IMPACT OF EDUCATIONAL PROGRAMMES ON THE HEALTH AND DIETARY PRACTICES OF THE WOKERS OF SEWAGE FARM IN THIRUVANANTHAPURAM CORPORATION

By

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THESIS
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2000

DECLARATION

I hereby declare that this thesis entitled "**Impact of educational programmes on the health and dietary practices of the workers of sewage farm in Thiruvananthapuram corporation**" is a bonafide record of research work done by me during the course of research and that the thesis has not previously formed the basis for the award of any degree, diploma, associateship, fellowship or other similar title, of any other university or society.

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CERTIFICATE

Certified that this thesis entitled "**Impact of educational programmes on the health and dietary practices of the workers of sewage farm in Thiruvananthapuram corporation**" is a record of research work done independently by Ms. Razeena, K. A. under my guidance and supervision and that it has not previously formed the basis for the award of any degree, fellowship or associateship to her.

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To

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF PLATES

INTRODUCTION

1. INTRODUCTION

Environment and human health are inevitably interlinked and a healthy environment is essential for the health and well being of the planet and its inhabitants, who depend on it for the air they breath, the water they drink and the food they eat. The discussions in The National Conference on Environmental Hygiene and Promotional Initiatives (1994) revealed that it is the household environment that carries the greatest risk of the health of people living in developing countries, particularly poor. Although the concept of environmental cleanliness and purity of water are not unfamiliar to the people of Kerala, there is a strong need to strengthen the hygiene education component in water supply and environmental sanitation programmes.

When we consider the relationship of environment and human health, the relationship between women and environment is vital, because of their close acquaintance with environment as consumers and providers of daily lives such as the provision of water, fuel, food and other basic needs. Hence these women not only bear the brunt of environmental degradation but also play a crucial part in environment management.

The advancement of science has resulted in new knowledge and technology related to household practices. There is a need to reach rural households with these new practices inorder to improve their standard of living. This calls for effective communication of improved practices through appropriate media (Kumari and Roy, 1988).

The World Development Report 1992 makes an emphatic statement that "investments in sanitation and water offer high economic, social and environmental returns". However these return are realizable only with the effective utilization of the facilities provided. It is in this context that the attempt to mobilise community or peoples participation in water and sanitation programmes acquire vital importance. Sensitizing the community is the first step in any sanitation programme.

Keeping all these in mind an education programme was conducted for the sewage farm workers in Thiruvananthapuram corporation. Thiruvananthapuram corporation encompasses as area of 74.93 sq. Km. having fifty administrative wards. The city has a continuous drinking water supply system. It also has a water carried sewage system covering about 20 Sq. Km. of the corporation. About 40 per cent of the households were connected to this. The city sewage system was first laid during the royal days by dividing the city, into seven drainage blocks. There are only five drainage blocks in the city today, A to E. Each block was given a sewage pumping station which inturn discharged its sewage into the main pumping station at Kuriathy and from there the sewage was pumped to the sewage farm at Valiathura. The gross area available now for sewage farming is 102 acres. Presently farming is done in 82 acres and remaining 20 acres is kept as fallow land (Proceedings of National Conference on Environmental Hygiene and Promotional Initiatives, 1994). There were more than 125 peoples working in the sewage and were exposed to the risk of being infected with the microorganisms or bitten by poisonous snakes and other reptiles. Their living conditions were

also very poor. Such unfavourable conditions cannot be allowed to continue further. This calls for the education of sewage farm workers on health, hygiene and dietary practices to improve their standard of living.

To make the education programme effective, the extension worker need to be equipped with better communication techniques through the use of various extension methods in general and visual aids in particular.

Gain in knowledge, retention in knowledge and the adoption of gained knowledge were low when exclusively oral methods were used for imparting education. To prove the old proverb 'one picture is worth of thousand words' efforts are needed in using visuals appropriately, suitably, timely, clearly and cogently (Philip *et al.*, 1999). The visual aids support the spoken word and create visual images which will be remembered long, even after the written or spoken word is removed from the audience. Stimulating two senses simultaneously results in easier and quicker mental impressions as well as longer retention. Hence maximum number of visual aids were made use of in teaching adults.

Until now no systematic research works had been carried out in Kerala to find out the impact of educational programmes on the health and dietary practices of workers of sewage farm and it was felt worthwhile to undertake a study to find out the impact of educational programmes on the health and dietary practices of the workers of sewage farm in Thiruvananthapuram and also to find out the comparative effectiveness of the selected teaching methods.

Hence the present study entitled 'The impact of educational programmes the health and dietary practices of the workers of sewage farm in Thiruvananthapuram corporation' is proposed with the following objectives.

1. To evaluate the impact of educational programmes on the gain in knowledge on health, hygiene and dietary practices by the respondents.
2. To evaluate the impact of educational programmes on the retention of knowledge on health, hygiene and dietary practices by the respondents.
3. To find out the impact of educational programmes on the adoption of gained knowledge on health, hygiene and dietary practices by the respondents.
4. To evaluate the comparative effectiveness of the selected teaching methods in the gain, retention and adoption of knowledge.

Scope of the study

In cities huge influx of population which results in rapid formation of hutment dwellings without proper sanitary and water facilities. Poor hygiene and sanitation are responsible for much of the diseases burden in these area. Sewage can be carrier of many pathogenic bacteria and the persons engaged in sewage work may be carriers of pathogenic bacteria without being affected themselves. Report in Hindu daily (1999) revealed, that there were a lot of cases of infections and allergies among the people who lived by the sides of the Parvathy Puthanar.

To inculcate healthy hygienic habits, the sewage farm workers were exposed to specific educational programmes. The results of the study will throw light not only to the impact of educational programmes in increasing knowledge and the adoption of health, hygiene and dietary practices, but also to the comparative effectiveness of the teaching methods used to educate them. This will facilitate extension educators and other organisations engaged in adult education programmes to select the appropriate teaching methods in imparting knowledge.

Limitations of the study

Considering the limited time and other resources available with the researcher and since this is an experimental study it has been confined only one ward in Thiruvananthapuram Corporation. The workers in this study group do not represent the whole sewage workers in Kerala. Hence the conclusion drawn from the experiment cannot be generalised to other areas and communication situations. However considering the efforts put in planning and conducting the experiment it is hoped that the results generated will be of use to make fraud, generalisations for the whole state of Kerala.

REVIEW OF LITERATURE

2. REVIEW OF LITERATURE

This chapter presents the review of earlier studies conducted on the impact of educational programmes on the knowledge and adoption of health, hygiene and dietary practices, effectiveness of teaching methods and associated studies under the different subheads.

2.1 Learning, learning situations and learning through different senses.

2.2 Studies on the effect of Health and Dietary practices.

2.3 Profile of sewage farm workers

2.4 Effectiveness of audio-visual aids on gain in knowledge, retention in knowledge and adoption of gained knowledge.

A. Gain in knowledge

B. Retention of knowledge

C. Adoption of gained knowledge

2.5 Association of independent variables with dependent variables.

2.1 Learning, learning situations and learning through different senses

Chari and Rana (1982) found that nutrition education became an integral component of all community development, extension and education activities.

Rajammal *et al.* (1982) revealed that rural women were keen in learning nutrition since they realised that good nutrition contributed to the health and well being of their families.

Undernutrition and malnutrition are major health problems among young children in developing countries of the world. In India children between the age of one and four years constitute more than 15 per cent of the population and they are the most vulnerable to malnutrition. The mortality rate of children below four years is as high as 40 per cent (Kakker *et al.*, 1987)

Health status of citizen is the most important indicator of socio-economic development of any nation. The proper health care should be given due attention right from the beginning of life (Anju *et al.*, 1988).

According to Tabinzadeh *et al.* (1989) by the end of the 20th century, the urban poor may represent the quarter of humanity.

According to Neelakantan (1991) education is a learning process through which knowledge is acquired and attributes are developed resulting in intelligent and skill full behaviour. The village people are ignorant particularly on matters of health and they should be given the knowledge of health and healthful living (Neelakantan, 1991).

According to Otta (1992) higher maternal education level is related to higher awareness and adoption of better health measures. Mothers with low educational level were found to have less knowledge about various health care practices and did not take proper health measures.

The community development approach requires recognition of the importance of township organisation. Success depends on a continuing learning process among health workers and members of the general population (Ferrinho *et al.*, 1993).

According to Katsha and watts (1994) a health education programme should not be perceived by local people as a scheme imposed from afar, but as something they have helped to create.

Motarjemo *et al.* (1994) reported that contaminated food is responsible for most of the diarrhoeal diseases in young children, yet the education of mothers and care given about the preparation of food under hygienic conditions tend to be neglected. Special attention should be given to advice on food safety for care given notably mothers and educational programmes in the subject.

Malnutrition among children and women is a serious danger today. The objective of any food and nutrition programme should undoubtedly be to eliminate malnutrition and to achieve optimum nutrition for the people. A systematic approach identifying the relevant factors coupled with massive efforts and strict monitoring of the existing programmes is necessary for combating malnutrition (Ahmad, 1994).

Daral *et al.* (1995) reported that low economic status, poor environmental hygiene coupled with lack of health education in mother may contribute to higher incidence of diarrhoea.

Yeshphal and Seghal (1995) reported that as women play a crucial role in the selection, preparation and serving of food, educating them will help in improving the nutritional status of the members especially the vulnerable groups, i.e., infants, preschool children, pregnant and lactating women.

According to Dilton and Philip (1996) a public that knows its rights and responsibilities, supported by political will and awareness at all levels of government can make health for all a reality. The co-operative medical system appears to be an appropriate health insurance model for financing rural health care services in the developing world (Khan *et al.*, 1996).

According to Patil *et al.* (1996) by acquiring health related knowledge, skills and practices, children are well placed to pursue a healthy life and to work as agents of change for the improved health of their families and community.

According to Singh (1996) the importance of the health of mother and children in nation building cannot be over emphasised. Investment in child health care is investment in the future. But health care cannot be provided in isolation.

According to Dubey (1997) in a community, health activity in closely linked with their values, believes and perceived needs.

As per the WHO technical report series (1997) the three major nutritional problems of primary school age children in the developing countries are protein-energy malnutrition, micro nutrient deficiency and short term hunger.

According to Balagir *et al.* (1998) health and nutritional status of under previlaged communities had attracted considerable attention in India. The scheduled tribes are the most vulnerable people. Health and nutritional status of school children need to be raised by imparting health education to students,

parents, and teachers especially pertaining to locally available cheap and essential nutrient rich foods.

A study conducted by Jaya and Visala (1997) revealed that the slum families need to be educated on prenatal care, utilising public services and preparation of low cost balanced food with available food items at home inorder to have the best out come of pregnancy and to reduce incidence of spontaneous abortions which are relatively more in slum areas.

According to Neelma *et al.* (1998) the important determinants of child health is the socio economic status of the family, especially income of the family and maternal education. Knowledge of the rural mothers becomes more important for the proper care of the child.

According to Bishnoi *et al.* (1999) the rural lactating mothers should be educated regarding their increased nutritional requirements. They should be educated to include more of the locally available seasonal fruits and vegetables to improve the nutritional status.

Sarwamangala *et al.* (1999) says that unless women as a builder of home is equipped with adequate information, developing the nation in all its perspectives will remain a cry.

2.2 Studies on the effect of Health and dietary practices.

Bhatia *et al.* (1980) studied various environmental factors and microbial agents influencing diarrhoea and found that diarrhoea was common below the age of two. They found that feeding habits, storage of drinking

water and lack of excreta disposal facilities were the significant variables responsible for the occurrence of diarrhoea.

Mathew and Benjamin (1980) in their study on health education, evaluation, believes and practices of rural Tamil Nadu reported that behaviours regarding diet and weaning can be changed more effectively in a comparatively shorter time.

Gajalekshmi (1984) stated that integrating nutrition, health and environment sanitation in the curriculum of the primary school children has increased their knowledge and developed good habits.

Bosley (1986) says that the fundamental objective of education in nutrition is to help individuals to establish food habits and practices that are consistent with nutritional needs of the body and adapted to the cultural pattern and food resources of the area they live in.

The aim of health education in nutrition is to guide people to choose optimum and balanced diets which contain nutrients necessary for energy, growth and repair (Park and Park 1989).

A study conducted by Biswas (1991) in slum communities of Calcutta about their health status showed that the two leading causes of morbidity were respiratory infections and diarrhoeal diseases.

A study conducted by Sidhu and Singh (1991) revealed that sanitation in rural areas is not satisfactory and lot needs to be improved, as it affects the health and all round developments of the residents.

A person's health is influenced by the availability of health information and health care, both preventive and curative. Finally the individuals behaviour or life style, plays a major part in determining the state of her or his health (Smyke, 1991).

Mukhopadhya (1992) conducted a study of factors affecting incidence of acute respiratory infection. His findings revealed that breast feeding, nutrition, indoor smoke pollution, parents smoking habits and immunisation were the most important factors for the incidence of acute respiratory infections.

Panda (1993) conducted a study in Ludhiana to find out the health status of under five children in relation to selected socio economic variables. The health problems were directly related to poverty and to polluted and stress filled environment. So attention is to be given to provide basic facilities like safe water and sanitation rather than effective immune prophylaxis.

The health status of an individual, community or a nation is determined by the interplay and integration of two ecological universes. The internal environment of man himself and the external environment which surrounds him. Diseases are due to a disturbance in the delicate balance between man and his environment (Francina, 1994).

The study conducted by Jayasree (1994) revealed that the deteriorating home environment and insufficient food intake by women and children increase the threat of their health. The skin diseases and scabies, due to poor

environmental condition have also affected women and children. Personal hygiene have a very big role in the control of these diseases.

A model for health education has been devised in Egypt to contribute to the solution of environmental health problems using locally available resources (Katsha and Watts, 1994).

The recommendations of National conference on environmental hygiene and promotional initiatives (1994) indicated that the participation of community in planning and implementing environmental sanitation programme alone will ensure their successful implementation.

Taking about environment and health, Philip (1994) noted that heredity and environment were two major determinants of health and well being.

Rajasree and Soman (1994) reported that inspite of better food intake, the rural coastal children exhibited poorer nutritional status because of environmental deprivation.

According to Brian (1996) every eight second a child dies of a water related disease. Every year more than 5 million human beings die from illness linked to unsafe drinking water, unclean domestic environment and improper excretar disposal.

Jaya and Sivaraj (1996) in their study pointed out that the educational programmes as most effective method of creating awareness in the aspects of health practices.

Singh (1996) revealed that environmental sanitation in the home, community, school and place of work must be improved to prevent disease caused by droplet infection.

Chhabra *et al.* (1997) conducted a field study in the rural zone of Delhi to study the risk factors for acute respiratory infections among the under five, the study revealed that nutritional status and housing condition emerged as significant determinants for acute respiratory infection. Children staying in well ventilated houses had a lower incidence of acute respiratory infections as compared to those in poorly ventilated houses.

Duby (1997) reported that poor hygiene and sanitation are responsible for much of the disease burden in two rural communities in the Volta region of Ghana. In this region 60 per cent of the morbidity is caused by malaria, diarrohoea and intestinal worm infestations, conditions associated with deficiencies in hygiene and environmental sanitation.

Ling *et al.* (1997) reported that in tropical and subtropical areas, schistosomiasis is second in importance to malaria from the socio-economic and public health stand points. The disease is endemic in 74 developing countries and over 600 million people are at risk from it because of poverty, ignorance and poor housing with little or no sanitation.

As per WHO Technical Report Series (1997) latrines, safe water for drinking and sufficient water for hand washing, means of waste collection and disposal and effective insect control are minimum pre-requisite for establishing and maintaining a healthy environment.

Nossal (1998) says that in the search for lower cost and greater value, the health care and education sectors are looking for new approaches. Health care is broadening its action to include disease prevention and health promotion. Similarly education is widening its focus from formal teaching to a renewed interest in the participatory process of learning both inside and out side the school. He also reports that empowerment, local expertise and community development are integral elements of health promotion and learner centered education.

According to Bishnoi *et al.* (1999) the diets of rural lactating women (0-6 months) were inadequate with respect to pulses, green leafy vegetables, roots and tubers, other vegetables, sugar and jaggary and fruits which results in lower intake of protein, carotene, iron, thiamine, riboflavin, niacin and ascorbic acid. BMI classification projected that only about one fourth of the respondents were under weight.

According to Maharaj (1999) "health does not simply mean an absence of disease, but is a harmony of the physical, mental, social and environmental aspects of life".

Randhwa *et al.* (1999) study the dietary pattern of rural women in the Mansa district of Punjab state. The results revealed that majority of the respondents liked cereals like wheat, maize, and rice and was more or less same for all the three ethnic groups, the study also pointed out the recommendation for improvement of dietary pattern.

2.3 Profile of sewage farm workers

2.3 (1 & 2) Religion and caste

Sharma and Singh (1970) observed that women belonging to low caste participated in farm operations more than others.

Padmanabhan (1981) in his study observed that all the respondent labourers belonged to scheduled caste.

Thomas (1989) had reported that most of the agricultural labourers belonged to Hindu religion and were from underprivileged community.

Shailaja (1990) in her study depicts that majority of the female labourers were from scheduled caste.

Sujatha (1990) reported that most of the agricultural labourers belonged to underprivileged communities.

2.3.3 Sex

Results of the survey conducted by Juna (1999) recorded that females constitute higher percentage than men.

Census data in Manorama year book (1999) proved that females constitutes slightly higher percentage than men.

2.3.4 Age

According to Sharma and Singh (1970) women belonging to middle age group, participated in farm operations in large proportions than others.

Ingle and Dharmadhikarj (1987) reported that relatively higher proportion of female labourers were below 30 years of age (40 per cent). The labourers below 40 years of age were 75.56 per cent.

Shailaja (1990) in her study on farmwomen found that agricultural labourers have a mean age of 38 years.

According to Jayasree (1994) for working in the unorganized sector there is no upper age or lower age limit for women. Gaikwad and Gunjal (2000) in their study on information seeking behaviour of the respondents revealed that most of the respondents were belonged to middle age category.

2.3.5 Family size

Kumar (1982) observed that the sample households of agricultural labourers were of small family.

Ingle and Dharmadhikarj (1987) reported that 90 per cent of the female labourers had family members upto five only out of which 40 per cent with one to three members and 50 per cent with four to five family members.

Rajagopal (1993) found that majority of the coir workers families in Andhra Pradesh had four to five members in their family.

According to Park (1997) the average family size in India is four.

2.3.6 Type of family

Kumar (1982) revealed that joint family system is not prevalent among agricultural labourers.

Nagammal (1989) and Thomas (1989) had reported that most of the families residing in the coastal areas of Thiruvananthapuram district were of nuclear type.

Predominance of nuclear type of families among fishermen families of Tamil Nadu and Thiruvananthapuram has been reported by Sadavisan *et al.* (1980) and Suja (1989) respectively.

Shailaja (1990) found that women agricultural labourers were having nuclear families.

Shah and Rathore (1993) reported that little more than half of the women labourers in the unorganized sectors belonged to nuclear families.

2.3.7 Land holdings

Deepali (1979) found that majority of respondents (55.53 per cent) were in small land holding groups.

Panicker (1979) opined that majority of the agricultural labourer household are landless except for the small area around their huts ranging from two to ten cents.

Seema (1986) in her study concluded that majority of Nadar community women were either small or marginal farmers and size of land holding had no significant relation with any of the dependent variables.

Zuniga *et al.* (1986) reported that families with land area liable to have a better nutritional status.

2.3.8 Family income

Alexander (1980) reported that in no state other than Punjab will the agricultural labourer be able to have an earning above the poverty line at the prescribed minimum wage.

UNICEF (1990) reported that in India share of earning of female workers in the family income was found to be below 50 per cent.

Park (1997) reported that Keralites are enjoying the high standard of living inspite of low percapita income.

2.3.9 Educational status of the respondent

Kanwar and Koranne (1989) reported that 45.35 per cent of working females were uneducated and 34.64 per cent took education only upto primary school level.

Shailaja (1990) in her study revealed that majority of the women agricultural labourers were able to read only.

Steek *et al.* (1991) observed that women with more education had food consumption patterns more consistent with current health promotion messages.

Kude (1995) observed that half of the beneficiaries he had taken for the study were having education upto high school level.

2.3.10 Educational status of family

Mosher (1965) indicated that education of farm people is an accelerator for agricultural development.

Panikar (1979) reported that illiteracy rate of agricultural labourers in Kerala were found to be 72 per cent.

Ramachandran (1990) reported that, his study in Tamil Nadu revealed that literacy among agricultural labourers was considerably lower (36 per cent).

The studies conducted by Husain (1994) in coconut climbers in Thiruvananthapuram revealed that 49 per cent of the respondents had family educational status below primary level.

2.3.11 Mass media participation

Exposure to mass media was assessed by Prema and Menon (1978) by determining the familiarity of women with different media and found that printed media and radio are the most popular media in the state.

Renukaradhya (1983) found a significant relationship between media participation of trained farmers with their level of economic performance.

Lalitha (1985) revealed that there was no significant difference in knowledge level of high and low mass media participation group.

Studies conducted by Gincy (1987) revealed that most of the women are illiterate and hence do not read newspapers or magazines and those who were literate, also not in the habit of reading newspapers.

Mony (1993) proved that poor socio-economic background of the respondents may be a reason for poor response of the television programmes.

2.3.12 Total physical facility

Perumal (1986) found that most of the households of coir workers in Tamil Nadu do not have the minimum sanitary requirements since they were living in small huts.

Menon (1972) observed that in Kerala most of the low class people were agricultural labourers and they lived in small huts by the side of their high caste masters.

According to UNICEF (1990) lack of ready access of water and poor environmental sanitation were important underlying causes of various types of infections resulting in malnutrition.

2.3.13 Monthly expenditure pattern

Tea Board (1962) found out the average weekly expenditure of a plantation labour family as Rs. 17.74. The bulk of the total expenditure is spent on food items, of which rice accounts for the lion's share.

Tea Board (1962) in a study found that only 28 per cent of the families made some savings.

Singh and Verma (1987) revealed that the largest single group of child workers (45.07 per cent) had been spending money on fulfillment of basic needs and entertainment needs.

According to Giriappa (1990) low average income and high expenditure levels are common features among labourers engaged in fishing, cultivation of vegetables and in plantations.

Pawar *et al.* (1991) indicated that the expenditure exceeds the income in all labour families forcing them to borrow money from the money lenders.

Dietary pattern

2.3.14 (a) Food habits of the family

It was observed by Stephanie (1984) that in South India, only about 28 per cent of the total population were completely vegetarians.

Studies conducted by Jyothi (1993), Karuna (1993) and lovely (1996) revealed that food consumption pattern of low income strata were observed to be of the habitual non-vegetarian type with rice as the staple food.

2.3.14 (b) Monthly expenditure on food

Studies conducted in Thiruvananthapuram coastal areas by Antony (1989) revealed that on an average, each family spent about Rs. 125.89 per head for food alone.

Study conducted by Mony (1995) revealed that majority of the families allocate more money for the purchase of cereals.

The survey conducted by National Nutrition Monitoring Bureau (1996) revealed that the dietary intake was found to be markedly influenced by income level. Although dietary deficiencies of nutrients are primary causes of deficiencies, only diets of high income and middle income groups in urban areas can be said to be satisfactory.

2.3.14 (c) Frequency of use of various food items

Studies conducted by Sujatha (1990) in Thiruvananthapuram district among women engaged in stone breaking found that they consumed pulses and eggs occasionally and was mainly due to high cost, non availability and ignorance. Similar findings were observed in surveys conducted by Karuna (1993) and Juna (1999).

The studies conducted by Johnson *et al.* (1994) on pregnancy outcome, dietary intake and anthropometric measurements and their relationship in life style practices revealed that the daily diet in most of the women comprised of energy rich food articles like cereals, especially rice, fats and oils and sugar.

2.3.15 Change in food consumption pattern during various physiological conditions

Parvathi and Babitha (1989) in their studies among rural families of Khasis of Meghalaya found that special conditions like pregnancy and lactation did not receive any special attention except in an increased intake of the normal adult diet.

Gincy (1987) opined that animal foods are avoided in infants diet by majority of the families since they believe that these foods may cause indigestion.

Parvathi and Babitha (1989) in their studies among rural males and females of Khasis of Meghalaya had found that balanced diet were given during fever, diarrhoea and chickenpox.

Saha and Kanchan (1991) found that the pregnant mothers in rural areas were not aware of the special health care needs of pregnancy and is mainly due to lack of education, awareness and knowledge.

Vaquerio and Navarro (1996) confirmed that moderate food restriction during pregnancy produce intera uterine growth retardation and that new borns have low trace elements content which make them depend on correct postnatal supply.

Lovely (1996) reported that the pregnant women, lactating mothers, adolescents and aged persons were not given special foods to nourish their body probably due to lack of income and knowledge about the significance of diet in the above periods.

Juna (1999) revealed that it is a common custom in developing countries in reduction of food intake during pregnancy especially in the last trimester. The research areas in South India, women mentioned that they reduce food intake in late pregnancy.

2.3.16 Environmental sanitary conditions around the house

Perumal (1986) observed that the unhygienic family and work surroundings contributed to the social deprivation, the coir workers faced.

According to Dilton and Philip (1996) two major determinants of health and well being are heredity and environment. Of these two, the environment plays a significant role and at the same time offers a greater scope for intervention. He is also of the opinion that the occupational environment causes health risk in the work place.

2.3.17 Health profile

Bhatia *et al.* (1980) studied various environmental factors and microbial agents influencing diarrhoea and found that diarrhoea was common below the age of two.

Chhabra *et al.* (1997) reported that nutritional status and housing condition emerged as significant determinant for acute respiratory infections. WHO Technical Report Series (1997 a), also reveals the importance of healthy environment.

The report in WHO Technical Report Series (1997 b), on improving the performance of health centres it is essential that health centres should be appropriately and strongly supported by the people and communities.

2.4 Effectiveness of audio-visual aids on gain in knowledge, retention in knowledge and adoption of gained knowledge

According to Somers (1977) the lecture method can be made effective by combining it with the audio visual aids like film, charts, flannel graphs, exhibits and flash cards.

Teaching methods in extension should be selected carefully and specifically and should emanate from a knowledge base that addresses all facts of learning situation. (Cole, 1981). He also reported that an understanding of behaviour science is basic to selecting teaching methods, for extension deals first with people and then with subject matter.

Extension studies have shown that the more teaching methods used, the higher the percentage of people changing their practices. Thus using a variety of techniques will be most effective approach in seeking to bring about behavioral changes (Cole, 1981).

A study conducted by Parvathi *et al.* (1982) revealed that the nutrition message given through visual aids about diet and deficiency diseases showed significant better awareness to the mothers.

According to Davis, (1983) radio drama holds promises as a medium through which we can convey the impact of psycho-social conditions on nutrition.

Mahanda and Hansra (1984) reported that higher amount of Invested Mental Effort (IME) required for pamphlet than for discussion.

Siddaramaiah and Rajanna (1984) conducted a filed experiment in five randomly selected villages of Bangalore district in Karnataka. The datas in the study indicated the gain in knowledge of the respondents due to their exposure to various communication methods. The findings indicated the potentiality of slide show in agricultural communication. This method seem to take the best advantage of interpersonal communication.

Gallup and Wilson (1985) suggested that for effective extension teaching the extension worker should be able to attract attention, create interst, develop desire, ensure action and maintain satisfaction in the people.

Kaur and Roy (1986) proved that teaching with the help of non-projected visual aids like charts, flash cards, and flannel graph were effective than the lecture method alone.

A study conducted by Malavia *et al.* (1986) revealed that the relative effectiveness of all the four media mix systems experimented by them were adjudged by the respective group of rural women about low cost nutritious food technology communication.

Mohanty and Kalpana (1987) opined that slides were the oldest form of projected aids, flexible in nature and a good medium of advertising. They play unique role in attracting the attention and creating interest.

Visual aids increase the effectiveness of lecture. Among the visual aids flip charts and specimen are important (Sadeqath and Channegowda, 1987).

It is evident from the findings of Singh and Verma (1987) that there was a significant gain in knowledge for the simple and complex messages after the exposure through the slide stories.

The study by Kumari and Roy (1988) proved that the flash card alone with tape message is more effective in educating rural women than the tape message alone on sun drying of vegetables.

Minnie (1988) revealed that the radio presentation such as straight talks and discussions have found to be effective in comparison to more dynamic modes including dialogue, folk songs and illustrated talk. She also says that mass media have a limitless scope for promoting knowledge, understanding, awareness and even people participation in this developmental process. She also reported that radio presentation such as straight talks and discussion have been found to effective in comparison to more dynamic modes including dialogue, folk songs and illustrated talks.

A study of 82 men and 101 expectant women concurred with the notion that parents prefer readily assessable sources to obtain child rearing information showed that fathers prefer to receive child rearing / care information from books, pamphlets, news letters and televisions. These parents preferred resources that could be used in their own homes (Harriman, 1990).

Flannel boards can be successfully used because mothers and older children can participate in using them. The aid should form part of the lesson and be induced in the follow up discussion (Igbedioh, 1990).

The newspapers got a real human interest story and performed a community service by presenting health care informations (Moyer, 1990).

A study undertaken by Jagadeeswar and Ramachandra (1992) found that the projected audio visual aids like film projector, slide projector, and super 8 mm. film projector could not be frequently used in training programmes due to lack of skills in operating them by subject matter specialists. There for the situation demands the necessity to provide training cum workshop on audio visual aids to these specialists.

The teaching materials produced for population education would help the adult learners to develop critical awareness and insight into the population situation, leading to a sense of direction, participation and fulfilment in individual as well as national development (Sunita, and Nalina, 1992).

Vijayalakshmi *et al.* (1992) proved that the level of technicality. method of presentation and visual aids should be carefully mixed with the delivery of lessons to make it more effective.

The indirect effects of media portrayal are of crucial importance because they help to determine the health and social concerns of people and society, colouring one's perceptions of reality and thus influencing the over all ideology and attitude to life and death. The health community has lot to learn from the media (Lisberg, 1993).

Biradar and Sundaraswamy (1998) reported that video show could be able to provide more intense experience than the only words could in lecture method.

The recommendations of the proceedings of the National conference on environmental hysiene and promotional initiatives (1994) revealed that the IEC materials should be designed carefully and very effectively. Apart from accuracy of messages delivered, they should be made attractive, colourful and culturally acceptable. The materials should also be made to last for consdierable time and should not get soiled easily. For maximum effectiveness the media have to be used in a co-ordinated and mutually reinforcing manner.

The impact of nutrition education imparted through a combination of media to rural mothers in Pantnagar labour colonies revealed that a combination of media viz, posters, slides, flip books; booklets, charts, flags, lectures and individual contacts helped the rural mothers to grasp information and change their attitude towards favourable side (Goel and Annamma, 1998).

A study conducted by Philip *et al.* (1998) revealed that interview with 2 Dimentional and 3 Dimentional visuals had resulted in maximum knowledge gain and knowledge retention.

Meenambigai and Ravichandran (1999) in their study on preference of farm women towards the components of farm programmes and publications reveals that radio, television and printed media play an important role in the dissemination of farm technologies.

A study aimed to find out the factors influencing the urban and rural women as their radio listening behaviour reveals that radio programmes are

not reaching adequately to the rural women of higher age group and having low print media participation (Patil *et al.*, 1999).

Philip *et al.* (1999) reported that to prove the old proverb, 'one picture is worth of thousand words', efforts are needed in using visuals appropriately, suitably, timely, clearly and cogently in video programme production.

Viswanathan *et al.* (1999) pointed out that with all the advantages, video can serve as an effective training tool in extension programmes to impart knowledge to the farmers as well as extension workers.

Through the use of information technology, we can create awareness on agriculture technology, processing technology, food regulations, marketing and socio-economic implications (Varadaraj, 1999).

A. Gain in knowledge

Chittamma (1978) reported that non-formal nutrition education imparted to rural illiterate mothers improved their nutritional knowledge on food and nutrient intake of the family and young children.

Chandrakandan (1980) established that radio listening behaviour had significant influence on knowledge gain of farmer listeners.

Extension studies have shown that the more teaching methods used, the higher the percentage of people changing their practices (Cole, 1981).

According to Rajammal *et al.* (1984) nutrition education imparted through the school curriculum and lunch programme had a significant higher beneficial effect than when imparted through the curriculum alone.

A study conducted by Siddaramaiah and Rajanna (1984) indicated that the gain in knowledge of the respondent was due to their exposure to various communication methods.

Selvaraj and Knight (1985) reported that mass media participation had no significant influence on the gain in knowledge.

Evaluation of educational programme was conducted to popularise ORS as a preventive measure to reduce diarrhoea and the results of education indicated that there was increase in the knowledge of mothers with regard to the treatment and prevention of diarrhoea (Gincy, 1987).

Malavia and Verma (1987) revealed that size of family as well as type of family had least significant influence on the gain in knowledge.

The finding of Singh and Verma (1987) reveals that there was significant gain in knowledge for the simple and complex messages after the exposure through the slide stories.

Minnie (1988) reported that drama was found to be most effective in gaining knowledge immediately after exposure.

An experimental study of Santhoshkumar (1990) revealed that slides had the maximum effect in combination with lecture in terms of gain in knowledge.

Singh (1995) reported that there was significant difference in gain in knowledge of the tribal women exposed to nutrition education training.

According to Biradar and Sundraswamy (1998) the knowledge gain was doubled by the combination of pamphlet + video show as compared to knowledge gain by lecture method alone. This findings supports the axiom one picture worth a thousand words and seeing is believing.

A study conducted by Jaya *et al.* (1998) revealed that the distant education programme was effective in terms of gain in knowledge. From the discussions it is revealed that characteristics like educational qualification, mass media participation attitude towards farm broad casts and scientific orientation on the farmers have significant role in the knowledge gain.

Philip *et al.* (1998) pointed out that higher farm size and mass media exposure should have facilitated the viewers to search for the new technology and this resulted in high knowledge gain.

A study on the effectiveness of video programmes among different age educational groups by Philip *et al.* (1999) shows that Age-group up to 35 Y with higher education may be concentrated while using video for dissemination of technologies in agriculture.

B. Retention in knowledge

Chandrakandan (1982) found urban contact of farmers to have significant influence on their retention of knowledge.

According to Pathak and Shan (1984) purely oral methods posing the problem of retention.

A study conducted by Malavia and Verma (1987) revealed that the retention of knowledge was low and which might be due to simple exposure given to the respondents through different media combinations. And the size and type of family had most significant influence on the retention of knowledge regarding improved home practices.

It was found that among the three visual aids used in the study, flashcards combined with lecture had the maximum combination in retention of knowledge of neo-literate respondents (Santhoshkumar, 1990).

Selvaraj (1990) found out that more than half of the information was found to be retained up to 15 days.

At the retention stage, significant gain in knowledge was reported over a time interval of 15 days (Singh ,1995).

All education efforts aim at learning which can be recalled and transferred to new situations. The knowledge gained just after the exposure of media is no doubt important, but what is more important is the amount of knowledge retained after lapse of time after the exposure (Biradar and Sundaraswamy, 1998).

Video show + discussion facilitated for more knowledge retention than video show alone (Biradar and Sundaraswamy, 1998).

A study on the effectiveness of visuals in teaching shows that the respondents of age group up to 35 years with higher education were found to have more knowledge gain, knowledge retention, skill acquisition and symbolic adoption (Philip *et al.*, 1999).

C. Adoption of the gained knowledge

According to Ramnath (1980) highly significant variation in the adoption of child health care practices due to maternal education and family income were observed.

A work conducted by Rajammal *et al.* (1982) revealed that rural women adopted desirable health practices as a result of their exposure to the education programmes.

Neelma (1996) found that significant positive relationship between maternal education and adoption of child health, physical and socio emotional development were observed.

Kunwar *et al.* (1998) reported that highly significant variation in adoption of child health care practices due to maternal education and family income were observed.

According to Philip *et al.* (1998) higher the value orientation, economic motivation and mass media exposure, higher would be the knowledge gain as well as adoption.

2.5 Association of independent variables with dependent variables

The age, family size, type of family, family income, mass media participation, dietary practices and health profile were considered as independent variables and their association with knowledge gain, retention and adoption were presented here.

Somasundaram and Singh (1979) found significant correlation between knowledge gain and income in case of adoptors.

According to Ramnath (1980) of all the socio-economic factors, income of the family and maternal educational status had more influence on adoption of the health care practices of child.

Chandrakandan (1982) stated that young farmers could gain and retain more knowledge than middle aged and old farmers.

Rajanna (1982) found that there is no influence of family size on the effects of media treatments in increasing over all knowledge.

Bhatanagar and Singal (1984) observed the significant effect of age, caste, type of family and education on the knowledge of respondents. Younger women possessed more knowledge about health and nutrition. They also supported the results that the increase in knowledge of respondents was highly effected by their educational status.

In a field experiment where mix media effectiveness was tested, by Malavia *et al.* (1986) observed that size of the family had its influence for the retention of knowledge regarding improved home practices.

Malavia and Verma (1987) revealed that size of family as well as type of family had least significant influence on the gain in knowledge where as the size and type of family had most significant influence for the retention of knowledge regarding improved home practices.

A study conducted by Aneja *et al.* (1988) revealed that age and education of respondents have significant association with the knowledge regarding health.

Kaur and Narwal (1988) reported that age of mother, education, caste, family type, social participation, occupation, knowledge and attitude towards immunization were found to be significantly associated with the adoption of immunization.

Mukhopadhya and Achar (1992) reported that early supplimentation of breast milk was a common practice among educated mothers.

A higher maternal education level is related to higher awareness and adoption of better health measures. Mothers with low educational level were found to have less knowledge about various health care practices and did not take proper health measures (Otta, 1992).

Singh (1992) identified from their study that common factors for non-immunization were illiteracy, ignorance, indifference, social beliefs and customs and discrimination against female children and not poverty.

Benjamin and Zachariah (1993) conducted a study of under three years in Ludhiana. Sex, birth order, number of siblings, education level of mother

and family income were the factors found to be associated with childhood malnutrition.

Dhanalakshmi and Murthy (1993) revealed that the infant and child morbidity was mostly influenced by the size of the household, type of family, occupation of the husband and surviving children.

Gajanan (1993) revealed that literate mothers belonging to the higher socio-economic status had better knowledge regarding dietary requirements during lactation is compared to the illiterate and economically poor women.

Neeraja (1993) in her study found significant association between mother's education, awareness and immunization status of under five children.

Daral *et al.* (1995) reported that low economic status, poor environmental hysiene coupled with lack of health education in mothers may contribute to a higher incidence of diarrhoea.

Kunwar *et al.* (1998) reported that the important determinants of child health is the socio economic status of the family especially income of the family and maternal education.

MATERIALS AND METHODS

3. MATERIALS AND METHODS

The study on 'The impact of educational programmes on the health and dietary practices of the workers of sewage farm in Thiruvananthapuram corporation is an assessment of the impact of educational programmes on the knowledge gain, retention and adoption practices of the respondents on health, hygiene and dietary practices and also to find out the comparative effectiveness of the selected teaching methods. This chapter deals with the materials used in this study and also the methodology followed. All these are presented under the following sub- heads.

3.1 Locale of study

3.2 Selection of respondents

3.3 Research design

3.4 Evaluation of the education programme

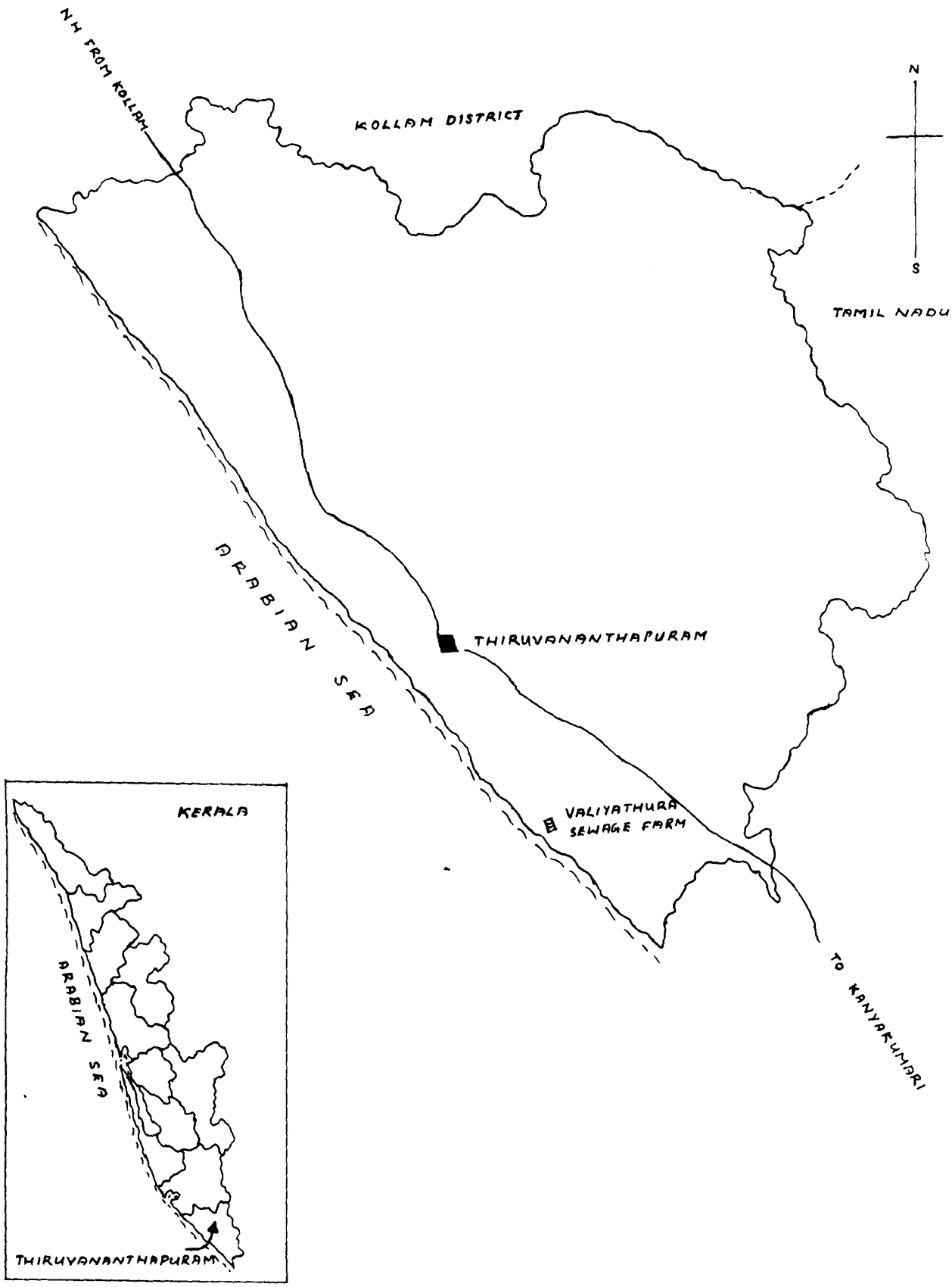
3.5 Selection of variables and their measurements

3.6 Statistical tools used

3.1 Locale of study

Valiathura ward in Thiruvananthapuram corporation where the sewage farm is situated will be purposively selected for the study. Thiruvananthapuram corporation encompasses an area of 74.93 sq. km having 50 administrative wards including Valiathura, where the sewage farm is located. The selection process was done with the active involvement and help of the officers of the sewage farm development office in Valiathura.

Fig. 1 MAP OF THIRUVANANTHAPURAM DISTRICT SHOWING THE STUDY AREA



The sewage farm at Valiathura is of a very old design having been constructed about thirty four years ago. The area in which the fodder grass in grown in the sewage farm is infested with poisonous snakes and other reptiles. The workers are exposed to the risk of bitten by these reptiles. Due to stagnation of sewage water in the fodder fields, the workers cutting the fodder grass come into contact with the sewage and often suffer from skin irritation. (Proceeding of National conference on Environmental Hygiene and Promotional Initiatives, 1994). Most of the selected respondents were residing in the colony located near the banks of Parvathi Puthanar. Adequate ventilation facilities were absent in most of the respondent's house.

The present conditions of sewage farm as well as the indiscriminate discharge of waste water to Parvathi Puthanar do cause health problems, not only to the farm workers, but also to the people residing in nearby hutments. Taking all these into consideration, this area was selected for the present study.

3.2 Selection of respondents

As the first stage hundred families of the sewage farm workers belonging to Parvathi Puthanar area was selected randomly for conducting the base line survey.

For the collection of baseline informations a structured interview schedule was prepared and is presented in Appendix I, II and III. Bass *et al.* (1979) reported that interview method is most suitable since it proceeds systematically and records the collected information quickly.

In the second stage 56 women sewage workers were selected randomly from the selected families and they were divided into four groups of 14 each which constitutes the experimental group. One control group was formed by including the female from the families of male sewage workers selected for the first stage survey.

3.3 Research design

To find out the effectiveness of teaching methods in combination with visual aids in terms of gain in knowledge, retention of knowledge and adoption of gained knowledge, the experimental design adopted by Santhoshkumar (1990) with slight modification was used.

The experiment was conducted in two stages, household survey was conducted in hundred families of sewage workers to delineate their problems and the knowledge on health, hygiene and dietary practice. Based on the results of the survey the message for the experimental study was formulated. Accordingly four topics viz., balanced diet, deficiency diseases, environmental sanitation and diarrhoea – reasons and remedies were identified to be included as subjects selected for the study purpose.

In the second stage 56 female sewage workers were selected at random from the families identified from conducting the first stage survey and four groups of sewage workers were formed. Each group consisted of 14 female workers. In addition to this one control group was also selected. This group consisted of females selected only from the male sewage worker's family.

The treatments of experiment are :

T_1 - Lecture method

T_2 - Lecture + flash cards

T_3 - Lecture + slide

T_4 - Combination of all

In the first group all the four topics will be taught using the treatment 1 (T_1), in the second group treatment 2 (T_2), in the third group treatment 3 (T_3) and in group four treatment 4 (T_4) and was presented below.

Group	Treatments	Topics
1	Lecture alone (T_1)	Balanced diet, deficiency diseases, environmental sanitation and diarrhoea-reasons and remedies
2	Lecture + flash cards (T_2)	"
3	Lecture + slide (T_3)	"
4	Combination of all (T_4)	"

Experimental design

Before	After		
Y_1 Pre-test	Y_2 Post-test	Y_3 Retention	Y_4 Adoption of gained knowledge

Where

Y_1 - Level of knowledge of the experimental group prior to particular teaching programme.

Y_2 - Level of knowledge of the experimental group immediately after the teaching programme.

Y_3 - Level of knowledge of the experimental group 15 days after the teaching programme.

Y_4 - Level of adoption practices 1 month after the teaching programme.

Care was also taken to see that the audience could get a clear view of the visual aids used. To enable these there was a time gap between the projection of two slides or two flashcards. In order to enable the respondents to have a closer view, the flashcards were also taken around the participants.

Before the actual conduct of the experiment, a detailed plan of schedule and an experimental design were prepared by the researcher. The schedule and design of the experiment were finalised after discussion with the local leaders, superintendent and other farm officers in the sewage farm, Valiathura.

With the help of the officers in sewage farm and health workers of the area, the researcher explained the purpose of this study to the workers of sewage farm well in advance. This helped to build a rapport with the group.

The date, time and venue for conducting the experiment in each of the group were finalised in consultation with the groups to suit their convenience. Each experimental group were given necessary instructions before the commencement of the experiment.

An objective type knowledge test containing 15 to 18 questions under each subtopic was prepared and administered before and immediately after the exposure of the stimuli, to assess the gain in knowledge. This interview schedule is presented in Appendix IV.

To measure the retention of knowledge the same test was administered fifteen days after the exposure.

The questions as well as their answer choice were read out by the researcher to enable easy marking of responses by the respondents. In order to facilitate easy answering by the respondents the questions got stenciled in bold letters with sufficient space in between lines.

A check list was prepared based on the topics taught to the respondents and it is presented in Appendix V, and their adoption practices were listed for non participant observation.

Based on the knowledge on health, hygiene and dietary practices of the respondents, obtained from the base line survey, education modules were prepared. From the survey it was clear that nutritional deficiency and lack of environmental sanitation and personal hygiene were the major problems of that area and hence the topic chosen for education module was on human nutrition. This was again subdivided into four groups, viz., balanced diet, deficiency diseases, environmental sanitation and diarrhoea reasons and remedies. All these topics were referred in detail by the researcher and the education module was prepared on simple language, easily understandable by the respondent.

Preparation of visual aids for different treatment

The relevant information on various subtopics under the main topic of human nutrition was collected from textbooks, reports, pamphlets and other publication of universities and Directorate of Health Service, Kerala. The information thus collected was processed and prepared into lecture script for each subtopic in vernacular language and flash cards and slides were prepared.

1. Flash cards

Key points in the lecture note were identified and flash cards of standard size with suitable illustrations were prepared as a visual aid for the experiment. For each topic there were 7 flash cards.

2. Slides

Sets of colour slides on each subtopic were produced from Directorate of Health Service, Thiruvananthapuram and prepared fresh slides also. These slides were previewed and arranged in a logical sequence so as to supplement the subject matter included in the lecture note. There were eight slides for each topic.

Suitable modifications were made in the lecture script to suit the presentation of flash cards and slides, when they were combined with lecture without deleting any key points included in the lecture script.

Before presenting the different treatments to the experimental group the researcher has rehearsed the same before the staff and students in the Department of Home Science and necessary modification were made in the mode of presentation.

Plate 1. Lecture class

Plate 2. Lecture class aided with flash cards

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Plate 3. Lecture class combined with flash cards and sides

3.4 Evaluation of educational programmes

The impact of educational programmes were evaluated by selecting the score values obtained in pre-test, post-test and retention of knowledge and also adoption of gained knowledge. To find this, appropriate statistical tools were used.

3.5 Selection of variables and their measurements

The study aimed at finding out the impact of educational programmes on the health & dietary practices of the workers of sewage farm and also to find out the relative effectiveness of different visual aids in terms of (1) gain in knowledge (2) retention of knowledge and (3) adoption of gained knowledge. Thus these three variables, gain in knowledge, retention of knowledge and adoption of gained knowledge were considered as the dependent variables of the study.

Based on the literature reviewed and discussions with experts, those socio-economic and personal characteristics which expected to have relationship with the selected dependent variables were selected.

Measurement of the selected dependent and independent variables

A. Dependent variables

Gain in Knowledge

For the measurement of gain in knowledge through various treatments, a simple teacher made objective type test was constructed following the procedure adopted by Santhoshkumar (1990) with slight modifications. Care

was taken to ensure that the questions covered the entire range of subject matter selected for the study.

The tests were pre-tested with a group of workers in a non-study area in order to avoid ambiguities and duplication as well as to help to edit some of the relevant questions. After this process 18 questions on balanced diet, 16 questions each for deficiency diseases and diarrhoea – reasons and remedies and 15 questions for environmental sanitation were finally selected for the purpose of this study. The response were collected in a diatomous pattern i.e., true or false. Each correct response was given a score of one and the incorrect response was given a score of zero. The total score for each respondent were obtained by summing up the correct responses. The possible score of this test ranged from a minimum of zero to a maximum of 18 to first topic i.e., balanced diet, 16 to deficiency diseases, 15 to environmental sanitation and 16 to diarrhoea - reasons and remedies.

The knowledge test was administered to the respondents.

(1) before the treatment- (pre-test)

(2) Immediately after the treatment (post-test)

The difference in the knowledge score of respondents between pretest and post-test indicated a measure of gain in knowledge.

Gain in knowledge was computed as percentage of net gain in knowledge over the total possible knowledge for the respondent on the test, using the following formula.

$$\text{Percentage gain in knowledge} = \frac{t_1 - t_0}{t} \times 100$$

where

t_0 – Pre-test knowledge score

t_1 – Post-test knowledge score

t - Total possible score.

The percentage gain in knowledge for each respondent was obtained and the mean score was arrived at for the respondents based on which further analysis has been done.

b. Retention of Knowledge

Retention of knowledge is the amount of knowledge retained by an individual on a particular topic after a reasonable period of time as a result of the four treatments.

The same teacher made test prepared for assessing the gain in knowledge was applied here also, but with a gap of 15 days after the exposure to such stimulation. This test is indicated as the post delay test.

Retention of knowledge was computed by deducting percentage of loss of knowledge due to post delayed test from the percentage of net knowledge gained using the formulae.

Retention of Knowledge = Percentage gain in knowledge- percentage loss of knowledge due to post delay test.

Percent loss of knowledge due to post delay test was computed as follows.

$$\text{Per cent knowledge lost} = \frac{t_1 - t_2}{t} \times 100$$

where

t_1 - Post test knowledge score

t_2 - Retention score

t - total possible score.

c. Adoption of gained knowledge

For the measurement of the level of adoption of health, hygiene and dietary practices, a check list was formulated including all the subjects that respondents were exposed. Based on this checklist the researcher had made a non-participant observation, before the treatments and the score values are compared with the observation score that were taken after the treatment. The cheek list is presented in Appendix V.

The non-participant observation was administered to the respondents.

(1) Before the treatment (pre-test) T_1

(2) One month after the treatment (post-test) T_2

The difference in the adoption level of respondents between pre-test and post-test indicated a measure of adoption of the gained knowledge.

$$\text{Percentage of knowledge adopted} = \frac{T_2 - T_1}{T} \times 100$$

Where,

T_1- Pretest adoption score

T_2- Post adoption score

T- Total possible score

B. Independent variables

a. Age :- Age of the respondent was measured as the number of completed years at the time of conducting the study. Mean age was computed and based on mean and standard deviation the respondents were categorized into young, middle and old aged groups.

b. Family size:- The size of the family refers to the total number of individuals being the members of the family of each of the respondent. The members themselves will be the numerical values against each respondent in the case of these variables.

Based on mean and standard deviation the respondents were categorized into those belonging to small, medium and big families.

c. Type of family:- Based on the composition of the family, it was classified into joint or nuclear type.

d. Annual income :- The average annual income of the family as expressed by the respondent was taken into account for measuring this variable. The average monthly income of the respondent and other family members were collected and it was multiplied by the number of months in a year to obtain their average annual income.

e. Educational status of respondent

It is defined as the level of formal education attained by the respondents. To measure the educational status of the respondent, the level of education was coded in to five classes ie, illiterate, lower primary, upper primary, high school and college level of education and the scores given was zero to five respectively. And based on this the respondents were categorized into illiterate or literate.

f. Educational status of the family

The educational status of the family was measured by separating the adult's and children's educational status. They were again classified into male and female and the education level was divided into illiterate, lower primary, upper primary, high school and college level education and each of them were distributed under different category depending on their educational status.

g. Mass media contact

Mass media contact is defined as the extent to which a rural women is exposed to different mass media communications such as radio, newspaper, television etc. (Jayalekshmi, 1996).

In the present study mass media contact was measured by using an arbitrary scale developed for the study. The respondents were asked whether they have contact with the various mass media and the following scoring procedure were adopted.

Yes = 1

No = 0

If 'Yes' to indicate the frequency, the following scoring procedure was adopted.

Always = 2

Occasionally = 1

The score obtained for each item was summed up to arrive at the individual total score for mass media contact.

3.6 Statistical tools used

The following statistical tools were used in the analysis of the data.

a. Frequency of percentage

Some of the data are subjected to and interpreted in terms of frequency and percentages.

b. Mean

The arithmetic mean (x) is the quotient that results from when sum of all items in the series is divided by the number of items. The formula interms of symbol is

$$\bar{x} = \frac{\Sigma x}{N}$$ where, $\bar{x}$ - Mean; Σx - Sum of individual items; N - Number of items

c. Standard deviation (S.D)

The standard deviation was found out by taking the differences of each item in the series from the arithmetic mean, squaring these differences summing all the squared differences dividing by the number of items and then extracting the square root. The formula interms of symbol

$$S.D = \frac{\Sigma x^2}{N}$$ where S.D - Standard deviation; Σx^2 - Sum of the squared deviations from the mean; N - Number of items

d. Analysis of variance (ANOVA) was used for determining the variances of treatment in their effect on the dependent variables.

e. The critical difference (C.D.) was used to ascertain the significant difference between and among the different treatments.

The CD was computed by using the formula

$$C.D. = \frac{2\ MSE}{V.\gamma}$$ where

MSE = mean squared error

V- Number of treatments.

γ - Number of replications.

f. Simple correlations (r) were computed to find out the relationship between the various independent variables and the dependent variables and also to study the inter- relationship among the various independent variable.

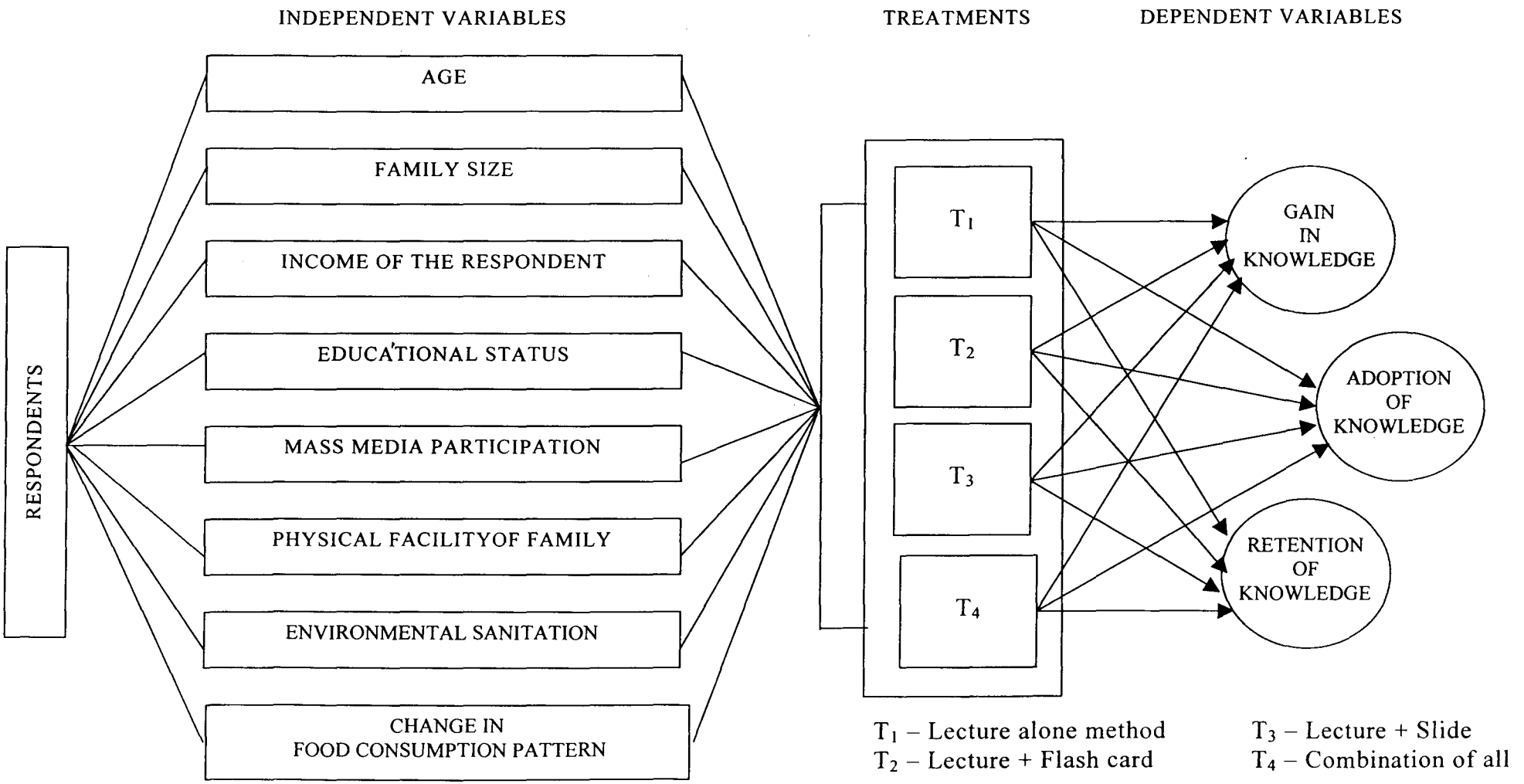
g. Chi square test was used to find out any difference or discrepancy between the theoretical values and observed values of the experiment.

General hypothesis for the study

The following general hypothesis were formulated keeping in view the objective of the study,

- There would not be any significant difference in gain in knowledge among different groups.
- There would not be any significant difference between different treatments with respect to their effect on gain in knowledge among different groups of women sewage farm workers.
- There would not be any significant difference among different dependent variables selected for the study purpose.
- There would not be any significant relationship between the dependent variables selected for the study purpose and the independent variables.
- There would not be any significant relationship among different groups with respect to retention of knowledge.
- There would not be any significant difference between different groups with respect to adoption of knowledge.

Fig. 2 CONCEPTUAL MODEL OF THE STUDY



RESULTS

4. RESULTS

The main objective of the study is to evaluate the impact of educational programmes on the knowledge and adoption of health and dietary practices by the workers of sewage farm in Thiruvananthapuram and the comparative effectiveness of the selected teaching methods. Keeping these objectives in view, the data collected from the large sample (100 respondent) and the sub sample (56 women sewage farm workers) were analysed and the results of the experimental study are presented under the following heads.

4.1 Distribution of the respondents based on their socio-economic and personal characteristics.

4.2 Association among and between the selected socio-economic variables and other variables.

4.3 Correlation between the percentage of over all knowledge gain, retention and adoption with the selected independent variables.

4.4 Inter-correlation between selected socio economic variables and other variables.

4.5 Effectiveness of the educational programmes on the gain in knowledge and retention in knowledge on health, hygiene and dietary practices by the respondent.

4.6 The comparative effectiveness of the selected teaching methods in gain in knowledge and retention on health, hygiene and dietary practices.

4.7 Effectiveness of educational programmes on the adoption of health, hygiene and dietary practices by the respondent.

4.8 Comparative effectiveness of selected teaching methods in the adoption of knowledge on health, hygiene and dietary practices.

4.1 Distribution of the respondents based on their socio economic and personal characteristics

The Socio-economic profile of the selected hundreds families engaged in sewage farm works were studied with reference to their religion, caste, sex, age, family size. type of family, annual income, educational status of the family, mass media contract, monthly expenditure, physical facility, change in food consumption pattern on various physiological conditions, environmental sanitary conditions around the house and health profile. This distributions were presented in Table 1.

4.1.1 Religion

Majority of the respondents (66%) were belonging to Hindu and the remaining 44 per cent belonging to Christian community. The number of Muslim were zero.

4.1.2 Caste

The caste wise distribution of the respondents depicted in the Table 1 showed that majority of the respondents (76 per cent) were belonged to SC/ST category and 23 per cent of the respondents were in OBC. While the remaining only 1 per cent belonged to forward caste i.e., Nair community.

Table 1 Percentage distribution of the respondents based on their socio-economic and personal characteristics

N = 100

Sl. No.	Variables	Category	Score range	Percentage of respondents
1.	Religion	Hindu	1	66
		Christian	2	44
		Muslim	3	0
2.	Caste	Backward	1	76
		OBC	2	23
		Forward	3	1
3.	Sex	Female	1	56
		Male	2	44
4.	Age	Young	<25	5
		Middle aged	25-55	93
		Old	>55	2
5.	Family size	Small	1 – 5	77
		Medium	5 – 8	21
		Large	>8	2
6.	Type of family	Joint	1	29
		Nuclear	2	71
7.	Land holdings	Low	<5	75
		Medium	5 – 25	23
		High	>25	2
8.	Family income	Low	<5000	34
		Medium	5000-10000	74
		High	>10000	2
9.	Educational status of the respondents	Illiterate	0	24
		L.P.	1	35
		U.P.	2	20
		High School	3	20
		College	4	1
10.	Educational status of family			
10.1	Adult male	Illiterate	0	25
		L.P.	1	32
		U.P.	2	35.63
		High School	3	33.3
		College	4	28.36

Table 1 Contd...

10.2	Adult female	Illiterate	0	55
		L.P.	1	40
		U.P.	2	48.27
		High School	3	41.23
		College	4	37
				31
10.3	Male children	Illiterate	0	8
		L.P.	1	12
		U.P.	2	6.89
		High School	3	9.64
		College	4	17.92
10.4	Female children	Illiterate	0	12
		L.P.	1	16
		U.P.	2	9.19
		High School	3	15.78
		College	4	16.41
11.	Mass media participation	Low	<7	39
		Medium	7 – 12	46
		High	>12	15
12.	Total physical facility	Low	<20	30
		Medium	20 – 25	64
		High	>25	6
13.	Food habit of the family	Vegetarian	1	2
		Non-vegetarian	2	98
14.	Environmental sanitary conditions around the house	Low	1 – 4	71
		Medium	4 – 8	29
		High	>8	0

4.1.3 Sex

As depicted in Table 1, majority of the respondents (56 per cent) were females and the remaining 44 per cent were males.

4.1.4 Age

Table 1 revealed that majority of the respondents (93%) belonged to middle aged category. Of the remaining, 5 per cent belonged to young and 2 per cent belonged to the old age category.

4.1.5 Family size

The majority (77 per cent) of the respondents had 1 to 5 members in their family. The average number of members in the family was 4.8 and 21 per cent of the respondents had 5 to 8 members in their family and the remaining 2 per cent had more than 8 members.

4.1.6 Type of family

The table revealed that majority (71%) of the respondents had nuclear family and the remaining 29 per cent had joint family.

4.1.7 Land holdings

Information related to the distribution of the families with respect to land holdings in Table 1 revealed that 75 per cent of families had around 5 cents of land, around their homes while 21 per cent families had 6-10 cents of land around their homes and two per cent of the families possess land holding

ranging between 11-26 cents. Only two per cent of the respondents were having more than 25 cents.

4.1.8 Total family income

Majority of the respondents (74 per cent) belonged to the middle income group 34 per cent of the respondent belonged to the low income group and the remaining 2 per cent belonged to high income group. The average monthly income of the family was 5279.1.

4.1.9 Educational status of the respondent

Out of the 100 respondents selected 24 per cent were illiterate 35 per cent had lower primary education, 20 per cent with upper primary education 20 per cent with high school and the remaining 1 per cent had college level of education.

4.1.10 Educational status of the family

The total number of family members of the 100 families surveyed were 493 and their educational status as revealed in the Table 1, 20.28 per cent of the adult population were illiterate. Based on their educational status, women were deserved to be more qualified than men. Among adults, only 23.12 per cent had high school education and 13.59 per cent had college level education. Among children most of them are school going and female children were having higher level of education.

4.1.11 Mass media contact

The distribution of the respondents according to their exposure to information source viz., mass media participation presented in Table 1, revealed that 46 per cent of the respondents were having medium level of exposure to information sources and thirty nine percentage were having low level of exposure (39 per cent) and the remaining had high level of exposure.

4.1.12 Physical facility

Table 1 showed that most of the respondents (64 per cent) physical facility available in and around the house were medium, 30 per cent of the respondents physical facility were low and 6 per cent of the respondents physical facility were high.

4.1.13 Monthly expenditure

The distribution of respondents based on their monthly expenditure on various house hold and personal articles were given in Table 2 and it revealed that majority of the respondents spent their income for the purchase of food items. 41 per cent of the respondents spent Rs. above 2000 for food materials. The expenditure for water, fuel and recreations were found to be very low.

4.1.14 Dietary habits and food consumption pattern of the respondents

The food consumption pattern of the families were assessed with regard to the dietary practices of the families, food expenditure pattern and frequency of use of various food stuffs.

Table 2 Percentage distribution of the monthly expenditure pattern

Sl. No	Items	Expenditure (Amount in Rs.)													
		0		1-100		100-500		500-1000		1000-1500		1500-2000		> 2000	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	Food	-	-	-	-	-	-	6	6	41	41	34	34	19	19
2	Clothing	-	-	29	29	61	61	9	9	1	1	-	-	-	-
3	Housing	65	65	25	25	8	8	2	2	-	-	-	-	-	-
4	Education	38	38	12	12	47	47	3	3	-	-	-	-	-	-
5	Health	19	19	42	42	31	31	-	-	-	-	-	-	-	-
6	Traveling	16	16	47	47	37	37	-	-	-	-	-	-	-	-
7	Recreation	84	84	8	8	7	7	1	1	-	-	-	-	-	-
8	Fuel	89	89	9	9	2	2	-	-	-	-	-	-	-	-
9	Water	92	92	7	7	1	1	-	-	-	-	-	-	-	-
10	Electricity	18	18	75	75	7	7	-	-	-	-	-	-	-	-
11	Gifts	27	27	25	25	44	44	4	4	-	-	-	-	-	-
12	Festivals/ occasions	25	25	42	42	30	30	3	3	-	-	-	-	-	-
13	Savings/ Miscella-neous	62	62	20	20	18	18	-	-	-	-	-	-	-	-

Table 3 Monthly food expenditure pattern of the family

Total income ↓	cereals			Pulses			Green leafy vegetables			Other vegetables			Roots and tubers			Fruits			Nuts and oil seeds			Milk and milk products		
Percentage →	≤ 10	10-20	> 20	≤ 4	4 - 8	> 8	≤ 1	1 - 2	> 2	≤ 5	5 - 10	> 10	≤ 2	2 - 4	> 4	≤ 2	2 - 5	> 5	≤ 2	2 - 4	> 4	≤ 4	4 - 8	> 4
≤ 5000	4	28	2	17	16	1	16	8	10	18	15	1	25	8	1	17	12	5	7	25	2	34	15	1
5000 - 7500	28	31	-	48	11	-	50	9	-	54	5	-	56	2	1	58	7	-	43	16	-	27	21	-
> 7500	7	-	-	6	1	-	7	-	-	7	-	-	7	-	-	7	-	-	6	1	-	-	1	1
Total	39	59	2	71	28	1	73	17	10	79	20	1	88	10	2	82	19	5	56	42	2	61	37	2

Total income ↓	Fats and oils			Sugar and jaggery			Animal foods			Beverages			Spices and condiments			Processed foods			Total food expenditure (%)			Total family's expenditure			
Percentage →	≤ 2	2 - 4	> 4	≤ 3	3 - 6	> 6	≤ 5	5 - 10	> 10	≤ 1	1 - 2	> 2	≤ 5	5 - 10	> 10	≤ 2	2 - 4	> 4	≤ 25	25 - 50	> 50	≤ 1000	1000 - 2000	2000 - 3000	> 2000
≤ 5000	6	23	5	18	13	3	13	16	5	12	15	7	21	15	1	25	5	4	0	7	27	0	17	17	0
5000 - 7500	42	16	1	54	5	5	36	22	1	32	24	3	49	5	-	53	6	-	2	49	8	1	19	34	5
> 7500	7	-	-	7	-	0	6	1	-	6	1	-	4	5	-	6	1	-	4	3	-	0	3	2	2
Total	55	39	6	79	18	8	55	39	6	50	40	10	74	25	1	84	12	4	6	59	35	1	39	53	7

4.1.14 a Food habit of the family

Food habits of all the families surveyed are presented in Table 1 and it reveals that, 98 per cent of them were non-vegetarians and the remaining 2 per cent were vegetarians. Though they were branded as non-vegetarians, it was observed that the consumption of fish was very high among the families surveyed and they were found to consume other non-vegetarians food items occasionally.

4.1.14 b Monthly expenditure on food

The total food expenditure pattern of the families in Table 3 shows that 6 percent of the families spent less than 25 percent of their income for food. 59 percent of the families spent 25-50 percent of their income for food and 35 per cent of families spent more than 50 per cent of their total income for food.

Fifty nine percent of the respondents spent 10-20 percent of the income for cereals 71 per cent of the respondents spent less than 4 per cent of income for the purchase of pulses. Seventy three per cent of the respondents spent less than one percent of their income for the purchase of green leafy vegetables. Seventy nine per cent of the respondents spent 45 per cent of their income for the purchase of other vegetables while 88 per cent spent below 5 per cent of their income for the purchase of other vegetables. The percentage of income spent for the purchase of fruits were found to be very meager i.e., below 2 per cent by 76 per cent of the families. Fifty six per cent of the respondents spent about 2 per cent of their income for the purchase of nuts and oil seeds, where as 55 per cent spent less than 2 per cent of their income

Table 4 Frequency of use of various food items

Frequency of use →	Daily (5)		Thrice in a week (4)		Twice in a week (2)		Once in a week(2)		Occasionally (1)		Never (0)	
Food items ↓	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Cereals	100	100		-	-	-	-	-	-	-	-	-
Pulses	16	16	20	20	38	38	19	19	7	7	-	-
Green leafy vegetables	4	4	7	7	16	16	42	42	15	15	1	1
Other vegetables	84	84	7	7	6	6	2	2	1	1	-	-
Roots and tubers	7	7	7	7	20	20	35	35	31	31	-	-
Fruits	4	4	6	6	18	18	24	35	32	31	16	16
Nuts and oil seeds	94	94	-	-	1	1	-	-	2	2	2	2
Milk and milk products	83	83	1	1	1	1	2	2	3	3	10	10
Fats and oils	99	99	-	-	-	-	-	-	1	1	-	-
Sugar and jaggary	100	100	-	-	-	-	-	-	-	-	-	-
Animal foods (meat, fish and egg)	85	85	3	3	1	1	4	4	5	5	2	2
Beverages	99	99					1	1	-	-	-	-
Spices and condiments	100	100	-	-	-	-	-	-	-	-	-	-
Processed foods	5	5	2	2	4	4	19	19	29	29	41	41

for the purchase of fats and oils. The percentage of income incurred for milk and milk products were below 4 per cent by 61 per cent of the families and for animal foods 55 per cent of the families spent about 5 per cent of their income. The income spent for the purchase of sugar and jaggary was found to be less than 3 per cent by 79 per cent of the families, and for beverages 50 per cent families spent about 1 per cent of their income for the purchase of spices and condiments and below 2 per cent of the income was spent by 84 per cent of the respondents for the purchase of processed items.

4.1.14 c Frequency of use of various food items

Frequency of use of various food items by the respondents were assessed and the details are presented is the Table 4.

All the respondents included cereals, sugar and jaggery and spices and condiments in their daily diet and 99 per cent of the respondents consumed beverages and fats and oils daily. Seven per cent of them included pulses, roots and tubers and 16 per cent used pulses in their daily diet. Eighty four percentage of them consumed vegetables in their diet. The consumption of green leafy vegetables and fruits were very low and only four percentage of the respondents consumed green leafy vegetables and pulses in their daily diet.

4.1.15 Change in food consumption pattern during various physiological conditions

The distribution of the respondents based on their change in food habits during physiological conditions were presented in Table 5 under different sub heads.

Table 5 Distribution of respondents based on their change in food consumption pattern during various physiological conditions

Sl. No.	Changing pattern	Category and percentage of respondents			
		Pregnancy	Lactation	Infancy	Disease conditions
1.	Deficient	2	-	-	-
2.	No change	93	97	90	8
3.	Slightly desirable	3	1	2	77
4.	More desirable	2	3	8	15
Total		100	100	100	100

4.1.15 a Change in food habits on pregnancy

The Table 5 revealed that (92 per cent) of the respondents food consumption during pregnancy were same as that on normal days. But 2 per cent of the respondents diet was deficient and 3 per cent of the respondents have changed their food habits like including milk and green leafy vegetables in the diet. The remaining 2 per cent adopted more desirable changes like including milk, egg, green leafy vegetables, fruits and other health supplements in their daily diet.

4.1.15 b Change in food habits on lactation

Most of the respondents (97 per cent) were not having the habit of changing food pattern during lactation. One per cent of them changed their foods slightly during lactation while 3 per cent of the respondents had made more desirable changes in food habits during lactation.

4.1.15 c Changes in food habits on infancy

Table 5 revealed that 90 per cent of the respondents did not make any desirable change in food habits in infant foods while 8 per cent of the respondents made more desirable changes in infant foods and 2 per cent of them made slight modifications while preparing infant foods.

4.1.15 d Changes in food habits on diseased conditions

Majority of the respondents (77 per cent) made slight desirable changes, while preparing food for diseased persons. The most commonly adopted changes were changes in the consistency and avoiding spices. Fifteen per cent of the respondents adopted more desirable changes like change in consistency, avoid salt and spices, avoid fried foods and other foods which were difficult to digest. But 8 per cent of the respondents did not make any change in foods while preparing food for sick persons.

4.1.16 Environmental sanitary conditions around the house

The distribution of the respondents based on their environmental sanitary conditions are presented in Table 1 and it revealed that in and around the houses of majority of the respondents (71 per cent), environmental sanitary conditions were very poor and 29 per cent of the respondents were disserved to have better environmental sanitation conditions.

4.1.17 Health profile

Table 6 Percentage distribution of the personal and family health profile of respondents

Sl. No.	Variable	Category	Score range	Percentage of respondent
1.	Family health profile	Low	<3	35
		Medium	3 – 4	65
		High	>4	0
2.	Personal health profile	Low	<8	10
		Medium	8 – 10	75
		High	>10	15

4.1.17 a Family health profile

The family health profile of the respondents showed that 65 per cent of the respondents family health profile were average where as 35 per cent of the respondents family health profile were below normal. None had family health profile above average.

4.1.17 b. Personal health profile of the respondents

Distribution of the respondents based on their personnel health care, detailed in Table 6 showed that 75 per cent of the respondents were categorized as persons disserving medium level of personal health care practices while 15 per cent of the respondents as a high level of personal health care practices and 10 per cent in the lower level.

4.2 Association among and between socio economic variables and other variables

4.2 (1 & 2) Association of total family income and mass media participation with other variables

Association of total family income and mass media participation with other selected variables were analysed in the present study and the results were presented in Table 7 and 8.

The results presented in Table 7 shows that the total family income of the respondent had significant positive association with educational expenditure, change in food consumption pattern during various physiological conditions and the adoption of immunization schedule. Other selected characteristics of the respondents had no significant association with their total family income.

A glance at Table 8 indicates that the mass media participation of the respondents showed significant association with the age of the respondent, expenditure on education, health and for the purchase of gifts, possession of information sources, utilization of sources in general and also to improve health, contact with extension agencies and physical facility available in the family. No other variable was found to be significantly associated.

4.2.3 Association between expenditure on various food items and total family income

The results presented in Table 9 revealed that the total family income of the respondents had significant effect on the expenditure for green leafy vegetables, roots and tubers, fats and oils and processed foods.

Table 7 Association of total family income with other selected socio economic and personal characteristics

N = 100

Sl. No.	Characteristics	Chi square value
1.	Religion	2.86
2.	Income of respondent	3.54
3.	Expenditure on food	1.82
4.	Expenditure on clothing	0.51
5.	Expenditure on education	6.66*
6.	Expenditure on health	1.97
7.	Savings	1.06
8.	Mass media present	0.62
9.	Contact with extension agency	8.86
10.	Land holdings	4.76
11.	Change in food consumption on physiological conditions	6.43*
12.	Physical facility available	0.29
13.	Environmental sanitation	3.82
14.	Immunization taken	9.75*

* Significant at 5 per cent level

Table 8 Association of mass media participation with other characteristics

	Characteristics	Chi square value
1.	Religion	0.94
2.	Caste	0.99
3.	Family size	0.99
4.	Age of respondent	10.51*
5.	Income of respondent	0.18
6.	Food expenditure	0.33
7.	Educational expenditure	6.46*
8.	Health expenditure	13.83*
9.	Expenditure for electricity	4.66
10.	Expenditure for festivals and occasions	7.37
11.	Expenditure for gifts	11.19*
12.	Mass media present	44.32*
13.	Mass media utilising	44.77*
14.	Mass media related to health	14.81
15.	Contact with extension agency	20.40*
16.	Physical facility available	13.53*
17.	Change in food consumption on physiological conditions	0.74
18.	Environmental sanitation	7.45
19.	Immunization	3.68

* Significant at 5 per cent level

Table 9 Association between family income and expenditure on various food items

Sl. No.	Characteristics	Chi square value
1.	Total food expenditure	1.82
2.	Expenditure on cereals	1.74
3.	Expenditure on pulses	3.92
4.	Expenditure on green leafy vegetables	4.39*
5.	Expenditure on other vegetables	0.58
6.	Expenditure on roots and tubers	9.85*
7.	Expenditure on fruits	2.62
8.	Expenditure on nuts and oil seeds	0.62
9.	Expenditure on milk and milk products	1.62
10.	Expenditure on fats and oils	7.13*
11.	Expenditure on sugar and jaggery	2.86
12.	Expenditure on animal foods	2.75
13.	Expenditure on beverages	3.41
14.	Expenditure on spices and condiments	1.25
15.	Expenditure on processed foods	5.69*

* Significant at 5 per cent level

Table 10 Association between personal hygiene and selected socio-economic variables

N = 100

Sl. No.	Characteristics	Chi square value
1.	Religion	0.69
2.	Family size	0.89
3.	Age	2.92
4.	Income of respondent	3.21
5.	Clothing expenditure	4.22*
6.	Educational expenditure	0.54
7.	Health expenditure	2.67
8.	Mass media present	1.01
9.	Mass media utilising	4.32
10.	Mass media for health	2.93
11.	Land holdings	1.22
12.	Environmental sanitation	19.62*
13.	Immunization	3.68

* Significant at 5 per cent level

4.2.4 Association between personal hygiene and selected socio-economic variables

The results presented in Table 10 revealed that personal hygiene of the respondent were significantly associated with their expenditure on clothing and environmental sanitation. All the other variables have no significant association with personal hygiene.

4.3 Correlation between the over all knowledge gain, retention and adoption of health, hygiene and dietary practices and selected independent variables

To study the relationship of gain in knowledge retention and adoption of health, hygiene and dietary practices each of the selected independent variables viz., age, family size, income of respondent, educational status of the respondent, total mass media participation, physical facility available in the family, environmental sanitation, and change in food consumption pattern during certain physiological conditions, correlation coefficient (r) was computed and the results are presented in the Table 11.

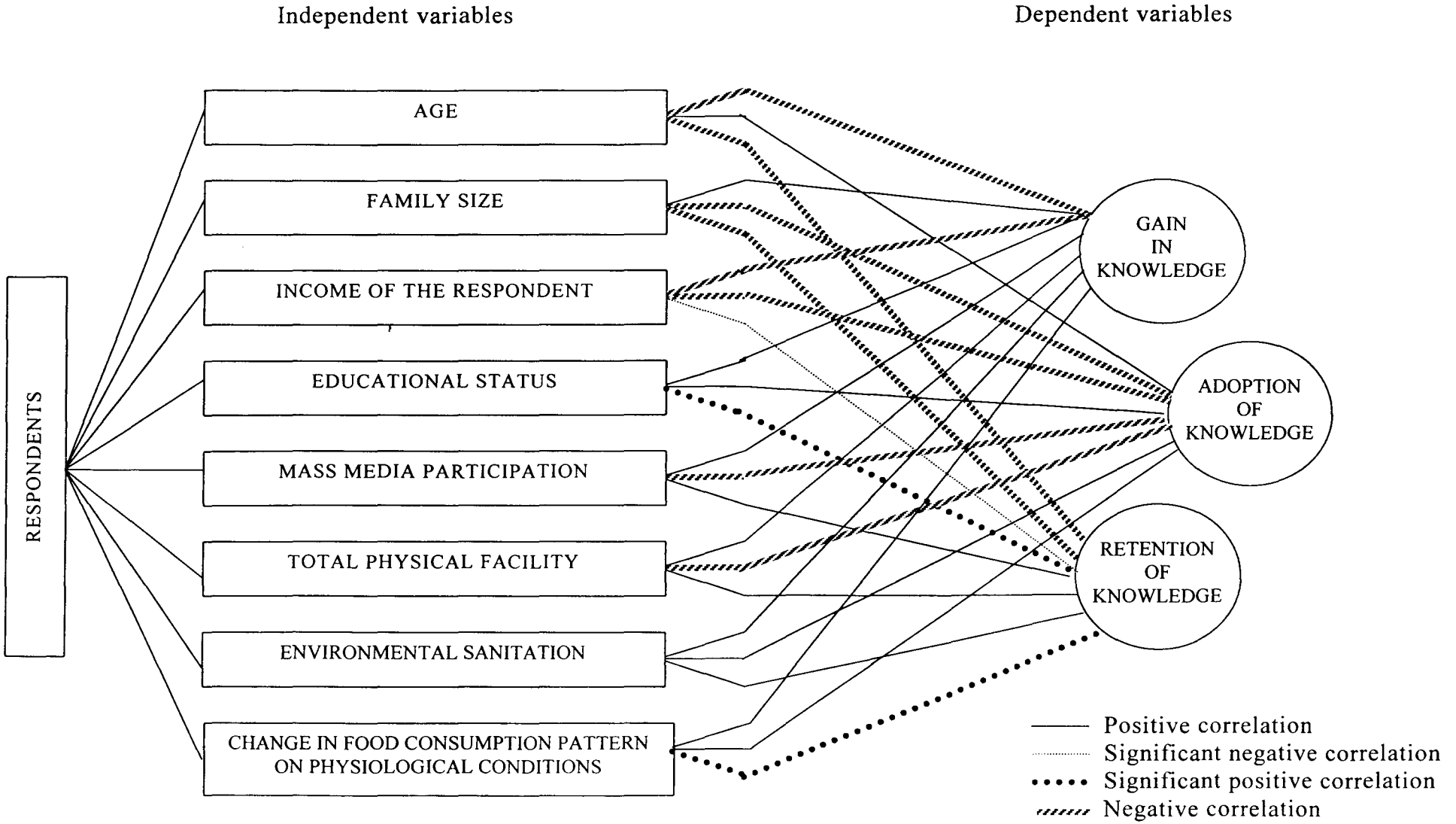
Table 11 Correlation between overall knowledge gain, retention and adoption with the selected independent variables

Variable No	Independent variable	Overall knowledge gain Post test	Retention	Adoption
1	Age	-0.0607	-0.0227	0.1339
2	Family size	0.0834	-0.0229	-0.0153
3	Income of respondents	-0.1752	-0.3037**	-0.1036
4	Educational status	0.1877	0.2767**	0.0630
5	Total mass media participation	0.0881	0.0657	-0.1350
6	Total physical facility	0.0784	0.0829	-0.1569
7	Environmental Sanitation	0.0413	0.0471	0.1483
8	Change in food consumption on physiological condition	0.0557	0.1975*	0.0248

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

With respect to overall knowledge gain (post test) and adoption, the selected variables exhibited no significant relationship. With respect to the retention of knowledge and selected variables viz., income of the respondent, were found to have significant relationship but in the negative direction whereas, the educational status and change in food consumption pattern on various physiological conditions were found to have significant relationship in positive direction with retention of knowledge. Of these educational status

Fig. 3 EMPERICAL MODEL OF THE STUDY



The characters are :

X_1 : Age

X_2 : Income of respondent

X_2 : Total family income

X_4 : Mass media participation

X_5 : Expenditure on cereals

X_6 : Expenditure on pulses

X_7 : Expenditure on green leafy vegetables

X_8 : Expenditure on roots and tubers

X_9 : Expenditure on Roots and tubers

X_{10} : Expenditure on fruits

X_{11} : Expenditure on nuts and oil seeds

X_{12} : Expenditure on milk and milk products

X_{13} : Expenditure on fats and oils

X_{14} : Expenditure on sugar and jaggery

X_{15} : Expenditure on animal foods

X_{16} : Expenditure on beverages

X_{17} : Expenditure on spices and condiments

X_{18} : Expenditure on processed foods

X_{19} : Cooking methods used

X_2 : Total Physical facility

X_{21} : Change in food consumption pattern on various physiological conditions

X_{22} : Personal hygiene

Table 12 Inter-correlation matrix of the socio-economic and personal characteristics of the respondent

X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17	X18	X19	X20	X21	X22
1.0000																					
0.3306**	1.0000																				
0.1806	0.2994**	1.0000																			
0.0898	0.0240	-0.0087	1.0000																		
0.1307	0.0863	0.3019**	0.0574	1.0000																	
0.0959	0.2081*	0.3054**	0.1200	0.4289**	1.0000																
0.0195	-0.1900	-0.2600**	0.0936	0.0634	0.1056	1.0000															
0.1182	0.0151	-0.0336	0.1916	0.1773	0.0426	0.2662**	1.0000														
0.1753	0.2204*	0.0298	-0.0123	0.0859	0.1273	0.2358*	0.1810	1.0000													
0.1178	0.0368	0.0588	0.2830**	0.1268	0.1585	0.1965*	0.1004	0.1966*	1.0000												
0.0019	0.1183	0.4238**	0.0710	0.3833**	0.3826**	0.0009	0.0735	-0.0244	0.2013*	1.0000											
0.0253	0.0023	0.0851	0.2168*	0.0710	0.2040*	-0.0359	0.1374	-0.0214	0.3175**	0.2777**	1.0000										
0.1611	0.0050	0.1597	-0.0347	0.4755**	0.2672**	0.1718	0.0203	0.0361	0.1675	0.4200**	0.1340	1.0000									
0.1420	0.0265	0.0662	0.0882	0.2374*	-0.0472	0.3299**	0.2127*	0.1764	0.0356	0.1987*	-0.1140	0.3555**	1.0000								
0.0122	0.1747	0.2147*	0.1130	0.1747	0.3199**	-0.1234	-0.1975*	0.1236	0.0780	0.2719**	0.2694**	0.1453	0.0128	1.0000							
0.0711	-0.0750	0.2246*	-0.0149	0.3099**	-0.0114	0.2128*	0.1506	0.0433	0.0986	0.2515*	0.0347	0.4576**	0.5253**	0.0238	1.0000						
0.1155	0.0796	0.2030*	0.0103	0.3110**	0.1503	-0.0182	0.0645	-0.0393	-0.1224	0.2587**	0.1123	0.2121*	0.0745	0.2107*	0.0376	1.0000					
0.1427	0.0211	0.0881	0.1618	0.1326	0.1391	0.1371	0.2455*	-0.1000	0.1540	0.1419	0.2820**	0.0528	0.1285	0.1984*	0.1533	0.2267*	1.0000				
0.1983*	0.0178	-0.0160	0.0050	-0.0356	-0.0680	0.0340	0.1749	0.1011	-0.1076	-0.0742	-0.0917	-0.1307	0.1075	-0.0356	0.0186	0.0137	-0.0197	1.0000			
0.0341	0.1011	-0.0082	0.3734**	0.1238	0.1686	-0.0091	0.1611	0.1548	0.0443	0.0366	0.0105	0.1070	0.1446	0.2836**	-0.0351	0.1982*	0.0210	0.0187	1.0000		
0.2044*	-0.1951*	-0.0400	0.0656	0.0925	0.0468	0.0256	0.0598	-0.0605	0.0183	0.0982	0.1882	-0.0929	-0.1714	0.0697	0.0763	-0.0579	0.0991	0.0248	0.0516	1.000	
0.0566	-0.0449	-0.1323	0.2438*	0.0868	-0.0449	0.2684**	0.1639	0.1094	-0.0786	-0.1152	0.0673	0.0327	0.2325*	0.0508	0.0679	0.1169	0.1183	0.0366	0.2132*	-0.0274	1.0000

nificant at 5 percent level
ignificant at 1 percent level.

and income of the respondent were correlated at one per cent level of significance and change in food consumption pattern at five per cent level.

4.4 Inter-correlation between selected socio economic variables and other variables

The results presented in the inter-correlation matrix revealed that age of the respondents have significant relations with the income of the respondent and change food consumption pattern during physiological conditions. The income of the respondent was correlated significantly and positively with the total family income, expenditure on pulses and roots and tubers and negatively correlated with the change in food habits during physiological conditions. The total family income shows significant positive correlation with the expenditure on cereals, pulses, nuts and oil seeds, beverages and spices and condiments and it was negatively correlated with expenditure on green leafy vegetable. The exposure to information sources were found to be positively correlated with the expenditure on fruits, milk and milk products, total physical facility available in the family and the personal hygiene. The physical facility was found to be significantly and positively correlated with the personal hygiene of the respondents.

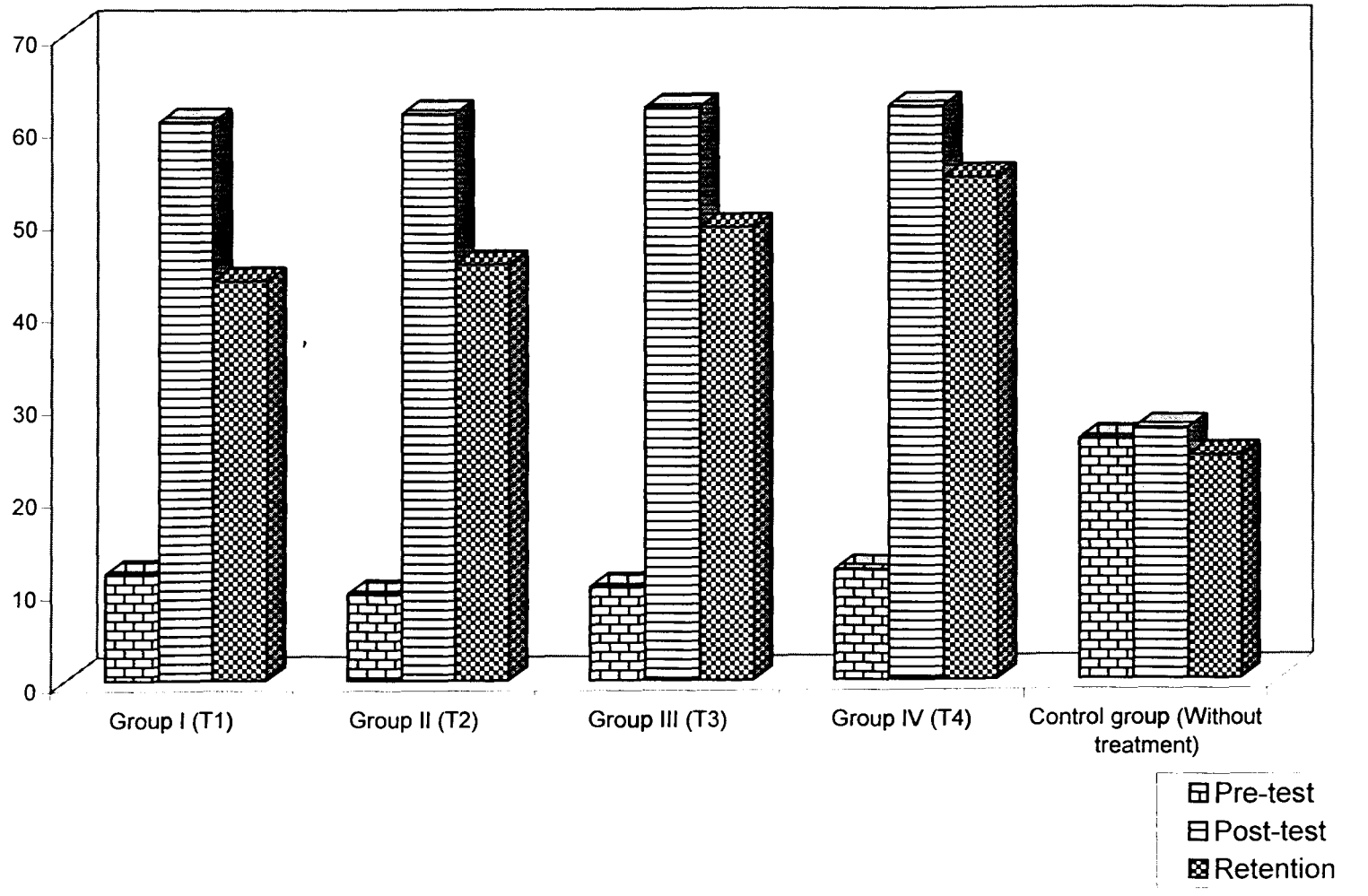
4.5 Effectiveness of educational programmes on the gain in knowledge and retention

To study the impact of teaching methods on the gain in knowledge of health, hygiene and dietary practices, the total score for pre-test, post-test and retention were computed by adding the scores of the selected topics viz.,

Table 13 Comparison of knowledge level scores of four experimental groups and control group before and after the treatment

Sl. No.	Lecture method Group I			Lecture + Flash cards Group II			Lecture + Slide Group III			Combination of all Group IV			Control group		
	Pre-test score	Post-test score	Retention score	Pre-test score	Post-test score	Retention score	Pre-test score	Post-test score	Retention score	Pre-test score	Post-test score	Retention score	Pre-test score	Post-test score	Retention score
1	15	62	52	16	62	48	10	62	52	12	62	51	28	29	26
2	14	62	49	10	61	40	10	62	50	11	62	54	30	32	29
3	12	58	39	7	62	41	12	62	53	12	62	53	28	28	26
4	11	61	45	13	62	47	9	62	54	12	62	53	30	33	30
5	12	63	41	8	60	44	7	62	53	10	62	53	21	22	20
6	10	59	40	6	62	46	12	62	52	12	62	55	26	27	22
7	9	57	41	9	61	42	10	62	52	12	62	53	22	25	21
8	11	61	42	11	62	47	16	62	53	13	62	56	23	23	22
9	11	61	42	7	62	45	9	61	50	13	62	54	21	23	20
10	13	59	41	9	61	43	10	62	54	14	62	56	24	25	22
11	12	62	43	8	62	48	10	62	54	10	62	57	24	24	21
12	10	61	42	12	61	48	10	62	54	10	62	55	30	31	29
13	10	60	43	8	61	46	8	62	54	12	62	55	25	25	21
14	12	62	45	7	60	45	8	62	54	12	62	55	31	31	28

Fig. 4 Bar diagram showing knowledge gain, retention and adoption of health, hygiene and dietary pracitces by the respondents



balanced diet, deficiency diseases, diarrhoea-reasons and remedies and environmental sanitation and that is presented in Table 13.

4.5.1 Comparison of the knowledge level scores of four experimental groups and the control group before and after the treatments

The pre, post and retention knowledge test scores of four groups presented in Table 13 revealed that the pre-test scores of all the four treatments were having lowest scoring when compared with the control group. There was not much difference between the post-test scores of four groups and four treatments but these score values were higher than the scores of control groups. With regards to retention T_1 and T_2 scores were less when compared to T_3 and T_4 at the same time all the four treatments were higher than the scores of control group. When the post-test and the retention scores were compared the post-test score was higher than the retention score.

Table 14 Mean scores to show the overall knowledge gain and retention by the respondents

Treatments	Mean scores
Pretest score	10.61
Post-test score	61.45
Retention score	48.82
Control group	6.71
CD	1.168

Analysis of variance were applied to the score values in Table 13 by taking pre-test, post-test retention and control group scores as treatments and the results are presented in the Table 14.

The results presented in Table 14 revealed that there exists significant difference between mean values of the treatment group and the control group i.e., the control group was inferior to all the other four treatment means. Mean post-test score (61.45) was significantly superior to all the other treatments. The retention score (48.82) was significantly superior to pre-test score and the control group and inferior to post-test score. And the pre-test score was significantly superior to control group and inferior to all other treatments.

4.6 Comparative effectiveness of the selected teaching methods in gain in knowledge and retention of knowledge on health, hygiene and dietary practice by the respondents

4.6 a Comparative effectiveness of selected teaching methods in gain in knowledge

The teaching methods used were lecture method, Lecture +flash card. Lecture + slide and combination of all. The topics selected were balanced diet, deficiency diseases, diarrhoea reasons and remedies and environmental sanitation. The scores obtained for each treatments were statistically analysed and the mean values obtained for the treatments were presented in Table 15.

Table 15 Comparative analysis of the effectiveness of selected teaching methods on gain in knowledge on health, hygiene and dietary practices immediately after the treatment (post-test)

Subjects / Treatments	S_1	S_2	S_3	S_4	Mean Treatments
T_1	650.67	1378.57	249.40	295.23	643.452
T_2	547.62	1239.29	579.60	525.00	722.87
T_3	588.10	1146.43	397.61	525.00	666.29
T_4	729.76	1421.43	189.55	323.21	665.20
Mean subjects	629.02	1296.43	352.12	417.11	

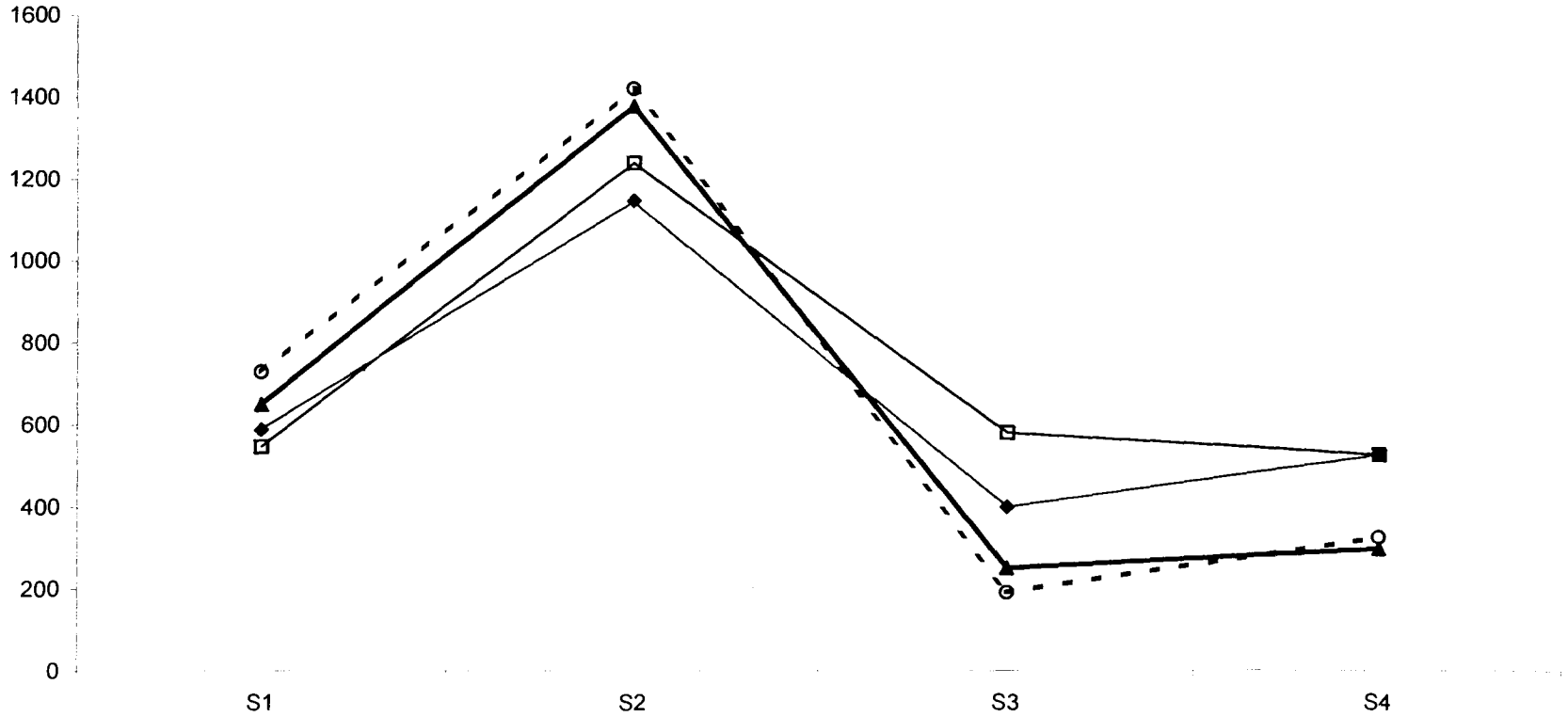
CD Treatments 84.30
CD Subjects 81.58
CD Treatment x Subjects 163.17

The mean values presented in Table 15 indicates that the highest mean value obtained for the first topic was 729.76 when the respondents were exposed to treatment four (T_4).

The mean scores of different treatments when compared with the critical value observed from Table 15 showed that T_4 shows significant difference with T_3 and T_2 but par with T_1. And there exist no significant difference between T_1, T_2 and T_3 when the topic balanced diet was taught to the respondents.

When the topic deficiency disease were taught to the respondents, the highest mean value was obtained for T_4 and the mean values of T_1, T_2, T_3 and

Fig. 5 Graphical representation of the comparative analysis of selected teaching methods on gain in knowledge immediately after the treatment (post test)



T1 - Lecture method
T2 - Lecture + Flash card
T3 - Lecture + slide
T4 - Combination of all

T_4 were when compared with the critical difference indicates that T_4 is superior T_3 and T_2 but par with T_1 and all the treatments except T_4 and T_1 have significant difference between each other.

The mean scores of four treatments showed that T_2 has got highest score value followed by T_3, T_1 and T_4 when the respondents were exposed on the topic environmental sanitation.

The mean scores of the four treatments were compared with critical value and it was found that T_2 and T_3 differs significantly from all other treatments while T_1 and T_4 have no significant difference in knowledge gain.

When the topic four was taught using treatment four to four groups of respondents, T_2 and T_3 have got equal score values and this indicate the equal effect of the treatment on knowledge gain. When score values of T_2 and T_3 (525.00) were compared with T_4 and T_1 they exhibit significant difference and T_4 and T_1 have no significant difference in gain in knowledge by the respondent group.

The respondents were exposed to four topics and the highest mean value obtained was for topic 2 i.e., deficiency diseases followed by S_1, S_4 and S_3 when T_1 was used as the treatment.

When these mean values of the topics were compared with the critical difference, the gain in knowledge on S_2 and S_3 significantly differ from all the other subjects while S_4 and S_3 have no significant difference in the knowledge gain.

T_2 when used as treatment, the knowledge gain was more on S_2 followed by S_3, S_1 and S_4 and when these mean values were compared with the critical difference S_2 differs significantly with all the other treatments while there exists no significant difference between S_1 S_3 and S_4 in knowledge gain.

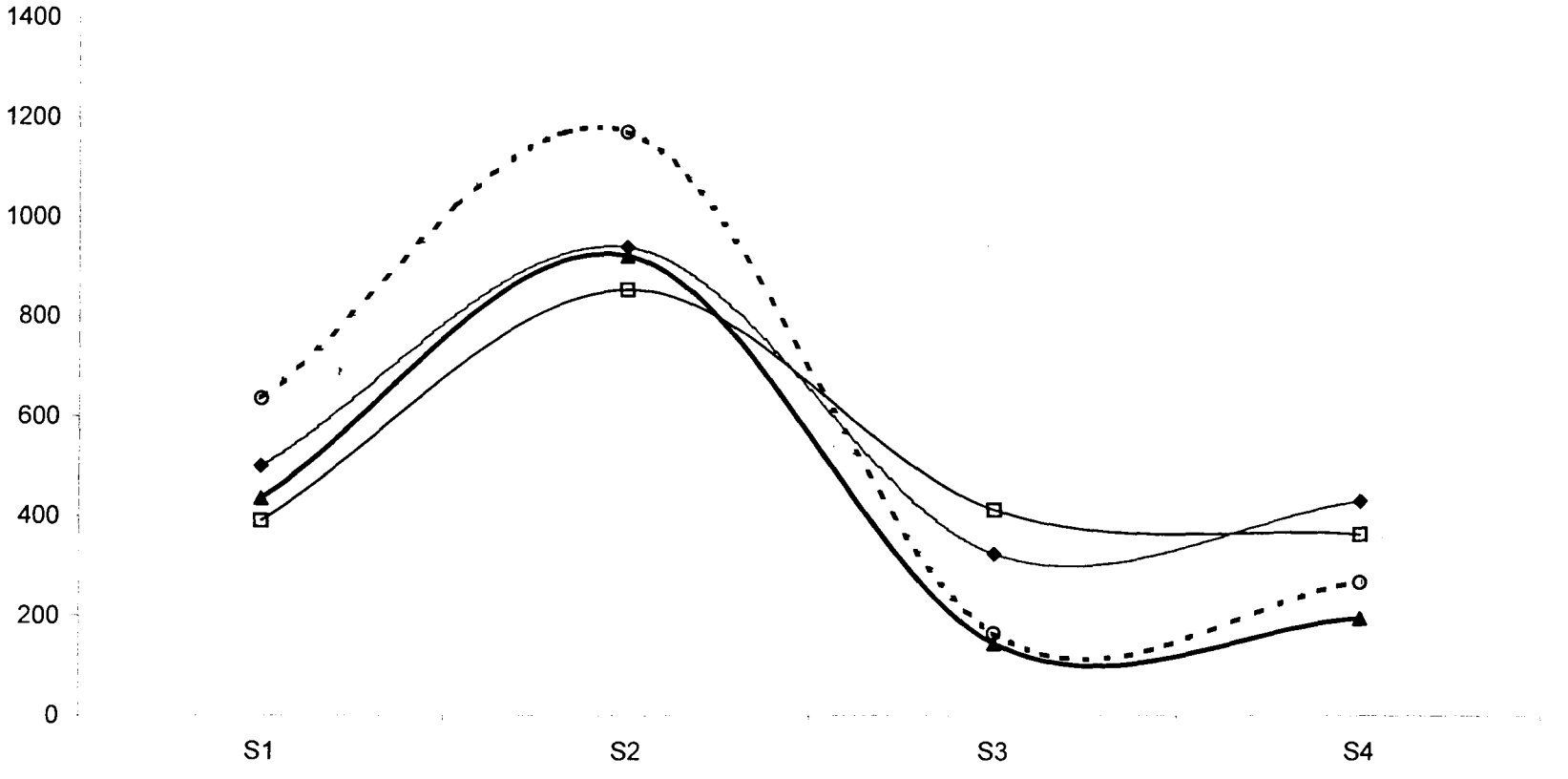
When the respondents were exposed to T_3 the knowledge gain was more on S_2. And the mean scores of T_3 when compared with critical difference indicates that S_2 have significant difference with all the other subjects and S_3 shows significant difference with S_1 and S_4 while S_1 and S_4 have no significant difference in knowledge gain.

The respondents when exposed to treatment four i.e., combination of all, their knowledge gain was more on S_2 followed by S_1, S_4 and S_3. The mean score values of four subjects when compared with the critical difference indicate that the four subjects were significantly different from each other.

4.6 b The comparative effectiveness of the selected teaching methods in retention of knowledge

15 days after the implementation of teaching programmes, the retention of the gained knowledge were assessed and the details are presented in Table 16.

Fig. 6 Graphical representation of the comparative analysis of selected teaching methods on gain in knowledge 15 days after treatment (retention)



T1 - Lecture method
T2 - Lecture + Flash card
T3 - Lecture + slide
T4 - Combination of all

significant difference in retention of knowledge while T_1 and T_2 differs significantly in retaining the knowledge related to deficiency diseases.

When the treatment two (T_2) was used to teach environmental sanitation, have got the highest mean value and when the mean values of these were compared with its critical difference, it was found that T_2 and T_3 have significant difference with all the other treatments while T_4 and T_1 have no significant difference in retaining the gained knowledge.

The mean scores of the fourth topic indicates that the highest value was obtained when T_3 was used as the treatment. When the mean values were compared with the critical difference, indicates that T_3 and T_2 have no significant difference in retaining knowledge while all the other treatments have significant difference between each other.

When the respondents were exposed to treatment 1, S_2 have got highest mean value of 921.43 followed by S_1, S_4 and S_3. When these mean values were compared the critical difference, it was observed that S_2 and S_1 differs significantly from all the other subjects, while S_4 and S_3 have no significant difference in the retention.

The subject two have got highest mean value when T_2 was used as treatment. When the mean values of different subjects were compared with the critical value it was found that S_2 have significant difference with all the other subjects in retention of knowledge. While S_3 and S_4 differs significantly in the knowledge retention. And there exists no significant difference between S_1, S_3 and S_4.

When the treatment three (T_3) was used to teach the respondents, the retention was more on the topic three (S_2) followed by S_1, S_4 and S_3 and when their mean values were compared with critical difference, it was found that all the subjects differ significantly from each other in retaining the knowledge.

The subject two have got highest mean value followed by S_1, S_4 and S_3 when T_4 was used as treatment. These mean values were compared with critical difference and found that each of the subjects were significantly different in the knowledge retention.

4.6 Impact of educational programmes on the retention of knowledge

The mean scores obtained for the different levels of treatments in Table 12 revealed that the mean retention score was 48.82. The pre-test score was 10.61. From these two values it is clear that there was significant difference between the pretest score (48.82), which means that the gained knowledge was retained for a period of 15 days after the treatment.

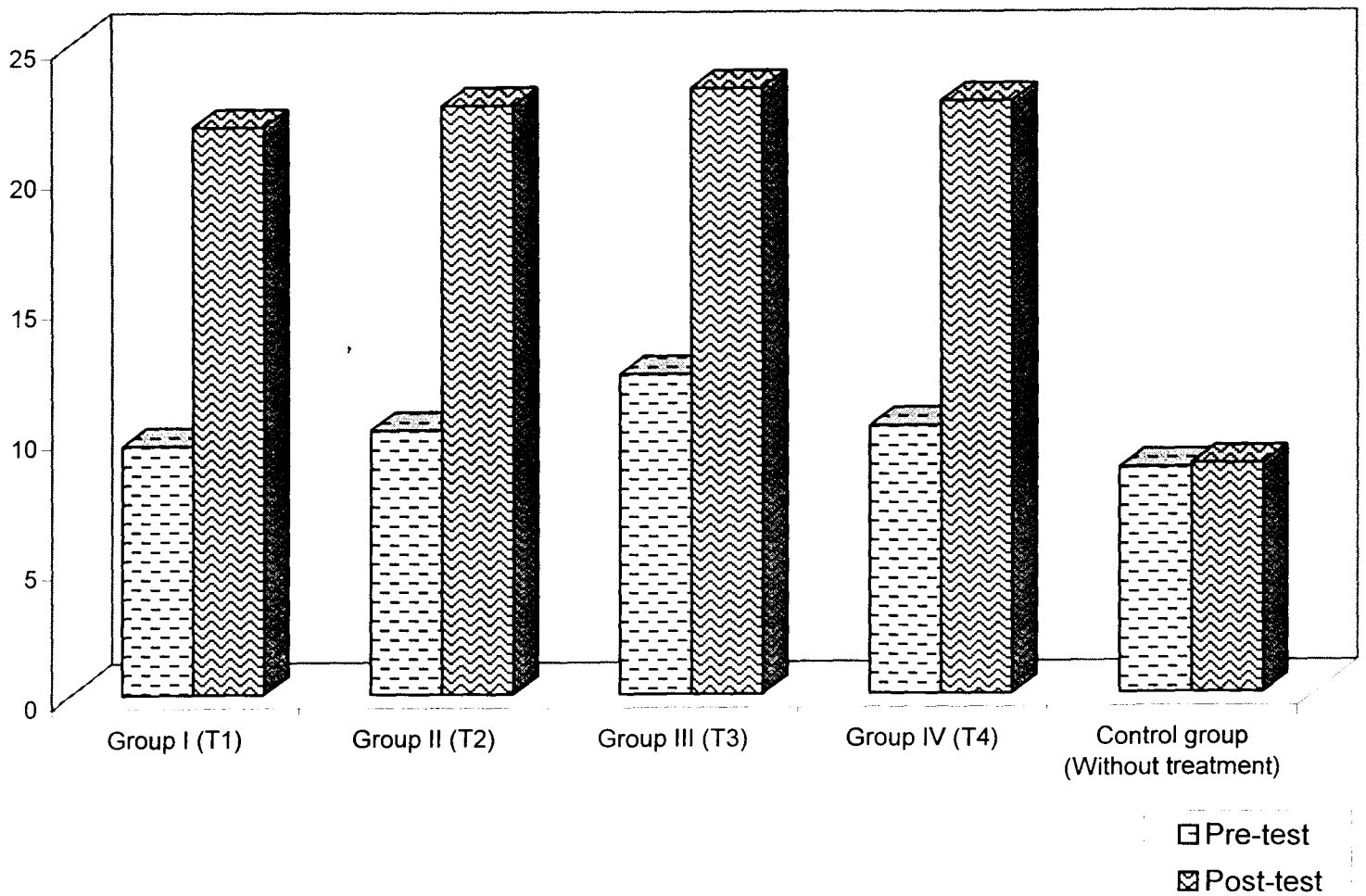
4.7 Effectiveness of educational programmes on the adoption of health, hygiene and dietary practices by the respondents

A non-participant observation was done before and after the education programme in order to assess their adoption practices.

Table 17 Comparison of the knowledge adoption level of four experimental groups and control groups before and after the treatment

Sl. No.	Lecture method Group I		Lecture + Flash cards Group II		Lecture + Slide Group III		Combination of all Group IV		Control group	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
1	9	20	10	22	10	23	13	23	8	8
2	6	21	6	22	12	23	10	23	10	10
3	7	21	8	22	12	23	8	21	7	7
4	8	21	10	23	10	24	11	23	6	6
5	11	21	9	22	9	23	12	21	5	5
6	7	20	12	22	12	22	11	23	9	9
7	10	24	6	23	11	22	10	23	12	12
8	11	22	14	22	9	23	9	23	11	11
9	11	22	12	24	11	23	11	24	8	8
10	6	22	11	24	10	24	8	23	4	6
11	12	23	11	22	12	24	9	23	9	9
12	12	23	11	24	13	23	10	23	13	13
13	11	23	10	23	12	25	10	24	10	10
14	13	23	12	22	8	24	12	22	9	9

Fig. 7 Bar diagram showing change in adoption of health, hygiene and dietary practices by the respondents before and after the treatments



4.7.1 Comparison of the adoption of health, hygiene and dietary practices of four experimental groups and control group before and after the treatment

The adoption practices of the gained knowledge by the respondents were compared by using pre and post test scores and it was presented in Table 17. The pre-adoption scores of all the four treatment groups were lower than the pre-test score and par with that of the scores of the control group.

Analysis of variance was applied to this to study impact of educational programme on the adoption of gained knowledge and the results were presented in Table 18.

Table 18 The mean values of adoption over pretest scores

	I	II	III	IV
Treatment mean	180	209.2	181.58	205.27
Subject mean	57.10	350.30	186.91	181.79

CD : Treatment x Subject – 97.24

The results presented in Table 18 revealed that the mean values of four treatments have no significant difference between each other when it was compared with the critical value. But the mean values for the adoption of knowledge on four subjects revealed that S_2 (deficiency diseases) differs significantly from S_1, S_3 and S_4, while S_3 and S_4 did not exhibit any

significant difference between each other when compared with critical difference. At the same time S_1 differs significantly from S_3 and S_4.

4.8 Comparative effectiveness of the selected teaching methods on the adoption of knowledge on healthy, hygiene and dietary practices

The analysis on impact of educational programmes showed that it had significant influence on the gain in knowledge. While trying to analyse the effectiveness of educational programmes on the adoption of gained knowledge, the data obtained are presented in Table 19.

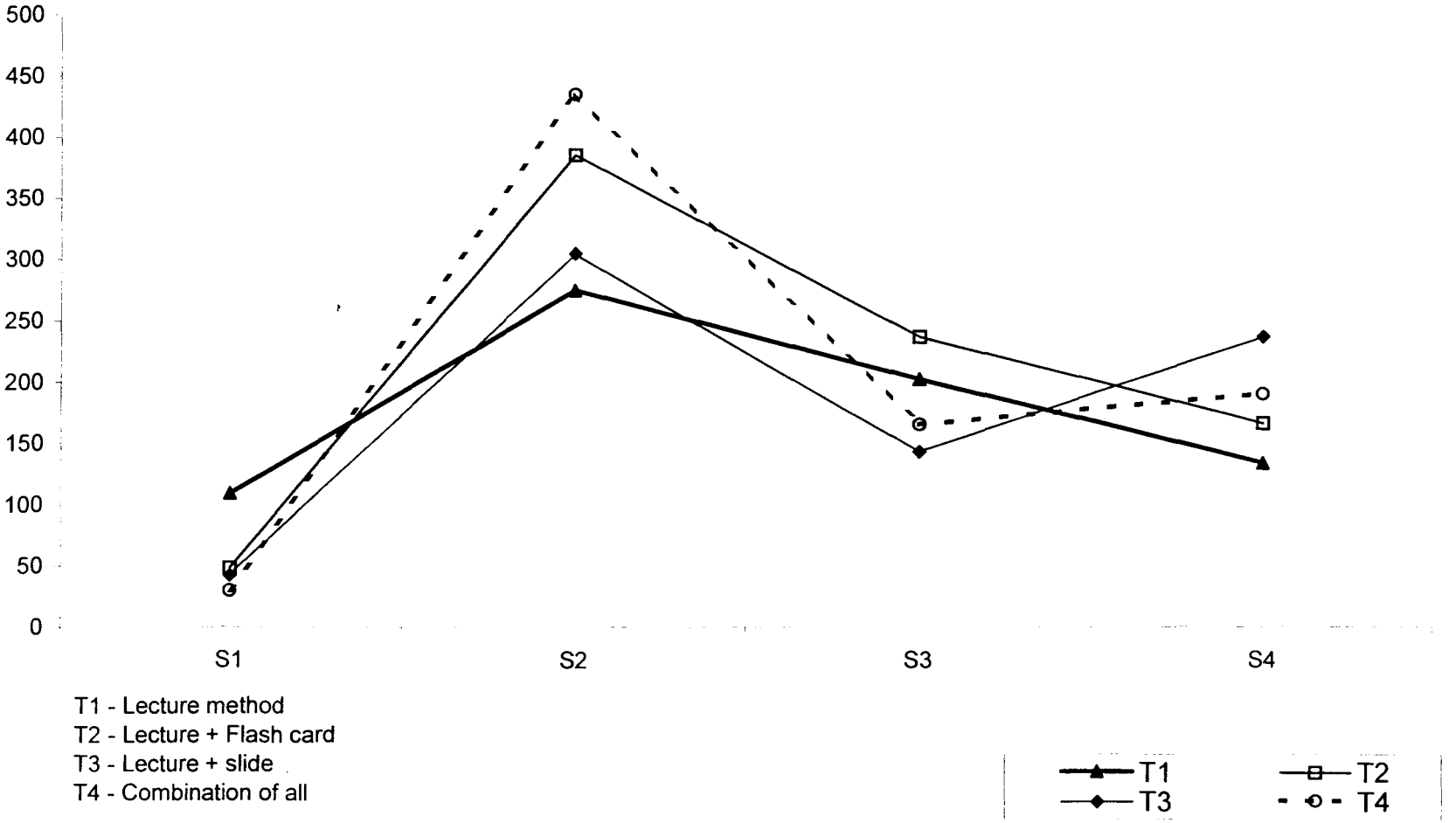
Table 19 The comparative analysis of the effectiveness on selected teaching methods in knowledge gain one month after the treatment (adoption)

Subjects / Treatments	S_1	S_2	S_3	S_4	Mean treatments
T_1	108.81	275.00	202.38	133.81	180.00
T_2	47.97	385.71	236.91	166.20	209.20
T_3	41.79	304.77	142.85	236.91	181.58
T_4	29.65	435.71	165.47	190.23	205.27
Mean-subjects	57.10	350.30	186.91	181.79	

CD- treatment -51.84 CD subject-48.61 CD treatment x Subject -97.24.

The mean values of different treatments showed that the highest mean was for T_1 (108.81) when S_1 was taken as subject. The scores of different treatments were compared with the critical value and it was found that T_1

Fig. 8 The graphical representation of the comparative analysis of selected teaching methods in knowledge gain one month after the treatment (adoption)



differs significantly from all the other treatments while T_2 T_3 and T_4 were having no significant difference when the knowledge adoption practices of the respondents on S_1 were analysed.

When the adoption practices on S_2 was analysed it was found that the adoption was more when the respondents were exposed to T_4 followed by T_2. T_3 and T_1. Comparison between mean values and critical difference indicates that T_4 and T_2 differs significantly from T_3 and T_1.

The mean values for the adoption of S_3 shows that the highest score was for T_2 followed by T_1, T_4 and T_3. The comparison between mean values and the critical difference indicates that T_1 shows no significant difference between T_2 and T_4. T_2 differs significantly from T_4 and T_3 and T_1 differs significantly from T_3, on the adoption of knowledge practices.

When the adoption practices of S_4 was taken into consideration, it can be said that T_3 have got highest mean value and that was most effective treatment for adoption. When the critical value and mean value was compared T_3 differs significantly from T_2 and T_1 and T_4 differs significant from T_1 in the adoption of gained knowledge on the topic diarrhoea – reasons and remedies.

When T_1 was used as treatment the adoption of gained knowledge was more on S_2 followed by S_3, S_4 and S_1 and when the mean values of the subjects were compared with the critical difference it was found that S_2 and S_3 differs significantly from all the other subjects. While S_4 and S_1 have no significant difference between each other when their adoption levels were compared.

Mean values of T_2 for different subjects showed that S_2 has the highest mean value (385.71) followed by S_3, S_4 and S_1. When the mean scores were compared with the critical difference showed that all the subjects differs significantly from each other on adoption practices by the respondents.

When the respondents were exposed to treatment three (T_3) the adoption practices done by the respondents on all the four subjects differs significantly from each other when their mean values were compared with the critical difference. The highest mean value was obtained for S_2 followed by S_4, S_3 and S_1.

The mean values of the treatment four, for four subjects showed that the highest mean score was obtained for S_2 followed by S_4, S_3 and S_1. When these mean values were compared with the critical difference, it can be said that S_1 differs significantly from all the other subjects while S_4 and S_3 have no significant difference and S_4 and S_1 and S_3 and S_1 were also significantly differ from each other in the adoption of practices.

Discussion

5. DISCUSSION

The study entitled the 'Impact of educational programmes on the health and dietary practices of the workers of Sewage Farm in Thiruvananthapuram corporation, was conducted with the purpose of enlightening the impact of education programmes on the gain, retention and adoption of the knowledge on health, hygiene and dietary practices and also to find out the comparative effectiveness of the selected teaching methods. The salient findings of the study are discussed under.

5.1 Distribution of the respondents based on their socio-economic and personal characteristics.

5.2 Association among and between the selected socio-economic variables and other variables.

5.3 Correlation between the percentage of over all knowledge gain, retention and adoption with the selected independent variables.

5.4 Inter-correlation between selected socio economic variables and other variables.

5.5 Effectiveness of the educational programmes on the gain in knowledge and retention in knowledge on health, hygiene and dietary practices by the respondent.

5.6 The comparative effectiveness of the selected teaching methods in gain in knowledge and retention on health, hygiene and dietary practices.

5.7 Effectiveness of educational programmes on the adoption of health, hygiene and dietary practices by the respondent.

5.8 Comparative effectiveness of selected teaching methods in the adoption of knowledge on health, hygiene and dietary practices.

5.9 Comparative effectiveness of the selected teaching methods in gain in knowledge retention and adoption of knowledge.

5.1 Distribution of respondents based on their socio economic and personal characteristics

5.1. (1&2) Religion and caste

With respect to religion and caste vast majority of the sewage farm workers were Hindus and belonged to SC/ST category (Table 1). The social status of sewage farm workers were considered to be very low and which might prevented the members of forward caste from becoming sewage farm workers. Even then there are some sewage farm workers from backward caste and forward caste and this is due to the unemployment problem and the fixed income obtained from the sewage farm works.

The results of this study is in line with the findings of Sharma and Singh (1970), Padmanabhan (1981), Thomas (1989) Shilaja (1990) and Sujatha (1990).

5.1.3 Sex

Regarding sex wise destribution of the workers of sewage farm females constitute slightly higher percentage than males. The main reason for this trend is that young men are not willing to take up this job because this job does not have the prestige compared with other jobs and majority of the labour class family is done by the income earned by women.

The findings of this study is in conformity with the studies reported by Juna (1999) and Manorama year book (1999).

5.1.4 Age

The study revealed that majority of the sewage farm workers belonged to middle aged group (Table 1). Young workers constitute 5 per cent and only 3 per cent come under old age group.

The discussion given under sex is applicable here also.

The results of this study is in tune with the findings of Sharma and Singh (1970), Ingle and Dharmadhikarj (1987), Shilaja (1990), Jayasree (1994) and Gaikwad and Gunjal (2000).

5.1.5 Family size

As far as their family size is concerned, it was found that the average family size of the respondent was 4.8 and from Table 1 it could be seen that 77 per cent of them has small families while 21 per cent of the respondents have medium family size and only 2 per cent of the respondents family size

was large. This was because of their good knowledge about family planning and its importance. Kerala is a state with high literacy and people are exposed to the benefits of having small family.

The findings of this study is in confirmity with the studies reported by Kumar (1982), Ingle and Dharmadhikarj (1987), Rajagopal (1993) and Park (1997).

5.1.6 Type of family

The family type of the respondents revealed that an over whelming majority of the sewage farm workers were having nuclear families (Table 1). In Kerala joint family system is not much prevalent nowadays, even though 21 per cent of the respondents were found to have joint family system, and that too because of the lack of money to construct new houses.

The findings of this study is in concurrence with the findings reported by Sadasivan *et al.* (1980), Nagammal (1989), Suja (1989), Shilaja (1990) and shah and Rathore (1993).

5.1.7 Land holdings

As per the data furnished in Table 1. about 75 per cent of the respondents come under low group and the reason behind this is that they neither inherited much land from their ancestors nor did they own much land using their own money because of their low income.

The result is in accordance with the findings of Deepali (1979) and Panicker (1979).

5.1.8 Family income

In the case of total family income of the respondent it could be seen from Table 1 that 74 per cent of the respondents come under medium range and only 2 per cent of the have high income. Majority of them had only very small land holdings so that they earned only a negligible amount from subsidiary jobs. Even though the annual income of the family as studied the major source of income and in many cases the only source of income was income earned by the respondents. The sewage farm workers were Government employees and that was the main reason for their stable family income.

5.1.9 Educational status of the respondent

As per the data furnished in Table 1, about 35 per cent of the respondents had lower primary level of education and only one per cent have college level education. Where as 24 per cent of them were illiterate. The results indicates that there is a wide variation in the educational status of the respondents and the main reason was that majority of the respondents selected were women in the lower class families and at very low age they have to go for job and look after their young ones or siblings when their parents go for job.

This findings were supported by the findings of Kanwar and Koranne (1989) and Shilaja (1990).

5.1.10 Educational status of the family

Education is life blood in any developmental activity and it helps people to understand and practice the ideal preached. With regard to the family educational status 25 per cent of the adult males were illiterate where as 55 per cent of the females were illiterate. And the results indicates that there is wide variation in the educational status of family members especially childrens and most of their study was going on. This points out that the respondents want their children to go to school like other children and take up higher employment rather than becoming agricultural labourers.

The findings of the present study is in tune with the findings of Paniker (1979) and Husain (1994).

5.1.11 Mass media participation

The mass media participation of the respondents revealed that majority of them (46 per cent) had medium level of exposure and 39 per cent of them were under low level. Mass media play a significant role in the spread of new ideas among women. In Kerala, majority of the farm families subscribe news paper, radio and television. Only 46 per cent of them consider these mass media as a major source of health and nutritional information.

The finding of the present study is in concurrence with the findings reported by Prema and Menon (1978), Gincy (1987) and Mony (1993).

5.1.12 Total physical facility

As per the data furnished in Table 1 the total physical facility available in the family was categorised into low, medium and high based on the type of housing, facilities for defecation/urination, waste and waste water disposal facilities etc. and it was found that 64 per cent of the respondent's physical facility available were medium. Most of the respondents use pipe water for drinking and water from well for all other household preparations and for washing, bathing etc. Due to the lack of sanitary latrines the families were using open grounds available around the house and this situation is due to lack of knowledge regarding health, hygiene and environmental sanitation.

The findings of the present study is in conformity with the findings of Menon (1972), Perumal (1986) and UNICEF (1990).

5.1.13 Monthly expenditure pattern

Monthly expenditure pattern of the sewage farm workers were found to be high compared to other agricultural labourers. The bulk of the total expenditure was spent on food items followed by clothing, education and on purchase of gifts. After this they may not have enough money to save and improve their housing facilities and this is due to their stable income when compared to other agricultural labourers.

The results of the present study is in tune with the findings of Tea Board (1962), Singh and Verma (1987) Giriappa (1990) and Pawar *et al.* (1991).

5.1.14 Dietary pattern

5.1.14(a) Food habits of the family

With regard to the food habit, vast majority of the sewage farm workers were non-vegetarians (Table 1) only 2 per cent of the respondent follow vegetarian diets. Although most of them were branded as non- vegetarians, they include meat, egg etc occasionally in their diets but fish is a common constituent in their daily diets and that was the usual meal pattern found in low income groups in Kerala.

The findings of the present study is in line with the findings of Kruna (1993) and Lovely (1996).

5.1.14 (b) Monthly expenditure on food

On further enquiry about the distribution of money for the purchase of various food items, it was revealed that majority of the families allocate more money for the purchase of cereals followed by fish, and vegetables and the amount spend for the purchase of green leafy vegetables, fruits, milk etc were found to be very low, and the purchase of these were very much depend on their income. As discussed earlier majority are non-vegetarians and they do not know the importance of green leafy vegetable even though the cost of it is low.

This results of this study is in agreement with the studies reported by Antony (1989), Mony (1993) and National nutrition Monitoring Burea (1996).

5.1.14 (c) Frequency of use of various food items

The discussion given under monthly expenditure on food is applicable here also.

The finding of the present study is in accordance with the studies conducted by Sujatha (1990), Karuna (1993), Johnson (1994) and Juna (1999).

5.1.15 Change in food consumption pattern during various physiological conditions

Details regarding the change in food consumption pattern of different vulnerable groups like pregnant women, lactating mother, infants and to sick persons were collected (Table 5) and are discussed here.

With respect to the change in food consumption during pregnancy, it was found that majority (93 per cent) of the respondents did not make any change while 2 per cent make more desirable changes while preparing food for pregnant women.

During lactation majority of the respondents do not make any change in food consumption pattern while considering infant food eight per cent made more desirable changes while 90 per cent not make any change in the food pattern of infants except that they give a part of their daily diet to infants. Lack of education, awareness etc are the main reason for this.

The sick persons occupy an important place with respect to their altered nutritional status. In the present study most of the respondents were having the habit of changing the food pattern during diseased condition and the

modification were change consistency i.e., food items in double cooked or in gruel form and restrict spices and fried item on the conditions like fever and diarrhoea. The medical facility available to them were very good and they take advice from the doctors.

The results of the present study is in the line with the findings of Gincy (1987), Parvathi and Babitha (1989). Saha and Kanchan (1991), Vaquerio and Nanarro (1996), Lovely (1996) and Juna (1999).

5.1.16 Environmental sanitary conditions around the house

In the present study, majority of the respondents (71 per cent) environmental sanitary conditions were very poor. Environmental pollution by human excreta, improper disposal of waste, stagnation of water due to improper drainage also promotes breeding of mosquitoes and flies. This lead to poor environmental sanitation and personal hygiene. It was clear that majority of the households would suffer from the effects of poor sanitary conditions such as repeated attacks of infections and infestations and this was due to their lack of knowledge regarding health, hygiene and environmental sanitation.

The findings of the present study is in accordance with the findings of Perumal (1986) and Dilton and Philip (1996).

5.1.17 Health profile of the respondent and family

The health profile of the respondent revealed that majority (75 per cent) were having medium level of personal health care practices where as in the

family health profile 65 per cent come under medium range. In the study area, infectious diseases, diarrhoeal diseases and skin diseases were more prominent than any other diseases in that area. The medium level of health care practices can be improved by imparting nutrition and health education to them and due to the lack of knowledge and most of their working conditions were very poor.

The results of the present study is in tune with the findings of Bhatia (1980). Chhabra *et al.* (1997) and WHO Technical Report Series (1997).

5.2 Association among and between the selected socio-economic variables and other variables

It was found that the sewage farm workers were from backward caste and have low economic status. So the researcher thought that it was desirable to know what are all the characteristics that have significant association with their particular job. Accordingly, association of total family income with other selected variables was found out using Chi-square test. It was found that the expenditure on education, change in food consumption during physiological conditions and immunization taken was significantly associated with the total family income. The significant association of expenditure on education with total family income was because, the sewage farm workers were getting only fixed amount of income and most of them have no subsidiary jobs or income from other sources. Due to lack of money most of them spend less amount for education and that is very much dependent on their family income. Agricultural labourers as par their children have better education and take up other higher jobs and they give more education to them

rather than becoming labourers. So they send their children to school and that was the main reason for the association of income and education. Change in food consumption pattern during various physiological conditions were also significantly associated with family income. and most people spend their income.

Because of their low economic status, they have to work in the sewage farm daily and they were not having enough time to go for immunization programmes. The workers with higher education and mass media participation go for immunization and other health matters.

The change in food consumption on physiological conditions like pregnancy, lactation, infancy and for sick persons showed that it was very much dependent on the total family income. The surveys conducted by NNMB (1996) also proved the influence on income level and dietary intake.

The association of mass media participation and other characteristics from the Table 8 revealed significant association of age, educational expenditure, health expenditure, expenditure for gifts, mass media utilization and to improve health, contact with extension agency and physical facility available. The reason for all these significant association was the effect of mass media on the public. The findings of the National Conference on Environmental Hygiene and Promotional Initiatives (1994) also proved the effectiveness of mass media participation.

In order to assess the health profile of the sewage farm workers their personal hygiene was measured. The association of their personal hygiene

with other variables were analysed using Chi-square test and its was found that the expenditure on clothing and the environmental sanitary conditions were having significant association with the personal hygiene of the respondent. This was the common situation in Kerala that low income groups spend good amount of money on clothing. But housing was reported to be a major problem faced by the families belonging to low socio-economic groups. Poor housing and sanitation are reported to cause health and nutritional problems. The findings of Zuniga *et al.* (1986) also supports the same.

When the total family income of the respondent was considered it significantly affect the expenditure pattern of food items like cereals, pulses, green leafy vegetables, root and tubers, fats and oils and processed foods.

The expenditure pattern of various food items showed that the diet taken by the sewage farm workers were deficient in many of the essential nutrients. The foods like pulses, green leafy vegetables, nuts and oil seed and animal foods especially meat and egg were consumed only in small quantities, that too infrequently by the poor and hence their diets are found to be inadequate with respect to many nutrients, particularly Vitamin A, iron and riboflavin. Only diets of high and middle income groups in urban areas can be said to be satisfactory (Juna, 1999). Wong *et al.* (1985) also found a direct relation between the amount of family income and expenditure on food. Karuna (1993) also reported the similar findings among the fishermen families of Thiruvananthapuram. Stephanie (1984) revealed that the expenditure on food is high, constituting 60.00 per cent to 70.00 per cent of the total monthly expenditure of an average Indian.

5.3 Correlation between the over all knowledge given, retention and adoption of health, hygiene and dietary practices and selected socio-economic variables

The over all knowledge gain of health, hygiene and dietary practices were analysed and their relationship with selected socio-economic variables were discussed under.

In the present study, age of the respondent have no significant relationship with gain in knowledge on post-test, retention and adoption. In this study there was wide variations in the age groups and it was clear that the old farm workers were as good as young farm workers in learning improved practices (Table 15).

In the present study, gain in knowledge and adoption have no significant relationship with the selected socio-economic variables whereas retention have significant relationship with income, education and change in food consumption pattern on various physiological conditions. Because of higher educational status the respondents retained the topics taught to them that was the main reason for the relationship between selected socio-economic variables and retention of knowledge.

This result was in tune with the findings of Sahoo (1958), Lokhande (1959) and Vishnoi and Bose (1961) was claimed that age of the farmers had no relationship with their gain in knowledge. The studies of Thampi and Menon (1972), Doraiswamy (1977), Kaleel (1978), raghavendra (1979), Seetharamu (1979) and Srishkumar (1979) were also in line with the present study.

5.4 Intercorrelation between selected socio-economic variables and other variables

The present study revealed that age of the respondent had significant relationship with the income and change in food consumption on various physiological conditions. As the age increases, the income of the respondent was also increasing and most of the aged peoples were very much careful about changing food consumption patterns on pregnancy and disease conditions. But most of the changes they made were not desirable. This was supported by the studies conducted by Bhatnagar and Singal (1984). They observed the significant effect of age, caste, type of family and education on the knowledge of the respondent. A study conducted by Aneja *et al.* (1988) revealed that age and education of the respondents have significant correlation with the knowledge regarding health.

The correlation between income of the respondent and other socio-economic variables in the present study showed that it had significant relationship with the total family income and total physical facility available in the family. The income of respondent is a major factor determining their total family income. In most cases the respondent was the only earning member in the family and the physical facility in the family depends only on the income of respondent. Ramnath (1980) also proved the effect of respondents income on the total family income.

The correlation between mass media participation and other variables revealed that it have significant relationship with the total physical facility

and the personal hygiene of the respondent. Mass media help to generate new ideas and informations to improve health and healthful living and because of the exposure to mass media, the respondents exhibit increase in the adoption of personal hygiene and also develop good physical facilities. Mass media participation helps the people to change their faulty habits. Otta (1992) proved that mothers with low educational level were found to have less knowledge about various health care practices and did not take proper health measures.

5.5 Effectiveness of educational programmes on the gain in knowledge on health, hygiene and dietary practices

From the findings of the present study it was clear that the teaching methods has significant influence on the gain in knowledge. Further it was evident that the visual aids when combined with lecture were significantly superior to lecture alone method. The results emphasized the need for making use of visual aids for imparting knowledge to the workers of sewage farm. When visual aids were used along with lecture we can catch hold the attention of the leaner at the same time retention will be more. A picture is equivalent to 'thousand words' and when the same information is given to the leaner through different sources learning will be more effective and reinforcement will be there. As a part of reinforcement adoption will be more. The study conducted by Santhoshkumar (1990) also proved the impact of different teaching methods in the gain in knowledge. The studies of Reddy and Hanumantha (1980) and Sisharrmaish and Rajanna (1984) support the present findings that visual aids are better in increasing the knowledge of respondents.

5.5b. Effectiveness of educational programmes on the retention of knowledge on health, hygiene and dietary practices

In the present study the mean retention score (48.82) was higher than the pre test score (10.61) and control group (6.7) this indicated that the gained knowledge was retained after 15 days of treatment. This is because of the effect of visual aids used. So whenever we have to teach people it is necessary to prepared audio-visual aids which were familiar to the audience and was prepared after pre-test. This may be a reason for retention.

Santhoshkumar (1990) reported that there was significant difference between and among the different visual aids combined with lecture method in retaining knowledge by neoliterates. The result was in line with results of the studies reported by Leagans (1961) Mahajan and Bhaskaram (1966) and Malavia and Verma (1987). All the above studies reported about the effectiveness of flash cards as a visual aid in combination with lecture method in retaining more knowledge over the lecture method alone.

The null hypothesis set for the study that there would not be any significant difference between the treatments involving lecture plus visual aids and lecture alone method in their affect on relating the knowledge by workers of sewage farm in Thiruvananthapuram was rejected. Similarly the null hypothesis that there would not be any significant difference between the visual aids on their effect in increasing the retention of knowledge by the sewage farm workers was also rejected.

The respondents were subjected to the post- delay test after a time lag of 15 days of the message presentation and exposure to visual aids. Santhoshkumar (1990) reported that there was more involvement on the part of the respondents during the exposure of the message by using flashcards since the audience to have a closer look at the illustrations on the cards.

5.6 The comparative analysis of the effectiveness of the selected teaching methods in the gain and retention of knowledge on health, hygiene and dietary practices

5.6.1 The comparative analysis of the effectiveness of teaching methods in the gain in knowledge immediately after treatment (post-test)

The effectiveness of different teaching methods viz., lecture alone, lecture + flashcard, lecture + slide and combination of all were analysed and discussed under. From the analysed data it could be seen that there was significant difference in the mean scores obtained by the women sewage farm workers for the different treatments. At the same time the knowledge gain on the four topics or subjects selected, was also varied.

When the gain in knowledge of the respondents were considered, lecture + flashcard method had got the highest mean value (722.88) and that method was more effective to teaching the respondent. The studies conducted by Santhoshkumar (1990) proved that lecture combined with slides secure the maximum mean score. In the present study the lecture + flash card combination was better for gain in knowledge and the knowledge gain was more on the topic deficiency diseases. Since they are living in a deficiency

stage, they try to understand more on the topic and they want to find a remedy for it. Perhaps it may be difficult to the respondents to grasp the details of messages presented through lecture alone or lecture in combination with slides since they were more in number. Flashcards on the other hand, presented very brief message with illustrations to emphasize the key points of lecture. The number of flash cards used were also less (7 number for each topic) when compared to slides. Moreover there was more involvement on the part of the respondents during the exposure of the message by using flashcards. These are the main reasons that the flash cards in combination with lecture had got the highest score for knowledge gain.

In the above finding, through lecture + slides contribute next to lecture +flash card all other treatments were superior to lecture methods alone. The result emphasised the need for making use of visual aids for imparting knowledge to the sewage farm workers.

The results of the present study is supported by the findings of Mohanty (1962), Bacon (1963) weaver and Bollinger (1963). Hass and Packer (1964), Jalihal (1965), Srinivasamurthy (1965), Ramkrishan (1969). Rao and Rao (1970), Singh *et al.* (1971), Nanjaiyan *et al.* (1976), Shashidharamurthy (1979), Suryaprakash (1979), Reddy (1980), Siddaramaian and Rajanna (1984) and Santhoshkumar (1990). They support the findings that the visual aids such as slides, flashcards, and flannel graphs are better in increasing the knowledge of respondents.

5.6.2 The comparative analysis of the effectiveness of teaching methods in gain in knowledge 15 days after the treatment (retention)

In the present study the retention of knowledge was more when the respondents receive information through the lecture method combined with flash cards and slides. In the present study the flash cards have proved their effect on the gain in knowledge. Since the two visual aids experimented in this study, along with lecture were significantly different from lecture alone method and from each other.

The superiority of the combination of all i.e., lecture + slides + flash cards, reinforcement is more and that could be attributed to the inherent qualities of slides in terms of attracting and holding attention, stimulating interest and making subject matter more understandable. Slides also helps to dramatise a point with sight and sound, at the same time flash cards helps to involve all the respondents during the exposure of the messages. These visual aids presented the informations in a systematic manner so as to make the audience to gain as much information as possible. This could help to acquire and retain more knowledge.

The studies conducted by Santhoshkumar (1990) revealed that lecture combined with flash cards was found to be superior to other treatments in retaining knowledge. But in the present study the combination of all the treatments have got more score for retaining the gained knowledge.

5.7 The comparative analysis of the effectiveness of educational programmes on gain in knowledge one month after the treatment (adoption)

The present study proved that the actual impact of educational programmes was the adoption of the gained knowledge. When the pre and post-test scores of adoption practices were compared it was found that the teaching have significant effect on the adoption practices. Most of the respondents were disserved to adopt the necessary measures taught to overcome deficiency diseases and diarrhoeal diseases. Kunwar *et al.* (1998) proved the variation in adoption of child health care practices due to maternal education. The findings of Rajammal *et al.* (1982), Ramnath (1980) and Neelma (1996) are also in line with the observations of the present study. Philip *et al.* (1998) reported that higher the value orientation, economic motivation and mass media exposure greater would be the rate of knowledge gain as well as adoption.

5.8 Comparative effectiveness of selected teaching methods in the adoption of gained knowledge

In the present study the adoption practices done by the respondents were high when they were exposed to the treatment II i.e., lecture + flashcard. When flashcards were used to supplement the subjects presented through lecture, the respondents grasp more knowledge in simple way and that help them to adopt the gained knowledge in a better way and the reinforcement, retention, interest, motivation etc. may be high.

When lecture alone method was used to teach the respondents, their knowledge gain, retention and adoption practices were low and this was due to the monotony of lecture alone method.

The adoption practices were shown that most of the respondents adopted the practices for the prevention of deficiency diseases. When the pictures of deficiency symptoms shown through flash cards and slides, they become very much aware of the severity and seriousness of those conditions and most of the respondent include nutritious low cost and locally available food items in their daily diet.

Non-adoption was seen only in negligible percentage of the respondents and that was mainly on environmental sanitation. Non-adoption was not because of their behaviour problems, but due to their polluted environment and low level of physical facilities available to them.

SUMMARY

6. SUMMARY

Communication to be effective and meaningful, not only the meaning be imparted, but also be understood properly. In other words communication is the transference and understanding of meaning. This principle is of greater significance when the message is communicated to the workers of sewage farm. The spoken word, supplemented by visual aids suitable to the situation and type of audience make communication still more effective.

In Kerala, no systematic efforts have been made so far to study the health status and dietary practices of the workers of sewage farm, and the impact of educational programmes on it. Hence it was felt worthwhile to undertake an experimental study to evaluate the impact of educational programmes on the health and dietary practices of the workers of sewage farm in Thiruvananthapuram corporation and also to analyse the comparative effectiveness of the selected teaching methods viz., Lecture alone, lecture + flashcard, lecture + slide and combination of all in gain, retention and adoption of knowledge. The study was designed with the following specific objectives.

1. To assess the impact of educational programmes on the gain in knowledge.
2. To assess the impact of educational programmes on the retention of knowledge.

3. To evaluate the impact of educational programmes on the adoption of gained knowledge.

4. To study the relative effectiveness of selected teaching methods in the gain, retention and adoption of knowledge.

5. To study the relationship of certain selected socio al characteristics of the respondents with their gain in knowledge, retention in knowledge and adoption of gained knowledge.

The experiment was conducted in Thiruvananthapuram corporation area. Valiathura ward in this area where the sewage farm is situated was purposively selected for the study.

Hundred families of sewage workers belonging to the defined area formed the study sample. The experimental group consisted of 56 women sewage workers who were grouped into four of equal number. Fourteen women belonged to the male sewage workers families were selected as control group.

The dependent variables selected for the study were gain in knowledge, retention of knowledge and adoption of gained knowledge by the workers of sewage farm. The independent variables for the study include age, family size, type of family, annual income, educational status of the respondent and family, mass media participation, health profile, environment sanitation and dietary habits.

Lecture alone (T_1) lecture + flashcard (T_2) lecture + slide (T_3) and combination of all (T_4) were the four treatments perimental study and the topic selected was human nutrition an in divided into

(1) Balanced diet (2) Deficiency diseases (3) Environmental sanitation and (4) Diarrhoea reasons and remedies.

The knowledge level of each of the respondent was measured

(1) before exposure (pre-test)

(2) Immediately after the exposure (post-test)

(3) 15 days after the exposure (retention) and

(4) After one month to test the level of adoption.

For pre, post and retention tests structured interview schedule was used and to test the level of adoption, a non participant observation with a check list was used. The data pertaining to the independent variables were collected with the help of a structured pre-tested interview schedule. The collected datas were tabulated, analysed statistically and the results were interpreted.

The salient findings of the study are summarised and presented below.

1. Majority of the selected respondents in the study belonged to middle aged category and they belonged to Hindu religion and were from underprivilaged community. Seventy seven percentage of the respondents had small family size and 71per cent had nuclear family. Majority of them belonged to middle income group and the educational status was not much satisfactory. Mass media participation of majority of the respondents were found to be at medium level. Dietary practices showed that most of the respondents were in a deficient condition.

2. The teaching programme had significant impact on the gain in knowledge of the respondents.

3. There was significant difference between the different teaching methods used, in imparting knowledge to the respondent. Similarly the visual aids experimented were also different from each other.

4. Among the four subjects selected for teaching the respondents maximum gain in knowledge was on the topic deficiency disease, and the most effective method for knowledge gain was lecture +flash card followed by T_4 and T_3 i.e., Combination of all and lecture + Slide.

5. There was significant difference in the retention of knowledge of the workers of sewage farm due to the different teaching methods.

6. The two visual aids, in combination with lecture were significantly different from lecture alone method in retaining the knowledge of the respondent. Similarly the visual aids themselves were significantly different from each other.

7. Among the four subjects selected, the knowledge on the 2^{nd} subject i.e., deficiency diseases, was retained more by the respondents and those who were taught by using the treatment T_4 i.e., combination of all retained more knowledge followed by T_3 (lecture + slide) and T_2 (lecture + flashcard).

8. Correlation between overall gain in knowledge retention and adoption and selected socio-economic variables revealed that

a) There exist no significant relationship with overall knowledge gain and adoption and the selected variables.

b) With respect to the retention of the knowledge and the selected variables viz., income of the respondent, educational status and change in food consumption pattern on various physiological conditions were found to be correlated significantly with retention of knowledge.

9. The educational programme had significant influence on the adoption of gained knowledge by the respondents.

10. Among the significantly superior treatments lecture + flashcard (T_2) was superior to the other treatments in adoption practices and this was followed by combination of all (T_4) and lecture + slide (T_3).

11. The four subjects selected, to which the respondents were exposed, the adoption practices were more to reduce the problems related to deficiency diseases, followed by environmental sanitation and the measures to reduce diarrohoea.

12. The comparative effectiveness of the selected teaching methods shows that there was significant difference between the lecture alone method and other treatments. Lecture when supplemented with visual aids were highly superior than lecture method alone in gain, retention and adoption of knowledge by the workers of sewage farm.

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APPENDICES

APPENDIX – I

KERALA AGRICULTURAL UNIVERSITY
College of Agriculture, Vellayani

Department of Home Science

Name of investigator :
Name of subject :

"Impact of educational programmes on the health and dietary practices of the workers of sewage farm in Thiruvananthapuram Corporation"

Interview schedule to elicit information on socio-economic pattern

1. Name of respondent :
2. Address :
3. Religion – Hindu/Muslim/Christian :
4. Caste – Specify :
5. Family size - small/medium/large :
6. Type of family – joint / nuclear :
7. Composition of family :

Sl. No.	Name of family member	Relationship with the head of the family	Age	Sex	Educational status	Occupation		Income	
						Main	Subsi.	Main	Subsi.

8. Total income of the family
9. Monthly expenditure pattern

Sl. No.	Item	Average expenditure / month (Rs.)						
		0	1 - 100	100 – 500	500 – 1000	1000 – 1500	1500 – 2000	> 2000
1.	Food							
2.	Clothing							
3.	Housing							
4.	Education							
5.	Health							
6.	Travelling							
7.	Recreation							
8.	Fuel							
9.	Water							
10.	Electricity							
11.	Gifts							
12.	Festivals/special occasions							
13.	Savings							

APPENDIX – I Continued

Schedule to collect information on the exposure to information sources of respondents

I. 1. Do you own a radio ? Yes/No

2. Do you hear radio ? Yes/No

3. Do you listen programmes related to health and hygiene Always/Occasional/Never

II. 1. Do your family possess T.V. ? Yes/No

2. Do you see television programmes ? Yes/No

3. Do you listen programmes related to health and hygiene Always/Occasional/Never

III. 1. Do your family subscribe newspaper ? Yes/No

2. Do you read newspaper ? Yes/No

3. Do you read articles related to health and hygiene Always/Occasional/Never

IV. 1. Do your family subscribe health magazines ? Yes/No

2. Do you read health magazines ? Always/Occasional/Never

V. Contact with extension agency :

A. Formal sources

1. Extension Officers in women welfare ☐
2. Health workers ☐
3. Anganwadi workers ☐
4. ICDS Supervisors ☐
5. Others ☐

B. Informal sources

1. Neighbours ☐
2. Friends ☐
3. Relatives ☐
4. Ayalkoottam ☐
5. Youth clubs ☐
6. Mahilamandals ☐
7. Others ☐

APPENDIX – I Continued

Schedule to collect the details about the physical facilities and environmental sanitary conditions available in the family

1. Total land owned
2. Ownership of the house
3. Type of housing
4. Do you have proper ventilation facility in your house
5. Do you have facilities for defecation/urination
6. If yes, specify
7. Do you have domestic animals in your house
8. If yes, distance from animal house and your house
9. How do you dispose your house hold waste
10. Sources of drinking water in your home
11. Source of water for washing/bathing
12. Do you have drainage facility in your house
13. If so, how do you dispose waste water form the house
14. Is there the presence of stagnant pool of water around your house
15. Is there the presence of more number of mosquitoes in your home
16. If yes, what type of measure do you adopt to control it

APPENDIX – II

KERALA AGRICULTURAL UNIVERSITY
College of Agriculture, Vellayani
Department of Home Science

Name of investigator :
Name of subject :
"Impact of educational programmes on the health and dietary practices of the workers of sewage farm in Thiruvananthapuram Corporation"

Schedule to collect the informations regarding dietary habits of the family

A. Dietary habit of the family - Vegetarian/Non-vegetarian

	Food items	Expenditure/month	Frequency of use	Method employed for cooking
1.	Cereals	1.1	1.2	1.3
2.	Pulses	2.1	2.2	2.3
3.	Green leafy vegetables	3.1	3.2	3.3
4.	Other vegetables	4.1	4.2	4.3
5.	Roots & tubers	5.1	5.2	5.3
6.	Fruits	6.1	6.2	6.3
7.	Nuts & Oil seeds	7.1	7.2	7.3
8.	Milk & Milk products	8.1	8.2	8.3
9.	Fats & Oils	9.1	9.2	9.3
10.	Sugar & Jaggary	10.1	10.2	10.3
11.	Animal foods	11.1	11.2	11.3
12.	Beverages	12.1	12.2	12.3
13.	Spices & condiments	13.1	13.2	13.3
14.	Processed foods	14.1	14.2	14.3
15.	Special foods prepared on special occasions			

16.Special foods given during physiological conditions

16.1 Pregnancy (Specify) [ ]

16.2 Lactation (Specify) [ ]

16.3 Infancy (Specify) [ ]

17. Do you modify food for sick person [ ]

18. If yes, what type of modification (Specify) [ ]

APPENDIX – III

KERALA AGRICULTURAL UNIVERSITY

College of Agriculture, Vellayani

Department of Home Science

Name of investigator :
Name of subject :

"Impact of educational programmes on the health and dietary practices of the workers of sewage farm in Thiruvananthapuram Corporation"

Schedule to collect the information regarding the health profile and personal hygiene of the respondent and family

1. Mention the incidence of diseases in your family during the past one year
2. Do you know about the immunizations to be given for the children and mothers.
3. If yes, immunization taken

Disease	I	II	III	Booster
1. BCG				
2. Triple antigen				
3. Polio vaccine				
4. MMR				
5. Hepatitis B.				
6. Others				

4. 1. Do you take bath every day ?

2. If no, now often do you take bath

3. Why? Specify

4. Do you insist your family members to bath daily

5. If no, how often do they take bath

6. Why ?

7 Do you use soap to clean your body ?

5. 1. Do you wash your teeth daily

2. If no, when do you clean your teeth ?

3. Do your children clean their teeth daily ?

4. If no, how often do they clean their teeth ?

6. 1 Do you wash your hands before taking food ?

2. Do you insist your children to wash their hands before taking food ?

3. Do you insist your family members to wash their hands before taking food ?

7.1 Do you wash your hands with soap after defication ?

2. Do you insist your children to wash their hands with soap after defication ?

8. 1. Do you use foot wears ?

2. Do your children wear foot wears ?

3. If no, why ?

APPENDIX IV

KERALA AGRICULTURAL UNIVERSITY
College of Agriculture, Vellayani

Department of Home Science

Name of investigator :
Name of subject :

"Impact of educational programmes on the health and dietary practices of the workers of sewage farm in Thiruvananthapuram Corporation"

Statements to test the knowledge on health, hygiene and dietary practices

SUBJECT -1 BALANCE DIET

Sl. No.	Statements	True / false		
		Pre-test	Post test	retention
1	We need energy to do work			
2	Balanced diets are expensive			
3	Low income groups cannot be able to prepare balanced diets			
4	Heavy workers and sedentary workers need equal amount of food			
5	There is no difference between the amount of food consumed by the male and female members			
6	Protein is needed for the protection and growth of the body			
7	Meat, milk and fish are good source of protein			
8	In addition to protein, fishes are rich source of vitamins			
9	The daily consumption of tapioca and fish is better than any other food			
10	Meat and fish can be substituted with pulses			
11	Sugar and jaggary are rich in calorie			
12	Anaemia occurs due to the deficiency of iron			
13	It is essential to include vegetables in a non-vegetarian diet			
14	Fishes are rich source of vitamin and minerals			
15	Vegetables and fruits are rich in vitamins			
16	While cooking, it is better to cut vegetables in small pieces.			
17	Lack of vitamins cause deficiency diseases			
18	Carrot, pappaya and pumpkin are better for good vision.			

APPENDIX IV Continued

SUBJECT II- DEFICIENCY DISEASES

Sl. No.	Statements	True/false		
		Pre-test	Post test	Retention
1	Deficiency of vitamins and minerals cause deficiency diseases			
2	Deficiency diseases are most commonly seen in children and pregnant women			
3	Vitamin A deficiency affects normal vision			
4	Pappaya is rich in vitamin A.			
5	Green leafy vegetables contain more amount of vitamin C.			
6	Drumstick leaves and curry leaves are deficient in vitamin A.			
7	Vitamin A and vitamin D tablets are available			
8	Vitamin D is absent in breast milk			
9	Availability of iron in the diet can be increased by using iron vessels for cooking.			
10	Deficiency of vitamin D affects bone functioning.			
11	Scurvy occurs due to the deficiency of vitamin C			
12	It is essential to remove bran from the grains.			
13	Spoon shaped nails are seen in Anaemic persons.			
14	Goitre occurs due to the deficiency of vitamin K.			
15	The dryness and scaly appearance of the skin are seen in the disease pellagra			
16	Fish oil concentrates are rich in vitamin A.			

APPENDIX IV Continued

SUBJECT III- DIARRHOEA- REASONS AND REMEDIES

Sl. No.	Statements	True/false		
		Pre-test	Post test	Retention
1	Diarrhoea if untreated, may be a reason for death			
2	Due to diarrhoea, the loss of water and mineral from the body occurs			
3	The intake of more water is restricted in diarrhoea			
4	In diarrhoea, food intake is not permitted			
5	Intake of lime juice is restricted to diarrhoea patients			
6	Tender coconut water and light tea are recommended during diarrhoea.			
7	Severe cholera results in shunken eyes			
8	Dryness of mouth occur during diarrhoea			
9	Patients having diarrhoea were provided with ORS as a life saving measure.			
10	ORS cannot be able to prepare in our home			
11	Boiled water is more pure			
12	Intake of ORS reduce diarrhoea			
13	Do not give breast milk to infants having diarrhoea.			
14	Diarrhoeal diseases are transmitted by house flies			
15	With proper hygienic practices, diarrhoea can be prevented			

APPENDIX IV Continued

SUBJECT IV - ENVIRONMENTAL SANITATION

Sl. No.	Statements	True/false		
		Pre-test	Post test	Retention
1	Worm infestation and diarrhoeal diseases can be prevented by keeping clean environment.			
2	Well water is more or less pure			
3	When bleaching powder is used to purify well water, it can be used for drinking only after one month			
4	Bathing in the sides of well is not a healthy habit			
5	Potassium permanganate is used to purify well- water.			
6	Well water can be used, for household purpose without purification			
7	Polio, yellow fever etc are transmitted through water			
8	Jaundies is not transmitted through water.			
9	Using toilet is a part of environmental sanitation.			
10	It is necessary to have a distance of 50 feet between the toilet and well (source of drinking water)			
12	Children infested with worm, try to eat sand.			
13	By using foot wear, worm infestations can be reduced			
14	Worm infestation do not cause skin irritations and scabies			
15	The contaminated cloths of diarrhoea patients were washed in ponds			
16	The smoke from factories cause health hazards.			

APPENDIX V

KERALA AGRICULTURAL UNIVERSITY
College of Agriculture, Vellayani

Department of Home Science

Name of investigator :
Name of subject :

"Impact of educational programmes on the health and dietary practices of the workers of sewage farm in Thiruvananthapuram Corporation"

Check list to test the knowledge adoption level

Sl. No.	Statements	Pre-test	Post-test
I	SUBJECT I - BALANCED DIET		
1.	Balanced diets were prepared within the low-income level.		
2	For heavy workers give more food		
3	Foods rich in protein, (milk, fish, meat) were included in the daily diet.		
4	Male members have given more amount of food.		
5	Pulses were included in the daily diet		
6	Vegetables were included in the daily diet along with fish		
II	SUBJECT II- DEFICIENCY DISEASES		
1	Vegetables were cooked by the methods which prevent nutrient loss.		
2	Pappaya, carrot, pumpkin etc were included in the diet because they are rich in vitamin A.		
3	In order to reduce anemia green leafy vegetables were included in the daily diet		
4	Iron vessels were used for cooking		
5	Cereals were used without removing bran.		
6	Deficiency of vitamins and minerals are reduced by supplemented with tablets		

APPENDIX V Continued

Sl. No.	Statements	Pre-test	Post-test
III	SUBJECT III- DIARRHOEA- REASONS AND REMEDIES		
1.	The loss of water and mineral due to diarrhoea were prevented by giving more fluids		
2	ORS in used to reduce diarrhoea and prepared in home.		
3	Tender coconut water was given to diarrhoea patients		
4	When ORS was used severity of diarrhoea was reduced.		
5	Breast milk was given to infants having diarrhoea.		
6	To prevent diarrhoea, cholera etc, they kept the environment clean.		
IV	SUBJECT IV- ENVIRONMENTAL SANITATION		
1	Do not bath in the side of well		
2	Well-water is purified for drinking purpose.		
3	Potassium permanganate, bleaching powder etc are used for the purification of water		
4	The drinking water is to be boiled, to prevent diseases like polio, yellow fever etc.		
5	Foot wears are used to prevent worm infestation		
6	The cloths of diarrhoeal patients were disinfected with dettol and boiling water.		
7	to prevent diseases caused by flies, worms etc, they keep the environment clean and tidy		

IMPACT OF EDUCATIONAL PROGRAMMES ON THE HEALTH AND DIETARY PRACTICES OF THE WOKERS OF SEWAGE FARM IN THIRUVANANTHAPURAM CORPORATION

By

RAZEENA. K.A.

ABSTRACT OF THE THESIS
SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT
FOR THE DEGREE OF
MASTER OF SCIENCE IN HOME SCIENCE
(FOOD SCIENCE AND NUTRITION)
FACULTY OF AGRICULTURE
KERALA AGRICULTURAL UNIVERSITY

DEPARTMENT OF HOME SCIENCE
COLLEGE OF AGRICULTURE
VELLAYANI
THIRUVANANTHAPURAM

2000

ABSTRACT

A study entitled the ' Impact of educational programmes on the health and dietary practices of the workers of sewage farm in Thiruvananthapuram Corporation' was conducted to evaluated the impact of educational programmes on the knowledge and adoption of health and dietary practices by the workers of sewage farm in Thiruvananthapuram and also to find out the comparative effectiveness of the selected teaching methods.

The study was carried out in Valiathura ward in Thiruvananthapuram Corporation where the sewage farm is situated. Two selected visual aids viz., flashcards and slides, were tested for their effectiveness. The subjects selected to teach the respondents were Balanced diet, deficiency diseases, environmental sanitation and diarrhoea-reasons and remedies. Hundred families of sewage workers belonging to the defined area form the study sample. The experimental group consisted of 56 women sewage workers. The four groups were exposed to all the selected topics at one week interval using the selected teaching methods.

Gain in knowledge, retention in knowledge and the adoption of gained knowledge on health, hygiene and dietary practices are the dependent variables. Age, family size, type of family, annual income, educational status of the respondent and family, mass media contact, dietary practices, physical facility available in the family and health profile were selected as independent variables.

The results revealed that the educational programme had significant impact on the knowledge and adoption of health and dietary practices by the workers of sewage farm. The gain in knowledge and retention was more on the topic deficiency diseases. The treatment II i.e., lecture + flashcard was the most effective method in terms of gain in knowledge where as the combination of all contributed the maximum to retention of knowledge. The knowledge adoption was also more on the topic deficiency diseases and the adoption was more in the respondents, who were exposed to treatment II i.e., lecture +flashcard.

The analysis of correlation coefficient revealed that the age and family size of the respondents were not correlated significantly, in the case of gain in knowledge, retention of knowledge and adoption. Income of the respondent was significantly and negatively correlated with the retention of knowledge. The educational status of the respondent was significantly and positively correlated with the retention of knowledge. The mass media participation of the respondent was positively correlated with gain and retention of knowledge. There was no significant relationship between the dependent variables and the total physical facility available in the family. Change in food consumption pattern on various physiological conditions have significant positive association with the retention of knowledge.

The relative effectiveness of the selected teaching methods revealed that there was significant difference between the selected four methods of teaching. The lecture method in combination with selected visual aids have more influence on the gain, retention and adoption of knowledge when compared with the lecture method alone.