

**KNOWLEDGE, ATTITUDE AND PRACTICE (KAP) STUDY OF THE  
NUTRITION EDUCATION PROGRAMME IN A TRIBAL AREA**

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**Dissertation  
Submitted in Partial Fulfilment of the Requirement  
for the Degree of Master of Science of the  
University of Madras**

**May, 1981**



## **A C K N O W L E D G E M E N T**

The author places on record her reverential gratitude and thanks to Dr.(Mrs.) Rajammai P.Devadas, M.A.,M.Sc.,Ph.D., (Ohio State), D.Sc.(Madras), Director, Sri Avinashilingam Education Trust Institutions, Coimbatore, for her permission to do part time course in Foods and Nutrition and her incessant guidance and valuable suggestions throughout the study. She is indebted to Miss S.Rajkumari, M.Sc., M.Ed., Project Officer, Nutrition/Health Education Project, Sri Avinashilingam Home Science College for Women, Coimbatore for her continuous assistance in presenting the study. She is grateful to the teachers of Government Tribal Residential School, Kunjapanai for having conducted the community contact programmes. She owes her thanks to the tribal mothers, and children who cheerfully participated in the study.

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## **I. INTRODUCTION**

The world is in the midst of the tensions of rapid social, economic and political changes, which have imposed severe limitations on resources. Energy and economic crises are evident everywhere. Hence the strategies for development must aim at augmentation and conservation of resources. In this context, expenditure on education and health should be regarded as investment in human resource development. The Nation should ensure optimum health for all its citizens (Nutrition/Health Education Project Report, 1981).

Today the world has been forced into not only wars in the quest of man for power and freedom but also by another kind of war - one which is more dread and fatal than the nuclear war, the war against hunger (FAO, 1976). Problem of hunger and malnutrition in the population get accentuated by the fact that over 50 per cent of our population live below the poverty line; 73 per cent are illiterate and 80 per cent lack medical facilities (Varma, 1978).

Nutrition education is a fact of life. It stresses the individual responsibility and relies upon an intelligent, informed population able to make decisions that are compatible with their ethnic, religious and economic background and habits (Theodore, 1978).

Malnutrition is a serious problem and it cannot wait for

an increase in individual income for its solution. Hence the best and easiest in the long term approach is imparting nutrition education both formally and informally by all the institutions where any sort of education is imparted (Banerjee, 1975).

It has been suggested that wherever poverty prevails, nutrition education may be a decisive factor in preventing malnutrition in the sense that better nutrition knowledge may help people get the maximum benefit from the little money that they have.

The family can function more successfully as a learning centre with input from both formal and nonformal educational institutions. The people, resources or processes that bring information from an authoritative source to the family are called linkages. There is a need for identifying the existing or potential linkages both formal (schools) and nonformal (cooperative extension systems), that could strengthen home based learning.

Education provides a child with opportunities for the development of his personality. It helps him acquire facilities of comprehension, expression and social values and equips him for the responsibilities he will be required to assume in adult life. It imparts abilities in problem solving, analytical thinking decision making and creative activities. It helps an individual to develop fully his

intellectual potential and productivity and become an useful and responsible member of the society. Hence development of human resources depend on the type of education imparted.

Young mothers comprise one of the potentially most successful groups to impart nutrition education (Greaves, 1975). Though much efforts are being made at global level to give nutrition education to children in the formal schools, the outcomes are not evident in terms of food behaviour and good health habits. The child cannot often select his own diet but must accept or choose from the food offered. He has limited opportunities to relate his nutrition knowledge to eating behaviour (Hanson, 1973). If good returns are expected from the investments in education, mothers must form the target group for nutrition education. Conflicts between what is being taught in the school, and those that are being practised at home will be minimised, since the mother's nutritional knowledge will be more.

Nutrition education is effective only if it results in behavioural change and the learner begins to eat variety of foods by changing his attitude (JADA, 1975). Such changes in attitudes 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 (Acroft, 1973).

Evaluation is essential for future programme planning and for improvement (Sime, 1976). Evaluation involves carefully appraising the functioning, measuring the work done, and the distance travelled toward stated objectives and assessing the cost in terms of money, time and material for producing the result (Gopalan, 1974).

Any evaluation strategy must necessarily encompass the cognitive, the affective, and the psychomotor domains of learning. Thus evaluation determines not only the knowledge acquired, but more importantly, to what degree this induces a change of attitudes and habits in favour of better nutrition and how this change is reflected in the physical and intellectual activities of the child (FAO, 1973). In measuring attitudes a basic premise is that reading about a concept or 'construct' as it is called by sociologists - elicits some feeling about that construct which is recorded on some type of scale (Betty et al., 1979).

Learning is not complete unless it is put into practice. This ability is evidenced when the learner can apply certain rules or procedures in order to arrive at the solution of a problem (Bhatia, 1973).

Realising the importance of assessing the gain in cognition, affective and the psychomotor domains, this study was directed towards determining gain in knowledge,

changes in attitudes and practices of nutrition, health and environmental sanitation by applying quantifiable tools.

### Definitions of the Technical Terms:

#### 1. Knowledge:

Knowledge in psychological connotation refers to cognition and means "that part of a person's information which is in accord with the established fact (English and English, 1961).

#### 2. Attitude:

Attitude defined as a "learned, emotional toned predisposition to react in a particular way toward something" (Redman, D.K., 1968).

#### 3. Practice or Application:

Application has been defined as the use of abstraction in particular and concrete situations. The abstractions may be in the form of general ideas, rules of procedure or generalised methods. The abstractions may also be technical, principles, ideas and theories which must be remembered and applied (Bloom, 1964).

The direct contact is considered to be the most effective in poor communities. It is more conducive to a higher level of credibility and consequently to a wider individual participation and a more satisfactory diffusion

of knowledge among members of the community in the effort to bring about desired changes (Proc. of Int. Congress in Nutrition, 1979).

Ten messages in nutrition/health and environmental sanitation based on the needs of the society were communicated to the community through a community contact programmes. Teachers are the change agents and catalysts helping the pupils and their families to effect the desirable changes. This strong linkage was made use to produce desirable food behavioural changes in the community.

This study is a part of a Pilot Project on Nutrition/Health Education and Environmental Sanitation at Primary stage sponsored by HCBRT/UNICEF and executed by Sri Avinashilingam Home Science College. In connection with International Year of the Child, the community was also reached through the school children to teach nutrition and health education. The investigator oriented the teachers towards nutrition/health education and trained the village level workers in nutrition/health education. She also supervised and assisted the community contact programmes and carried out the evaluation.

## II. REVIEW OF LITERATURE

The literature pertinent to the present study are discussed under the following heads:

1. Need for nutrition education
2. Factors contributing malnutrition
3. Effects of malnutrition
4. Need for evaluation
- and 5. Related studies

### 1. Need for Nutrition Education

( Nutrition education is fact of life. Education that stresses individual responsibility and relies upon an intelligent, informed population being able to make the decisions that are compatible with their ethnic, religious and economic backgrounds and habits, is the need of this hour. Such an education will increase nutrition awareness, influence the nutritional behaviour and ultimately enhance the quality of life and health of those affected (JNE, 1978).

Nutrition education is the foundation on which any programmes for nutritional improvement can be built. Any education programme to be effective should be geared to the needs and problems of the people (Devadas, Chandrasekhar, 1970).

A dynamic nutrition education programme that begins in early childhood and continues through the elementary and secondary schools can help young children to acquire positive attitude towards food, and help elder children to assume responsibility for their own food selection and thus prepare them for adult and parental responsibility (JNE, 1970). Children are open minded to accept new practices and curious to effect changes. Early childhood is the period of habit formation. Learning to develop proper food habits during this period can prove crucial for children's health in later life (Santhosh, 1977).

School going children form a sizable percentage of the population and they form an effective bridge between the school and the home to carry home nutrition knowledge (Flower, 1971). Nutrition education can reach more people through school than through other channels.

School based group approaches to prevent malnutrition in adolescents have a great potential. Children are more accessible than adults, easy to reach in class rooms and more willing to change (Lakhanpal, 1978).

The child is at the mercy of his parents/sponsors for the fulfilment of his food and other needs. He has to accept or choose from the foods offered even if nutrition and health are taught to him in the school. He has limited opportunity to relate his nutritional knowledge to eating

behaviour. Hence nutrition and health programmes in the primary schools need to include parents and other adults to minimize and remove the conflicts that may arise in the young learners due to contradictions between what is taught in the school and what is practised at home (Lillian Kinnens and Marian Hayes, 1973).

The family can be mobilized to function as a learning centre with relevant inputs from both formal and nonformal educational institutions. Young mothers comprise one of the potentially influential groups to benefit from nutrition health education and spread its messages to the community.

### 2. Factors Contributing Malnutrition:

(It is well known that a substantial section of the population in developing countries suffer from undernutrition or malnutrition or both. The factors responsible are complex. Several factors such as low agricultural production, poverty, population explosion, ignorance and poor environmental sanitation appear to cause and aggravate malnutrition (Gopalan, C., 1975; Srikantha, S.G., 1975, 1976 and Devadas, 1970). )

Anjalakshmi (1976) states that a poor economic status resulting in a low plane of nutrition which in turn, results in decreased productivity is a major factor. Ignorance of how locally available foods can be used

effectively for alleviating and preventing malnutrition and food habits and prejudices which operate against constitute important contributing factors.'

The following social, structural model shows how poverty, ignorance, malnutrition, poor environment and frequent child birth can result in poor intellectual development of children.

The widespread incidence of malnutrition in the country has been linked time and again to the growing gap between nutrition knowledge and its application. Indeed it is ironical that practical application does not keep pace with the speed and volume with which laboratories turn out useful results (Ofelia, 1976). Varma (1978) opines the belief that "good food is costly food" is the major contributing factor for malnutrition.

There are lots of misconceptions. Majority believe in superstition, are conservative, and have pessimistic and to a certain extent fatalistic attitude toward life events. They present a picture of helplessness and do not have anything to look forward to. The available knowledge is still to make an impact on their lives. All these result in their being very rigid and not amenable to change.

The challenge today is how to make the benefits of modern scientific knowledge available to families to enable them to improve health standards.

### Effects of Malnutrition:

Malnutrition begins quite commonly in the womb and ends frequently in a tiny grave. The underweight baby born of an undernourished and anemic mother starts life with a heavy handicap. Weak in body and with brain possibly already stunted in growth, the child is not only susceptible to disease but in many cases mentally apathetic.

Doerma (1972) states "Malnutrition affects adversely the growth potential of a nation. It is an obstacle to national development. To look at in the cold blooded way, lives of children are prematurely shortened by malnutrition. Malnutrition which is a proven killer of younger children on a horrendous scale represents a severe economic loss to society.

Gopalan (1973) enumerates the cost of malnutrition as cost of treating clinical cases of malnutrition and associated non-nutritional diseases; invisible cost of loss of income to the family arising as a result of hospitalization of the child; cost of child wastage which includes the costs of going through a pregnancy and child birth, lactation, food consumed by the child during the first few years of life, clothing, and education, time spent in rearing the child and the cost at the time of death. Thus the death of the child any time during non-productive age should be considered as a total loss to the economy of the country.)

It is stated that as a result of malnutrition, the capacity to work is lowered, because of apathy, lethargy, lack of initiative and lack of stamina. Increased susceptibility to infection and consequent absenteeism from work were said to be the potential sources of loss to the nation through lowered productivity. Thus the nutritional status of a country influences significantly not only its health status but also its socio-economic development.

Gopalan (1972) states that malnutrition is one of the factors most closely associated with growth in infancy and childhood. Malnutrition can lead to stunted physical growth, suboptimal intellectual development and poor neuro integration competence in children. When it occurs in a sizable proportion of the community it must be considered as a consequence from the point of view of national development.

Manocha (1975) states that there is a critical period during intrauterine and neonatal life during which malnutrition may cause irreversible damage to the brain and adversely affect the learning. During this critical period, the environmental influences come to play an important role. But unfortunately, infants who are malnourished in their fetal life belong to parents who belong to the lowest socio-economic groups and are steeped in poverty, illiteracy and backwardness. A child belonging to them is

not only malnourished and prone to catch common infections but experiences retardation in language, personal, social and psychological behaviour, because of cultural deprivation of the parents.

Of all the ill effects of poor nutrition during development permanent reduction in ultimate intellectual achievement must be one of the most serious, ever postulated for human children (John, 1977). Extensive growth studies carried out in India indicated that among the malnourished children there is considerable degree of growth retardation (Gopalan, C., 1971). Malnutrition of the child is a problem linked to the future of the nation, the progress of which it can inhibit. It cannot be faced as a part of the general development and wait for an increase in individual income for its solution because it is by itself an obstacle to the socio-economic development of a country (Alfredo, 1973).

Problem of malnutrition in children get accentuated by the fact that over 50 per cent of our population lives below poverty line; 73 per cent are illiterate and 50 per cent lack medical facilities (Varma, 1978).

#### 4. Need for Evaluation:

Education has been rightly defined as "change in behaviour". The change in behaviour is manifested by the

acquisition of knowledge, development of skills, adjustment, to the environment, and putting into meaningful practice all that is learnt. Education also aims at the conscientisation of the individual. Conscientisation involves the scientific judgement with cause and effect relationship and not merely the acceptance of others opinion or blindly following superstitions, tradition and age old habits.

The three components of education are, the objectives, the learning experiences and evaluation. Education as a dynamic process of internalisation of ideals, ideas, concepts and messages. Internalisation is exhibited visibly by improved practices in the learners life.

Evaluation is a dynamic process, and attempts to find out whether or not learning has taken place in relation to the objectives set in the beginning of the educative process. Thus education and evaluation go hand in hand.

Evaluation serves as the compass for Nutrition/Health Education Programmes. It helps the programme to proceed and give it direction as it moves towards the objectives (Nancy, 1959). Evaluation is the process of measuring the progress. Devadas (1972) considered evaluation as a process arriving at a considerable judgement and its essential to plan and implement the programme.

Evaluation of effectiveness involve atleast two steps namely, assessment of knowledge gained and practices of good health habits.

**Tools of Evaluation:**

The tools of evaluation are:

1. Tests - written and oral
2. Performance
3. Observation
4. Rating scale
5. Check lists
6. Anecdotal records
7. Score cards
8. Role playing
9. Sociometry
- and 10. Assignments

Evaluation tools to be effective, must be simple, reliable and valid. To quantify the learning that has taken place it is better to have the profile of the individual in which the individuals initial knowledge, strength and weakness, are noted and then assessed at the end of any programme.

Conferences with parents may also yield substantiating evidences such as changed attitudes, towards home meals on the part of children(Austin, 1963). A performance test,

such as preparing a meal or preparing a single dish in the laboratory gives the teacher some ideas of the students ability, to apply what has been learned (Medwed, 1973).

A judicious combination of evaluation tools can reveal the dimensions of learning that take place. Knowledge about the progress will be an incentive for further learning.

### 5. Related Studies:

A few studies have been conducted with tribals in India. An indepth study on tribal children was carried out to assess the relation of their nutritional status to income, social status and family structure. The intellectual performance and responsiveness to cognitive tasks were ascertained in these children who survived nutritional deprivation (Patel, 1976).

A study was conducted with Irula tribe at Kotagiri to find out the impact of nutrition integrated syllabus on knowledge, awareness and practice. The gain in knowledge and awareness by the tribes was in par with the non tribal children (Thesis submitted to the University of Madras, 1978-79). The findings agreed with Keska (1977) who says that the tribal children have no less intellectual, artistic and aesthetic capacities and qualities than children from the urban society.

Betty Ruth and Katherine (1979) have conducted an attitude assessment with students enrolled in a community nutrition course. They have found that a sound knowledge of nutrition helped them to develop positive attitude.

Leslee (1979) designed a True or false nutrition knowledge test and used this test to find out the impact of nutrition education to school children. She has found that "Children are better able to retain knowledge gained at school when it is reinforced by conditions in the home that are <sup>v</sup>favorable to good nutrition practices.

### III. EXPERIMENTAL PROCEDURE

The evaluation of the "Community Contact Programme" through which nutrition/health and environmental sanitation concepts were imparted to a tribal community through the tribal women, in terms of knowledge, attitude and practice consisted of the following steps:

- A. Formulation of the ten messages
- B. Selection of the sample
- C. Collection of background information
- D. Implementation of the Community Contact Programme
- E. Preparing the evaluation model for knowledge, attitude and practice for the housewives
- and F. Preparing the evaluation model for KAP for the school children who received the nutrition health and environmental sanitation concepts through the integrated syllabus: through the teachers.

#### A. Formulation of the Ten Messages:

Ten basic universal messages generally applicable throughout India in rural and urban situations in nutrition/health were framed on the basis of the needs of the communities. These messages were framed during a National Conference by all the five Regional Centres of Nutrition Education 1979 in connection with the International Year of the Child. These messages were conveyed to the community

through contact programmes by the teachers. The packet of messages or ideas represent what every mother needs to know (Appendix I). They have been kept deliberately as few and as simple as possible. They were formulated inconsonance with the social customs and beliefs regarding illness and with food habits and taboos of the community.

### B. Selection of the Sample:

More efforts are being made to impart nutrition knowledge to the people in and around Coimbatore. No effort has been made to reach the unreachable tribes living in the mountain regions of Nilgiris district situated at an elevation of 6,500 metre above Madras sea level.

Six major tribes live in OtaCamund namely, Kothas, Mullukurumbas, Podas, Kattunickanas, Pannias and Irulas living in Nilgiris District. Irulas are considered to be the most backward among the tribes and no concerted effort has been made to improve their standard of living and make their lives better. Moreover the Irula tribe was chosen to be a part of the pilot project of integrating Nutrition education at the primary stage sponsored by NCRST/UNICEF. Their earlier cooperation and response was much better than the other tribes.

Two tribal padis (hamlets) namely, Kunjapanai and Kolikarai in Kotagiri Block, Nilgiris District were

selected for the study. All the 100 households in both the hamlets were chosen to conduct Community Contact programme. Besides children from class III studying in the Government Tribal Residential School (G.T.R.S.) at Kanjapanai were included in the study to measure the impact of formal nutrition education on knowledge, attitude and practices.

### C. Collection of Background Information:

Nutritional surveillance is an essential instrument for the detection of nutrition problems, for the formulation of policy and for the planning and evaluation of action programmes for both development and emergency situations (WHO, 1976; and Mason, 1976). A schedule (Appendix II) was developed covering the following areas:

1. General background of the family
2. Food expenditure
3. Food habits, knowledge of nutrition and health

The data was collected by the interview method from the homemakers of the two padis.

### D. Implementation of the Community Contact Programmes:

The investigator trained the primary school teachers in the two selected padis to impart nutrition/health and environmental concepts to the school children and the community.

The teachers who were trained in nutrition/health and environmental sanitation were responsible for the conduct of the Community Contact programmes. The contact programmes were carried through home visits, method and result demonstrations, Parent Teachers Associations; puppet shows, folk lores, mass immunisation campaigns, cleaning drives, debates and group discussions to impart the ten messages. These were conducted only in the evenings when parents were available after completing their day's work. Each teacher covered 30 to 40 families in his village.

The programme was in operation for six months during which period 136 hours were spent on an average for 20 contact programmes, within a period of 63 working days by each teacher. Five teachers including two women teachers imparted knowledge in the selected two villages.

**E. Preparing the Evaluation Model for Knowledge Attitude and Practice for the Housewives**

Nutrition knowledge was assessed by activity oriented tests such as grouping the given foods according to their functions in the body, as the subjects included for the study were illiterates (Appendix III). The attitudes were found by agree, disagree statements (Appendix IV). The nutritional, health and sanitation practices score was devised from an assessment of frequency of intake over a 3 day period and a rating scale based on observation (Appendix V).

The three day intakes were compared to the basic five pattern for evaluation. The same test <sup>it</sup> was administered to Irulas of another hamlet for whom no nutrition education was given and they served as the control group.

**F. Preparing the Evaluation Model for Knowledge, Attitude and Practice for the School Children:**

The initial nutritional knowledge of the samples were evaluated using a specially constructed knowledge test. The test was so formulated that it would evaluate ultimately the nutritional knowledge gained by the learners after imparting nutrition education using the specially designed integrated syllabus.

The attitude of children was assessed by true or false statements and the nutritional and health practices scores were derived from an check list based on observation (Appendix VI).

#### **IV. RESULTS AND DISCUSSION**

The ultimate measure of effectiveness of any programme introduced in school and community is not only the amount of skill and knowledge acquired but also the amount retained and used. In this instance, 'use - usefulness' is viewed in the broadest meaning - direct application (Gary, 1965).

The results of this study are discussed under the following heads:

1. Knowledge of mothers regarding nutrition health and environmental sanitation
2. Attitudes of mothers regarding nutrition health and environmental sanitation
3. Nutrition, health and sanitary practices used by the mothers
4. Knowledge, attitude and practice of school children regarding nutrition, health and environmental sanitation
5. Relation of knowledge to meals
- and 6. Correlation between knowledge and practices of children.

TABLE I

KNOWLEDGE OF MOTHERS REGARDING NUTRITION HEALTH AND ENVIRONMENTAL SANITATION

		N			
		Control	- 50		
		Experimental	-100		
Mean	Mean	't'	't'	Signi	
Control	Experimental	observed	expected	at 1 per	fica-
			at 1 per	cent	nce
			level		
1.26±	9.73±	8.47±			
0.9858	2.6048	0.3819	22.1814	2.52	**

\*\*Significant at 1 per cent level

Table I shows the results of the knowledge test of the mothers. Independent 't' test was used to compare the knowledge acquired by the groups. The difference was 22.184 which is greater than the expected 't' value and hence it is significant at 1 per cent level.

Mothers were able to acquire nutrition - health knowledge when it is reinforced through community contact programme.

TABLE II

## ATTITUDES OF MOTHERS TOWARDS FUNCTIONS OF FOOD

S.No.	Constructs	Agree		Disagree		't' value
		Percentage				
		Control Group	Experimental Group	Control Group	Experimental Group	
1.	We eat food:					
	a) to get energy and grow	14	74	36	—	14.7442**
	b) fill the stomach	100	60	—	24	11.0782**
	c) protect from illness	22	62	62	8	7.354**

\*\*significant at 1 per cent level

Table II reveals the out look of mothers towards the functions of food. The observed 't' value is greater than the expected 't' value i.e. 1.96 at 5 per cent level and 2.576 at 1 per cent level. Hence, the null hypothesis namely the experimental treatment has no impact in the change in attitude is rejected. The inference drawn is that imparting nutrition education results in the development of positive attitudes towards the functions of food.

TABLE III

ATTITUDE TOWARDS BALANCED DIET

S.No.	Constructs	Percentage		t-value
		Agree	Disagree	
		Control group	Experimental group	
2.	Balanced diet is:			
	a) eating plenty of foods	65	30	65
	b) including rich foods like ghee, butter, meat, fish and egg	73	30	60
	c) inclusion of foods from all the five food groups in the diet	0	76	0
				10.023**
				10.023**
				16.6170**

\*\*Significant at 1 per cent level.

Table III indicates the attitude of mothers towards the balanced diet. The observed 't' value for the concept that balanced diet is eating plenty of food is 10.7756 and for the other two statements are 10.022, 18.6178 respectively. The observed 't' value is greater than the expected 't' value. All are significant at 1 per cent level. The inference drawn is that mothers had a positive outlook that balanced diet is one which contains foods from all the five groups.

TABLE IV

ATTITUDE TOWARDS METHOD OF COOKING VEGETABLES

S.No.	Constructs	Percentage		Disagree	Observed t value	
		Agree	Disagree			
		Control Group	Experi- mental Group	Control Group	Experi- mental Group	
3.	Best method of cooking vegetables:					
a)	Wash vegetables after cutting	33	7	18	70	8.456**
b)	Drain the cooked water	35	37	5	70	3.0174**
c)	Cut vegetables into big pieces	15	85	25	15	14.289**
d)	Avoid using baking soda	22	100	11	---	13.136**

\*\*Significant at 1 per cent level

Attitude of mothers towards method of cooking is depicted in Table IV. Mothers belonging to the control group agreed that vegetables must be washed after cutting and the water should be drained after cooking. The observed 't' value for all the four constructs are greater than the expected 't' value. Hence it is significant at 1 per cent level for agreement of the statements expressed by the experimental group.

TABLE V

ATTITUDE TOWARDS FEEDING THE EXPECTANT WOMEN

S.No.	Constructs	Percentage		t' value		
		Agree	Disagree			
		Control group	Experimental group			
4.	a) Expectant women must eat eggs	9	40	32	60	5.748**
	b) eat flesh foods	7	26	29	50	5.7262**
	c) Pulses like bengal gram	2	26	43	60	6.471**
	d) Eat vegetables	6	40	33	42	6.3709**
	e) Cereals like cholam, varagu, thennai	6	26	36	60	2.9253**

\*\*Significant at 1 per cent level

The tribal women should change their attitude towards feeding the expectant women. As seen from Table V the 't' value for the agreement for all the constructs are significant at 1 per cent level. Though these results are statistically significant, yet there is not 100 per cent agreement for the positive attitudes which indicates that they are to be fully convinced to have a positive outlook, towards feeding the expectant woman.



TABLE VI

ATTITUDE TOWARDS INTRODUCTION OF SUPPLEMENT FOODS FROM 6TH MONTH ONWARDS

S.No.	Constructs	Percentage		% value
		Control group	Experimental group	
5.	a) You must start supplementing as babies should not be breast fed after 4 months	10	0	1.4145
		96	100	
	b) Nourishment which the child gets from the mother is not sufficient	0	90	23.15**
		29	0	

\*\*Significant at 1 per cent level

It is clear from the above table that no mother from the experimental group agreed to the concept that supplementary foods must be given as babies should not be breastfed after 4 months. However, about 10 per cent of the mothers belonging to the control group agreed the statement. This may be the consequence of large publicity given to the commercial baby foods which might have gained entry into these remote areas too. However, for the second construct 90 per cent of mothers from the experimental group had the positive outlook that infants should be given supplementary foods as the nourishment for the infants is inadequate. The 't' value is greater than the expected 't' value. Hence it is statistically significant at 1 per cent level.

TABLE VII

ATTITUDE TOWARDS HEALTH

S.No.	Constructs	Percentage		t value		
		Agree	Disagree			
		Control group	Experi-mental group			
a)	Good health is merely the absence of sickness	31	55	11	20	1.1334
b)	Ability to work hard and eat well	33	55	13	26	2.3063*
c)	Being too heavy	17	35	30	40	0.2573

\*Significant at 5 per cent level

Mothers attitudes towards good health is illustrated in Table VII. The observed 't' value for the statement "Good health is merely the absence of sickness" is lesser than the expected value. It is not statistically significant, which implies that both the groups held the attitude that absence of illness is one of the signs of good health. Being too heavy has got the 't' value 0.2573 which is lesser than the expected value. This shows that both the groups held a positive attitude towards signs of good health.

TABLE VIII

ATTITUDE TOWARDS CAUSES OF SICKNESS

S.No.	Constructs	Percentage				t' value
		Agree Control group	Disagree Experi- mental group	Control group	Experi- mental group	
7.	Sickness is caused by:					
a)	Evil spells	50	74	0	12	9.4123**
b)	Visitation of Goddess	43	70	0	14	3.0247**
c)	Wrath of gods	46	80	4	15	6.7895**
d)	Doing too much work	10	16	27	80	4.009**
e)	Unhygienic environment	9	81	30	17	14.4254**
f)	Eating an unbalanced diet	7	48	40	46	15.75**
g)	Drinking unclean water	4	78	36	15	6.00**

\*\*Significant at 1 per cent level

Table VIII shows the attitude held by mothers towards the causes of sickness. The tribes had the positive attitude that illness was caused by sorcery, and the supernatural powers like visitation of goddesses and wrath of gods, while the general concept that poor dietary intake, and poor environmental sanitation could affect the health was generally held.

TABLE IX

ATTITUDE TOWARDS ISOLATING THE SICK CHILDREN

S.No.	Constructs	Percentage		t value		
		Control Group	Experimental Group			
6.	When you fall sick:					
	a) Move alongwith other members in the family	32	17	9	77	12.3737**
	b) Use the articles used by the patients	30	6	11	86	7.6057**
	c) Show yourself to the doctor	35	96	12	4	14.2666**

\*\*Significant at 1 per cent level

Table IX depicts their attitude towards isolating the sick patients. The observed 't' value for the agreement are 13.2737, 7.6057, 14.266 which are greater than the expected 't' value. This shows that nutrition education had an positive effect towards the attitude of isolating the patient.

TABLE X

ATTITUDE TOWARDS IMMUNIZATION

S.No.	Constructs	Percentage		t value
		Agree	Disagree	
		Control group	Experimental group	
a)	Immunization help the child to be healthy	13	80	35
				20
b)	Immunization causes diarrhoea and fever	26	3	10
				71
				16.039**
				12.702**

\*\* Significant at 1 per cent level

Table X indicates attitude towards immunisation of the child. The tribes in general were of the opinion that immunisation causes fever and diarrhoea. As seen from the above Table the 't' value is greater than the expected value hence the treatment had a good impact in changing the attitude.

Thus Tables II to Table X indicate a positive trend in the attitudes held by the mothers and the null hypothesis is rejected, showing that nutrition health education leads to conviction which is the underlying factor for developing positive attitude and plays the foundation for practice.

TABLE XI

**NUTRITION HEALTH AND ENVIRONMENTAL SANITATION PRACTICES OF  
HORSEMAKERS**

S.No.	Aspects	Observed 't' value		
		Always	Frequen- tly	Some- times
<b>A. <u>Nutrition:</u></b>				
1.	Including raw foods in the daily diet	1.448*	2.455**	4.008*
2.	Including fruits in the daily diet	7.509**	11.453**	18.6152**
3.	Including green leafy vegetables	3.573**	4.051**	1.6306
4.	Cutting vegetables after washing	3.4576**	3.962**	1.257
5.	Using mixed cereal diet	9.1876**	15.0**	22.5**
6.	Giving special diet to the vulnerable group	0.6924	8.8254**	11.6869**
<b>B. <u>Health:</u></b>				
7.	Brushing the teeth everyday	21.008**	12.99**	10.13**
8.	Combing the hair daily	1.962*	4.118*	5.5391**
9.	Rinsing the mouth after eating sweets	6.539**	9.89**	6.5726**
10.	Keeping the nails trimmed and clean	4.0862**	2.5415*	5.662**
11.	Eating fruits after washing	3.9321**	4.604**	6.357**
12.	Washing hands after using the toilet	19.6396**	12.99**	9.1856**
13.	Isolating sick patient	5.4174**	5.462**	6.091**
14.	Voluntary immunisation	1.131	4.4857**	4.9431*
<b>C. <u>Environmental Sanitation:</u></b>				
14.	Cleaning the place after eating	6.1337**	17.185**	21.008**

16. Keeping the surroundings clean	4.5938**	7.5**	11.85**
17. Absence of used water running around the house	0.8924	8.8252**	11.6868**
18. Absence of unwanted shrubs and bushes around the house	1.17	10.896**	13.3234**
19. Water sources and nearby area are clean	1.385	8.65**	8.6091**

\*\*\*\*\*

\*\*Significant at 1 per cent level

\*Significant at 5 per cent level

Table XI shows the practice of nutrition health and environmental component by the mothers. A rating scale was used to find out the practices combined with <sup>participant</sup> observation participant by the investigator. Paired 't' test was done to find out the significance. Giving special diet to the vulnerable group always is insignificant which shows that they are yet to improve. In the health component voluntary immunisation is not significant and other aspects except "combing the hair daily" is significant at 1 per cent level. In the environmental sanitation component except cleaning the place after eating and keeping the surroundings clean, others are not significant. This indicates that tribal mothers need more convincing activities to follow health environmental sanitation.

**TABLE XII**  
**PUPILS KNOWLEDGE ABOUT NUTRITION HEALTH AND ENVIRONMENTAL**  
**SANITATION**

$\sum d$	$\bar{d}$ means	Crude sum of squares of $d - \bar{d}$	Sum of squares of $d$	Variance of $d$	S	d	t
1531	10.6319	16635	347.4931	2.43	0.1308	81.27**	

Table XII indicates the knowledge acquired by the pupils in nutrition health and environmental sanitation. Paired 't' test was used between pre-test and post test scores. The observed 't' value is 81.27 which is highly significant. The implication is that children exposed to nutrition education acquired good knowledge in nutrition health and environmental sanitation.

TABLE XIII

PUPILS ATTITUDES TOWARDS NUTRITION HEALTH AND ENVIRONMENTAL  
SANITATION

N = 143

Total	Mean	Crude sum of squares	Sum of squares of d	Variance of d	SEd	't' observ- ed
x	$\bar{x}$	$d^2$	$d - \bar{d}^2$			
2061	14.4126	31307	1623.6573	11.2863	0.3339	50.9419**

\*Significant at 5 per cent level

\*\* Significant at 1 per cent level.

49 true or false *test* items were given to the pupils to find out their attitude. Table XIII shows the result of paired 't' test between pre-test and post test used to compute difference between before and after imparting nutrition/health education. The observed 't' value was 50.9419 which was greater than the expected 't' value (i.e.) 1.96 and 3.52 at 5 per cent and 1 per cent level. This implies that nutrition education had helped in the development of positive attitude.

TABLE XIV

**PRACTICES OF NUTRITION HEALTH AND ENVIRONMENTAL SANITATION  
ASPECTS FOLLOWED BY CLASS III CHILDREN**

**N = 143**

S.No.	Nutrition/health practices	Percentage	
		Yes	No
1.	Including raw foods in the diet	44	56
2.	Eating all the foods served to him/her	66	34
3.	Including fruits in the diet	65	35
4.	Rinsing the mouth after eating sweets	62.5	37.5
5.	Drinking boiled and cooled water	93.5	6.5
6.	Washing the fruits and vegetables before eating	69.9	30
7.	Trim the nails and keeping them clean	70	30
8.	Drying beds in the sun	66	34
9.	Using a dust bin to throw the waste	90.5	9.5
10.	Cleaning the place after eating	63	37

Table XIV shows the percentage of children practising nutrition health and sanitary practices. 94% of children drink boiled and cooled water whereas only 44 per cent of children include raw vegetables. The rest of the practices were followed by more than 62 per cent of children.

## V. Relation of Knowledge to Practice

Since nutrition knowledge of the mother is of little value to a family unless it is put into practice, an attempt was made to see how much mother's practice (what they reported as important in their child's diet) From the child's listing of foods and his recall of his diet for the same day, it was possible to see whether he ate what he believed was important and if recall of foods eaten agreed with the recall of his mother. Only the out of school diet was compared, since mothers did not know what the child ate in the school.

TABLE XV

RELATIONSHIP OF NUTRITION KNOWLEDGE TO MOTHER'S SCORE AND CHILDREN'S DIET

PERCENTAGES OF MOTHERS AND CHILDREN

Food groups	Mother's listing the group as important		Children listing the group as important		Mother's serving these foods		Children eating these foods	
	Before	After	Before	After	Before	After	Before	After
Cereals	100	100	30	65	100	100	100	100
Vegetables	20	60	15	65	15	50	20	75
Fruit	30	90	10	100	20	67	60	100
Green leafy vegetables	15	95	15	70	15	64	14	74
Meat, fish, poultry	100	100	50	85	10	35	100	100
MILK	60	100	40	100	15	25	60	100

Table XV shows the percentage of mothers and their children who listed the food groups as important in the child's diet, the percentage of mothers who recalled that the food groups were included in the child's diet, and the percentage of children who recalled having eaten the food groups before and after nutrition education.

The first finding of importance is that lesser mothers served foods from different groups than the mothers reported the food groups as being important in their child's diet.

While 100 per cent of mothers said milk was important in the child's diet, only 25 per cent of mothers actually includes milk in their child's diet on the day of their recall.

6. Correlation Between Attitudes and Knowledge of Pupils in Nutrition Health and Environmental Sanitation;

The post test scores were considered for the correlation between knowledge and practice. The correlation coefficient was 0.4385 which is lesser than the expected 't' value. They are independent of each other.

## V. SUMMARY AND CONCLUSION

This study was conducted to find out the impact of community contact programmes on nutrition-health and environmental sanitation in terms of the knowledge, attitude and practices of mothers in a tribal area. Responses were obtained from 100 homemakers and 143 children reading in class III.

From the results of the knowledge, attitude and practices of mothers and children in this study, some important implications can be drawn. Ultimately, all nutrition education is aimed at positive change in knowledge, attitudes and practices, but according to this study it would appear unsound to assume that individuals who have gained a basic knowledge of nutrition-health and environmental sanitation are able to apply this knowledge in all their personal practices.

Travers (1963) emphasized that, expressed attitudes bear little relation to food behaviour. It was therefore not surprising that in this study, dietary behaviour as noted from the recall survey was not modified to the extent as cognitive learning. The mothers in the experimental group obtained greater scores than the control group for knowledge test. However, only 35 per cent of children consumed milk, although cent per cent of mothers had listed

milk as an important food for the children. Travers (1963) says that this is a problem of transfer of training. Though there is some evidence that transfer can take place from cognitive systems, the conditions that make the transfer possible are difficult to establish. In this study the mothers could have been affected by the type of secluded life they lead, non-availability of ~~problems~~, foods, weather conditions, long time food practices of the community and other variables.

Let this study emphasises that some relationship exists between information acquired and attitude systems that lead to a degree of action by the learner. Nutrition education can certainly modify behaviour.

#### Limitations of the Study:

1. Even though much effort was made to interview the subjects separately and not to allow the mothers to share ideas, undoubtedly some exchanges did occur.
2. The time for community contact programme was not enough. If nutrition education could have been imparted over a longer period of time, the gap between cognitive learning and dietary behaviour might possibly have been decreased.

3. Inability of the subjects to express was an obstacle to measure the intensity of their attitude as to whether or not they strongly agreed, or strongly disagreed with the constructs.
4. Other physical factors such as difficulties in reaching the target group, disturbances due to wild animals, adverse climate, non availability of public conveyance were some of the difficulties faced by the investigator.

#### Recommendations:

Based on the results of this study the following recommendations are made:

Community contact programmes through nutritionally oriented teachers appears desirable. These programmes should be aimed at improving the knowledge of the mothers in the areas of nutritional requirements during pregnancy and other periods of life cycle and the nutrient composition of foods. In addition, a better understanding of the principles of food budgeting appears necessary to enable the home makers to effect the changes in the feeding practices of its members. This type of nutrition education should not be confined to limited schools but should be adopted in all the schools in the state.

Reading and writing materials in nutrition education should be distributed to children, so that each time they read them, their learning will be reinforced. Such education will reach their homes when their parents will also be informed.

Longitudinal studies need to be conducted to study the long term impact of nutrition education on attitudes and practices when the child will be in a position to take decision of his own.

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**APPENDICES**





**APPENDIX II**

**SRI AVINASHILINGAM HOME SCIENCE COLLEGE FOR WOMEN  
COIMBATORE 641043**

- I. Name of the Village ..
- II. Head of the family ..
- III. Name of the tribe ..
- IV. Door No. ..

V. Type of the family:

- a) Joint family
- b) Nuclear family

VI. Composition of the family:

S.No.	Name	Sex		Age	Educa- tion	Occu- pation	Monthly income
		Male	Female				
.....	.....	.....	.....	.....	.....	.....	.....

.....  
**P.N.B.:** Put a \* mark against those who have stopped going to  
the school within fifteen years.

**VI. Monthly Expenditure:**

S.No.	Item	Amount spent in Rs.	Percentage
1.	Food		
2.	Clothing		
3.	House Rent		
4.	Education		
5.	Electricity		
6.	Fuel		
7.	Medicine		
8.	Recreation		
9.	Miscellaneous		

**VIII. Food Expenditure Pattern:**

S.No.	Items	Duration		
		Weekly	Fortnight	Monthly
1.	Cereals			
2.	Pulses			
3.	Roots and Tubers			
4.	Vegetables			
5.	Leafy Vegetables			
6.	Fruits			
7.	Oils			
8.	Milk and milk products			
9.	Fleshy foods			
10.	Sugar and jaggery			
11.	Spices and Condiments			
12.	Other items			



**X. Mortality and morbidity data:**

.....

S.No.	Name	Age	Sex		Name of the Present	
			Male	Female	Disease	Health condition

.....

1.

2.

3.

4.

5.

.....

N.B.: Put a / mark if the person is no more.

**II. Foods given during special conditions:**

.....

S.No.	Condition	Foods included	Foods avoided	Reasons
-------	-----------	----------------	---------------	---------

.....

1. **Pregnancy**2. **Lactation**3. **Pre-school children**4. **Sickness**

a)

b)

c)

d)

.....

**XII. Do you have a kitchen garden?**

Yes  No

**1. If 'yes' what do you grow?**

- a) Roots and tubers
- b) Green leafy vegetables
- c) Fruits
- d) Vegetables

**2. Use of the kitchen garden produce**

- a) By sale
- b) Give away as gift
- c) Using it for their own purpose

**3. Do you have poultry/cows/goats?**

Yes  No

**4. What do you do with the produce?**

- a) By sale
- b) Give away as gift
- c) Using it for their own purpose

**XIII. Food beliefs****a) List the 'hot' foods**

- 1.
- 2.
- 3.
- 4.
- 5.

**b) List the 'cold' foods**

1.

2.

3.

4.

5.

**c) List the gas producing foods**

1.

2.

3.

4.

5.

**XIV. Methods of preservation:**

1. Pickling

2. Drying

3. Salting

**XV. Meal patterns:****List out the foods eaten during the past 24 hours**

**APPENDIX III**

**SRI AVINASHILINGAM HOME SCIENCE FOR WOMEN, COIMBATORE 641 043**

**KNOWLEDGE TEST FOR PARENTS**

Name of the village ..  
Name of the Homemaker ..  
Door No. ..

**Maximum Marks: 15**

1. Arrange the given foods according to their functions in the body.
2. How will you make the given sample of water safe for drinking purposes?
3. Provided are the pictures. Pick out the person who need more care?
4. Pick out the vegetables which will help you in good vision?
5. Pick out the cereal which will help you to have good blood?

**APPENDIX IV**

**SRI AVINASHILINGAM HOME SCIENCE COLLEGE FOR WOMEN, COIMBATORE 43**

**PARENTS ATTITUDE SCALE**

Name of the Village ..

Name of the Homemaker ..

Door No. ..

.....

S.No.	Constructs	Agree Disagree Not known
-------	------------	--------------------------

- |    |   |  |
|----|---|--|
| 1. | To eat food:  |  |
|    | a) To get energy and grow                                       |  |
|    | b) fill the stomach   |  |
|    | c) Protect from illness   |  |
| 2. | Balanced diet is:   |  |
|    | a) Including rich foods like ghee, butter, meat fish and egg    |  |
|    | b) eating plenty of foods                                       |  |
|    | c) Inclusion of foods from all the five food groups in the diet |  |
| 3. | Best method of cooking vegetables:                              |  |
|    | a) Wash vegetables after cutting                                |  |
|    | b) Drain the cooked water                                       |  |
|    | c) Cut vegetables into big pieces                               |  |
|    | d) Avoid using baking soda                                      |  |

.....  
 S.No.                      Constructs                      Agree Disagree Not known  
 -----

4.     Expectant women must eat:
- a)     Eggs
  - b)     Eat fleshy foods
  - c)     Eat vegetables
  - d)     Pulses like bengal gram
  - e)     Cereals like cholam, varagu, thennai
5.     Supplementary feeds:
- a)     You must start supplementing as babies should not be breast fed after 4 months
  - b)     Nourishment which the child gets from the mother is not sufficient
6.     Good health:
- a)     Good health is merely the absence of sickness
  - b)     Ability to work hard and eat well
  - c)     Being too heavy
7.     Sickness is caused by:
- a)     Evil spells
  - b)     Visitation of goddess
  - c)     Wrath of gods
  - d)     Doing too much work
  - e)     Unhygienic environment
  - f)     Eating an unbalanced diet
  - g)     Drinking unclean water

S.No.	Constructs	Agree	Disagree	Not known
8.	When you fall sick:			
	a) Love along with other members in the family			
	b) Use the articles used by the patients			
	c) Show yourself to the doctor			
9.	Immunisation:			
	a) Immunisation help the child to be healthy			
	b) Immunisation causes diarrhoea and fever			

**APPENDIX V**

**SRI AVINASHILINGAM HOME SCIENCE COLLEGE FOR WOMEN; COIMBATORE 43**

**RATING SCALE TO FIND OUT THE NUTRITION HEALTH AND ENVIRONMENTAL  
SANITARY PRACTICES OF MOTHERS**

.....

Name of the village ..

Name of the homemaker ..

Door No. ..

.....

S.No.	Aspects	Always	Frequently	Some time
-------	---------	--------	------------	--------------

-----

**A. Nutrition**

1. Including raw foods in the daily diet
2. Including fruits in the daily diet
3. Including green leafy vegetables
4. Cutting vegetables after washing
5. Using mixed cereal diet
6. Giving special diet to the vulnerable group

**B. Health**

1. Brushing the teeth everyday
6. Combing the hair daily
9. Rinsing the mouth after eating sweets
10. Keeping the nails trimmed and clean
11. Eating fruits after washing
12. Washing hands after using the toilet
13. Isolating sick patient
14. Voluntary organisation

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S.No.	Aspects	Always	Frequently	Some times
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**C. Environmental Sanitation**

15. Cleaning the place after eating
16. Keeping the surroundings clean
17. Absence of used water running around the house
18. Absence of unwanted shrubs and bushes around the house
19. Water sources and nearby area are clean

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APPENDIX VI  
KNOWLEDGE TEST FOR CHILDREN

மதிப்பீடு:-

சரியான விடையை தேர்ந்தெடுத்தல் அகற்ற ( 4 ) மதிப்பீடு.

1. மழைநீர் எற்படக் காரணம்

- அ) தயாயில் குறைவாகும்
- ஆ) வாயுமண்டலத்தில் குறைவாகும்
- இ) மழைநீர் தரவில்லை உணவு அளவில் உட்கொடுக்காததால்.

2. பல்பூக்கிவளர்ச்சி உணவில் சேர்ப்பதில்

- அ) மலையில் 'சி' விடக்கிறது
- ஆ) சமஸ்ப்பா குறைவாகும்
- இ) சி கொடுக்கிறது.

3. அரிசை நோய்

- அ) மாதிரியாகக் குறைவாக பரவுகிறது
- ஆ) கொடுக்கலில்
- இ) காரணம்

4. கலிநோய் எற்படக்காரணம்

- அ) மலையில் 'சி' குறைவாகும்
- ஆ) கொடுக்கலில் உட்கொடுக்கலில்
- இ) நோய் கலிநோய் கலி மாரிப்பதில் காரணம்

5. கொடுக்கலில் பரக்காரணம்

- அ) அசுத்தமான தண்ணீர் தேக்கி நிப்பதால்
- ஆ) கதவைத் திறந்து வைப்பதில்
- இ) விடைய அசுத்தமானவைப்பதில்

6. உணவு உட்கொடுத்தல் கைகொடுக்க வேண்டிய செயல்கள்

- அ) நோய்க்கிருமிகள் உட்கொடுக்க உட்கொடுக்கிறதே
- ஆ) உணவு தயாரிக்கிறதே
- இ) உணவில் மணம் மாறப்படுகிறது.

7. கரிம உணவு எப்படி

- அ) தனி உணவு
- ஆ) கை நிறைந்த உணவு
- இ) எல்லா உணவுப் பொருள்களையும் தனித்த தனக்கே கொடுக்க உணவு.

8. தடுப்பு கை

- அ) நோய் கிருமிகளைப் போட்டுக்கொடுக்க வேண்டும்
- ஆ) நோய் கிருமிகளைப் போட்டுக்கொடுக்க வேண்டும்
- இ) எப்போதாவது ஒருமுறை போட்டுக்கொடுக்க வேண்டும்

9. பரிபாதி பற்றி உணவில் சேர்க்கை கொடுக்க

- அ) கட்டிடம்(உ) கட்டிடம்
- ஆ) உணவில் உட்கொடுக்க ஏற்படுத்தும்
- இ) உணவில் போடுக ஏற்படுத்தும்

10. மனோபாதிக்காக ஏற்கனவே

- அ) மனச்சிறப்பு நீக்கி கொடுக்கிறதே
- ஆ) கொடுக்கக் கொடுக்கக் கொடுக்க
- இ) கொடுக்கக் கொடுக்கக் கொடுக்க



APPENDIX VIII

TRUE OR FALSE TEST ITEMS TO FIND OUT CHILDRENS ATTITUDE

Marks: 25

என்பா தவற என்ம ஒப்பிடவும். சரி என்ம  தவற என்ம   
ஒப்பிடவும்.

1. உலகப் பொருள்கள் எல்லாவற்றிலும் ஒரே ஊர், உலகச் சந்தர்ப்பம் காணப்படுகின்றன.
2. டி.கே.சி. இயக்கம் புரதம் மிக உயர் தரமானதே
3. பச்சைக் கார்ப்புகளில் கலப்பில் 'சி' உலகம்
4. அழகம் பொருள்கள் உலகப் பாதாளத்தில் ஒத்ததொன்றும்
5. தனித்தரம் காட்சி கருப்பில் 'ல' நோய் அறாமல் தடுக்கலாம்.
6. நோய் எந்தவித தடுப்பு அளி போட வேண்டும்
7. அம்மை நோய் உலகில் கோபத்தால் அருகிதே
8. கட்டி மலமாக நோய் பரவுகின்றன
9. சில உலகப் பொருள்கள் பச்சையாகவே உலகலாம்.
10. தொற்றுநோய் கட்டிகள் உலகியுமொரு பாரிசு வேண்டும்
11. சாதத்தில் கட்டி கருப்பை தடுக்க
12. ஒவ்வொரு நோயின் பரிசீலிதொட்டும் அம்மை விடுதல்தொட்டும் அமைக்கலாம்.
13. அழகம் எல்லாம் பொருள்கள் உலகியுமொரு அருகிதே.
14. வெளி உலகியில் எல்லாம் தடுப்புகள் தடுக்க
15. அழகிய கிற்றை நீர் சந்தமலானதே
16. பழகிய உலகியில் உலகியுமொரு ஊர்மம்
17. பப்பாவி உலகியுமொரு
18. மலம் காண்கையில் காணப்படுதல் உலகியுமொரு

19. கிட்டாள் சார்பிட்டவுடன் காதி கண்ப்பயிதிக் கெட்டுப்
20. ஒரு நெகிதிகளால் ஒரு சூப்பியுக்குச் சையல்
21. நகியல் கார்பிடு சூப்பியுக்குக் குறிப்பு
22. சைலிநெகிடு குணகூடப் கெட்டு அப்பிடு கிட்டி கெட்டுப்
23. நெகிடு நகியல் அப்பிடு கிட்டி கெட்டு கெட்டு
24. நெகிடுகெட்டு அப்பிடு கெட்டுக் கெட்டு கெட்டு.