete the study. During the parents meeting time, she met the parents of the selected children. Then she visited the families, explained the objectives of the study and sought their cooperation to collect the data.

C. Selection of the Methods

Since the interview schedule is specially appropriate to collect the data from the young children and illiterates (Subhia et al. 1976), socio-economic data of the selected subjects was collected by interview schedule. The interview schedule used to collect the necessary information is given in Appendix A.

The investigator herself assessed the health status of the children by the anthropometric measurements, since anthropometric measurements are used as a standard procedure in a pediatric practice to measure the variations of the physical dimensions and the gross composition of the human body at

different age levels and degrees of nutrition (Jelliffee, 1966). Inch tape was used to take mid arm circumference, heightwas measured by the indigenous way of using the wall as the standard with the scale, whereas salter was used to measure the weight (Figure 2). As a data gathering device, direct observation may make an important contribution to descriptive research (Best, 1963). The investigator did a thorough observation to assess the personal hygiene and physical health. She also recorded the state of immunisation of the children with the help of the Anganwadi workers. The schedule is given in Appendix B.

D. Conduct of the Study:

In order to see the impact of ICDS on the health status of children, baseline survey was done initially in September 1992 and after 4 months the required data was again collected for the same children.

Data was consolidated and analysed in terms of the

a) Background information of the selected children
b) Feeding practices
c) Immunisation status
d) Morbidity pattern in children and hygienic condition and
e) Nutritional status of children

IV. RESULTS AND DISCUSSION

The results of this study on "Assessment of Health Status of Children in Anganwadis" are presented and discussed under the following headings:

A. Background information of the selected children

B. Feeding practices

C. Immunisation status of the children

D. Morbidity pattern in children and hygienic condition

and E. Nutritional status of children

A. Background Information of the Selected Children:

The background information of the selected children is discussed in terms of size of the family, family income, educational status of family members, occupational status of the head of the family and the amount of debt.

1. Size of the family:

The number of members in the selected families is shown in Table II.

TABLE XI

SIZE OF THE FAMILY

S.No.	Number of family members	Coastal N = 100	Interior N = 100
1.	1 - 5	80	80
2.	6 - 10	20	20

Eighty per cent of the coastal and interior families have one to five members including the parents, which reveals that people become increasingly aware of the necessity of limiting the size of the family.

2. Educational status of family members

TableXII pictures the family members' educational level.

TABLE XII

THE EDUCATIONAL STATUS OF FAMILY MEMBERS

S.No.	Educational status	Coastal N=273	Coastal %	Interior N=274	Interior %
1.	Illiterate	21	7.7	27	9.8
2.	Primary	157	57.5	122	44.51
3.	High School	96	34.4	120	43.89
4.	P.U.C.	1	0.4	1	0.4
5.	Graduate	--	--	4	1.5

It is heartening to note that only 21 and 27 members of coastal and interior families respectively are illiterates. Nearly half of the members in both areas had primary education. It is surprising to note that 4 of the interior family members are even graduates.

3. <u>Occupational status and income of the fathers of selected children:</u>

The following table pictures out the family income and occupational status of the fathers of the selected children.

TABLE IV

OCCUPATIONAL STATUS AND INCOME OF THE FATHERS' OF THE SELECTED CHILDREN

S.No.	Occupation	Coastal N = 100	Interior N = 100
1.	Coolie work	18	30
2.	Fishery	34	—
3.	Business	10	19
4.	Company work	6	15
5.	Carpentory	3	10
6.	Driving	6	4
7.	Tailoring	3	2

S.No.	Income	Coastal N = 100	Interior N = 100
1.	Below 100	1	1
2.	100 - 150	53	13
3.	150 - 200	19	16
4.	200 - 250	6	22
5.	250 - 300	21	48

Coolie work is the main occupation of the (50 per cent) head of the families of the interior area where as fishing is the main job (34 per cent) of the coastal area people. Small business, company work, carpentry, driving and tailoring are the other jobs by which the heads of the families earn for their breads.

While 48 per cent of the interior families earn Rs. 250 to 300 per month, it is disheartening to note that one family in the coastal and in the interior areas live within 100 rupees.

4. Amount of debts

The amounts of debt the families had incurred is given below:

TABLE V

AMOUNT OF DEBT

S.No.	Amount	Coastal	Interior
1.	100 - 200	4	1
2.	200 - 300	7	4
3.	300 - 400	3	4
4.	400 - 500	1	-
5.	500 - 600	2	7
6.	600 - 700	-	-
7.	700 - 800	2	4
8.	800 - 900	4	1
	Total	23	21

Since the monthly earning falls within Rs. 300 per month, which is very meagre to meet even the basic needs of family members, 23 and 21 families of the coastal and interior areas respectively are in debts.

It is also found that more than half the families of the interior in debts, had obtained the loans from banks, whereas the coastal area families received the financial help from whole sale marchants and neighbours.

5. Monthly expenditure pattern:

The pattern of family expenditure(monthly) is presented in Table VI.

TABLE VI

MONTHLY EXPENDITURE PATTERN

S.No.	Items	Expenditure in percentage	Coastal N=100	Interior N=100
1.	Food	60-70	—	4
		70 - 80	5	10
		80 - 90	60	45
		90 -100	35	41
2.	Clothing	0 - 10	71	88
		10 - 20	—	—
3.	Fuel and lighting	0 - 10	90	82
		10 - 20	10	—
4.	Transport	0 - 10	50	50
5.	Recreation	0 - 10	32	34
6.	Education	0 - 10	29	30
7.	Rent	0 - 10	19	46
8.	Health	0 - 10	21	24
9.	Savings	0 - 10	12	16
10.	Debt Repayment	0 - 10	15	4
11.	Alcoholic and Pankuperi	0 - 10	1	4
12.	Durable goods	0 - 10	50	5

Sixty and forty five per cent of the coastal and interior families respectively spend 80 to 90 per cent of their income on food. And all the families spend more than 60 per cent of the income on food. Clothing, transport, fuel and lighting are the other aspects for which secondary importance is given by these families. It is painful to note that amount spent on education, rent and health aspects are similar to the recreational expenditure.

6. Details of food expenditure:

Table VII gives the details of food expenditure of the selected families.

TABLE VII

DETAILS OF FOOD EXPENDITURE

S.No.	Food items	Percentage of food expenditure	Coastal	Interior
1.	Cereals	10-20	10	17
		20-30	17	25
		30-40	39	35
		40-50	19	9
		50-60	10	2
		60-70	2	3
		70-80	1	2
2.	Pulses	0-10	90	80
		10-20	10	16
		20-30	—	4
3.	Roots and Tubers	0-10	68	54
		10-20	12	38
		20-30	—	5
4.	Green leafy vegetables	0-10	—	5
5.	Other vegetables	0-10	100	30
		10-20	—	66
		20-30	—	4
6.	Fruits	0-10	31	48
7.	Fleshy foods	0-10	20	47
		10-20	—	23
8.	Nuts and oils	0-10	51	53
		10-20	49	47
9.	Milk and Milk Products	0-10	50	45
		10-20	15	45
10.	Sugar and jaggery	0-10	85	80
11.	Prepared food	0-10	62	75
12.	Beverages	0-10	75	94

A majority of the families in both the areas spend upto 50 per cent for the cereals. It is saddening to find that one coastal area family and two interior area families spend upto 80 per cent on cereals which reveals the peoples' ignorance about the balanced diet. And if at all the families purchase the other food items, it is upto 10 per cent only, very rarely they spend between 10 to 20 per cent.

It is also found that 10 and 25 families of the coastal and interior areas respectively maintain accounts for the expenditure on food aspects.

B. Feeding practices:

All the families of coastal(100) and 70 families of interior areas are habituated for non-vegetarian foods.

During the duration of breasting feeding and reasons for breast feeding, age of weaning, foods given during weaning and dietary practices during infancy were the various aspects on which data was elicited and presented below:

1. Duration of breast feeding:

Table VIII pictures the duration of breast feeding.

TABLE VIII

DURATION OF BREAST FEEDING

S.No.	Duration in months	Coastal N = 100	Interior N = 100
1.	12 - 24	42	54
2.	24 - 36	58	46

Practices of feeding vary depending on the region. All the mothers fed their children by breast. This retrospective study on 200 children showed that all the babies were breast fed soon after the delivery which was much contrary to Rai's (1983) study in the ICDS Block (A) where only 50% of babies were breast fed soon after delivery.

Majority of the mothers of the interior areas, feed their children by breast upto 2 years, while their counterparts in the coastal area feed upto 3 years. This is perhaps due to the existence of poverty, unemployment and ignorance. The finding is in line with the statement of Dayal (1980), that the long term lactation upto 2-3 years is not uncommon. A longer duration of breast feeding is generally practised in the rural areas when compared to the urban areas.

2. Reasons for the selection of breast feeding

The reasons given by the mothers on their decision to breastfeed their children are depicted in Table IX.

TABLE IX

REASONS FOR THE SELECTION OF BREAST FEEDING

S.No.	Reasons	No. of mothers	
		Coastal	Interior
1.	Easily available	46	52
2.	Cheap	38	33
3.	Good food for the health of the child	31	27
4.	Traditional practice in the family	13	21

Among those mothers who fed their children by breast have reasoned that breast milk is easily available, cheap, promotes good health in infants and is a dependable traditional method. This study confirms the findings of Abdulla and Abraham (1980) which indicate that a high number of mothers feed their babies by breast because it is cheap, convenient and traditional.

3. Foods given during weaning

Table X figures out the foods given during weaning.

TABLE X

FOODS GIVEN DURING WEANING

S.No.	Foods given	Coastal N = 100	Interior N = 100
1.	Boiled fish	52	1
2.	Ragi pudding	16	39
3.	Rice pudding	14	28
4.	Arrow root pudding	11	27
5.	Boiled vegetables	5	5
6.	Dried banana pudding	2	3

Boiled fish and ragi pudding are the main complementary foods given to the coastal and interior area children respectively. Rice pudding and arrow root pudding stand as next main food for both the group.

Though the community is flooded with advertisements for baby food, in this study, mothers fed their babies with the above mentioned food items. This may be because, the food items are less costly than the other foods in the market.

4. Number of meals per day for the children:

Table XI pictures the number of meals per day for the children.

TABLE XI

NUMBER OF MEALS PER DAY

S.No.	No. of meals per day	Coastal N = 100	Interior N = 100
1.	3 times	36	3
2.	4 times	46	58
3.	5 times	18	39

It is saddening to note that 36 per cent of the children in the coastal area are fed only three times a day. They do not even get little snacks in between the meals. On the other hand, the children of the interior area, though they also come from the poor families, are given some snacks.

5. Daily meal pattern of the selected children:

Daily meal pattern of the selected children in different areas is shown in Table XII.

TABLE XII

DAILY MEAL PATTERN OF THE SELECTED CHILDREN

S.No.	Meal pattern		Coastal	Interior
1.	Breakfast:			
	Kanji		72	63
	Tapioca		12	18
	Puttu and Coffee or Milk		8	7
	Dosai or Iddli and Coffee or Milk		5	8
	Chappathi		3	7
2.	Mid morning:			
	Bread (Provided in the Anganwadi)		100	90
	Fruits		—	22
3.	Lunch:			
	Rice/Tapioca		78	97
	Vegetable curry		22	13
	Meat		3	12
	Fish		83	23
	Dhal		7	22
	Curds		—	12
4.	Tea:			
	Coffee		15	31
	Milk		3	8
5.	Dinner:	Rice/Tapioca	64	97
		Vegetable curry	12	37
		Dhal	11	36
		Fish	27	3
		Chutney	19	24

Kanji is the main food for the breakfast and rice or tapioca in the afternoon for all. It is very sad to see that only 22 per cent of the children in the interior area have some fruits. But 83 per cent of coastal children's lunch includes fish which has good nutrients. The feeding patterns of the infants and preschool children by the rural and urban mothers of the low income group were far from satisfaction. The intake of low income groups showed gross deficits in milk, green leafy vegetables and fruits, which reflected glaring deficits of calcium, B-carotene, thiamine and riboflavin (Devadas et al, 1981).

C. Immunisation Status of Children:

The types of immunisation given to the children initially and finally are figured in Table XIII.

TABLE XIII

IMMUNISATION STATUS OF CHILDREN

S.No.	Immunisation given	Coastal (N=100)		Interior (n=100)	
		Initial	Final	Initial	Final
1.	Polio	78	100	70	98
2.	D.P.T.	84	97	75	90
3.	B C G	89	98	83	96

A majority of the children in both areas are vaccinated and immunised at the time of their enrolment in the Anganwadi itself. This is perhaps due to the concerted efforts of the health department and campaigns in the rural/slum areas. While this initial record is satisfactory, it is painful to see the final record, which reveals the immunisation coverage lies between 78 to 100 per cent. The reason that can be attributed for not covering the whole population is the ineffectiveness of the Anganwadi workers to educate the parents regarding the health service. Though the cent per cent coverage is not seen in this study, it is higher when comparedwith the national figures. This finding is in agreement with that of Patowari (1983) who also found substantial improvement in the immunisation status of children in ICDS block of Assam. The immunisation status of the selected children (initial and after) is pictured out in Figure 3.

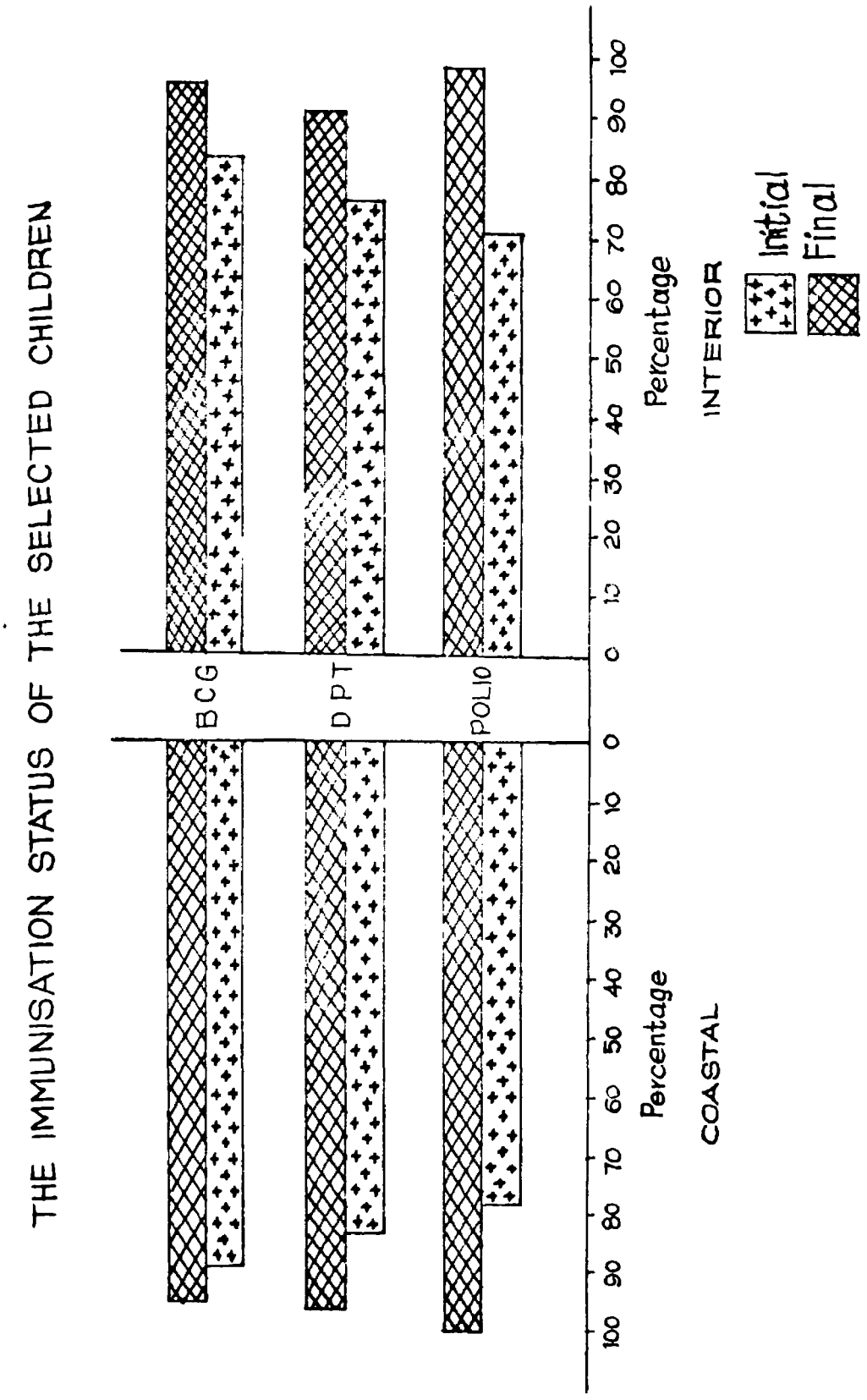

THE IMMUNISATION STATUS OF THE SELECTED CHILDREN
BCG
DPT
POLIO
0 10 20 30 40 50 60 70 80 90 100
Percentage
INTERIOR
COASTAL
Initial
Final

Figure:3

D. The Morbidity pattern in children and Anaemic Conditions:

Clinical examination was done initialy and finally for all the children and the results are presented in the Table XIV.

TABLE XIV

MORBIDITY PATTERN IN CHILDREN OF INTERIOR AND COASTAL AREAS

S.No.	Diseases	Coastal		Interior	
		Initial (N=100)	Final	Initial (N=100)	Final
I	Respiratory				
	a) Cold	12	8	10	6
	b) Cough	8	4	7	3
	c) Asthma	4	4	6	2
	d) T.B.	-	-	2	2
II	Gastrointestinal				
	a) Diarrhoea	6	3	7	4
	b) Vomiting	2	1	-	-
III	Cardiovascular	-	-	-	-
IV	Genitourinary	-	-	-	-
V	Musculoskeletal				
	a) Weakness	10	2	-	-
	b) Fracture	-	1	-	-
VI	Nervous	-	-	-	-
VII	Skin disease(Scabies)	14	5	16	6
VIII	Helminthiosis	8	4	10	3
IX	Deficiency Disease				
	a) Vitamin A	4	-	6	-
	b) Vitamin B	5	-	8	-
	c) Iron	-	-	-	-
	d) Anaemia	14	5	12	4
	e) Pale conjunction	10	4	12	2
X	Malnutrition	8	1	10	2

Only 3.8 per cent of the children of both the areas suffered from some diseases. Children were highly affected by respiratory infections such as cold, cough, asthma and primary complex. Deficiency diseases such as vitamin A deficiency, vitamin B deficiency and iron deficiency are the other ailments seen among the children next to respiratory infections. Gastro intestinal, musculo skeletal and skin diseases are the other kinds of diseases that were present in few children. This finding is in agreement with that of Banik's (1978) that the major causes of morbidity are respiratory, deficiency and gastro intestinal diseases, which account for about the two thirds of total morbidity in children.

Personal hygiene and environmental sanitation:

The personal hygiene of each child in the Anganwadi was graded as good or fair or poor in consideration to their dress, hair, face, nose, eye, skin(scabies), hands, nails and legs. They were in a poor condition during the baseline survey, time, but much change was observed during the time of the final survey. Drastic change was seen in their habits and behaviour.

Other areas which also contribute to the child's health status like environmental cleanliness, disposal of waste, water supply, light and ventilation in the Anganwadis were also taken into consideration.

Though the class rooms were well kept, the environment specially the drains were not well maintained. The light and ventilation in two Anganwadis out of ten were not satisfactory. Little change was seen during the final survey due to the difficulty in getting rented rooms. The proper maintenance of drainage was out of ICDS control as it was maintained by the corporation. One of the salient feature in all the Anganwadis was the availability of safe water supply and toilet facilities.

Records maintained

The records of the weight, height, grades of malnutrition, immunisation status and morbidity pattern of the children were well maintained by the anganwadi workers. These are evaluated occationally by the supervisors, medical officers and child development project officers.

E. [redacted]

1. Difference in the mean height of children

The difference in the mean height of children of both areas with ICMR measurement is given below.

TABLE XV

THE INITIAL AND FINAL MEAN HEIGHT OF BOYS AND GIRLS OF COASTAL AND INTERIOR AREA(in cms)

S.No.	Sex	Age in years	Category	Initial		Final		Difference	
				Coastal	Interior	Coastal	Interior	Coastal	Interior
1.	Boys	3 - 4	ICMR	83.8					
			Present study	85.90± 6.2322	91.88± 6.0648	93.16± 6.0890	93.72± 5.8559	2.20± 0.5678	1.84± 0.6119
		4 - 5	ICMR	96.0					
			Present study	92.43± 6.5107	95.58± 6.0465	94.55± 6.6589	97.643± 6.2073	1.74± 0.4716	2.06± 0.6216
2.	Girls	3 - 4	ICMR	87.2					
			Present study	92.36± 6.6920	91.44± 5.9852	93.36± 6.6250	92.50± 6.0468	1.10± 0.7348	1.06± 0.5161
		4 - 5	ICMR	96.5					
			Present study	92.76± 5.0401	96.2± 6.9500	93.98± 6.9548	95.54± 6.8992	1.22± 0.8134	1.34± 0.7172

**significant at 1 per cent level

The findings of this study reveal that there is no considerable difference in the mean height of boys and girls of costal and interior areas when compared to the ICMR standard measurement (for Indian children) except the 4 to 5 years old girls and boys. Coastal area boys and girls of 4 - 5 year old are far below in the mean height while the boys of interior area are not with that of ICMR standard height.

2. Difference in the mean weight of children with ICMR measurement

Table XVI gives the difference in the mean weight of children of both areas with ICMR measurement.

TABLE XVI

THE INITIAL AND FINAL MEAN WEIGHT OF BOYS AND GIRLS OF COASTAL AND INTERIOR(in Kg)

S.No.	Sex	Age in years	Category	Initial		Final		Difference	
				Coastal	Interior	Coastal	Interior	Coastal	Interior
1.	Boys	3 - 4	ICMR	11.8					
			Present study	10.71± 1.3076	11.26± 1.5851	12.62± 1.4754	12.45± 1.5033	1.91± 0.4737	1.19± 0.6375
		4 - 5	ICMR	13.5					
			Present study	11.04± 1.6821	12.76± 1.3653	13.50± 1.5620	13.58± 1.3941	1.67± 0.5390	0.80± 0.4950
2.	Girls	3 - 4	ICMR	11.2					
			Present study	10.68± 1.6531	10.41± 1.3990	12.35± 1.5890	12.08± 1.1741	1.673± 0.5028	1.67± 0.6595
		4 - 5	ICMR	12.9					
			Present study	11.34± 1.4763	11.47± 1.9303	13.02± 1.4229	13.37± 1.7002	1.68± 0.5316	1.90± 0.7842

** Significant at 1 per cent level

Though we can see difference between initial and final datas in both the areas, it it was painful to note that the children were far below the expected mean weight of ICMR, when we started the study. But the four months intensive feeding programme in the Anganwadi had increased the weight of the children. Thus the mean weight of the children in the final survey is slightly higher than the ICMR standard mean weight of the Indian child. Similari finding of increment in the weight of the children of ICDS block, was noticed in the study of Vasudevan et al (1983).

3. Mid arm circumference of children in relation to ICMR standard

Both 3 - 4 and 4 - 5 year old boys and girls of interior area were far better both initially and finally than the coastal children in the mid arm circumference measurement. But the mean difference of growth during the experimental period is seen higher in coastal areas by overheading the ICMR standard.

The correlation between heights and weights is highly significant indicating that as weight or height increases, the other dependant too, increases (Appendix C). The graphic presentation of mean weight and height of the selected children in comparison with the ICMR standards are shown in Figure 4.

MEAN WEIGHTS AND HEIGHTS OF BOYS AND GIRLS VERSUS ICMR STANDARDS
(coastal and Interior)

Scale: 2.cm : 1year
1.cm : 5.kg

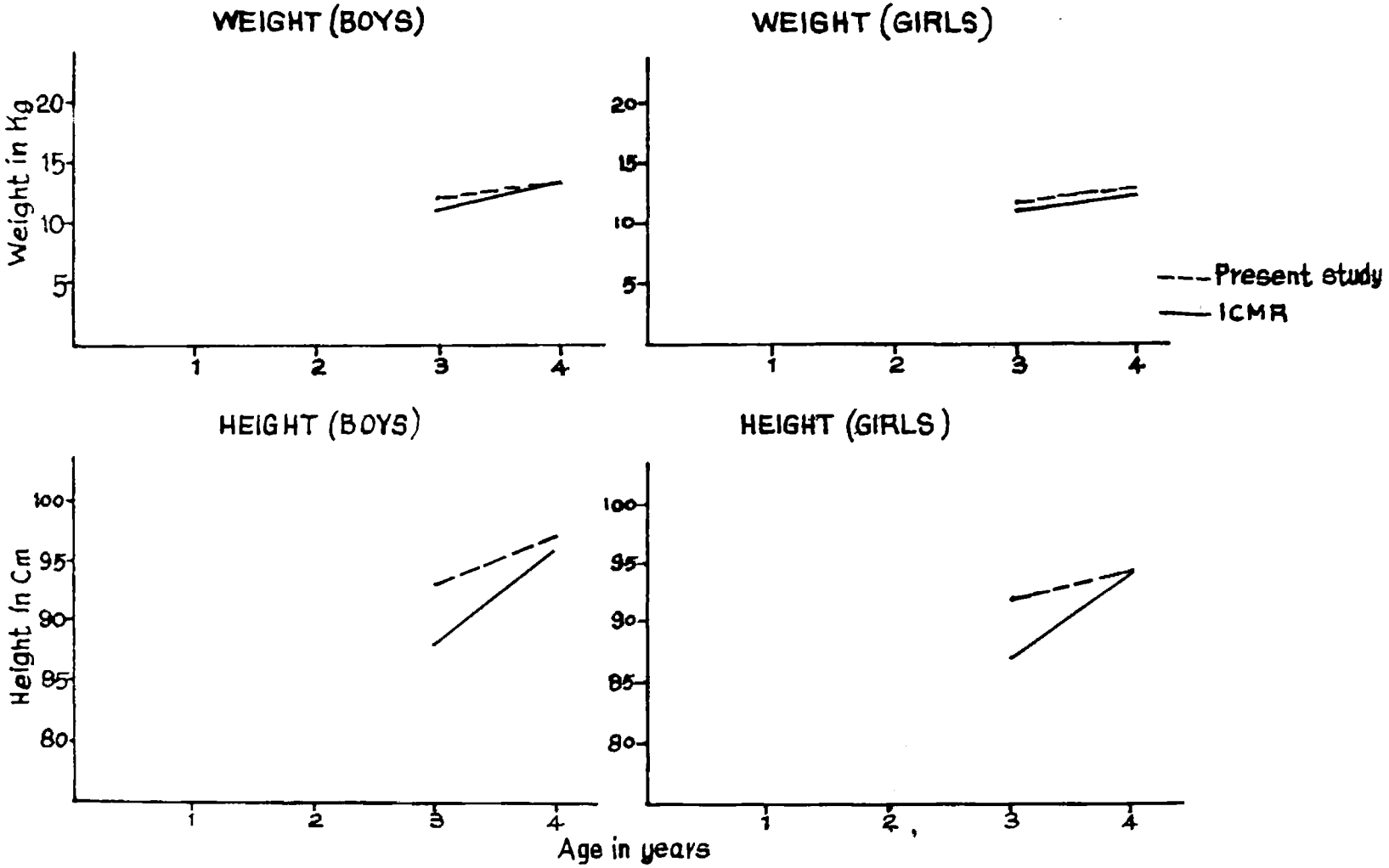


Figure- 4

The apparent differences prevalent between initial and final records of mean height, weight and mid arm circumference, make the investigator to strongly voice that there is a positive correlations between supplementary nutrition given in the Anganwadis and the growth performance of the children.

Grades of malnutrition in children:

Based on the weight of the children corresponding to age, the children were divided into grades namely normal, Grade I, Grade II, Grade III and Grade IV. The following table gives the percentage of the sample according to these grades.

Both initially and finally the grades of the boys in coastal and interior area are superior than that of girls. The data of the present study showed success in terms of decrease in number of severely malnourished children, similarly in an assessment of impact of ICDS programme in Haryana and by Sunderlal et al (1977) and in Assam by Patowari (1983) found that children belonging to Grade II, III and IV had improved their nutritional status. The finding of this study is represented in Figure 3.

THE GRADES OF MALNUTRITION IN SELECTED CHILDREN

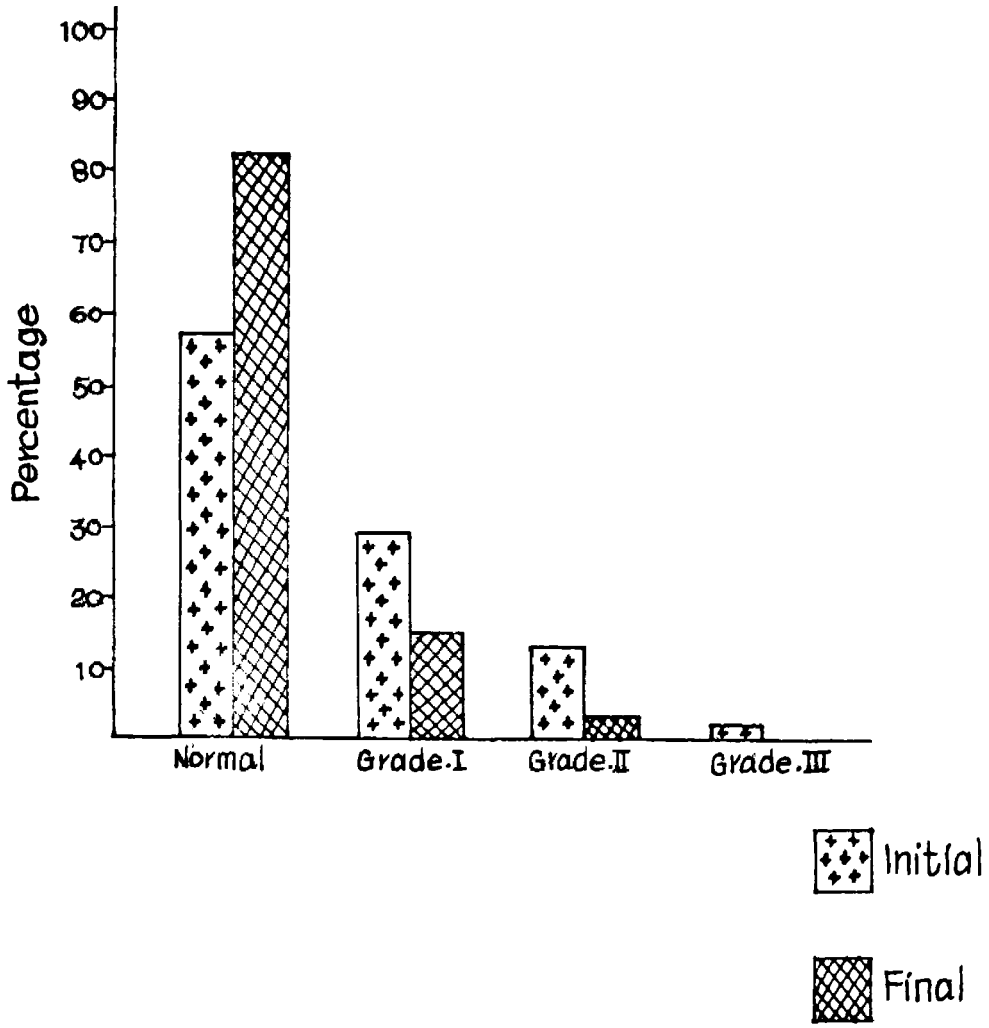


Figure. 5

V. SUMMARY AND CONCLUSION

This study on "The assessment of health status of children in Anganwadi" was conducted with 200 preschool children (100 from coastal and 100 from interior area) at Nattancherry block of Kerala state. The key findings of the study are summarised below:

1. Eight per cent of the families are of small size.
2. More than half of the family members had primary education and few are graduates.
3. The main occupationof the interior area people is coolli work and of the coastal area people is fishing. Though all the families of both the areas earn less than Rs. 300/- per month, the people of interior area income is higher when compared to the coastal area people.
4. All the families spend their maximum income for food in which major amount goes for cereals.
5. Long duration of breast feeding is generally practised in both the areas, mothers have reasoned out for this choice as easily available food, cheap, good for health, protects against disease and also as it is a traditional method.

6. Most of the children are fed 4 times a day. But in coastal areas quite different from the interior area, 36 per cent of children are fed only thrice of which one is the I.C.D.S. supplementary feeding. Boiled fish and ragi pudding are the main complementary food given to the coastal and interior area children respectively. Their main foods are kanji and tapioca. But in the coastal area fish is included in their daily menu.

7. Majority of the children are vaccinated and is significantly higher than our national figures.

8. Respiratory diseases, gastro intestinal and deficiency diseases such as vitamin A and anaemia are more common among children.

9. The personal hygiene is better in the final survey, but in the environmental condition, only little improvements have been noticed.

10. The children have shown much improvement in the height, weight and mid arm circumference. The difference in weights and heights of all children's initial and final records was statistically significant.

11. Much difference is seen in the nutritional grade of children during the study period.

Recommendations:

Based on the results of this study the investigator wishes to give the following recommendations.

1. This scheme should be linked with economic activities (Income generating programmes) so that the family living will be improved.

2. Village level committee of women may be organised to supervise, guide and supplement the effort of the Anganwadi workers.

3. Community fairs, public meetings, group discussions and exhibitions should be organised for propagating the philosophy, programmes and achievements of ICDS.

4. It is an urgent need to plan to have health and non health component to go hand in hand to enable the community to make full use of the ICDS programme.

5. Literatures on the salient features of ICDS should be developed in local and regional languages.

6. Large scale action researches could be carried out further in the field in order to arrive at objective conclusions.

BIBLIOGRAPHY

Abdulla, A.M.
Abraham, S.C.R.
1980

"Malaysia: Country Report". The Proceeding of the Workshop on Breast Feeding and Supplementary Foods, Bangkok Mahidol University, p. 33.

Agarwal, D.R.,
Agoswkar, G.P.,
Katiyar, G.P.
1980

"Morbidity pattern and source of first contact in rural under five children" in Indian Pediatrics Journal of the Indian Academy of Pediatrics, New Delhi: Vol.XVII, No.12, p. 56.

Asuri, P.
1973

Child Care Demonstration Work Book. UNICEF, Delhi, p. 13.

Bai, I.
1981

Comparative Study of Feeding Patterns of Children in Rural ICDS and Urban Non-ICDS Areas. Indian Journal of Pediatrics, New Delhi: Vol. 49, pp. 226 - 227.

Baroosh, R.P.
1979

Role at child welfare agencies in India. International Year of the Child Souvenir, Sri Avinashilingam Home Science Autonomous College for Women, Coimbatore: pp. 25-26.

Basu, R.N.
1979

Immunisation against communicable diseases in Swasth Hindi, New Delhi: p. 72.

Bhatacharya, B.T.
1976

Proceedings of the 13th Biennial Conference of the Home Science Association of India, VHD Central Institute of Home Science, Bangalore: p. 42.

Bhatnagar, K.M.
1982
Population Education in ICDS. A Report of Consultation Meeting, NIPCCD, New Delhi, pp. 81-86.

Bai, S.
1983
"Introduction of Solid Foods in Children. A Study undertaken in an ICDS Block (A.P.)". ICDS Selected Abstracts of Reepearch Papers. All India Institute of Medical Sciences, New Delhi, p.14.

Central Technical Committee
1981
Integrated Child Development Services in India - Objectives, Organisation and Base Line Survey of the Project Population. Indian Institute of Medical Science, New Delhi, Pes. 13, pp. 374 - 384.

Chowdary, D.P.
1980
Child Welfare Mannual. Atma Ram and Sons, Delhi, pp. 1-10.

Chowdary D.P.
1982
Hand Book for Middle Level Training Centres of ICDS. National Institute of Public Cooperation and Child Development, New Delhi pp. 1-3.

Lebre
1979
Children in Tropics. International Children Center, Paris, p. 3.

Deodhar, N.S.
1980
Programmes for Remedy in Child Welfare and Development. Atma Ram and Sons, Delhi: pp. 5-7.

Desai, M.
1979
"International Year of the Child", in Lok Kalyan, New Delhi: Vol.2, No.1, p. 3.

Desai, M.
1979
"Child - A Cherished Trust", in Swasth Hind, New Delhi, pp. 46-47.

Desai, M.
1973
"Proceeding of the Nutrition Society of India". Seminar on Social and Economic Aspect of Nutrition, Cambridge Printing Works, Scashnoore Gate, Hyderabad, Delhi: p. 91.

Devadas, R.P.,
Kamalanathan, G.,
Herbert, V.
1977
"Studies on Special Nutrition Programme(SNP): Growth Study on 1,121 Children receiving the supplement in Coimbatore City", in the Indian Journal of Nutrition and Dietetics, Vol.14, No.5, pp. 123 - 127.

Devadas, R.P.,
Suri, U.,
Easwaran, P.P.
1976
"Incidence of Malnutrition among Selected Preschool Children", in the Indian Journal of Nutrition and Dietetics, Vol.13, No.4, pp. 98-100.

Devadas, R.P.,
Premakumari, S.
1978
"Nutritional Impact of School Lunch Programme on Children", in the Indian Journal of Nutrition and Dietetics, Vol.XV, No.8, pp. 257 - 263.

Devadas, R.P.,
Rajalakshmi, P.
Kaveri, R.
1980
"Influence of family income on the nutritional status of preschool children", in the Indian Journal of Nutrition and Dietetics, Vol.17, p. 237.

Devadas, R.P., 1983 — Inaugural Address in XVI Biennial Conference of Home Science Association of India, held at Pant Nagar, March 19-22.

Dey, I. 1981 — "The unwanted child", in ICCW News Bulletin. New Delhi: Vol.XXIX, No.9, p. 10.

Eliot, G. 1979 — "Quotation" in Sweeth Hind, New Delhi: March/April, p. 76.

Gandhi, I. 1980 — Profile of the child in India - Policies and Programmes. Ministry of Social Welfare, Government of India, Rekha Pvt. Ltd., New Delhi: p. I.

Gandhi, I. 1981 — "Thirty-fourth World Health Assembly Adopts Global Strategy for Health of All", in WHO Chronicle, Geneva: Vol.35, No.4, pp. 118 - 125.

Gandhi, M. 1979 — "The Child in India" in International Year of the Child(Souvenir), Kalaimani Printers, Oppanakara Street, Coimbatore: p. 1-4.

Ghosh, S. 1980 — Priorities in Child Health. Profile of the Child in India, Rekha Printers, New Delhi: pp. 74-89.

Ghosh, S. 1977 — "Nutritional needs of children" in Swasth Hind, New Delhi: Vol.21, pp. 97-100.

Gopalan, C. 1977 — "The challenge of global malnutrition commentary action in nutrition programme", in Proceedings of Joint IUNS/UNICEF/ICMR Working Conference held at NIN, Hyderabad, pp. 23 - 28.

Gunaratne, V.T.H. 1979 — "Protecting health of children need to set up priorities", in Swasth Hind, New Delhi: p. 89.

Gupta, K.B. Walia, B.N.S. 1981 — "Utilisation of health facilities by Rural Children", in the Indian Pediatrics, New Delhi: Vol.18, No.4, p. 287.

Gupta, S.B. Srivastava, B.C. 1983 — Integrated Child Development Service Selected Abstracts of Research Papers. All India Institute of Medical Science, New Delhi: pp. 9-10.

Gyorgy, 1970 — The role of community mothers craft centres in combating malnutrition" in malnutrition a problem of Ecology. Basel S.Karger, New York: pp. 36.

Hooja, V. Mittal, S.K. Verma, R.K. and Ghosh, S. 1976 — Profile of the child in India - Policies and Programmes. Ministry of Social Welfare, Government of India, Rekha Pvt.Ltd., New Delhi: p. 76.

ICMR 1977 — "Studies on pre-school children", in the Indian Council of Medical Research, Technical Report Series, New Delhi, No.26, pp. 14-42.

Jelliffe, D.B. Jelliffe, E.F.P. 1973 — Evaluation of Nutrition Programmes for Preschool children. Stamparijaobrasee, Zagreb, p. 326.

Lonesco 1981 — Fragments of a Journal. ICDS News Bulletin New Delhi, Vol.XXIX, No.4, p. 6.

Mahler, H.
1981

"Health for all by the year 2000", in Indian Journal of Pediatrics, New Delhi, Vol.48, No.388, pp. 69-70.

Mahler, H.
1977

"Immunise and protect your children in World Health Organisation Pamphlet, p. 3.

Mathur, G.P.
1980

"Prevalence of handicapped children and young adults in ICDS Urban Projects Gorakhpur with Special Reference to their Rehabilitation", in Integrated Child Development Services — Selected abstracts of Research Papers. All India Institute of Medical Sciences, New Delhi: p. 15.

Miglani, M.K.
1982

ICDS an over view. ICCW News Bulletin, New Delhi: Vol.30, No.6, p. 1.

Miller, M.
1973

"The neglected years", in Early Childhood (Pamphlet), UNICEF Publication Division, Delhi, p. 5.

Muralidharan, R.
1980

"Pre-school Education", in profile the Child in India, Metha Printers Pvt. Ltd., New Delhi: p. 102.

National Institute of Public Cooperation and Child Development
1983

Manual on Integrated Child Development Services and Functional Literacy for Adult Women Scheme. National Institute of Public Cooperation and Child Development, Delhi: p. 1.

NIPCCD
1983

Manual of Integrated Child Development and functional literacy for adult women schemes. National Institute of Public Cooperation and Child Development, New Delhi: pp. 1-5.

NIPCCD
1982

Introduction in Handbook for Middle level Training Centres of ICDS, NIPCCD, New Delhi, p. 2.

Patowari, A.P.
1983

Evaluation of nutritional and immunisation status of the children in ICDS block of Assam in ICDS selected abstracts of research papers. All India Institute of Medical Sciences, New Delhi: p. 19.

Pellet,
Maarbach
1979

Recommended proportions of foods in home made feeding mixtures in Economic food. Food and Nutrition Vol.7, pp. 201 - 228.

Radhakrishnan, A.
1981

Home Science. New York, Vol.19, No.2, p. 1.

Ranginiprem
1977

Integral Rural Development, Koddal Publishers, Michigan.

Rao, M.P.
1978

"Nutritional status of pre-school children and the related factors", in the Indian Journal of Nutrition and Dietetics, Vol.15, No.7, pp. 233-245.

Rao, N.P.
1976 "Nutritional Status of people of different socio-economic groups in a rural area with special reference to pre-school children", in Ecology of Food and Nutrition, Vol.4, p. 24.

Rao, N.P.
1980 "Statistics on Children", in Profile of the Child in India, Rekha Printers Pvt. Ltd., New Delhi: p. 102.

Rao, S., and Peri, S.
1983 "Preventive health services in tribal ICDS Block in ICDS Selected abstracts of research papers. All India Institute of Health and Nutrition: New Delhi, p. 17.

Ravichandran, S.
1979 "Reaching the deprived children", in Social Welfare, CSWB, Calcutta: Vol.25, No.10, p. 16.

Reddy, S.
1979 "International Year of the Child", in Swasth Hind, New Delhi: February, pp. 46-49.

Salim, S.A.
1981 "Quotation", Health for all by the year 2000. Indian Journal of Paediatrics, New Delhi, Vol.48, No. 395, p. 676.

Saksena, P.N.
1983 "Effects of breast feeding on growth" in Integrated Child Development Services, Selected Abstracts of Research Papers, All India Institute of Medical Sciences, New Delhi: p. 13.

Shankaranand, B.
1980

ICDS Workshop for State Directors of Social Welfare and Health. National Institute of Public Cooperation and Child Development, New Delhi: pp. 2-6.

Singh, D.
1981

Resource book for training workers for Mukhya Sevikas. Family life Education Section, Literacy House, Lucknow: p. III.

Soni, A.L.,
Singh, R.N.
Gupta, B.D.
1980

"Nutritional disorders in rural Rajasthan", in Indian Journal of Pediatrics, New Delhi: Vol.47, pp. 199-202.

Soria, M.C.,
Talija, R.K.,
Mukerjee, B.,
Kaul, K.K.
1975

Indian Pediatrics Journal of the Indian Academy of Pediatrics, New Delhi: Vol.XII, No.9, pp. 36-47

Spurgeon, C.M.
1982

"Quotation", in ICCW News Bulletin New Delhi: Vol.30, No.5, p. 6.

Sundarlal
1983

Assessment of impact of ICDS Programme. Nutritional Study of Pre-school children in Kathura Block(Haryana)" in ICDS Selected Abstracts of Research Papers. Central Committee on Health and Nutrition. All India Institute of Medical Sciences, New Delhi, p. 13.

Swaminathan, M.S.
1980
Inaugural session in ICDS Workshop for the State Directors of Social Welfare and Health. National Institute of Public Cooperation and Child Development, New Delhi: p. 3.

Tandon, B.N.
Mamtani, R.
1982
Involvement of Academicians in ICDS. Report of Consultant Meeting, NIPCCD, New Delhi: pp. 63-67.

Trivedi, I.
1982
"The Importance of Child Health Care", in ICCW News Bulletin, Deendayal Upadhyaya Marg, New Delhi: pp. 2-3.

Trivedi, I.
1982
Editorial Page. ICCW News Bulletin New Delhi: Vol.30, No.6, p. 1.

UNICEF
1979
United Nations Children's Education Fund. A Year for the Child, Kakhagan, Vol.2, No.1, p. 31.

UNICEF
1981
"There are miles to go", in Weekly Edition of the Hindu, Coimbatore: Nov. 15, pp. 18 and 19.

Vasudeva, Y.L.
1982
Health and nutrition education in ICDS. Role of Schools and Social Work and Home Science College in Involvement of Technical Institutions in ICDS. National Institute of Public Cooperation and Child Development, New Delhi: pp. 75-78.

Vasudeva, y.L.
1983
"A comparison of immunization status of children in ICDS and non ICDS Block", in Integrated Child Development Services - Selected Abstracts of Research Paper. Central Committee on Health and Nutrition. All India Institute of Medical Sciences, New Delhi: 1983, p. 11.

Vasudeva, M.K.
1983
ICDS - An attempt to improve health Status of Children through Multi-Sectoral Approach. Integrated Child Development Services — Selected Abstract of Research Papers. All India Institute of Medical Sciences, New Delhi, p. 14.

WHO
1974
"Childhood mortality in America", in WHO Chronicle, Geneva: Vol.28, p. 76.

WHO
1976
"Health Aspect of Human Right", in WHO Chronicle, Geneva: Vol.30, No.9, pp. 347 - 359.

WHO
1980
"Thirty Third World Health Assembly", in WHO Chronicle, Geneva: Vol.34, No. 7/8, pp. 249-257.

Working Group of Social Welfare
1980
"Child Welfare", in Child Welfare Manual, Atma Ram and Son., New Delhi: pp. 98-99.

Yamia, E.
Devi, L.I.
1983
"Study of Two ICDS Projects in Integrated Child Development Services— Selected Abstract of Research Paper. All India Institute of Medical Services, New Delhi: p. 14.

APPENDICES

APPENDIX A

SRI AVINASHILINGAM HOME SCIENCE COLLEGE FOR WOMEN: COIMBATORE-43

INTERVIEW SCHEDULE TO ASSESS THE HEALTH STATUS OF CHILDREN IN ANGANWADIS(SOCIO ECONOMIC DATA)

S.No.: Date:

Coastal: Interior: Village/Ward:

Block/City:

I. Personal Data:

1. Child's name
2. Sex: Male/Female
3. Birth Date
4. Age : Below 1 yr. 1-3 yr. 3-6 yr.
5. Vegetarian/Non Vegetarian

II. Family members:

S.No.	Name of members	Relation to the head of the family	Marital status	Age in years	Education	Occupation	Income per month

III. Other sources of income Rs./month

a) Business earnings

b) Receipts from properties:

1) Land

2) Building

c) Income from investment

d) Allowances from parents/in-laws

e) Other earnings:

Total family income

IV. Monthly expenditure pattern:

S.No.	Items	Rupees spent	Percentage of income
1.	Food		
2.	Clothing		
3.	House rent/taxes		
4.	Education		
5.	Health		
6.	Fuel and light		
7.	Pan Supari and tabacco and alcoholic drinks		
8.	Durable goods(furniture utensils)		
9.	Transport		
10.	Other services		
11.	Remittances(debit repayment)		
12.	Savings		
13.	Recreation		

V. Debts:

S.No.	Source of debit	Amount of debt (in Rs.)	Long term	short term	Purpose	Mode of repayment

VI. Savings:

S.No.	Mode of savings	Frequency of savings			Total amount saved so far
		Weekly Rs.	Monthly Rs.	Yearly Rs.	
1.	Kuri				
2.	Post Office Savings				
3.	Bank Accounts				
4.	Insurance				
5.	Provident Fund				
6.	Government Bonds				
7.	Chit Funds				
8.	Shares				
9.	Others-specify				

VII. Maintaining/accounts for foodexpenditure.
If Yes, in what form?

	Yes			No
	Daily	Weekly		Monthly
Written				
Memory				

VIII. Details of food expenditure:

Foods	Quantity purchased/ obtained/ month	Total cost Rs.	Normal frequency of purchase	Percentage of food expenditure
1. Cereals:				
Raw rice				
Boiled rice				
Wheat				
Tapioca				
Ragi				
2. Pulses:				
Red gram dhal				
Black gram dhal				
Bengal gram dhal				
Horse gram dhal				
Cow gram				
Others(specify)				

3. Roots and tubers:

Potato

Carrot

Yam

Colocasia

Others(specify)

4. Green leafy vegetables:

Amaranthus

Others (specify)

5. Other vegetables:

Brinjal

Beans

Pumkins

Ladies finger

Tomato

Others (specify)

6. Fruits:

Plantain

Guava

Papaya

Others (specify)

7. Nuts and oils:

Coconut oil

Gingelly oil

Groundnut oil

Vanaspathy

Others (specify)

8. Fleshy foods:

Mutton

Fish (fresh)

Fish (Dried)

Chicken

Egg

Beef

Others(specify)

9. Milk and Milk Products:

Milk

Curds

Butter milk

Ghee

10. Sugar and Jaggery:

Sugar

Jaggery

Palm Jaggery

11. Prepared foods:

Biscuits

Pickles

Papads

Sweets

12. Beverages:

Tea

Coffee

Others(specify)

IX. Daily meal pattern of the child

Days	Break-fast	Lunch	Tea	Dinner

X. Length of time of breast feeding and waning food of the children

When was the breast feeding started	Reasons	Age at which weaning		Methods of Weaning and Reasons
		started	Comple-ted	

XI. Foods given under special conditions

Condition	Special foods added	Reasons	Special Foods avoided	Reasons
Infant				
Weaning period				
Pre-school period				

XII. Details regarding the introduction of supplementary foods

Age at which supplementary food introduced	Form in which given	Amount of foods given/ day	Frequency of feeding	Reasons

APPENDIX B

SRI AVINASHILINGAM HOME SCIENCE COLLEGE FOR WOMEN
COIMBATORE 641 043

FACULTY OF CHILD DEVELOPMENT

INTERVIEW SCHEDULE TO ASSESS THE HEALTH STATUS OF CHILDREN IN ANGANWADIS(HEALTH ASPECT)

I. Details regarding health:

1. Immunisation

	I Dose	II Dose	III Dose	Booster I	Booster II
A. Polio					
B. D.P.T.					
C. D.T.					
D. Small pox					
E. B.C.G.					

2. Height (cm)

3. a) Weight (kg)

b) Grade of children

Normal Grade I Grade II Grade III Grade IV

4. Chronic sickness during the past three months

Good Fair Poor

5. Personal hygiene

Dress

Hair

Face

Nose

Good Fair Poor

Eye

Skin (scobiase)

Hands and Nails

Legs

6. Environmental cleanliness

7. Disposal waste

8. Proper water supply

9. Light and ventilation

10. Clinical assessment:

1) Infection

Head:

a) Head ache

b) Trauma

II) Eyes:

a) Strabismus

b) Pain

c) Inflamation

d) Other disturbances

III) Ear

a) Pain

b) Discharge

c) Tinnitus

IV) Nose:

a) Discharge

b) Spistaxis

c) Abstruction

d) Disturbance in olfactory sense

V) Teeth:

a) Extractions

b) Disorders of dentition

c) Abscesses

d) General condition

VI. Mouth:

a) Mouth breathing

b) Sore mouth

c) Sore tongue

d) Caries bleeding gums

VII. Throat:

a) Pain

b) Infection

c) Tonsils

d) Difficulty in swallowing

e) Hear soness

VIII. Respiratory

a) Cold

b) Cough

c) Sputum

d) Stridor

e) Bronchite

f) Asthma

IX. Gastrointestinal

a) Food indiosyncrasies

b) Vomiting

c) Abdominal discomfort pain

d) Constipation

e) Diarrhoea

f) Jaundice

g) Pain in the abdomen

X. Cardiovascular

a) Lysores

b) Palpilation

c) Syncope

XI. Genito urinary

a) Difficulty in passing urine

XII. Musculo Skeletal

a) Weakness

b) Swelling or pain of joint

c) Deformities

d) Fracture

XIII. Nervous

a) Sleep disturbances

b) Fits

c) Tremours

d) Paralysis

XIV. Skin:

a) Eruption

b) Congenital anomalies

c) Itching

d) Pigmentation

e) Erythema

f) Bruising

g) Petechial

XV. Allergic reactions:

a) Asthma

XVI. Accidental:

a) Burns

b) Fractures

XVII. Helminthiasis:

a) Irregular bowel movement

b) Passing blood and mucus

c) Passing worms through rectum

d) Vomitting worms

XVIII. Deficiency:

a) Vitamin A

b) Night blindness

c) Xerophthalmia

d) Bitot's spot

e) Keratomalacia

XIX. Vitamin B

a) Angular stomatitis

b) Glossitis

XX. Iron

a) Anaemia

b) Pale conjunction

c) Atrobic lingual papilla

XXI. Mal nutrition

a) Loss of weight

b) Fatigue

c) Lassitude

d) Restlessness

e) Anorexia

f) Anaemia

XXII. Protein energy

a) Kwashiorkar

b) Marasmus

APPENDIX C

Male/Final/(ht. vs Wt.)

Height(x) / Weight(y)	80–85	85–90	90–95	95–100	100–105	105–110	Total (f)	y	fy	fy^2	fxy
9.5 – 11.0	1	4	1	1			7	-2	-14	28	24
	6	4	2	0							
11.0 – 12.5	4	9	7	3	3		26	-1	-26	26	34
	3	2	1	0	-1						
12.5 – 14.0	1	6	6	16	9	1	39	0	0	0	0
	0	0	0	0	0	0					
14.0 – 15.5	1	1		10	6		18	1	18	18	1
	-3	-2		0	1						
15.5 – 17.0				2	4	4	10	2	20	40	24
				0	2	4					
Total(x) f	y	20	14	32	22	5	100=N		-2	112	83
x	-3	-2	-1	0	1	2	—				
fx	-21	-2	-1	0	22	10	-43				
fx^2	63	80	14	0	22	20	199				
fxy	15	32	9	0	11	16	83				

$$r = \frac{(100 \times 83) - (-43 \times -2)}{\sqrt{((100 \times 199) - (-43)^2) \times ((100 \times 112) - (-2)^2)}} = 8214/14216 = 0.5778^{**}$$

**Significant at P = 0.01 level

Female/Final(ht vs weight)

Height (x) / Weight (y)	80–85	85–90	90–95	95–100	100–105	105–110	Total (f)	y	fy	fy^2	fyx
9.0 – 10.5	1	1	3				5	-2	-10	20	6
	4	2	0								
10–5 – 12.0	3	9	7	1			20	-1	-20	20	14
	2	1	0	-1							
12.0 – 13.5	2	7	14	12	5		40	0	0	0	0
	0	0	0	0	0						
13.5 – 15.0		3	3	9	10	2	27	1	27	27	30
		-1	0	1	2	6					
15.0 – 16.5					3	2	5	2	10	20	24
					4	6					
16.5 – 18		1			1	1	3	3	9	27	12
		-3			4	9					
Total (x) f	6	21	27	22	19	5	N=100				
x	-2	-1	0	1	2	3	**				
fx	-12	-21	0	22	38	15	42				
fx^2	24	21	0	22	76	45	188				
fxy	10	5	0	8	38	25	86				

$$r = \frac{(100 \times 86) - (42 \times 16)}{\sqrt{((100 \times 188) - (42)^2) \times ((100 \times 14) - (16)^2)}} = 7928/13779 = 0.5754^{**}$$

**Significant at P = 0.01 level

Significance of Gain in weight of coastal boys and girls		Mean gain	S.E.	't' & sig.
3 year	Boys	1.91	0.0677	28.213**
3 year	Girls	1.67	0.0726	23.003**
4 year	Boys	1.66	0.0769	21.586**
4 year	Girls	1.68	0.0759	22.134**
Significance of gain in weight of Interior Boys and girls				
3 year	Boys	1.19	0.0911	13.063**
3 year	Girls	1.67	0.0941	17.747**
4 year	Boys	0.80	0.0709	11.315**
4 year	Girls	1.90	0.1120	16.960**
Significance of gain in height of coastal boys and girls				
3 year	Boys	2.26	0.0811	27.867**
3 year	Girls	1.10	0.1050	10.476**
3 year	Boys	1.74	0.0674	25.816**
3 year	Girls	1.22	0.1162	10.499*
Significance of gain in height of Interior boys and girls				
3 year	Boys	1.84	0.0874	21.053**
3 year	Girls	1.06	0.0737	14.383**
4 year	Boys	2.06	0.0888	23.198**
4 year	Girls	1.34	0.1025	13.079**