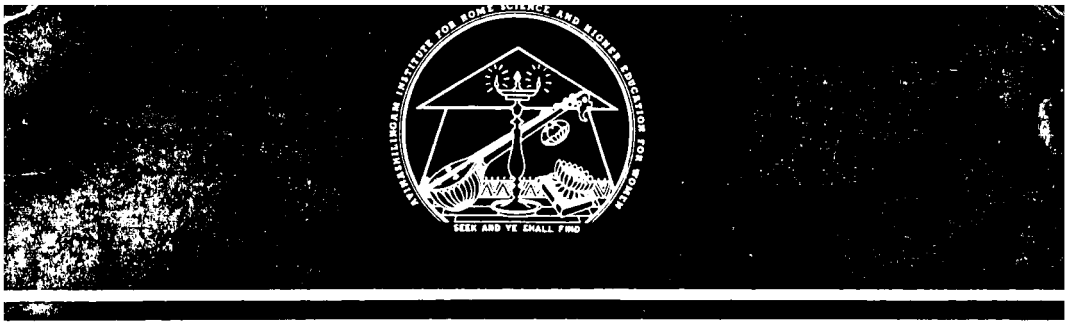
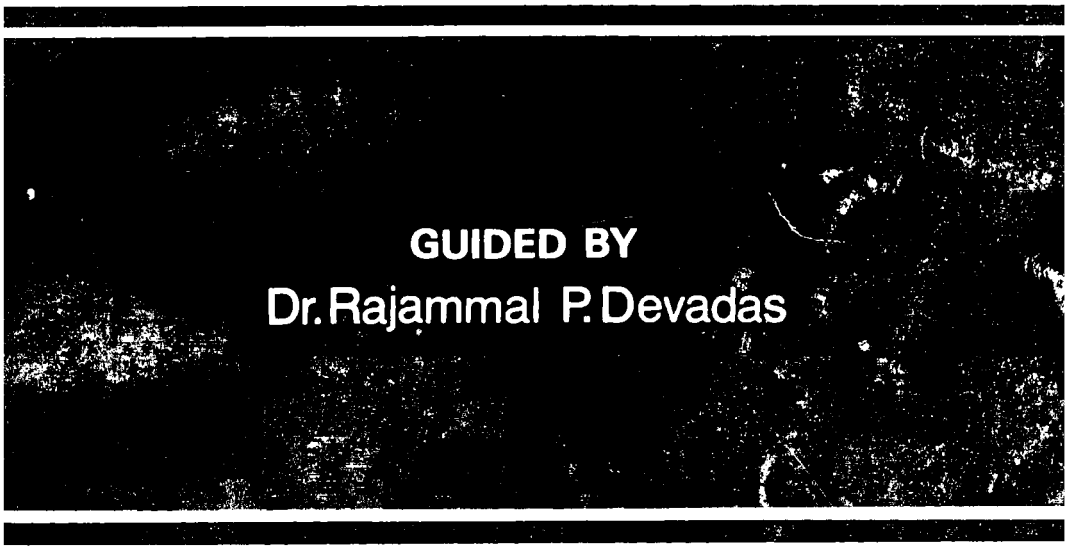
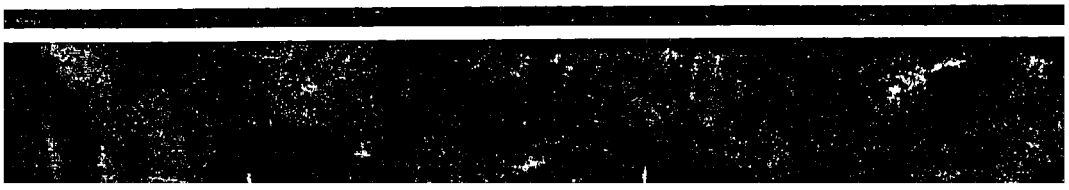


A COMPILATION OF THE SYNOPSES OF Ph.D THESES



AVINASHILINGAM INSTITUTE FOR HOME SCIENCE
AND HIGHER EDUCATION FOR WOMEN

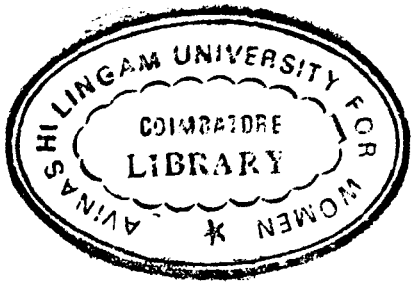
(DEEMED UNIVERSITY)
COIMBATORE-641043



A COMPILATION OF THE SYNOPSES OF Ph.D. THESES

Guided by

Dr. Rajammal P. Devadas
M.A., M.Sc., Ph.D. (Ohio State), D.Sc. (Madras)



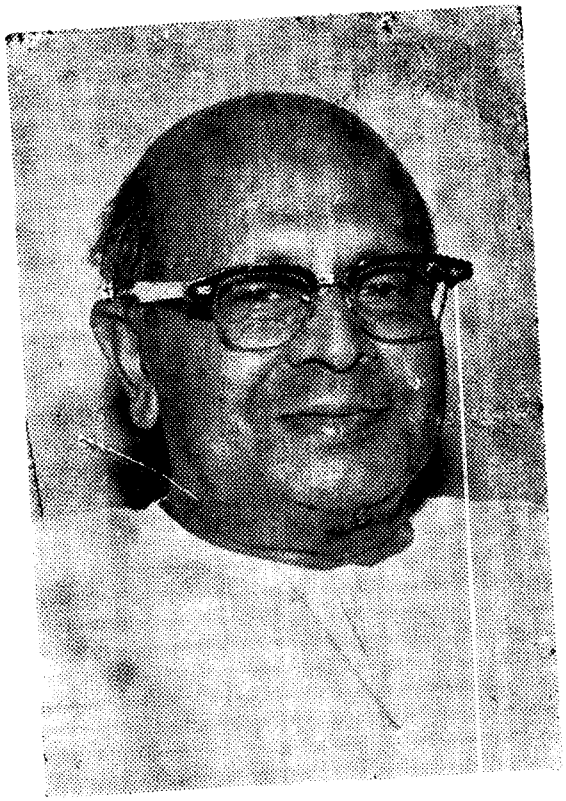
AVINASHILINGAM INSTITUTE FOR HOME SCIENCE AND HIGHER EDUCATION FOR WOMEN
(Deemed University)
COIMBATORE - 641 043

Price : Rs. 45-00

Printed at Saradalaya Press

Dedicated to the Sacred memory of

Padmabhushan Dr. T.S. AVINASHILINGAM



Our Ayya Avargal, who inspired us

GUIDE

Dr. (Mrs.) Rajammal P. Devadas (Padmashree)
M.A., M.Sc., Ph.D. (Ohio State), D.Sc. (Madras)
Vice - Chancellor

Avinashilingam Institute for Home Science and
Higher Education for Women (Deemed University)

FOREWORD

The major objectives of Home Science in Higher Education are to foster the growth, development and well-being of individuals, families and communities utilising the findings and advance in science and technology. Today Home Science occupies a very important role in the fields of education, social welfare, rural development and Women and child development due to the very nature of the discipline. The major areas of Home Science - Family Resource Management, Food Service Management and Dietetics, Food Science and Nutrition, Textiles and Clothing, Human Development and Home Science Extension are the foundation for the development of the family, Community and the nation at large. Hence the discipline lends itself for undertaking need based, community based research. However publications based on indigenous research are very few.

Research is absolutely essential to improve the quality of living of the masses. The research findings when extended to the community for incorporation in the day to day living will render long lasting satisfaction and will pave way for betterment of these masses.

This manual is a compilation of the findings of the research studies conducted by scholars, whom I had the previlege to guide, direct and supervise. The interdisciplinary topics studied by the scholars were significant in that they have immediate relevance to the uplift of the community.

This volume carries synopses of the research work undertaken at the level of the Doctor of Philosophy Degree course. I hope that they will serve as useful references in universities, national institutes, colleges, extension training centres and schools.

With reverential gratitude to our revered Ayya, Founder-Chancellor Dr. T.S. Avinashilingam Avargal, who inspired us throughout his life time, I dedicate this humble volume at his lotus feet.

Rajammal P. Devadas

(Dr. Rajammal P. Devadas)

Textiles and Clothing

Child Development

CONTENTS

Extension Education

INTER DISCIPLINARY

Economics

Tamil

Biochemistry

ADDITION

Family Resource Management

RELEVANCE OF BIOGAS PRODUCTION TO IMPROVEMENT OF RESOURCES IN THE HOME

— *B. Lakshmi Santa Rajagopal (1982)*

Right from the dawn of civilization, the Home has been the nucleus of society and country. It has been instrumental for promoting the welfare and progress of the nation and for transmitting her cultural traditions. The norms of any society are largely the product of inter actions in the homes. The highest aspirations of human mind have been derived from happy and well managed homes (Avinashilingam, 1976).

However homes, the basic units of society which were once strong and well founded are now gradually becoming less effective owing to the complexity of modern living and prodigious developments in science and technology. The global energy crisis with its consequent economic recessions have accentuated the adverse impact of modernization on the homes. Preserving sound homes and well-knit communities demand effective mnagement of the family and community resources.

Home management, the administrative side of dynamic family living, is part and parcel of successful living (Devadas, 1979). Management of the home encompasses all those processes that enable individuals and families to realise their values and achieve their goals through effective use of human and material resources. In this context, utilising the findings of science and technology in the management of resources in the home assumes great importance.

Home management is the art of managing resources, the field which is increasingly becoming challenging. Home management determines the quality of life because of its intellectual components and involvement in augmenting and utilising resources. The nation is facing several crises arising out of shortages of fuel, fertilizer, fodder and foods. It is imperative to conserve resources, avoid wastage and use the waste profitably. Mantell (1975) and Cheremisinoff and Morresi (1976) regard waste as matter and energy, in a less useful form or in a less useful place than one conventionally finds. Our late Prime Minister Smt. Indira Gandhi (1974) stated that the once considered WASTE is the greatest source of WEALTH for renewal of life on this planet and that every material when processed in the right way yields the maximum benefit. This statement has great relevance in the context of acute shortages in resources in the country.

Ecologists have reiterated that irregular waste management results in a variety of health and environmental hazards such as pollution, obnoxious odour, rodent infestation and fire besides the depletion of natural resources (Turner, 1971; Rich, 1973; and Park and Park, 1977). The Khadi and Village Industries Commission (KVIC, 1975), Sathianathan (1975) and Swaminathan (1979) have rightly emphasised the need for intelligent and judicious utilisation of waste by way of 'recycling'. Waste recyclying is the process of transferring waste into new products in such a manner that the original matter may lose their identity and become useful products. The 'Recycling Revolution' at the microlevel is of paramount importance to achieve the national objectives of improving the quality of life of people and safeguarding their environment.

Biogasification involving anaerobic fermentation of organic waste is an accepted appropriate technology for waste recycling. It has far reaching potentials in the techno-economic perspective of the developing country, India. Many countries have shown interest in biogas systems with respect to various objectives namely waste recycling, a renewable source of fuel and bio fertilizer, rural development, pollution control, environmental management, public health and hygiene, and income generation (DaSilva, 1979).

In India, several research organisations are involved today in biogas research. Inspite of the fact that the KVIC which is primarily responsible for the extension of this technology to the community has introduced as many as 72,000 biogas plants (gobar) in the various parts of the country, this achievement appears to be rather meagre when viewed in terms of the long duration of the pioneering work started in the field as early as 1940, the huge amount of organic waste available in the country and the dimensions of the population. On the contrary, the Peoples Republic of China has advanced in her adoption of this technology on a massive scale having nearly 1,000,000 biogas plants, in the task of building up a stable economic system (FAO, 1977 and Seshadri, 1979). This reveals the crucial need for intensive work in India, to make families accept, install and use the low energy-intensive and low materials - intensive technology.

This research study has therefore been undertaken to evaluate the utilities of this technology at the household level as a stepping stone towards wider acceptance of the system with the following objectives:

1. Evaluate the utilitarian aspects of biogas plants by selected households
2. Compare the efficiency of biogas with selected fuels by estimating the time, money and energy expenditure pattern for cooking meals
3. Assess the possibilities of using digested cowdung slurry as a feed component in poultry ration
4. Study the effect of digested cowdung slurry in raising kitchen garden
5. Determine the feasibility of utilising selected household waste for biogas production
6. Judge the benefits and problems involved in adopting biogas technology and
7. Extend knowledge to community for acceptance of biogas technology in improving managerial practices.

Methodology:

A. Survey of households utilising biogas plants:

Using a specially designed interview schedule, the required information on size of biogas plant, source of raw material, utilisation of biogas and biomanure and problems faced and benefits derived from the adoption of biogas technology was elicited from 100 households selected from five districts of Tamil Nadu.

B. Experiments using selected fuels for meal preparation:

Using biogas, indane gas and kerosene as fuels, cooking experiments were conducted by preparing the day's menu for an average family in triplicate, and the daily meals by students residing in the three Home Management Houses for a period of three months. The time required to cook the meals, the quantity of fuel consumed and the cost of fuel were estimated. With the help of a check-list, the opinion of members using the fuels was collected. The comparative efficiency of fuels for cooking in terms of time, fuel and money expended was studied.

C. Experiments on incorporation of digested slurry for poultry feeding :

Following the randomised block design, 160 chicks, 80 male and 80 female were grouped and feeding experiments conducted incorporating the dried digested cowdung slurry in the poultry ration at 5 per cent, 7.5 per cent and 10 per cent levels. The weight increase for the sample during the period of five weeks and the egg production of layers, in relation to feed consumption were studied.

D. Experiments using digested cowdung slurry for raising kitchen garden

A comparison of digested cowdung slurry with poultry manure and inorganic fertilizers was done for growing selected vegetables. The effect of selected manures on plant growth and vegetable production was studied.

E. Experiments using selected household waste for biogas production:

Selected garbage and garden waste were fermented anaerobically on a laboratory scale for producing biogas. The fuel gas production from the selected materials was studied to maximise the use of organic waste for biogas production.

Findings:

The results of these experiments have revealed:

1. the effective use of biogas as fuel for cooking and lighting and the advantages of biogas and biomanure and problems faced, as expressed by the plant owners
2. the comparative efficiency of biogas as fuel for cooking over indane and kerosene in terms of time and fuel consumption, money saved and the sanitation in and around the house
3. the feasibility of incorporating dried digested slurry at 5 per cent level in poultry feed
4. the benefits of utilising digested cowdung slurry and poultry manure in raising kitchen garden and
5. the possibility of utilising selected garbage and garden waste for biogasification.

REFERENCES

1. Avinashilingam, T.S. (1976), Proceedings of the Biennial Conference of the Home Science Association of India, Bangalore.
2. Devadas, R.P. (1970) Home Science and National Development, Home Science and the Nation, National Lectures 1977-78 sponsored by the University Grants Commission, published by the University of Madras.
3. Cheremisinoff, P.N. and Morresi, A.C. (1976) Energy from Solid Waste, New York, Marcel Dekker, INC.,
4. DaSilva, E.J. (1979) Biogas Generation: Developments, Problems and Tasks - An Overview, Bioconversion of Organic Residues for Rural Communities,

Food and Nutrition Bulletin Supplement 2, The United Nations University.

5. FAO Soils Bulletin, (1977) China; Recycling of Organic Wastes in Agriculture. Report on an FAO/UNDP Study tour to the Peoples Republic of China, Rome.

6. Gandhi Indira (1974) ESCAP Report on Workshop on Biogas Technology and Utilisation, New Delhi.

7. Khadi and Village Industries Commission (1975) Gobargas: Why and How, Bombay, Khadi Gramodyog.

8. Mantell, C.L. (1975) Soild Wastes, Origin, Collection, Processing and Disposal, New York, A Wiley Inter Science Publication, John Wiley and Sons,

9. Park, J.E. and Park, K. (1977) Text Book of Preventive and Social Medicine, Jabalpur, India, Banersidas Bharat Publishers.

10. Rich. L.G. (1973) Environmental Systems Engineering, Tokyo, Mc Graw Hill, Inc., Kogkusha Ltd.

11. Sathianathan, M.A. (1975), Biogas Achievements and Challenges, New Delhi Association of Voluntary Agencies for Rural Development.

12. Seshadri, C.V. (1979) Analysis of Bioconversion Systems at the Village Level, Bioconversion of Organic Residues for Rural Communities, Food and Nutrition Bulletin Supplement 2, The United Nations University.

13. Swaminathan, M.S. (1979) 5th Annual Convocation Address at Sri Avinashilingam Home Science College for Women(Autonomous) and Sri Avinashilingam Teachers College for Women, Coimbatore.

14. Turner, C.E., (1971) Personal and Community Health, Saint Louis Mosby Company.

FOOD MANAGERIAL PROBLEMS AND SATISFACTIONS OF EMPLOYED AND UNEMPLOYED MIDDLE CLASS HOMEMAKERS IN NAGPUR CITY

— *Smt. Asha Nimkar*

A survey of the food managerial problems and satisfactions of 150 unemployed and 418 employed middle class homemakers in Nagpur City was conducted. Originally, the design was to have 150 homemakers in each category of employed homemakers. Out of the 450 homemakers in the three categories of employment - teaching, clerical and nursing, 32 had dropped. Employed homemakers from the three particular professions were selected as those professions are the most popular among the working women in Nagpur. A family income ranging from Rs. 500 to Rs. 1400 per month was operationally defined as 'Middle Class' in this investigation. Personal interview method was used for collection of data

The following were the objectives of this investigaton:

1. To study the food management practices, problems and satisfactions of the selected homemakers with specific reference to:
   (a) Planning, purchasing, cleaning, storage and preservation
   (b) Preparing meals
   (c) Preparing meals for special occasions like festivals and presence of guests
   (d) Serving children and adults in health and disease and
   (e) Cleaning after meals
2. To locate the factors which influence food management and
3. To make appropriate recommendations for
   (a) Solving the problems located and
   (b) Further research in food management

General Information of the Families :

The average age of the unemployed homemakers was 34 years and that of the employed homemakers 33 years. Thus no difference was found in the average age of the unemployed and employed homemakers. A large majority of 78 per cent of the homemakers was

in the age range of 21 to 40 years. Out of the total sample of 568 homemakers, a large majority namely 95 per cent, had some education, 66 per cent of the unemployed and 99.8 per cent of the employed homemakers had education beyond nineth standard. The percentage of widowed, divorced or separated was more among the unemployed category. The average size of the family was five. The employed homemakers had small size families with one or two children. There were more employed homemakers without children than unemployed. The number of homemakers with one or two children was also high among the employed homemakers. Forty to fifty three per cent of all the categories except telephone operators (62 per cent) had the highest percentage of children in the age range 0 to 5 years.

Seventy seven per cent of the unemployed homemakers and 59 per cent of the employed homemakers were from the nuclear type of families. Eighty two per cent of the husbands in both the unemployed and employed categories were engaged in various salaried jobs. The average monthly income of the families of the unemployed and employed homemakers was Rs. 712 and Rs. 856 respectively. A sum of Rs. 200-300 Rs. 300-400 and Rs 400-500 were spent on food by families in the income ranges Rs. 500-800, Rs. 800-1100 and Rs. 1100-1400 respectively.

All the 418 employed homemakers were in full time employment. Among these, 80 per cent held permanent jobs. Fifty per cent of the employed homemakers covered a distannce of 1 to 3 kilometers to reach the workplace; 23 per cent 3 to 5 kilometers and 12 per cent more than six kilometers for reaching the place of work and returning. Thirty three per cent of the homemakers spent 20 minutes, 33 per cent 21 to 40 minutes, and 14 per cent between one hour to two and a half hours in travelling. Bus and riksha were the transport used commonly.

Findings regarding Practices, Problems and Satisfactions:

Planning : Menus were planned personally by 68 and 76 per cent of the unemployed and employed homemakers respectively. Other members of the family were not involved much in this activity. For 90 percent each of the unemployed and employed homemakers, nutritional needs, availability of foods and equipment, variety, availability of resources and the likes and dislikes of individuals in the family were the considerations for planning menus. It is indeed encouraging to note that a large majority of the homemakers planned their menus.

Only mental planning was done by all the homemakers for planning the daily meals. Planning menus for festivals and parties was also mostly mental. More homemakers tended to make written planning for parties than for festivals. This was less common among unemployed than employed homemakers. This may be because of the need for employed homemakers to manage the parties and festivals within the limited time available. Among the employed homemakers, more than 90 per cent of the telephone operators and nurses did not bother about written planning.

Planning menus 'just before cooking' was more common than planning menus 'A day/s' or 'A few hours' in advance for daily meals among both the unemployed and employed homemakers. A very large percentage, over 90 per cent, planned menus a day/s in advance for festivals and parties. The reason may be that festivals and parties required elaborate planning and these are special occasions which should be organised properly. These findings are encouraging because planning ensures success in management.

The problems faced in planning menus were: 'Planning within the budget', 'Putting the plan into action', 'Rising prices', 'Rigid food habits', 'Lack of time' and 'Non-availability of food commodities'. Twenty six and 29 per cent of unemployed and employed homemakers faced problems regarding planning menus. Outside employment of the homemakers restricts the time available for home management activities. Successful planning requires resourcefulness and calls for better discipline although some factors are beyond their control. Teachers in more number faced these problems than other categories of employed homemakers. This may be because they have to carry school work to home and spend some time on it. Regardless of the mode of planning menus, 100 per cent of the unemployed and 81 per cent of the employed homemakers without problems expressed satisfaction, 84 per cent of the unemployed and 66 per cent of the employed homemakers who faced problems also had expressed satisfaction. This indicates that the homemakers accept the problems as a motivation for further action. As life is challenged with problems and motivation for further action, satisfaction results.

Planning Purchasing : Fifty nine per cent of all the homemakers (unemployed and employed) planned their purchases alone. Thirty three per cent of the homemakers planned the purchasing jointly with their husbands. Planning by other members was negligible. The quantities of food items to be purchased and the brands were included in the list of purchasing by 84 and 71 per cent of the unemployed and employed

homemakers respectively. This list was used by 88 per cent of the homemakers as an aid to memory while 14 to 41 per cent had mentioned other particulars also in the list such 'as possible substitution of the commodity and cleaned or uncleaned commodity'. The lists were referred for the purpose of grains and grocery. However no market list was made regarding vegetables by 90 per cent of the homemakers. Ten per cent homemakers had listed vegetables probably because the homemakers were better managers. Occasionally children were sent to buy vegetables.

The problems faced by the homemakers in planning purchasing were: 'Forget items while making a list' 'Prices not known while making a list', 'Tastes of members differ', 'Limited money' and 'commodities not available'. Forty five per cent of the unemployed and 55 per cent of the employed homemakers faced problems regarding making purchasing list, the difference between them being insignificant. Within the categories of employed homemakers, 63 and 62 per cent clerks and nurses faced problems. Employed homemakers faced all the five problems while the unemployed category faced only two problems: 'Forgetting items while making a list' and 'Prices not known while making a list'.

Buying :

More unemployed than employed homemakers personally purchased food commodities except vegetables and fleshy foods. Employed home makers purchased vegetables and fleshy foods on their way home from office to save an extra trip. The homemakers went for purchases, because they wanted to share the husband's work, liked to buy and could manage purchasing. Husbands were, however, the main buying agents of all the food commodities. Husband and homemaker together wen to purchase grains more in the case of employed homemakers whereas they went together more in case of unemployed homemakers to buy grocery. Employed homemakers received more help from servants as against the unemployed homemakers except in buying grocery. It was surprising to note that the unemployed homemakers received more help from children than the employed homemakers.

Among both the unemployed and employed homemakers, grains were purchased more commonly from retail shops than from wholesalers. In the purchase of vegetables, wholesale shops were used more commonly than retail shops. The use of home delivery facility in buying grains and grocery was least common among both the unemployed and employed homemakers. Milk was invariably delivered at the door of the individual. Monthly purchasing was most common among the unemployed and employed homemakers for grains and grocery. Vegetables were bought twice a week or even more frequently.

The problems faced in buying food commodities were: 'Lack of time', 'Bad quality of commodities', 'Managing children' and' High cost'. There was no statistical difference between the number of unemployed and employed homemakers who faced these problems. 'Lack of time' and 'Bad quality' were more frequently mentioned by the homemakers than other problems. Among the categories of employed homemakers, more clerks and nurses faced problems due to their duty hours.

Cleaning :

Eighty six per cent of unemployed and 69 per cent of employed homemakers cleaned the grains personally. The help received for this task from other members was negligible. However, the employed homemakers received more help from other members and servants in cleaning food commodities. Among both the unemployed and employed homemakers, grains were cleaned mostly when required. Grocery, however, was cleaned after it was bought. Seventy one and 55 per cent of the unemployed and employed homemakers respectively cleaned groceries immediately after purchasing. Vegetables were mostly cleaned when required just before cooking Leafy vegetables which were susceptible to wilt are consumed first.

The problems faced in cleaning food commodities have been classified as: 'Tiring,' 'No time' and 'Managing children while cleaning'. Statistically no significant difference was found among the unemployed and employed homemakers in cleaning grains and grocery. However, this difference was significant in cleaning vegetables. More employed homemakers faced problems in cleaning grains, grocery and vegetables than the unemployed homemakers. The problem of time was frequently mentioned by the employed homemakers particularly clerks and nurses. Nurses always faced the problem of time due to split duty hours.

Storage :

The problems faced by homemakers regarding storage are classified as: 'Infestation', 'Wastage', 'Milk gets spoilt' and 'Time consuming process'. Eighty per cent of the employed homemakers faced problems in storage against 74 per cent of the unemployed homemakers. However, this difference was statistically not significant. Fifty four per cent of the unemployed homemakers and 41 per cent of the employed homemakers faced problems of insects, rodents and vermin which cause wastage of food. Food commodities were spoilt either due to lack of storage facilities or acute summer of Nagpur. Morning and duty hours created problems in the storage for 82 per cent of homemakers.

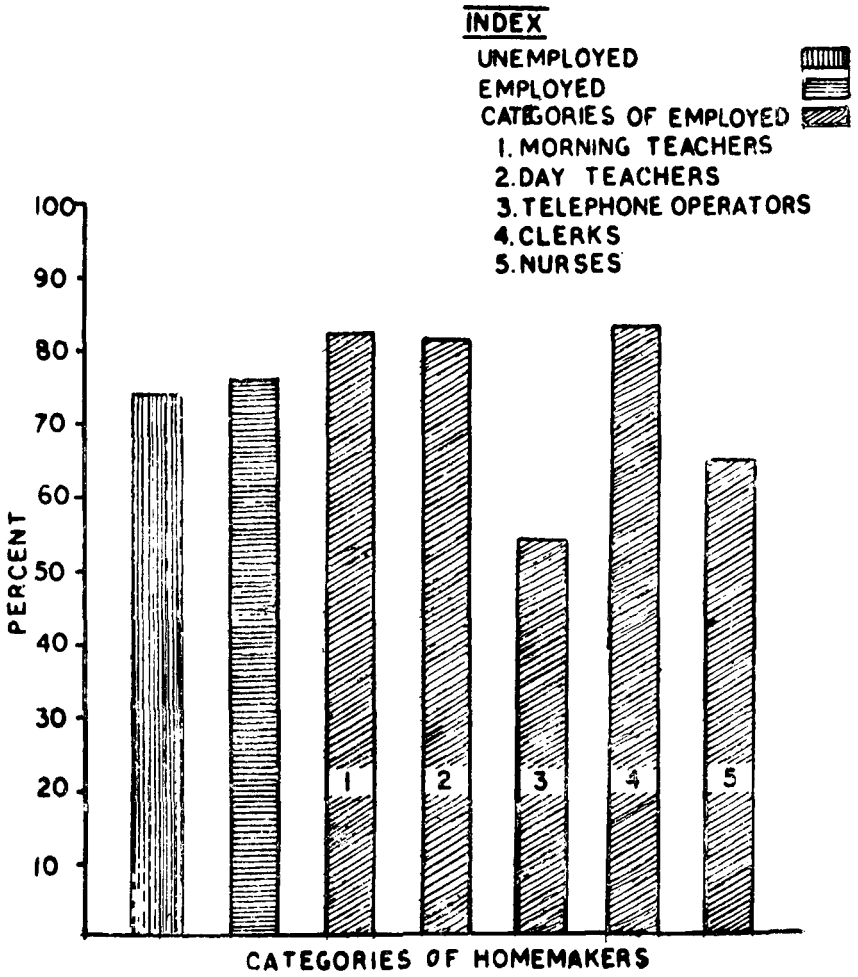


Fig. 1

Preservation :

The foods preserved at home were jams and murabbas, pickles and papad, vada etc. Ninety per cent of the homemakers preserved these foods at home. The problems faced by the homemakers regarding preservation are: 'Need to work during holidays or night only', 'Tiring and time consuming', 'Help from neighbours required', 'Planning required' and 'Costly readymade food'. There is no difference between the number of unemployed and employed homemakers who faced problems. Among the categories of employed homemakers, more nurses faced problems. This might be a result of their split duties. About one third of the homemakers faced problems regarding preservation, indicating that preservation was an essential activity. It helped the homemakers in better food management.

Cooking :

The general meal pattern consisted of morning tea, lunch, afternoon tea, snacks and dinner. Breakfast was not common. Only 32 and 45 per cent of unemployed and employed homemakers respectively had breakfast. Eighty five and 71 per cent of unemployed and employed homemakers respectively prepared the meals personally. The help received from children, 'others' and servants for cooking was insignificant. However, the help from servants and 'others' was more in the case of employed than unemployed homemakers. The problems faced in cooking daily meals are: 'Lack of time', 'Timings of duty', 'Too much time in the kitchen', 'Managing children', 'Managing guests', 'Money limitations', 'Likes and dislikes', and 'Tiresomeness'. Sixty one per cent of the employed and 37 per cent of the unemployed homemakers faced problems. This difference was significant 'Lack of time' was faced by significantly more number of employed than unemployed homemakers. All the problems in cooking were not faced by all the categories of employed homemakers. (Fig - 2)

Irrespective of duty hours, all categories of employed homemaker faced problems regarding cooking meals. More unemployed and employed homemakers in nuclear families faced problems than those homemakers in extended families. There were a few employed homemakers who faced problems irrespective of the type of the family to which they belonged. Those homemakers with low income had to face more problems. Number of children made no difference for the homemakers, unemployed and employed - who faced problems. Similarly the size of the family had no definite relationship with cooking activity. The age of the youngest child was definitely related to this activity. The younger the children, the more were the problems faced by the homemakers.

Out of the homemakers who faced problems in cooking meals cent per cent of the unemployed and 71 per cent of the employed homemakers expressed satisfaction. Because they attached more importance to earning, they were satisfied even if they had problems. This compensated the problems arising out of the cooking activity in particular and food management in general.

Cooking for Special Occasions:

The special occasions considered were for festivals and entertaining guests. The problems faced by the homemakers regarding cooking for festivals were: 'Getting up early', 'Adjusting duty hours mutually', 'Taking leave or going late to the office', 'Have to be satisfied with

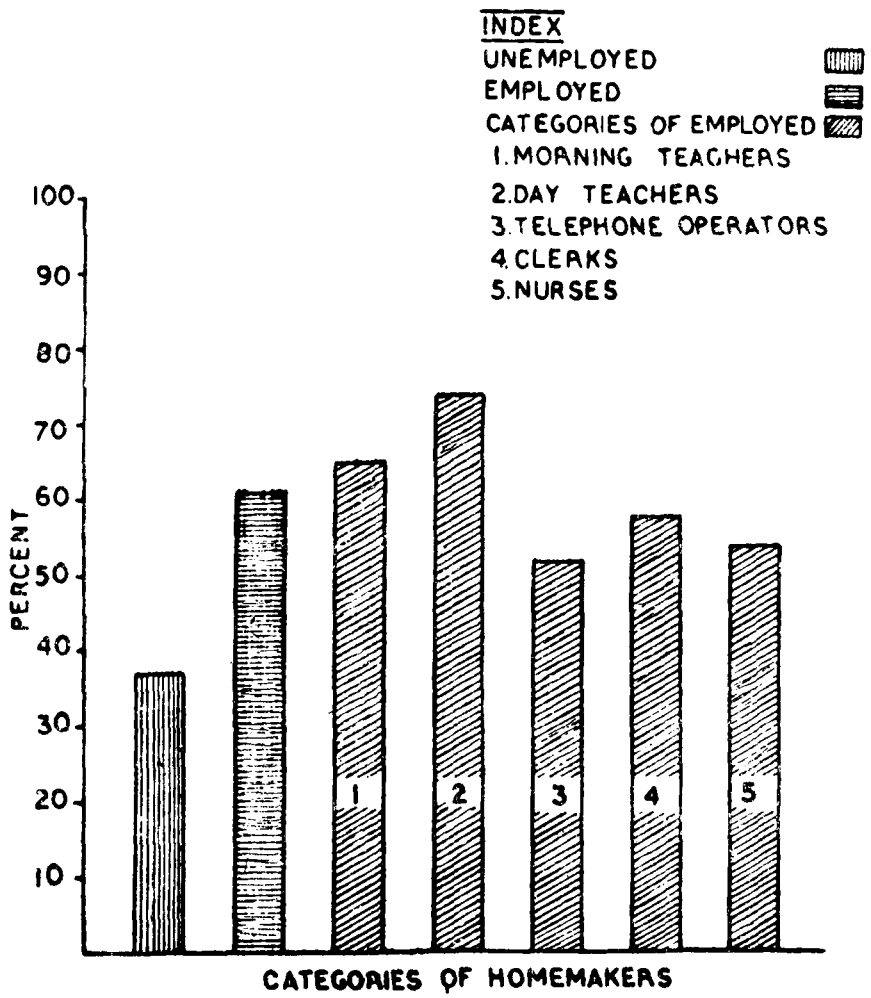


Fig. 2

simple sweets', 'Cannot celebrate festivals', 'Ready made sweets are costly', and 'Help from other members required'. Fifty two per cent of employed and 25 per cent of unemployed homemakers faced problems. Unemployed homemakers did not have to face as many problems as that of employed homemakers. Within the categories of employed homemakers, nurses faced maximum problems and day teachers faced minimum problems. Thus duty hours were positively correlated with the problems faced in cooking festival meals. Shift and split duties created problems for 60 and 79 per cent of the homemakers respectively. Homemakers in nuclear families found it difficult to organise special occasions. Those with low income had to face problems in more numbers. Irrespective of the income ranges the number of employed homemakers who faced problems exceeded the number of unemployed

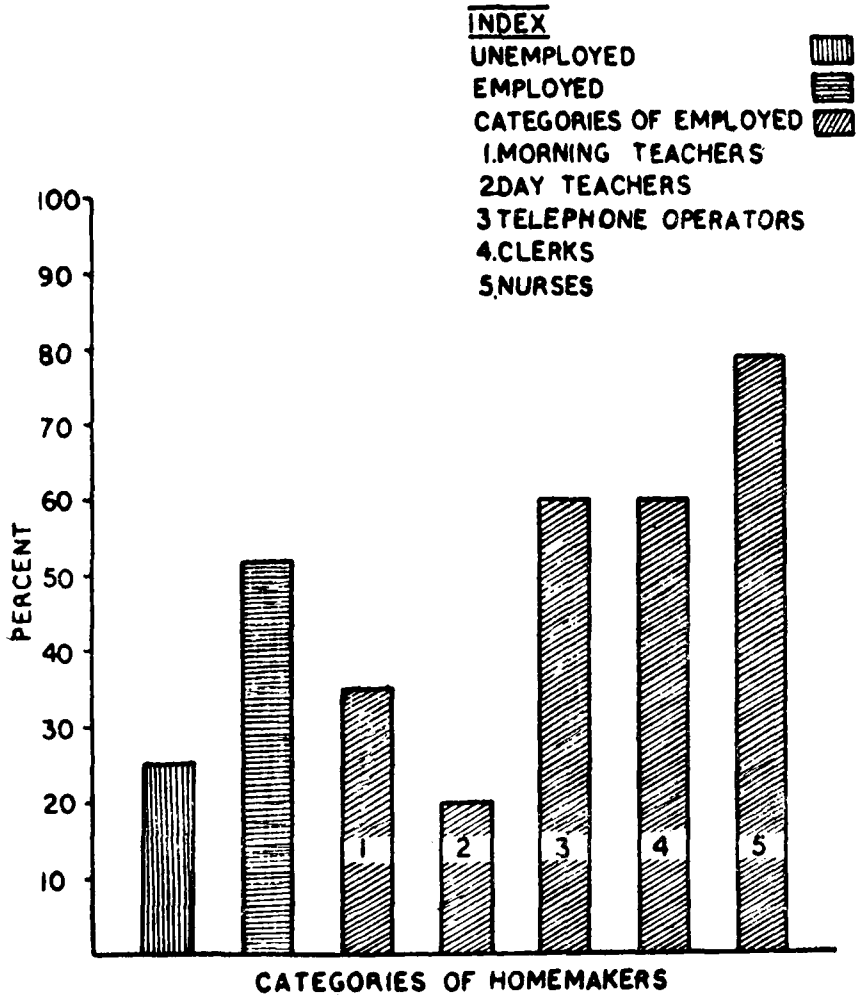


Fig. 3

homemakers. Cent per cent of unemployed and 42 per cent of employed homemakers with problems expressed satisfaction. Employment is a contributory factor towards dissatisfactions or expressing neutral responses.

Cooking for guests created problems such as: 'Cooking of more quantity without help', 'Taking leave or going late to work or office', and 'Cannot entertain guests properly'. The number of employed homemakers who faced individual problems significantly exceeded their counterparts among unemployed homemakers. In total number also the employed homemakers met with more problems. Duty hours had a significant effect on the number of homemakers stating the problems, particularly among the nurses. More nurses faced problems regarding cooking for guests.

The nuclear family created problems for more number of unemployed and employed homemakers in contrast to the homemakers in extended families. With younger children, the problems faced by the homemakers were more. In the employed category, as the number of children increased, the number of homemakers facing problems increased. Cent per cent of the unemployed homemakers with problems were satisfied in contrast to 41 per cent of the employed category.

Serving in Health and Disease:

Over 90 per cent of the unemployed homemakers served food to the members of the family personally, whereas only 25 per cent of the employed homemakers could serve personally. Therefore, help from others was received by more of the employed homemakers in serving. Nurses received maximum help. Duty hours had a prominent role to play as homemakers with day duties served personally more often. The problems faced by the homemakers regarding serving in health and disease were: 'Cannot look after feeding personally', 'Work of the servant not satisfactory', 'Too much time in the kitchen for serving', 'Lack of time', 'Activities get delayed' and 'Have to take leave'. The number of employed homemakers (40 per cent) significantly exceeded the number of unemployed homemakers (17 per cent) while serving in health. However, while serving in disease, the difference was statistically not significant. Shift duties created problems for 84 per cent of the telephone operators. More unemployed and employed homemakers in nuclear families faced problems than the unemployed and employed homemakers in extended families while serving in health. More number of homemakers with younger children (below five) faced problems in feeding in health and disease than the homemakers with elder children (above five). Homemakers having more children faced more problems. Having more children is a source of problem regarding serving in health.

Similarly shift duties, nuclear families and large number of children had a close impact on the activity of serving in disease. These factors created problems for a majority of the homemakers. Employment created dissatisfaction amongst the employed homemakers regarding serving in health and also in disease. Employed homemakers could not cater to the needs of the members of the family while serving in health and disease.

Only employed homemakers faced problems regarding feeding the the babies (below one year of age). The problems faced in feeding

babies were: 'Making preparations before leaving for job', 'Help of neighbours', and 'Feeding by servants'. Employed homemakers in nuclear as well as extended families having shift and split duties faced problems. This indicates that help or no help makes no difference so far as problems of homemakers are concerned. Only 18 per cent of the employed homemakers with problems expressed satisfaction. This shows that a majority of the homemakers were not satisfied with the management of this activity of feeding babies.

Cleaning after Meals:

Eighty two and 52 per cent respectively of the unemployed and employed homemakers personally cleaned the kitchen. More homemakers cleaned kitchen than utensils personally. Help from servants was received by 94 and 21 per cent of employed homemakers for cleaning utensil and kitchen respectively. Not much help was received from other members of the family in cleaning after meals. The problems faced regarding cleaning after meals were: 'It is tiresome', 'Servants irregular or absent', and 'Employment of the homemaker'. Forty five and 40 per cent of the employed homemakers faced problems in contrast to 36 and 13 per cent of the unemployed homemakers in cleaning utensils and kitchen respectively. Among all the categories of employed homemakers cleaning kitchen created more problems than cleaning utensils.

Nuclear families was the source of problems for both the unemployed and employed homemakers. Employment and not the type of family is the main source of problems. The age of the youngest child was related to this activity of cleaning after meals. The younger the child, the more the problems faced by the homemakers. Help from children could not aid the homemakers in facing the problem of cleaning the kitchen.

The suggestions and recommendations are based on general discussion. Written planning needs to be emphasized to reach the goals in food management. Suitable propaganda measures such as women's and children's magazines, radio and extension services should be exploited for the same. Cleaned and packeted food commodities should be supplied by the shopkeepers through home delivery on easy and convenient terms. Mahila Mandals and other women's organizations should run consumer cooperative societies to fulfil the genuine needs of the consumers. Women should be united to raise the voice against adulteration and spiralling prices. The facilities like subsidized lunch, office buses, residence near the place of work of the homemakers and creches are the prime needs of the day. Similarly facilities in the home such as

labour saving devices, help from the members of the family and the use of simplified menus should be given preference and top priority. Home Science education should be given to the girls as they are the future homemakers. In the Fifth Five Year Plan priority is given to women in need of care, through a programme of functional literacy. This will help them function better as housewives, to take good care of children and family. This is an encouraging step for the betterment of family life.

Some of the important aspects which have been beyond the scope. of the present study may be outlined as useful suggestions for further investigation. These are :

1. The present study covered only middly income group. Lower and higher income groups may also be studied.

2. The present study covered only the homemakers from urban area. Rural homemakers may also be studied.

3. Study of 'time-costs' of various activities in food management, may be of immense value.

A STUDY ON THE MOTIVATIONAL FACTORS IN LIMITING THE SIZE OF THE FAMILY

— *R. Rajalakshmi*

The nation today is challenged by many problems. Among these, the twin symbiotic problems of population and food pose a serious threat to all her developmental efforts (Gopalan, 1973; Thiagarajan, 1973; Sanjivi, 1974 and Maniben, 1974). Economic growth involves qualitative changes in human resources, which in turn, are the main vehicles for the circular causative force in the cumulative conditions of the process of economic change. The economic conditions of the country can be improved by regulating her population in size and quality. Population control is of utmost importance to national planning and development (Chandrasekar, 1972; Mehra, 1972; Devadas, 1972; Adiseshiah, 1973; Parthasarathy, 1974 and Bhattacharya, 1975).

The rapid growth of population is due to not just excessive births, but because of man's victory over death and disease. According to the Census report of 1951, the population was 361 million. In 1961, it went upto 439 million, and in 1971 to 548 million-(1975). These figures reveal clearly the rapidity of the shooting-up size of our population and the rate of its growth. The birth rate has come down by eight per cent only, leaving the rate of growth at about 2.5 per cent per annum. As a result, there are 23.78 million births a year and only 9.28 million to our deaths, resulting in an annual increase of 14.5 million to our already crowded huge population (Lulla, 1975 and Kamalakshi, 1975). This means that the birth rate has not fallen sufficiently to nullify the fall in the death rate. The average expectation of life of an Indian in 1946 was 32 years. It was raised to 45 years and to 53 years in 1971 (Kulkarni, 1974; Gandhi, 1975 and Rale, 1975). Thus the number of mouths to be fed is increasing in leaps and bounds everyday.

The population of India is increasing at an alarming rate. Unless the current rate of population growth is checked, the situation will become totally out of control by the end of this centuary. Family planning is a vital necessity in this respect. Gandhi (1975) says, "we need it not because we are against more children but because we want every child to have the best opportunity possible in life. We want our children to inherit a better world than our own. This is the aim of every father and mother and this is the objective of planned development". There-

fore, Family Planning can be understood only in the light of the good of the individual family. In this context, Family Planning means the regulation and spacing of the births of children in a family so as to ensure the optimum health of parents and children (Lambo, 1974; Abdul, 1974 and Chandrasekar, 1976).

Family Planning is truly a people's programme. Its success rests on individual citizens. They have to be approached, persuaded, prompted, motivated and helped, to practise Family Planning. Our country, so marked by mass illiteracy and poverty, can not leave it to individual motivation because such motivation comes only after a certain level of literacy or economic betterment has already been reached. Out of 100 million couples in the reproductive age-group, only about 16 million couples are practising family planning in one form or the other. Hence motivation of individual couple is low, and concentracted efforts are necessary to actuate them to practice family planning methods successfully. Realising the urgent need for motivation towards family planning, the study has been undertaken with a view to find out the knowledge, attitude, decisions and practices of selected urban and rural homemakers. An attempt has also been made to study the factors that motivated them to adopt family planning or to have a small family.

The literature relevant for the study has been reviewed under the following headings:-

A. The crisis of population explosion.
   1. World Perspective.
   2. Indian Context.

B. Importance of Family Planning to National Welfare.

C. Definition and Meaning of Family Planning.

D. Family Planning Programme in India
   1. Origin and History of Family Planning.
   2. Objectives of Family Planning Programme.
   3. Family Planning Methods followed in India.
   4. Achievements in the Five Year Plans

E. Attitude towards Family Planning in India.

F. Factors affecting the adoption of Family Planning:-

1. Promoting Factors.
2. Debilitating Factors.

and G. Population Education for India :-

1. Definition and meaning of population education.
2. Objectives of population education.
3. Need for population education in India.

Methodology

The sample for the study comprised of 500 urban and 500 rural homemakers selected on the basis of the following criteria:-

1. The homemaker should be in the reproductive age group (15-45 Years).

2. The homemaker should have atleast one living child. Interview was the chief method advocated for carrying out this research study. Coimbatore town and four nearby villages of Perriyanayakan Palayam block and one village from Perur block were selected as the area for the study.

Practice of family planning in relation to the following factors were analysed:-

1. Age of the homemaker.
2. Type of family.
3. Area of residence.
4. Educational status of the homemakers and
5. Socio-economic status of the households.

General Background Information

The selected urban and rural homemakers possessed certain characteristics in common, while they differed in some. It was noted that 306 urban (61 per cent) and 332 rural (66 per cent) heads of the households were below 40 years of age, (ranging from 18-40 years) whereas of 330 urban (66 per cent) and 346 rural homemakers (69.2 per cent) were 35 years and below (ranging from 16 to 35 years).

A majority of 415 urban (83 per cent) households and 364 (72.8 per cent) rural households are belonging to the nuclear family which speaks of the trend towards disintegration of joint family system in India.

In urban area, only 35 (7 per cent) heads of the households and 56 (11.2 per cent) homemakers were found to be illiterates. Seventy six (17.2 per cent) rural husbands and 99 (19.8 per cent) rural homemakers were illiterates.

Irrespective of the area of residence, the most predominent religion was Hinduism - 310 (62 per cent) families in the urban and 385 (77 per cent) in the rural area respectively.

In general, 103 (20.6 per cent) urban families as against 286 (57.2 per cent) rural families belonged to the low income group. Three hundred and thirty six (67.2 per cent) urban households and 196 (39.2 per cent) rural households were in the middle income group. The remaining 61 (12.2 per cent) urban and 18 (3.6 per cent) rural families were from the high income group.

Regarding the occupational pattern of the selected families, 216 (43.2 per cent) urban heads of the households as against 102 (20.2 per cent) rural husbands were engaged in professional and business field. While 212 (42.4 per cent) urban and 142 (28.2 per cent) rural husbands were employed as clerical and manual workers. In the rural, 210 (42 per cent) heads of the families were engaged in agriculture as against 39 (7.8 per cent) urban husbands.

In regard to family size, 281 (56.2 per cent) urban and 181 (36.2 per cent) rural families had 3 or less number of children.

Knowledge of Population Problem

Three hundred and ninety three (78.6 per cent) urban homemakers and 278 (55 6 per cent) rural homemakers mentioned "population explosion" as the most critical problem facing our nation. "Rise in price" was the most pressing problem as reported by 425 (85 per cent) urban and 410 (82 per cent) rural homemakers respectively. These facts bring to the lime-light that irrespective of the urban or rural, a majority of the homemakers were aware of India's population problem.

Knowledge of Family Planning

Majority of the urban 485 (97 per cent) and 476 (95.2 per cent) rural homemakers respectively were aware of Family Planning. Out of them, 100 (20 per cent) urban and 65 (13 per cent) rural homemakers were not able to define the term ' family planning". The most common definition given by 223 (44.6 per cent) urban and 249 (49.8 per cent) rural homemakers was "family planning means restricting family size".

The most popular family planning methods known to 490 (98 per cent) urban and 483 (96.5 per cent) rural housewives were tubectomy and vasectomy. None of them mentioned about diaphgram, foam tablets and jelly.

Information on family planning was received mainly through medical sources such as doctors and nurses among the urban homemakers, whereas the rural homemakers obtained information on family planning chiefly through neighbours, friends and relatives. Mass media was found to be a better source for the urban homemakers.

Attitude towards Family Planning

Four hundred and twenty five (85 per cent) urban and 388 rural (77.6 per cent) homemakers expressed their desire to have 2 to 3 children as the ideal number for an Indian family. There was not much difference in the attitudes towards family size among the selected urban and rural homemakers. Majority of them preferred to have small family (1-3 children).

It was found that 448 (89.6 percent) urban and 410 (82 per cent) rural homemakers had favourable attitude towards family planning. Tnirty two (6.4 per cent) urban and 41 rural (8.2 per cent) homemakers had unfavourable attitude towards family planning. The remaining 20 (4 per cent) urban and 49 (9.8 percent) rural homemakers had no definite attitude towards family planning. In general, both the urban and rural homemakers had favourable attitude towards family planning.

Practice of Family Planning

A marked difference was found in the practice of family planning among the urban and rural households. Two hundred and sixty eight (53.6 per cent) urban families and 180 (36 per cent) rural families had practised or were practising family planning in one way or the other.

The most common family planning method practised by the households was sterilisation - Tubectomy in urban 84 (31.1 per cent) households and vasectomy in 62 (34.4 per cent) rural families. Loop was equally practised by both urban and rural homemakers - 31 (11.6 per cent) urban homemakers and 29 (16.1 per cent) rural homemakers.

Practice of Family Planning and related factors

The family planning practice in both urban and rural areas was found to be associated with age and educational level of the homemaker; family income, occupational status of their husbands, type of family, religion, area of residence and living condition. All these associations were found to be statistically significant.

A higher percentage of the middle - aged homemakers (30 - 39) years of age) practised family planning in one way or the other compared to the younger (below 30 years and older age group (40 - 44 years)

As the literacy level of the homemaker increased, proportion of practising family planning also increased.

It was observed that family planning adoption was more among the middle income group.

A majority of skilled and semi-skilled heads of the households practised family planning whereas majority of the unskilled and unemployed were not practising family planning.

Family planning was practised at a higher percentage by nuclear families and in joint family it was found to be less.

A majority of Hindus and Christians were found to be practising family planning while only a small proportion of Muslims were practising family planning.

A larger proportion of urban couples were practising family planning compared to rural counterparts.

It was revealed that the family planning practice was increasing with increasing level of living condition.

REFERENCES

1. Gopalan, C. "Planning for Better Nutrition' . *Yojana.* 1973, August 15, XVIII, 14, pp. 52-53.
2. Thiyagarajan, K. "Family Planning and Population Education". *Swasth Hind.* July 1973, XX, 4, p. 1.

3. Sanjivi, K.S. "The Small Family". *Planning Indian Health.* Orient Longman, Bombay 1971, p. 68.

4. Maniben, K. "Trade Union responsibility". *Seminar* 1974, 1975, p. 16-18.

5. Chandrasekar, S. "Population Growth Infant Mortality and Family Planning in India". *Infant Mortality, Population Growth and Family Planning.* George Allen & Unwin Ltd., London: 1972, Chap. VI, pp. 251 to 253.

6. Mehra, T.S. "Population Education". *The Indian Family in the Change and Challenge of the Seventies.* Sterling Publishers, Jullundar: 1972, Chap. 14 pp. 171-75.

7. Devadas, Rajammal, P. "The Concept of Planning for better Family Living". *The Indian Journal of Home Science*, October, 1972, 6, 2, p. 92.

8. Adiseshiah, Malcom, S. "An Alternative Strategy for the hour. Bulletin - Madras Development Seminar Series, Feb. 1973, III, 2, pp. 132-34.

9. Parthasarathy, N.R. ' Problems of Too many". *Swasth Hind*, January 1974, XVII, pp. 4-6.

10. Bhattacharya, Vivek. "Challenge of Population Explosion in rural India". Khadhi Gramdyog. Nov. 1975, XIII, 21, pp. 113-19.

11. Government of India, Ministry of Information and Broadcasting, Compiled by the research and Reference Division, *India - A reference annual 1975.* New Delhi. May 1975, pp. 85-87.

12. Lulla, B.P. "Place of Population Education in Teacher Training Programme". Guest in Education, Jan. 1975, XII, 1, p. 34.

13. Kamalakshi, S. "Population Education" *Sovenir and Hand Book.* National Seminar on the role of women in Education in India. The society for the promotion of Education in India, Madras 1975, 3rd Oct. to 8th October, pp.10-11.

14. Kulkarni, V.B. "Population and Food". *Carriers Digest*, August 1974, p. 635.

15. Gandhi, Indira, India - The Speeches and Reminiscants of Indira Gandhi, Rupa & Co., Calcutta, 1975, p. 77.

16. Rale, J.R. "Population Growth, Food and Social Change in India". *Explorations in the Family and other Essays.*

17. Lambo, Adeoye. "World Population Year - right to health". *World Health*, April, 1974, p.4.

18. Abdul, Coran, R. "Health Benefits for mother and Child" *World Health*, Jan. 1974, p. 13.

19. Chandrasekar, S. "State's Power to Restrict Families". *The Hindu*, June 2, 1976, p. 6.

COMPARATIVE STUDY OF THREE DIFFERENT TYPES OF MIXERS AND GRINDERS WITH REGARD TO TIME, MOTION, ENERGY AND COST

— *Asha Patwardhan (1976)*

Numerous activities demand the time of the modern homemaker. Purchasing goods, managing all the resources, care of children, preparation of food, maintenance of cleanliness of the house, making and mending clothes, laundering and fulfilling the personal and social obligations of the family and a multitude of other homemaking activities keep her engaged all the time. Unless she is sklilful in managing her resources of time, energy and money, she will find her tasks nerve - wrecking and exhausting, instead of being joyful and creative.

Science and technology have opened new vistas in the area of household equipment. Practical equipment will help not only to simplify the jobs, but also to reduce time, cutting down the number of motions and movements, or improving the types of motions required for specific tasks. Therefore, a homemaker, inorder to get satisfaction from the use of equipment, needs to have some knowledge about the properties of the materials used in their construction, since certain qualities are necessary for efficiency and durability of the equipment. It is also important that the homemaker has a full understanding about the performance of various types of commonly used household equipments.

In India, although varieties of inexpensive labour saving equipments are used, only very few studies have been conducted to evaluate them in terms of their use and efficiency. For numerous traditional Indian food preparations, a variety of grinding and mixing equipments are used.

In view of the many different types of mixers and grinders available in the market, there is need to study their efficiency. Hence this study was conducted to investigate the performance of a few selected commonly used household mixers and grinders-traditional, mechanical and electrical in terms of the time, cost, motion and energy involved in their operation with the following specific objectives :

To assess and compare :

1. The energy required while operating
2. The time and movements involved in their operation
3. The prices
4. Ease of operation, cleaning and assembling and
5. The overall efficiency

Methodology

Based on the preliminary survey conducted involving 300 home makers to find out the commonly used and preferred mixers and grinders, a small hand churner (traditional), a rotary beater (mechanical) and mixer (electrical) were selected for the experimental study from among the mixers.

Under grinders a stone grinder (traditional), a hand rotated grinder (mechanical) and an electrical blender/mixer (electrical) were selected.

Four different recipes were selected for each-grinding and mixing activity. These recipes were selected so as to represent cooked, uncooked, dry, wet and liquid foods from standard recipes. The quantities of the ingredients taken for each recipe were enough for a family of four adults.

S.No.	Selected recipes employing Mixers	Grinders
1.	Milk shake	Meat (kabab)
2.	Cooked dal	Masala powder
3.	Butter milk	Soaked dal (vada)
4.	Omelette	Puran

Standardization of the conditions for the preparation of mixing and grinding recipes

Time taken for individual preparation depends, upon the required consistency of the recipe, and burner heat. While using pressure cooker only the left hand side burner of the gas stove, on 'full' was used which supplies gas at the rate of 0.285 kg/hour. While frying kabab, wadas and omelette the flame was lowered. The time taken for preparation was noted down. This procedure was repeated five times and the total time taken for mixing and grinding was standardized.

Conducting the experiments

Six homemakers were selected for conducting the study. The pilot study proved that the energy consumption among the different subjects, while operating the three types of mixers and grinders, were not significant. Hence one subject from among them, was selected for performing the experiments.

A score card was implemented to judge the colour, texture, taste, flavour, appearance, doneness and consistency of individual products. The scores were designed on a five point scale and accordingly each quality was graded by the scorer. The descriptions ranged from superior to inferior on the five point scales.

Similarly to judge objectively, the palatability of various recipes a taste panel was selected.

Measuring the performance of mixers and grinders with reference to time, movements, energy consumption and palatability

Time for actual mixing or grinding, time for cleaning the mixers and grinders and time for assembling the mixers and grinders were noted using a stop watch.

For noting the hand movements involved while performing the activities an operation chart was used.

For the determination of oxygen consumption, kofranyi Michaelis respirometer and Beckman's oxygen analyser were used. Before performing the task the subject was fitted with the kofranyi Michaelis respirometer. The pulse rate, blood pressure and respiration of the subject were noted before and after completion of the activity.

Findings

The findings of the study are presented under the following heads :

1. Survey of the mixers and grinders commonly used and their characteristics.
2. The performance of the selected mixers and grinders.

1. Survey of the mixers and grinders

From among the 300 homemakers surveyed 43, 36 and 20 per cent preferred the traditional, mechanical and electrical types of mixers respectively. Similarly 58, 26 and 16 per cent of the homemakers preferred the traditional, mechanical and electrical types of grinders respectively. The survey revealed that the traditional type of mixers and grinders were the most popular.

The cost range of traditional grinders ranged between 0.50 Ps.-Rs. 25/-., mechanical mixers between Rs. 7/- Rs. 54/- and electrical mixers between Rs. 180/-Rs. 450/-

The cost range of traditional grinders ranged between Rs. 2-25/- mechanical grinders between Rs. 10-60/- and electrical grinders between Rs. 50-600/-

The survey revealed the mechanical type to be most popular among mixers and traditional type to be most popular among grinders.

A binary point diagram showing relation between popularity and actual distribution of various types of mixers indicated that although the traditional mixers have higher distribution, their popularity is comparatively low, where as the mechanical mixers have their distribution almost equal to the popularity count. The electric mixers have less distribution compared to their popularity.

Similarly correlation of the popularity and the actual distribution of the three types of grinders, showed the traditional grinder as most popular and its distribution also the largest. The mechanical grinder showed almost ideal distribution and popularity pattern. The electric mixers have less distribution compared to their popularity. The study revealed electrical grinders as neither popular nor their distribution.

2. Performance of the selected mixers and grinders

a. Finance aspect

The electrical mixers and grinders were found to be most expensive among the three types studied. Though no financial outlay is required while operating the traditional and mechanical equipments, electrical mixers and grinders involved the expenditure of electric current The cost of maintenance using 'surf' was found to be negligible.

b. Time aspect

The time required for mixing, cleaning and assembling the equipments, were noted for the mixers and grinders under study.

The electrical mixer took the minimum time for mixing of all recipes, but it took more time for cleaning and also for assembling because of its structure.

On the contrary the electrical grinder took maximum time for grinding because of its small capacity, followed by traditional grinder. Mechanical grinder took minimum time for grinding but took more time for cleaning and assembling.

c. Hand movements

Electrical mixer and grinder took the minimum number of hand movements while traditional mixer and grinder took maximum movements. Statistical analysis using 'T' test proved that the differences might be highly significant at both levels of significance for both experiments using mixers and grinders.

d. Correlation and suitability of the selected equipment

The recipes were evaluated for palatability. The palatability scores included appearance, colour, flavour and taste as common parameters for both mixers and grinders In addition consistency for mixers and texture for grinders were also included.

Table I and II present the average scores awarded for palatability for the recipes prepared by using mixers and grinders respectively.

TABLE I

AVERAGE SCORES FOR PALATABILITY FOR THE RECIPES PREPARED BY USING MIXERS

Parameters	Traditional	Mechanical	Electrical
Appearance	4.02	3.90	4.08
Colour	4.27	4.10	4.19
Flavour	3.89	3.60	3.85
Taste	4.09	3.92	3.72
Consistency	4.13	4.14	3.97
Average	4.08	3.93	3.96

TABLE II

AVERAGE SCORES AWARDED FOR PALATABILITY FOR THE RECIPES PREPARED BY USING VARIOUS GRINDERS

Parameters	Traditional	Mechanical	Electrical
Appearance	3.41	3.67	3.43
Colour	3.81	3.99	3.82
Flavour	3.67	3.63	3.70
Taste	3.80	3.83	3.88
Texture	3.58	4.14	3.04
Average	3.65	3.85	3.58

Based on these scores an attempt was made to correlate the various values obtained during the study.

e. Energy consumption

Electrical mixers and grinders proved to be the most efficient using less oxygen for performance as compared to the mechanical and traditional mixers.

Based on the values obtained by considering the oxygen consumed by the subject while preparing the recipe and the time taken to prepare it, the magnitude of energy utilised for the recipe in each case was calculated. The energy consumption was denoted as $\mathcal{E}E = AxB$, where

A = total time in seconds to prepare the recipe

B = Oxygen consumedin ml/sec.

Since the selection of a particular equipment shall depend on two major factors-palatability and energy consumption, the performance of the equipment shall be directly proportional to the 'P' value - "palatability index"-and would be inversely proportional to the energy consumed in preparing the recipe. The ratio of $P/\mathcal{E}E$ would indicate the performance of the equipment in relation to a particular recipe prepared.

The values of ratio $P/\mathcal{E}E$ plotted against the selected values indicated, electrical mixers to be the best among the three for all recipes. The same plotted for grinders indicated that there is not a significant variation in the values for all the recipes using various grinders.

f. Suitability Index

SI denotes the performance of an equipment. It is directly proportional to the palatability and inversely proportional to the energy consumed At the same time the suitability / performance shall be directly proportional to the Cost Index, indicating more suitability with higher difference in the income and the cost of equipment. The study revealed electrical mixers and grinders to be suitable for families in the income range between Rs. 900-1200/- per month. Irrespective of the income groups the traditional and mechanical mixers and grinders were found to be best suited to specific recipes like dhal, buttermilk (using mixers) and puran (using grinders).

Conclusion

The electric mixer and grinder were adjudged as the best in performance in all respects as far as time, hand movements and energy consumption were concerned except for their initial cost.

Recommendations

The following suggestions were put forth by the investigator for future thought.

1. Cost of electrical equipments should be minimised.
2. Time thus saved (using electrical equipment) by the homemakers should be productively and creatively utilised.
3. Innovations need to be brought out in the field of equipment to suit Indian homes, Indian recipes and ISI specifications.

MOTIVATING RURAL FAMILIES TOWARDS IMPROVED FUEL MANAGEMENT PRACTICES

— *L.S. Sathyavathi (1987)*

The three national problems facing India today are food, fertilisers and fuel. While concerted efforts have been made to meet the challenges of food and fertilisers over a long period, the problem of fuel has come to the lime light only recently, consequent to the world wide energy crisis.

Energy crisis is a problem that calls for the utmost efforts of the Government at the highest level and of the common man at the lowest level. India, as several other developing countries, is hard hit by the energy crisis. The energy problem of the domestic sector is a complex one, having implications on the life of the community. Considering the rural bias of the nation, India's energy problem should be studied in the context of the 80 per cent of the population living in her 6,00,000 villages.

An analysis of the energy consumption indicates that firewood has been the conventional source of energy, meeting 87 per cent of the domestic fuel needs. The problem of fuel wood is more menacing than is usually realised and unless adequate measures are taken. the fuel wood supply will be critical by the year 2000 AD. An additional 2000 millions or more will then be facing similar critical shortage. (Lokras and Kumar 1983; Salariya and Jindal, 1983; and Tata Energy Research Inttitute, 1983).

The availablity of firewood for cooking is also taking a very serious turn. Out of the 685 million people in the country 600 millions use wood for fuel because of its cheap and easy availabiity (Relwani, 1984). The nation requires 7.5 million tonnes of fuel wood annually whereas the production is only 1.4 million tonnes taking into account all available forest resources.

Besides fuel wood, another commonly used fuel in the rural households is animal dung in the form of the form of dried cakes. It is estimated that over 30 per cent of the 980 million tonnes of cattle, dung produced in India are burnt away for fuel thus reducting the availabilty of organic manure.

While efforts are taken by the government to improve the forest resources through Social Forestry Schemes, alternative fuels are also urgently needed to take the pressure off from the rural poor to find firewood for domestic use. The time has come when one has to search for alternate non conventional sources of energy in the household sector to solve the fuel problem.

Science and Technology find relevance in solving the problems of the day today life of the common man. The challenges before science are to open avenues for solving problems of the rural poor, to improve that existing practices with object of increasing the output and to eliminate drudgery through optimum use of available resources. In response to the appeal made by our late Prime Minister of India, Smt. Indira Gandhi to develop indigenous technology in the rural area, the Department of Science and Technology, Government of India has identified measures to alleviate the drudgery of Indian women and meet the energy crisis in the domestic sector. The status report prepared by the Department of Science and Technology places emphasis on such technology. Several researches have been undertaken to develop improved cookstoves, smokeless chulah, solar cookers and biogas designs since they are the most appropriate devices needed in the Indian households, (Perumal, 1983)

The ordinary 5000 years old household open chulah is a highly inefficient device and has an extremely low thermal efficiency. An improvement in the efficiency of the chulahs can reduce half the nation's present consumption of firewood. The use of smokeless chulah will also make the women folk healthy and also increase their life span.

Besides improving the cook stoves there is need to find out appropriate alternative energy sources for cooking. Biogas technology gives an ideal fuel and valuable manure for an agricultural country like India with high cattle population.

Solar energy, seems to be the appropriate option among the alternate sources of energy. It is our largest and ultimate non fossil, non nuclear energy source. India receives plenty of sunshine for almost eight months in a year and the geographical location of the country (7° to 37° North latitude) has a large potential for solar energy utilisation.

Transfer of appropriate technologies to the Indian Villages is a major challenge and if done efficiently it will solve the problems of energy crisis to a great extent. To achieve this end, research should be linked with suitable non formal programmes for the target groups, to motivate them for adoption.

Methodology

The methodology followed for this study consisted of the following steps :

A. Studying the fuel management practices in the selected villages.

The villages in Karamadai Panchayat Union of Coimbatore District were selected for the project. A total of 914 households spread in 12 villages in this area were selected for this aspect of the study. The findings of the survey brought out the felt needs of the rural homemakers with regard to fuel management.

B. Selecting Appropriate Fuel Technologies to be introduced

Based on the felt needs of the community, the investigator identified three improved fuel saving techniques as appropriate to alleviate the drudgery due to faulty fuel practices. They are as follows :

— Removing the drudgery of smoke by introducing 'Improved Chulah' known as smokeless chulah.

— Utilising the abundant cowdung available for producing biogas by setting up biogas plants.

— Developing an awareness among the rural families regarding the use of solar energy for cooking.

C. Selecting the Specific Devices to be Introduced

Several designs of smokeless chulah, biogas plants and solar cookers are propagated in the country to suit different local conditions. Preliminary experiments were conducted by the investigator to select appropriate design for introduction in the selected rural households. The following devices have been selected.

1. 'Avinashilingam' model smokeless chulah
2. Fixed dome model biogas plant and
3. Box type solar cooker

D. Creating Awareness on Improved Fuel Technologies among the Rural Families.

Home visits were made to the households to discuss with housewives the problems in fuel management and the importance of improving

the chulahs, adopting biogas technology and using solar cookers. Exhibition, demonstrations and field visits were organised to impart the knowledge.

As a result of the motivation programme 200 families came forward to adopt smokeless chulah and 40 families for solar cookers. Twenty families applied to the BDO, Karamadai Panchayat Union for loan for construction of biogas plants.

E. Evaluating the Impact of the Adoption of these Improved Fuel Management Practices

The 200 homemakers who received the smokeless chulah, 40 homemakers who were using solar cooker and the households who constructed the Fixed dome biogas plants were interviewed to elicit information regarding the performance of these devices, benefits obtained, problems faced and suggestions for further improvement.

F. Assessing the Performance of the Smokeless Chulah, Biogas and Solar Cookers

Smokeless chulah

Since the assessment of the efficiency of the fuel using smokeless chulah involved scientific record keeping and careful administration, out of the 200 families, 50 were located based on the educational background of the homemaker and interest evinced by her in maintaining records on smokeless chulah.

Six kilograms of firewood from the stock stored were weighed and given separately to the 50 homemakers before they installed the smokeless chulah. They were instructed to use fuel from the weighed stock for that day. This was repeated for a period of three days by all the homemakers. The homemakers were instructed to follow the same procedure for a period of three days, to quantify the firewood needed and the time taken for cooking after installing the smokeless chulah.

Biogas

In order to record the quantum of biogas required to prepare a day's menu a gas flow meter (INSREF IR 08 wet type) was used. Homemakers who adopted a routine normal menu of breakfast, lunch, tea

and dinner were chosen to assess the sufficiency of biogas for cooking. The experiment was conducted for nine days (3 days per household) in three selected households. The time taken for preparing each meal was recorded. The mean biogas requirement for a day's menu for family was calculated by taking the average for three days.

Solar cookers

A suitable menu was drawn and given to ten selected homemakers who had shown great interest in using the solar cookers.

Results and Discussion

The major findings of the study are discussed under the following heads :

A. Smokeless chulah

The smokeless chulahs were given to 200 families at Karamadai, for their installation and use. After three months the 200 homemakers who had received the smokeless chulahs were interviewed to elicit their opinions about the newly constructed chulahs, using a schedule. Table I presents the time saved with the use of smokeless chulah.

TABLE I
TIME SAVED WITH THE USE OF SMOKELESS CHULAH

Activity	Mean time expenditure per family per day		
	In ordinary chulah (in minutes)	In smokeless chulah (in minutes)	Difference
Cooking food	199.24	167.18	32.06
Cleaning utensils	14.8	8.08	6.72
Total	214.04	175.26	38.78

It was interesting to note that the mean saving of time for a homemaker in cooking food and cleaning cooking utensils amounted to be 38.78 minutes per day or 236 hours per annum which the homemakers may utilised for productive purpose.

2. The mean per capita saving effected in fuelwood used as a result of adopting smokeless chulahs amounted to be 0.130 kg./day per person for the families. Taking into account the average size of the rural household for Tamil Nadu (4.46) the saving of fuel per family per annum was estimated (0.130 kg.x4.46x365) days to be 211.627 kg. The saving of firewood effected by using smokeless chulah is amounted to 212 kg. per family per annum. A sum of Rs. 170/- can be saved per annum.

3. The advantages of using smokeless chulah as elicited from the homemakers are given in Table II.

TABLE II
ADVANTAGES OF USING SMOKELESS CHULAH

Advantages	Percentage of homemakers starting N. 200
Eliminates smoke from the kitchen	100
Keeps the kitchen wall clean at lower cost	100
Lends for the use of all types of fuels	100
Gives soot free utensils	99
Saves time in cleaning utensils	99
Foster better family relationship	97
Helps to prepare extra items	97
Saves time in meal preparation	96
Saves fuel wood	96
Simple Technology	95
Cheaper cost of construction	94
Reduces the attention given to the chulah	94
Removes eye strain	93
Removes the drudgery in cooking	92
Minimises time spent in fuel collection	75

All the homemakers spontaneously mentioned the benefit of smoke free kitchen which enabled them to perform cooking in hygienic and pleasant atmosphere. Providing opportunities for all the family members to remain inside the multipurpose room, this simple device helped to develop better family relationship.

4. The fuel consumption for a family of five using biogas is given in the Table III.

TABLE III
COMPARISON OF FUEL CONSUMPTION PER FAMILY PER ANNUM WHILE USING FIREWOOD AND BIOGAS

Fuel	Percapita consumption per day	Consumption per family per day	Consumption per family per annum	Money in Rs.
Firewood (kg.)	1.06	5.30	1934.5	1,547.60
Biogas (litres)	238	1190	434350 or 434.35 cu.m.	1,525.60

Thus, by installing a 6 m^3 biogas plant, with the initial cost of Rs.7,500/- firewood of the value of Rs. 1,547.60 per annum could be saved.

5. The benefits derived from the biogas plants are given in Table IV.

TABLE IV
BENEFITS DERIVED FROM THE BIOGAS PLANTS

Benefits	Percentage of families reporting N : 20
Supplies efficient fuel gas	100
Supplies rich manure reducing the money spent on chemical fertiliser	100
Avoids smoke and smell	95
Maintains the surroundings clean	90
Conserves time and energy in cooking food and cleaning utensils	90
Reduces monthly expenditure on fuel	80
Offers more leisure time	80
Prevents growth of flies, mosquitoes and weeds in the open slurry	75
Reduces eye strain	70

The major benefits were in terms of efficient fuel gas and fertiliser as realised by homemakers. No homemaker expressed problems in the use of the newly constructed biogas plant.

6. The solar box type cookers were found to be convenient compact and easy to use in the households. The homemakers who expressed their willingness to use solar cooker were provided with the cookers. They were interviewed for their opinions about the use of solar cookers the satisfactions and limitations experienced.

More than 50 per cent of the home makers realised the various benefits of utilising solar energy for cooking. The novel way of cooking was fascinating to the rural homemakers. Ninety six per cent of the homemakers stated that solar cooking is pollution free as the cooking is done in an enclosed box.

Conclusion

The world wide energy crisis has brought increasing emphasis upon the use of renewable sources of energy. This study made an attempt to motivate a selected group of rural households through education, towards adopting appropriate fuel management practices such as the use of smokeless chulah, biogas and solar cookers.

Clean environment, better family relations, reduction in fuel cost and elimination of drudgery for the homemakers in the process of cooking food and cleaning utensils were the benefits stated by the homemakers in using smokeless chulah.

An analysis on using biogas for cooking a day's menu was 1190 litres for a family of five members. The per capita consumption was estimated to be 238 litres or 8.4 cu. ft.

The time taken to prepare a day's menu for a family of five members was about 224 minutes, when biogas was used as fuel and 248 minutes when firewood was used as fuel.

Apparently solar cooking required more of time (50 per cent more than fire wood) and there was the advantage of less attention for cooking required by the homemaker. The quantum of firewood that was saved was found to be 0.8 kg per day which results in a saving of 160 kg per family per annum if solar cooking is constanly used on all the sunny days. This stndy has thus thrown light on the possibilities of saving fuelwood by introduction of improved fuel management practices in the rural households.

REFERENCES

1. Lokras, S.S. and Kumar, R. 1983, Development of an Improved three pan cook stoves, changing villages, special issue, Vol. 5 No. 3.
2. Perumal, S.P. 1983, 'smokeless chulahs', Technology for Rural women, 'National Seminar on Rural Development, Tamil Nadu Agricultural University, Coimbatore.
3. Relwani L.L. 1984 'Biomass Energy Assessment', changing village - Special issue, vol. 6 No. 5
4. Salariya K.S. and Jindal, S.L. 1983 ' Smokeless Rural Cooking Appliances" changing villages Vol. 5, No. 5.

CRITICAL ANALYSIS OF FAMILY BUDGETS IN SELECTED RURAL AND URBAN AREAS OF TAMILNADU

— *Sugirthavathi, S.P. (1985)*

Today, prices of all commodities are soaring sky high and people's aspirations to achieve better standard of living are also mounting. These developments have resulted in inefficiency of the family's income to make both ends meet. The situation is aggravated further by the homemakers' ignorance and inefficiency in utilising the available resources wisely to maximise the benefits.

Money is one of the important tangible resources. Its effective utilisation plays a crucial role in the financial management of the family. But often, even people with adequate income face shortage of money because of reckless and injudicious spending (Dani, 1978).

Family budget is an integral part of the family's life style. Each family encounters its own management problems. By framing the budget wisely, families can earn greater buying power and financial security and pay their debts or get back to financial recovery within a short time. According to Devadas (1968) the budget is useful only to those families who have adequate income and who can envisage their total income and control their expenditure. Misra (1963) points out that the major cause for the country's poor standard of living is due to the wastage of resources. The resulting deterioration and resourceless existence are formidable barriers to progress. Therefore, the present study might help the extension and social workers to understand the root causes of the problem and adopt a realistic approach while solving the problems. Hence this study was undertaken with the following objectives :

1. to study the prevailing socio-economic conditions and standard of living of selected families
2. to analyse initially the relationship between family characteristics and family budgets
3. to derive norms for expenditure pattern for different income groups and family size and
4. to offer suggestions for budget aspects in the Home Science curriculum at secondary school and college levels.

Methodology

The study was made on 1042 families in 12 villages and two cities in Coimbatore and South Arcot Districts. Among the families headed by a husband and wife, with or without children or any one of the parent with children were selected for the interview.

The interview schedule framed consisted of three sections. Part A covered information relating to family composition, occupation, income, gainful employment, savings, housing conditions etc. and Part B of the schedule consisted of questions related to their money management practices.

In 'Part C' of the schedule detailed account keeping for various items of expenditure for one year were called for.

Developing standard budget

Standard family budgets were developed for the rural and urban families at low, middle and high income levels and for small, medium and large sized families.

Education on family budget

In order to improve the life style of very low income group, education for better living was given through Mahalir Manram, South Arcot. The aim of this part of the study was to :

educate the ways and means to augment family income

eliminate drudgery in domestic work by the adoption of indigenous labour saving equipment such as hay box, smokeless chulah and improvised mud cooler

overcome prevailing vitamin deficiency diseases such as angular stomatitis, bleeding gums and night blindness

educate improved and desirable methods of food preparation, preservation and cooking practices and

study the effect of income and expenditure by supplementary occupation

Findings

Considering the economic profile of the selected families it was found that salaries and wages were the common source of income for both urban and rural families. The percentage of women in employment was 21 in the urban and 10 in the rural areas. Gainful employment of the homemakers increased the family income.

Earning dependents increased as the family income and size increased. The dependency ratio was high in the rural households than the urban households. Higher educational levels, higher occupational status, higher age of heads and large number of earning members in the family were characteristics of the families with high income. The mean family expenditure per month was almost double in the urban than rural areas. Both the urban and rural families spent their major share on food. Rural households incurred a lesser expenditure on housing. The family debt was prominent in the urban medium and the rural large sized families.

As judged by the socio-economic status scale, high income and small family size favoured luxurious standard of living

Table I gives the frequency of planning the budget by family size.

TABLE I

FREQUENCY OF PLANNING THE BUDGET BY FAMILY SIZE

(Families in per cent)

Frequency of Planning	Urban				Rural			
	Small N=164	Medium N=132	Large N=48	Total N=344	Small N=106	Medium N=128	Large N=54	Total N=283
Weekly	-	-	4.17	0.58	18.87	9.38	14.81	13.89
Fortnightly	-	-	-	-	-	1.56	-	0.69
Monthly	100.00	96.97	95.83	98.26	35 85	76.56	74.08	61.11
Yearly	-	3.03	-	1.16	45.28	12.50	11.11	24.31
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

It is evident from the Table that all the urban small sized families planned their expenditure whereas only 36 per cent of families in rural area planned monthly, while 45 per cent of rural small sized families planned yearly. This might be due to the owner cultivators dominating this group.

Keeping inventories was observed only in 23 per cent of urban families and 19 per cent of the rural families. It was surprising to note that the 20 per cent of the rural low income families pursued this practice in contrast to four per cent of the urban low income families.

Income and expenditure ratio calculated revealed that the expenditure was well within the income. Table II presents the income expenditure ratio.

TABLE II
INCOME EXPENDITURE RATIO BY INCOME

Income	Urban			Rural		
	Mean Income	Mean Expenditure	Ratio	Mean Income	Mean Expenditure	Ratio
High Income above Rs. 1500/-	3297.32	2410.79	73.11	2382.55	2157.66	90.56
Middle Income Rs.700-Rs.1500	1059 01	1219.21	110.94	974.39	869.51	89.24
Low Income below Rs.700/-	480.82	656.68	136.58	562.93	533.48	94.77
Total	1819.11	1537.86	84.54	959.34	900.15	93.83

The urban income was Rs. 1819 and the expenditure was only Rs. 1538. In the rural areas the income was Rs. 955 and the expenditure was Rs. 900 only. The income expenditure ratio were 100:85 for urban and 100:94 for rural. The ratio explains that for 100 rupees of income earned, the family incurred expenditure of only Rs. 85 in urban and Rs. 94 in rural areas indicating that the urban families were better than the rural families.

The syllabus developed for the budget aspect of Home Science curriculum for higher secondary school included, sources and ways of augmenting income, factors affecting the cost of goods, buying to get the most for the money spent and planning family income and items of expenditure

The syllabus for the college level included budget, account keeping decision making practices, evaluation, financial management practices with fluctuating income in rural and urban areas, ways and means of balancing budget, ways of making money go further and savings and credit.

Recommendations

The following recommendations emerged from the study.

The model budgets developed should be tested for its suitability in different settings.

Budget needs to be developed for different family size in the same income group and also for the same size in different income groups.

The estimated cost of food in food plans and other goods should be updated every six months to reflect changing food prices and other items.

Budgets suggested should be published to enable students to get training in the formulation of budget for specific groups.

The extension worker should adopt micro-level plan suited to the environment and resources available to raise the standard of living.

REFERENCES

1. Dani, R.H. (1978), "Managing your Money," Mirror, Vol.10, No.8.
2. Devadas, R.P. (1968), Text Book of Home Science, New Delhi, Govt of India.
3. Misra, S. (1963), Planning and Development at Village level, Rural India, 26, P. 47

IMPACT OF MAHILA SAMITI ON HOME MANAGEMENT PRACTICES IN RURAL ORISSA

— *Bijayalaxmi Das (1986)*

The status of women in any society is a true index of its cultural, social, religious and spiritual conditions. Today, the position of women in India, even after 30 years of Independence tends to support the dictum that India is a land of paradoxes and extremes. While on one hand womanhood has been defined in the mother-cult-goddess worship pattern, on the other, women are grouped among the most backward category. Traditionally energy-'shakti', has been regarded as a female indicating women's power at home, at work and in the community.

Due to historical and cultural factors, women's role got relegated to a secondary position, which inhibited her free participation in the community welfare activities. This situation, however, changed during the freedom struggle when large number of women, both rural and urban participated freely in mass movements and other activities along with men. Thus women's voluntary organisation appeared on the scene.

The major aim of any women's voluntary organisation is to promote women's welfare through activities in the areas of social, education, nutrition, health, home management, child care, adult literacy family planning, maternity and child welfare services and craft activities. The investigator was interested to study the extent of help rendered by the Mahila Samities and its influence in fostering rural development.

Therefore a comparative study on impact of home management practices of the members and non members of selected Mahila Samities in Orissa was undertaken with the following objectives :

1. Assess the growth and progress of Mahila Samities in Cuttack district of Orissa.
2. Examine the socio-economic status of the selected homemakers who are members of Mahila Samities.
3. Study the impact of Mahila Samities on the managerial practices of the selected homemakers and
4. Analyse the performance of Mahila Samities and suggest measures for improvement.

Methodology

Eight selected blocks of Cuttack District were first selected. In each block, ten villages were selected having Mahila Samities. From 80 villages, 800 homemakers (10 from each) were interviewed. Of the homemakers interviewed, 50 per cent were members of the Mahila Samities and 50 per cent were non members of the samities.

Information was collected from the members and non members with the help of a questionnaire. The Secretaries of the Mahila Samities were also interviewed to collect information regarding the Samities and their suggestions for the improvement of the Samities.

Findings

Among the selected homemakers 98 per cent were Hindus, 82.5 per cent of the families were of nuclear type and 99.8 per cent belonged to medium sized families. Twenty three per cent of the families belonged to low income groups and 61.1 per cent were in the middle income category. Forty nine per cent of the homemakers were illiterates. Only 3.5 per cent of the homemakers were gainfully employed and 40 per cent of the head of families were agriculturists Of the 400 members of the Mahila Samities, 56.3 per cent were members of the Samiti because they wanted to earn to raise their family income and 93.8 per cent joined the Samiti to do some work for the betterment of the rural women. Regarding the payment of honorarium for the Secretaries and the women who helped in the feeding programmes, the members expressed their dissatisfaction.

Seventy five per cent of the members hoped that a good Mahila Samiti can help to improve the status of rural women. While 30 to 40 per cent of the Samiti members taught health and hygiene aspects to the rural women, 40 per cent taught how to prevent and check the adulteration of foods.

About 55 to 66 per cent of the members and non members spent their time in doing household work only inside their houses. All the Samities conducted cultural programmes like songs, dramas and festivals whenever possible, but they could not carry out sustained programmes. Forty per cent of the Samities suggested that Government of Orissa should try to improve the conditions of the Mahila Samities by providing some fund as well as by deputing trained members to each Mahila Samiti to impart training in production activities.

Table I presents the views of the homemakers regarding the programmes of the Samiti.

TABLE I

VIEWS OF THE HOMEMAKERS ABOUT SAMITI'S PROGRAMME

S.No.	Details	Number of families (N. 400)	Per cent
Activities			
1.	Sewing	261	65.2
2.	Handicrafts	97	24.2
3.	Small Scale Industry	46	11.5
4.	Any other (Grinding, knitting, cooking, preservation, health and hygiene etc.)	110	27.5
Reasons for being the Mahila Samiti members			
1.	To earn	225	56.2
2.	To engage one's time	132	33.0
3.	To gain knowledge	110	27.5
4.	For the welfare of the village	55	14.0
5.	For the welfare of the children	56	-

About 65 per cent expressed that they were doing sewing, stitching and knitting in the Samiti while 24 per cent of them said that they were learning and conducting handicraft classes in the Mahila Samiti. Among the reasons stated for being a member, 56 per cent wanted to earn some means of living after acquiring knowledge on subsidiary occupations.

Though 33 to 44 per cent of non members and members maintained household budget, only 13 per cent followed the same. A majority of nearly 80 per cent of both the groups borrowed money as their income was insufficient for their family expenditure. Regarding savings, 48 to 49 per cent of the members and non members saved money to meet future their needs.

The adoption of family planning was successful in the selected villages. Considering the general health status, it was observed that 50 to 60 per cent of both the members and non members were in poor health condition.

Cultural functions were performed only by the village folk. The Mahila Samiti had no role in it. There was also no leadership to improve the condition of the village.

Table II depicts the objectives of the Mahila Samities given by their secretaries.

TABLE II
OBJECTIVES OF THE SAMITIES AS GIVEN BY THEIR SECRETARIES

S.No.	Objectives	Number (N. 80)	Per cent
1.	To earn	75	93.7
2.	For the welfare of women	75	93.7
3.	For the welfare of village	71	88.7
4.	For the welfare of children	70	87.5
5.	To gain knowledge	54	67.5
6.	To engage themselves	3	3.7

Above 87 per cent of the secretaries stated that the major objective set were to work for the welfare of women, children and the village on the whole.

Table III gives the opinion of the Samiti members on payment received by them

TABLE III
OPINION OF THE SAMITI MEMBERS ON THEIR PAYMENT

S.No.	Details	Number of Mahila Samities	Per cent
1.	Not satisfied	80	100
2.	Less earning for more work	80	100
3.	Difficult to get payment from the block	8	10
4.	Regular payment	6	7.5

The secretaries and the members were not satisfied with their salary and work environment.

The study thus showed that the Mahila Samities in Cuttack District of Orissa are not functioning effectively. Based on the responses of members, the following suggestions were given by the investigator.

1. A Net Work of Mahila Samities :

   A Mahila Samiti for every village is the first necessity for rural upliftment.

2. Decent accommodation for Women Workers :

   Provision of safe, decent accommodation for women working in the rural areas is essential to tackle the problems of health and education.

3. Balwadies :

Each village under the charge of a "Mukhya Sevika" must have a Balwadi.

4. Village Clubs :

In addition to the Balwadi, a group of 10 to 15 villages must have a creative cum education centre, maternity services, craft classes, social education and cultural and recreational facilities.

5. Regular meetings of Mahila Samities

Meetings of the Mahila Samities should be held either weekly or fortnightly. The topics which can be taken up are :

a. Skill development in handicrafts
b. Cooking low cost and nutritious meal
c. House Keeping
d. Health and sanitation
e. Maternal and childcare,
f. Agriculture and livestock keeping
g. Co-operatives
h. Cultural activities and
i. Inculcation of spiritual and human values

6. Proper organisation of meetings

The meeting should be organised properly as per the recognised procedures, respecting the purposes of the Samiti.

7. Cooperation of the B.D.Os

The Block Development Officers should see that some trained teachers of the Block are present in each samiti and they should have meetings regularly and consider all the points raised by the women members.

8. Impact Evaluation

Frequent analysis should be made of the progress of the Mahila Samiti by the ICDS supervisers or some responsible officers, so that the money spent in each Mahila Samiti in Orissa is not a waste and full benefits are reaped.

9. Linkages with Home Science Institutions

The College and Higher Secondary Schools in the neighbourhood should establish linkages with the Mahila Samities and help them in all ways possible.

CONSCIENTISING CONSUMERS WITH REGARD TO HUMAN VALUES IN CONSUMER BUYING PRACTICES

— *Sridhari Das (1988)*

> "Harmony, peace and unity in the world could be achieved only when "Sathya, Dharma, Shanti, Prema and Ahimsa' become the cherished rules the world over"
>
> (Bhagwan Sri Sathya Sai Baba, 1985)

Values are the motivating forces for achieving goals. Values constitute guidelines for human behaviour and serve as criteria in respect of judgement, preference and choice relating to purposeful action. Education aims to increase the capacity of individuals to deal with their environment. Education, according to Swami Vivekananda is the manifestation of the perfection already in man. Perfection in man is the state of harmony and balance between his attitudes, actions, behaviour, character, skills, thinking patterns and maintenance of human relations (Swami Ranganathananda, 1986).

Education needs to be humanised to redeem society from the ravages of the widespread corruption, selfishness, exploitation and authoritarianism. The goal of a continuing process of education should be the development of human values (Kar, 1985).

Human values are necessary for every human being, as they indicate human development and progress. Moral and spiritual values are indispensible to group living (Avinashilingam, 1983).

Ages ago when spiritual vision and culture of the Vedas and Upanishads began to seek their own separate spiritual satisfaction and characteristic entity, to the neglect and exclusion of the other, the Gita propounded a magnificent synthesis and paved the way for a harmonious growth of the whole human personality (Bhandari, 1985). In the present world man is caught in a vicious circle of wants and desires which leave little time to probe into the depths of his heart. In the absence of human values, education becomes a prey to the machinations of power made politicians, commercial interests and vulgar tastes. Taking note of these realities, the New Education Policy (NEP, 1985) of the Government of India has stressed 'Value oriented education'.

Human personality has five "domains" or levels, namely, the physical, the intellectual, the psychic, the emotional and the spiritual. The five basic human values of truth, righteous conduct, peace, love and non violence are derived from the five domains of personality (Report of the National Seminar on Value Orientation and Teacher Educators, 1986).

A family which is linked by love and understanding rather than mere authority is the training ground for wholesome human relations. Mass media, particularly, the audio visual media have played a devastating role in promoting fantasies and mythologies about women. As a result, consumerist life styles which serve commercial interests and degrade women as sex objects have emerged and are flourishing.

Value education is the first step to avert the dangers of these changes and fill the vacuum in the affective domain created by the erosion of values. In order to launch a comprehensive programme of value education the why, what and how of value education need to be understood (Devadas, 1987).

Population explosion in developing countries where illiteracy and ignorance abound, despite the advancements of science and technology has created wide gaps between the haves and the have nots. In addition, shortages of essential commodities is ever increasing. The manifestations of consumer neglect are evident in the substandard quality, adulteration, under weights and measures, deceptive advertising and packaging of spurious goods and a variety of pseudo commodities which occupy a prominent role in the marketing structure, confusing and cheating the consumer buyer. Sale of hazardous toys, food, appliances and drugs banned in most countries in the West without safety to the consumer is also threatening humanity. With increasing malpractices and a complexity of economic activities, strong organised groups representing specific interests of consumers are necessary.

While the consumer has awakened in the progressive countries consumer education needs to become an economic, social and cultural activity in the Indian community. Consumers need centres where they can seek guidance and advice. There is a strong need to conscientise consumers on "Human Values" in consumer buying practices. Therefore this study was undertaken in the city of Coimbatore with due consideration to the following objectives :

1. Define and study the "Human Values" as viewed by a selected group of homemakers.

2. Elucidate the buying patterns and practices of the selected consumers.
3. Assess the awareness of the selected consumers on the protective measures available for consumers, and their education, and
4. Conscientise the consumers on Human Values in consumer behaviour.

Procedure

As the first step, review of related literature was made, relevant to the study. The research guidelines as stated by Quirk (1979) and Borg and Gall (1983) were adopted in conducting the study.

The survey method was utilised and the required information collected by interviewing the selected homemakers with the help of the specially constructed schedule. A pilot study was conducted to pretest the schedule, which was finalised thereafter with suitable modifications.

'An Action Programme' was carried out for conscientising the selected consumers regarding human values in consumer buying practices. The area selected for the field of study was the city of Coimbatore with a population of 7,04,514 and an area dimension of 105.60 square kilometres. A target of 1000 homemakers was selected at random from the Eastern, Central and Western sectors of the city in the high, middle and low income groups as per the Tamil Nadu Employees grade scale classification.

Out of the sample of 1000 homemakers taken, a sub sample of 60 homemakers was randomly taken, 20 from each of the classified groups for the action programme.

A curriculum was evolved and classes were handled by a group of experts using audio visual aids for the three classified groups. The initial knowledge of the sample of homemakers before the action programme on human values, buying patterns and practices and consumer awareness among the three groups of A, B and C was recorded and an evaluation was conducted later after a period of 12 months after the action programme to find out the impact

The data was subjected to rigorous statistical analysis.

Findings

There was a striking influence on the values mentioned by the sample of homemakers before and after the education programme. The human values of truth and right conduct existed and remained constant, whereas with regard to the concept of human values as qualities to be

preserved in life and deep seated beliefs and customs altered after the education programme.

The selected homemakers were conscientised that human values encompass human thought and action in the family system and that they are indicative of human development and progress which revealed a striking difference of about 80 per cent to 90 per cent.

The important values held by all the homemakers were truth, righteousness, peace, love, nonviolence, education and good health. There was not much disparity with regard to money, dignity and self respect.

Awareness was created on proper utilisation of resources. The physical, intellectual, emotional, spiritual, social and aesthetic values were considered the main domains of the family system as they strongly influence the buying of food, clothing, equipment, housing and household commodities.

The amount of resources was decided while purchasing. Shopping lists and expenditure plans were maintained. Both the partners were involved in purchasing, using advertisements as guides and use of I.S.I. seal marked goods.

Wholesale buying, retail buying, cash payment, credit payment and instalment buying at one or varieties of stores was the practice. Window shopping was also practised.

Malpractices were avoided after being conscientised.

Factors of durability, economy, comfort, beauty, availability, servicing, habits and advertising were practised in shopping goods.

Conscientising had helped the women to be better consumers.

To sum up :

1. Human values are deeply involved in consumer buying.
2. Consumer education helps better buying through creating awareness.
3. Conscientising the consumer of consumerism helps them to be better consumers.

Recommendations

The following recommendations have emerged out of this study.

1. All consumer commodities should be standardised and made available at reasonable prices. With encouragement to consumerism better commodities should be made available to the consumers.

2. There should be an integrated approach to value orientation and consumer education. Conscientisation of human values and consumer education should be carried out frequently to improve the quality of consumer life.

3. Lectures with audio visual aids should be given to educate men, women and social workers at women's organisation centres and at their place of work.

4. There is a need for establishing a resource centre in every district for literature on human values and consumerism.

5. Value education and consumer education should be introduced in the curricula of schools and colleges.

6. A strong national movement capable of focussing attention on the pressing needs to be established within branches in all the states, and

7. Committees consisting of manufacturers, traders, high level experts in the field of Home Science including consumers from various areas should be set up at all levels to help ensure fair practices, avoidance of hoarding and best service to consumers.

It is hoped that the findings of this study would help to promote consumerism and awaken the consumers to meet their obligation.

REFERENCES

1. Bhagwan Sri Sathya Sai Baba : 'We our role and Human Excellence' published by Sri Sathya Sai Education in Human values Trust, Prashanthinilayam, India, 1984 Pp. 4-7.

2 Avinashilingam, T.S. : Inculcation of social, ethical and spiritual values in education, Sri Ramakrishna Mission Vidyalaya, Coimbatore, 1983. Pp. 3-10.

3. Devadas, R. P. : Ethical values in a changing world. Edited by Devadas, R. P. and Chandramani M. published by Sri Avinashilingam Trust Institutions, Coimbatore, 1987. Pp. 1-18.

4. Ministry of Education : Challenge of Education, Policy perspective. Government of India, New Delhi, 1985, August P.12.

5. Swami Ranganathananda : Eternal values for a changing society. Vol. III Education for Human Excellence, Bharatiya Vidya Bhawan, Bombay, 1986, P. 25.

6. Birg W.R. and Gall M.D., : Educational Research, 4th Edition, Longman, NewYork, 1983, P. 1.

7. Five Basic Human Values : Report of the seminar on value orientation to teacher educators, Madurai Kamara University 1986, Pp. 1-14.

NUTRITIONAL EVALUATION OF SELECTED UNCONVENTIONAL FOODS ON YOUNG CHILDREN

— *Godavari Kamalanathan (1976)*

Introduction

Among the various solutions to combat global food crisis and the problem of the 'food gap', tapping the unconventional foods such as byproducts of food processing hitherto used, only as animal feed or sparingly or sporadically for human consumption, is being postulated. Enriching the existing foods such as cereal flours with proteins, minerals and vitamins, is being examined and novel sources such as Leaf Protein, algae, yeast and single cell protein are being explored. Yet, very few studies have been undertaken on the utilisation of these food sources for human consumption, in terms of palatability, economic qualities and nutritive values. This study is an attempt, to explore the possibility of the following unconventional and novel food sources :

Horse gram (*Dolichos biflorus* L)
Sesame (*Sesamum indicus* L)
Deoiled rice polishing
Leaf Protein and
Enriched bread

TABLE I
NUTRITIVE VALUE OF THE TEST FOODS

Component	Horse-gram	Sesame meal	Deoiled Rice Polishing	Enriched Bread	Leaf Protein
Calories Kcal	320	418	300	306	397
Protein g	22.0	28.0	14.5	7.8	58.3
Calcium mg	265.0	1760	146	840	800
Phosphorous mg	310.0	-	2540	-	400
Iron mg	8.8	13.2	38	14	50
Thiamine mg	0.42	1.28	2.30	0.16	-
Riboflavin mg	0.18	0.16	1.10	0.34	-
Fat g	0.30	13.30	0.50	2.20	10
Crude fibre g	5.3	4.0	9.2	-	-

— Not analysed

Horsegram (*Dolichos biflorus*)

Horsegram is a common animal food and can be grown under austere condition with minimum rainfall. It is less expensive than the traditional legumes such as red gram or chick peas. The protein content is 22g per cent. When horsegram was incorporated in common Indian recipes in the place of the commonly used legumes, the food preparations were found acceptable by a panel of judges. This has scope for further utilization.

Sesame (*Sesamum indicus*) **Meal**

The sesame meal contains 56g per cent protein. Sesame meal processed from clean decorticated seeds was found to be quite acceptable by children. Twenty five children of age range 30 to 60 months in a preschool were fed daily a diet contributing 900 calories and 26g of protein per day. The diet included a mixture of groundnut meal, sesame meal and horsegram providing protein in the ratio of 2:1:1. The growth pattern over six months and haemoglobin levels of these children were found to be superior to those of another group of children under identical socio economic levels, but not receiving any such diet in the preschool.

Deoiled Rice Polishings

The modern food processing technology has made it possible to have rice husked without losing the polishings and extract oil from the polishings. Bio-chemical analysis of deoiled rice polishings obtained from Modern Rice Mill, Tanjore Co-operative Marketing Federation Ltd., indicated that it was a good source of protein (14.5g per cent), calcium, iron, thiamine and riboflavin. Experiments with recipe development showed that rice polishings could be incorporated only upto 15 per cent on dry weight basis into some commonly used preparations. The polishings being brown in colour, were more suitable for dark coloured savoury flavoured food preparations. The acceptance of flavour of these preparations was high. Animal experiments indicated that the rice polishings as received needed further purification, to be of nutritional benefits.

Leaf Protein

The outstanding contribution in the field of food research at the turn of this century has been extraction of protein from leaf. When leaves are pulped, juice extracted and treated with steam, edible protein fraction is separated along with some lipid and fat soluble vitamin. Leaf Protein has the further advantages that locally available lush crops may be used. Its production involves simple technology that could be understood and operated by even unskilled workers and the residual product (fiber, waste water) are usable and do not add to environmental pollution.

The machinery for extracting and separating Leaf Protein, has been installed at Sri Avinashilingam Home Science College, Coimbatore. Method of processing was standardized. Lucerne or alfalfa *Medigo Satives* was selected as the most possible source for Leaf Protein, from the point of view of agronomy and economy. The protein content was 56 to 60 g per cent on dry matter basis.

Nutritive value and edibility of Leaf Protein have been established through analysis and animal studies. In this investigation, possible ways of incorporating the Leaf Protein to the maximum extent in the local food preparations were ascertained. It was noted that 10g. of Leaf Protein per serving was acceptable in many recipes. The most suitable preparation for child feeding programme, was a snack 'Laddu'. The 'Leaf Protein Incorporated Laddu' was fed to preschool children and the improvements in their nutritional status were compared with those of a control group not receiving this supplement. Two groups of thirty children in two preschools (Balwadis) were given daily diet to supply 500 calories and 10g protein including 6g. from Leaf Protein. Leaf Protein in combinations with the finger millet Ragi (*Eleucine carcona*) and Leaf Protein blended with Tapioca or Cassava (*Manihot utilissima*) were given. Thirty other children received a similar diet but the protein source was groundnut meal. To another thirty children a corn legume blend was given. The results indicated that the supplementary value of Leaf Protein was better than groundnut meal or corn legume with respect to their height, weight pattern, haemoglobin level and clinical symptoms.

Another trial was undertaken to compare Leaf Protein with three other protein supplements-skim milk, horsegram and an indigenous vegetable protein mixture.

In each 'Balwadi' sixty children of 30-60 months of both sexes were established in six different villages. The 'Balwadi' timing was from 8-00 a m. to 7-30 p.m daily, to accommodate the feeding trial In all the six 'Balwadis' the basic diet was similar to the home diet of the children, to provide 1,150 calories and 18-20 g of protein per day. One group was placed on this diet. For the five experimental groups the diet were planned to provide 1,400 calories, one with tapioca and the rest with the addition of the supplements namely, 10 g of iso protein level of leaf protein, horsegram. skim milk and an indigenous mixture of cereal and pulse. The height, weight pattern and haemoglobin level of the children were measured and the cost-benefit aspects of the supplements studied. Leaf Protein was as good as skim milk or cereal pulse mixture.

TABLE II

MEAN INITIAL AND FINAL HEIGHT AND WEIGHT OF PRESCHOOL CHILDREN ON THE FIVE DIFFERENT SUPPLEMENTS IN THE WHOLE DAY FEEDING IN THE BALWADI (Over 6 months)

Sex	Basal diet	Tapioca	Horse-gram	Skimmilk	Leaf Protein	Cereal pulse mixture
Boys			Height in cm			
Initial	89.9	89.6	89.9	90.8	89.6	90.1
Final	90.9	90.3	93.4	94.3	92.9	93.1
Increase	1.0	0.7	3.5	3.5	3.3	3.0
Girls						
Initial	89.2	88.7	88.1	90.4	88.1	89.9
Final	90.6	90.5	90.8	93.8	91.3	92.5
Increase	1.4	1.8	2.7	3.4	3.2	2.6
Boys			Weight in kg.			
Initial	11.7	11.7	12.4	12.7	11.8	11.4
Final	12.3	12.5	13.4	14.0	13 0	12.6
Increase	0.6	0.8	1.0	1.3	1.2	1.2
Girls						
Initial	11.1	10.9	12.2	11.6	11.5	11.4
Final	11.9	11.8	13.2	11.8	12.6	12.5
Increase	0.8	0.9	1.0	1.2	1.1	1.1

The supplementary value of Leaf Protein was similar to that of Skimmilk or Cereal Pulse mixture.

Enriched Bread

Enriching cereals has been the trend since refining beeame large scale and technologically based. Enriched bread, was introduced in India through the Modern bread of protein content of 7.8 per cent g. It was chosen as a supplementary food in the Special Nutrition Programme because of quantity production, ease of transport and standardized portions for distribution. Since the inception of distribution of enriched bread at Coimbatore in 1971 to the conclusion in 1975, the supplementary value to the preschool age beneficiaries of the enriched bread was studied. The utilization by the target group, change in their nutritional status with regard to height, weight, haemoglobin and clinical pictures on longitudinal, and on cross sectional basis at selected centres were observed. It was found that the success of this programme was enhanced by sound nutrition education imparted concomittantly.

Nutrition Education

Of the various factors for ensuring success in supplementary feeding of preschoolers and proper utilisation of supplements, nutrition education is most convincing. Acceptance and appreciation of Leaf Protein as a supplementary food for preschoolers by parents was possible through nutrition education. In turn, this feeding programme became the incentive for further nutrition education.

This study on the nutritional contribution of unconventional sources of protein energy foods has revealed some potential low cost food sources. Implementation to large scale production of foods and fair price distribution, will pay high dividends towards mitigating the problems of malnutrition among children.

REFERENCES

1. Rajammal P. Devadas (1978), Science and Technology Policy for Tamil Nadu in relation to Nutrition and Home Science. Proceedings of Tamil Nadu Academy of Sciences, Vol. 1A.

2. Rajammal P. Devadas, Kamalanathan, G. and Vijayalakshmi, P (1980) Leaf Protein feeding trials with preschool children in Coimbatore-I. Proceedings of Leaf Protein. Indian Journal of Nutrition and Dietetics, 17, pp. 433-436.

3. Rajammal P. Devadas, Kamalanathan, G. and Vijayalakshmi P. (1981) Leaf Protein feeding trials with preschool children in Coimbatore II. Family background information of the selected children who participated Indian Journal of Nutrition and Dietetics, 18, pp. 125-129.

4. Rajammal P. Devadas, Kamalanathan, G. and Vijayalakshmi, P. (1981) Leaf Protein feeding trials with preschool children IV. Evaluation of the feeding programme Indian Journal of Nutrition and Dietetics, 18, pp. 427-434.

NUTRITIONAL EVALUATION OF THE SUPPLEMENTARY VALUE OF LOW COST AND LOCALLY AVAILABLE FOODS NAMELY HORSE GRAM, FIELD BEANS, SESAME AND AMARANTHUS TO POOR RICE DIET

— *P.S. Nirmala (1977)*

Abstract

A series of studies to evaluate the use of selected low cost foods such as Maize Sorghum (cereals), Cow pea, Horse gram, Field beans (legumes), Sesame, Groundnuts and Sunflower seeds (oil seeds) and Amaranthus and Carrots (vegetables) grown in Coimbatore district, Tamil Nadu state, towards the alleviation of malnutrition and under nutrition particularly among children. While rice was the predominant and prestigious cereal in Tamil Nadu state, other millets such as maize and sorghum were locally grown, and were of low cost (1/3 the cost of rice) which would suit the purse of the common man. Further these millets also contributed more quantity of protein, minerals and vitamins when compared to rice. Hence these indigenous foods at low cost have been evaluated for their nutritional value.

A series of food formulation incorporating several low cost indigenous foods in different combinations were developed and evaluated for use in community feeding programmes, with the specific objective of promoting self reliance. Each of the series of food mixtures evaluated in this study consisted of different combinations of indigenous foods as supplements. The human feeding trials involved different age groups, ranging from the young preschool child to adult college women. Growth promoting abilities were evaluated through a feeding trial among children. Evaluation of iron and Vitamin A availabilities from the selected foods were carried out on older age groups. The nutritive efficacy of the recipes of the food formulations which were found acceptable were further evaluated through a series of human feeding trials.

The first study was on vegetable protein mixtures formulated with the local foods namely maize, cow gram, horse gram, groundnut and sunflower seeds, which will be useful for preschool and school going children.

The formulations were first evaluated on albino rats using PER, NPU and NDP cals per cent as criteria. The cost analysis of the formulation showed that for a ration of 100 grams of the food mixture, the costs ranged between 15 to 19 paise per child per day, which was lower

than the cost of any processed or imported foods commonly used in feeding programmes and the prices of which are exorbitant due to transport and storage charges. Organoleptic evaluation was carried out on selected food preparations (recipes) in which the formulated food mixture had been incorporated. All the food recipes tested were found to be palatable and wholesome. The series of maize based food formulae thus evolved along with vitamin and mineral fortification is recommended for use in feeding programmes and other nutrition intervention projects to fill the existing nutritional gaps in the diets of the pre-school and school children.

Nutritional evaluation of a sorghum-green gram mixture was carried out. The experiment was designed to findout how much of green supplemented to a sorghum diet would result in maximum PER value. Maximum protein value was obtained when 60 per cent of the protein in a diet were derived from sorghum and 40 per cent from green gram. The protein quality increased to the maximum when the proportion of sorghum or cereal component to the legume (greem gram) component was in the ratio of 3:1. This finding was of particular interest in evolving simple low cost indigenous food mixtures.

A mixture of horse gram and sesame in the protein ratio of 4:1 was next evaluated using a bioassay technique. The mean PER value increased from 1.05±0.091 to 1038±0.101 for horse gram sesame mixture when the protein content of the diet was increased from 9 to 15 per cent. Significant differences were noted in the total hepatic nitrogen content and hepatic nitrogen per g. of fresh tissue among the groups fed different levels of protein. The hepatic succinic dehydrogenase (SDH) activity also increased with the increase in the level and quality of protein. The Relative growth Index (RGI) which is an expression used for the relative nutritive value of dietary proteins, is the slope of the regression between dose and response expressed as a percentage of the slope obtained with the protein of reference quality or maximum nutritive value. Using this index and skim milk as a reference protein with 100 as value, the relative nutritive value based on body weight gain of horse gram-sesame mixture was found to be 53.6. Such protein quality evaluations are helpful and necessary to evolve a series of vegetable protein mixtures, using indigenous food sources such as oil seeds legumes and cereals for use in supplementing feeding programmes.

The effect of three selected dietary sources of proteins

1. a combination of red gram and sesame at a protein ratio of 2:1
2. defatted fish flour and 3. skimmilk powder on carotene utilization in albino rats was next studied in comparison against a basal rice diet.

Improvement of dietary protein quality improved not only growth rates, but also helped in better dietary carotene utilization.

The effects of food supplements based on Opaque-2 maize, ordinary maize and skimmilk on the nutritional status of preschool children 18-30 months of age was studied. All the groups who received the different supplements had registered significant increments in heights and weights, when compared with the control group who did not receive any supplement.

Nutritional supplement made of cow pea, horse gram, field beans, sesame and rice was given to school going children in the age range 6-9. At the end of the study, the incidence of vitamin A deficiency, angular stomatitis and spongy, bleeding gums in the supplemented group had been reduced.

The availability of B-carotene from carrots to women college students was investigated. The total amount of Vitamin A contained in the basal diet and the supplement met the requirement of this nutrient for this age group as specified by ICMR. Thus the existing deficiency of Vitamin A in the Indian diets could be effectively made up through the use of local vegetable sources such as carrots and papaya if given in adequate quantities.

This series of experiments has thus brought out valuable information on the possibility for evolving low cost indigenous food, formulations for nutritional improvement.

NUTRITIONAL STATUS OF CHILDREN AND ADOLESCENT GIRLS THROUGH ANTHROPOMETRIC MEASUREMENTS

— *P. Parvathi Easwaran (1980)*

Introduction

Growth is an outstanding characteristic of childhood. It is an intricate pattern of certain forces - genetic, nutritional, social and cultural, dynamically affecting the child from conception to adulthood[1]. Genetic factors determine the characteristics, but the ecologic environment is responsible for the major differences observed in the growth of population groups. In the ecologic environment nutrition plays a dominant role. It determines the extent to which the genetic potentialities are exploited.

Nutritional assessment of population groups is necessary not only to gain an insight into the quality of human species, but also to contribute towards its improvement specially in the context of the widespread prevalence of undernutrition and malnutrition.

The pattern of growth is one of the most exciting studies and nothing can be more fascinating in life than the investigation of life itself. However, investigations of the factors involved in growth are meagre. Only during the last 20 years some investigators have pointed out what a complicated process growth is. Although the physical growth is an exceedingly regular process abiding the same biological laws all over the world and all children have the same basic needs and requirements, it is difficult to define 'normal growth' because children belonging to the same age group are by no means uniform and constant in their growth pattern [2,3].

Growth needs to be studied in the context of a given community. For purposes of comparison, with a heterogenous population in our country, local reference standards for anthropometric measurements need to be evolved and used, which would make the comparison realistic [4-6]. Such standards should be prepared from anthropometric measurements of well nourished population groups who experience no constraint on food intake and who are not exposed to adverse environmental factors [7,8]. Hence this research study was undertaken to understand the growth performance of children from various income levels in the city of Coimbatore, Tamil Nadu and to develop tables of norms for body measurements.

Materials and Methods

A total of 25,305 children and adolescent girls, 18,617 from urban and 6688 from rural areas of Coimbatore were studied over a period of nine years. Among those from the urban area, 100 infants were followed up for a period of one year, 120 preschoolers for two years, 563 school children for five years and 594 adolescent girls for a period of two years.

TABLE I
NORMS OF BODY MEASUREMENTS FOR INFANTS

Male Age in months					Anthropometric measurements	Female Age in months				
At birth	3	6	9	12		At birth	3	6	9	12
50.6	59.7	66.9	71 9	75.4	Crown heal length (cm)	50.4	58.9	65.7	70.7	74.6
3.3	5.0	6.9	8.2	9.4	Weight (kg)	3.2	5.1	6.6	7.9	9.1
10.4	12.9	13.7	14.1	14.6	Arm circumference (cm)	10.1	12.8	13.7	14.7	14.6
33.6	39.7	42.0	43.6	44.2	Head circumference (cm)	32.9	38.5	41.6	43.0	44.4
32.4	38.0	42.8	44.0	45.0	Chest circumference (cm)	31.5	36.0	41.4	43.6	45.4
4.5	8.0	9.0	9.9	10.1	Fat fold at triceps (mm)	3.9	7.8	8.3	9.6	9.8

The anthropometric measurements, height - standing and sitting, weight, circumferences of head, chest and arm and triceps skinfold were measured using internationally accepted standard procedures[9,10].

The entire sample was clinically assessed using the rapid clinical assessment proforma developed by the Indian Council of Medical Research. On a sub-sample of 230 preschoolers and 420 school children, estimation of haemoglobin was done using cyanmethaemoglobin method. Quanlification of mean daily food and nutrient intake was made using weighment of raw and cooked foods on a subsample of 48 infants, 48 preschoolers and 60 school children.

Utmost importance was given to the assessment of correct age of every child, since the validity of the anthropometric measurements is based on the assessment of correct age. Assessment of correct age of the sample in the high income group was easy because the parents were able to give the valid evidence of birth certificates. Among the others, age was assessed to the accuracy of 60 days making use of a calender of local events and festivals and also other evidences produced such as horoscopes, home records and health record cum growth chart issued by the maternity and paediatric centres.

Results and Discussion

The findings revealed that the income levels affected the physical measurements of children with their adverse effect on dietary practices and food consumption.

The feeding patterns of the infants and preschool children by the rural and urban mothers of the low income groups were far from satisfaction while those of the infants and preschool children from the high income group were found to be satisfactory. The food and nutrient intake of the children from the high income group met the allowances recommended by the ICMR for Indians, while in the intake of low income groups, gross deficits were observed in milk, green leafy vegetables and fruits which reflected glaring deficits of calcium, β carotene, thiamine and riboflavin. Energy was the bottle neck in the dietaries of infants and children with the per cent deficit in energy ranging between 33 to 41 while protein was almost met.

TABLE II
NORMS OF BODY MEASUREMENTS FOR PRESCHOOLERS

Male		Age in months	Female	
Height (cm)	Weight (kg)		Height (cm)	Weight (kg)
80.8	10.4	18	79.7	10.2
85.4	11.4	24	85.8	11.3
89.4	12.6	30	88.8	12.4
93.1	13.6	36	92.9	13.2
96.3	14.7	42	95.5	14.2
100.8	15.5	48	99.3	14.7
104.5	16.2	54	103.1	15.7
107.3	17.1	60	106.5	16.2

Male				Female		
Sitting height (cm)	Arm circumference (cm)	Fatfold at triceps (mm)	Age in years	Sitting height (cm)	Arm circumference (cm)	Fatfold at triceps (mm)
45.5	14.6	10.1	1	44.5	14.6	9.8
50.2	14.8	9.3	2	48.9	14.6	9.4
53.0	15.1	8.7	3	52.7	15 0	8.8
55.4	15.2	8.6	4	54.4	15.2	8.6
57.2	15.5	8.3	5	56.3	15.4	8.6

The differences between the height weight measurements of 'well fed' and 'poorly fed' children classified on the basis of their menu pattern indicated significant difference at one per cent level. Simple linear correlation between height[1] and weight with intake of energy, protein, calcium and vitamin A indicated positive correlation reiterating the vital link between nutrition and physical growth. Such influence of good nutrition on physical dimensions[2] has been substantiated by many earlier studies with special reference to those observed among Japanese "youth".

TABLE III

NORMS OF BODY MEASUREMENTS FOR SCHOOL CHILDREN

Male					Age in years	Female				
Height cm		Weight kg	Arm circum-ference cm	Fatfold at triceps mm		Height cm		Weight kg	Arm circum-ference cm	Fat-fold at triceps mm.
Stan-ding	Sitting					Stan-ding	Sitting			
119.6	64.4	20.9	16.0	8.1	6	118.5	63.1	19.9	15.6	9.3
124.3	66.1	23.2	16.9	8.4	7	123.7	65.8	22.4	16.8	9.4
127.3	68.1	25.5	17.4	8.7	8	125.2	67.1	24.9	17.9	9.8
133.3	69.1	27.8	18.0	9.1	9	131.2	68.9	26.6	18.1	10.1
138.7	71.6	30.8	18.4	9.3	10	139.6	71.7	31.8	18.8	11.5
142.0	73.2	34.6	18.9	9.3	11	143.4	74.4	35.4	19.0	11.7
146.5	75.1	36.2	19.5	9.9	12	147.2	76.2	39.8	19.7	11.9

TABLE IV

NORMS OF ANTHROPOMETRIC MEASUREMENTS OF ADOLESCENT GIRLS

Age in years	Height cm		Weight kg	Arm circumference cm	Fatfold at triceps mm
	Standing	Sitting			
13	149.9	76.6	42.5	21.3	11.9
14	152.1	77.6	44.2	21.6	11.9
15	154.2	78.9	45.4	21.7	12.0
16	155.3	79.8	46.3	21.7	12.4
17	155.5	80.5	46.8	21.9	12.4
18	156.0	81.0	47.0	22.4	12.5
19	156.8	81.2	47.2	22.6	12.7

The body is, thus in the most literal sense, a product of nutrition. The fact that growth is the sensitive index of nutritional adequacy has been well substantiated by studies on height weight measurements of children in Germany during prowar and postwar times. Nutrition is the most vital of all the factors that have a bearing on the child's growth[12]. Thus the children of the high income group did not exhibit any nutritional deficiency symptoms. Among the malnourished preschoolers in both urban and rural areas, the commonest deficiency symptoms observed were discolouration of the hair, angular stomatitis, rough and scaly skin, bitot's spots and moon face, while the school children exhibited vitamin B complex deficiencies, ocular lesions of vitamin A deficiency, follicular hyperkeratosis and pallor of the skin.

The immunisation pattern of infants and preschoolers from the urban high income group was satisfactory, while the picture presented by the sample in the urban and rural low income groups was unsatisfactory, even with regard to immunisation against small pox and DPT. The morbidity pattern indicated a greater susceptibility of children in the low income group to respiratory and gastro intestinal infections.

Children of the high income group had haemoglobin values in the normal range, while the rest had low values.

Growth pattern of the well nourished infants revealed greatest velocity in the first quarter with the velocity declining in the last quarter to one third in terms of height and one half in terms of weight. By fifth month, the infant boys and girls doubled their birth weight and tripled it by one year. The chest circumference overtook the head circumference at six and nine months for boys and girls respectively.

Growth performance of the children indicated that the increment registered in terms of height were comparable to those of American children, while weight increments were smaller. With the present thinking on problems associated with obesity, lower weight increments can be ignored and norms of weight for age in the affluent nations need not be taken as ideal.

The boys remained taller than girls till the 9th year and the adolescent spurt was initiated by 10 years in girls, with their growth pattern superceding that of boys upto 13 years of age. Evaluation of the growth performance of the school children in the high income group over a period of five years by classifying them in the American percentile values indicated that 67 and 66 per cent of the boys and girls remained in the same percentile channel in height and for weight, 79 and 78 per cent of the boys and girls maintained their initial percentile channel. Improvement towards a higher channel was more evident in height than weight with 15 and 20 per cent of boys and girls respectively as against the 11 and nine per cent in weight. This observation on growth performance of well-to-do children strengthens the point that given a satisfactory environment, Indian children grow as well as children in developed countries.

Analysis of the secular trends in height weight measurements over a five, ten and fifteen year period indicated an increase in height

weight measurements along the lines observed by Tanner[13] in Glasgow children and Yoshimura[14] among the Japanese children. The increase in anthropometric characteristics have been interpreted as probably related to such factors as advances in knowledge of dietary requirements, increased immunisation facilities against disease, better medical care, improved housing and sanitary conditions.

Conclusion

The anthropometric measurements obtained in this research study on infants, preschoolers school going children and adolescent girls from the urban high income group on whom there were no constraints on food intake are comparable with values obtained on well nourished children in our country.

Hence these measurements as presented in Tables I to IV can be used as norms of reference standards for Tamil Nadu in the evaluation of body measurements.

The following Research Articles have been published from this Ph. D Dissertation.

1. Parvathi Easwaran, P., Usha Suri and Rajammal P. Devadas 'Incidence of malnutrition among selected preschool children'. *The Ind. J. Nutr. Dietet.*, 1976, 95, 13.

2. Parvathi Easwaran, P. and Rajammal P. Devadas 'Trends in growth performance of Indian children and development of norms', *The Ind. J.Nutr.Dietet.*, 1981, 155, 18.

3. Parvathi Easwaran, P. and Rajammal P. Devadas. 'Growth performance and secular trends among school children of Coimbatore. *The Ind. J. Nutr. Dietet.*, 1984, 355, 21.

4. Parvathi Easwaran, P.and Rajammal P. Devadas Clinical nutritional deficiency signs and growth retardation among Coimbatore pre-school children. Recent advances in clinical nutrition 2 Ed. Mark. L. Walquist and Steward Truswel A. 1986, pp. 345-347.

REFERENCES

1. Masee, N. and Deschamps, J.P. (1975) Child development indicators and public health. *Assign. Child*, 32, 48.

2. Tanner, J.M. (1971) Growth and its regulation in the healthy child. *Proc. Nutr. Soc. Ind.*, No. 10, 57-59.

3. UNU (1979) Protein energy requirements under conditions prevailing in developing countries, Current knowledge on research needs. Published by the United Nations University, pp. 25, 35.

4. Vijayaraghavan, K. (1978) Growth standards of Indian children. A Decade of Progress, National Institute of Nutrition, Hyderabad, ICMR, New Delhi, p. 4.

5. Swaminathan, M.C. (1971) Observation on growth and development of undernourished children of Andhra Pradesh. *Proc. Nutr. Soc. Ind.*, No. 10, 149-153.

6. Jelliffe, D. B. (1973) Key issues in human nutrition, *J.Trop.Paediat.Environ. Child Health*, 59, 648-654.

7. Vijayaraghavan, K., Dharshan Singh and Swaminathan, M.C. (1971) Heights and weights of well nourished Indian school children. *Ind. J. Med. Res.*, 59, 648-654.

8. Hanumantha Rao, D., Sathyanarayan, K. and Gowrinath Sastry, J. (1976) Growth pattern of well-to-do Hyderabad preschool children. *Ind. J. Med. Res.*, 64, 629-636.

9. Jelliffe, D. B. (1966) The Assessment of the Nutritional Status of the Community. Geneva, pp. 35, 50 and 55.

10. National Academy of Sciences (1974) Comparison of body weight and lengths or heights of groups of children. *Nutr. Rev.*, 32, 284-288.

11. Mitchell, H. S. (1962) Nutrition in relation to stature, *J.Amer.Dietet.Asso.*, 40, 521.

12. WHO (1972) Human Development and Public Health. WHO Technical Report Series, No. 485, Geneva, p. 44.

13. Tanner, J. (1969) Growth of children in industrialised countries with special reference to secular trends. In : "Nutrition in Preschool and School Age", Edited by Bliz, G. Symposia of the Swedish Nutrition Foundation, VII Almario and Wicksell-Stockholm, Sweden, pp .19-20

14. Yoshimura, H. (1975) Comparative studies of growth rate based on living habits and habitat as assessed by anthropometric measurement. Nutrition approaches to practical solution. Edited by Chavex, A., Baurges, M. and Baste, S., Mexico. pp. 68-75.

AN EXPERIMENTAL NON-FORMAL NUTRITION EDUCATION PROGRAMME FOR RURAL WOMEN

— *K. Chittemma Rao (1978)*

The study on an Experimental Non-formal Nutrition Education Programme for Rural women was undertaken to :

1. Develop a comprehensive nutrition education curriculum with messages to be delivered to the mothers along with the health and nutrition programmes of the maternity and childcare services.

2. Develop proto-types of units and discussion guides for the curriculum to be used in nutrition education and non-formal education programmes.

3. Evaluate the overall effectiveness of the materials thus developed and identify the socio-economic and demographic factors associated with the gains in nutritional knowledge.

This study was conducted as two experiments. The first was in Mehabubnagar District of Andhra Pradesh and the second in Coimbatore District of Tamil Nadu.

The experiment at Mehabubnagar

The target group for the experiment were (a) expectant women (b) nursing mothers with child 0-6 months and (c) mothers of children who were being weaned (children 7-36 months of age). The sample included 197 respondents, 103 from six control villages and 94 from six experimental villages. The Auxiliary Nurse Midwives (ANM) were the educators.

The curriculum for nutrition education was developed, its content unitized and proto-type guides for discussions and demonstrations were prepared. Suitable feed back system was also evolved to evaluate the nutrition education material and facilitate its revision. The evaluation of the efficacy of the nutrition education material was done through the comparison of the data obtained before starting and three months after the nutrition education programme.

The results are presented in the following tables.

Table I gives the mean values for the nutrition knowledge of the respondents at Bench Mark Survey (BMS) and Gain (G) in nutrition knowledge as a consequence of nutrition education programme.

TABLE I

NUTRITION KNOWLEDGE OF THE RESPONDENTS DURING BENCH MARK SURVEY (BMS) AND GAIN SCORE (G) IN CONTROL AND EXPERIMENTAL VILLAGES

Area of nutrition knowledge	Mean of means		
	Control group	Experimental group	't' value
1. General Nutrition			
a. Knowledge about functions of food			
BMS	42.97	45.34	0.77
G	34.48	43.47	3.01*
b. Knowledge regarding food groups			
BMS	54.24	53.25	0.90
G	−5.34	21.12	5.37**
2. Nutrition during early childhood			
a. Age of introduction of supplementary foods			
BMS	38.33	37.33	0.58
G	9.84	33.40	3.11*
b. Knowledge about supplementary foods			
BMS	20.50	16.37	2.43*
G	28.29	60.37	10.69**
3. Knowledge regarding extra food needs			
a. During pregnancy			
BMS	45.10	48.31	1.56
G	−7.31	23.43	3.77**
b. Extra food during lactation			
BMS	28.90	31.54	0.70
G	30.34	47.64	3.33**
4. Food avoidance			
a. During pregnancy			
BMS	44.37	45.64	0.46
G	10.54	26.66	2.52*
b. During lactation			
BMS	31.66	33.19	0.48
G	25.50	35.57	2.22*

* Significant at five per cent level

** Significant at one per cent level

The respondents in the experimental group gained knowledge in the nutrition areas evaluated and the nutrition education programme had recorded significant gains in the nutrition knowledge of the respondents

The influence of socio-economic and demographic characteristics on gains in nutrition knowledge is presented in Table II.

TABLE II

THE EFFECT OF SOME OF THE HOUSEHOLD CHARACTERISTICS ON GAIN IN NUTRITION KNOWLEDGE OF RESPONDENTS (MEAN VALUES)

Selected housebold characteristics	'n'	Nutrition knowledge: Regarding functions of food	Regarding food groups	Regarding age of introduction of supplementary foods	About supplementary foods	Extra food needs during pregnancy	Food needs during lactation	Food avoidance during pregnancy	Food avoidance during lactation
1. Type of the house									
a. Hut	(20)	49.77	18.30	24.78	65.22	22.50	54.00	1.52	11.98
b. Thatched	(17)	41.71	13.90	18.22	59.41	13.82	49.99	20.91	43.52
c. Pucca	(52)	40.86	18.92	30.66	70.76	13.46	47.90	23.94	32.98
F-Value		0.97	1.41	0.91	1.49	0.40	0.18	3.18	3.60*
2. Caste									
a. Scheduled	(10)	58.89	17.99	10.52	55.99	25.01	43.01	5.02	23.96
b. Backward	(67)	43.76	18.19	33.95	69.77	14.85	48.52	16.64	30.15
c. Upper	(10)	25.68	6.70	19.19	63.31	11.68	61.66	37.50	36.24
F-Value		5.46**	2.15	9.14**	1.58	0.36	1.59	2.74	0.27
3. Type of the family									
a. Joint	(55)	41.60	12.02	26.27	68.98	12.09	45.37	15.81	26.27
b. Nuclear	(39)	49.05	22.48	28.98	63.72	24.49	56.28	22.84	33.84
F-Value		1.54	2.78**	0.32	0.64	1.19	1.52	0.94	0.92
4. Family size									
a. 6 and above	(55)	39.48	12.74	24.63	68.90	16.73	50.92	15.73	27.54
b. 4—5	(34)	49.42	24.25	32.80	66.31	20.21	55.00	23.24	30.87
c. 1—3	(5)	60.94	15.30	21.04	57.98	3.98	25.01	43.01	46.99
F-Value		3.60*	4.77**	1.16	0.49	0.37	0.51	0.65	0.69
5. Age of the respondent									
a. 31 and above	(21)	41.97	16.40	18.31	66.18	26.44	53.10	9.29	19.76
b. 21—30	(52)	47.46	16.74	28.57	65.77	18.36	55.68	22.79	32.00
c. Upto 20	(21)	37.04	15.79	28.55	69.02	5.23	34.09	18.09	32.62
F-Value		1.34	0.02	0.77	0.13	0.65	2.70	1.10	0.83
6. Number of children (alive)									
a. 4 and above	(29)	39.91	11.65	17.05	66.38	19.14	45.34	11.04	22.41
b. 2—3	(41)	48.56	18.40	32.70	67.42	20.13	59.15	24.15	32.19
c. Upto 1	(24)	42.15	14.25	27.91	67.06	3.95	41.05	15.83	33.12
F-Value		1.11	1.08	1.95	0.02	1.16	2.25	10.57**	0.68

(Figures in parenthesis are numbers studied)

* Significant at 5 per cent level ** Significant at 1 per cent level

Type of the house, caste, type of the family, family size, age of the respondent and number of children alive demonstrated some influence on the gains in nutrition knowledge of respondents.

The experiment at Coimbatore

The respondents in the second experiment in Coimbatore district of Tamil Nadu were also expectant women, nursing mothers within six months after delivery and mothers of children aged 7 months to 36 months of age. The sample size is 55 in experimental village and 51 in control. A detailed background of the respondents with regard to their socio-economic status, pregnancy history, information on early childhood mortality, morbidity pattern of the children and the respondents and family consumer expenditure pattern were studied. The data collected at the BMS and three months after the nutrition education programmes (PPS) are given below.

TABLE III

PER CAPITA EXPENDITURE ON FOOD AND NON-FOOD ITEMS AS PERCENTAGE OF GENERAL CONSUMER EXPENDITURE

Per capita general expenditure levels	Treatment	Percentage of general expenditure on food		Percentage of general expenditure on non-food	
		BMS	PPS	BMS	PPS
Upto Rs. 35/-per month	Control (17)	78.8	74.1	21.2	25.9
	Experimental (16)	78.1	74.4	21.9	25.6
Rs. 35-45/- per month	Control (13)	75.3	62.6	24.7	37.4
	Experimental (14)	75.5	69.3	24.5	30.7
Above Rs. 45/- per month	Control (18)	73.1	68.3	26.9	31.7
	Experimental (17)	73.7	69.6	26.3	30.4
Overall	Control (48)	75.7	68.3	24.3	31.7
	Experimental (47)	75.8	71.1	24.2	28.9

(Figures in parenthesis are number studied)

The per cent expenditure on food were higher in experimental group than that in the control group during Post Post Survey (PPS). The overall difference was 2.8 per cent and this might have been due to the realisation of the importance of food in their life.

There was an increase in food expenditure in the experimental group on food groups like pulses, vegetables and milk compared to control both in PS and PPS.

TABLE IV

PER CONSUMPTION CO-EFFICIENT UNIT FOOD INTAKE IN EXPERIMENTAL AND CONTROL GROUPS DURING INITIAL AND FINAL DIETARY SURVEYS (Average in Gms.)

Treatment	Survey	Cereals	Pulses	Greenleafy vegetables	Roots and tubers	Other vegetables	Fruits	Fleshy foods	Milk and milk products	Fats and oils	Sugar and Jaggery
Control n : 28	Initial	408	45	15	36	21	5	7	13	5	13
	Final	382	41	15	23	11	3	7	7	3	8
Experimental n : 24	Initial	449	35	17	36	16	23	27	26	9	17
	Final	437	48	42	31	24	15	6	36	3	7
Composition of suggested balanced diet		400	55	100	75	75	30	60	100	40	30

Dietary surveys were conducted by weighment method with 28 families in the control and 24 families in the experimental group both at BMS and PPS. The PCU food intake of both the groups at BMS and PPS are presented in Table IV.

The mean Perconsumption Coefficient Unit intake of pulses, green leafy vegetables, other vegetables, milk and milk products were higher during the final diet survey in experimental group. Similar trends were observed with regard to the food intake of breastfed children of 1-3 years as well as children between 2-5 years of age who are completely weaned from breast milk.

The nutrition education programme recorded a significant effect on the awareness of the respondents regarding the existing health and nutrition services. A positive shifts in food beliefs on the respondents with regard to foods to be avoided during pregnancy, lactation and early childhood was observed.

The respondents in Experimental group gained knowledge in nutrition significantly and retained well. The Non-Formal nutrition education imparted to the rural illiterate mothers improved their nutrition knowledge and food and nutrient intake of the family and the young children.

OUTCOMES OF PREGNANCY AND LACTATION AS INFLUENCED BY SOCIO ECONOMIC FACTORS AND NUTRITIONAL INTERVENTIONS

— *Vijayalakshmi P. (1981)*

The main objectives of the study are four fold.

1. Compare the existing nutritional status of selected expectant mothers in two income brackets in terms of food and nutrient intake, clinical picture, biochemical profile, weight gain during pregnancy and other parameters.

2. Correlate the maternal nutritional status with that of the infant.

3. Bring out the relation between lactation and growth performance of the exterogestate infants.

4. Study the impact of specific intervention programmes namely, the Applied Nutrition Programme, (ANP), Prophylaxis against anaemia programme and Massive dose of vitamin A supplementation to expectant mothers in addition to iron supplementation.

The study covered a total of 2063 expectant mothers, 1264 in the low and 799 in the high income groups over a period of five years.

The results of the study brought out the following facts.

1. The mean food intake of the randomly selected 66 mothers from low and 54 mothers from high income group, indicated that the mean daily intake of the mothers in the low income group was grossly deficient. Although the intake of cereals, pulses and green leafy vegetables by the mothers in the high income group was less than the allowances recommended by the ICMR, their intake was adequate with reference to all the nutrients, except energy.

2. The clinical examination of the expectant mothers brought to light the high prevalence of angular stomatitis and cheilosis (10.6%), oedema (40%) and anaemia (63%) among the low, inadequately fed group. In contrast, there was only one per cent of oedema and nine per cent of cases with anaemia, in the high income, well fed group.

3. The biochemical investigations revealed that the expectant mothers in the low and high income groups showed mean levels of

a) total serum protein 5.42 g/100ml and 7.02 g/100ml respectively.

b) serum albumin 2.74 g/100ml and 3.85 g/100ml respectively and

c) serum globulin 2.79 g/100ml and 3.17 g/100ml respectively. The mean haemoglobin level was 8.74 g/100ml for the low income inadequately fed group, against 10 64 g/100ml for the high income well fed group. Mean serum iron levels recorded by the latter was 64.2 μg, while the former recorded a mean value of only 38 1 μg indicating high risk.

Mean serum retinol value of the high income well fed mothers was 28.26 μg/100 ml against the 13.5 μg/100 ml of the low income inadequately fed mothers.

Mean serum folate level was 7.9 ng/ml for the high income well fed group against 3.74 ng/ml for the inadequately fed group as assessed by microbiological assay. A more accurate and less variable quantitative index of folate nutrition namely red cell folate assay also indicated that the mean value was 160.65 ng/ml and 120.55 ng/ml for the well fed and inadequately fed group respectively.

Mothers in the high income well fed group had registered a mean weight gain of 8.14 kg during pregnancy, while their counterparts had recorded only 5.9 kg. The mean heights were 150.7 cm and 148.96 cm respectively.

Thirty one per cent of the mothers from the low income inadequately fed group had below 36 weeks, against only 15.35 per cent in the high income well fed group.

An index has been evolved to assess the risk levels of expectant mothers. An attempt has also been made to evolve guidelines for interpretation of serum levels of certain nutrients. Infants born to well fed high income group had recorded higher anthropometric measurements.

From among these expectant mothers it was possible to follow 107 mothers from the low income and 122 mothers from high income and study details relating to their nutritional profile.

The food and nutrient intake of the nursing mothers was deficient in most of the foods and nutrients. Anaemia and angular stomatitis continued to be the prominent signs of malnutrition during the nursing period. There was an increase in serum retinol and haemoglobin levels from the levels during pregnancy.

The breask milk output was 670ml in the low income group and 552 ml in the high income group. Economic value of breast milk for 12 months indicated a saving of Rs. 31.25/- month. The amenorrheal period appeared to be positively correlated with the length of breast feeding. One third of the infants from the low income group were infested with thread worms and round worms, against none in the high income group.

Impact of the Applied Nutrition Programme

Impact of the Applied Nutrition Programme on 25 mothers revealed that the mean weight gain, haemoglobin levels and anthropometric measurements of the new born were better for the mothers participating in ANP than those not participating

Impact of the prophylaxis against anaemia programme

The intake of iron and folic acid was increased through the supplementation in the prophylaxis programme. As a result, the mean weight gain, haemoglobin levels, serum red cell folate and serum iron levels had increased 120 mg of ferrous sulphate and 300 μg of folic acid appear to be the most desirable values.

Impact of vitamin A and iron supplemention

The serum vitamin A levels of the three groups of expectant mothers who received varying combinations of vitamin A and iron and control indicated that the vitamin A and iron supplemented group recorded higher values of serum vitamin A (31.1 μg) than the other groups. Vitamin A supplemented group recorded a serum iron level of 54.3 μg, vitamin A and iron supplemented group 96.23 μg, iron supplemented group 67.63 μg and control 38.1 μg.

Out of these results many recommendations emerged. The most important ones were :

1. If maternal malnutrition can be prevented most of the hazards due to pregnancy can be averted and hence appropriate nutritional care before and during conception should be emphasised.

2. The use of the simple index should be encouraged to locate mothers at risk during pregnancy and immediate remedial measures taken.

3. Supplementary feeding programmes must be continued for the vulnerable groups.

4. Massive nutrition and health education must be mounted and maintained to make people more conscious of nutrition.

5. Special attention should be paid to the weaning period, child spacing through family planning and provide adequate training in nutrition and health education.

6. The allowances prescribed by ICMR should be thoroughly examined and suitable modifications made.

AN EVALUATION OF PRESCHOOL FEEDING PROGRAMMES IN AND AROUND COIMBATORE

— *S. Premakumari (1982)*

Evaluation of feeding programmes is indispensable to obtain information about how the programmes are functioning with respect to achieving their goals. This investigation was designed to evaluate the preschool feeding programmes operating in and around Coimbatore. Five hundred preschool children (Group A) from 14 preschool feeding centres and 650 preschool children (Group C) from four Modified Special Nutrition Programme (MSNP) centres formed the two experimental groups. From the rural areas 170 children (Group B) and from the urban slums 200 children (Group D) who neither participated in the feeding nor attended the preschool formed the respective control groups. Anthropometric measurements, clinical assessment, blood haemoglobin levels, nutrition knowledge of the children and their mothers were used as the criteria for evaluating the two feeding programmes.

Sub samples, were selected from these four groups and two more groups, one with children attending the rural preschool but not the feeding programme, and the other with children not attending the school but the MSNP alone were selected for studying the socio-cultural influence of the feeding programmes. A standard schedule with scores was evolved to evaluate the performance of the preschool feeding centres. Using this schedule 20 feeding centres were assessed and rated as 'average' 'above average' or 'below average' in their performance and also the weaker areas of performance in each of those centres was identified. The findings were :

1. Socio economic background of the families:

The mean monthly income of the families were found to be Rs. 297.3, 336.1, 285 6 and 291.4 for groups A,B,C and D respectively. The per cent of households living below the poverty line were 61.0, 49.9, 66.9 and 58.9 in the groups A,B,C and D respectively. A maximum portion of the income (61-80%) was spent on food in all the families studied. More than 70 per cent of all the families spent 40 to 80 per cent of their food expenditure on cereals. Less than 10 per cent of their food expenditure was on pulses, while the remaining expenditure was shared by all the other foods.

2. Nutritional outcomes of the feeding programmes :

The mean heights and weights of the children recorded over a period of six months revealed that none of the children reached the ICMR standard anthropometric measurements for their age groups. Among the children in the two feeding programmes, those in the preschool feeding programme registered a significantly greater height and weight increments over the children in the MSNP. When compared with the respective controls, the children in the experimental groups registered a significantly greater heights and weights than the control children.

In groups A,B,C and D only 47.0, 22.3, 38.0 and 20.0 per cent of the children were free from deficiency signs. Among the two groups of beneficiaries, the rural children who attended the preschool feeding programme had better health picture than the beneficiaries in the 'Take Home' feeding programme. The common deficiency signs observed among the children were anaemia, angular stomatitis, red-raw tongue and dry skin while hair changes, bleeding gums, bitot's spots, xerosis of conjunctiva and moon face were present in lesser number of cases.

The mean blood haemoglobin levels of randomly selected children in groups A, B, C and D were found to be 10.2, 9.4, 10.0 and 9.5g per 100ml respectively indicating that inspite of attending the feeding programmes the mean haemoglobin levels of the beneficiaries were found to be lower than the WHO standard namely 11.0g per 100ml blood. However the children in the two feeding programmes showed a significantly higher levels of haemoglobin ($P < 0.01$) when compared with the respective control children.

The mean intake of all the nutrients were found to be deficient in all the children. It was found out that only 44.5 per cent of the calories and 67.0 per cent of the protein supplied in the preschool feeding programme were utilised for supplementing the home diets while the rest of the calories and the protein only substituted their home diets. In the case of the MSNP, only 39.2 per cent of the calories and 25.7 per cent of the protein served to supplement the home diets of the children.

3. Nutrition knowledge of the children and their mothers

The nutrition knowledge of the children as well as the mothers was found to be very poor. However children and the mothers belonging to group A stood highest in their scores than the subjects in Group C while the control group children and the mothers received the lowest scores for their nutrition knowledge.

4. Food consumption details of the MSNP beneficiaries

In the MSNP, Balahar was supplied to the children at the rate of 100g per day per beneficiary on 'Take Home' basis. It was found out that only 22 per cent of the beneficiaries utilised a week's ration for six to seven days as expected. In nineteen per cent of the cases food was exhausted within four to five days, obviously due to sharing by the rest of the family members. In 30 per cent of the families it was used for two to three days only while in 20 per cent of the families they prepared a meal out of 700g ration and the entire family consumed it.

5. Social behaviour of children

When the children were sent to pre-school regularly, they developed their general behaviour and their participation in the feeding programme alone did not bring about any significant impact on their behavioural pattern at the pre-school age.

6. Cultural practices of the families

Among the two feeding programmes, the MSNP had a more influencing role on the cultural practices of the families which might be due to their free access to the physician and the participation of those mothers from early pregnancy up to the lactation period in the same feeding programme.

7. Cost analysis of the feeding programme

The total cost of feeding and maintaining a preschool feeding centre was worked out to be 32.5 paise/head/day while the cost of the MSNP amounted to 31.8 paise/head/day with a difference of 0.7 paise/head/day. Though 0.7 paise/head/day was spent more in the preschool feeding, in this programme it was possible to ensure the proper consumption of the food supplements which was reflected in the overall nutritional status, nutrition knowledge and the behaviour pattern of the children.

8. Standard schedule for evaluating the feeding programme

The standard evaluating schedule developed had 20 finalised criteria with a range of scores for each, to indicate the average performance of the centres. If a feeding centre received scores above the upper limit of the range it indicated an above average performance of the centre in that particular criteria while the scores below the lower limit of the

range indicated the below average performance of the centre in the particular criterion. Through this schedule it was possible to spot out the exact inefficient areas of performance in each feeding centre. Using these pointers future improvement programmes could be efficiently planned.

The range of scores indicating the average performance of the centres is given in Table I.

TABLE - I

SCORES INDICATING THE OVERALL AVERAGE PERFORMANCE OF THE PRESCHOOL FEEDING CENTRES

S.No.	Criteria	Range (scores per cent)
1.	Enrolment in the feeding centre	70.3 - 93.5
2.	Attendance of the beneficiaries	66.6 - 81.5
3.	No. of days of feeding against the requirement	90.0 - 98.3
4.	Kitchen and dining facilities and other equipment available to run the programme	63.5 - 85.5
5.	Adequacy of water supply	58.5 - 84.3
6.	Environmental sanitation	41.1 - 78.8
7.	Participation of children in activities	38.7 - 58.4
8.	Morbidity levels among the children	55.6 - 86.9
9.	Health check-up of the children	36.9 - 84 7
10.	Presence of adequate supervision	44.7 - 63.8
11.	Availability of the cook and hygienic practices of the cook	78.4 - 98.7
12.	Nutrition knowledge of the preschool teacher	48.5 - 74.7
13.	Nutritional status of the children	72.1 - 82.6
14.	Personal hygiene of the children	45.2 - 72.9
15.	Food habits of the children	53.6 - 71.6
16.	Nutrition knowledge of the children	27.1 - 58.4
17.	Adequacy of the quality of the food supplied	79.0 - 93.3
18.	Adequacy of the quantity of the food supplied	79.0 - 93.9
19.	Nutrition knowledge of the parents	44.1 - 63.2
20.	Opinion of the parents about the programme	61.9 - 75.4

For every criterion score 3 was given to a feeding centre if it stood efficient, score 2 was given if it was average and score 1 if it was inefficient. Thus the maximum index value a centre could secure was (20x3) 60, the minimum was (20x1) 20 and the average was 40. Based

on these, the following range of values were considered for the index to decide whether or not the overall performance of the feeding centre was 'above average', 'average' or 'below average'.

Total scores 50 and above indicated efficient conduct of the programme, scores between 30 and 49 indicated average efficiency and scores below 30 indicated inefficient conduct of the programme. Using this procedure the overall efficiency of the selected feeding centre was judged.

In this investigation, of the 20 centres tested, two centres were rated as 'above average', one centre as 'below average' and the remaining as 'average'. It was observed that among the 20 feeding centres, only three could maintain a kitchen garden and the participation of the public was found to be very meagre in all the centres studied. Water problems, inadequate kitchen and dining facility and inadequate nutrition knowledge of the preschool teacher were some of the common observations made among the feeding centres. In general, the centres evinced satisfactory standards in the food habits of the children, hygiene of the cook, participation of the children in activities, nutrition knowledge of the parents and their opinion about the feeding programme. The ranges of scores obtained for these major criteria substantiate these observations.

Conclusion

The newly developed schedule was found to be very effective in evaluating the preschool feeding programme. It could be widely used to evaluate any on going preschool feeding programme. It not only helps to evaluate the overall performance of the programme but also the criteriawise evaluation of the centres. Through this type of evaluation it would be possible to spot out the exact inefficient areas which prevent the successful outcomes of the programme. This standardised schedule if properly administered by trained personnel, it would be possible to obtain reports of uniform evaluation of the programme from the entire state or the country as per the requirements.

Recommendations emerged out of this study are as follows :

1. A systematic phased programme of introducing all the basic facilities such as water, equipment and fencing in the existing preschool feeding centres must be undertaken by the Government and other sponsoring agencies.

2. The personnel in the feeding programme, starting from the grass root level workers to the top level officials should be oriented to the conduct and the evaluation of the programme.

3. All the feeding programmes in the preschool must have the component of nutrition/health education.

4. Since the nutritional outcomes of the preschool feeding programme is more promising than the MSNP, more of the former type of the programme should be encouraged in future.

5. The health workers attached to the PHCs must take care of the health and nutrition problems of the beneficiaries.

6. Through regular and organised parents' meetings, the very poorly existing public participation in the feeding programmes should be strengthened.

7. All the nutrition intervention programmes must have a built in evaluation which must be the basis for follow up and continuous feed back.

GARMENT MAKING AS AN INCOME GENERATING ACTIVITY FOR RURAL WOMEN

— *R. Raji (1983)*

Integrated Rural Development Programme emerged as an integral feature of the Sixth Plan. Its objective is to provide production assets and employment opportunities to the poor for attaining higher income and better standards of living. The economic uplift of women is fundamental as women constitute one half of the nation's resources. Among the wide spectrum of opportunities for women, the garment industry provides a large employment potential. In the IRD Programme, assistance is rendered to beneficiaries in the purchase of sewing machines. With minimum capital investment garment making can be adopted for self employment by women for supplementing their family income.

Studies on consumer preferences reveal that readymade garments are highly priced with improper fitting and stitching aspects. In India commercial patterns are not available for dressmaking as in Western countries. Attempts have been made in this research to study the above aspects.

Methodology

The methodology of the research included the following aspects.

a. Study of consumer preferences and problems in clothing selection

b. Standardising body measurements for selected women's wear and for preschoolers

c. Organising a garment unit for rural young girls and training them for production and

d. Evaluating the unit in regard to the training programme and production.

Study of consumer preferences and problems

Consumer preferences and problems were studied by conducting surveys on 200 young women consumers, 300 consumers belonging to low middle and high income levels and 200 educated mothers who had preschoolers. The findings of the surveys formed the basis for standardising body measurements.

Standardising body measurements

Body measurements were standardised for selected women's wear and for preschoolers. Bust measurements were grouped into five sizes for choli and each size included fifty samples. Thirteen body measurements were standardised based on bust measures using mode as the statistical tool.

For petticoat 600 women formed the sample and four body measures were standardised based on length using mode or median as the statistical tool.

Thirty body measurements were standardised for 850 preschoolers- 430 boys and 420 girls of three to five years age.

Paper patterns were developed for choli, muslin patterns were constructed for each size and the five sizes were evaluated for ease, fit and general appearance.

The same procedure was followed for petticoats of 95 cms to 100 cms.

Since observations revealed that frocks, shirts and halfpants happened to be the most common outfits for preschoolers, dress designs were developed for the above using standard body measurements and garments were constructed. Children of the particular bust size were made to wear the dresses and the evaluation was done by 50 judges. The adaptation of standard measurements for different types of preschoolers' dresses were tested. Standard body measures were used for garment production.

Organising a garment unit for young girls

Kooranoor happened to be the village selected for IRD Programme in Seeliyur Panchayat, of Karamadai Block, Coimbatore district. From the nearby villages 250 families were surveyed using an interview schedule.

Their expenditure patterns, clothing practices and problems revealed that there was a dire need in this area for income generating occupations.

Ten girls were mobilised and motivated to join the educational programme. Minimum equipment were purchased and the course contents were outlined for vocational training programme. The ten candidates were made to undergo adequate training in making selected garments for six months.

Evaluation of the garment unit

The training programme was evaluated for interest, skills developed and knowledge obtained by candidates.

Production was commenced after six months training period. Orders were solicited from different sources such as NTC, KVIC and others. NTC agreed to provide their seconds for making ready made petticoats. The production and despatch of petticoats for NTC formed a regular feature of the programme. From the different records maintained, the garments produced within a specific period, the amount earned by candidates and the monetary benefits incurred could be assessed.

The reaction of 150 consumers who purchased and used the petticoats were also studied, the data collected and analysed.

Findings of the study

Majority of consumers preferred tailor made cholis and readymade petticoats. Poplin and long cloth were preferred for petticoats and two by two and cambric for cholis. Common sizes in readymade petticoats happened to be 95 cms/100 cms and six gored skirts were preferred. In preschooler's wear tailor made garments were popular in the three income levels. Ready mades were popular only in the middle and high income levels. Irrespective of income levels, cotton fabrics such as poplin, cambric and two by two were preferred both by consumers and mothers because of reasonable price, durability washability and comfort. Terecots were preferred due to qualities such as crease resistance and easy maintenance. Poor workmanship, non durable decoration, heavy cost, improper fitting were the main problems faced in readymades.

The evaluation of muslin cholis for five sizes reveated that the position of darts, ease, and comfort were good as rated by the judges. The evaluation of petticoats for four sizes revealed the judges were satisfied with general appearance, fitting and construction aspects.

Out of 850 preschoolers 394 male and 379 female sample rendered themselves for standardisation of eight bust sizes for boys and nine bust sizes for girls.

The variations in body measurements among different bust sizes amounted to one to two centimeters only except in a few selected length and round measured.

The evaluation of the most common outfits constructed out of standard measurements revealed that these garments were rated as 'good' in general appearance and fitting aspects and found acceptable to mothers.

The candidates were very regular in their participation in the training programme. The results of the initial performance when compared with final performance revealed there was immense progress in skill development. The scores obtained by them showed that their progress was satisfactory.

For implementing the training programme for ten candidates for six months the cost incurred was Rs. 3500/-. Self assessment by the candidates revealed their immense satisfaction in acquiring knowledge and skills in clothing construction. Training proved to be an asset to them for future employment purpose.

The major source of orders happened to be the National Textiles Corporation that orders were forth coming for the unit from NTC and showed that the produced goods had standards of quality, gained recognition could undergo competition in the clothing market.

The peak period of earning happened to be July/August to November. On an average a candidate could earn Rs. 400 per year. For very low income families this could not be despised with. The financial implications of the unit revealed an income of Rs. 1805 could be realised for one and a half year period with a minimum capital investment of Rs. 5000/- borrowed as loan from banks at differential interest rates of four per cent. If an organiser can set up a unit in his premises he would realise Rs. 1000 after paying the interest and can repay the loan in five years. Improved returns can be expected with greater concentration, close supervision and mobilisation of orders. Hence it would be profitable for unemployed youth to start such unit as these would cater to self employment.

Consumers preferred plain petticoats, the common sizes being 95 cms/100 cms. The majority were satisfied with general appearance, fitting and stitching aspects, the quality of fabrics, drapability and comfort in wearing. The above showed that petticoats can be undertaken for mass production within a short period of training of candidates.

MENTAL ABILITIES OF SELECTED MALNOURISHED PRE-SCHOOL CHILDREN IN COIMBATORE CITY

— *N. Jaya (1978)*

This study undertaken to find out the relationship between the nutritional status and mental abilities of selected pre-school children was carried out in three parts. The first part comprised the study of the ecological factors regarding the malnourished children who attended the Coimbatore Medical College Hospital during 1971. The number of pre school children registered per day in the Out Patient's Department of the hospital was noted for a period of five months. The morbidity pattern of the cases registered in the hospital was also studied. The family background, dietary pattern, birth order and duration of illness of the malnourished children were recorded. Out of these emerged an assessment of the dimensions of malnutrition prevalent in the selected community.

The second part of the study was a comparison between the five groups of children of preschool age under identical socio - economic conditions. Children attending a preschool with meal programme formed group I; children from a preschool without meal programme comprised group II; children who were not attending preschools constituted group III. All these three groups were not malnourished. Less malnourished children and malnourished children formed groups IV and V respectively. Each group had 20 children, making up a total of 100. Clinical scores, anthropometric measurements, nutrient intake and mental abilities of these groups of children were assessed over a period of one year.

The third part of the study was longitudinal in nature, as a follow up of severely malnourished and mildly malnourished children over a period of four years. Comparison of height, weight, protein and calorie deficit variations of severely and mildly malnourished children and their siblings over the years was done in this phase. Correlation and regression analysis between mental ability scores and physical attributes and between mental ability scores and nutritional attributes were computed to find out whether or not the physical and nutritional attributes had any relationship to the variations in the mental ability score of those children malnourished earlier and their siblings separately. For this purpose, the simple correlation co - efficient between the mental ability scores as the dependent variable and height, weight, protein, calorie deficits as the independent variables was computed for the four years and tested for

significance. In order to explore the functional relationship of the parameters such as height, weight, intake of protein and calorie on the mental ability score and their relative contributions towards the mental ability score, a multiple correlation and regression approach was adopted. Since the study was conducted for over a period of four years, an attempt was also made to compare the physical, nutritional and mental attributes of those malnourished earlier with those of their siblings at the corresponding age periods and assess the real impact of malnutrition on the different attributes.

The findings of this study are summarized below :

1. The total number of children below five years attended the Coimbatore Medical College Hospital during the period August 1971 to December 1971 was 18497. This is approximately 20 per cent of the children in the city. The number of male children attending the hospital was greater than that of female children (10515 against 7982).

2. Nutritional disorders were predominant in the morbidity pattern. The incidence of PCM was 61 per cent The other major causes of morbidity were: infections of respiratory (15.9%) and gastro intestinal origin (15%) followed by convulsive disorders (1.5%) and accidental poisoning (1.3%).

3. Forty five per cent of the families of the malnourished children had a per capita monthly income below Rs. 20/-. These families had the highest number of cases (5147) registered when compared to those who had per capita family income of Rs. 20 to 40 and above Rs. 40/. The number of cases attending the hospital in the latter categories was 3562 and 2617 respectively. The association between the income group and intensity of malnutrition was significant

4 A majority of the malnourished children were from large families with III, IV and V birth orders.

5. The meal pattern of 95 per cent of the pre-school children attending the hospital was ill balanced, predominantly lacking in fruits, green leafy vegetables, milk and other protein rich foods.

6. The clinical and health status of children attending the preschools was better than those not attending preschool.

7. Their anthropometric measurements such as heights, weights, head, chest, arm circumferences were also higher. These differences were statistically significant at one per cent level.

8. Children in group I, attending a pre school that provides a balanced meal programme had the highest nutritional status and ranked first in scores of mental abilities, followed by those in groups II and III. Children in groups IV and V scored the lowest and the differences between groups I and II, I and III, I and IV, I and V, II and III, II and IV, II and V and III and V were significant, indicating better nutritional status and learning opportunities go hand in hand together with higher mental abilities.

9. As for the performance in the tests of problem solving, that is, the ability to recognize and to perceive a problem and employ proper means to solve the problem, the children of group I, scored the highest followed by those in groups II and III. Children in groups IV and V were unable to explore the solutions to the problems posed. These differences in the performances between groups I and II, I and III, I and IV, I and V, II and IV, II and V and III and V were highly significant statistically.

10. Children of groups III, IV and V who had poorer clinical and nutritional status achieved low scores in the tests of mental abilities.

11. Inadequate calories and nutrient intake were found to be associated with poor mental performance and problem solving. Nutritional feeding and educational exposure and motivation in the preschool appeared to be the factors which influenced most favourably the nutritional status and mental abilities of the children in group I.

12. Children whose food intakes were adequate in both protein and calories, scored highest in mental abilities. As the calorie inadequacy advanced, even though the food intakes were adequate in protein, the scores in mental abilities became less and less.

13. Among the 22 children who had been malnourished earlier, 16 had been bottle fed; two from their birth onwards and the rest between third and sixth month (chronologically). None of the mothers used low cost weaning foods.

14. The association between malnutrition and frequency of illnesses was significant indicating the fact that those who suffered acute malnutrition were most often affected by illnesses such as cold, cough diarrhoea followed by measles, dysentry and nutritional deficiency disorders.

15. The height deficit of the severely malnourished was three times more, when compared to that of their siblings who had not been affected by malnutrition. The deficit rate in the weight with the severely malnourished was 31.13 per cent while it was 7.28 per cent in the case of their non-malnourished siblings. Against 38.25 per cent of calorie deficit in those malnourished earlier, the corresponding figures were 13.25 per cent in the siblings. As for the protein deficit in the severely malnourished and their siblings the overall mean protein deficit values computed for the two groups was found to be 26.30 and 11.85 per cent respectively. There was a significant variation in the height, weight, calorie and protein deficit over the years as shown by the 'F' test of significance.

16. Marked differences existed among the mean height, weight, calorie and protein deficit values of the mildly malnourished and their siblings over the years. The mean deficit in height and weight for the mildly malnourished and their siblings were 11.23 and 4.75; and 17.81 and 6.94 per cent respectively, as against the mean calorie and protein deficit which were 18.5 and 13.5, 18.04 and 14.25 respectively. Comparison of the mildly malnourished with their non-malnourised siblings with regard to the height, weight, protein and calorie deficit, revealed that the deficit per cent was significantly higher with the mildly malnourished than their siblings.

17. Comparison of physical, nutritional and mental attributes of the earlier malnourished and their non-malnourished siblings by the test of significance confirmed that despite the similarity in environmental conditions, socio economic backgrounds and age, children who were affected by malnutrition during their second year of life, lagged behind in physical and nutritional status and mental abilities.

18. The frequency of illnesses was higher among the children who were affected by malnutrition; the school attendance and academic performance of those children malnourished earlier were poorer than their siblings. Siblings of malnourished children participated in games and activities more actively than the malnourished themselves.

19. The reports of parents and teachers showed that the non-malnourished siblings of the malnourished were superior in socialization better in behaviour than those who were malnourished during their second year of life.

20. The type and intensity of relationship between the mental ability score and height deficit, computed over the four year period, showed the existence of a remarkably negative relationship between the two characteristics. The correlation co - efficients indicated that the relationship between weight and mental ability was negative during all the years of the study. This relationship was remarkably consistent in its inferiority. The relationship was between calorie deficit and mental ability scores was also negative as in the case of height and weight. Furthermore, significant negative relationship was consistant in greater dimension, irrespective of the period of observation of the characteristics. The overall estimate of the simple correlation coefficient between the calorie deficit and mental ability score worked out to -0.6450 being significant at $p=0.01$ level, thus establishing a strong negative relationship between calorie deficit and mental ability scores. The relationship between the protein deficit and the mental ability score and the overall estimate of the correlation were also negative, establishing the evidence that the protein deficit in the molnourished children would pull down their mental ability. From the pooled estimates of the simple correlation coefficient between the mental ability score and the calorie deficit, mental ability score and the protein deficit (-0.645 and -0 44 respectively) and also based on the significance of the values (the former being signficant at $p=0.01$ and the latter being signicant at $p=0.05$ level), it could be definitely said that the negative intensity of relationship between the mental ability score and the calorie deficit had been remarkably more than the intensity of relationship between the mental ability score and the protein deficit.

21. Contrary to the significant correlations for the individual years as well as the significant pooled estimate of the correlation coefficients in the case of malnourished children, the mental ability scores of the siblings who had not been affected by malnourished children, the mental ability scores of the siblings who had not been affected by malnutrition in their early childhood, were orthogonal to their physical and nutritional attributes. Comparision of the deficit per cent of severely malnourished and mildly malnourished children with regard to their physical, nutritional and mental attributes (pooled) brought forth the fact that higher the level of malnutrition, higher would be the increases in height, weight, calorie and protein deficits and would thus correspondingly decrease the mental ability scores significantly.

22. The combined influence of the independent variables; height, weight, calories and protein deficits on the dependent variable mental ability score, assessed through a multiple regression approach, revealed that the calorie deficit played the most prominent role in

determining the mental ability score of children, who were malnourished earlier, followed by height, weight and protein. Thus from the multiple regression approach, it is seen that when there is interaction of the four independent variables, height, weight and protein deficits converge towards the calorie deficit. It is also clear that all the four variables put together have interacted with each other with high order intra-class correlations, resulting in the calorie deficit, which is responsible for 69 per cent contribution towards determining the mental ability score in the malnourised children.

23. Comparison of the physical, nutritional and mental attributes of the malnourished children with those of their siblings, at the corresponding age periods revealed that the height, weight, head and arm circumference, protein and calorie deficit and the deficit in the mean scores of mental abilities were significantly greater for the malnourished children than for their siblings.

24. The average deficits in height, weight, calorie and protein intake were greater in the case of drop outs than in the case of children participating in the school lunch programme. The mental ability score of the latter group was higher by three points.

25. Nonformal education given to the families of malnourished children during the study period resulted in a better concept of balanced diet, desirable methods of cooking, low cost weaning foods, immunisation practices and ways of supplementing their family income.

A COMPARATIVE ANALYSIS OF LANGUAGE DEVELOPMENT OF CHILDREN AMONG THE AGE GROUP 2½-5 YEARS WHO ARE ATTENDING AND WHO ARE NOT ATTENDING PRESCHOOLS

— *G. Pankajam (1980)*

The early years of the child are the most impressionable and crucial period. The pre-schools can become an antidote for the deprivation and promote language development of children. A survey of researches done on language of children in India reveals that most of the studies are on vocabularies of children.

There were no researches conducted on language development of children between two and a half and five years of age who are attending and not attending the pre-schools on a comparative basis Hence the present study with the following objectives.

To examine the claim that attending pre-school and the experiences provided there, help children especially those who are coming from culturally, economically and socially deprived homes in their acquisition of language.

To find out whether there is any relationship between the age of the children and their language development.

To find out whether the children who are coming from urban areas are better than their counterparts in rural areas.

The following steps were followed to design the study :

1. Identifying two different areas-rural and urban.
2. Identifying pre-schools which satisfy the characteristics of a good pre-school, in these areas.
3. Obtaining four sets of samples representing each category namely urban attending, urban non-attending and rural attending and rural non-attending.
4. Observing children in the free play situation and when they are in the company of their parents and collecting appropriate data and recording the speeches using the standard recording procedures.
5. Administering a set of pictures and toys to each child to elicit the oral responses and recording them in the tape.

6. Analysing children's speech with reference to parts of speech and sentence patterns.

The sample for the study was drawn from both urban and rural areas of Madurai District in Tamil Nadu. The rural sample was drawn from Athoor Panchayat Union in Madurai District. The total sample size was 411 of which 258 were drawn from a population attending pre-schools and 253 were from the population which was not attending pre-schools.

Findings :

1. The language abilities of children who attended pre-schools seem to be significantly higher at 0.01 level than those who did not attend pre-schools, in the use of nouns, verbs, case particles and vocabulary. The difference was found to be significant at 0.05 level in the use of the following aspects of language of children who attended pre-schools use of verb adjuncts and numerals. No significant difference was observed in the use of the following aspects of language of children : pronoun-self ie. the egocentric speech noun adjuncts, total number of words spoken and the use of imply verbs. (Table I)

TABLE I

S. No.	Language aspect		No.	Mean	Mean difference	S D.	Value of 'Z'	Level of significance
1.	Nouns	A	258	178.2	+12.9	56.175	2.624	0.01
		NA	253	165.3		54.71		
2.	Verbs	A	258	145.69	+17.54	59.473	3.38	0.01
		NA	253	128.15		57.55		
3.	Pronoun Self (a)	A	258	10.98	— .89	9.646	1.016	N.S.
		NA	253	11.87		10.32		
4.	Pronoun Socialized (b)	A	258	17.00	— 6.84	15.076	3.6286	0.01 Favourable towards NA
		NA	253	23.84		26.11		
5.	Noun Adjuncts	A	258	10.5	+ 2.84	23.52	1.74	N.S.
		NA	253	7.66		11.04		
6.	Verb Adjuncts	A	258	30.5	+ 4.8	21.46	2.46	0.05
		NA	253	25.7		22.58		
7.	Numerals	A	258	13.8	+ 2.4	12.43	2.43	0.05
		NA	253	11.4		9.34		
8.	Case Particles	A	258	11.23	+ 2.32	9.48	2.67	0.01
		NA	253	8.91		10.43		
9.	Total No. of words spoken	A	258	399.91	—13.67	209.8	.223	N.S. Advantage in favour of NA
		NA	253	403.58		156.97		
10.	Simple verbs	A	258	70.58	— 6.25	55.66	1.486	N.S.
		NA	253	76.83		37.24		
11.	Compound verbs	A	258	14.83	+ 2.06	13.88	1.98	0.05
		NA	253	12.77		8 97		
12.	Vocabulary	A	258	232 3	+43.38	96 39	6.514	0.01
		NA	253	188 87		44 07		

A Attending NA Not Attending N.S. Not Significant

TABLE II

S.No.	Language Aspect		No.	Mean	Mean difference	S.D.	Value of 'z'	level of Significance
1.	Complete Sentence	A	258	109.56	+ 9.29	53.91	2.24	0.01
		NA	253	100.27		37.88		
2.	Average No. of words in sentence	A	258	4.18	+ .16	2.03	1.11	N.S.
		NA	253	4.02		1.57		
3.	Simple Sentence	A	258	88.85	+ 6.89	39.01	1.99	0.5
		NA	253	81.96		39.15		
4.	Compound sentence	A	258	9.71	+ 5.42	15.3	4.28	0.01
		NA	253	4.29		13.11		
5.	Complex Sentence	A	258	2.45	+ .68	4.69	2.002	0.05
		NA	253	1.77		2.73		
6.	Negative sentence	A	258	4.96	+ .91	3.95	2.167	0.05
		NA	253	4.05		5.46		
7.	Interrogative sentence	A	258	5.32	+ 1.08	5.54	2.16	0.05
		NA	253	4.24		5.73		

There was significant difference found in the construction and use of complete sentences, compound sentence, the use of simple sentence and interrogative sentence at 0.01 level. The difference was not significant in average number of words in sentence. (Table II)

2. For different age groups ranging from 30 to 65 months in rural and urban areas it was found that the children who are coming from urban areas seem to be significantly higher in the language abilities than children who are coming from rural areas. The reason for tbe difference favouring the urban children might be due to the opportunities provided at home and the exposure to the variety of things and experiences around them even if they did not go to pre-schools; whereas in rural areas the difference was significant favouring the experimental group.

3. Children who attended pre-schools used more nouns in their conversation than those who did not attend pre-schools.

4. The children who attended, pre-schools used more verbs in their speeches than those who did not attend pre-schools. Since the children in urban area, are exposed to many activities and experiences, their use of verbs is greater than that of children in rural areas.

5. The children from urban areas are more egocentric in their speech than the children from rural areas.

6. The children who attended pre-schools seemed to have engaged less in socialised speech than those who did not attend pre-schools. In urban areas, it is observed that the children of experimental group were engaged in less socialised speech, when compared with the control group.

7. The differences found in the use of numerals, are fluctuating. The children who attended pre-schools used numerals, with more meaning whereas, the children who did not attend pre-schools used numerals without much meanings for these terms.

8. The children who attended pre-schools, seemed to have gained a greater skill in the use of complete sentences, when compared to the children who did not attend pre schools. Children in urban areas tend to have a greater skill in the use of complete sentences when compared to the children in rural areas.

9. The children of urban areas, had higher vocabulary than the children of rural areas.

POPULATION AWARENESS OF PRIMARY AND SECONDARY SCHOOL PUPILS AND THEIR WILLINGNESS TO RECEIVE POPULATION EDUCATION IN SCHOOLS

— *R. Nalina Devi (1981)*

The snowballing population explosion has now attained such menacing dimensions that it has become a major threat to the development, stabillty and security of the nation. The dangerous consequences of this rapidly growing problem were expressed appropriately by the Peerson Commission in 1969. "No other phenomenon caste a darker shadow over the prospects for international development than the staggering growth of population. The problem is gigantic in numbers and intricate in its manifestation impinging on the social, economic and psychological structure of the nation and the individual at the same time". Hence the population problem has become the concern of every member of the world community. (Patel, 1970).

If the population continues to increase at the current rate, all the efforts and programmes towards giving work and providing means of production would become futile (Desai, 1977). The population explosion is bound to create serious problems in all spheres of life and wash off the impact of the phenomenal economic progress that has been registered since independence (Abdullah 1976).

The young people of today will form the major position of the adult population in the next three crucial decades, that is 1990-2020 A.D and their reproductive behaviour will be of great importance to the next generation, should be made aware of the magnitude of the population problem and educated to recognize that a small family is not only proper but highly desirable and easily obtainable (Edlefsen, 1972).

To start with. the programme of population education should be adopted by selected schools which are ready and willing and where the climate is favourable in the local community (Singh. 1976). By taking advantage of the experience of such schools, other schools could take up teaching programme education gradually.

The success of any educational enterprise depends primarily on the aptitudes and qualities of the teacher. The innovation itself has no chance of success without the thrust of teachers who know their subject

and work in it conscientiously and devotedly. Particularly the teacher of young children should have a genuine interest in the child, a sympathetic understanding of the child's mind and a clear purpose before him and derive satisfaction by imparting population education effectively (Bai, 1974, Mishra, 1977). For this purpose, the curriculum and methodology must be determined first and teachers trained to handle that curriculum effectively. The approach must be infusion or integration of instructional units into existing courses of study at the primary and secondary stages. Programmes must also be established in teacher training institution and in professional schools.

Objectives

It is in schools that the younger generation could be effectively approached and prepared to know about the demographic factors influencing the standard of life in a family, community and ultimately the nation. Hence this study was undertaken with the objective of studying their awareness of population growth and its impact on society and their willingness to receive population education. The second odjective, was to analyse teachers' views on different aspects of population education.

Sample and methodology

Four hundred primary, 400 middle and 400 high school pupils were selected with equal representation of boys and girls, rural and urban areas, low middle income groups as well as small and large families. The teachers' sample included 100 primary, 100 middle and 100 high school teachers. The data were collected with the use of a questionnaire. Thirdly, a course on population education was conducted for 100 primary, 100 middle and 100 high school pupils separately and the impact was tested by administering and the questionnaire again at the end of the course.

Findings

The key findings of the study are as follows :

1. On the whole, the pupils could answer only half of the questions on population figures. The high school pupils could answer two thirds of the questions and their superiority in awareness was highly significant in camparison with the primary and middle school pupils.

2. The symbol of red triangle was well known to more than 80 per cent of the pupils, the most common places displaying being the hospitals, walls and films.

3. Ninety four per cent from the primary. 78 per cent from the middle and 78 per cent from the high school levels have expressed willingness to learn population education would help them guide friends and have a small family, while pupils of higher classes could think in terms of preventing food scarcity and unemployment as a result of learning population education.

4 Twelve per cent of the teachers opined that India's population growth is normal and not over populated, seven per cent stated that the population growth had not affected our nation's progress. As awareness is the first step in any type of motivation, the teacher training programmes all over the country have to be strengthened with adequate and relevant facts of population.

5. Eighty eight per cent of the teachers favoured population education in schools and opined that this education would promote the welfare of the individual, family and community.

6. The percentage of primary, middle and high schoool teachers dissatisfied with their knowledge on population education were 89, 68 and 55 respectively. They have suggested that separate training courses for a period of one to four weeks, special lectures, seminars and group discussions be organised to equip themselves for the task.

7. Population education imparted to selected groups of primary middle and high school pupils brought about highly significant improvement in their awareness of population figures, effects of over population on society and effects of small and large families on family members.

Conclusion

The findings reveal that population education had brought about significant changes in the pupil's views and hence integration of population education in the school curriculum is bound to instil in the young minds the need to limit family size and control population growth for the welfare of the country and the world. The teachers also need to be prepared and armoured with adequate knowledge through population education to achieve the goals of the national population policy, which is based on the democratic principle of voluntary participation in population control programme.

REFERENCES

1. Patel, B.P. (1970), The Genesis and perspective of our population problem, New Delhi, Department of Family Planning, 2.

2. Desai, M. (1977), Population control on voluntary basis, welfare to be the key note, Centre Calling, XII, 4-5, April-May, 3.

3. Abdullah, S. (1976), Take the message to every nook and corner, Centre Calling, XI, 9, 2.

4. Edlefsen, J. (1972), Population education documents population education - A new role for the region's schools. Bangkok, UNESCO Regional office for Education in Asia, 1-2.

5. Mishra, U.S. (1677), "Population Education for the young", Centre Calling, XII, 7, 2.

6. Singh, K. (1976), "A historic decision", Centre Calling, X, 7, 3.

7. Bai, M. (1974), "Books in Education", Social Welfare, XXI, 10, 29.

MEASUREMENT OF MENTAL ABILITIES OF WELL NOURISHED AND MAL-NOURISHED CHILDREN

— *Hemalatha Natesan (1979)*

India has the largest proportion of child population in the world. About 50 per cent of her population are below 12 years of age (Devadas, 1977). Ninety two million children live below the poverty line and 46 million of these children belong to the vulnerable age group, 0 to 6 years (Yojana, 1979).

Childhood is a period of rapid physical and mental growth and development. The nutritional requirements of children are higher per unit of body weight than those of adults. If Children are not provided with the nourishment they need, undernutrition and malnutrition of one type or other results, inevitably affecting not only their health, but also their intellectual development. It is now widely accepted that 80 per cent of mental development takes place by the age of eight years. The brain of the normal child reaches nearly two thirds of the adult size by the end of the first year and four fifths of the adult size by the end of the second year. This fast growth of the brain and rapid mental development are dependent upon the amino acids of the protein intake (Ornellas, 1973).

Mental development in childhood years moves consistently towards functions such as perceptual organisation, learning, achievement thinking, reasoning and cognitive content. It leads the child towards greater awareness of the world around him (Sharma, 1975).

Psychological tests are used to appraise the mental abilities of individuals. They are used in clinics, mental hospitals, child guidance centres, educational and vocational guidance centres and in research studies of different types. However, experience in developing and using appropriate tests for measuring mental abilities in the Indian setting is scarce. Hence this study was undertaken with the following objectives.

Objectives

1. To construct and standardise a test on mental abilities and
2. To apply the test to see whether or not there is significant difference between the mental abilities of well nourished and malnourished children.

Procedure

In line with objectives, the investigation was conducted in two parts.

Part I

Construction and standardisation of a test on mental abilities.

Nature of the test

The test constructed was intended to measure the following mental abilities: verbal ability, information, comprehension, memory, spatial relations and reasoning. The test included both verbal and non-verbal items, since the present day tendency in intelligence testing is to have a composite battery of tests containing almost an equal number of verbal and non-verbal tests (Boaz, 1971). The test is an individual test. Anastasi (1976) advise that, at preschool ages individual testing is required in order to establish and maintain rapport, as well as to administer oral and performance type of items for children of that age.

The test constructed was a power test and as such, no time limit was imposed. Cattell (1947) advise that time tests are undersirable in testing pre-school children. The test constructed was a point scale, where in, all the times were grouped together into one single continuous test, irrespective of the age level. In this connection, Cronbach (1970) has pointed out that point scale reduces testing time and permits reliable measurement even with fewer items.

Pre-test

A pre-test was conducted on 100 pre-school children selected in Coimbatore, who were not included in the study to eradicate gross errors if any and to eliminate items which were irrelevant ambiguous or misleading in the test.

Standardisation of the test

One thousand pre-school children between the age group, two to six years constituted the standardisation sample. Fifty boys and 50 girls were selected in each age group (2,3,4,5, and 6 years) both from the urban and rural areas of Coimbatore.

Item analysis was conducted and 58 items with validity index above 0.33 and difficulty index above 0.37 were selected. The test-retest reliability of the test was determined by administering the test on 100 pre-school children in Coimbatore twice, with an interval of 15 days. The reliability co-efficient was found to be 0.88. The validity of the test was established by correlating it with the I.Q. of the 100 subjects of Stanford Binet (1960 Revision) which is 0.77. Norms were provided for each group to convert the raw scores into standard scores.

Part II

One hundred well nourished and 100 malnourished pre-school children between three to five years of age from the urban areas of Coimbatore and 36 well nourished and 100 malnourished children from the rural areas of Coimbatore constituted the sample for the final study. Since number of well nourished Children in the villages was less, the target of 100 could not be reached. The nutritional status was determined by the 'Weight For Age' standards provided by Jelliffe (1966), in addition to a clinical diagnosis by a physician.

Method

The test on mental abilities, constructed standardised was administered on the entire sample.

The total number of correct answers constituted the 'raw score' the subject. This was converted into 'standard score' by referring to the norms.

Biserial correlation was computed between the mental abilities scores and nutritional status of the entire urban and rural sample.

There was a significant positive correlation between mental abilities and nutritional status of the subjects irrespective of the area of their residence. The better the nutritional status the greater the mental abilities score. Studies on different ethnic children by Knowblock *et al* (1963) in the U.S.A. Stock and Smith (1963) in South Africa, Cabak and Najdanvik (1965) in Serbia, Cravioto, *et al* (1966) in Mexico, Liang *et al* (1967) in Indonesia, Dobbing (1965), Udani *et al* (1971), Srikantia *et al* (1971) and Jaya (1977) in India, reveal that there is impairment in the development of malnourished children.

Conclusion

This study reinforce the relationship between nutritional status and mental abilities; malnourished children are poorer in their perfor-formance on mental abilities test when compared to their well nourished counterparts, Since malnutrition of a child is a problem linked to the future of the nation, both public and private sectors must contribute their mite to eradicate malnutrition.

REFERENCES

1. Anastnsi, A. (1976) Psychological Testing, Fourth Edition. Collier - Mac Millan Publishers, London, 254.
2. Boaz, G.D. (1976) General Psychology, Boaz Institute of Psychology Service Madras, 199.
3. Cabak, V. And Najdanvic, R. (1965) 'Effects of Undernutrition in Early Life on Physical and Mental Development'. Archives of Diseases of Child-hood, 43, 532-34.
4. Catteli, P. (1947) The Measurement of Intellgence of infants and young children, Psychological Corporation, New York.
5. Cravioto, J.De. Licardie, E.R. And Birch, H.G. (1966) Nutrition. Growth and Neuro-integrative Development and Experimental and Ecological Study, Pediatrics, 28 Part II, 319-372.
6. Cronbach, L., J. (1970) Essentials of Psychological Testing, Harper Row Publishers, III Edition New York.
7. Devadas, R.P. (1977) Improvement of Health, Nutritional Status of School-going children. Sixty Fourth Session of the Indian Science Congress, Bhuvaneswar.
8. Dobbing, J. (1965) Symp. Prague, Hann, P. and Koldovsky (Eds) Pub. Karger, S. Basel.
9. Eastern Economist (1979) Twelve Facts About the State of Children in Developing Countries Today, Eastern Economist 72, No. 1, 19.
10. Jaya, N. (1977) Mental Abilities of Selected Malnourished Preshool Children in Coimbatore city, Doctoral Thesis, 261-265.
11. Jelliffe, D.B. (1965) The Assessment of the Nutritional Status of the Community, WHO, Geneva, 221-223.
12. Knowblock, H akd Pasamanik, B. (1963) Predicting Intellectual Potential in Infancy, American Journal of Disabled child, 106, 43, 51, 77.
13. Liang, P.H. T.T.Jan. O.H. and Glok, L.T. (1967) Evaluation of Mental Development in Relation To Early Malnutrition, American Journal of Clinical Nutrition, 20, 1290.

14. Ornellas, A. (1973) Infant Nutrition Problems, Nutrition, 27, No. 5, 316-321.

15. Sharma, V.P. Mental Development in School Years, Archives of Child Health, 17, No. 6, 180-186.

16. Srikanta, S.G. And Sastri, Y.C., (1971) Effect of Meternal Attributeson Malnutrition in children, Paper presented at Asian Congress of Nutrition, Hyderabad

17. Stanford-Binet Intelligence Scale, (1969) Houghton Mifflin, Mental Measurements Year Books, 1973,7,425.

18. Stock, M.B. and Smythe, R.M. (1963) Archives of Disabled child 38, 546.

19. Udani, P.M. Mukherjee, S. and Parekh U.C. (1971) Proceedings of the Nutrition Society of India, No. 10, NIN, Hyderabad, 187.

20. Yojana, (1979) 'Do You Know', Yojana, xxii/244.

IMPACT OF NUTRITION EDUCATION AT DIFFERENT SCHOOL LEVELS

— *M. Chandramani (1988)*

Children are the nation's biggest investment for the future. Good nutrition is essential for optimum growth and development. A diet which is, adequate in quantity and quality will promote optimum health. If the preschool and school going children are nourished well. they become healthy, vigorous, and grow upto their full stature physically, mentally and socially (Devadas, 1987). On the other hand, malnutrition which is a devastating disability results when the diet is deficient in calories and nutrients. Children are the worst sufferers from this.

In the developing world, 15 million children under five die every year. Half of these deaths are due to malnutrition or diseases directly caused by malnutrition. In India about one-fourth of population is unable to obtain their daily nutritional requirements. Twenty five per cent suffer from malnutrition and 10 million children suffer from protein-energy malnutrition. Forty thousand young children die every day and twenty five thousand become blind every year from malnutrition.

One of the ways of combating the problem of malnutrition is through nutrition education of the children, their families and the community. Nutrition education is a means of translating nutritional requirements into food and adjusting food choices to satisfy physiological, cultural psychological and economic needs. It is the process by which beliefs, attitudes, environmental influences and understandings about food and hygiene are converted into practices which are nutritionally sound, healthful and consistent with individual's needs, purchasing power, available food resources and socio-cultural background (Albanesa, 1971 and Devadas, 1977). It is concerned with persuading people to modify their food practices in order to improve their health and nutritional status by wiser use of available food resources.

Nutrition education must be given to children to enable them to understand that adequate nutrition is essential for good health and normal physical and mental development. They must be educated in the proper selection, preparation and conservation of good quality foods in order to develop desirable practices with regard to nutrition, hygiene and environmental sanitation.

The school provides an ideal forum for nutrition education. A dynamic nutrition education programme which begins in early childhood and continues through the primary and secondary school can help young children acquire positive attitudes towards food and accept new practices. Changes in attitudes towards food require knowledge, awareness of the benefits that may be obtained from acceptance of new ideas and adjustments in food related habits which ultimately lead to practice of what is being learnt.

During the last two decades India has introduced a number of feeding programmes. Along with providing food they have succeeded in educating the children on sound nutritional principles. Only on a very limited scale nutrition education programmes have been evaluated on a comprehensive level. The evaluation should determine the knowledge acquired and to what degree the knowledge acquired has induced changes in attitudes and habits/practices infavour of better nutrition. Therefore the study was directed towards assessing the impact of nutrition education on school going children at different levels. namely, preschool, primary, secondary, and higher secondary levels. in terms of knowledge gained and changes effected in attitudes and nutritional practices.

Experimental procedure

Nutrition education was evaluated in 696 children at four different educational levels namely pre-primary, primary, secondary and higher secondary. At the secondary level the group was evaluated before and after receiving nutrition education. At all the other levels experimental and control groups formed the basis for comparison.

The children were tested for their nutritional knowledge, attitude and dietary practices. The tests were constructed by the investigators and were approved by experts and finalised on the basis of pilot studies.

Findings

The major finding was that nutrition education had significant positive impact on the children at all levels in terms of the nutritional knowledge gained, changes in attitudes towards food and dietary practices. Amongst the socio-economic parameters of children's families, income and educational status influenced the gain in nutritional knowledge, attitudes, and practices. However, whether they belong to joint or nuclear family or vegetarian and non vegetarian families had no significant bearing on the results.

Pre-primary level

At the pre-primary level children of the experimental group seemed to be well aware of the foods needed for health, and importance of eating variety of vegetables and fruits. They also knew the disadvantages of eating too many sweets. The need to drink milk daily was also understood by them. They seemed to have less food dislikes. A majority had adopted good practices such as drinking safe water after meals, and washing hands and mouth before and after eating. They also started taking raw vegetables, greens and fruits daily.

Primary level

Nutrition education had helped children at this level to gain better knowledge of energy yielding and body building foods, nutrients present in the food and importance of the greens in the diet. They understood also the need to follow hygienic habits, the reasons for using protected drinking water, and how to dispose waste properly; they agreed that good habits like brushing the teeth daily, eating greens, avoiding snacks in between meals, eating without spilling, washing hands before and after eating are very essential for good health. A good number have started kitchen gardening and poultry farming in their homes in a limited way. They assist also in the school gardens.

Secondary level

The post test showed an increase in the knowledge gained, changes in attitudes and dietary practices. It is heartening to note that even at the pre-test stage they got better scores in all the three aspects which may be attributed to the influence of the Chief Minister's Nutritious Meal Programme in which they were participating. Compared to the primary and pre-primary levels they had gained advanced knowledge on classification of foods, nutritional deficiency diseases, protein and calorie requirements, food preservation and nutrients present in different foods. Nutrition education has given them also an opportunity to learn about better cooking methods without loss of nutrients. They understood the need to include mixed cereals in their daily diet.

Higher Secondary level

The Home Science students fared significantly better than the non Home Science students in all the three aspects. They were better aware of all the important nutritional concepts; and a majority had

adopted desirable dietary practices. It is gratifying to note that the Home Science syllabus at the Higher Secondary Level covers all the important areas of nutrition.

Education and income of the families do influence the gain in nutritional knowledge and positive attitudes towards food and dietary practices of the children. The higher the educational level, the better the nutritional knowledge and behaviour ; also, the higher the income level, better was their nutritional knowledge and behaviour.

There was significant correlation between (a) knowledge and attitudes, (b) attitudes and dietary practices and (c) knowledge and dietary practices. These variables are interdependent and all act and increase simultaneously.

Problems of Nutrition Education

1. There is a dearth of trained teachers who can impart nutrition education.

2. Nutrition is not included in the general curriculum of schools. This leads to a lack of proper focus on nutrition education and its relevance.

3. Teaching aids and other facilities like posters, charts and other visual aids are inadequate in the field of nutrition to help teachers provide a meaningful course to students.

4. Since students come from a cross section of society, and their families have varied beliefs and taboos about nutrition, it becomes difficult to make all of them follow particular nutritional practices.

5. Mass poverty and nutritional ignorance of the families are a hindrance to good nutritional habits.

6. Parental interest in the nutrition education of the children is lacking.

7. The sanitary conditions of the lower strata of the Indian Society are so poor that children taught good sanitary habits in school are unable to practice them at home.

8. Nutrition education is given low priority in the national policy. However, the importance of nutrition is gradually being appreciated at the highest levels in our country.

Recommendation

This study has helped to bring out the following recommendations

1. Nutrition education must be given top priority at the different levels of education upto the secondary levels integrated with other school subjects.

2. All feeding programmes must have the component of nutrition/ health education inbuilt at all levels.

3. Training programmes must be conducted for the teachers periodically to guide them in terms of the preparation of curricular guidelines, resource materials and methodology of teaching and evaluation of nutrition education.

4. Nutrition education must be an integral part of all teacher training programmes.

5. The concerns of health and nutrition education should be on the change of behaviour, habits, attitudes and beliefs in respect of good sanitation, prevention of diseases and care of personal and social health. Health and nutrition education should cover physical education, personal health, family health as well as community health.

6. Suitable instructional materials in nutrition must be made available to teachers. Local resources must be used for the purpose.

7. Nutrition education especially at the primary, secondary and higher secondary levels should include the importance of mixed cereals in the daily diet, the necessary proteins, vitamins and calories for school children and the cause of infectious diseases and diseases caused from the deficiency of vitamins and iron.

8. Along with nutrition education there must be provision for income generating activities.

9. Some action research needed in this area are :

   a. The status of health and nutrition education in the state.

   b. Health and nutrition behaviour of pupils in all stages and their implications to education.

c. Development and validation of instructional materials in health/nutrition education.

d. Development of innovative method of teacher training in relation to health/nutrition education, and

e. Development of valid tools for evaluation of the impact of nutrition and health education on children.

REFERENCES

1. Albanesa. N.G. (1971), A Giant Step in Nutrition Education, *School Lunch J.*, 25, 7, 106.

2. Devadas, R. P. (1977), Need for nutrition education, *Proceeding of Nutrition Society of India*, 21, 7.

3. Devadas, R. P. (1987), Chief Minister's Nutritious Meal Programme - An Appraisal, Public (CMNMP) Department, Government of Tamil Nadu, 11-14, 17, 53-55.

4. ICMR, (1982), Energy requirements and recommended allowances, *Nutrition News*, 3, 38, 4, 145.

IMPACT OF THE PRE SCHOOL EDUCATION COMPONENT IN THE INTEGRATED CHILD DEVELOPMENT SERVICES (ICDS) ON THE COGNITIVE DEVELOPMENT OF CHILDREN

— *Hema Pandey (1989)*

Children are the most important national resource for human development. However, a large majority of India's 272 million children live in impoverished economic, social and environmental conditions, which impede their physical and mental development. In order to meet the basic needs of this vast and vulnerable population, the Government of India introduced, in 1975, the Integrated Child Development Services (ICDS). The ICDS is the most ambitious and comprehensive plan of the Government of India to increase child survival rates among the poorest of preschool children and their mothers and to enhance the health nutrition and learning opportunities for them. The plan was launched in only 33 projects on an experimental basis. Within 12 years, the programme has been extended to 1615 ICDS projects all over the country, in the rural, tribal and urban sectors. Thus, more than one-fifth of the country has been covered by ICDS.

The impact of the health and nutrition components of the ICDS is visible in terms of growth of children. This aspect has been studied extensively, whereas, information regarding the impact of the social components of ICDS, specially its preschool education component, is scanty.

Cognitive development is one of the major outcomes of preschool education, the measurement of which, is relatively difficult nor are suitable tools available for such measurements. Therefore, the present study was undertaken keeping in view the limitations, future scope and importance of ICDS. The specific objectives of the study were to:

A. Construct and standardize a Cognitive Development Test (CDT) for preschool children ;

B. Study the infrastructure, working environment and functioning of selected Anganwadis in ICDS, and the extent of children's participation and involvement in their preschool activities;

C. 1. Study the differences in cognitive development between preschoolers participating in the ICDS, Anganwadi programmes, and their non-participating counterparts;

2. Study the level of cognitive development among Anganwadi participating and non-participating preschool children according to their sex and age difference at 3,4, and 5 years;

3. Study whether or not cognitive scores of the child and age and education of parents, and size, income and type of the family were independent;

4. Study the correlation between cognitive scores of children and (a) birth order of the child, (b) socio-economic status of the family, (c) stimulation provided at home, (d) child's health status, (e) child's nutritional status, (f) time given to various preschool education activities by the Anganwadi worker's competence; and (i) Anganwadi attendance of the child;

5. Study the differences between (1) stimulation provided at home, (2) health status, (3) immunization status, (4) nutritional status, and (5) personal hygiene and illness status of Anganwadi participating and non-participating children at 3,4, and 5 years of age;

6. Study the differences between Anganwadi participating and non-participating boys and girls at 3,4, and 5 years of age in their performance on subtests of the cognitive development test-conceptual skills, information, comprehension, visual perception, memory and object vocabulary; and

D. Make recommendations based on the findings of this study. to augment the preschool education component of the ICDS for optimum cognitive development of children.

Design and Methodology

This study was undertaken in Coimbatore city of Tamil Nadu State. There were two major dimension of this study: (A) Constructing and standardizing an instrument for measuring the cognitive development of preschoolers; and (B) Studying the impact of the preschool education component of the ICDS programme on the cognitive development of children.

For this purpose out of the four urban ICDS projects operating in Coimbatore city, Project Number Four at Singanallur was selected, since Sri Avinashilingam Home Science College had already established rapport with this project, maximum cooperation was expected to facilitate collection of the appropriate and relevant data.

Purposive sampling procedure was adopted for selecting the samples. The samples were identified for both the experimental (participating) and control (non-participating) groups of children. The sample selected for the final data collection was entirely new; it was not included in any other stage of the study i.e. during pre-testing of the schedules and standardization of the cognitive development test. An eligible child for the experimental group was defined as "any child aged three to five years, who had been attending an ICDS Anganwadi Centre regularly at least for a period of six months. An eligible child for the control group was defined as "a child aged three to five years, who did not attented ICDS Anganwadi Centre or any other Child Welfare Programme". These two groups of children were matched in respect of age, sex and socio-economic status for making the groups comparable.

Out of 90 Anganwadis of ICDS Project Number Four, 25 were selected for collecting data on the required number of experimental group children. An Anganwadi observation schedule was used for selecting the Anganwadis Cumulative scores were provided to each Anganwadi. Out of those 25 selected Anganwadis, eight fell in the first class, eight in the second class and the remaining nine in the third class. Thus, the 25 AWs selected, represented a good cross-section of excellent, good and fair Anganwadis.

The experimental group comprised 6.6 per cent of the total population of the children enrolled and participating in the ICDS Anganwadis of Project Number Four (i.e. 210 out of 3170 children). For the control group, children were selected from those who were registered under ICDS Anganwadis, but were not attending it at all. This decision was taken because it was not possible to get children for the control group elsewhere as in Tamil Nadu State, the Hon'ble Chief Minister's Nutritious Meal Programme and the ICDS are committed to cover all the preschoolers, under their wings. This sample consisted of 13.13 per cent of the population i.e., 90 out of 650 subjects who constitute the gap between the registration in the Anganwadis and the actual attendance. Children in both experimental and control groups were equally distributed sex wise over the 3+, 4+ and 5+ age groups.

Developing the Tools

1. Constructing and Standardizing Cognitive Development Test (CDT) for Preschoolers:

A new Cognitive Development Test was designed and standardized for assessing the cognitive development level of three, four and five years old children.

An operational definition of "Cognitive development" was framed and the areas which the test would measure were decided after scrutinizing the available standardised tests. One hundred and fifty relevant test items were selected to be included in the CDT battery. These items were further arranged under the relevant sub-tests. The testing kit was locally developed as per the test items.

In the first instance the test was written in English, subsequently it was translated into Tamil, the only language with which the subjects were familier. When the material, the text of the test and the scoring cards were ready, testing work was undertaken. Due to language barrier, the testing was done by a well trained Home Science Graduate, with specialisation in Child Development.

Five pretestings were done with different sets of representative samples. The selected sample children were in the age group of 3+, 4+, 5+ year old of both sexes from the lower, middle and higher socio-economic group. The test instructions, items, procedure of presentation and materials were modified on the basis of these pilot studies. The scoring procedure adopted was, giving one point for each correct answer.

Taking into account the findings of the exploratory studies, a preliminery test form containing 100 items which survived the initial screening, was prepared. A separate score card was also prepared.

This preliminary test form of CDT was then administered individually - orally to a new representative sample of 270 children. The results were analysed and out of the 100 items only 63 items having high discrimination power, high validity index and a difficulty index ranging from 0.25 to 0.85 were retained for the final test form. In addition to the 63 items, one very easy item and one very difficult item was selected making the total number of items 65. The items were assembled and reviewed again. Test directions were scrutinized. The test constructed was power test and, therefore, no time limit was set.

The validity of the instrument constructed was determined by correlating the standard scores obtained by the validation sample on the constructed instrument, with their IQ scores obtained on Standford-Binet Scale. The correlation was 0.80. Test re-test reliability was carried out on 100 subjects, which was 0.95. Norms for 3 years, 4 years and 5 years old children were also developed.

2. Apart from the CDT, the following structured interview schedules were also prepared, pretested and finalised to be used in the present study :
    a. Personal Data Sheet,
    b. Home Stimulation Inventory,
    e. Anganwadi Observation Schedule,
    d. Health Status Inventory.

Studying the Impact of the ICDS

For studying the impact of the preschool education component of the ICDS programme on cognitive development of children, data were collected, using the socio-economic scale by Vendal (1981), and all the above mentioned schedules and CDT.

Analysis of Data

For the analysis of data, the statistical techniques used were : a) Descriptive analysis ; b) Reliability and Validity tests; c) Analysis of Variance (ANOVA) on a Completely Randomized Design (CRD) ; d) 'F' tests, normal and the 't' tests; e) Simple Correlation and Simple Regression analysis ; f) Multiple Correlations, Partial Regression Coefficients, Multiple Regression Equations and their test of significance and g) the chi-square test of independence.

The analysis of the study included the following aspects :

a) Information on family background of children ;
b) Mental stimulation received at home by children ;
c) Physical environment and functioning of Anganwadis ;
d) Impact of ICDS on health and nutritional status of children ;
e) Sub-tests of Cognitive development between age classes of children (3+, 4+ and 5+ years) ;
f) Influence of family background on cognitive development of children ;
g) Factors influencing cognitive development and
h) Anganwadi characters and cognitive development of children.

The findings of this study have brought to light the superior nutritional and health status, and cognitive development in children, who attend the ICDS programmes as compared with their control counterparts belonging to the same socio-economic background.

On the basis of the findings of this study, it could be concluded that cognitive abilities can be increased during the preschool years by providing appropriate learning experiences at Anganwadis by competent Anganwadi workers.

UTILISING RURAL INFRASTRUCTURE FOR STIMULATING BETTER HOME AND FAMILY LIVING

— *S. Sitalakshmi (1983)*

A wide net work of infrastructural facilities is available in rural India under the auspices of various developmental programmes. However, their utilisation is far from satisfactory. Therefore, this action research project was undertaken to stimulate rural families to identify and utilise the available infrastructure towards better family living with the following objectives :

1. To create an awareness in the selected rural community about the need to become self reliant.
2. To enable families to identify the available infrastructure for economic, health, educational and social improvement, which are the major areas of family living.
3. To stimulate them to utilise the infrastructure identified to fulfil their needs.
4. To evaluate the impact of the utilisation of the infrastructure identified on family living of the rural communities.
5. To identify the problems in the utilisation of the infrastructure and
6. To suggest suitable measures to make effective use of the infrastructure for development.

Kottaipalayam, Agrahara Samakulam and Vellamadai of Sarcar Samakulam Panchayat Union, Coimbatore District were the villages selected for the project. Two other villages located nearby, namely Thottipalayam and Vaiyampalayam served as control. The profiles of the villages were studied through baseline surveys.

Community organisations, namely Village Welfare Committees, Madar Sangams (Women's Clubs) and Youth Clubs (for boys and girls) were set up in the project villages to involve all segments of the population from the planning stage through execution to evaluation of the programmes. The various infrastructure available for rural development were identified and linkages established with the authorities concerned.

Thereafter specific programmes to bring about economic development, educational improvement, health status improvement and social development were planned and carried out by the people - men, women and youth - in the project villages.

Built in evaluation was done to assess the quantitative and qualitative outcomes, using specific yardsticks. The following are the major findings of this action-research project :

A. Economic Development

1. The total financial flow to the three project villages from the commercial bank was considerably higher (Rs. 4.97 lakhs) as compared to that of the non project villages (Rs. 1.35 lakhs), pointing out the positive impact of motivational efforts on people to utilise the services of the nationalised banks.

2. The per capita income in the project villages had risen by Rs. 227.39 (mean increase being 24.23 per cent) and the increase commensurated with the efforts taken to augment family income. On the otherhand, the control villages registered improvement in per capita income only by Rs. 26.49 and Rs. 96.01 respectively (mean increase being only eight per cent).

3. There was a fall in the percentage of families living below the poverty line in the project villages (mean decrease being 14.26 per cent), which is in tune with improvement in the percapita income of the households in these villages. This is also a pointer towards the positive impact of the efforts to raise family income of the lowest rung of the society. The data on the distribution of families according to annual income also confirmed this finding.

4. The percentage expenditure on food was found to decrease in a majority of the households in the project villages, which may be attributed to the impact of the efforts towards raising family income, home food production and nutrition and health education. The saving effected in food budget was reported to be spent on children's education, clothing and acquisition of capital goods such as utensils.

5. There was a marked increase in domestic savings mean increase being 41.8 per cent in the project villages pointing out a greater propensity to save extra income. In contrast the control villages had a mean increase in savings by 9.1 per cent.

B. Educational Status Development

1. There was a considerable increase in school enrolment in the project villages (22 to 24 per cent higher in the case of boys and 15 to 23 per cent in respect of girls).

2. There was a noteworthy decline in the percentage 'dropouts' from the primary schools (14.4 to 25.4 per cent for boys and 23.8 to 43 per cent for girls.

3. The increase in literacy rates was observed to be ranging from 12.5 to 18 per cent indicating the fruitful efforts made through the National Adult Education Programme and the combined efforts of Youth Clubs and Women's Clubs. The changes in the literacy rates in the control villages were rather negligible.

4. The exposure to several non formal training programmes resulted in mobilisation and development of the human resources in the community, as reflected by the greater participation of men, women and youth in the community affairs and the chain reaction set in by the leaders.

5. The attempts to establish and maintain good school community relationships in the three project villages paid rich dividents in terms of parents' interest in the affairs of the school and their contributions in cash, kind and labour in bringing forth durable assets for the school such as construction of school lunch sheds, water tanks, tap connections, urinals etc.

C. Health Status Improvement in the Community

1. The project villages made greater use of the health services available at the PHC leading to reduction in the incidence of communicable diseases (by 17.1 to 23.4 per cent as against 1.6 to 1.9 per cent in the control villages) which may be ascribed to the continuous health education programmes and the prophylactic measures undertaken by the PHC.

   There was decrease in the death rates also in the project villages (by four or five cases as against only one or two in the control villages).

2 Due to the adoption of the various population control measures and the impact of non formal education on the small family norm, there was a decline in the birth rates also in the project villages (10 to 13 after the project as against 18 to 19 prior to the project).

D. Nutrition and Food Practices

1. The balwadies established, resulted in improvement of the health status of the children attending them in terms of increments in heights, weights and other anthropometric measurements and better clinical picture.

2. Due to the impact of community nutrition efforts there was a great improvement in the nutritional knowledge and dietary practices of the homemakers as reflected in their following the absorption method of cooking rice and vegetables, cutting vegetables after washing and cutting vegetables in big pieces.

3. The efforts taken in the direction of home food production resulted in 43 to 60.6 per cent more families taking to kitchen garden in the project villages.

E. Social Development

1. The community organisations established gave continuous support to all the developmental effort, put forth in this project.

2. The members of the Youth Clubs (both boys and girls) acquired leadership traits so essential to prepare them to shoulder responsibilities in future and to make them responsive citizens. Statistical analysis revealed that there was significant increase in the leadership scores obtained by the members of the clubs, as a result of their participation in the various activities.

3. There was an increase in the percentage of families who were aware of the development personnel at the block, as a result of closer linkages established through the project.

4. The responses of the people regarding the major changes they had observed in their villages, as the outcomes of the project, were highly encouraging. Whether or not they were directly associated with or benefitted from the specific activities, had been keenly observing the progress of the project. The programmes which attracted the people were those which generated gainful employment, adult education, health activities, provision of safe drinking water and social overheads in the villages.

5. As a result of exposure to several activities the respondents could give workable and specific suggestions for the betterment of their own villages, which reflected attitudinal changes resulting from education and motivation.

Working with the infrastructure and the rural families offered rich experiences to the investigator. In the utilisation of infrastructure both positive and negative aspects were noted. Out of these experiences, the following specific suggestions are made :

1. Bureaucratic delays from the top level to the lowest level must be eliminated. There should be greater stress on planning from below.

2. The current sporadic, adhoc efforts towards rural development, with different ministries and development departments trying to push forth their priorities and programmes resulting in a plethora of plans and waste, must be replaced by a single official planning team with responsibility for formulating an integrated area plan and its implementation at the micro level. In this team, there must be representatives from all the major departments, financial and educational institutions, business houses, non officials and voluntary agencies. The team must take a holistic, integrated view of the resources available on one hand and the needs of the people on the other. The dichotomy that is existing between the official and non official agencies should be eliminated.

3. Employment is a function of so many variables such as presence and identification of raw materials, human resources, capital formation, growth in national income and distribution, availability of entrepreneurship, infrastructural facilities, organisational frame work and marketing. All these should be pooled together and brought within the reach of the rural community. The cooperatives must emerge as a marketing agency not only for agricultural produce but also for products of cottage industries.

4. The present role of banks as mainly surveyors of credit should be altered. As the Thakker Committee had suggested, all the rural branches of commercial banks should have Multi Service Agency for co-ordinating, planning and offering technical assistance to the self employed. Provision of such a technical consultancy service coupled with simplification of banking procedures would go a longway in educating the rural community on the value of institutional credit and instill in youth the much needed entrepreneurship.

5. The procedures for application for the projects with KVIC, CSWS etc. should be simplified. Efforts should be made to

minimise time lag between application for projects and actual sanction. The District Industries Centre should not only function as consultancy service but also serve as a data for raw material availablity. There should be coordination of efforts between DIC, KVIC, CSWB, banks and cooperatives at various levels.

6. The schools in the rural areas must be recognised as effective agents for ushering in changes in the minds of people. Every village must have a balwadi/creche, not only to serve the educational and social needs of pre school children but also to serve as vehicles of nutrition education both for children and their parents.

7. Adult education should be an integral part of all developmental efforts and find a place in the national policy framework which should not be sacrificed at the change of political structures.

8. Attempts must be made by the government to foster an integrated approach to Maternal and Child Health (MCH) services, combining components of preventive care, family planning, nutrition and public health Efforts should be made to offer domiciliary care through a band of trained community health workers, who hail from the same communities and are confident to tackle local health problems.

9. Great recognition should be given to the role of community organisations. Efforts must be taken to federate the local level organisation with block, district, state and central organisations concerned namely Youth Clubs or Mahila Mandals, through registrations. The scheme of incentive awards for successful functioning of these organisations must be continued and widened.

10. While it is difficult to create a cadre of staff for the implementation of Integrated Rural Development (IRD) at the village levels, some one must be made in charge of the delivery of the package of services at the local grass root level and the corresponding feedback. This task must be entrusted to a local educated unemployed person with certain amount of honorarium. These volunteers must be given training at the Block level to to orient them to the various aspects of development and the services and inputs at their disposal. They must be trained also in the methods of evaluation and record keeping They must

be given time bound targets and entrust to act as links between the organisers of the programmes and the needy people. These volunteers, who may be termed as community organisers must hail from the local areas and be well versed with the problems and situations in the area. They should have leadership qualities and be free from political interventions, Their main job would be to communicate continuously to rural families the availability of the various infrastructure and enable them to utilise them to the fullest extent,

The goal of rural development of the people, of the human beings living in the rural communities. The development of infrastructure is only a means to this end, and not the end in itself. The current massive awakening in the rural areas, is highly encouraging. It must be utilised to uplift the masses, who have so far been out of the various national development programmes.

The present study is only a maiden venture in the direction of utilisation of infrastructure for ushering in better home and family living. Follow-up studies are required on the following aspects.

1. Impact of utilisation of infrastructure on selected target families in the rural areas.

2. Exploratory/action research on the impact of the newly introduced Integrated Rural Development Programme to assess the degree of holistic approach.

Studies are essential also in developing indices to measure rural development.

MOTIVATING YOUTH FOR RURAL DEVELOPMENT

— *K. Thangamani (1984)*

Rural India needs strong and vigorous leaders who can cope up with the many problems that confront the country. The young people of today will have to take over the various responsibilities of managing the administration, politics, farms, factories and homes of tomorrow.

Integrated Rural Development aims at total development of the area and the people by bringing about the necessary institutional and attitudinal changes and by delivering a package of services through extension methods to cover not only the economic fields, such as, development of agriculture and rural industries but also the establishment of the required special infrastructure and services in the human areas of health and nutrition, education and literacy, basic civic amenities and family planning with the ultimate objective of improving the quality of life in the rural areas (Sharma, 1980).

The strategy of directed change in agriculture and other fields of life through science and technology needs to take into account the individual recipients requirements for training. Training is an effective tool in developing favourable attitudes, job competences, confidence and also willingness to adopt new technology. Every year more than five million youth, mostly rural, become earning members in the country. But, unfortunately about two thirds remain untrained and unskilled. An efficient programme of organising such rural youth and imparting vocational training to them is imperative to harness their energies for national development (Kulhari, *et al* 1977)

Avinashilingam (1967) advocates that a spirit of large hearted tolerance, of mutual 'give and take' and appreciation of ways in which people differ from one another must be cultivated in youth. The educational system should be so shaped and directed that it can inspire the future generations to acquire desirable qualities in the interest of national integration and development. Youth clubs can fulfil this need.

The main objective of Youth clubs is to provide an opportunity to youth in the rural areas to acquire the required knowledge, attitudes and skills for effective living and implementation of the development programmes. The clubs help youth also to discover their needs and explore new approaches and trends to fulfil them Youth clubs can serve also as organic links between the Village Panchayat, co-operatives and the school.

Democracy can survive only when there is effective leadership (Singh and Sharma, 1974). One of the most important objectives of the Communtiy Development Programme in India, which is the largest democracy in the world, is to foster creative leadership amongst youth. The first and foremost step in organising youth for leadership is to train them for better involvement and participation in the programmes to develop the nation. Youth must be motivated to participate in rural development work.

This investigation was aimed at organising and training youth from a selected area to become effective leaders and take up activities for their village and self improvement, with the following specific objectives.

1. Study the aspirations of rural youth
2. Find out the adult leaders' perception about participation of Youth for rural development.
3. Analyse the methods of organising and strengthening youth for rural development.
4. Investigate the factors that determine the participation of youth in rural development.

and 5. Suggest ways and means of motivating the rural youth for active participation in rural development.

It is hoped that the findings of this study will help the rural development workers in studying the interests and aspirations of youth, and take appropriate steps to organise youth clubs and utilise the energies of youth for rural upliftment through proper motivation.

Methodology

Perianaickenpalayam Panchayat Union area of Coimbatore Taluk, Tamil Nadu was selected for this study. Among the village in the Block, six villages were randomly selected to study the opinion of youth towards rural development. Out of these six, three were finally selected for organising youth clubs where greater potentialities were observed for co-operative action by the youth and their leaders.

The following sampling procedure was adopted for the study.

Number of families covered for baseline survey in six villages	841
Local leaders (6 × 10)	60
Youth located (15 to 30 years) in the six villages	1165
Youth interviewed (among 1165) for the opinion survey	300
In the three villages, number of youth participated in the Youth club programme	146

The youth include boys and girls. The members of youth clubs were included purely on voluntary basis.

The baseline data and opinion of youth were collected using different interview schedules. Based on the needs of the youth, youth clubs were organised having the following steps.

1. Studying the background of the village
2. Obtaining permission from the officials
3. Contacting village local leaders
4. Informing and involving local institutions
5. Arranging a preliminary village meeting
6. Approaching active youth and adult advisers.
7. Formation of the club
8. Enrolment drive
9. Studying the background, interest and needs of the youth
10. Electing the office - bearers and club leaders.
11. Giving initial and continuous guidance.

After undergoing the above mentioned steps, the activities were planned for the youth clubs.

Results

It is very interesting to note that 44 to 92 per cent of the youth had interest in the welfare of their villages mainly because they were closely associated with their village people and concerned with the development of their own near and dear ones.

There were no organisations for the youth in the selected villages. After observing the interests of the selected youth in the welfare of their own villages, the investigator elicited from the youth, the reasons for their not having an organisation of their own, and their interests in starting such an organisation.

Youth had given the areas of development needed for their villages and their interest in those activities. These expressions formed the format for orgnising the youth clubs. For fulfilling their needs and interests in addition to the rural development, they get help from banks educational institutions and voluntary organisation and the youth club act as a vechicle to reach their goals.

Youth club conducted some general activities by which they try to reach the welfare of the people.

Details regarding the achievements due to the general activities are given in Table I.

TABLE I

GENERAL ACTIVITIES OF THE YOUTH CLUB

S.No.	Activities	No. of Beneficiaries
1.	Coaching classes	165
2.	Parent Teacher Association	156
3.	Adult Education	127
4.	School enrolment drive	73
5.	Balwadis	90
6.	Kitchen gardening	224
7.	Sports club	40
8.	Religious tour groups	35

Two hundred and twenty four families benefitted with kitchen gardening, 165 children had coaching in their subject and so on. One of the youth clubs constructed school luuch kitchen in their village.

Educational training conducted for youth are given Table II.

TABLE II

EDUCATIONAL TRAINING FOR YOUTH

S.No.	Training	No. of Participants
1.	Nutrition education and childcare	64
2.	Small savings	56
3.	Training on public co-operation among rural women	30
4.	Leadership training	18
5.	Food preservation	15

Through the nutrition education programme and child care, the youth club members and village people became aware of good nutrition and better care of children.

Details of training for the economic improvement of the youth are given in Table III.

TABLE III

TEACHING FOR ECONOMIC DEVELOPMENT

S.No.	Training	No. of Participants	No. of Self employed
1.	Improved agriculture	33	33
2.	Motor coilwinding	11	3
3.	Tailoring	11	11
4.	Automobiles	6	2
5.	Sericulture	4	2
6.	Type writing	3	-
7.	Floriculture	1	1

With the education given in the field of agriculture, the youth members having land were experimenting the new innovations. Four boys started sericulture and two continued it with success; 33 boys attended the training in agriculture organised by SFDA at Tamil Nadu Agricultural University. One member who under went training in floriculture is successfully managing his flower garden.

The average income earned through various activities are given in Table IV.

TABLE IV
INCOME FROM ECONOMIC ACTIVITIES OF YOUTH

S.No.	Activity	Income per month in Rs.
1.	Automobiles	450
2.	Coil winding	300
3.	Type writing	300
4.	Tailoring	120

As the outcome of youth club activities, at least some of them were able to earn for their families.

The village leader had positive expectations from the participation of youth in youth clubs. They expressed that the youth had become very co-operative in their endeavours due to the youth club programmes. They suggested that proper guidance be given to youth for their effective participation in rural development.

These findings offer a plan to future workers who organise youth clubs in the rural areas, to obtain their full participation in Integrated Rural Development Programme.

REFERENCES

1. Sharma, S.K. 1980 "Rural Development in India programmes, strategies and perspectives" Community Development Journal, Vol. 15 No. 1, pp. 2-9.

2 Kulhari, V.S. Kaviya, Z.D. and Shrikhande, V.J. 1977 "Training Needs and Suggestions of Rural Youth about Fruit and regetables cultivation, Journal of Adult Education, Vol. 30, No. 2,. pp. 36

3. Avinashilingam T.S. 1967 "Education for National Integration", Sri Ramakrishna Mission Vidyalaya, Coimbatore, p. 10

4. Singh, A.K. and Sharma, S.N. "Leadership and Rural Development" Rural India, Vol. XXXVII, No. 9, pp. 136, 139.

IMPACT OF THE NATIONAL SERVICE SCHEME PROGRAMMES ON STUDENTS, TEACHERS AND THE COMMUNITY

— *N.S. Narayanaswamy (1986)*

The National Service Scheme (NSS) had two major aspects; Education and Service. It sought to arouse the social conscience of students and provide them with opportunities to work with and among people, to engage themselves in creative and constructive social action, to enhance their knowledge of themselves and the community in which they live through a confrontation with reality and put their scholarship to practical use in mitigating atleast some of the social problems and gain skills in the exercise of democratic leadership.

Since NSS has been functioning for nearly one and a half decades, it is worth while to investigate the impact of the NSS on the student volunteers, teachers and the community in terms of certain parameters with the following objectives:

To study

1. The willingness and earnestness of the NSS volunteers to participate in NSS activities.

2. The impact of NSS on the volunteers in terms of leadership quality, co-operation and team work, dignity of labour, patience and preseverence, adjustments, satisfaction of doing social service and other personality traits.

3. The extent to which the NSS has moulded the character of the NSS volunteers.

4. The effect of the NSS experience on the programme officers in terms of leadership qualities, sense of responsibility, initiative, adjustments, tolerence and other psychological traits, due to their being the NSS programme officers.

5. The reaction of the community towards NSS and

6. The developmental programmes carried out in the village by the NSS volunteers.

Methodology

A sample of 654 NSS volunteers was selected from 57 colleges (462 were men and 192 were women). They were studying in different classes, B.A., B.Sc., B.Com., M.A. and B.E. Fifty seven teachers (42 men, 15 women) NSS programme officers and 654 persons in the community (319 men and 135 women) in the adopted villages were also selected. A pre - coded questionnaire bearing questions on N S S was administrated to the NSS volunteers, NSS programme officers and village people. Their responses were consolidated and analysed, to study the impact of NSS projects, successful projects, achievements during special camps, personal gains, benefits derived, overall impact of NSS, personal achievements of NSS programme officers, achievements of successful projects, activities carried out in the village, benefits, activities, carried out during camps, permanent assets created in the village, and suggestions for effective implementation. Based on the analysis of the data certain recommendations are made.

Findings

The study reveals that the achievements of the NSS in terms of direct contact of students and teachers with each other, creation of durable assets, changes in attitudes, support to local development programmes, liaison with governmental and voluntary agencies and adoption of villages on a continuing basis. On the basis of the evaluation carried out on the regular programmes and special camping programmes, it can be stated that NSS had registered gains both to the community and the participating teachers and students. Several benefits, both tangible and intangible, had accrued to the community as a result of various developmental activities taken up under the NSS, in addition to creating an awareness among the people.

In the special camps, the students and non-student youth had been benefitted by their mutual contact and stay in the camps. The student youth had specially, learnt from the non-student youth, the skills of manual work, how to handle spades, axes and other equipment used in manual work and had begun to appreciate the problems and aspirations of the rural youth. The non-student youth on the other hand, had learnt from their student colleagues more about the general state of affairs and problems of their region and the country, developed hygienic and civic habits and understood better the aspirations of their counterparts living in the urban areas. NSS has succeeded in bringing about a meaningful contact of the youth with rural people and with the slum dwellers. The NSS students now know more about the social millieu in which they appreciate and understand the problems of the people, especially, those of the weaker sections, much better after working in the NSS.

When students engage themselves in various projects in the rural areas, they become sensitive to life in the villages. This is perhaps the most outstanding achievement of the NSS. The participation of the students and teachers in rural projects had brought about an appreciable improvement in the teaching-learning situations as both the teachers and students had acquainted themselves with the social reality from close quarters. For example, teachers and students of economics might have read more on the subject of poverty but not many had seen or experienced as to how poverty influences the poor, diminishes his productivity, lowers his ambitions and paralyses him socially and economically with such a severity that he ceases to be a participant in the process of planned development. This confrontation with realities of life, did enhance student's knowledge and deepen his understanding of his classroom subjects and thus provided a corrective for the predominently text book-oriented education. This apart, the students had also gained rich experience in democreatic leadership, planning, management and working with people at all levels.

The NSS units had been able to arouse enthusiasm among the villagers for improving their conditions. The communities are conscious of the significant achievements of NSS. In so far as the students are concerned the NSS had succeeded in bringing about a meaningful conduct of the student youth with rural people and slum dwellers. The development work project, that is, educational project, especially the discussion with the members of the communities on various problems, community service projects and survey work projects had helped the youth considerably in developing an awareness and knowledge about their own social responsibilities in planning, organising and executing the work projects, wherein they could make use of their knowledge and skills, in deepening their understanding about social responsibilities, in gaining experience in group and community living, in recognising and appreciating the dignity of labour, in organising community service for the betterment of the community in supplementing their academic education by bringing them face to face with the realities of life, in developing better understanding of problems and aspirations of the people and in promoting the cause of national integration. In the special camps the student and non-student youth had also benefitted by their mutual contacts and stay in the camps.

Many projects under rural development undertaken by the NSS indicated that NSS had produced significant result during the Fifteen years of its operation. These results were of two types-tangible and intangible. The gains of the community were clearly visible and tangible.

Durable community assets had been created by student's initiative and efforts and people's participation. A number of small link roads had been constructed or repaired to end the isolation of many far flung villages from the rest of the country. A number of wells had been sunk, deepened, repaired or cleaned and this had helped in assuring regulated supply of water both for drinking and irrigation purposes. The NSS volunteers had helped the neofarmers to recline the waste land allotted to them. Small and marginal farmers in Adivasi and other Backward areas had been helped in getting credit facilities from the Banks and other financial institutions. The hold of the money lenders had been loosened in quite a few backward areas due to the efforts of NSS students. Improved methods of cultivation had been introduced. The Harijans had been helped in the construction of their homes. Medical assistance had been provided in far away villages. Thousands of trees had been planted and a number of people had been helped to earn money by giving training in self employment schemes. There were intangible gains also, especially to the village communities were the NSS students lived for ten days during special camps and engaged themselves in activities which invariably involved manual labour. When the students worked, for instance, on construction of a building for the village school, the village community, especially, the village youth could hardly afford to remain aloof. So they joined the NSS students in their work projects. Even the senior members of the community had participated. This helped in bringing about certain attitudinal changes in the village community and an awareness among the people about their own welfare needs which they themselves could meet. The very fact that thousands of young boys and girls from the city colleges had gone to the villages and stayed there and shared the difficulties of the village population had created very healthy impact in the minds of the local community. It helped in removing the barrier that existed between the rural community and the educated youth.

Several benefits had acrued to the community also as a result of various development activities taken up under the NSS. These benefits included increased and regulated supply of water both for drinking and irrigation purposes preparation of land for agriculture, prevention of soil erosion and floods, better communication, increased forest resources, fishery, construction of houses for Harijan, tribal and other weaker sections of the society, preparation of play ground, beautification of college campus and the areas where the camps were organised, setting up of kitchen gardens, organisation of first aid centres, mass immunization, formation of hobby classes and organisation of Youth Clubs and Mahila Mandals. NSS units had been able to arouse enthusiasm among the villagers for improving their own lot. There were numerous examples of villagers working side by side with students in

various projects. Earlier the members of the community seldom took it seriously that the present day youth could do any hard work and could be of any service to them; but after the camps were completed, many realised that their notions were mistaken or unfounded. The communities were conscious of the benefits of the NSS programmes which aim at the betterment of their conditions of life. There is now undoubtedly greater respect in the community for youth and their capabilities than ever, which is one of the notable achievements of NSS.

The service activities under the NSS were planned to meet the community needs and at the same time helped the student in gaining knowledge of himself and the community through the organisation of community service projects. A student is not to be looked upon merely as a means to be utilised in meeting the community's needs. So also the community should not suffer while accomplishing the educational goals of the scheme. The programme, therefore, is so planned and implemented as to realise both the service goal and the educational goal in adequate measures and to avoid conflict between them.

The study indicates that there are some problems encountered while implementing the NSS.

Services organised with student involvement always face the problem of ensuring continuity, primarily because the students are not available for work throughout the year. This situation is sought to be remedied by a commitment on the part of the colleges implementing the NSS to work intensively and continuously throughout the year in a village or group of villages for atleast 5-7 years through adoption of villages. To maintain continuity of work in the adopted villages, it is necessary to establish some organised nuclei in the villages or in the colleges. Attempts should be made effectively to motivate the rural folk, especially the rural youth, to take responsibility of continuing the developmental and service programmes in the adopted villages.

Most of the colleges implement the NSS programmes only through special camps which are isolated events. So there is the need to strengthen the regular programmes under the NSS. In urban and rural areas there are ample opportunities for the college to engage the students in regular NSS programmes and activities in slums or in their adopted villages.

A casual visitor to a camp is many a times struck with the earnestness, sincerity, devotion and hardwork which the students and the teachers put in their work. Some NSS camps are found wanting

in liveliness and proper organisation. Often sufficient thought is not given to the question of proper use of all the working hours of the campers. Youth camys should not be mere work projects. These should be gatherings where compers derive joys of community living and make ablding friendship. There should be intellectual activity, academic discussions, dances, music, sports, games and fun.

There are several reasons for not implementing the NSS programmes successfully. Many times sufficient thought is not given to the formulation of projects and in pooling together the resources for implementing them. This often leads to a haphazard and unplanned activity and consequently the objectives of the projects are not achieved with the result waste of time, energy and money and causing frustrations among the youth. It is, therefore, of greatest importance that programmes are drawn up in consultation with the specialised agencies, the government departments concerned, the voluntary agencies, students and the felt needs of the local community.

The NSS programmes suffer also because of the delay in the release of grants. Advance release of grant to the colleges will held to plan and implement the NSS activities more effectlvely.

The NSS programme officer is paid an out-of-pocket allowance to cover expenses and conveyance and other incidential expenses and because of this payment, the rest of the faculty members think that the NSS is the sole responsibility of the teacher incharge. The concern for the NSS on the part of other teachers is thus lacking. To overcome this, the Principals of the Colleges can play a leading role in arousing the interest of other faculty members in NSS.

Since the NSS has accepted rural reconsrtuction as one of the programmes, it is necessary that the NSS programme officers and students plan the programmes in close co-operation and consultation with various development departments functioning in the rural areas, namely Block Development functionaries, Forest department, Village Industries department, District Rural Development Agency and nationalised banks.

There is a need to recognise the value of participation by students in the NSS. One way of doing this is to see that more preference is given in the matter of employment of those students who have regularly and actively participated in the NSS programmes. There is, however, a need to evolve a consensus to the type of incentive or recognition to be given to the NSS students.

NUTRITIONAL IMPROVEMENT OF THE RURAL COMMUNITY THROUGH EXTENSION

— *Muthiah Manoharan (1989)*

"India is to be found not in a few cities but in the villages. Farmers and workers make India. Their prosperity alone can make India a country fit to live in".

— *Mahatma Gandhi*

India is the seventh largest and the second most populous country in the world. Though India constitutes 2.4 per cent of the world's land area, she carries 14.6 per cent of the world's population. Approximately 70-75 per cent of the Indian population are dependent on agriculture.

To a large section of the Indian population, "God is bread". Therefore a true index of national development can be provided only by the extent of success achieved in ensuring that no child, women or man goes to bed hungry and the potential of no human being is stunted by malnutrition physically or mentally.

According to the Nutrition Atlas and the Diet Atlas published by the Indian Council of Medical Research (ICMR), the diets consumed by a large majority of the population consists predominantly of cereals and only small or negligible amounts of legumes and vegetables. The amounts of milk, egg, meat and fish and other protective and protein rich foods are microscopically small.

The search for solutions to the problem of malnutrition in general, and infant malnutrition in particular, is usually relegated to a minor position in agricultural and rural development projects. Therefore it is important to link effectively agricultural production to food and nutrition policies. If this is done, food and nutritional considerations can influence significantly resource management, crop planning, the nutritional quality of food crops, post harvest technology practices, processing, storage, marketing of foods and family consumption.

Poverty, illiteracy and ignorance exist among the Indian masses on a colossal scale. Unscientific and outdated practices which are

common in Indian agriculture may be one of the root causes for such situation. Also, the fragmention of land has resulted in small holdings which are unsuitable for large scale farming. Vagaries of monsoons result in floods and droughts both of which are equally destructive. Soil erosion proceeds unchecked, deforestation has progressed without concerted attempts to control it till recently. These facts project the immensity of the problem of malnutrition.

The rural families are victims of illiteracy and poverty. If rural communities are to come out of the dark space of nutritional ignorance, knowledge of nutritional aspects, must be imparted to them through well planned regular programmes of nutrition education. This transfer of knowledge and desirable practices through sound extension strategies in food and nutrition practices need to be planned at the national level with great care, taking into account the socio-economic conditions and cultural values of the rural people.

Hence this study was undertaken with the following objectives.

Objectives

a. To study the living and general conditions of the selected rural community with reference to income, sources of income, amenities for living, educational status agricultural practices, and status of nutrition and health.

b. To identify the nutritional problems of the selected community.

c. To undertake appropriate nutrition action and education in improving the nutritional status of the community based on the problems identified through various extension programmes in the selected area.

d. To evaluate the impact of extension programmes in improving the nutritional status of the rural people and

e. To give suggestions for formulating future food and nutrition action programmes through agricultural extension.

Methodology

Seven revenue villages, comprising 86 hamlets (with a total population of 46876) in Karamadai West Block was selected for this study.

To understand the general status, the nutritional knowledge, status and problems of the community, a sample of 500 households located in the area were selected at random. Using the interview method through specially designed schedules, the required information was obtained.

The following on going extension programmes were selected to assess their impact a) Krishi Vigyan Kendra extension programme, b) Lab-to-Land programme, c) UNICEF Home Science programme. From each of these three programmes 100 beneficiaries were selected at random with 50 non-participants as control group. Thus a total of 450 rural persons were interviewed

Nutrition education imparted

The training in nutrition education given to the selected group, included : the role of different food groups : cereals, pulses and vegetables in the growth, development and functional efficiency of human beings ; correct cooking practices like cooking rice or vegetables in sufficient water, avoiding straining of excess water, cutting vegetables into big pieces, washing vegetables before cutting and cooking in a closed vessel.

The data were analysed under the following lines :

a. Existing socio, economic conditions, dietary patterns, nutrition knowledge, nutritional problems, food beliefs and taboos, dependence on agriculture and cropping pattern.

b. The role of various extension programmes such as Lab-to-Land Programme of ICAR, UNICEF Nutrition programme and Krishi Vigyan Kendras, Agrictulture and Home Science Extension Programme with special reference to nutritional improvement.

c. The impact of these extension programmes on the participants their expectations, problems and preferences, nutritional knowledge gained by the beneficiaries and the new nutritional practices adopted by the trainees.

d. Role perception and role performance of rural women leaders in the area of nutritional improvement.

Based on the problems sighted nutrition and health education was incorporated in the three extension programmes. Nutrition education was imparted through home visits, discussions, folklore, drama, villupattu, demonstrations and competitions.

The impact of these nutrition education efforts was evaluated using interview schedule, to assess the changes, if any, the same which had occurred as a result of the nutrition education programme.

The interview schedule called for information on :

a. Socio-economic background of the families in the beginning.
b. The extension programmes they were aware of
c. Their problems in participation in the extension programmes.
d. Their problems in maintaining health - common ailments.
e. Problems in feeding children and other members of the family.
f. Problems in child rearing.
g. Problems in performing dual role as mothers and labourers.
h. Problems in resource management and others.

Findings

a. In general, in the rural households, persons from the age of 18 to 60 years, hold the responsibility as head of the household, Grouping them in the age groups of 18-25 years, 25-40 years. 40-60 years for nutrition education gave immediate results.

b. Agriculture is the main source of income and training in improved practices encouraging cultivation of more pulses and oilseeds both for home consumption and for marketing was feasible.

c. Forty per cent of the families live below poverty line. Their knowledge of nutritional facts and foods was poor. They benefitted from the knowledge given on locally available low cost foods, such as green leafy vegetables, seasonal fruits and vegetables, balanced diet, supplementary food preparations and combating deficiency diseases.

d. Adoption of practices such as use of labour saving devices, proper cooking practices, maintenance of kitchen garden, breast feeding practices, immunisation and environmental sanitation required the creation of awareness and eagerness to adopt among the rural people.

e Extension staff and youth club leaders (contact persons) were the main source through which information about the extension programmes reached the rural people.

f. Distribution of inputs such as smokeless chulahs mud coolers, solar driers, paddy par-boiling units, seeds. fertilizers and insecticides were preferred by the rural homemakers for they helped in putting into practice the technology taught, without delay.

g. The participants understood fully the need for safe drinking water and the method of obtaining it. A majority of the trainees practised the methods learnt

h. The trainees realised the need for determining the cropping pattern so as to cater to the nutritional needs of the family.

i. Home consumption of the products was given priority while determining the marketable surplus.

j. Adequate knowledge had been gained in post harvest techniques,

k. Preservation methods for better utilisation and consumption of the seasonal foods such as mango, cucumber, tomato etc. were learnt and practised by the trainees.

l. After getting a considerable exposure, the homemakers started maintaining kitchen gardens and prepared Kulandai Amudhu and Ragi malt for their weaned infants. In comparison with the control group, the consumption of green leafy vegetabels was very high among the trainees who were exposed to nutrition knowledge, This revelation is very encouraging.

m. Girls in the age group of 18 to 25 years took up leadership roles very effectively; The women leaders could gather more information on the problems the rural families faced and passed them on to the extension workers, for actions to be take n to overcome these problems.

Through the introduction of nutrition education with selected extension programmes there was 20 per cent to 40 per cent increase in the yield and vegetables, pulses and cereals, and nutritional food intake of the families.

The problems encountered

1. In these rural programmes transport was a great hurdle, overcoming which was almost impossible. In the case of women, family commitments posed a problem and came in the way of attending the training regularly.

2. In rural areas during acute scarcity of water women found it difficult to cultivate green and leafy vegetables.

3. During religious festival and village functions training of farmer families found to be not effective.

Conclusion

The imperative need of the hour is to formulate adequate and appropriate extension programmes at the national, state, district, Block and village levels to overcome ignorance, poverty and hazards of nutritional deficiencies. The schemes need to be made viable with incorporation of nutrition education. through which knowledge is to be imparted. Better nutritional and health practices need to take a deep root among the rural people.

ROLE EXPECTATION, JOB PERFORMANCE AND PROBLEMS OF LADY VILLAGE EXTENSION OFFICERS OF KERALA STATE

— *S. Kamini (1991)*

The main objectives of the study were to

a. Investigate the role expectation of Lady Village Extension Officers (LVEOs) as perceived by themselves and Block level superior officials.

b. Assess the job performance of LVEOs as rated by themselves, Block level superior officials and village women.

c, Understand the problems encountered by LVEOs and

d. Analyse the effect of certain personal characteristics of the LEVO such as age, education, marital status, income, and training received on the job performance and problems.

The entire state of Kerala with its 14 Districts and 151 Blocks was the universe for the study. The sample consisted of LVEOs, Block level superior officials (BDOs and EOWWs) and village women. All the 524 LVEOs in Kerala were selected. All the BDOs and and EOWWs in Kerala were chosen as raters. In all 150 BDOs and 145 EOWWs were available for the study. Two Village women from each Block were also selected as raters. The survey method utilising structured questionnaires was used for the collection of data. Personal data of each LVEO on age, education, caste. marital status, family income, experience, type of family to which she belonged and size of the family was also collected. A pre-test of the questionnaires was carried out in Vattiyoorkavu, Athiyannoor, Chirayinkil and Kazhakootam Blocks of Trivandrum District. On the basis of the pre-test, the questionnaires were scored and the scores analysed using Spearman's Rank Correlation Co-efficient, Analysis of Variance and Students' t- tests.

The results of these tests showed that there was a significant correlation between role expectation of LVEOs as perceived by themselves, and their Block level superior officials at 5 per cent level. The LVEOs of Trivandrum District had maximum problems and LVEOs of Calicut had least problems. The problems which affected the LVEOs most were 'Lack of security during village visits' followed by 'delay in

settlement of TA Bills', 'inadequate TA and DA, and lack of recreational facilities for the family. The problems which affected the LVEOs least was 'having too many children followed by 'freedom of expression at staff meetings' 'non co-operation from children and husbands and lack of awareness of superiors' expectations respectively. Training, religion and living with family influenced significantly their problems. Age, experience, education background marital status, type of family, and income of the LVEOs had no significant influence on their problems.

The LVEOs were found to be good in maintaining diary. helping people in getting assistance under IRDP and functioning as liaison officer between bank, block, and beneficiaries. The LVEOs were poor in organising for publicity through the press and radio. There was a significant correlation of performance ratings among BDOs EOWWs and village women, but no significant correlation in ratings between the LVEOs and the other raters (*ie.* BDOs, EOWWs and village women). The BDOs had rated the LVEOs lowest, followed by EOWWs and village women. The LVEOs had rated themselves highest.

Districts which had more problems performed better. According to all the four raters, the LVEOs performed best in IRDP. The worst performance was seen in women and children's activities.

Having children below five years of age training received and income of the LVEOs affected their job performance. Factors like age, background, experience, marital status, religion, education, and type of family of LVEOs had no significant effect on the LVEOs performance. Accordingly, all LVEOs except three were 'Average Performers! The other three were rated as Poor Performers'.

The study highlights the fact that training improves a LVEO's performance as a change agent in the villages. It is hoped that with better training in future, the LVEOs will build up a better tomorrow.

MOTIVATING RURAL POOR FOR BETTER FAMILY LIVING

— *Leelavathy, K. C. (1991)*

India is a land of 5.761 lakh villages, fifty per cent of these villages are situated in different terrain characterized by poor socio-economic conditions. Neglected and isolated, these villages have suffered several handicaps for long. With the dawn of Independence in 1947, some concerted efforts have been made to better the lot of rural masses.

Rural poor are struggling all the time in the midst of their malnutrition, unemployment, lack of skills, non availability of facilities, poor leadership, indebtedness and the exploitation of the elite. Since the inception of the Community Development Programme in 1952, the nation has been waging in a war against these evils in the rural areas. But lack of awareness, motivation and commitment and the consequent evils have been impeding progress. The innocent and simple rural population have not been empowered to avail themselves of the facilities forwarded at the taxpayers' expense for better family living.

Motivation is an internal force of a human being which impels her to some activity which has some specific goals and which usually originates to fulfil some physiological need, of the body or psychological satisfaction (Ghorpade, 1977). Better family living demands that attention is given within families to the process of setting of goals, decision making, planning and implementing to improve the quality of living, with fullest utilisation of all the available resources such as food, health facilities, housing, education, employment and community services.

Sri Avinashilingam Rural Centre is at Vivekanandapuram village of Karamadai Panchayat Union, in Coimbatore District located at a distance of 40km from the city. The objective of this centre is to realise the goal of working for the rural families, to alleviate their poverty, ignorance, ill health, illiteracy, unemployment and other associated social evils. Hence in tune with the objective of the institution, this investigator designed her project in 10 selected villages to uplift the rural families with a total perspective, with the following objectives.

1; Studying the profiles of the block and the villages selected therein.

2. Locating the needs, aspirations, skills and demands of the rural poor families.
3. Analysing the factors motivating them.
4. Planning programmes with them for better family living.
5. Imparting training for upgradation of skills and adoption of appropriate technology for rural development.
6 Providing necessary infrastructure for conducting entrepreneurial development programmes for the selected groups hailing from backward classes, SC/ST and other weaker sections below poverty line
7. Arranging for economic, social and educational inputs for better family living and enhancing the income by arranging financial assistance from various infrastructure and
8. Assessing the impact of inputs as instruments of motivation for better family living.

With the help of the personnel of Sri Avinashilingam Rural Centre, Vivekanandapuram, Karamadai Panchayat Union, ten villages selected were Ansur, Kendaipalayam, Kittampalayam, Kurumbanoor, Mottampatti, Sellappanoor, Salaiyur, Sullipalayam, Thekkampatti and Welspuram.

The target groups encompassed all the families in the selected 10 villages living below the poverty line. Financial assistance of Rs. 500 to 5,000 was rendered to 209 families and thus a total amount of Rs. 1,54,000.00 was disbursed. The finance was mobilised from the local financial institutions and infrastructures namely, District Rural Development, agency through Block IRDP and TRYSEM Programme, Tamil Nadu Adi Dravida Development Corporation and Lab to Land Programme, ICAR.

Interview schedules were prepared to know the profile of the village and population. Changes evidenced through the social, economic and educational inputs were assessed in terms of acquisition of assets, assessment of nutritional knowledge and practices and adults made literate.

Implementing the plan of Action had two phases:

1. Training inputs for better family living.
2. Entrepreneurship development programme for economic development.

The preliminary data collected from the 10 villages revealed the economic oppression and mental suppression of families due to their non-employability. Training programmes were arranged as part of Entrepreneurship Development Programme.

The impact on social inputs were assessed in terms of acquisition and adoption of knowledge in nutrition and health, enhancement of leadership qualities, utilisation of infrastructure and application of transfer of simple technology. The educational inputs resulted in enrolment in adult education classes, participation in development activities involvement in group activities and community welfare efforts. The enhancement of income and thus achieving better family living enabled the investigator to get evidence of economic inputs.

Recommendations

1. A Directory of Voluntary Agencies working in the District must be made available at the District Head Quarters (Collectorate) to enable all the development departments to know their existence and work hand in hand with them.

2. Voluntary agencies working in close collaboration with rural/urban development programmes must be given some share of allotment from poverty alleviation programmes. (*eg*) Out of 600 beneficiaries from the block of IRDP, atleast 50 should be identified by the voluntary agency. To realise this, the voluntary agency in that area could be made as a member of the Task Force Committee of the Block.

3. The developments should coordinate activities in giving package of services to poverty stricken families.

4. Instead of target oriented approach, holistic development approach should be stressed and package of services in one window service should be provided.

5. A network in marketing should be established, Those enterprises established, by the government have effective take off facilities. The products of voluntary agencies should also be linked up with government agencies, cooperative departments and popular private concerns.

6. Massive efforts be made to develop entrepreneurship development programme. Linkages should be made with government/NGO's to get to know the demands of personnel and products in the market and thus strengthen the EDPs.

STUDY ON GANDHIAN ECONOMIC THOUGHT AND ITS CONTRIBUTION TO HOME MANAGEMENT

— *B. Saraswathi (1981)*

The economy of the country should be geared to useful, wasteless, production activities which would help in keeping the moral-cultural fabric intact. In other words, the where withal of a decent living-employment with fair wages-must be provided to all able bodied men and women. This would not only give them the necessary purchasing power, but also the necessary goods and services which they would have produced. How is this to be done? This is where Gandhiji's message is of paramount importance. He made clear the pivotal role of the household and the family, in earning, producing and consuming to ensure a good life.

Though there have been many studies on Gandhiji's contribution in solving present day economic problems, this particular aspect of Gandhian economics and Home Management has not been studied so far.

The households are the ultimate consumption units in the economic set-up. Effective consumer demand emanates from these units and ultimate consumption takes place there. Their needs have therefore to be catered to by the society.

The well managed home is the locus round which a well-knit economy could function for the benefit of the community, village and country. In his Sarvodaya plan, Gandhiji visualised the ultimate decentralised economic unit, the household, flowering into production - cum - consumption units in an ideal democratic environment - Ramrajya.

In India today, the type of economic set-up that Gandhiji visualised, does not find a proper place in the nation's plans, since there is powerful political lobbying against it. The strangle hold of vested interests has not as yet been broken. If the economic thought of Mahatma Gandhi could be translated into action in terms of decentralisation, self sufficiency, rural industrialisation and equitable distribution, India could well talk of 'Sarvodaya' or 'Anthyodaya', the dawn of economic freedom for all-the lowliest and the last. This study on 'Gandhian economics and its contribution to home-managerial science' is an inter disciplinary approach to the problem.

Methodology

The study has two major aspects

I. A study of the Gandhian economic ideas and their relevance today.

II. Assessing the contribution of Gandhian ideas to the science of Home Management.

I. The study of Gandhian economic ideas and their relevance today

The first step involved a study of Gandhian literature to cull out his contribution to economics in general and to the micro economic unit - the household.

Gandhian stalwarts, it was presumed, would have a better perception of Gandhian thought. These stalwarts were very much alive to the needs and demands of the nation. Therefore, an opinionnaire was given to them to find out their views on the relevance of Gandhian thought to the present day set up.

II. Assessing the contribution of Gandhian ideas to the science of Home Management

Since the economic relevance of the households and their upliftment, is in relation to the village, its progress and development, a longitudinal study of a semi rural area - Narasimhanaickenpalayam - was taken up. The investigator had earlier undertaken a study on a socio economic pattern of Narasimhanaickenpalayam for another study on rural conditions. That study provided the base-line statistics for this study for the year 1969. The case inaccessability and cooperation of the villagers was the reason for the selection of the village. A survey was conducted in 1969 and again in 1979 to assess the improvements made. The areas studied were

Socio economic patterns
Housing and home Managerial practices
Nutritional status
Clothing practices
Attitude of parents towards family planning and education of their children.
Interview schedules were used to get the necessary information.

Since any plan of economic development needs the involvement of the target groups, an opinionnaire was given to the local leaders to find out the extent of their participation and identification with the development process. This also helped to pin-point the lacunae in village development.

Home - Improvement programmes have been undertaken by a number of Gandhian institutions. The type and content of their programmes and the extent to which they could act as catalytic agents in the development process was studied through the replies they gave to opinionnaires sent to them.

This study pointed out the need to give a new orientation to the implementation of Gandhian economic ideas in rural development, starting from the individual households, as the initiators of economic change.

The role of voluntary Gandhian Institutions in this venture must be recast. In this endeavour the educated elite have a special role. A bond of dedicated workers can work miracles in raising the living levels of the masses from the depths of despondency to a decent quality of life.

IMPACT OF THE FAMILY PLANNING PROGRAMME ON THE RURAL HOUSEHOLDS IN THE SELECTED THREE TALUKS OF COIMBATORE DISTRICT WITH SPECIAL REFERENCE TO THEIR FOOD HABITS AND FOOD EXPENDITURE

— *M. Jayalakshmi (1977)*

Economic development involves a qualitative change in the utilization of human resources as they are the main vehicle for the process of economic change. Human resources in India have registered an unbridled progress in the last decade 1961-71 in numerical terms, recording an increase of 24.66 per cent which is the highest increase observed so far, not withstanding the nation wide Family Planning Programme which has been claimed as integral part of the socio economic development. This rapid increase in India's population has deferred the country's efforts to raise living standards, with the result one third of the population lives in absolute poverty.

The Government of India's commitment to the gigantic task of the removal of poverty is a mandate from her people. There are two basic strategies to remove poverty-structural and distributive. The structural strategy contemplates building up the capacity of the poorest segments of the population in order to enable them to earn a decent income and come up to a minimum level, with the main crux as the reduction of birth rate. Even under the existing constraints on food resources and income, a sizeable proportion of malnutrition can be prevented by limiting the family size. Since 55 per cent of the available studies on impact of Family Planning are on urban samples the present study was undertaken in a rural area, to find out the impact of Family Planning on the rural households with reference to their food habits and food expenditure.

The design of the study was the survey with interview schedule. A precoded interview schedule bearing questions on the socio-economic demographic variables of the sample was framed to conduct the study. Five hundred households were selected from three taluks in Coimbatore District as the sample for this study.

The data were consolidated, analysed and discussed under the following heads:

1. Samples analysis by socio-economic and demographic variables
2. Sample's knowledge of various aspects of Family Planning

3. Sample's Family Planning Practices by socio-economic and demographic correlates.
4. Breast feeding practices
5. Contraceptive behaviour by socio-economic classes
6. Sample's desired family size
7. Food preferences of the sample
8. Food expenditure by average family size, income and adoption and non-adoption of family planning.

Based on the analysis of the data, certain inferences have been drawn constituting the recommendations of the study.

The specific recommendations of the study are:

1. Medical care is not available in all the villages as is evident from the fact that one allopathic doctor is available for 45 villages or 27,000 villagers. To have functional coverage of the 100 million couples who are in the reproductive age, more clinics at the rate of one per 10,000 population must be established. The absence of free and easy access to the clinic in the existing set up, has forced many a women, to the village dhai both for delivery and for the illegal termination of pregnancy.

2. On the functional side, the Family Planning Centre must work on a comprehensive basis. Its function should include sex education, advice on the spacing of children, marriage counselling, marriage hygiene and nutrition education. Family Planning should be reinforced with a substantial nutrition education component. Without this, the poor family's position can scarcely get better. The up-graded approach can bring optimum quality of life.

3. In view of the big gulf between awareness and acceptance of suitable and timely Family Planning techniques, new emphasis should be given towards intensifying the motives for restricting the family size and only secondary importance given to increasing the availability of the means for restriction. Motivational advertising should persuade people to have fewer children and tell them how they can set about limiting family size.

4. In view of the key role played by the village dhai both in the matter of looking after deliveries and administering aborticides, to the economically vulnerable sections of the rural population, the existing programmes of training and utilizing their services in propagating family planning must be intensified and further strengthened.

5. Since Family Planning is miscontrued as stopping the birth of children by the people in general and by the sample in particular, the advertising-publicity wings of the Government should take immense efforts in equating Family Planning with planned parenthood, dealing with the control of both the number and placing of births. It is due to this lacunae in the present advertising, that pills, foam tablets and condoms are not known to most of the target population.

6. The Western system of contraception serves only a limited population in the rural areas in the sample which is reflective of the national trend. They use traditional and indigenous articles which are less expensive and easily available through the village dhai. Furthermore, they have conventional faith in the treatment. The bio-medical research wing of the Family Planning Programme should conduct research on the traditional aborticides which are being used by the rural population and for which there are allusions in our ancient unsophisticated cultures and lores.

7. Post-partum approach in Family Planning should be incorporated, since it is based on the rationale that women having recently delivered in a health facility are of proven fertility and at risk to become pregnant again relatively rapidly and will be more motivated to regulate their fertility than women in non-puerperal situations. This makes it easier to offer certain methods of Family Planning.

8. In view of the fact that 76.36 per cent of expenditure was being spent on food by the sample, there is urgent need for developing low-cost nutritious food for the overwhelming majority of the population.

9. The ratio of cereals to total food expenditure being 55.6, slightly higher than the 54.79 per cent of the NSS Rounds, on account of poor incomes and big families. Any further increase in income will be diverted mostly to the purchase of cereals, with the high incidence of cereal elasticity of 0.6. Therefore, new cereals and millets with high nutritive values must be evolved to help this group in fighting both malnutrition and undernutrition.

10. Inadequate incomes and large families increase the poverty syndrome of the population. This in turn, restricts the consumption of protein foods. The inadequate production of pulses in the country as a whole aggravates the situation with the advent of the high yielding varieties of cereals, the area under pulses has declined by nearly 10 lakh hectares between 1961-62 and 1970-71, although their production has slightly improved to one lakh tonnes during the period, with the evolvement of high yielding varieties of pulses. However, this is not adequate quantitatively to meet the recommended amount by the ICMR. Efforts in the direction of evolving high yielding pulses must be doubled on an emergency footing.

11. Breast feeding is an economic asset in terms of national development. Its link with Family Planning, and as a key to child survival, better nutrition, through breast feeding may be an important pre-condition for reducing birth rates. Prolonged breast feeding can be a plank in the Family Planning platform. Therefore, lactation needs to be appreciated and reinforced and the Nutrition Education Programme must give full cognition to this aspect of Family Planning.

However, breast feeding is carried out for long periods in the rural areas without supplementing it with any food. There is need to evolve simple, low cost, supplementary feeds using the local resources. Such weaning foods must be popularised and promoted in the country.

12. Animal husbandry, dairy farming poultry keeping should also be popularised. Popularisation of such industries may be in the nature of providing employment generating income and the availability of quality food to the population. All this may help in upgrading the living standards along with an automatic reduction of birth rates.

13. The age at marriage for girls must be raised to 20 and 25 for boys. Increase in the age at marriage can be expected to lower fertility as it cuts down the reproductive span. Measures must be taken to penalyse early marriages and large families.

14. The idea of numbers to the couple with regard to children becomes meaningless without reference to sex. Male child is a must for the parents. A family that has had the required number of children, but not the desired sex composition is likely to relax the size consideration. Therefore, a massive programme of social education would be needed to promote the idea of equal importance of children of both sexes.

15. The correct approach should be complemented with the stick approach, to get worthwhile results from the efforts and funds invested in the Family Planning Programme.

16. Supplementary occupation should be popularised among the womanfolk in the villages. Rural industries are the best suited to engage the rural women in their leisure hours.

The task of national development is not like playing a penny whistle; but a symphony where all the instruments are to be co-ordinated. Therefore, the approach for rural development in the context of prodigious population growth and the consequent poverty must be based on a synergistic approach in which, when many units function in collaboration with each other, the result will be not merely the sum of their individual efforts, but the multiplication of their individual efforts.

தமிழ் இலக்கியத்தில் மனையியல்

(சங்கமும், சங்கம் மருவிய காலமும்)

— பி. சிவகாமசுந்தரி (1979)

முன்னுரை

''மனையியல் என்பது மனை வாழ்க்கைக்குரியது. மனை, சமுதாயம் இவற்றிற்கு மிக முக்கியமான, நிலைபேறுடைய நன்மைகளை நாடவைத்து உலகியல் அறிவைப் பெருக்குவது. தெய்வ நம்பிக்கையை ஆழப்படுத்தி பழங்கால பழக்க வழக்கங்களால் வளர்ச்சி குன்றாது இலட்சிய மனை வாழ்க்கை நடத்தி நிறைவைக் காண்பது.''

மனையியல் கல்வியானது இன்று மழலைப்பள்ளி துவங்கி பல்கலைக் கழகம் வரை கல்வித்துறையிலும், நாட்டு விரிவாக்கப் பணியிலும் விரிவாகப் பேசப்பட்டு வருகின்றது. அறிவியல் விளக்கங்களுடன் இன்று பெரிதும் பாராட்டப்படுகின்ற மனையியல் அறிவுபற்றி தமிழிலக்கியத்தில் ஆழமாகக் காலூன்றி நிற்கும் கருத்துக்களைக் கண்டறிவதே இந்த ஆய்வின் நோக்கமாகும்.

தமிழிலக்கியத்தில் சங்கம், சங்கம் மருவிய காலத்தில் தோன்றியுள்ள இலக்கியங்களில் மனையியல் பெற்றுள்ள இடத்தினையும், மனையியலின் பிரிவுகளாக உள்ள உணவியல், உடையியல், குழந்தையியல், மனை நிருவாகம், நிறுவன நிருவாகம், விரிவியல் - இவற்றின் தோற்றம், வளர்ச்சி, வாழ்வியலுடன் இணைந்து நிற்கும் போக்கினை இலக்கியச் சான்றுகளுடன் நிறுவ முயலும் முதல் முயற்சி இது.

மனையியல்

மனையியல் - மனைமாட்சியை விளக்குவது. இல்லத்தின் இயல்பை இனிதாக்குவது. இல்லறத்தை நல்லறமாக்குவது. வாழ்வின் உயர்ந்த இன்பத்தை வழங்குவது. மனத்தை உடைய மனிதன் மனையில் வாழ்வதை விரும்பி ஏற்பது. ''மனை'' என்ற சொல் பொருள் ஆழம் உடையது. மனை என்ற சொல்லுக்கு இல், வீடு, மனைவி, இல்வாழ்க்கை, அறம், ஒழுக்கம் போன்ற பல பொருள் குறிப்பது. ''இயல்'' என்றால் 'ஒழுங்கு'' என்பது பொருள். ஆக, ''மனையை ஒழுங்குபடுத்துவது மனையியல்''. மனை சமூகத்தில் அச்சாணியாக இருந்தது. அன்பே மனையின் அடிப்படை. அன்புக் குரியவள் மனையாள், மனைமின் சிறப்பு வடிவமே மனையியலாக வளர்ந்துள்ளது. மனை - ஆக வடிவம் உடையது. இயல் - புறவடிவம் உடையது. அகம், புறம் கலந்த அருமை வடிவந்தான் மனையியல்.

வையத்துள் வாழ்வாங்கு வாழும் வாழ்க்கைக்கான கல்வியை அளிக்கும் முதல் ஆசிரியை அன்னை. அவள் வாழும் ஆலயம் மனை. வாழ்க்கையின் குறிக்கோளை அமைப்பது மனை. மனையும், மனைவாழ் மக்களின் சாதனை களுந்தான் நாட்டின் முன்னேற்றத்தை அளக்கும் அளவுகோல்கள். அமைதி நிறைந்த ஆழ்ந்த பொருளுடைய வாழ்க்கையைத் தருவது அதன் சூழ்நிலை. பொருள் என்றால் வாழ்க்கை என்று கூறலாம். வாழ்க்கை முறையினை அமைத்துக் கொடுக்கும் நற்பள்ளிதான் மனை. அப்பள்ளியில் வகுக்கப்பெறும் மனை இலக்கணம் தான் மனையியல்.

அகம், புறம் என்பன தமிழர் வாழ்வில் கண்ட மனையியலின் முதல் நிலை எனலாம். மனையில் கண்ட சிந்தனைச் சிறப்பே அகம். சமுதாயத்தில் கண்ட செயற் சிறப்பே புறம். இவையிரண்டும் சேர்ந்த உயர்நிலையே தமிழிலக்கியம் கண்ட மனையியல். தமிழ் இலக்கியத்தில் மனையியல் தனித்து நிற்கவில்லை. வாழ்வில் நிகழ்ச்சிகளை அமைக்கும் போதும், விளக்கும்போதும் மனையியல் கூறுகள் இயற்கையாகப் பாடலுள் பொதிந்து கிடக்கின்றன.

வாழ்க்கையின் அன்றாட நிகழ்ச்சிகள் மனையியல் தத்துவத்தின் அடிப்படை. அவை, செம்மைப்படும் பொழுது தனி மனிதனும், மனையும் பயனை அனுபவிக்க முடிகிறது. அச்செம்மைப்பயன் சாதனைகளாக உயரும் பொழுது சமுதாயமும், நாடும் மனையியலைப் புரிந்து கொள்ள முடிகிறது என்று கூறலாம்.

மனையியலின் பிரிவுகள்

வாழ்க்கை நலத்திற்கும், நாட்டுப் பணிக்கும் உரிய கல்வியை வழங்கும் மனையியல் - உடல், உள்ளம், உணர்ச்சி, சமூக, பொருளாதாரத் தேவைக்கு மருந்தாக அமைகிறது. என வே, மனையியல் கல்வியில் 1 உணவு, 2. உடை, 3. குழந்தைப்பராமரிப்பு, 4. மனை நிருவாகம், 5. நிறுவன நிருவாகம் 6 விரிவியல் பிரிவுகள் அடங்கி உள்ளன.

தமிழ் இலக்கியம் உணர்த்தும் மனையியல்

நிலமும், நிலத்து வாழ் மக்களின் மனை வாழ்க்கையும் மனையி யலுக் குவித்திட்டுள்ளன. ஐவகை நிலத்து மக்கள் வாழ்வில் உரிப்பொருள் தமிழ் இலக்கியத்துக்கே சிறப்பாக அமைந்துள்ளது

மனைக்கு மனைவி தலைமைப் பொறுப்பேற்கும் தனிச்சிறப்பே மனையியல் தத்துவம் எனலாம். இல்லாள், மனையாள், தாய் போன்ற சொற்கள் பொருளாழமுடையவை. மனைவருப்பு முறையும், வளர்ந்த முறை யும் தலைவனும் தலைவியும் நடத்திய மாட்சியுடைய மனை வாழ்க்கையும், இலக்கியச் சுவைபட அமைந்துள்ளது மனைவாழ்வின் கடமைகளே மனை யியலாக அமைந்தது. மனை உணர்த்திய அகவாழ்வே, புறவாழ்வில் வெற்றிக்கு

அடிப்படையாகக் கூறலாம். மனித வாழ்க்கை காலத்திற்குக் காலம் மாறி வந்தாலும் மனையறம் மட்டும் மாறா இடம் வகித்திருந்தது. தனிமனித மனையம், சமுதாய அறமாக வளர்ந்து. ''எல்லார்க்கும் எல்லாம்'' என்ற ''சர்வ உதயத்தை'' நோக்கிச்சென்றது, தன்நிறைவு, தன்மன நிறைவு, சமுதாய நிறை வாக விரிந்திருந்தது.

தனிமனிதனின் தந்நிலையும், பொதுநிலையும் அவனது நிறைவு, குறைவினைச் சுட்டிக்காட்டுகின்றன, அச்சுட்டின் எல்லைக்கோடு தான் சமுதாயம். தனிமனித வாழ்வின் வெற்றிப் பிரதிபலிப்பே மனையியல். அந்தப் பிரதிபலிப்பின் ஒளிப்பிழம்பே சமுதாய விழிப்பு.

தமிழிலக்கியத்தில் மனையியல் தனி மனையை விளக்கவில்லை. சமுதாய நோக்கிலேயே அமைக்கப்பட்டுள்ளது. சமுதாய நோக்கில்லா மனைவாழ்வு குற்றமுடையதாகக்கருதப்பட்டது. கடையனும் கடைத்தேர்ச்சி பெறுவதே இலக்கியம் விளக்கும் மனையியல். உரியநேரத்தில், கைமாறு கருதாது, ஈத்துவக்கும் மகிழ்வைப் பெருக்கி தனிமனித வாழ்வை சமுதாய நலனுக்காக வழங்கியது தமிழிலக்கியம்.

மனையியல் கல்வி விளக்கத்திற்கும் தமிழிலக்கியம் உணர்த்தும் மனையியல் விளக்கத்திற்குமுள்ள ஒற்றுமை வேற்றுமை

மனையியல் அறிஞர்களான காத்தரின் ஈ. பீச்சர் மேரி ஹெமன்னே, மரியா பர்லோனா, மேரி. ஜே. லிஸ்கன், டாக்டர் இராஜம்மாள் பி. தேவதாஸ் போன்றவர்கள் பெண்களுக்கான தனிக்கல்வி தேவையென்ற சூழ்நிலையில் மனையியல் கல்வி எழுந்ததென்று கூறுகின்றார்கள். அத்துடன், காலத்துக் கேற்றவாறு உணவு, உடை, கலை, வெளி பழக்க வழக்கங்கள் மாறி வருவ தால் அதற்குத்தக மனையுறையும் பெண்ணும், ஆணும் பயில வேண்டிய கல்வியாக இன்று வளர்ந்துள்ளதென இன்று வலியுறுத்துகின்றார்கள். வீட்டில் துவங்குகின்ற மனையியல் கல்வி, கல்விக் கூடங்கள் வழி கற்றும், பிறவழி களாலும் நாட்டுப்பணி நோக்கி நிறைவு பெறுவது சுட்டிக் காட்டப்படுகிறது.

தமிழிலக்கியம் காட்டுகின்ற மனையியல் ஆண் - பெண் இருபாலாரும் கற்க வேண்டிய கல்வி என்பதினும், நாட்டுப்பணி நோக்கி நிறைவுபெறுதல் போன்றவற்றில் ஒத்துப்போனாலும், சிற்சில இடங்களில் தனக்கே உரிய முறையில் தனித்து நிற்கின்றது.

மனையியல் கல்வியில் விளக்கம், அணுகுமுறை அறிவியல் அடிப்படை யில் அமைய, தமிழிலக்கியம் காணும் மனையியல், வாழ்வியல் அடிப்படையில் அமைந்துள்ளது. வாழ்க்கை அனுபவத்தின் நிறைவினை நிலம், காலம், பொழுது, அக, புற வாழ்வு நிலைக்குத் தக்கவாறு சுவையும், நயனும் பட காலத்தில் நின்று, காலத்தையும் தாண்டி வாழ்ந்து காட்டுகிறது.

மனித வாழ்வின் உணர்ச்சிப் பிரதிபலிப்பே இலக்கியம். உயர்ந்த கருத்துக்களின் பதிவே இலக்கியம். எனவே வாழ்வியல் முறைகளில் அல்லது அகற்றி நல்லது காத்து சமுதாயத்தை தன்னுள் அடக்கி வாழ்வதே தமிழ் இலக்கியம் கண்ட மனையியல்.

முடிவுரை

ஆய்வின் முடிவுகள் :-

1. மனையியலின் கரு, விதை, வளர்ச்சி, பயன் தமிழிலக்கியத்தில் பல்லாயிரம் ஆண்டுகளுக்கு முன்னரேயே வேரோடி நிற்கிறது.

2. தற்காலத்தில் மனையியல் கல்வி அறிவியல் நோக்கோடு தருகின்ற விளக்கம் தமிழிலக்கியத்தில் அடிப்படைக்கலை, அறிவியல், வாழ்வியல் பண்பாட்டு விளக்கமாக அமைந்துள்ளது.

3. ஐவகை நில அடிப்படையில் அமைந்த தமிழர் வாழ்வின் மனையே அனைத்துக்குமான உயிர்நாடி. மனைத்தலைமையை ஏற்று நிர்வகிப்பவள் ''பெண்'' தான்.

4. இந்த நூற்றாண்டின் பெண்களுக்கான தனிக்கல்வியாகத்தோன்றிய மனையியல் கல்வி, இன்று ஆண், பெண் இருவருமே கற்க வேண்டிய நிலைக்கு வளர்ந்துள்ளது ஆனால், தமிழிலக்கியம் பண்டு தொட்டே தாய், தந்தை, நாடாள்வோர், பணிபுரிவோர், குடிமகன் ஒவ்வொரு வரும் ஆற்றவேண்டிய கடமைகளை வரையறுத்து வற்புறுத்தி வந்துள்ளது. மனை வாழ்வில் மனநிறைவு நாட்டின் தந்நிறைவை நோக்கி அமையுமென்பது அடிப்படை விளக்கம்.

5. மனையியலில் - ''விரிவியல்'' தனிப்பகுதியாக விதிக்கப்பட்டுள்ளது. ஆனால் தமிழிலக்கியத்தைப் பொறுத்தவரை ''விரிவியல்'' இலக்கியம் முழுவதும் உயிர் நாடியாக அமைந்துள்ளது.

DEVELOPMENT OF WOMEN IN THE SANGAM AGE AND THE PRESENT TIMES

— *Saroja Prabhakar (1991)*

Women constitute one half of the nation's population. Their position in the society is an index of its civilization. The nation can move into 21st century with strength, only by integrating women, the makers of the new generation, into the national mainstreams. (Alva, 1988). Their contribution to national development depends on their active involvement in development plans and their implementation (Devadas, 1988) During the recent years considerable interest has been evinced with regard to women's involvement in development. However, the past and present of Indian Women remain largely undocumented and also the achievements of millions of ordinary women who make up the fabric of Indian life are seldom chronicled. Hence this investigation was taken up to study the development of women in the Sangam age (I century) and the present times (20th Century) with the following objectives:

1. To identify the trends in development, education, employment, participation in national politics and awareness of legal rights with regard to women in the Sangam age and the present times, through review of literature and descriptive investigation.

2. To suggest suitable strategies for furthering the development of women in the light of the documentary study of women in the Sangam age and the descriptive investigation of the present day conditions.

The methodology comprised two parts

1. Gathering facts about women in Sangam Age through the historical approach by way of survey of literature and

2. Collecting information using a questionnaire about the development of women in the present day through interview schedule with 1200 women (rural and urban) selected from four districts of Tamil Nadu, representing Northern, Southern, Eastern and Western reforms of the state.

Findings

1. As portrayed by Sangam literature, the women of Tamil Nadu had distinguished themselves by their cultural attainments and virtuous living.

2. Women of Sangam age enjoyed considerable esteem and respect in the family and community. They were given equal opportunities to receive education and were trained in fine arts. (Varadharajan, 1979).

3. Agriculture was the main occupation in which they took active part.

4. They were brave and patriotic and at the same time they were the light of the homes and managed their homes well, ensured harmony and brought happiness to all the members of the family.

5. Compared to Sangam age, the status of present day women is much affected by the various factors influencing social change.

6. The results of the survey on 1200 women revealed that:

i. Women should aspire for higher education to get better employment and thereby ensure better status in the society.

ii. Vocational training must be given importance so as to enable to raise the family income.

iii. Most of the respondents (95 per cent) were aware of the Adult Education Programmes and the Nutritious Noon Meal Programme of Tamil Nadu government.

iv. Enforcement of the various laws such as Child Restraint Act, Dowry Prohibition Act, Widow Remarriage Act, Sati Prevention Act, Equal Remuneration Act and Maternity Benefit Act, was necessary to help women enjoy their legal rights and status.

v. The women of present day are more courageous and hold an important role in making policy decisions.

7. Recalling the respondents on the development of women 50 years back, 25 years back and during the decade (1980-1989) respectively revealed the following facts.

i. Neglect of women's education along with problems such as child marriage, polygamy, seclusion and Purdah system had brought about degradation in the women's status.

ii. Women suffered untold agonies, polygamy, sati and dowry problems. Female literacy was low and there was no protection for women through laws.

iii. The status of women improved through education and employment. They are being considered as equal partners, an asset in the family rather than a liability. The political participation, occupational role, the legal rights and equality have elevated women to newer heights.

The rays of hope are becoming brighter to bring about favourable change in and through women's development and thus women will be more instrumental to eusure a healthier, happier and progressive India in the 21st century.

REFERENCES

1. Alva, Margaret (1988), Women and Higher Education, Yojana, P. 12.

2. Rajammal P. Devadas, (1988) " Managing women's programmes in Social forestry" Management of development programmes for women and children, Avinashilingam Institute for Home Science and Higher Education for Women P.1.

3. Varadarajan, M. (1979) 'Penmai Vaazhka' Pari Nilayam, Madras, P. 11-12, 26.

4. Varadarajan, M. (1979) "Pazhamtamizh Ilakkiyathil Iyarkai" Pari Nilayam, Madras P. 36.

2. To study the impact of supplementation of low-cost sources of β-carotene namely amaranth, carrot and papaya fruit in comparison with the massive dose of vitamin A by administering them to different groups of vitamin A deficient children aged 2½ to 6 years. These supplements were provided along with a lunch.

3. To study the effect of supplementation of iron alone, vitamin A alone and iron and vitamin A together to children aged 2½ to 6 years and suffering from vitamin A deficiency.

Methodology

Six villages of Perur Block and 10 villages of Karamadai Block were chosen by multi-stage sampling to study the prevalence of vitamin A deficiency. Complete enumeration of the children in all the selected villages was done. Based on the WHO classification of Xerophthalmia (WHO 1976) the clinical survey was done and the prevalence rate in each village was recorded. At random one per twenty children were selected for the estimation of serum vitamin A. Since vitamin A is indicated to be playing an important role in haemopoieses, blood haemaglobin, haematocrit serum iron, total iron binding capacity and percentage saturation of transferrin were also determined for these children. The food and nutritient intake of a sub sample of these children were recorded.

Five villages, among the 16 villages selected for the study of prevalence of Xerophthalmia, in which the prevalance was found to be high, were selected for studying the impact of supplementation of low-cost sources of β-carotene. About 40 children from each village suffering from vitamin A deficiency participated in the feeding programme for a period of one year. They were served lunch every day in a balwadi. In three of the villages along with the lunch each child was given either 63.5g of carrot costing 7.6 paise, or 140 g of papaya fruit costing 7.0 paise, or 40g of amaranth costing 4.0 paise. Each of these supplements provided 1200 μg of β-carotene, which is the recommended daily allowance for this age group. In the 4th village 2.0 ml of vitamin A concentrate i.e. 200 001.U. retinol per child was given orally every 3 months as a massive dose. The effect of the supplementation was studied in terms of height and weight measurement once every month measurement of serum vitamin A, blood haemoglobin, haematocrit, serum iron, total iron binding capacity and percentage saturation of transferrin every threee months, against the 5th village which was the lunch and no supplement. Dark adaptation test was carried out every three months. The clinical assessment was done every six months.

PREVALENCE OF VITAMIN A MALNUTRITION IN CHILDREN AND EFFECTS SUPPLEMENTATION OF β-CAROTENE RICH FOODS, AND VITAMIN A PROPHYLAXIS

— *S. Saroja (1981)*

Malnutrition is a major global health problem and is mainly due to ignorance, false beliefs, traditions, customs and faulty foods. The damaging effects of malnutrition, especially during the early years of growth, are irreversible with respect to physical and mental function. The social and economic implications of malnutrition must therefore be considerable. While malnutrition is already a major world health problem, all indications point to a further aggravation of the problem in the coming decades. Protein Energy Malnutrition, nutritional anaemia and Xerophthalmia pose a great problem in the developing countries.

Studies on the prevalence of Xerophthalmia and vitamin A nutritional status of the children in India are few and inconclusive. This study was planned to record the prevalence of vitamin A deficiency in 16 villages of Coimbatore District and impact of supplementation of low cost sources of β-Carotene namely, carrot, papaya fruit and amaranth in comparison with massive oral vitamin A administration, on the vitamin A nutritional status of children.

Results of recent studies have suggested that vitamin A may play an important role in hematopoiesis. Xerophthalmia and nutritional anaemia are two major public health problems in developing countries and they often co-exist, particularly in children of poor countries. Attempts were therefore made to evaluate the possible interrelationship between these two deficiency diseases in children.

Objectives

The main objectives of the study are :

1. To study the prevalence of vitamin A deficiency among rural children of the age 0-12 years in 16 villages of Coimbatore District and in children attending the Paediatrics ward of Coimbatore Medical College hospital, as out patients, through clinical examination, dietary survey and biochemical estimation of retinol and also to determine their haemoglobin, haematocrit, serum iron, total iron binding capacity and percentage saturation of transferrin.

As a horticultural approach to reduce the prevalence of vitamin. A deficiency, parents of these children were supplied with papaya saplings and were instructed to nurture the same.

To study the association of vitamin A deficiency with other childhood diseases, children manifesting various other diseases in addition to vitamin A deficiency and attending the paediatrics ward of Coimbatore Medical College hospital as out patients were categorised. Ten thousand children of the age 0-12 years were clinically examined for the signs of xerophthalmia. Out of these 1006 were found to suffer from some degree of xerophthalmia or other.

The background information of all these 1006 children, prevalence of other deficiency diseases and the type of diseases, from which they were suffering, were also recorded. The initial values of serum retinol, serum iron, total iron binding capacity and percentage saturation of transferrin and lysozyme activity were estimated for a sub sample of willing and cooperative children.

They were given the initial dose of 100,000 I.U. of retinol parenterally on the first day and after treatment for the infections were given either 100,000 I.U. retinol (for children below 1 year) or 200,000 I.U. retinol (for children above 1 year) orally. They were instructed to come every three months for the 2nd, 3rd and 4th doses of retinol. Thus the cooperative children were followed, upto one year. Every third month, blood was collected to study the effect of the previous dose in terms of serum retinol and other blood indices and then the next dose of 200,000 I.U. retinol was given to them orally. Thus in 652 children (490 of the age 0-6 years and 162 of the age 7-12 years), the initial serum retinol and blood indices were analysed. 64.5 per cent, 39.4 per cent and 18.6 per cent of the children (0-6 years) turned up for the 2nd, 3rd and 4th doses respectively, whereas 58.0 per cent, 30.2 per cent and 12.3 per cent of the children (7-12 years) turned up for the 2nd, 3rd and 4th doses respectively.

Supplementation of iron and vitamin A

Forty children (age 3 to 5 years) in a balwadi were formed into 4 groups of 10 each, comparable in mean height, weight and age. They were suffering from mild degree of Xerophthalmia. One group formed the control and the rest experimental. The groupings were as follows :

Group 1	...	No supplement
Group 2	...	60mg of iron/day
Group 3	...	300 μg of retinol/day
Group 4	...	60 mg of iron and 300 μg of retinol/day

The supplementation was carried out for a period of one year. Their initial levels of serum retinol and blood indices viz, blood haemoglobin haematocrit, serum iron, total iron binding capacity and percentage saturation of transferrin were estimated every three months during the supplementation period.

Results

The analysis of the results indicated that

1. Xerophthalmia is a significant public health problem in the selected villages except the village, Seeranaickenpalayam. This being closer to Tamil Nadu Agricultural University and also being fertile when compared to the other villages selected, the consumption of low-cost sources of β-carotene such as papaya, yellow maize and green leafy vegetables is found to be high.

Prevalence of Xerophthalmia was found to be as follows:

Symptoms	Per cent
Conjunctival xerosis	6.9
Bitot's spots with conjunctival xerosis	8.0
Corneal Xerosis and Corneal ulceration	0.04
Night blindness	0.3

2. All the low-cost sourcee of β-carotene tried appear to be effective in alleviating the mild degrees of xerophthalmia and significantly improve the serum vitamin A levels. Of these sources, amaranth is the cheapest and appears to be more effective than others.

The time taken for dark adaptation appears to reduce itself gradually in the experimenial villages, but not in the control group.

3. Vitamin A deficiency is found to be more associated with worm infestation, gastroenterities and respiratory infections.

4. Massive doses of vitamin A not only reverse xerophthalmia, and increase serum vitamin A levels but also improve the serum iron levels and percentage saturation of transferrin, thereby scraping out anaemia too. A positive correlation between serum retinol and serum iron is noted

5. The utilisation of iron in haematopoitic process appears to be enhanced, when combined with vitamin A.

6. An analysis of the morbidity pattern of the target children revealed that in all the experimental groups third degree malnutrition disappeared after feeding for twelve months ; but it persisted in the control group even at the end of the study. This indicated the beneficial role of the β-carotene supplements and vitamin A in reducing the morbidity in children.

Out of the findings of this study the following recommendations emerge.

1. The WHO (1976) needs to include the 6 year old children along with the preschool children while specifying the criteria for determining whether or not xerophthalmia is a significant public health problem.

2. Serum retinol levels less than 10μg per 100ml is a significant indicator of health and nutrition risk among preschool children.

3. The inclusion of green leafy vegetables and papaya fruit should be a regular feature in all nutritional feeding programmes for the vulnerable groups, specially in Balwadis and primary schools.

IMPACT OF INCOME GENERATING ACTIVITIES ON HOME MANAGEMENT ASPECT OF SELECTED HOME MAKERS FROM URBAN SLUM AREAS OF MADRAS CITY AND RURAL AREAS OF CHENGALPATTU DISTRICT

— *R. Malligeswari (1990)*

Economic participation and economic independence of women are the two vital factors to be reckoned within any economic programme. In the present socio economic context, income generating activities constitute one of the programmes which assume great significance especially for the poorest of the poor women. The main objective of income generating programme is to make the benefits reach the identified target groups in order to bring them above the poverty line. This investigation is an effort in that direction with the following objectives :

1. To assess the impact of income generating activities on the socio economic variables such as family type, size and composition, community, education, marital factors, type of house, occupation, income, location, etc.

2. To find out the factors influencing the selected employed home makers in their selection of income generating activities.

3. To study the type and extent of income generating activities pursued by the selected homemakers and their participation in development programmes.

4. To explore the possibilities of infrastructure and credit facilities received by the selected employed home makers from the government and other agencies,

5. To assess the impact of income generating activities on the quality of life of the selected employed home makers from the government and other agencies.

6. To study the aspects of home management or family resource management, nutritional status, health status and child rearing practice and elucidate data in the light of before and after involvement in income generating activities towards economic position of the family.

7. To evaluate the qualitative aspect of the programme.

8. To find out the future intention of women interviewed and their suggestions for improving the income generating activities and the home management aspects and

9. To evolve some better schemes for future policies and programmes for generating more income and employment opportunities in order to improve their family resources and quality of living of weaker sections of women.

Methodology

The district of Chengalpattu was selected as the primary unit to represent the beneficiaries of homemakers from economically weaker sections such as landless labourers, marginal farmers, artisans etc. who were under poverty line.

Respondents were selected using a two stage random sampling procedure. Out of total 800 samples surveyed in the urban slum and rural areas, 300 beneficiaries as employed home makers were selected each from urban slum and rural area and the remaining 200 is allotted for the non beneficiaries. Again, within these 800 samples comparisons were drawn in the areas of family goal setting, time management, energy management, money management practices and nutrition.

Findings of the Study

1. The primary sources of income generating activities were banks, husbands of employed homemakers, radio and cinema. The secondary sources were neighbours, gramasevikas, makhya sevikas, balasevikas and mass media like exhibition, newspaper, T.V. and posters.

2. Most of the employed homemakers from urban slums were engaged in handicraft works as income generating activities like tailoring, sewing, basket weaving etc. wheras in the rural area a majority of employed homemakers were involved in animal husbandry activities like cattle rearing, poultry keeping and duckery.

3. After participating in the various income generating activities, the family income was raised to higher brackets than before participation, in both the areas.

4. Slum clearance Board of Tamil Nadu and I.R.D.P. were the sources of credit facilities for the urban and rural groups respectively.

5. Majority of the beneficiaries from both the groups acquired practical skills from their respective income generating activities.

6. After getting involved in income generating activities, both the groups were able to fulfil a majority of family goals to a greater extent than before.

7. Comparatively a greater percentage of employed homemakers from both the groups felt that the demand on their time was high due to their participation in the income generating activities.

8. After getting involved in income generating activities, a majority of the employed homemakers from both the groups realized that certain factors like "getting help from other family members"' "grouping up of activities" and "use of labour saving devices "facilitated to manage time more effectively than before.

9. Both the groups were able to conserve energy in their household activity due to grouping up of activities.

10. Regardless of areas, a majority of both the groups of employed homemakers were able to plan their family budget after participating in the income generating activities.

11. After accepting the income generating activities, both the groups reported that the proportion of income spent on food, possession of physical assets and the general quality of life had improved. The food pattern had also changed, leading to better nutritional status.

12. More than three fourth of the selected employed home makers from both the areas expressed that they had progressed towards women's development. use of infrastructure facilities and home management aspects.

13. On the whole the income generating activities had a highly significant impact on income level of both the categories.