A REPORT OF THE COMMUNITY NUTRITION PROJECT CONDUCTED IN THE VILLAGE MADHAMBALAYAM IN COIMBATORE DISTRICT

By

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1 INTRODUCTION

King (1968) warns that the world food problem is not a future threat and it must be solved within few decades. Rural areas wherein live the teaming millions of India's citizens must receive their due share. (Dey, (1964). Our Late Prime Minister Nehru (1968) said that it is a question of our realising the importance of problem of hunger and malnutrition and utilising science and its methods to solve it. Studenikin (1964) claims that high priority, possibly high priority should be given to Nutrition in national planning.

Under nutrition and malnutrition are widely prevalent among the low income groups of the population in almost all the less developed countries (Swaminathan, 1967). According to Swaminanthan (1968) the diets consumed by a vast majority of the population in several developing countries are lacking in protein rich and protective foods and are deficient in several vitamins and essential minerals. Bagchi (1968) warns that in India 60 to 70 per cent of young children today are having the conditions of "Nutritional dwarfism" and approximately 12000 to 14,000 children go blind every year as a result of vitamin A deficiency and 50 per cent of pregnant and nursing mothers have nutritional anaemia.

FAO (1956, 1958, 1963) claim that the science of nutrition has reached the stage at which it can be applied to practical problems of population which is a challenge to the ability and good will of a man to solve the problem which is capable of solution. FAO (1963) demands that in developing countries the public have to be informed about the extent and causes of malnutrition and the measures to bridge the nutrition gap.

Studenikin (1964) urges that nutrition education is extremely important, in order to over come faulty feeding habits.

Mothers in rural areas, where 80 per cent of our population live suffer from an all round inadequacy of nutrients (Pasricha 1958), Belavady et al 1959). The reasons are, ignorance, taboos, fads and fallacies and economic conditions.

So the study aims at assessing their nutritional status and tackle some possible problems in nutrition through nutrition education, a small attempt in the direction of designating any programme towards improvement.

II. NUTRITIONAL NEEDS OF NURSING MOTHERS

Healthy well grown children are derived from healthy, well grown mothers. The mother is the necessary link between any health service and the faetus and the young child (WHO, 1965).

As defined by Macy (1945) lactation is a physiological state of the woman when she undergoes the extra strain of nursing the baby. Venkatachalam, (1966) FAO, (1963) Scott, (1957) and Macy (1959) warn that the nursing mothers are included under vulnerable groups, who need special food for synthesis of milk, otherwise the out put of milk will be decreased.

Calories:-

The FAO committee on calorie requirement (1957) recommends 1000 additional calories for a woman secreting 850 ml of milk. She needs 40.2 calories per hour as she spends more calories per unit of body weight. (Venkatachalam and Gopalan, 1960). Chaudhiri (1947) says that for successful breast feeding adequate calories should be supplied through rice, vegetables, dhal, fish and milk.

Protein:-

Protein deficiency also causes a reduction in the quantity of the milk secreted (Carry and Wood, 1964).

The FAO committee on protein Requirements (1957) concluded that 2 gms of good quality protein is needed to produce one gram of milk protein. Aykroyd et al (1948) recommended 110 gms/day as the daily protein requirement for nursing mothers. According to Narasinga Rao et al (1958) the requirement is 1.5 g/k.g of body weight per day.

Minerals:-

Calcium and phosphorus requirements are greater during lactation, calcium being two grams per day (Macy, 1959). Nutrition Research Laboratories (NRL, 1968) reports that maternal anaemia also affects the infant. According to the Indian Council of Medical Research (1966) the iron requirement is 15 to 30 gms. per day.

Vitamins:

Ashdir and Puri (1962) found a significant correlation between diet vitamin A and milk vitamin A and the same observation with riboflavin. Belavady (1969) found that when additional supplements of some of the vitamins were given to the mothers it was found that the vitamin content of the breast milk also increased considerably.

TABLE . 1

RECOMMENDED DAILY NUTRITIONAL ALLOWANCE DURING LACTATION

Nutrient	ICMR	BMA	NRC
Calories	2700	3000	3000
Protein (gm)	110	105	98
Calcium (gm)	2	2	1.3
Iron (mg)	20-30	15	20
Vitamin A (I.U.)	3000-4000	8000	8000
Thiamine (mg)	1-2	1-2	1-2
Biboflavin (mm)	2.5	1.8	1.9
Vitamin C (mg)	50	50	100
Vitamin D (I.U.)	400-800	800	400

Kagal (1963) advises that these requirements can be met by proper selection of foods available in the community.

ASSESSMENT OF THE NUTRITIONAL STATUS

Serimshaw (1962) stressess that assessment of nutritional status is necessary to define, human nutrition problems and to guide the practical efforts towards their solution. Watkins (1962) defines nutritional status to the manner in which a person manifests the quality of his health as influenced by nutrition.

The methods commonly used for the assessment of nutritional status are:

A. Anthropometry

B. Biochemical tests

C. Dietary surveys

and D. Clinical assessment

A. Anthropometry:-

The Joint FAO/WHO Expert committee (1955) Macy and Kelly (1957), Garn (1962) and Krehe and Hodjmes (1965) point out that anthropometric data provide useful information for appraising nutritional status.

B. Biochemical Tests:-

Mechenry and Beaton (1962) state that biochemical methods have a real place in unravelling difficult of diagnostic problem. Sinclair (1946) and the Joint FAO/ WHO Expert committee (1951) state that biochemical tests make it possible to detect evidence of deficiencies.

C. Dietary Surveys:

There are numerous methods available for conducting diet surveys. The are as follows:

1. Food list
2. Observation
3. Questionnaire
4. Case study
5. Recall
6. Interview
7. Inventory or logbook
8. Weighment

1. Food list:-

In this method diet survey is conducted by requesting the housewife to record each day's consumption. FAO considers food list as helpful to collect information on the amount of various foods consumed in a house during specific period, usually a week. This method differs from the inventory in that there is no direct measurement.

2. Observation:-

Observation is the most direct means of studying the subjects. The success of observation depends on the experience of the observer and his insight.

3. Questionnaire:-

In using the questionnaire method a set of questions are posted to th subjects in which the use of a schedule preferred with the selected questions and their answer recorded.

4. Case study:-

In the case study, the interviewer meets the interviewee and asks a set of well thought out questions pertaining to the surveys and records the observations made.

5. Recall:-

According to Ahalmere et al (1952) recall method involves the use of food check lists to recall what the person's diet during the past 24 hours or any other length of period as decided by the investigator.

6. Interview:-

Interview is mainly used for illitrate people. Through direct interview the investigator gathers data from the interviewee, in a face to face contact.

7. Inventory log book:-

In the inventory method an inventory of the food already in the house is taken by actual weighment at the commencement of the survey the homemaker is

requested to maintain a record of all the food purchased, received as gifts or produced from the garden during the survey period.

8. Weighment of raw foods:-

In weighment method the investigator weighs all the foods used daily for a period of three to seven days in the selected households in their raw form. The investigator has possibly stayed in the village or at a place close by so that she can be present to weigh the foods personally or check the weighment of raw foods immediately before cooking.

The question of wastes from the kitchen, tadle and places has also to be taken into account.

This method is time consuming but more accurate than any other method.

Survey of cooked food:-

In this method the investigator equipped with a few pairs of scales, visits the family under survey, every day for a defined period during all meal hours. This method is not a very popular in India because of its draw backs. People do not like others to know theamount of food they cook; they hesitate to take the food weighed in the balance. Madhavan and Swaminathan (1966) point out that the most widely used method is the 7 day weighment method but, they consider this as laborious and tedious.

IV. PLANNING AND CONDUCTING THE DIET AND NUTRITION SURVEYS

The steps involved in planning and conducting this project were:

1. Selection of the village
2. Selection of the methods of survey
3. Duration of survey
4. Formulating the schedules for the survey
5. Selection of sample
6. Conducting the survey
7. Analysis of the findings

and 8. Clinical assessment.

1. Selection of the village:-

The village Madhambalayam, 15 miles away from Coimbatore was selected for the following reasons.

a. Easy accessibility

b. The keen interest and co-operation shown by the villagers

c. It was near by the college

2. Selection of methods of survey:-

The following methods were selected for this study

I. Interview

II. Questionnaire

III. Weighment of raw and cooked foods

Interview:

According to the FAO (1953) the outstanding advantages of the interview method is that the information occured is likely to be more correct than that occured by other techniques, since the interviewer can clear up in accurate answers by explaining the question to the informant. The interview method was selected because of the following advantages.

1) Delicate situations could be handled more effectively
2) The language can be adopted to the level of education of people
3) Access is possible to objective data
4) Facts which vary with particular person with particular circumstances can be determined and
5) Opinions, attitudes or beliefs can be ascertained.

Questionnaire:-

The questionnaire method was selected for this investigation, since ICMR (1951) claims that it helps to obtain an approximate picture of the dietary habits of a large section of the population with a very short time in a particular area. In the particular area, information of a generalised nature pertaining to habitual lack or excess of groups of people and

information on sources of supply of foodstuffs and methods of storage and cooking.

Weighment of raw and cooked food methods:

Since weighment method can provide accurate results and the data obtained will be independent of memory, it was chosen to find out the deficiencies clearly.

The ICMR (1951) point out that weighment is a reliable method for assessing the nutritional status of populations.

3. Duration of survey:-

As the result of the statistical analysis of Chandrasekar at the instances of ICMR (1961) concluded that 7 to 10 days would constitute an adequate period, since food is often bought by families on one particular day in the week, survey lasting one week would tend to cover a dietary cycle. Accordingly a seven day period was decided upon for this survey.

4. Formulation of the schedules for the survey:-

Based on the objectives of the surveys the following schedules were prepared.

a) Form for studying the socioeconomic status of the selected families

b. Dietary schedule to elicit the food habits of the selected families

c. Form for studying the details of the subjects in the families

d. The form to findout the family and individual consumption

e. Schedule for clinical assessment for the subject

and f. Questionnaire to evaluate the effectiveness of the nutrition education programme.

The proforma was prepared with the above provisions and it was tested to see wether it conveys all the information and testing was done in the nearby colony.

5. Selection of sample:-

A preliminary dietary and socioeconomic survey was conducted to locate the subjects to elicit their background. From the background details of the families of nine lactating mothers were selected.

6. Conducting the survey:-

The weighment survey was conducted for seven days. Analysis of findings:

From the data collected by 7 days weighment, the mean nutrient intake of selected 9 families and of

individuals were calculated for mean food intake using ICMR (1966) tables.

Then it was compared with recommended allowances given by ICMR (1966) and the problems were located regarding the deficient nutrients.

Clinical assessment:-

Clinical assessment was done with the help of a trained physician.

V FINDINGS

The findings included:

A. Findings of socio economic status and dietary habits of the people

B. Dietary survey of family and the selected individual

C. Clinical assessment

Findings of the socio economic survey:

Through the socio economic survey the background information of the villagers were found out. The village consists of four hamlets namely Madhambalayam, Chinnamadhambalayam, Bettathapuram and Thulukkanur. The people were of different castes and religion and followed different occupations. The main occupation of the village is agriculture; Hence most of them do not have time and convenience to have subsidiary occupations. The monthly income of most of the people was Rs. 10-50 per month.

Educational level:

The village had a preschool and a primary school under the panchayat Board. Among 1290 people living 558 people were illiterate. Many children were kept at home to look after children.

Table II shows the age distribution of the people living in the village.

TABLE II

AGE DISTRIBUTION

Age range	M.P.	C.M.P.	B.P.	T.N.
0-2½	38	10	21	8
2½-5	29	23	22	6
5-14	162	68	66	21
15-18	46	19	13	4
18-26	123	56	56	20
26-above	321	107	78	30
	719	282	256	93

Income of the families:

The people who are coming under different income range are given in Table III.

TABLE III

DISTRIBUTION OF THE FAMILIES ACCORDING TO THEIR INCOME

S.No	Income/ months Rs.	Number of families			
		M.P.	C.N.	B.P.	T.N.
1	10-50	64	62	49	22
2	51-100	53	24	37	22
3	101-150	27	13	3	3
4	151-200	15	3	4	2
5	201-250	5	1	1	Nil
6	251-300	9	2	1	Nil
7	301-350	5	2	1	Nil
8	351-400	4	Nil	Nil	Nil
9	401-500	4	Nil	Nil	Nil
10	500 and above	4	Nil	Nil	Nil

In all the four villages as it is revealed from the Table III above majority of the families come under the lowest income group that is from Rs.10-50.

Expenditure pattern of the families:-

Table IV gives the expenditure pattern for their needs.

TABLE IV

EXPENDITURE PATTERN OF THE FAMILIES

S.No.	Items	M.P.		M.P.		B.P.		T.N.	
		Rs.	No.	Rs.	No.	Rs.	No.	Rs.	No.
1.	Food	96	161	86	54	77	52	57	17
2.	Clothing	39	160	29	47	31	38	26	10
3.	Housing	15	84	11	30	12	26	8	8
4.	Education	26	54	12	24	9	35	7	9
5.	Health	14	85	14	36	11	29	84	7
6.	Transport	13	101	13	38	10	32	10	8
7.	Savings	61	25	21	32	9	34	15	1
8.	Recreation	38	74	12	20	15	35	11	7
9.	Miscellaneous	48	7	92	16	20	12	9	6

I. Food expenditure pattern:-

The distribution of their income to the food was already seen. In that amount the distribution to the different food items is given in Table V.

TABLE V

THE DISTRIBUTION OF THEIR INCOME TO DIFFERENT FOOD ITEMS

Percentage	Cereals	Pulses	Veg.	g.e.u.	Fruits	Milk	Meat	Egg	Fat	Sug	Nuts	Others
0.5	-	130	54	192	170	58	136	22	160	113	56	244
6-10	28	120	20	82	30	60	6	-	22	158	12	34
11-15	40	66	-	-	-	26	104	-	100	30	-	6
16-20	10	66	-	-	-	2	2	-	30	8	-	-
21-25	12	-	-	-	-	-	-	-	-	-	-	-
26-30	16	-	-	-	-	-	-	-	-	-	-	-
31-35	28	-	-	-	-	-	-	-	-	-	-	-
36-40	30	-	-	-	-	-	-	-	-	-	-	-
41-45	52	-	-	-	-	-	-	-	-	-	-	-
46-50	20	-	-	-	-	-	-	-	-	-	-	-
Above 50	156	-	-	-	-	-	-	-	-	-	-	-

By observing keenly the statistical figures it is evident that they were spending around fifty per cent of the money allotted for food was spent on cereals in 154 families out of 322 families, while the expenditure on protective foods such as meat and milk products was very small. 130 families spent 50 per cent on pulses and 66 families spent maximum of 16-20 per cent, on pulses, fifty four families spent only below 5 per cent for the vegetables. The money spent on milk and milk products in 58 families was only 0.5 per cent. Animal foods were also consumed by many families. Hundred and thirtysix families spent 0.5 per cent on flesh foods. But those who are spending their money on egg is only 22 and the per centage was 0.53 per cent.

Daily meal pattern:-

All the three meals of a day that is the breakfast lunch and dinner contained mostly cereals and pulses in majority of the families. Only few families used vegetables in the afternoon and night meals. The vegetables used was mostly brinjal, tomato and greens.

Cholam was found to be the staple cereal in their diet. Ragi stood next and rice next. In 32% of the house which were belonging to the middle class and above, where rice was the staple food.

The remaining of the previous nights food served as the breakfast for 82% of the families. In short majority of the houses do not cook in the morning. In 202 houses did not cook their lunch but they used the same preparation which they used for the morning. So only in 50 families, cereal preparations were made for the breakfast and in 26 families both pulses and cereals were found to be in use.

Only ten families used milk and milk products (curds, buttermilk and ghee) along with other foods. The green leafy vegetables are used in 25 families along with cereals and pulses.

Regularly the dinner was not prepared in 104 families as they had the habit of using, left over food of the lunch daily for the dinner also. For dinner 218 families used cereals and pulses for dinner most of them cooked their food only at 6 p.m. as all of them would got to field work in the day time.

Cooking was done mostly by housewifes. In 188 families cookingwas done by house wifes, in 64 families by daughters and 70 families by daughter in laws.

<u>The foods given during special conditions</u>:-

Special foods given were biscuits, backed foods

and fruits, iddly, dosai, sweets, eggs, garlic rasam, bread, gengilly oil, ulundukali in general.

Reasons for avoiding certain food during special conditions:-

In infancy fried oily foods vegetables, plantain were avoided with the main cause as indigestion. In pregnancy papaya, mango, pumpkin, gasforming vegetables, cholam and ragi with the reason of that it may harm the faetus. Fried foods are avoided during old age because it might cause indigestion.

During lactation the foods avoided are mango, jack fruit, snake gourd, ash gourd, pumpkin, drumstick, raw rice, plantain, ragi and cholam, fried foods, meat and vegetables. In general they thought them as heat producing.

The period upto which the children were breast fed:-

The Table VI gives the details of the period upto which the children were breast fed in the families surveyed.

TABLE VI

BREAST FEEDING PERIODS

Age in year up to which breast feeding was done	Number of families
9 months	10
1-2 years	75
2-3 years	199
3-4 years	20
4-5 years	18

Breast feeding was done in 109 families up to 2 - 3 years and in 75 families up to 2 years.

b) Table VII gives the reasons for weaning their infants

TABLE VII

REASONS FOR WEANING INFANTS

S.No.	Reason	Number of families
1	On set of pregnancy	115
2	No milk secretion	88
3	Not good for the health of the child	3
4	To safeguard mothers health	21
5	Child learning to eat	75
6	Eruption of teeth	20

Methods adopted to wean their infants:-

Table VIII gives the details of the methods adopted to wean their infants.

TABLE VIII

THE DETAILS OF THE METHODS ADOPTED TO WEAN THEIR INFANTS

S.No.	Methods adopted	No. of families
1.	No method was adopted (forgotten by himself)	100
2.	Applying neem oil to nipple	25
3.	By introducing other foods	82
4.	By separating child from mother	20
5.	Introducing cows milk instead of mothers milk	12
6.	Applying cow dung to nipple	10
7.	Stopped abruptly	53
		322

5. Diets given during diseased condition and during children ailments:

Commonly the children were found to be affected by ailments like cold, cough diarrhea, jaundice and fever. "Nattu vaidyam" was used to cure the disease in 114 families. Doctors were consulted by 164 families and they

followed the dietary treatment as advised by the doctor. The remaining 44 families followed their own treatment as they know. For example they gave rice kanji, biscuits and milk during fever. Cold and milk products were avoided during cold. Apart from giving special foods during diseases such as fever, small pox and chicken pox they also avoided certain foods and they were asked for the reason for that. The Table IX illustrates the details regarding that.

TABLE IX

FOODS INCLUDED AND AVOIDED UNDER DISEASED CONDITION AND REASONS

S. No.	Disease	Foods included	Reason	Foods avoided	Reasons
1.	Small pox and chicken pox	Tender cocoanut curds, palm fruits, combu. cholam, butter milk. cocoanut water,	Cooking effect	Fried foods salty foods Hotfoods	Irritation Heat effect
2.	Feyer	Rice, barley water, rice kanji. bread, coffee, milk, orgnge, ragikanji, rasam, pepper/ water.	to lower temperature. To promote easy digestion	Fried foods cholam curds vegetables	Increase temperature and indigestion.

Foods included and avoided were followed traditionally with special care. Some of the habits are favourable to present concept and some are not.

Foods for special occasions:-

In this village, pongal, Deepavali, Adipandigai, Ranganathan festival, Christmus and Moharm were considered as the special occasion by the people.

During the special occasions they prepared payasam, sweets, iddli, fried foods, rice, vegetables, mutton, pongal uppuma, kachayam as special preparations for all the festivals they observed.

7. Meal Planning:-

Only 82 families had the habits of meal planning among the 322 families. They were asked for the reason for which the following explanations were given.

1. The housewife has got no time as most of them are going for work out side
2. Food stuffs are bought from the fair only once in a month
3. Easy to work with a plan
4. To live within their budgets.

In the families where meal planning was done, it was done both by father and mother.

The remaining 300 families did not do meal planning and they were asked for the reason. They were as follows:

1. Low income
2. Large family and limited resources

Foods considered for health are:-

1. Cereals
   a. Ragi
   b. Parboiled rice
2. Milk and milk products
3. Pulses
4. Left over rice
5. Fleshy foods and egg
6. Vegetables
7. All foods
8. Easily digestible foods

Majority of the families considered only ragi and cholam as important foods for health as they give satiety value.

9. Details of food production in the home:-

The vegetables needed by them was produced only by 8 families. The remaining did not have kitchen garden because they do not have water facilities. The familys

which were having their own fields produced only cereals like cholam and ragi. But they did not produce vegetables for their own needs. Part of the grain was used for their household use and the other part was sold.

10. Purchasing habit regarding food:-

Purchasing was done in majority of families, that is, 130 families by the head of the family, in 90 families by the mother and by the remaining 100 families by the son. The purchasing was mostly done once in a week in the fair. The items they purchased generally were cereals, pulses, oils, vegetables, and jaggery.

11. Food storage habits:-

Mudpots, tins and sacks were used for storing cereals and pulses. Oils are stored in the bottles. Vegetables are stored in baskets and cold floor.

12. Food preservation habits:-

Preservation was not very common in that village as they do not have surplus food items. In a few houses just pickling was done by usual methods at home.

B. Methods of cooking:-

Boiling was the main cooking method used. Fire-wood oven was used in 300 families, 20 families used charcoal and 2 families used kerosine stoves.

14. Beliefs regarding food habits.

They had some beliefs for food with sepecific reasons:

1. Pappaya was not taken during pregnancy because it was thought it would cause heat production and hence was harmful to the faetus.
2. As fried foods maize and cholam were believed to cause body pains pregnant women were not allowed to include them in their meals
3. As pumpkin, jack fruit, mango, plantain, drum-stick leaves, were supposed to cause harm in digestive systems lactating mothers were objected to take them.
4. Some foods like plantain, milk, greens, and cucumber were believed to be very good for health
5. Cholam was considered to give them strength and stamina to do their work.
6. Previous days rice assured good health to them
7. Greens when consumed in large quantities were supposed to cause harmful effect on the health.

Purchase of prepared food items from outside:-

Some foods were purchased from outside

after preparations. They are dosai, puffed rice and iddley. The reasons for that were as follows.

1. They cannot afford to prepare special foods in their home in large quantities.
2. Children when they cried, it helped
3. During emergency period also it was helpful

16. Reasons for feeding their families:-

Following reasons were given:

a) To fulfil the hunger

b) It is the duty of the head of the family

17. Opinions about mid-day meal programme:-

It was found that 35 families did not have the idea about the school lunch. But all the others considered it as a very good and useful programme especially for the poor children. But they were little unhappy about the fact that, it was not conducted properly in their village schools.

18. The details of the survey conducted in selected nine families: -

The dietary and weighment survey of raw and cooked foods were done in selected nine families in order to assess the nutritional status of individual nursing mothers.

Table X shows the details of the survey conducted in nine families.

TABLE X

DETAILS ABOUT THE SELECTED GROUP OF LACTATING MOTHERS AND THEIR FAMILIES

Subjects	Age in years	State of location	Individual		Family occupation	Number of people	Income in Rs.
			Ve. or Non. veg.	Education			
1	24	5	Non. veg.	Nil	Coolie	3	250
2	23	8	Non. veg.	Nil	Nil	5	200
3	31	10	Non. veg.	Nil	Coolie	10	140
4	20	8	Non. veg.	Nil	Coolie	5	100
5	28	6	Non. veg.	Nil	Nil	8	90
6	26	7	Non. veg.	Nil	Nil	10	100
7	28	10	Non. veg.	Nil	Farm	6	120
8	23	2	Non. veg.	Nil	Nil	3	60
9	19	11	Non. veg.	Nil	Nil	3	50

Table X shows the details of selected nine families.

The age range of the nine mothers was 10-31 years. The age range of the children whom they nursed were below one year. All were non vegetarians. None of them have education. They went out for work although five families had low income and also the greatest number of children. All the families except one were nuclear.

Food consumption of selected nine families:

Table XI shows the mean nutrient intake of the individual families when compared with ICMR.

TABLE XI

MEAN NUTRIENT INTAKE OF SELECTED NURSING MOTHERS FAMILIES COMPARED WITH ICMR RECOMMENDATION

Subjects	Calories	Protein gm.	Calcium mg.	Iron mg.	Vitamine A I.U. m.gm.	Vitamin B_1 m.gm.	Vitamin B m.gm.
I	4092	120	848	68	5472	2.32	62.0
Recommended	10200	200	4000	60	16000	6.0	200.0
II	2858	76	644	48	810	1.28	56.0
Recommended	8220	62	330	32	5	6.38	400.0
III	7700	200	2645	155	3530	3.0	100.0
Recommended	5100	100	2000	30	3000	3.0	100.0
IV	4182	148	3184	172	2442	2.32	145.0
Recommended	7004	184	10176	36	6000	3.92	84.0
V	7960	236	1216	150	1000	6.44	40.0
Recommended	10200	200	4000	60	16000	6.0	200.0
VI	6156	195	594	87	1347	3.9	39.8
Recommended	7960	230	1216	150	1660	6.4	40.0
VII	4064	176	2976	144	1272	18.02	10.4
Recommended	3400	66	1333	20	5333	2.00	66.0
VIII	4955	130	200	155	10200	3.35	170.0
Recommended	5150	100	2000	30	8000	3.0	100.0
IX	7386	196.9	996	120	1686	4.08	180.0
Recommended	10200	200	4000	60	16000	6.0	200.0

Calories:-

Except one family all the families are not meeting the recommended allowance by ICMR. Some of the families are meeting just half of the recommended allowance.

Protein:-

Regarding protein the intake seems to be fairly good. Four families are getting more protein than the recommended allowance. Where as others are not very much lacking in protein content.

Minerals:-

Only one family met the calcium requirement where as the others are drastically lacking and lower when compared to the allowance recommended. Regarding iron the intake is fairly good as they are consuming lots of cereals.

Vitamins:-

All the vitamins except B_1 is very low when compared to the recommended allowance. Especially vitamin C is very much low because most of them do not consume much of vegetables or fruits.

The Table XI shows the mean nutrient intake by individual subjects in nine families.

TABLE XII

MEAN NUTRIENT INTAKE OF NINE SUBJECTS

Nutrients	ICMR Recommend-ations	Name of subjects								
		I	II	III	IV	V	VI	VII	VIII	IX
Calories	2700	1023	1629	1540	2091	149	2052	623	991	1231
Protein (gm)	110	30	38	40	74	58	65	22	26	32
Calcium (mg)	2000	312	322	529	1592	329	198	372	40	166
Iron mg)	30	17.4	24	31	86	39	29	18	31	20
Vitamin A. I.U.	4000	1368	405	2706	6221	415	449	159	2042	281
Vitamin B_1 (mg)	2	.58	0.64	1.24	1.16	1.61	1.3	2.26	0.67	0.78
Vitamin C (mg)	50	15	28	57	122	10	13	13	34	30

Calories:-

None of the nursing mother is reaching the calorie requirement as specified by ICMR. Four do not even meet half the requirement of ICMR.

Protein:-

Protein requirement also not met by any of the individual.

Minerals:

Iron requirement is met by four mothers. Calcium is very low and not even the half of the requirement is reached.

Vitamin :-

Only one subject's intake of vitamin A was more than the recommended allowance. Vitamin C and B allowances are fairly good except in the case of a few mothers who had very low intake.

PLANNING AND CONDUCTING NUTRITION EDUCATION

The problems were located first during dietary survey and then the methods to be used were decided. Each problem was taken into consideration and nutrition education was done.

Table XIII shows the problems and the the methods used to solve them.

TABLE XIII

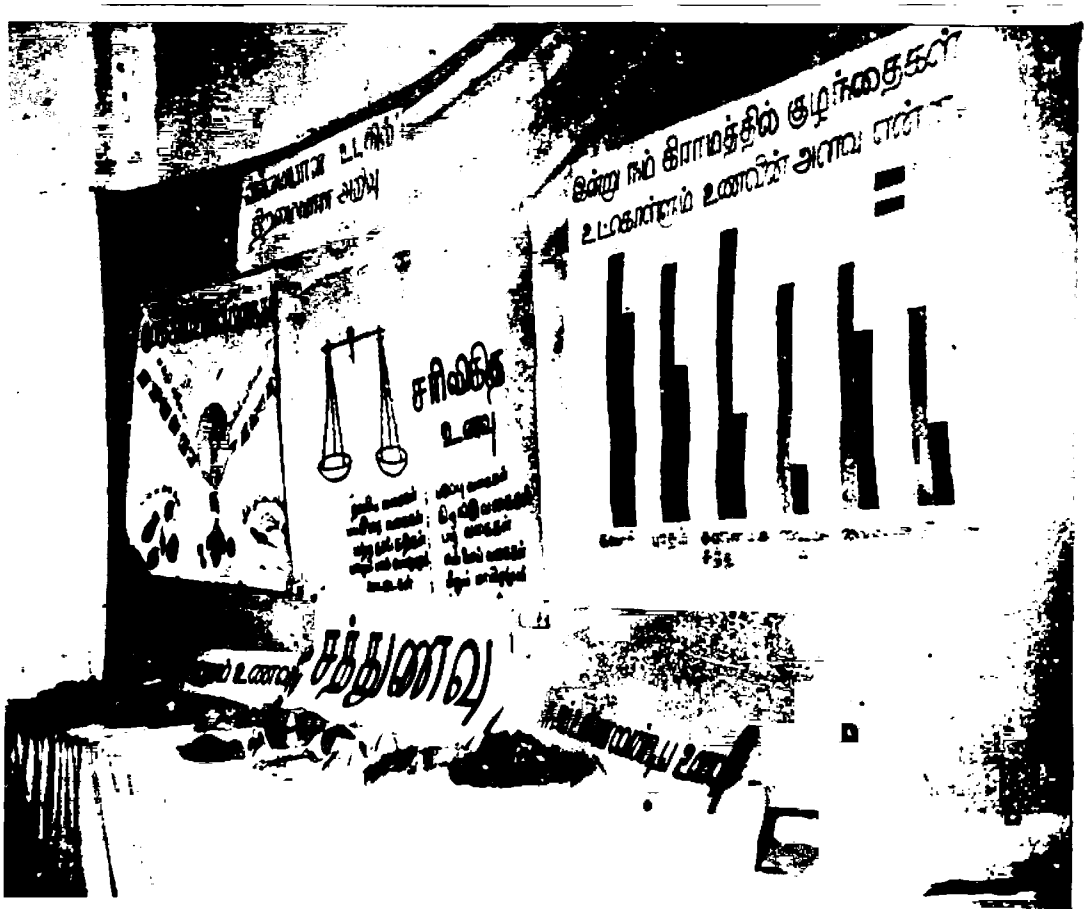
THE METHODS USED FOR NUTRITION EDUCATION

The problem	Method used
1. Inadequacy of food stuffs	a) Taught them to increase their food production through 1. Charts (the plan of a kitchen garden) 2. Personal interview and discussion 3. Showing them an actual model of kitchen garden through general educational session
	b) Taught them also to increase their their income through subsidiary occupation by which they can increase their purchasing power 1. Through charts 2. Exhibition in general session 3. Advising each individual personally

The problem	Method used
2. Vitamin A deficiency:	a) Educated then to take in abundance low cost vitamin A rich food such as carrots, pappaya, cabbage and to produce in their kitchen garden through out the year the vitamin A rich food stuffs such as corriander leaves a) Charts b) Personal conversations
3. Protein deficiency	Educated them to use protein rich food are of low cost such as horse gram instead of using mere cereals. a) Advises to individual by showing them through b) Charts the consequences of protein deficiency c) The kwarshiorkai child
4. Vitamin C deficiency	Insisted upon them to have raw vegetable example tomato which is a available in abundance a) Charts b) Demonstrations c) Talks
5. The improper methods of cooking	For example they boil, boil tomato and other vegetables a) Taught them Do's and dont's of cooking through 1. Charts 2. Demonstrations

The problem	Method used
6. Unhygienic ways of cooking and serving, keeping their surroundings	Personally advised them about washing the cooking vessels, vegetables.
7. Fads and fallaices	So many foods which are rich in nutrients such as pappaya by preganant women and pulses by nursing mother are being left off by them completely.
8. Monatany of the preparation	Taught them new recipies with ragi, cholam a) Mainly by Demonstrations

THE EXHIBITION



VII. EVALUATION OF THE NUTRITION EDUCATION PROGRAMME

Evaluation is a process of collecting information, applying selected criteria and drawing conclusion or forming judgements as basis for making decision. This evaluation serves as a cheklist to indicate the success or failure of any programme. Dayal (1960) points out that in any programme big or small it is essential that the means adopted and the results achieved are simultaneously evaluated to inspire confidence and to restrict, of any wrong step which is carried so far, might result in failure to achieve the goals and targets.- Evaluation is needed to:

Guide educational programmes

Obtain accurate information in producing the desired effect

Test the objectives and introduce changes where it is needed

Locate the weakness of extension programmes

Provide confidence for further work

Gain satisfaction in work

and Assess the progress in terms of goals.

In Savilos (1965) view, evaluation is necessary on completion of each plan of work in order to find out exactly what progress has been made.

The criteria selected for the evaluation were:

A. Frequency of used of mixed cereals, in the diets

B. Inclusion of greens and other nutrients foods in the diet

C. Knowledge about the important foods needed for health

D. Changes in the food habits of the mothers

E. Increase in home production of food

F. Supplementary foods given to the babies

G. Food beliefs of the mothers

H. Nutrient intake of the mother

and I. Clinical assessments.

A. Use of mixed cereals:-

Table XIV shows the number of selected families used different cereals before and after the nutrition education programme.

TABLE XIV

USE OF MIXED CEREALS

Cereals used	Number of families	
	Before	After
1. Ragi	2	4
2. Kambu	1	3
3. Thina	2	4
4. Cholum	4	4

The use of mixed cereals had increased after the nutrition education programme.

B. Inclusion of nutrition foods:

The majority of the families had started using more wheat, horsegram, ragi, greens, sundikai, citrus fruits, pappaya and jaggary.

When the mothers were asked about their views for using these foods they were:

1. Ragi is good for strong bones
2. Milk and cereals are good for health
3. Corrots and greens are good for eyes
4. Wheat and horsegram were considered to be important because they provided energy
5. Sundaikai and bitter gourd are good because they killed the worms in the intestine.

C. Important foods needed for health:-

Table XI gives the food considered to be important by the families.

TABLE XV

IMPORTANT FOODS NEEDED FOR HEALTH

	Important for	Foods needed
1.	Healthy nerves	Parboiled rice
2.	Strong bones	Ragi, greens and milk
3.	Healthy gum	Amla, tomatoes
4.	Healthy blood circulation	Greens, milk, egg
5.	Healthy eyes	Carrot, greens
6.	Healthy skin	curds, pappaya, brinjal, milk.

D. Food habits of mothers:-

Table XVI shows the food habits of mothers.

TABLE XVI

FOOD HABITS OF MOTHERS

	Habits	Number of families followed
1.	Cutting vegetables into larger pieces to preserve nutrients	6
2.	Washing vegetables before cutting	5
3.	Using absorption method	7
4.	Eating in raw stage food like tomatoes, cucumber, amla, and carrots	5
5.	Planning the menu in advance	3

E. Home food production:-

Among nine families five have raised gardens. Greens and tomato were produced in the gardens. Tomatoes were sold , during seasons when ample amounts is available. The rest of the families did not have space to have gardens.

The problems experienced by the families in home food production were:-

Lack of water, invasion by pests and inadequacy of land.

F. Supplementary foods for the baby:-

Three families supplemented the infants diet with ragi kanji or ragi malt. In cheri where children are weaned after three years probably, received cooked ragi and cholam as taken by elders.

G. Food beliefs:-

None of the family member was ready to consume papaya as they strongly believed it as heat producing.

G. Nutrient intake before and after nutrition education:-

The three days weighment survey was carried out to find out the changes in the nutrient intake of the expectant mothers and their families after nutrition education programme. The results are present in Table XVII and XVIII. The comparison of the nutrient intake of the families and individuals before and after the

nutrients education was made in difference between intakes and recommended allowances.

TABLE XVII

COMPARISON OF NUTRIEN INTAKE OF FAMILIES BEFORE AND AFTER NUTRITION EDUCATION

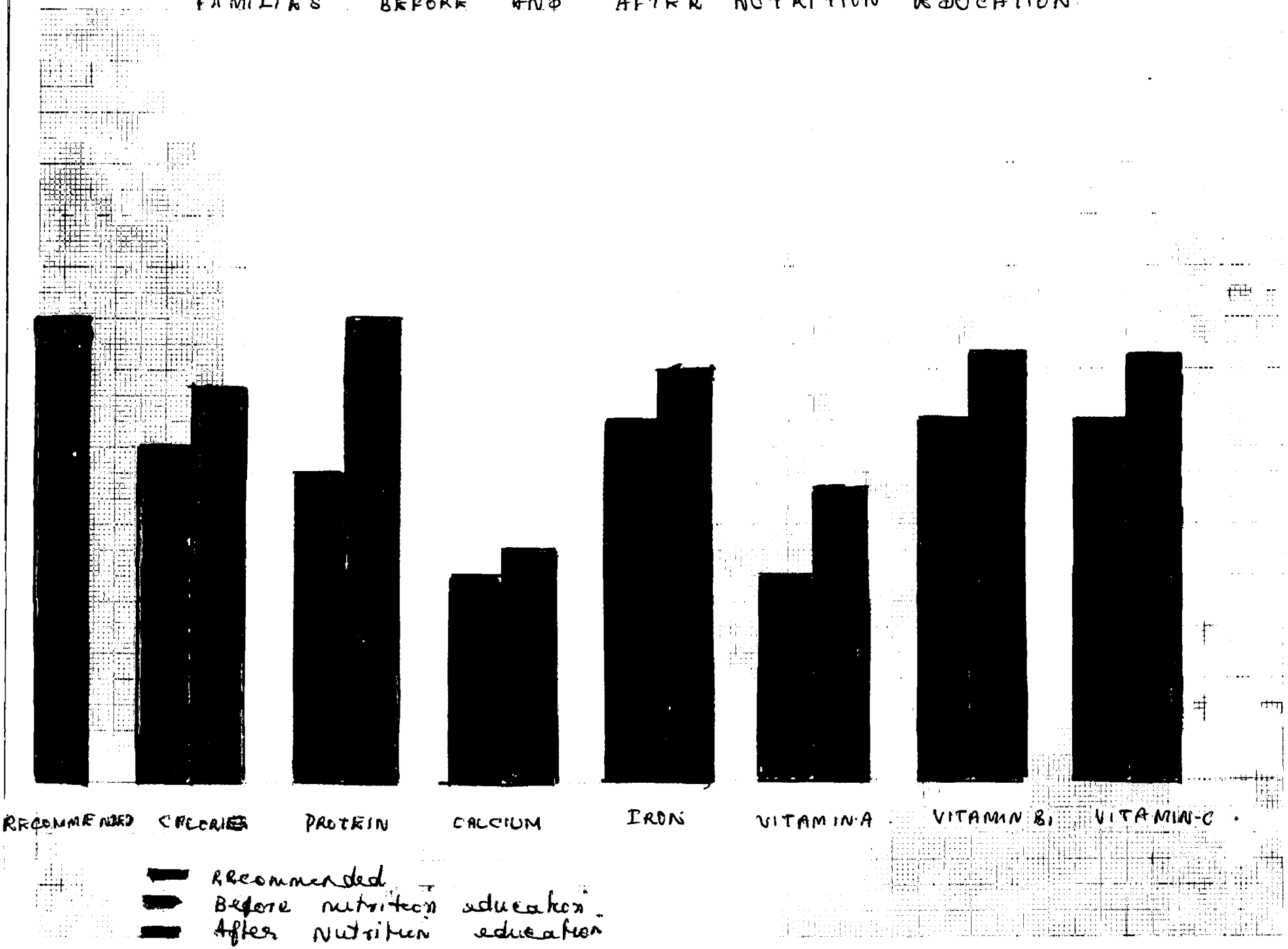
Subjects	Calories	Protein gm.	Calcium mg.	Iron mg.	Vitamin A I.U.	Vitamin B1 mg	Vitamin B_2 mg
1. Before	4092	120	848	68	5472	2.32	62
After	6440	124	930	72	6796	2.96	72
Difference	+2348	+4	+182	+4	+1324	+64	+10
2. Before	2858	76	644	48	810	1.28	56
After	3502	92	750	58	924	1.96	70
Difference	+644	+16	+106	+10	+114	+.58	+14
3. Before	5100	100	2000	30	8000	3.00	100
After	8320	150	3115	195	9055	9.20	235
Difference	+3220	+50	+115	+165	+1055	+.2	+135
4. Before	4182	148	3184	172	2442	2.32	145.
After	5106	166	3958	206	2532	8.2	264
Difference8	+924	+18	+774	+34	+900	+1.8	+119
5. Before	7960	236	1216	156	1660	6.44	40
After	8002	264	2016	232	1698	8.88	52
Difference	+42	+28	+800	+76	+38	+2.44	+12
6. Before	6156	195	594	87	1347	3.9	39.9
After	6249	237	750	198	2961	5.7	72.0
Difference	+97	+42	+156	+111	+1614	+1.8	+321
7. Before	4964	176	2976	144	1272	18.02	10
After	11935	230	4157	423	4088	27.04	222
Difference	+6971	+54	+1181	+279	+2816	+9.02	+111
8.Before	4955	130	200	155	10220	3.35	170
After	7428	245	178.3	160	10699	7.9	367
Difference	+2473	+115	+378.7	+15	+3479	+4.55	+197
9. Before	7386	199.8	996	120	1686	4.08	180
After	9816	364	1022	182	2185	5.93	315
Difference	+2430	+167	+26	+38	+499	+1.85	+135

TABLE XVIII

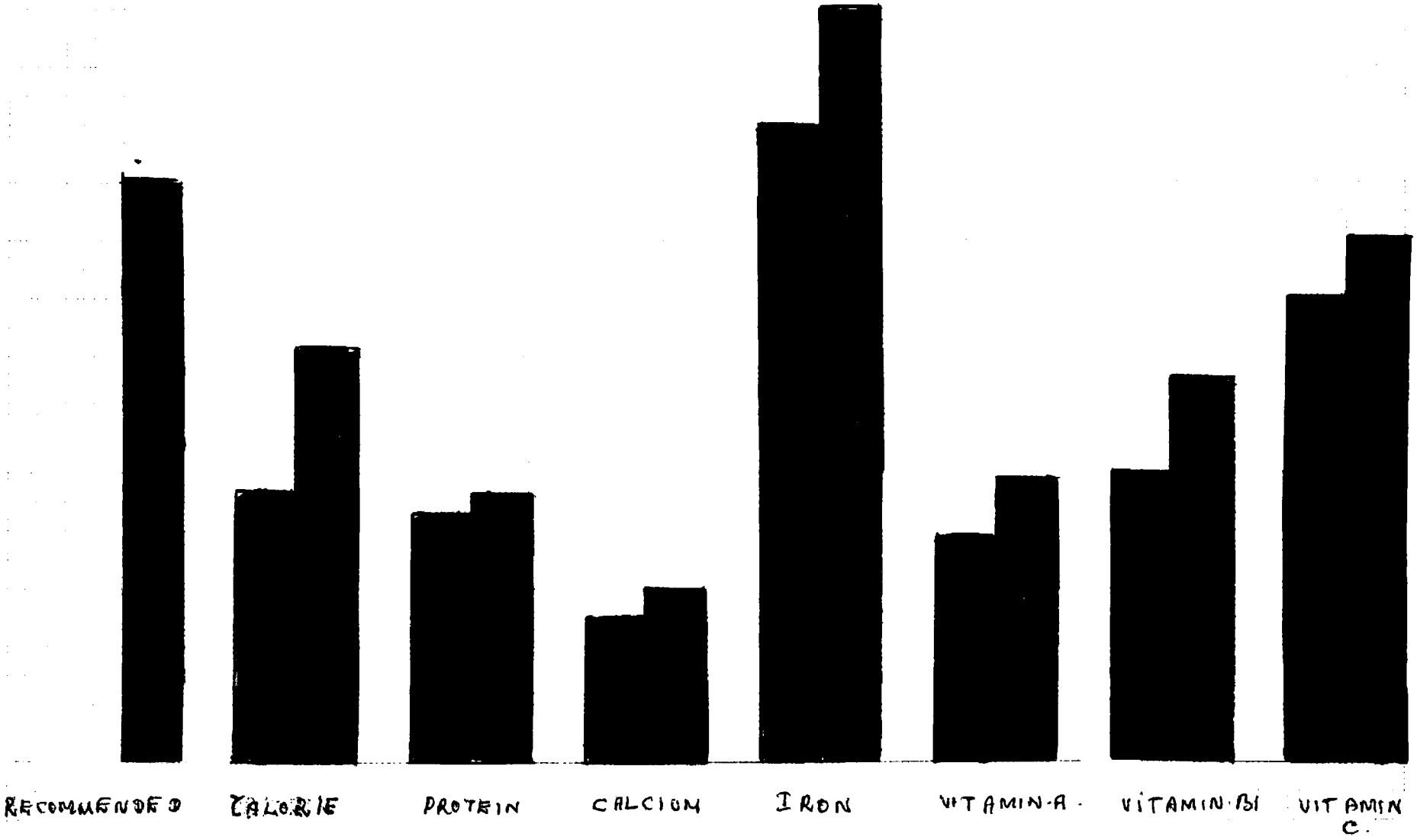
COMPARISON OF THE NUTRIEN INTAKE OF 9 NURSING MOTHERS BEFORE AND AFTER NUTRITION EDUCATION

Subjects	Calories	Protein gm.	Calcium mg.	Iron mg.	Vitamin A I.U.	Vitamin B_1 mg.	Vitamin C mg.
1. Before	1023	30	312	18	1368	.58	155
After	1610	32	359	19	2441	.74	170
Difference	+587	+2	+47	+1	+1077	+.16	+25
2. Before	1629	38	322	24	405	.04	28
After	1751	46	425	39	462	.98	35
Difference	+122	+8	+103	+15	+57	+94	+7
3. Before	1540	40	529	31	2706	1.24	57
After	1664	46	691	39	4033	1.84	67
Difference	+124	6	+162	+8	+1327	+.60	+10
4. Before	2091	74	1118	86	4955	1.6	22.9
After	2553	82	1592	103	6176	1.6	43
Difference	+462	+8	+474	+17	+1221		+19
5. Before	1490	58	329	39	415	1.6	10
After	1752	66	504	58	432	1.8	13
Difference	+262	+8	+175	+19	+17	+.2	+3
6. Before	2052	65	198	29	449	1.3	13.3
After	2083	69	250	66	987	1.0	24
Difference	+1	+14	+52	+37	+538	+.6	+107
7. Before	623	22	372	18	159	2.2	31
After	1471	41	396	39	380	1.4	52.4
Difference	+848	+19	+24	+21	+191	-.8	+21.4
8. Before	991	20	40	31	2042	.6	34
After	1312	44	428	36	2758	1.9	65
Difference	+312	+18	+338	+ 5	+716	+1.3	+319
9. Before	1231	32	1.66	29	281	.78	30
After	1887	50	225	33	982	.48	47
Difference	+656	+17	+59	+13	+701	-.30	+17

THE AVERAGE PERCENTAGE INCREASE OF NUTRIENT INTAKE BY FAMILIES BEFORE AND AFTER NUTRITION EDUCATION



THE AVERAGE INCREASE OF NUTRIENT INTAKE BY NURSING MOTHERS BEFORE AND AFTER NUTRITION EDUCATION



Although the recommended allowances are still not met the table shows that improvement had taken place with regard to all the nutrients after nutrition education.

Among the families two families have met the recommended allowances. The main reason is the less number of family members. Vitamin A, calcium and vitamin C are the most deficient nutrients when compared to the recommended allowances. The improvement is observed after nutrition education when there is increase in vitamin 'C', vitamin 'A' and calories have occured mainly due to the addition of green leafy vegetables and ragi in their diet.

SUMMARY AND CONCLUSION

This survey on the dietary intake and nutritional status of nine lactating women and their families showed that the poor condition of nutrition is existing among this vulnerable group of population in a rural area. The results observed lead us to the following conclusion:-

1. The food consumption of the families of lactating mothers was highly unsatisfactory.
2. The nutrient intake on the average was very much lower than recommended by ICMR
3. Food preferences fads and fallacies and beliefs were prevailing

All these conclusions urges the immediate need for nutrition education in our country because of illiteracy and economic backwardness of the rural areas especially on the importance of diet of the vulnerable segment of population.

and 4. Nutrition Education has stimulated some of the improvements which obviously reveals that along with production and distribution nutrition education also plays an eminent role.

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குழு

மகிழ்நீது மகிழ்நீது ஆடுகடி
மக்கள் நலம் பெற பாடுகடி
(மகிழ்நீது)

வீட்டுக் கொரு தோட்டம் போடுவோமடி சதீது
வீணுக்காமல் சமைப்போமென பாடுகடி
(மகிழ்நீது)

நல்ல அறிவு பெற ஆடுகடி அதற்கு
நம் மக்களை பள்ளிக்கு அனுப்புவோமடி
(மகிழ்நீது)

கைத்தொழிலே சிறப்பு என ஆடுவோமடி
கை நிறைய பணம் சேர்த்து மகிழ்வோமடி
(மகிழ்நீது)

வில்லுப் பாட்டு

பாட்டு: குழந்தை, கரிப்பிகள் பால்
கொடுக்கும் தாய்மாருக்கும்
சத்துணவு திட்டம் நல்ல திட்டம்
(குழந்தை)

வசனம்: அரசாங்கத்துடன் நாமும் பாடுபட்டு, மக்களும்
ஒத்துழைத்தால் நமது கிராமங்கள் முன்னேற்றமடைந்துவிடும்
'கிராம நலனே நாட்டு நலம்' சொல்லு
அதுவே என்ன சந்தேகம்:
நம் நாடு முன்னேற நம் பங்கு சரிப்பட்டு இயங்க
நாமெல்லாம் மக்களுடன் சேர்ந்து கொண்டாடிப் பாடி
சேவை செய்து புதிய பாரதத்தை உருவாக்குவோமே
உருவாக்குவோமே:

பாட்டு: கொண்டாடுவோம்: கிராம மக்கள் நலனை என்னி
காந்திஜியின் பெயரைச் சொல்லி கொண்டாடுவோம்:
வாழ்க கிராம நலம்: வளர்க பாரதம்:::

வசனம்: 'அனேலஸ்' பண்ணினோமா அப்படீன்னு என்ன!

இது தெரியாதா! மக்கள் எவ்வளவு சாப்பிடறாங்க

அவங்க சாப்பிடற அளவிலே எவ்வளவு உணவுச்சத்துக்கள்

இருக்குன்னு கணக்கெடுத்துப் பார்த்தோமே

ஆமா ... கணக்கெடுப்புலே என்ன தெரிந்தது?

பாட்டு: கலோரியும் புரதமும் குறைவு அது

குறைந்ததினால் வந்ததே வளர்ச்சியின் குறைவு

இரும்பும் சுண்ணாம்புச் சத்தும் குறைவு அது

குறைந்ததினால் வந்ததே இரத்த மின்மை

விட்டமின் எல்லாம் குறைவு அது

குறைந்ததினால் வந்ததே கண் நோவு

(கலோரியும்)

வசனம்: இத்தனை குறைகளா!

நாம எப்படி கல்வி முலம் உதவி பண்ணிேணும்

இந்த மக்களுக்கு!

பாட்டு: நல்ல கீரை காய் அறிந்து சமைத்தால்

நாலு வகை நோய் நொடி பறந்து போகுமே அம்மா

சோற்றில் கஞ்சி வடிக்காமல் சமைத்தால்

சோர்வு நீங்கி வலிமை பெறுவோமே

(நல்ல)

வசனம்: தம்பி! நம்ப அரசாங்கம் இந்த கிராம

அபிவிருத்திக்கு என்ன என்ன பண்ணியிருக்காங்க

ஆமா ஆமா நிறைய திட்டங்கள் போட்டு

செயல்கள் ஆற்றி வராங்க. மதிய உணவு திட்டம்,

சத்துணவு திட்டம் இந்த திட்டங்களெல்லாம் கிராம

மக்கள் நல்வாழ்வு பெற வந்த திட்டங்கள்.

வில்லுப் பாட்டு

கணேச சரணம் சரணம் கணேசா

கணேச சரணம் சரணம் கணேசா (கணேச)

வசனம்: நாம ஏன் இங்கு கூடியிருக்கோம் தெரியுமா

தெரியுமே

அப்போ நாம அதைக் கொஞ்சம் எடுத்துச் சொல்லுவோமா

பாட்டு: ஆடிப்பாடி தேடிவந்தோம் மத்தம் பாடீயம்

கிராம மக்கள் நலம் பெறவே நாடி வந்தோம்
(ஆடிப்பாடி)

வசனம்: கிராம மக்கள் நலம் நலம் எனப் பேசுகிறோம் - அதை விரிவாக

சொல்லுவோமே: நம்ம நாட்டிலே அதிகமான ஜனங்க

கிராமங்களிலே தான் வாழுறாங்க

ஆமா, அப்புறம்:

அவர்களுக்கு போதிய அளவு கல்வி, உணவு, சுகாதார

வசதி இல்லாத தாலே பின் தங்கியிருக்காங்க, நாமதான்

உணவுச் சத்துக்களின் உபயோகத்தைப் பற்றி விரிவாக

எடுத்துச் சொல்லணும்

சரி ... இந்த கிராமத்திலே மக்களின் உணவு முறையை

அறிய என்ன பண்ணுறோம்

அப்படிக் கேளு!

பாட்டு: தராசும் தட்டும் கையில் ஏந்தி

வீடு வீடாய் தேடி அலைந்தோம்

சப்ஜெக்ட் ( ) உண்ணும் உணவைத்தானே

அளந்து அலசிக் ( ) பண்ணுறோம்
(தராசும்)

DRILL SONG

லெப்ட் ரைட் என்று சொல்லி அணிவகுத்தும் வழி நடக்கும்
மத்தளம் பாடலையும் பள்ளிக் கூட மாணவர் நாங்கள்
வேலை வேலை என்று சொல்லி நாமும் தினமுமே
உழைத்திட சக்தி என்றும் நமக்கு வேண்டுமே
அதற்கு தானியங்கள் போதுமளவு உண்ண வேண்டுமே
(லெப்டு)

குழந்தை வரை பெரியோர் வாழ வளர்ச்சி வேண்டுமே
அதற்கு புரதமென்ற உணவு சத்து அவசியமானதே
அதற்கு பருப்பும் பாலும் போதுமளவு உண்ணவேண்டுமே
(லெப்டு)

உறுதியான பல்லும் எலும்பும் நாமும் அடையவே
தாது உப்பு என்ற சத்து நமக்கு வேண்டுமே
அதற்கு நீங்கள் உண்ணும் ராகியே யிதமும் நல்லதே
(லெப்டு)

நல்ல ரத்தம் நாளும் பெருகி நலமும் அடையவே
இரும்பு என்ற உணவு சத்து அவசியமானதே
அதற்கு கீரை நாளும் போதுமளவு உண்ண வேண்டுமே
(லெப்டு)

உங்கள் கண்ணில் உடம்பில் என்றும் அழகு மிளிரவே
வைடமின்கள் என்ற சத்து அவசியமானதே
அதற்கு காயும் கனியும் அதிக அளவில் உண்ணவேண்டுமே
(லெப்டு)