

**HOUSEHOLD FOOD SECURITY AND
NUTRITIONAL STATUS OF WOMEN
AGRICULTURAL LABOURERS**

**By
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THESIS

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requirement for the degree of**

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DECLARATION

I hereby declare that the thesis entitled “**Household food security and nutritional status of women agricultural labourers**” is a bonafide record of research work done by me during the course of research work and that the thesis has not previously formed the basis for the award to me of any degree, diploma, associateship, fellowship or other similar title, of any other university or society.

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ABBREVIATIONS

BMI	Body Mass Index
CED	Chronic Energy Deficiency
FAO	Food and Agricultural Organisation
ICAR	Indian Council of Agricultural Research
ICMR	Indian Council of Medical Research
IFPRI	International Food and Policy Research Institute
MSSRF	M.S.Swaminathan Research Foundation
NIN	National Institute of Nutrition
NNMB	National Nutritional Monitoring Bureau
RDA	Recommended Dietary Allowances
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Emergency Fund
USDA	United States Department of Agriculture
WHO	World Health Organisation

INTRODUCTION

1. INTRODUCTION

At the threshold of the twenty first century; perhaps the most critical task facing Indian agriculture is to feed its ever burgeoning populace. Since independence, though the food grain production has increased four fold the population also increased three times (Sharma, 2001). The country has accumulated about 70 million tones of food stocks that remain unused and this gives the impression of excess production and high consumption (Purushothaman and Paul, 2003). Eventhough the aggregate food production is sufficient to feed all, yet some 800 million people do not have access to sufficient food. Thus, one side of the coin gives a rosy picture while the other side presents a gloomy picture. Though there is “food for all” the biggest challenge facing the nation is to ensure “food to all” to achieve food security. Hoddinott and Yohannes (2002) defined food security as “when all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life”.

Inspite of the substantial progress made in India’s food production serious nutritional challenges continue to threaten the progress of our country. Although adequate food is available through markets, food security at the household level remains a challenge, mainly because of low purchasing power, and lack of accessibility of a variety of foods to most of the people.

Households that are food secure are the ones capable of providing an adequate supply of nutritious and safe food on a sustainable basis to each member of the family (Prema, 2001). Even with adequate food availability at the household level it does not guarantee adequate individual dietary intake both in terms of quality and quantity. This is mainly due to the gender bias inherent in the culture that favour male over female members of the households. Nutritionally inadequate diets among the households coupled with the male biased intra – household food distribution and lack of care for the nutritionally vulnerable members of the households especially women and children may result in widespread nutritional disorders.

Hence, an attempt has been made to find out the household food security and nutritional status of women agricultural labourers with the following objectives.

1. To assess the current status of the household food security.
2. To assess the nutritional status of women agricultural labourers.
3. To find out the determinants of household food security.
4. To find out the influence of household food security on the nutritional status of women agricultural labourers.

REVIEW OF LITERATURE

2. REVIEW OF LITERATURE

Literature relevant to the study entitled “Household food security and nutritional status of women agricultural labourers” is reviewed in this chapter under the following sections.

1. Role of women in agriculture.
2. Factors influencing the nutritional status of women.
3. Prevalence of nutritional deficiency diseases among women.
4. Dimensions of food security.

2.1 ROLE OF WOMEN IN AGRICULTURE

Women are the back bone of Indian farming. Women in agriculture are often ‘physically visible’ but conceptually and culturally are invisible and remain marginalized (Sailaja and Reddy, 1999).

According to 2001 census, Kerala has higher number of females than males i.e. 1058 females per 1000 males (Competition Success Review Year book, 2002). Females constitute 51.42 per cent of the total population as against 48.58 per cent of male in Kerala (Government of Kerala, 2002). Working women in the organized sector constitute 10 per cent of the work force while the remaining 90 per cent is in the unorganized sector (Alva, 1998 and Agarwal, 2000). Pratheesh (2002) reported that in Ollukkara block panchayat of Thrissur district, agricultural labourer families constitute about 33.4 per cent.

Women performed tasks essential to any society’s survival, from raising children to giving food and to feed their families (UNICEF, 1985). Manjulatha (1993) observed that in India more than 60 per cent of the agricultural operations are performed by women. Women perform 50 per cent of the labour involved in intensive rice cultivation in Asia and 30 per cent of the agricultural work in industrialized countries (Brathe, 1998).

Rural women play a critical role in household activities both inside and outside the home (Jhurani, 1985). In addition to cooking, cleaning and caring for children and spouse, rural women are engaged in various agricultural activities and rearing domestic animals (Quisumberg, 1995).

Engagement of female labourers in farming activities is a common feature of Indian agriculture (Swamy and Vijayalakshmi, 1999). Women participate in most of the agricultural operations like manuring, land preparation, applying fertilizers, harvesting, threshing and storage of food grains (Monika and Sawhney, 1999 and Cherian *et al.*, 2000). According to Rajalakshmi and Gayathri (2001) farm women involve in activities like harvesting, post harvest operations, cleaning and storing the grain, feeding cattle and kitchen gardening.

Haemalatha (1998) observed different roles of women in agriculture like pulling out seedlings from nursery bed, weeding, transplanting, harvesting, winnowing, dehusking, storage of dried seeds, supervision of labourers, maintenance of cattle shed, management of milch animals and taking care of sick animal. Other activities of women include kitchen gardening, production of mushrooms using agricultural wastes, production of grafted and budded plants, nursery raising etc, through women's groups (Jayalakshmi, 1998). Since time immemorial women labourers have been practicing various cultural operations of paddy cultivation with their own specific skill and excellence (Gurumoorthy, 2000). According to Jyothi (2003) harvesting and transplanting are the major farm operations done by women agricultural labourers involved in rice cultivation.

In a study conducted among women in the East Godavari district of Andhra Pradesh Mrunalini (1992) revealed that irrespective of land holdings women participated in the household operations which comprised house keeping, food related and family care related operations. A study conducted to understand the present scenario of participation of women in commercial poultry farming in rural areas of Namakkal district by Amudha and Bhadrachari (2000) revealed that participation of women is mostly confined to activities like feeding and litter

management and important aspects like marketing, production and medical care are left for the men folk to handle.

Rural women in the world over play a major role in ensuring food security and in the development and stability of rural areas (Brathe, 1998). Kahlon and Hansra (1998) also indicated that women play a major role in providing better food to every member of the family so as to ensure food security.

Absan (1986) observed that in Bangladesh, 75 per cent of females spend 30 per cent of their time in agricultural activities. He also pointed out that women from small farmer households spend more time in field agriculture, while women from larger farm households spend more time in homestead agriculture. However, the landless females were found to be involved in agricultural activities for earning direct income.

According to Sundari (1990) and Rajuladevi (2001), the jobs which are strenuous and arduous are kept aside exclusively for women and these jobs are termed as nonskill requiring and paid less for the same reason. The position of Indian women in the unorganized sector is characterized by increasing concentration of the work force with no job security, arduous working condition and low wages (Sundari, 1990). Nair (1990) showed that women worked for longer hours and contributed more in terms of total labour energy that was spent by the family members.

Sheela (1993) observed that hard labour, low wages and uncertainty in employment are the characteristic features of the working condition of women quarry workers. Swaminathan (1998) reported that women belonging to the economically and socially underprivileged sections often work for more than 15 hours a day and earn less than Rs.30 per day. According to Jyothi (2003) men agricultural labourers used to get Rs.80 to Rs.110 per day while the wage of women agricultural labourers varied from Rs.40 to Rs.60 per day depending upon the work load.

Singh (2000) conducted a study in the Himalayas and revealed that a pair of bullocks work for 1064 hours, a man for 1202 hours and a women for 3485 hours in a year on a one hectare farm. Mor (2001) indicated that Indian women work for 69 hours in a week whereas men work only for 59 hours. Jejuverma (2002) noted that a women on an average works for 3,380 hours per hectare in a year which was equal to the combined work done by man and two bullocks.

According to Umarani (1999) women are the better managers than men in the fields of livestock management and poultry. Meena *et al.* (2000) indicated that women's work in agriculture and household activities are significantly higher than men's work. Women's share of labour hours is increased disproportionately to that of men (Sheela and Puttaraj, 2001).

In the rural areas, women shoulder numerous responsibilities in homemaking and income generating activities (Vijayalakshmi, 1991). According to Singh (2000) women put in nearly 2/3rd of human work hours, receive 1/10th of the world's income and own 1/100th of the world's property.

2.2 FACTORS INFLUENCING THE NUTRITIONAL STATUS OF WOMEN

Malnutrition is a condition when one or two nutrients are less or are in excess in the body (Robinson, 1990 and Begum, 1991). Malnutrition has been described as a biological state resulting from a relative or absolute deficiency or excess of one or more essential nutrients (WHO, 1993).

The nutritional status of each member of the household depends on several conditions being met: the food available to the household must be shared according to individual needs; the food must be of sufficient variety, quality and safety and each family member must have good health status (Ravindran, 1996).

Poverty is the first source of limitation on the consumption of food by large sections of the population (Swaminathan, 1996 and Singh, 1998). Women's poor health status is directly due to her low social status, unequal intrafamilial distribution of food and unequal provision of health care (Swamy and Vijayalakshmi, 1999).

Household income, educational level and occupation of the head of the household and size of household affect the nutritional status (WHO, 1995). The socio-economic factors such as income, occupation and migration have a profound influence on nutrient intake while, among the biological factors, sex and physiological status of women emerge as strong variables in influencing nutrient intake (Busi and Saileela, 1999).

According to Rajkumar and Premakumari (2000) women's health and nutritional status are affected by socio-economic conditions like poverty, illiteracy, over work, repeated pregnancies, high infant and maternal mortality rates, ineffective health care services, faulty food habits, hazardous work environment, infections and infestations. The most important social, economic and cultural dimensions which affect women's provision of nutrition are women's employment, women's decision making power, the way of disposal of their income and their ability to cook and serve adequate quantities of food to individual household members (Khetarpaul and Grover, 2001).

Rothenberg *et al.* (1994) in their study observed that food choices and intakes are related to socio-economic status and daily living status in the homogenous population. Diet varies from individual to individual due to variation in the social, economic, demographic status and seasons and the diet has a far reaching influence on health and nutritional status (Rahman and Rao, 2000). According to Yongok (2001) individuals with high socio-economic status had significantly higher intake of most of the nutrients. He also opined that income and education are the most important variables influencing the food and nutrient consumption.

Employment and economic improvement of women combined with education, health and social inputs would definitely serve as a motivation for consuming nutritious food (Vijayalakshmi, 1991). Nayga (1994) observed that factors like urbanization, religion, race, ethnicity, sex, unemployment, household size, weight, height, age and income affect the consumption of certain food groups.

Variation in the food consumption pattern and nutrient intake is due to the inequalities in income and occupational status (Brahman *et al.*, 1987; Bigsten *et al.*, 1992 and Rahman and Rao, 2000). Rose *et al.* (1995) opined that economic factors especially income affect the dietary intake. According to Hemalatha *et al.* (2000), employment is the best and cheapest guarantee to enhance the nutritional status as it supplements to the household income and paves for better purchasing power. Unemployment and economic difficulties in the family decreased the level of food intake (Roos *et al.*, 2001).

Studies conducted among the vulnerable rural segments of Hyderabad and Karnataka indicated more nutritional inadequacy among the lower socio-economic groups (Rao *et al.*, 1981; Swamy and Vijayalakshmi, 1999; Farzana and Manay, 2000). Rao *et al.* (1986) observed that the dietary and nutritional status of urban population groups had a clear cut socio-economic differentials with high income group showing higher level of nutrient consumption and better nutritional profile than the other two groups and slum registered the poorest level of nutrient consumption.

According to Farzana and Manay (2000) high income households spend more proportion of their income for protein rich protective foods like pulses, milk, vegetables and flesh foods in their diet. In Hyderabad, Rahman and Rao (2000) indicated an increase intake of qualitative foods with an increase in the income. Rahman and Rao (2001) also reported that the low income group families spent 82 per cent of their total income for food while the high and middle income groups spent only 40 and 43 per cent of their total income for food respectively.

According to Brahman *et al.* (1987) and Farzana and Manay (2000) the average dietary consumption of various foods and the nutritional status among the urban groups differed according to their socio-economic status. Brahman *et al.* (1987) also indicated that the poor nutritional standards of the slum dwellers in urban area is due to the poor food intake and environmental conditions. Kumar (1996) reported that among the rural and urban areas of India the changes in the food consumption pattern is due to the changes in faster urbanization and growth in the economy.

Genecaga and Huddleston (1986) reported that educational level of parents and their knowledge of sound dietary practices as the most important determinants of nutritional status. A positive association between parental literacy and nutritional status was reported by Vazir (1990) and Devadas *et al.* (1991). Alderman and Garcia (1992) reported that raising of the household food consumption had less impact on nutritional status than increasing the educational level of mothers.

Adverse circumstances such as unemployment, economic distress and natural calamities also affect the level of food intake (Panicker, 1979). Niedzialek (1983) opined that seasonal nature of consumption could be considered as one of the causes of poor nutrition among agricultural labourers. Seasonal variation in environmental conditions, food prices and labour demands in rural areas of developing countries produced considerable variation in food consumption pattern and also in the nutrition and health status of the people (Behrman and Deolalikar, 1986). According to Devadas and Easwaran (1986), food habits of the people depend on availability of food. Food habits of subsistence farmers depended mainly on the subsistence cropping system and the seasonalities and perishabilities of certain foods and food products (Haillu, 1990).

Larger family size resulted in improper food distribution among family members of agricultural labourers mainly due to low purchasing power and faulty food habits (Thimmayamma; 1983). According to Saxena (1986) nuclear families were better than joint families in health and development.

According to Suiter and Hunter (1980) physiological influences and the thoughts, beliefs and emotions will affect the nutritional status of an individual. Gopalan (1991) indicated that the nutritional problems in the developing countries are due to the inadequate diet with respect to quantity and quality of food necessary for the physiological needs and welfare of the population.

Dewalt (1993) reported that the nature of the crop, the control of production and income, the allocation of household labour, the maintenance of subsistence production, land tenure and pricing policies for both cash crops and food stuffs appear to be the most crucial factors in the nutritional status of rural people.

The volume and structure of food consumption were influenced mostly by changes in retail food prices and by the price of industrial goods and nominal wage levels (Stikova, 1994).

Among rural households, women's time use and opportunities for off farm employment might be the important variables mediating nutritional status of women and children (Ashmore and Curry, 1994 and Ashmore, 1996). Ashmore (1996) reported that commercial live stock production may alter both food intake and the intrahousehold control of nutritional resources.

Sundari (1990) pointed out that for women employed as casual labourers, their job, inspite of providing greater economic freedom results in greater drudgery and consequently poor nutritional status. The working environment in which women spend a significant part of their functional life has a decisive influence on their health, safety, physical, mental and social well being (Rajkumar and Premakumari, 2000).

According to Perla and Estella (1997) other factors which influence nutritional status are political stability, gross domestic product, growth rate, agricultural production, poverty incidence and prevalence, annual per capita

income, employment rate, infant mortality rate, occurrence of infectious and non infectious diseases and delivery of health, nutrition and other social services. :

Women's access to and control over assets is an important determinant of their ability to lead a healthy life. According to Deshpande *et al.* (2001) nutrition, financial independence and education for women are being stressed as important pre-requisites to improve nutritional status of the community.

2.3 PREVALENCE OF NUTRITIONAL DEFICIENCY DISEASES AMONG WOMEN

Women have been the focal point for family health and have been referred to as the producers of health and nutrition for the family (Swamy and Vijayalakshmi, 1999). Women occupy an important position in any effort for controlling malnutrition as they are entirely responsible for the nutritional status of the family and hence the nation (Hemalatha *et al.*, 2000). Good nutritional status of women is essential to improve the quality of their present and future life as well as that of their family.

The most important nutritional problems prevalent in India include protein calorie malnutrition, iron deficiency anaemia, iodine deficiency, vitamin A and B complex deficiencies (Vijayalakshmi *et al.*, 1987, Perla and Estella, 1997, Chakravarthy and Ghosh, 2000 and Gopalan and Aeri, 2001).

In tropical countries adult malnutrition has received much less attention than that of children. The prevalence of adult under nutrition has been high in poor socio-economic group and continues to be an important public health problem in India (Naidu and Rao, 1994).

Protein energy malnutrition was documented among women of both rural and urban population in India (Harris *et al.*, 1990 and Rasmussen and Habicht, 1992). Sar *et al.* (1991) observed protein deficiency among 30 per cent of women in the rural households of Maharashtra. The prevalence of malnutrition is

3.9 per cent among men and 6.2 per cent among women in greater metropolitan Sao Paulo (Martins and Melendez, 1999). Getaburn *et al.* (2001) observed protein energy malnutrition among the rural women in Ethiopia.

Surveys carried out by NNMB during 2000-2001 in the rural areas in all states of India except Uttar Pradesh indicated that about 80 per cent of male and 88 per cent of females were consuming diets that were adequate in protein and energy (NIN, 2002).

A district level survey conducted in West Bengal (NIN, 2002) to assess the food and nutrient intakes of rural and urban communities indicated higher intake of all nutrients except the micronutrients such as iron, vitamin A and riboflavin. The extent of deficit with regard to micronutrients was higher among females with 40 per cent for iron, 35 per cent for vitamin A and 45 per cent for riboflavin.

Nutritional anaemia is common in 50-70 per cent of women who took cereal based vegetarian diet because of excessive body needs of iron (NIN, 1984). Anaemia is one of the main causes of maternal mortality (UNDP, 1999). In almost 1/5th of maternal deaths (19.3%) in rural India, anaemia was reported to be an indirect cause (Negi, 1999). For severe anaemia the highest and lowest prevalences were observed in rural areas, with the rural high standard of living group exhibiting the lowest (1%) and the rural low standard of living group the highest (3%) prevalence (Bentley and Griffiths, 2003).

Roy (1991), in a study conducted among the tea garden workers of North Bengal observed that iron deficiency anaemia occurred more frequently among women than among male workers. Seralathan *et al.* (1993) observed that 16 per cent of farm women in Coimbatore district suffered from severe anaemia. According to Singh *et al.* (2001) iron deficiency anaemia is a major health problem resulting in considerable mortality and morbidity at an early age.

Cherian (1992) and Augustine (1993) observed iron deficiency anaemia among the agricultural labourers and women engaged in stone breaking in Thiruvananthapuram district. Study conducted by Udaya (1996) and Smitha (1999) reported anaemia among 60 per cent of farm women and women agricultural labourers of Thrissur district respectively on the basis of haemoglobin status. Jyothi (2003) also observed anaemia among 63.33 per cent of women labourers involved in rice cultivation in Palakkad district of Kerala.

Rajkumar and Premakumari (1999 and 2000) in their studies among women workers of different occupational sectors in Coimbatore observed under weight and anaemia. Farzana and Manay (2000) and Singh and Baghe (2001) reported nutritional anaemia among women in rural areas of Karnataka. Ramya and Devaki (2000) observed increasing degrees of anaemia associated with deficient intake of iron, vitamin C, protein and energy among women construction workers in Thirupathi.

Study conducted by Mathuravalli *et al.* (2002) among the urban slums of Madhurai district also observed anaemia among women.

Saxena and Taneja (1999) in their studies among the pregnant and lactating women of Jhabua district of Madhya Pradesh observed higher rate of morbidity and mortality among women during child bearing. Kapil *et al.* (1999) indicated that 4.8 per cent of pregnant women in three urban slum communities of Delhi had iron deficiency anaemia. Dietary intakes showed that 8 to 85 per cent of women in this area were consuming less than 50 per cent of energy, protein, iron and β -carotene as compared to their RDA.

Gopalan (2001) reported the occurrence of anaemia among pregnant women in the state of Orissa, Assam, Meghalaya, Tamil Nadu, Kerala, Punjab and Madhya Pradesh and indicated significant differences with respect to anaemia among the different states.

A study conducted by Sucharno *et al.* (1992) observed iron deficiency anaemia among 43.5 per cent pregnant women in West Java, Indonesia. Iron deficiency anaemia was also observed among the rural women of child bearing age in China (Liu *et al.*, 1992) and Costa Rica (Rodeguize *et al.*, 2000). Iron deficiency anaemia among the rural pregnant women in North West Ecuador, Ethiopia, Tanzania, Burkina and Mexico was reported by Weiget *et al.* (1992), Haidar *et al.* (1999), Antelman *et al.* (2000), Meda *et al.* (2000) and Perez and Alamaguir (2002) respectively. Anssary *et al.* (1999) observed iron deficiency anaemia among the mothers in the rural areas of Kohrran Abad city. Sanchez *et al.* (2000) observed anaemia among 3 per cent of women above 18 years in the Canary Island population. The authors also reported deficient ferritin levels among 25 per cent of women

A study conducted by Kupputhail and Mallika (1993) among women belonging to Khond, Gadaba and Porja tribes of Andhra Pradesh observed anaemia in the form of pallor of conjunctiva and Koilonychia.

Bentley and Griffiths (2003) reported that 32.4 per cent, 14.19 per cent and 22 per cent of women in Andhra Pradesh had mild, moderate and severe anaemia respectively.

Brabin *et al.* (1998) reported anaemia among women of different weight categories which was found to be 52 per cent for thin women, 50 per cent for normal weight and 41 per cent for over weight women. Kumar (2000) observed anaemia among 40 per cent of women in the highest socio economic group while among urban poor and rural poor women the prevalence was found to be 62 per cent and 54 per cent respectively.

The prevalence of goitre is higher among females (Griffiths and Bentley, 2001). In India, 200 million people are estimated to be at risk of iodine deficiency disorder. A study conducted by Kapil *et al.* (1999) observed that 22.9 per cent of pregnant women had iodine deficiency disorder.

Sucharno *et al.* (1992) reported vitamin A deficiency among 2.5 per cent of pregnant women in Indonesia. Christin *et al.* (1995) reported clinical symptoms of vitamin A deficiency among the pregnant women in rural Nepal. Kapil *et al.* (1999) observed retinal deficiency among 4.8 per cent of pregnant women. The prevalence of inadequate levels of serum retinal levels was observed among mothers in Brazil (Ramalho *et al.*, 2001).

Clinical manifestation of vitamin B complex deficiencies were reported among women agricultural labourers of Thiruvananthapuram district (Cherian, 1992) and women of fisher folk families of Alleppy district (Yegammai and Ambili, 1992).

Augustine (1993) observed B complex deficiency symptoms among the women engaged in stone breaking. The prevalence of vitamin B complex deficiency was seen in pregnant women and lactating mothers in both dairy and non dairy farmers in Coastal Andhra (Devi and Sarojini, 2000).

Mohapatra *et al.* (2001) observed B complex deficiency signs mainly angular stomatitis, cheilosis and glossitis among the women labourers of Kalahandi district of Orissa.

Sar *et al.* (1991) observed calorie deficiency among 53 per cent of women in the rural households of Maharashtra and 30 per cent of the households had protein deficiency. Karuna and Prema (1993) observed that 33.33 per cent of women engaged in fish vending in Thiruvananthapuram had different grades of energy deficiency. Kupputhail and Mallika (1993) conducted a study among Khond, Gadaba and Porja tribes of Andhra Pradesh and reported that 82 to 92 per cent of the tribes had chronic energy deficiency of grade I type.

Udaya (1996) also observed different grades of energy deficiency among the farm women in Thrissur district. Smitha (1999) observed grade I and grade II chronic energy deficiencies (CED) among 18 per cent and 3.33 per cent of women agricultural labourers of Trichur District respectively. A study conducted

by NIN (2002) in West Bengal indicated different grades of CED among 49 per cent of the women. Jyothi (2003) reported various grades of CED among 43.33 per cent of women agricultural labourers in Palakkad district.

Rabe *et al.* (1996) and Gupta (1999) observed greater proportion of chronic energy deficiency among females than males. Women aged more than 35 years are twice as likely to have a BMI less than 18.5 compared to younger women (Ahmed *et al.*, 1998). Studies carried out by NNMB in India indicated chronic energy deficiency among 39 per cent of women. (NIN, 2002)

4.4 DIMENSIONS OF FOOD SECURITY

Food is the basic human right as well as the basic necessity for mankind. Each one needs enough food to stay an active and healthy life (MSSRF, 2001).

Food security is defined as access by all people at all times to enough food for an active, healthy life (Maxwell and Frankenberger, 1992, FAO, 1996, USDA, 2000, Jhamtani and Singh, 2001, Singh *et al.*, 2001 and Purushothaman and Paul, 2003).

A household is said to be food secure when it has access to the food needed for a healthy life for all its members, adequate in terms of quality, safety and culturally acceptable and when it is not at under risk of losing such access (United Nations, 1997). According to Vijayaraghavan *et al.* (1998) factors influencing household food security include the purchasing power, availability of food at affordable prices, size of the landholding, agricultural production, employment status during all seasons and availability of public distribution system. Adhiguru and Ramaswamy (2003) observed that household food security stems from inadequate employment, low income, seasonal migration especially among tribal population, relatively higher food prices, geographic and seasonal maldistribution of food, poor social organization and large family size.

The three major dimensions of food security are food availability, food access and food absorption (Anderson *et al.*, 1999 and MSSRF, 2001).

Self sufficiency in production of food grains is the first step for attainment of food security for a country like India (Suryanarayana, 1996). Rapid increase in population in India has resulted in food scarcity, nutritional deficiency and environmental insecurity (Roy, 2001). The decennial increase in population in India during 1991-2001 has been 18.1 crores, equivalent to the total population of Canada, France and Germany (Competition success review, 2003).

Since independence, while population has increased 3 times, food grain production increased 4 times from 50.8 million tonnes during 1950-51 to 210 million tonnes in 1999-2000 (Sarkar, 2001, Sharma, 2001, MSSRF 2001 and Directorate of Economics and Statistics, 2002). India is becoming the largest producer of fruits and second largest producer of vegetables in the world but, unfortunately average Indians do not get the basic daily requirement of fruits and vegetables (Dhanikhar, 2001, Jhamtani and Singh, 2001, Roy, 2001 and Sarkar, 2001). The percapita availability of fruits and vegetables is at present about 85 g per day for fruits and 146 g per day for vegetables which is far less than the recommended levels (Murthy *et al.*, 2002).

One of India's outstanding strides has been the revolution in agricultural production that transformed an India which could not feed its 450 million inhabitants to an India that now produces enough grain for the calorie average of 950 million persons and has recorded a surplus of 33 million tonnes of grain (Serageldin, 2000).

Swaminathan (2002a) observed that surplus of food grains is the result of inadequate consumption on the part of the poor.

India today has over 65 million tonnes of wheat and rice in government godowns, yet poverty induced hunger affects over 200 million people (Swaminathan, 2002a and Competition Success Review, 2003).

Environmental degradation, soil degradation and climate change are longer term threats to sustained productivity (MSSRF, 2001). Agarwal and Bina (2001) found that monsoon abnormalities are related to problems like availability of food, safe drinking water, shelter and scarcity of employment. A single drought has a temporary detrimental effect on food access and availability in rural areas (Geinitz, 2002). Effect of drought on food grain production in 2002-03 is expected to be severe and production may fall to 183.2 million tonnes from last year production of 212.02 million tonnes (Economic Division, 2002).

Though India has demonstrated impressive productivity in agriculture, horticulture, dairy, poultry and fishery sectors the per caput consumption as well as calorie intake of the vast majority of the rural poor especially of women and children is alarmingly distressing (Sarkar, 2001). According to Pingali (2002) food security is not just a problem of increasing production, but it is a problem of improving access, equitable distribution and enhancing effective demand of the poorest of the poor for food.

MSSRF (2001) reported that factors influencing food access and livelihood access are food consumption, poverty, employment, gender discrimination, caste discrimination and rural infrastructure.

Sen (1981) observed that the poor do not have adequate entitlements to secure their access to food, even when food is available in local or regional markets.

About half the rural consumers and two third of the urban consumers had nutritionally inadequate food consumption levels (Bhagwati *et al.*, 1993). George (1999) reported that 51.9 per cent of the rural consumers had experienced calorie deficiency.

The lowest per capita monthly expenditure group of less than Rs.160 had a per diem intake of 1674 kcal, which increased gradually to 3628 kcal in the highest group of above Rs.1055 (Nawani, 1993).

Zeller and Schrieder (1995) observed that the number of working adults has a positive impact on per capita income and caloric consumption. Increase in women's income significantly raises expenditures that led to improvement of nutritional status of children (Haddad and Alderman, 1997). Senauer *et al.* (1997) observed that food consumption pattern, women's income and her status have both direct and indirect effects on sustainable household food security. High female wages were associated with an improvement in the nutrient intake of most of the household members and women (Adhiguru and Ramaswamy, 2003).

Persistence of under and malnutrition is largely due to inadequate purchasing power which in turn arises from a low growth rate in livelihood opportunities (Swaminathan, 1995). Sabri (2000) observed that due to low and irregular income, unemployment, illiteracy, low purchasing power and inflationary pressure, the rural poor cannot afford sufficient food to meet their balanced diet.

Poverty is the world's most ruthless killer and the greatest cause of suffering on earth (Caldwell *et al.*, 1994). Poverty is the primary cause of household food insecurity (Sabri, 2000 and Swaminathan, 2001). Poverty is a ruthless taskmaster, it exacts an exorbitant price in terms of denial of the right to food and its corollary the right to life (Competition Success Review, 2003).

Vasanthi (2000) observed that in India for every 4 persons one person lives below poverty line. According to Sarkar (2001) about 244 million people are estimated to be below poverty line in rural areas. About 25.76 per cent of population in Kerala lies below poverty line (MSSRF, 2001). During 1999 – 2000 Srinivasan (2002) observed highest incidence of poverty among agricultural and other labourers in rural areas of India.

Indira (1996) observed that the incidence of poverty has increased due to under employment and decline in real wages on account of increase in the prices of food grains. Rural poverty is due to under employment, small land holdings, harsh agroclimatic conditions, poor infrastructure and limited opportunities for rural industrial development, poor health care, illiteracy, social suppression, addiction to alcohol and other vices and exploitation by vested interests in the society (Hegde, 2001).

Chronic hunger is part of a vicious cycle of low productivity and earnings, ill health, indebtedness and malnutrition (Sabri, 2000). According to Swaminathan (2002b) hunger is the extreme manifestation of poverty since the poor spend over 70 per cent of their daily earnings on food. Hunger is writ large on the puckered and wizened faces of the young and old in rural and tribal India (Competition Success Review, 2003).

The level of household income and prevailing market prices play an important role in making a household food secure (Alderman, 1993, Khan *et al.*, 1996 and Alderman and Garcia, 2000). Malik (1994) concluded that due to price instability of essential food items, the incidence of malnutrition and poverty will increase. Musbe and Kumar (2002) reported that drastic upward changes in prices of food stuffs would worsen the nutritional status of the poor and the landless households.

Meyer (1997) observed that unemployment rates are higher in rural than in urban regions. Unemployment among female labour force is much above male labour force (Mathew, 1997). MSSRF (2001) reported that unemployment depends upon density of population and availability of agricultural and nonagricultural work. Unemployment rate in India is 7.32 per cent in 1999-2000. As per the 55th round survey of NSSO 1999-2000 employment is declined from 2.7 per cent per annum in 1983-94 to 1.07 per cent per annum in 1994-2000 (Economic Division, 2002).

Rural women have been subjected to discrimination of all sorts and are denied equality of status and opportunities in the social, economic and political spheres despite their significant contribution to the social and economic progress of the country (Gowda *et al.*, 1996). Sinha (2000) reported that in India girl children are largely engaged in running the household from a very early age even before they are capable of wage earning activities.

Kaur (1991) reported that extra work is frequently taken from women, but they are seldom paid for the additional labour. Days of employment available to women are much less than that of men (Kaur, 1991 and MSSRF, 2001).

Chakravarthy (1989) pinpointed that women and female children were getting less medical attention because of socio-economic and cultural practices than due to lack of facilities. Alderman and Gertler (1997) found that low income households seek medical care more often for male children than for female children.

The status of women is lower than men and is due to low earning, lower wages, low level of skill, poverty, low literacy, malnutrition, poor standard of health, greater exposure to domestic violence and vulnerability to sexual crimes (Aggarwal, 2001).

Food security of individual members of the household is influenced by intrahousehold allocation of food (Mark *et al.*, 1990). Food security at household level does not guarantee adequate individual dietary intake due to gender bias inherent in the culture that favours male over female members at the household (Minhas, 1991, Sharan *et al.*, 2000 and Babu, 2000). Intrahousehold allocations are the result of implicit or explicit bargaining among household members, individual bargaining, positions and various cultural norms that could affect individual preferences that shape the bargaining and allocation processes (Behrman, 1997 and Adhiguru and Ramaswamy, 2003).

Gulati (1989) conducted a study on agricultural labour households in Kerala and noted that on working days, calorie intake of men fell short of ICMR recommendation by 11 per cent while in the case of women the deficit was 20 per cent. On unemployed days, the short falls were 26 per cent for men and 50 per cent for women.

Senauer (1990) reviewed the factors concerning household behaviour on food consumption and nutrition and found that income, price changes, agricultural households, agricultural commercialization, household economics and education determined the intrahousehold allocation of food.

Jatrana and Sangwan (1996) and Gade (2000) observed strong evidence for sex discrimination in food intake. Gade (2000) pinpointed that within household the available food is distributed according to the status of individual in the family rather than according to the nutritional requirement as per the work output and physiological requirements.

Behrman and Deolalikar (1988) analyzed the effect of income and food prices on individual dietary intake and concluded that when food prices are high, the nutritional status of girls and women were adjusted downward more than those of boys.

Seshadrinath (1993) reported that often male members, employed members, head of the family or children were given priority while serving foods. Inferior quality of foods usually went to adolescent and adult females of the households.

Education is an important variable affecting demographic behaviour concerning marriage, fertility, mortality, migration and participation in the labour force (Bhende and Kanitkar, 1994). Bhandari and Smith (2000) found that female education has an effect on the consumption of nutritious and preferred foods that was independent of the effect of income. On the contrary male education had an effect on the consumption of foods only when interacted with income. According

to Alderman and Garcia (2000), educating women to atleast the primary level is likely to be nearly three times more effective than increasing household income by 10 per cent.

Food access and livelihood access are problems in places with poor infrastructure (MSSRF, 2001).

Food absorption is the final step in achieving food security for a healthy and long life (MSSRF, 2001). Thomas (2001) reported that nutritional status reflects not only the quantity of food available and consumed but also its quality and the extent to which the body transformed this food into nutrients that protect and promote health.

Factors influencing food absorption are protein energy malnutrition, micronutrient deficiencies, chronic energy deficiency, infant mortality and rural health infrastructure (MSSRF, 2001).

The number of undernourished people in the developing world is estimated at 790 million and India alone account for 204 million undernourished people (Musbe and Kumar, 2002).

Rathore (2001) reported that malnutrition problem is more acute in poor segment of population which resides mostly in arid, hilly arid tribal regions. About 36 per cent of children affected with malnutrition in the world are Indians.

Nawani (1993) observed that the extents of access to gainful employment to arable land, to suitable technologies and to other productive resources are important factors influencing under nutrition. Under nutrition reduces work capacity and productivity amongst adults and enhances mortality and morbidity amongst children. MSSRF (2001) reported that infant mortality is associated positively with maternal mortality and percentage of scheduled caste and tribe population.

Even with adequate dietary intake, lack of education of mothers, poor feeding, hygiene and other health care practices hinder the attainment of nutritional security (Senauer and Roe, 1997). About 1.3 billion people, two third of whom are women live without access to balanced diet, clean water, sanitation, primary health care and basic education (Swaminathan, 2001).

MSSRF (2001) reported that consumption, lack of disease and better absorption depend on rural health infrastructure available in a state. Swaminathan (2002a) reported that lack of access to clean drinking water as well as poor environmental hygiene and health infrastructure lead to poor assimilation of food consumed. Safe drinking water and improved sanitation play major roles in the overall well being of the people, with a significant bearing on infant mortality rate, death rate, longevity and productivity (Economic Division, 2002).

Agriculture being the main source of employment and income for a large proportion of Indian population, development of agriculture and the rural economy are important source to achieve food security at the national and household levels.

MATERIALS AND METHODS

3. MATERIALS AND METHODS

This chapter presents the methods and procedures followed in the various phases of the study and the details are presented under the following sections.

- 1 Locality of the study
- 2 Selection of samples
- 3 Plan of the study
- 4 Methods adopted for the study
- 5 Development of tools and conduct of the study
- 6 Analysis of the data

3.1 LOCALITY OF THE STUDY

Ollukkara block panchayat of Thrissur district was purposively selected for the study. The list of wards in the panchayat where state/central government farms are situated was prepared and from this list six wards namely ward number 3, 4, 5, 6, 7 and 8 were selected randomly for the study.

3.2 Selection of samples

From each of the selected wards a sampling frame of women agricultural labourers working in the organized and unorganized sectors was prepared. From this sampling frame 10 women agricultural labourers in the age group of 25-50 years from both the sectors were selected randomly from each ward. Thus, 60 women agricultural labourers from each of the organized and unorganized sectors were selected for the study. For conducting the detailed study, five women from each of the organized and unorganized sectors were selected randomly from each ward. Thus a total of 60 respondents were selected for conducting clinical examination. From this list 15 respondents from each of the organized and unorganized sectors were randomly selected to conduct the food weighment survey.

3.3 Plan of the study

Based on the objectives of the study, the plan of the study was designed. The study comprised of

- 3.3.1 A baseline survey to collect data on the socioeconomic status of the families
- 3.3.2 A dietary survey to collect the food consumption pattern of the families
- 3.3.3 Dietary recall survey to collect information on the food adequacy of the families and per capita food and nutrient intake
- 3.3.4 Measurement of household food security of the families
- 3.3.5 Assessment of nutritional status of the respondents through
 - 3.3.5.1 Anthropometric measurements namely weight and height and computing the Body Mass Index (BMI)
 - 3.3.5.2 Clinical examination to identify the deficiency symptoms (subsample)
 - 3.3.5.3 Food weighing survey to assess the actual food and nutrient intake (subsample)
- 3.3.6 Statistical analysis and interpretation of data using suitable statistical techniques

3.4 Methods adopted for the study

Determination of suitable methods and procedures is very important to get accurate and reliable data. Interview method was used with the help of structured and pretested schedules to collect the required information about the socioeconomic status, and dietary habits of the families. The working pattern of the respondents was also collected using the interview schedule. According to Bass *et al.* (1979) interview method is the most suitable way to collect data since it proceeds systematically and enables quick recording.

Three day recall method of diet survey was used to assess the food adequacy of the families and the percapita food and nutrient intake.

To measure the household food security the modified version of the food security scale suggested by United States Department of Agriculture (USDA, 2000) was used:

To assess the nutritional status of women agricultural labourers, the following methods were employed.

1. Recording of anthropometric measurements
2. Conducting clinical examination
3. Monitoring actual food and nutrient intake

Anthropometric indices, presence of clinical deficiency signs, dietary assessment and actual food intake were widely used as direct parameters of nutritional status (Aebi, 1983). Anthropometry has been accepted as an important tool for assessment of nutritional status and it is a simple and useful practical index (Jelliffe, 1966; Cooper and William, 1982; Weisell and Francois, 1982; McLaren *et al.*, 1984; Vijayaraghavan, 1987; Sharma and Kalia, 1990; Reddy *et al.*, 1993; and Rao and Vijayaraghavan, 1996).

According to Rao and Vijayaraghavan (1996), anthropometry can help in the assessment of subclinical stages of malnutrition and it has been recognized as a reliable tool to identify nutritionally vulnerable groups.

Body weight is the most widely used and the simplest anthropometric measurement for the evaluation of nutritional status (Swaminathan, 1987; Rao and Vijayaraghavan, 1996). A change in body weight may be the result of change in the health of an individual, change in dietary supplies or even changes in one's physical activity. Body weight is a sensitive indicator of nutritional status (Venkitalakshmi and Peramma, 2000).

Height deficit is an indicator of long term malnutrition. Among the environmental factors which influence the height of an individual, nutrition and morbidity are very important because inadequate dietary intake as also or infections or both reduce nutrient availability at cellular level leading to growth retardation and stunting (Rao and Vijayaraghavan, 1996). The extent of height deficit in relation to age as compared to regional standards can be regarded as a measure of malnutrition (Gopaldas and Seshadri, 1987).

In this study anthropometric measurements like weight and height of all the respondents were taken to assess the nutritional status.

Presently, the Body Mass Index (BMI) is used as an indicator of nutritional status of adults (Brahman, 1999). In order to assess the Chronic Energy Deficiency (CED) of women agricultural labourers BMI was calculated by the formula

$$\text{BMI} = \text{Weight (kg)} / \text{height (m}^2\text{)}$$

Clinical examination is an important and sound method of assessing the nutritional status of a community (Jelliffe, 1966 and Kamath, 1986). According to Swaminathan (1986) it provides direct information of signs and symptoms of dietary deficiencies prevalent among people.

In this study clinical examination of 30 respondents from each of the organized and unorganised sectors was conducted to assess the signs and symptoms associated with nutrient deficiencies.

Food consumption surveys provide data on the type and amount of food consumed by a representative sample of the survey population (Schofield, 1985). Devadas and Easwaran (1986) observed that food weighing method was the most reliable method to assess the actual food intake of an individual. Diet surveys constitute an essential part of any complete study of nutritional status of

individuals or groups and provide essential information on nutrient intake levels, source of nutrients, food habits and attitudes (Gopaldas and Seshadri, 1987).

Since, the diets consumed by rural low income categories are more or less uniform with negligible variations in their day to day intakes, the food intake pattern and quantities of food consumed can be obtained by following a one day food weighing method (Jansi and Sarojini, 1991). Weighment of the food items before consumption and oral questionnaire to recall the food items consumed already are the well utilized methods of food consumption surveys (Rahman and Rao, 2000).

Hence, in this study one day food weighing survey was conducted to determine the actual food and nutrient intake.

3.5 Development of tools and conduct of the study

According to Sindhu (1985) selection of suitable tools is vital in conducting a research work as they are the instruments which are used in research for gathering new facts. To collect information on socio-economic status and food consumption pattern of the families and to collect information of working pattern of the respondents, two interview schedules were prepared. The schedule to find out the socio economic conditions of the families and working pattern of the respondents comprised of informations pertaining to the type of the family, details of family members according to age and sex, education and occupational status of the family members, personal habits, monthly income, percapita income, size of landholding, average food production during the preceeding year, crops cultivated, domestication of animals, savings, indebtedness, monthly expenditure pattern, housing conditions, health facilities available in the locality, availability of safe drinking water, morbidity pattern, quantum of work, nature of work, number of days of labour and seasonality in employment.

The schedule to find out the food consumption pattern of the families included food habits, food expenditure pattern, frequency of purchase and

use of foods, meal pattern, preservation and storage practices, food consumption at the work site, food adequacy and per capita food and nutrient intake and nutritional awareness of the respondents.

Both these schedules were pretested by field application and are given in Appendix I and II respectively.

The three day dietary recall method has been used in dietary assessment. Standard measuring cups, spoons and a weighing scale were used in estimating quantities of foods consumed by the families. The respondents recalled the details of the raw food items selected during the preceding three days and also the quantity of each item in cup measurements which was converted into grams. Per capita food and nutrient intake was calculated from these data.

To measure the household food security the food security scale prepared by USDA (2000) was modified slightly and the modified version was used to collect the relevant informations. The food security core-module questionnaire (Appendix III) covers the full range of severity observed under current conditions for households both with and without children. Each household's response to each of the questions in the food security core module is coded as either affirmative or negative. Then the number of affirmative responses has been calculated.

The set of food security questions included in the core survey module is combined into a single over all measure called the food security scale. This is a continuous, linear scale which measures the degree of severity of food insecurity / hunger experienced by a household in terms of a single numerical value ranging from 0 to 10. The food security scale values and status level classifications were determined using the reference standard values suggested by USDA (2000). (Appendix IV) Both the scale value and the status level classification of each household depended on the number of affirmative answers the respondent has given and whether the household has children.

Scale value and type of food security were determined by selecting the column corresponding to the total number of affirmative answers responded by the household. For example, if a household without children gives 6 out of 18 affirmative answers, that household is assigned a scale value of 3.9 and classified as food insecure without hunger.

Anthropometric measurements like weight and height of women labourers were taken as suggested by Jelliffe (1966).

Weight was recorded using a bathroom balance, which was checked by calibration with standard weights. Weight was recorded with minimum clothing on the subject and expressed in kilogram.

Height was measured using a fibre glass tape. The subject was asked to stand straight without slippers, with the heels, buttocks, shoulder and occiput against the wall. The height was recorded in centimeters.

Clinical examination of the 60 respondents was conducted with the help of a qualified physician using a schedule formulated for this purpose and the schedule is given in Appendix V.

One day food weighing survey was conducted among the subsample. In this method the investigator weighed the raw foods included in the meal for a day and the cooked weight of each preparation. The amount of each food item consumed by the respondent was also weighed, so also the plate wastage to get the exact amount of foods consumed. Any other extra foods consumed was also taken into account. All these weighments were done using standard measuring cups and spoons and also by means of a food weighing balance. The amount of cooked food item consumed by the respondent was then converted to its raw equivalent. The nutritive value of the foods consumed was calculated using the food composition tables (Gopalan *et al.*, 1989). The schedule is given in the Appendix VI.

3.6 Analysis of the data

3.6.1. Test of significance

The per capita food and nutrient intake and actual food and nutrient intake were compared with the standard values by Student's 't' test.

Mean food intake of the respondents were compared with the quantity specified for a balanced diet suggested by ICMR (1984). The nutrients were compared with the 1989 Recommended Dietary Allowances (RDA) of nutrients suggested by ICMR (1990). Student's 't' test was used to analyse the difference with the RDA for food and nutrients.

Monthly expenditure pattern for different items and food items, per capita food and nutrient intake, actual food and nutrient intake, anthropometric measurements, nutritional status index and household food security status between the organized and unorganized sectors were compared by 't' test.

3.6.2. Correlation Analysis.

Correlation analysis was done to find out the relationship between anthropometric measurements in different grades of CED and nutritional status index and food security status.

3.6.3. Calculation of food use frequency

Based on the frequency of use of different food groups in the daily diet of the surveyed families, food use frequency scores were calculated as suggested by Reaburn *et al* (1979). The formula used for the calculation is given below:

$$\text{Percentage of total score} = \frac{R_1S_1 + R_2S_2 + \dots + R_nS_n}{n}$$

S_n = Scale of rating

R_n = Percentage of respondents selecting a rating

n = Maximum scale rating

3.6.4. Nutritional status index of the respondents

Anthropometric measurements like weight, height and BMI and per capita food and nutrient intake were used to compute the nutritional status index of the respondents in the organized and unorganized sectors.

Suppose X_{ij} be the observation corresponding to the j^{th} variable for the i^{th} sample, $W_j = 1/\sigma_j^2$, the weight assigned to the observation corresponding to j^{th} variable, the nutritional status of the i^{th} individual is defined as

$$N_i = \sum_k W_k X_{ij} \quad i = 1, 2, 3, \dots, N$$

N = Number of respondents

K = Number of variables.

The index was calculated for each respondent and classified into low, medium and high based on measures of quartile deviation, viz. less than Q_1 = low; between Q_1 to Q_3 = medium and above Q_3 = high, where Q_1 and Q_3 are quartile deviations with respect to first and third quartiles.

3.6.5. Path analysis

Path analysis was carried out to find out the direct and indirect effects of socioeconomic variables such as family size, family type, caste, monthly income, size of land holding, educational status of the head and food expenditure with the food security.

RESULTS

4. RESULTS

The results of the study on household food security and nutritional status of women agricultural labourers are presented in this chapter under the following sub headings:

1. Socio-economic profile of the families
2. Food consumption pattern of the families
3. Per capita food and nutrient intake.
4. Household food security among the families
5. Nutritional status of the respondents
6. Factors influencing food security.

4.1 SOCIO-ECONOMIC PROFILE OF THE FAMILIES

The socio-economic profile of the families was studied with special reference to their religion, caste, type of family, head of the family, composition of the family, educational and occupational status of family members and the respondents, total land holdings, cultivation of crops, domestication of animals, kitchen garden, monthly income, details of loan, savings, monthly expenditure pattern, housing conditions, source of drinking water and fuel used at home and use of health care facilities.

4.1.1 Religion, caste, type of family and family size.

Details of religion, caste, type of family and family size are presented in Table 1.

The table reveals that most of the families in the organized (81.67%) and unorganized (75%) sectors were Hindus. In the organized sector, 11.66 per cent and 6.67 per cent of the families came under Muslim and Christian communities respectively, while the percentage were 13.33 and 11.67 in the unorganized sector.

Table 1. Details regarding religion, caste, type of family and family size.

Sl.No.	Category	Number of families	
		Organised	Unorganised
1	Religion		
	Hindu	49(81.67)	45 (75.00)
	Muslim	7 (11.66)	8 (13.33)
	Christian	4 (6.67)	7 (11.67)
	Total	60 (100.00)	60 (100.00)
2	Caste		
	Forward caste	4 (8.16)	4 (8.89)
	Other backward caste	39 (79.59)	28 (62.22)
	Scheduled caste	6 (12.25)	13 (28.89)
	Total	49 (100.00)	45 (100.00)
3	Type of family		
	Joint	16 (26.67)	22 (36.67)
	Nuclear	44 (73.33)	38 (63.33)
	Total	60 (100.00)	60 (100.00)
4	Family size (Number)		
	1 - 3	11 (18.33)	8 (13.33)
	4 - 6	46 (76.67)	47 (78.34)
	7 - 9	3 (5.00)	5 (8.33)
	Total	60 (100.00)	60 (100.00)

(Figures in parentheses are percentages)

Among the Hindus, the families belonging to forward castes were a minority in both the sectors and were equal in number. About 79.59 per cent of the families in the organized sector and 62.22 per cent in the unorganized sector belonged to other backward communities. Families belonging to scheduled castes comprised of 12.25 per cent and 28.89 per cent in the organized and unorganized sectors respectively.

Majority of the families in the organized (73.33%) and unorganized (63.33%) sectors followed a nuclear family system.

Regarding the family size it was found that as much as 76.67 per cent and 78.34 per cent in the organized and unorganized sectors respectively were in the family size group of 4 to 6 members and 18.33 per cent and 13.33 per cent of the families in the organized and unorganized sectors respectively had upto 3 members. Rest of the families had above 6 members.

Majority of the families in the organized (85%) and unorganized (86.67%) sectors were male headed while the rest were female headed due to the expiry of the husband.

4.1.2 Composition of the families

Details on the composition of the families are given in the table 2. It was found that as much as 62.71 per cent and 59.08 per cent of the total population in the organized and unorganized sectors were in the age group of 20 to 50 years. It was composed of 55.55 per cent males and 70.06 per cent females in the organized sector while in the unorganized sector, the percentage of male and female members were found to be 52.98 per cent and 64.36 per cent. The people above 50 years constituted 10.25 per cent and 11.76 per cent of the organized and unorganized sectors respectively. Children below 20 years were 27.04 per cent in the organized and 29.16 per cent in the unorganized sector.

4.1.3 Educational status of family members

The educational status of family members above 18 years of age is presented in table 3. Among 99 male and 124 female members above 18 years of age in the organized sector, 39.4 per cent of male and 41.93 per cent of female members had studied upto high school level. In the unorganized sector 32.33 per cent male and 45.45 per cent of female members had studied upto this level. About 18.18 per cent of male and 11.29 per cent of female in the organized and 19.19 per

cent of male and 28.1 per cent of female in the unorganized sectors were found to be illiterates. Only 7.07 per cent of male and 11.29 per cent of female in the organized sector had received college level of education while it was found to be lower in the unorganized sector, which consist of 2.02 per cent male and 2.48 per cent female members. None of the male and female members above 45 years of age in both the sectors had attained college level education.

Table 2. Distribution of family members on the basis of age and sex

Age (years)	Number of Males		Number of Females		Total	
	Org	Unorg	Org	Unorg	Org	Unorg
0-10	15 (12.82)	11 (9.20)	10 (7.29)	15 (9.93)	25 (10.50)	26 (9.60)
10-20	11 (9.40)	17 (14.29)	31 (22.63)	36 (23.60)	42 (16.54)	53 (19.56)
20-30	35 (30.77)	34 (28.60)	34 (24.82)	35 (23.03)	69 (27.20)	59 (25.50)
30-40	11 (9.40)	12 (10.09)	3 (2.20)	21 (13.81)	14 (5.51)	33 (12.18)
40-50	18 (15.38)	17 (14.29)	58 (42.34)	41 (26.97)	76 (30.00)	58 (21.40)
50-60	26 (22.22)	23 (19.33)	-	1 (0.66)	26 (10.24)	24 (8.86)
>60	1 (0.01)	5 (4.20)	1 (0.72)	3 (2.00)	2 (0.01)	8 (2.90)
Total	117 (100)	119 (100)	137 (100)	152 (100)	254 (100)	271 (100)

(Figures in parentheses are percentages)

Org – Organised

Unorg - Unorganised

Table 3. Educational status of family members above 18 years of age.

Educational status	18-45 years				45-55 years				>55 years				Total			
	Male		Female		Male		Female		Male		Female		Male		Female	
	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg
Lower Primary	12 (22.22)	7 (11.67)	16 (19.05)	16 (18.18)	16 (40.00)	10 (40.00)	19 (48.72)	6 (20.69)	1 (20.00)	2 (14.29)	-	-	29 (29.29)	19 (19.19)	35 (28.23)	22 (18.19)
Upper Primary	1 (1.85)	19 (31.67)	6 (7.14)	5 (5.68)	5 (12.50)	8 (32.00)	3 (7.69)	2 (6.89)	-	-	-	-	6 (6.06)	27 (27.27)	9 (7.26)	7 (5.78)
High School	32 (59.26)	30 (50.00)	47 (55.96)	54 (61.37)	7 (17.50)	2 (8.00)	5 (12.82)	1 (3.45)	-	-	-	-	39 (39.40)	32 (32.32)	52 (41.93)	55 (45.45)
College	7 (12.96)	2 (3.33)	14 (16.66)	3 (3.41)	-	-	-	-	-	-	-	-	7 (7.07)	2 (2.02)	14 (11.29)	3 (2.48)
Illiterate	2 (3.70)	2 (3.33)	1 (1.19)	10 (11.36)	12 (30.0)	5 (20.00)	12 (30.77)	20 (68.97)	4 (80)	12 (85.71)	1 (100)	4 (100)	18 (18.18)	19 (19.19)	14 (11.29)	34 (28.10)
Total	54 (100)	60 (100)	84 (100)	88 (100)	40 (100)	25 (100)	39 (100)	29 (100)	5 (100)	14 (100)	1 (100)	4 (100)	99 (100)	99 (100)	124 (100)	121 (100)

(Figures in parentheses are percentages)

4.1.4 Educational status of respondents

Details regarding the educational status of the respondents are presented in table 4. In the organized sector 55 per cent and 10 per cent of the respondents had attained lower primary and upper primary levels of education respectively. About 22 per cent of respondents were found to be illiterates. In the unorganized sector nearly 43 per cent were illiterates and 33 per cent had attained lower primary level of education. None of the respondents in the organized and unorganized sectors had attained college level education.

Table 4. Educational status of respondents

Sl.No.	Educational status	Number of families	
		Organised	Unorganised
1	Illiterate	13 (21.67)	26 (43.34)
2	Lower primary	33 (55.00)	20 (33.33)
3	Upper primary	6 (10.00)	6 (10.00)
4	High school	8 (13.33)	8 (13.33)
	Total	60 (100.00)	60 (100.00)

(Figures in parentheses are percentages)

4.1.5 Educational status of children and adolescents

It was observed that none of the children below 4 years were attending either schools or balwadies. About 16.67 per cent of boys and 7.69 per cent of girls in the organized sector had attained lower primary education whereas in the unorganized sector 15 per cent of boys and 9.68 per cent of girls had studied upto this level. Only 5.55 per cent of boys and 9.68 per cent of girls in the unorganized sector had college level of education. (Table 5a and 5b)

Table 5a Educational status of boys (0 – 17 years) in the organized and unorganized sectors

Category	0-4		5-9		10-12		13-15		16-17		Total	
	Boys		Boys		Boys		Boys		Boys		Boys	
	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg
Not started studies	11 (18.3)	7 (11.7)	1 (1.7)	-	-	-	-	-	-	-	12 (66.67)	7 (35.00)
Lower primary	-	-	3 (5.0)	3 (5.0)	-	-	-	-	-	-	3 (16.67)	3 (15.00)
Upper primary	-	-	-	-	-	2 (3.3)	-	-	-	-	-	2 (10.00)
High school	-	-	-	-	-	4 (6.7)	2 (3.3)	1 (1.7)	-	2 (3.3)	2 (11.11)	7 (35.00)
College	-	-	-	-	-	-	-	-	1 (1.7)	1 (1.7)	1 (5.55)	1 (5.55)
Total	11 (100)	7 (100)	4 (100)	3 (100)	-	6 (100)	2 (100)	1 (100)	1 (100)	3 (100)	18 (100)	18 (100)

(Figures in parentheses are percentages)

Org – Organized sector

Unorg – Unorganized sector

Table 5b. Educational status of girls (0 - 17 years) in the organized and unorganized sectors.

Category	0 - 4		5 - 9		10 - 12		13 - 15		16 - 17		Total	
	Girls		Girls		Girls		Girls		Girls		Girls	
	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg
Not started studies	7 (11.7)	8 (13.3)	1 (1.7)	-	-	-	-	-	-	-	8 (61.54)	8 (25.81)
Lower Primary	-	-	1 (1.7)	3 (5.0)	-	-	-	-	-	-	1 (7.69)	3 (9.68)
Upper primary	-	-	-	2 (3.3)	1 (1.7)	3 (5.0)	-	-	-	-	1 (7.69)	5 (16.13)
High school	-	-	-	-	-	3 (5.0)	1 (1.7)	7 (11.7)	2 (3.3)	2 (3.3)	3 (23.08)	12 (38.7)
College	-	-	-	-	-	-	-	-	-	3 (5.0)	-	3 (9.68)
Total	7 (100)	8 (100)	2 (100)	5 (100)	1 (100)	6 (100)	1 (100)	7 (100)	2 (100)	5 (100)	13 (100)	31 (100)

(Figures in parentheses are percentages)

Org - organized sector

Unorg - unorganized sector

4.1.6 Occupational status of family members

The details on the occupational status of the family members are given in the table 6. Out of the total population above 18 years, 8.9 per cent and 44 per cent were engaged as agricultural labourers in organized and unorganized sectors respectively which included 19.19 per cent male and 0.18 per cent female members in the organized sector and 34.34 per cent male and 52.06 per cent female in the unorganized sector. About 41.42 per cent and 37.37 per cent male in the organized and unorganized sectors respectively were engaged in private jobs when compared to 3.23 per cent females in the organized and 2.47 per cent in the unorganized sectors.

4.1.7. Possession of land

All the families in the organized and unorganized sectors owned land. Most of the family members of the respondents in the organized sector (86.66%) owned upto 15 cents and rest of the families owned more than 15 cents of land while in the unorganized sector, all the families had upto 15 cents of land (Table 7).

4.1.8 Cultivation of crops

From Table 8 it is clear that though all the families had their own land, only 5 per cent of the families in the organized sector cultivated crops like coconut, cashew, pepper and paddy and only 3.33 per cent received income from the crops. None of the families in the unorganized sector cultivated crops.

Table 6. Occupational status of family members

Sl. No.	Category	18-45				45-55				>55				Total			
		Male		Female		Male		Female		Male		Female		Male		Female	
		Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg	Org	Unorg
1	Private job	34 (62.96)	31 (51.67)	4 (4.76)	3 (3.41)	7 (17.5)	6 (24)	-	-	-	-	-	-	41 (41.42)	37 (37.37)	4 (3.23)	3 (2.47)
2	Agricultural laborers	4 (7.41)	21 (35.00)	-	34 (38.63)	14 (35)	12 (48)	1 (2.56)	29 (100)	1 (20)	1 (7.14)	-	-	19 (19.19)	34 (34.34)	1 (0.81)	63 (52.06)
3	Idle	14 (25.93)	6 (10)	56 (66.67)	50 (56.82)	9 (22.5)	7 (28)	1 (2.56)	-	4 (80)	13 (92.86)	1 (100)	4 (100)	27 (27.29)	26 (26.26)	58 (46.77)	54 (44.63)
4	Government	2 (3.7)	2 (3.33)	24 (28.57)	1 (1.14)	9 (22.5)	-	37 (94.88)	-	-	-	-	-	11 (11.11)	2 (2.03)	61 (49.19)	1 (0.84)
5	Farmer	-	-	-	-	1 (2.5)	-	-	-	-	-	-	-	1 (1.01)	-	-	-
	Total	54 (100)	60 (100)	84 (100)	88 (100)	40 (100)	25 (100)	39 (100)	29 (100)	5 (100)	14 (100)	1 (100)	4 (100)	99 (100)	99 (100)	124 (100)	121 (100)

(Figures in parentheses are percentages)

Org - Organised

Unorg

Unorganised

Table 7. Details regarding possession of land.

Area(Cents)	Number of families	
	Organised	Unorganised
< 5 cents	2 (3.33)	19 (31.67)
5 - 10	41 (68.33)	38 (63.33)
11 - 15	9 (15.00)	3 (5.00)
16 - 20	3 (5.00)	
21 - 25	1 (1.67)	
> 25	4 (6.67)	
Total	60 (100.00)	60 (100.00)

(Figures in parentheses are percentages)

Table 8. Details of cultivation of crops

Category	Number of families	
	Organised	Unorganised
Coconut	1 (1.67)	-
Cashew and pepper	1 (1.67)	-
Paddy	1 (1.66)	-
No crops	57 (95.00)	60 (100.00)
Total	60 (100.00)	60 (100.00)
Receiving income from cultivation	1(33.33)	-
No income	2 (66.67)	-
Total	3 (100.00)	-

(Figures in parentheses are percentages)

4.1.9 Possession of livestock and kitchen garden

Among the two sectors surveyed, majority of the families (95%) did not possess any livestock (Table 9). Out of the families who had domestic animals only 33.33 per cent families in the organized sector and 66.67 per cent in the unorganized sector received income from the animals.

Most of the families in the organized (93.33%) and the unorganized (98.33%) did not have kitchen garden in their house (Table 10).

4.1.10. Monthly income of the families.

From Table 11, it can be ascertained that 93.33 per cent of the families in the organized sector had an income ranging between Rs.1000 to Rs.6000 per month, while in the unorganized sector majority (98.33%) earned between Rs.1000 to Rs.4000 per month. In the organized sector, the mean per capita monthly income was Rs.945, whereas in the unorganized sector it was Rs.594.

Table 9. Details regarding domestication of animals

Sl.No.	Details	Number of families	
		Organised	Unorganised
1	Domestic animals present	3 (5.00)	3 (5.00)
2	No domestic animals	57 (95.00)	57 (95.00)
	Total	60 (100.00)	60 (100.00)
1	Received income	1 (33.33)	2 (66.67)
2	No income	2 (66.67)	1 (33.33)
	Total	3 (100)	3 (100)

(Figures in parentheses are percentages)

Table 10. Details about kitchen garden

Sl.No.	Details	Number of families	
		Organised	Unorganised
1	Kitchen garden Present	4 (6.67)	1 (1.67)
	Absent	56 (93.33)	59 (98.33)
	Total	60 (100.00)	60 (100.00)
2	Getting income	1 (25.00)	-
	No income	3 (75.00)	1 (100.00)
	Total	4 (100.00)	1 (100.00)

(Figures in parentheses are percentages)

Table 11. Monthly income of the families.

Sl.No.	Income (Rs.)	Number of families	
		Organised	Unorganised
1	<1000	-	1 (1.67)
2	1000-2000	9 (15.00)	23 (38.33)
3	2000-3000	9 (15.00)	22 (36.67)
4	3000-4000	19 (31.67)	14 (23.33)
5	4000-5000	14 (23.34)	-
6	5000-6000	5 (8.33)	-
7	6000-7000	2 (3.33)	-
8	7000	2 (3.33)	-
	Total	60 (100)	60 (100)

(Figures in parentheses are percentages)

4.1.11 Monthly expenditure pattern of the families

Table 12 and 13 depict the percentage of income spent on food, clothing, education, water, health, transport, fuel, electricity, shelter, recreation, luxury, remittance, savings and others.

It is clear that 85 per cent of the families in the organized sector spent between 20 to 50 per cent of their income for food while in the unorganized sector only 43.33 per cent of the families spent this much percentage of their

monthly income for food. Forty per cent and 13 per cent of the families in unorganized and organized sectors spent more than 55 per cent of their income on food.

Besides 18.33 per cent in the organized and 11.67 per cent in the unorganized sector, all others spent less than 5 per cent of their monthly income for the purchase of clothing. All the families in the organized and unorganized sectors spent less than 5 per cent of their monthly income for shelter.

It was also observed that majority of the families in the organized and unorganised sectors spent less than 10 per cent of their monthly income for other purposes like transportation, recreation, education, health and luxury.

Sixty five per cent, five per cent and ten per cent of the families in the organized sector did not spend money for education, electricity and fuel respectively. About 63.33 per cent and 40 per cent of the families in the unorganized sector also did not spend money for education and fuel respectively.

Most of the families in the organized (93.33%) and unorganized (78.33%) sectors spent upto 50 per cent of their income as remittance.

About 33.33 per cent of the families in the organized sector saved below 10 per cent of their income, whereas in the unorganized sector 21.67 per cent of the families saved below 5 per cent of their income. Only 1.67 per cent in

Table 12. Monthly expenditure pattern of the families in the organised sector (percentage of income).

Percentage of income	Food	Clothing	Shelter	Transport	Recreation	Education	Electricity	Health	Fuel	Luxury	Remittance	Savings	Others
Nil	-	-	-	-	-	39 (65.00)	3 (5.00)	-	6 (10.00)	-	4 (6.67)	40 (66.67)	59 (98.33)
<5	-	49 (81.67)	60 (100)	24 (40.00)	60 (100)	13 (21.67)	52 (86.67)	58 (96.67)	18 (30.00)	54 (90.00)	7 (11.67)	15 (25.00)	
5-10	-	11 (18.33)	-	28 (46.67)	-	5 (8.33)	4 (6.67)	2 (3.33)	35 (58.33)	6 (10.00)	4 (6.67)	5 (8.33)	
10-15	-	-	-	2 (3.33)	-	-	1 (1.66)	-	1 (1.67)	-	4 (6.67)		
15-20	1 (1.67)	-	-	3 (5.00)	-	-	-	-	-	-	8 (13.33)		
20-25	6 (10.00)	-	-	1 (1.67)	-	3 (5.00)	-	-	-	-	5 (8.33)		
25-30	9 (15.00)	-	-	-	-	-	-	-	-	-	12 (20.00)		
30-35	10 (16.67)	-	-	2 (3.33)	-	-	-	-	-	-	9 (15.00)		1 (1.67)
35-40	10 (16.67)	-	-	-	-	-	-	-	-	-	4 (6.67)		
40-45	12 (20.00)	-	-	-	-	-	-	-	-	-	1 (1.66)		
45-50	4 (6.66)	-	-	-	-	-	-	-	-	-	2 (3.33)		
50-55	-	-	-	-	-	-	-	-	-	-	-		
>55	8 (13.33)	-	-	-	-	-	-	-	-	-	-		
Total	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)

(Figures in parentheses are percentages)

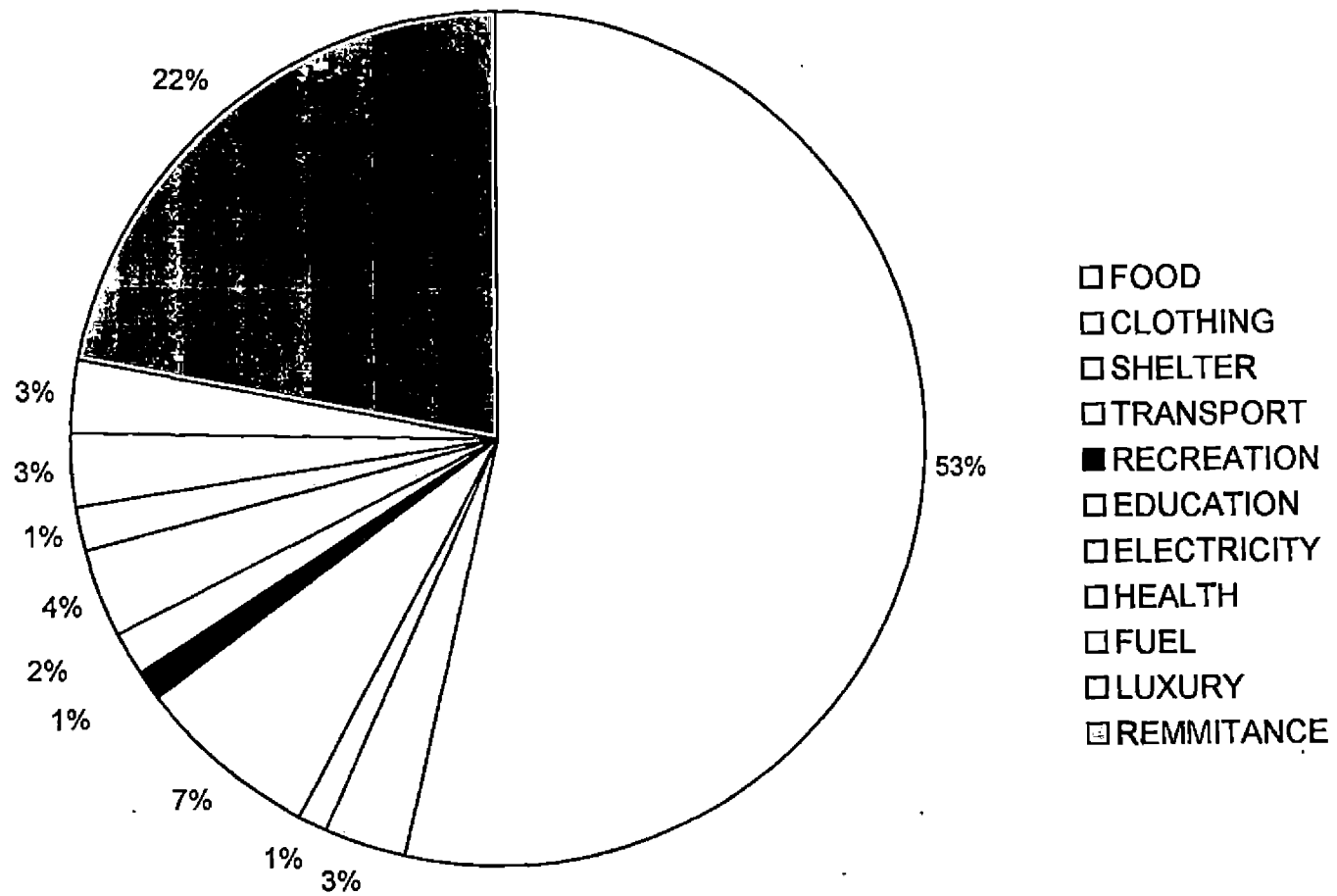


Fig 1. Monthly expenditure pattern of the families in the organised scetor

Table 13 Monthly expenditure pattern of the families in the unorganised sector (percentage of income)

Percentage of income	Food	Clothing	Shelter	Transport	Recreation	Education	Electricity	Health	Fuel	Luxury	Remittance	Savings	Others
Nil	-	-	-	-	-	38 (63.33)	2 (3.33)	-	24 (40.00)	-	13 (21.67)	47 (78.33)	58 (96.67)
<5	-	53 (88.33)	60 (100)	24 (40.00)	59 (98.33)	13 (21.67)	47 (78.34)	55 (91.67)	22 (36.67)	56 (93.33)	-	13 (21.67)	-
5-10	-	7 (11.67)	-	29 (48.33)	1 (1.67)	9 (15.00)	11 (18.33)	5 (8.33)	14 (23.33)	4 (6.67)	10 (16.67)	-	-
10-15	-	-	-	5 (8.33)	-	-	-	-	-	-	1 (1.67)	-	-
15-20	1 (1.67)	-	-	1 (1.67)	-	-	-	-	-	-	5 (8.33)	-	2 (3.33)
20-25	-	-	-	1 (1.67)	-	-	-	-	-	-	7 (11.66)	-	-
25-30	-	-	-	-	-	-	-	-	-	-	10 (16.67)	-	-
30-35	2 (3.33)	-	-	-	-	-	-	-	-	-	8 (13.33)	-	-
35-40	3 (5.00)	-	-	-	-	-	-	-	-	-	5 (8.33)	-	-
40-45	9 (15.00)	-	-	-	-	-	-	-	-	-	-	-	-
45-50	12 (20.00)	-	-	-	-	-	-	-	-	-	1 (1.67)	-	-
50-55	9 (15.00)	-	-	-	-	-	-	-	-	-	-	-	-
>55	24 (40.00)	-	-	-	-	-	-	-	-	-	-	-	-
Total	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)	60 (100)

(Figures in parentheses are percentages)

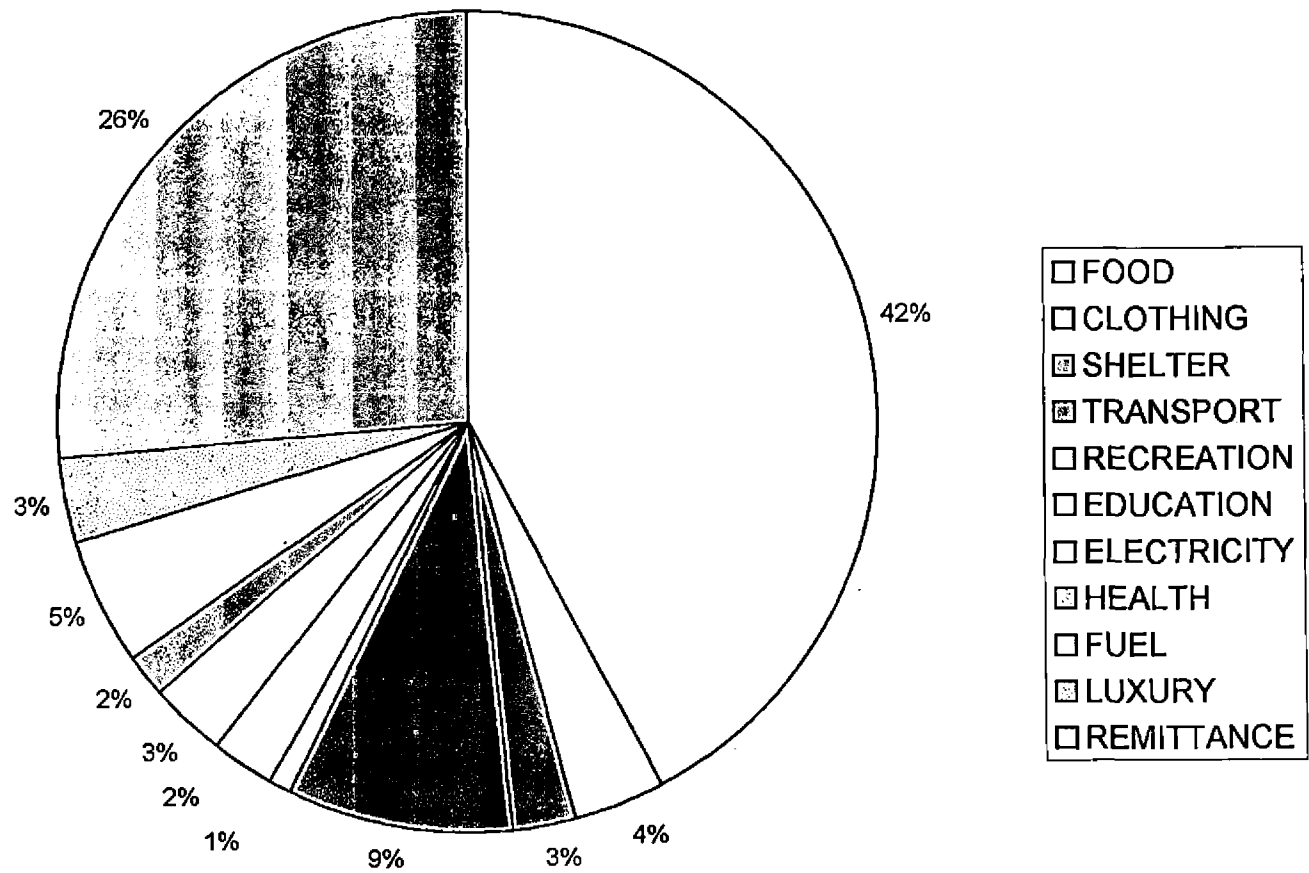


Fig 2. Monthly expenditure pattern of the families in the ^{un}organized sector

Table 14. Detail regarding savings.

Sl. No	Details	Number of families	
		Organised	Unorganised
1.	Saved money	20 (33.33)	13 (21.67)
	No saving	40 (66.67)	47 (78.33)
	Total	60 (100.00)	60 (100.00)
2.	Mode of saving		
	Post Office	3 (15.00)	1 (7.69)
	Bank	4 (20.00)	2 (15.38)
	Chitty	13 (65.00)	10 (76.93)
	Total	20 (100.00)	13 (100.00)

(Figures in parentheses are percentages)

4.1.14 Housing conditions

Details of the housing conditions of the families are presented in Table 16. Majority of the families in the organized sector (98.33%) and all families in the unorganized (100%) sector were living in their own houses. Majority of the families in both the sectors had 4 to 5 rooms with brick walls. Most of the houses in the organized (61.67%) sector had concrete roofs while in the unorganized (86.67%) sector had tiled roofs.

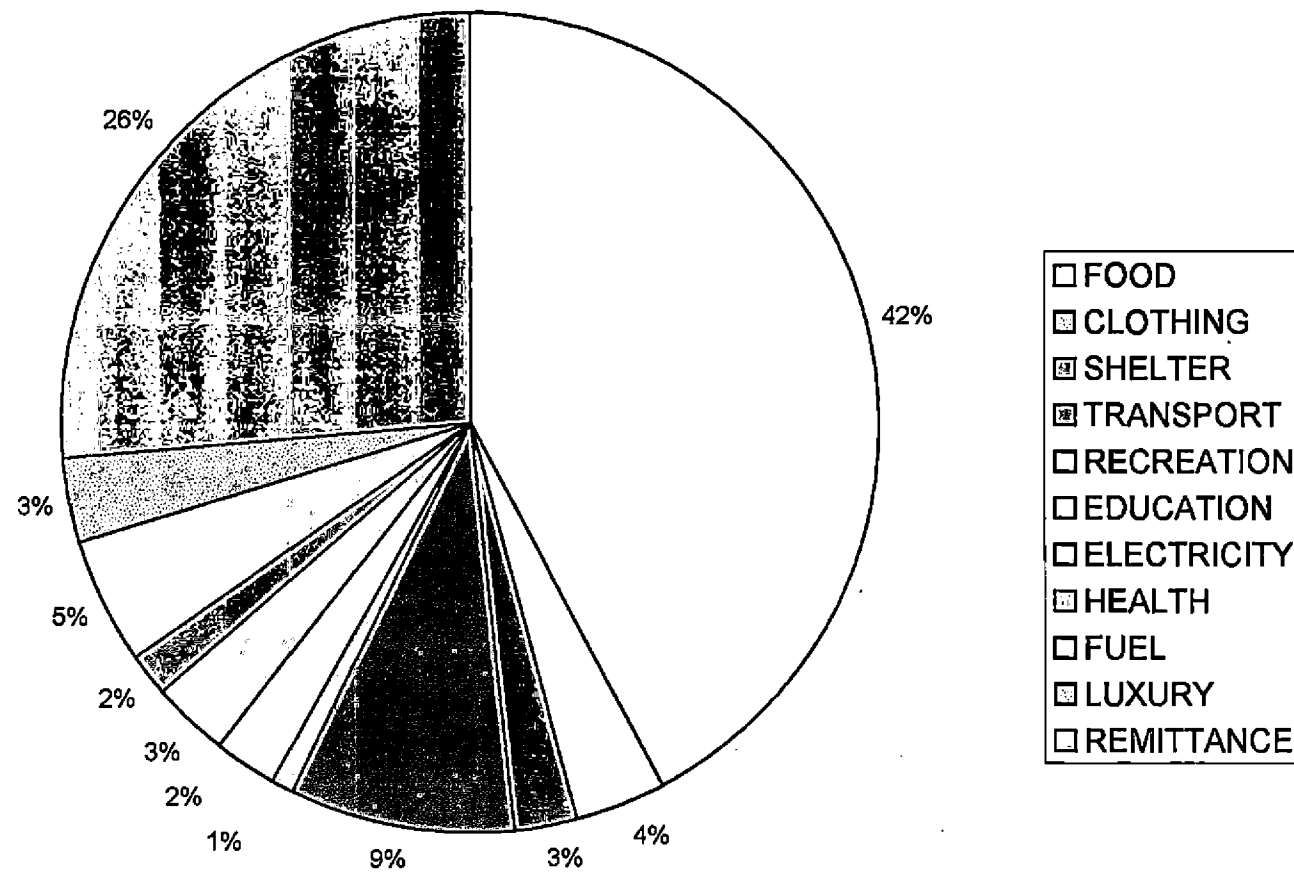


Fig 2. Monthly expenditure pattern of the families in the ^{uuu}organised sector

the organized and 3.33 per cent in the unorganized sectors spent money for other purposes like cattle feed, construction of house etc. The mean percentage of income incurred on different items in the organized and unorganized sectors is illustrated in the fig. 1 and 2.

There was significant difference in the amount spent on food ($t=2.69^{**}$), clothing ($t=4.5^{**}$), transport ($t=3.15^{**}$), recreation ($t=3.97^{**}$), electricity ($t=2.98^{**}$), health ($t=2.06^*$), fuel ($t=7.47^{**}$), luxury ($t=6.39^{**}$) and remittance ($t=3.75^{**}$) between the two sectors.

(** - Significant at 1 % level

* - Significant at 5 % level)

4.1.12 Savings

More families in the organized sector (33.33%) saved money than unorganized sector (21.67%). Most of the families in both the sectors (65% and 76.69%) saved money in chitty (Table 14).

4.1.13 Indebtedness

From the survey, it was found that majority of the families in the organized (93.33%) and unorganized (78.33%) sectors borrowed money from the Kerala Agricultural University, co-operative bank and private chitties. The details of the source, purpose and amount of loan received by the families are presented in table 15.

About 32.14 per cent, 17.86 per cent and 14.29 per cent in the organized sector took money for construction of house, marriage of children and to clear the previous debt respectively and in the unorganized sector 25.58 per cent, 9.3 per cent and 16.28 per cent borrowed money for the same purposes.

Table 14. Detail regarding savings.

Sl. No	Details	Number of families	
		Organised	Unorganised
1.	Saved money	20 (33.33)	13 (21.67)
	No saving	40 (66.67)	47 (78.33)
	Total	60 (100.00)	60 (100.00)
2.	Mode of saving		
	Post Office	3 (15.00)	1 (7.69)
	Bank	4 (20.00)	2 (15.38)
	Chitty	13 (65.00)	10 (76.93)
	Total	20 (100.00)	13 (100.00)

(Figures in parentheses are percentages)

4.1.14 Housing conditions

Details of the housing conditions of the families are presented in Table 16. Majority of the families in the organized sector (98.33%) and all families in the unorganized (100%) sector were living in their own houses. Majority of the families in both the sectors had 4 to 5 rooms with brick walls. Most of the houses in the organized (61.67%) sector had concrete roofs while in the unorganized (86.67%) sector had tiled roofs.

Table 15. Details of loan taken by the families

Category	Number of families		Purpose	Number of families		Amount (Rs.)	Number of families	
	Org	Unorg		Org	Unorg		Org	Unorg
Co-operative Bank	26 (43.33)	33 (55.00)	House construction	18 (32.14)	11 (25.58)	Upto 10,000	-	4 (9.3)
University	18 (30.00)	-	Marriage	10 (17.86)	4 (9.30)	20,000- 30,000	2 (3.57)	8 (18.6)
Co and University	12 (20.00)	-	Debt clearance	8 (14.29)	7 (16.28)	30,000- 40,000	3 (5.36)	3 (6.98)
Kuri	-	10 (16.66)	House & debt clearance	15 (26.79)	19 (44.19)	40,000- 50,000	5 (8.93)	5 (11.63)
Nil	4 (6.67)	17 (28.33)	House construction & marriage	4 (7.14)	2 (4.65)	50,000- 70,000	7 (12.50)	9 (20.93)
			Marriage & debt clearance	1 (1.78)	-	60,000- 70,000	7 (12.50)	3 (6.98)
						70,000- 80,000	10 (17.86)	7 (16.28)
						80,000- 90,000	3 (5.36)	2 (4.65)
						90,000- 1 lakh	3 (5.36)	2 (4.65)
						> 1 lakh	16 (28.56)	-
Total	60 (100)	60 (100)		56 (100)	43 (100)		56 (100)	43 (100)

(Figures in parentheses are percentages)

Org – Organised sector

Unorg – Unorganised sector

Table 16. Housing conditions of the families

Sl.No.	Facilities	Number of families	
		Organised	Unorganised
1	Type of house		
	Own	59 (98.33)	60 (100.00)
	Rented	1 (1.67)	-
2	Number of rooms		
	1	-	-
	2	-	-
	3	-	1 (1.67)
	4	23 (38.33)	46 (76.66)
	5	33 (55.00)	12 (20.00)
	>5	4(6.67)	1 (1.67)
3	Type of wall		
	Brick	60 (100.00)	60 (100.00)
4	Roofing material		
	Tiled	23 (38.33)	52 (86.67)
	Terrace	37 (61.67)	8 (13.33)
5	Kitchen		
	Separate kitchen	60 (100.00)	60 (100.00)
6	Source of drinking water		
	Own well	51 (85.00)	41 (68.33)
	Neighbours	5 (8.33)	19 (31.67)
	Public Tap	4 (6.67)	-
7	Lavatory facilities		
	Own latrine	60 (100.00)	60 (100.00)
8	Drainage facilities		
	Open drainage	3 (5.00)	-
	Closed	3 (5.00)	-
	None	54 (90.00)	60 (100.00)
9	Electricity facilities		
	Present	57 (95.00)	59 (98.33)
	Absent	3 (5.00)	1 (1.67)
10	Recreational facilities		
	Radio	3 (5.00)	3 (5.00)
	Television	38 (63.33)	33 (55.00)
	Video cassette recorder	1 (1.67)	-
	Radio & Television	14 (23.33)	6 (10.00)
	No facility	4 (6.67)	18 (30.00)
11	Transport facilities		
	Cycle (own)	21 (35.00)	19 (31.66)
	Auto (own)	4 (6.67)	4 (6.67)
	Bike (own)	8 (13.33)	2 (3.33)
	Total	60 (100)	60 (100)

(Figures in parentheses are percentages)

All the families in both the sectors had separate kitchen and proper lavatory facilities.

Majority of the families in the organized (85%) and unorganized (68.33%) sectors had their own well. About 8.33 per cent in the organized sector and 31.67 per cent in the unorganized sector depended on nearby houses for water. None of the families in the unorganized sector depended on public tap while 6.67 per cent in the organized sector depended on public tap.

Regarding the drainage facility in the houses majority in the organized sector (90%) and all families in the unorganized sector had no proper drainage facilities. Except for five per cent of the families in the organized and 1.67 per cent in the unorganized sectors, all the households had electricity facility.

Majority of the families in the organized (93.33%) and unorganized sectors (70%) had recreation facilities in their home. All the families in the organized and unorganized sectors had proper transport facilities in their locality.

4.1.15 Type of fuel used

Except 3.33 per cent of the families in the organized sector, all the households used firewood as the major source of fuel and only 3.33 per cent of families used Liquefied Petroleum Gas (Table 17). None of the families in the unorganized sector used Liquefied Petroleum Gas. Majority of the families in the organized sector (61.66%) purchased wood from outside whereas in the unorganized sector 38.33 per cent collected wood from surroundings.

4.1.16 Details of health care facilities

Majority in the organized sector (85.33%) and all families in the unorganized sector depended on Public health centre for medical care. About 15 per cent in the organized sector depended on Public health centre, private doctor as

well as homoeopathic doctor while a minority (1.67%) depended on private doctor for medical services. The details are provided in table 18.

Table 17. Details regarding type and source of fuel used.

Type	Number of families	
	Organised	Unorganised
Fire wood	20 (33.33)	47 (78.33)
Fire wood and kerosene	10 (16.67)	10 (16.67)
Fire wood, kerosene and liquified petroleum gas	3 (5.00)	1 (1.67)
Fire wood and liquified petroleum gas	25 (41.67)	2 (3.33)
Liquified petroleum gas	2 (3.33)	-

Source of fuel		
Collected from surroundings	7	23
Purchased	(11.67)	(38.33)
	37	16
Collected from surroundings	(61.66)	(26.67)
and purchased	16	21
	(26.67)	(35.00)

(Figures in parentheses are percentages)

4.1.17 Epidemics prevalent in the locality.

Prevalence of any type of epidemics was not reported in the locality during the past one year.

Table 18. Details regarding health care facilities in the locality

Sl.No.	Facilities	Organised	Unorganised
1	Public health centre	50 (83.33)	60 (100.00)
2	Private doctor	1 (1.67)	-
3	Public health center, homoeopathic doctor and private doctor	9 (15.00)	-

(Figures in parentheses are percentages)

4.1.18. Personal habits of the respondents.

From the table 19, it was observed that 6.67 per cent and 26.67 per cent of the respondents in the organised and unorganized sectors had the habit of chewing tobacco.

Table 19. Details regarding personal habits

Sl.No.	Facilities	Organised	Unorganised
1	Tobacco chewing	4 (6.67)	16 (26.67)
2	No tobacco chewing	56 (93.33)	44 (73.33)
	Total	60 (100)	60 (100)

(Figures in parentheses are percentages)

4.1.19 Crisis in the family

None of the families in both the sectors did not report any crisis like death or any handicapped persons in the family for the past one year.

4.1.20 Working pattern of the respondents.

From table 20, it was observed that majority (79.99%) of the respondents in the unorganized sector get work for 3 – 5 days a week while all respondents in the organized sector get work for 6 days in a week. Lack of work in the field is the main reason for not getting work in the unorganised sector. It was found that all the respondents in the organized sector worked for 6-7 hours a day while in the unorganized sector all the respondents worked for 8-8 ½ hours in a day. In the organized sector majority of the respondents start to work at 8.15 am and stop at 4.45 pm where as in the unorganized sector majority start to work at 8 am and stop at 5.30 pm. All the respondents in the organized sector had half an hour interval in the morning, 1 ¼ hour interval at noon and 15 minutes interval in the afternoon. In the unorganized sector majority had half an hour interval in the morning, 1 ½ hour interval at noon and 15 minutes interval in the afternoon. It was found that all the women labourers in the organized sector were not going for any other work during off days.

Considering the details regarding the work during different seasons it was found that all the respondents in the organized sector used to get about 25-26 days work in summer and rainy seasons. In the unorganized sector 81.67 per cent used to get work for upto 10 days per month during rainy season while 18.33 per cent used to get 10-15 days of work.

Transplanting, weeding, harvesting, threshing and winnowing were the tasks performed by women in the unorganized sector.

It was also observed that 58.33 per cent of the respondents in the unorganized sector used to get Rs.80/- as their daily wage while for 41.67 per cent it was found to be Rs.100/day. In the organized sector wage per day was more than the unorganized sector. About 73.33 per cent and 26.67 per cent of the respondents were getting Rs.170/- and Rs.165/- respectively in the organized sector.

Table 20. Details on the working pattern of the respondents

Category	Number of families	
	Organised	Unorganised
Frequency of work in a week (Days)		
2	-	10 (16.67)
3	-	17 (28.33)
4	-	17 (28.33)
5	-	14 (23.34)
6	60 (100.00)	2 (3.33)
Working Time (Hours)		
6 - 7	60 (100.00)	-
8 - 8 ½	-	60 (100.00)
Work during different seasons		
Summer season (Days)		
Upto 20	-	15
20 - 25	-	(25.00)
25 - 26	60 (100.00)	45 (75.00)
Rainy season (Days)		
Upto 10	-	49 (81.67)
10 - 15	-	11 (18.33)
25 - 26	60 (100.00)	-

Wage per day (Rs.)		
80	-	35 (58.33)
100	-	25 (41.67)
165	16 (26.67)	-
170	44 (73.33)	-
Total	60 (100.00)	60 (100.00)

(Figures in parentheses are percentages)

4.2. FOOD CONSUMPTION PATTERN OF THE FAMILIES

The food consumption pattern of the families was assessed with respect to the food habits, food expenditure pattern, frequency of purchase and use of different food items, meal pattern, preservation and storage practices.

4.2.1. Food habits of the families

All the families in both the sectors except 1.67 per cent were non-vegetarians. All the families in the two sectors consumed rice as their staple food.

4.2.2. Food expenditure pattern

From Tables 21 and 22, it is seen that majority of the families spent above 15 per cent of food expenses on cereals. Majority of the families in the unorganized sector (79.99%) spent between 30 to 50 per cent on cereals while in organized sector 96.66 per cent spent the same amount for the purchase of cereals.

In the case of green leafy vegetables, roots and tubers, fruits and egg except 1.67 per cent of the families, all the families in the unorganized sector spent

Table 21. Monthly expenditure pattern for different food items (Organized sector).

Food items	No expenditure	<5%	5-10%	10-15%	15-20%	20-25%	25-30%	30-35%	35-40%	40-45%	45-50%	>50%	Total
Cereals	1 (1.67)	-	-	-	4 (6.67)	3 (5.00)	16 (26.66)	13 (21.66)	11 (18.33)	6 (10.00)	6 (10.00)	-	60 (100)
Pulses	-	46 (76.67)	14 (23.33)	-	-	-	-	-	-	-	-	-	60 (100)
Green leafy vegetables	2 (3.33)	58 (96.67)	-	-	-	-	-	-	-	-	-	-	60 (100)
Other vegetables	1 (1.67)	14 (23.33)	36 (60.00)	7 (11.67)	2 (3.33)	-	-	-	-	-	-	-	60 (100)
Roots & tubers	7 (11.67)	50 (83.33)	-	-	-	-	-	-	-	-	-	-	60 (100)
Fruits	3 (5.00)	57 (95.00)	-	-	-	-	-	-	-	-	-	-	60 (100)
Fats & oils	1 (1.67)	-	7 (11.66)	34 (56.67)	17 (28.33)	1 (1.67)	-	-	-	-	-	-	60 (100)
Sugar	-	51 (85.00)	9 (15.00)	-	-	-	-	-	-	-	-	-	60 (100)
Spices & condiments	-	41 (68.33)	19 (31.67)	-	-	-	-	-	-	-	-	-	60 (100)
Milk & milk products	5 (8.33)	14 (23.33)	24 (40.00)	9 (15.00)	7 (11.67)	-	1 (1.67)	-	-	-	-	-	60 (100)
Meat	1 (1.67)	12 (20.00)	35 (58.33)	8 (13.33)	4 (6.67)	-	-	-	-	-	-	-	60 (100)
Fish	1 (1.67)	9 (15.00)	38 (63.33)	6 (10.00)	6 (10.00)	-	-	-	-	-	-	-	60 (100)
Egg	2 (3.33)	56 (93.34)	2 (3.33)	-	-	-	-	-	-	-	-	-	60 (100)
Others	-	43 (71.67)	16 (26.66)	-	1 (1.67)	-	-	-	-	-	-	-	

(Figures in parentheses are percentages)

Table 22. Monthly expenditure pattern of the families for different food items (unorganized sector).

Food items	No expenditure	<5%	5-10%	10-15%	15-20%	20-25%	25-30%	30-35%	35-40%	40-45%	45-50%	>50%	Total
Cereals	-	-	-	-	1 (1.67)	3 (5.00)	6 (10.00)	11 (18.33)	11 (18.33)	18 (30.00)	8 (13.33)	2 (3.33)	60 (100)
Pulses	-	48 (80.00)	12 (20.00)	-	-	-	-	-	-	-	-	-	60 (100)
Green leafy vegetables	1 (1.67)	59 (98.33)	-	-	-	-	-	-	-	-	-	-	60 (100)
Other vegetables	1 (1.67)	9 (15.00)	38 (63.33)	10 (16.67)	2 (3.33)	-	-	-	-	-	-	-	60 (100)
Roots & tubers	1 (1.67)	59 (98.33)	-	-	-	-	-	-	-	-	-	-	60 (100)
Fruits	1 (1.67)	59 (98.33)	-	-	-	-	-	-	-	-	-	-	60 (100)
Fats & oils	-	-	5 (8.33)	29 (48.30)	21 (35.00)	3 (5.00)	1 (1.67)	-	1 (1.67)	-	-	-	60 (100)
Sugar	-	42 (70.00)	16 (26.66)	2 (3.33)	-	-	-	-	-	-	-	-	60 (100)
Spices & condiments	-	19 (31.67)	41 (68.33)	-	-	-	-	-	-	-	-	-	60 (100)
Milk & milk products	3 (5.00)	38 (63.34)	14 (23.33)	5 (8.33)	-	-	-	-	-	-	-	-	60 (100)
meat	1 (1.67)	30 (50.00)	22 (36.66)	6 (10.00)	1 (1.67)	-	-	-	-	-	-	-	60 (100)
Fish	1 (1.67)	5 (8.33)	41 (68.33)	12 (20.00)	1 (1.67)	-	-	-	-	-	-	-	60 (100)
Egg	1 (1.67)	59 (98.33)	-	-	-	-	-	-	-	-	-	-	60 (100)
Others	-	47 (78.33)	13 (21.67)	-	-	-	-	-	-	-	-	-	60 (100)

(Figures in parentheses are percentages)

less than 5 per cent of the food expenses. Majority of the families in the organized sector also spent less than 5 per cent of their expenditure on food for pulses (76.67%), green leafy vegetables (96.67%), roots and tubers (83.33%), fruits (95%), sugar (85%), spices and condiments (68.3%), egg (93.34%) and others (71.67%).

Majority in the organized sector spent upto 15 per cent of money for food on other vegetables, milk and milk products, meat and fish. In the case of pulses, sugar, spices and condiments, meat and fish, most of the families in the unorganized sector spent less than 10 per cent of the food expenses. In both the sectors, majority spent between 10 and 20 per cent on fats and oils.

There was significant difference in expenditure on various food items like roots and tubers, fruits, milk and milk products, meat and egg between the sectors. (t value = 2.08*, 3.5**, 4.36**, 4.46** and 4.26** respectively).

4.2.3 Frequency of purchase of food items

Table 23 and 24, furnish information on the frequency of purchase of various food items by the families. It is clear that majority of the families in the organized sector purchased cereals (86.67%), pulses (73.33%), fats and oils (86.67%), sugar (85%), spices and condiments (85%) and egg (83.34%) once in a month while 51.67 per cent and 71.67 per cent purchased other vegetables and milk daily. Weekly purchase was made by most of the families of organized sector in the case of roots and tubers (81.67%), fruits (51.67%), meat (78.33%) and fish (83.33%).

In the unorganized sector most of the families purchased pulses (78.33%), other vegetables (61.67%), roots and tubers (83.33%), fats and oils (86.67%) and sugar (73.33%) weekly whereas majority of the families purchased green leafy vegetables (90%), fruits (58.33%), spices and condiments (100%) and egg (86.66%) on a monthly basis.

Table 23. Details of frequency of purchase of food in the Organised sector.

Food Items	Daily	Weekly	Monthly	Occasionally	Never	As required	Total
Cereals	1 (1.67)	6 (10)	52 (86.66)	-	1 (1.67)	-	60 (100)
Pulses	-	14 (23.33)	44 (73.34)	-	-	2 (3.33)	60 (100)
Green leafy vegetables	-	14 (23.33)	30 (50)	16 (26.67)	-	-	60 (100)
Other vegetables	31 (51.67)	27 (45.00)	-	-	2 (3.33)	-	60 (100)
Roots and tubers	-	49 (81.67)	1 (1.67)	4 (6.67)	6 (10)	-	60 (100)
Fruits	-	31 (51.67)	9 (15)	4 (6.67)	3 (5)	13 (21.67)	60 (100)
Fats and oils	-	8 (13.33)	52 (86.67)	-	-	-	60 (100)
Sugar	1 (1.67)	8 (13.33)	51 (85)	-	-	-	60 (100)
Spices & condiments	-	-	60 (100)	-	-	-	60 (100)
Milk & milk products	43 (71.67)	-	-	12 (20)	3 (5)	2 (3.33)	60 (100)
Meat	-	47 (78.33)	12 (20)	-	1 (1.67)	-	60 (100)
Fish	-	50 (83.33)	8 (13.33)	1 (1.67)	1 (1.67)	-	60 (100)
Egg	-	-	50 (83.34)	3 (5)	2 (3.33)	5 (8.33)	60 (100)

(Figures in parentheses are percentages)

Table 24. Details of frequency of purchase of food in the unorganized sector.

Food Items	Daily	Weekly	Monthly	Occasionally	Never	As required	Total
Cereals	9 (15)	31 (51.67)	20 (33.33)	-	-	-	60 (100)
Pulses	-	47 (78.33)	13 (21.67)	-	-	-	60 (100)
Green leafy vegetables	-	4 (6.67)	54 (90.00)	2 (3.33)	-	-	60 (100)
Other vegetables	22 (36.67)	37 (61.66)	-	-	1 (1.67)	-	60 (100)
Roots and tubers	-	50 (83.33)	8 (13.33)	-	1 (1.67)	1 (1.67)	60 (100)
Fruits	-	20 (33.33)	35 (58.33)	1 (1.67)	1 (1.67)	3 (5.00)	60 (100)
Fats and oils	2 (3.33)	52 (86.67)	6 (10)	-	-	-	60 (100)
Sugar	4 (6.67)	44 (73.33)	12 (20.00)	-	-	-	60 (100)
Spices and condiments	-	-	60 (100)	-	-	-	60 (100)
Milk & milk products	21 (35.00)	2 (3.33)	-	27 (45)	-	10 (16.67)	60 (100)
Meat	-	21 (35)	36 (60)	2 (3.33)	1 (1.67)	-	60 (100)
Fish	4 (6.67)	53 (88.33)	2 (3.33)	-	1 (1.67)	-	60 (100)
Egg	-	6 (10)	52 (86.66)	1 (1.67)	1 (1.67)	-	60 (100)

(Figures in parentheses are percentages)

4.2.4. Frequency of use of different food items

The details of frequency of use of various food items by the two sectors are presented in Tables 25 and 26.

The tables reveal that all the families of both the sectors used cereals, spices and condiments, fats and oils and sugar in their daily diet.

Majority of the families in the organized sector used pulses (100%), roots and tubers (86.67%), fruits (56.67%), meat (78.33%) and fish (83.33%) on a weekly basis.

In the unorganized sector, 90 per cent, 68.34 per cent and 60 per cent of the families used green leafy vegetables, fruits and meat respectively on a monthly basis. About 100 per cent, 63.33 per cent, 86.67 per cent and 88.33 per cent of families used pulses, other vegetables and roots and tubers respectively on a weekly basis.

Majority of the families in the organized sector (71.67%) used milk and milk products daily whereas in the unorganized sector only 35 per cent used this daily. In both the sectors, 80 per cent of the families used egg once in a month.

The frequency of use of different food items among the selected families was assessed by the formula suggested by Reaburn *et al.* (1979) and the percentage score is presented in Table 27.

The results indicated that the maximum score of 100 per cent was obtained for food items like cereals, fats and oils, sugar and spices and condiments for both the sectors. The food frequency score obtained for pulses (78.6%) green leafy vegetables (65.55%), other vegetables (90.95%) and milk and milk products (75%) were higher in the organized sector compared to unorganized sector (64.17%, 51.25%, 86.67% and 46.19% respectively). In the case of roots and

Table 25. Frequency of use of various foods by the families of organized sector.

Food items	D	W ₄	W ₃	W ₂	W ₁	M	O	N	Total
Cereals	60 (100)	-	-	-	-	-	-	-	60 (100)
Pulses	-	8 (13.33)	29 (48.34)	21 (35.00)	2 (3.33)	-	-	-	60 (100)
Green leafy vegetables	-	-	-	-	14 (23.33)	30 (50.00)	16 (26.67)	-	60 (100)
Other vegetables	31 (51.66)	21 (35.00)	7 (11.67)	1 (1.67)	-	-	-	-	60 (100)
Roots & tubers	-	4 (6.67)	8 (13.33)	12 (20.00)	28 (46.67)	2 (3.33)	2 (3.33)	4 (6.67)	60 (100)
Fruits	-	-	-	3 (5.00)	31 (51.67)	8 (13.33)	15 (25.00)	3 (5.00)	60 (100)
Fats & oils	60 (100)	-	-	-	-	-	-	-	60 (100)
Sugar	60 (100)	-	-	-	-	-	-	-	60 (100)
Spices & condiments	60 (100)	-	-	-	-	-	-	-	60 (100)
Milk & milk products	43 (71.67)	-	-	-	-	-	14 (23.33)	3 (5.00)	60 (100)
Meat	-	-	3 (5.00)	23 (38.33)	21 (35.00)	11 (18.33)	1 (1.67)	1 (1.67)	60 (100)
Fish	-	7 (11.67)	8 (13.33)	23 (38.33)	12 (20.00)	8 (13.33)	1 (1.66)	1 (1.66)	60 (100)
Egg	1 (1.67)	-	-	-	-	48 (80.00)	9 (15.00)	2 (3.33)	60 (100)
Others	-	-	-	15 (25.00)	12 (20.00)	20 (33.33)	13 (21.67)	-	60 (100)

(Figures in parentheses are percentages) D- Daily, W₄- Weekly four times, W₃ - Weekly three times, W₂ - Weekly two times, M - Monthly, O - Occasionally, N- Never.

Table 26. Frequency of use of various foods by the families of unorganized sector.

Food items	D	W ₄	W ₃	W ₂	W ₁	M	O	N	Total
Cereals	60 (100)	-	-	-	-	-	-	-	60 (100)
Pulses	-	9 (15.00)	27 (45.00)	24 (40.00)	-	-	-	-	60 (100)
Green leafy vegetables	-	-	-	1 (1.67)	3 (5.00)	54 (90.00)	2 (3.33)	-	60 (100)
Other vegetables	22 (36.67)	32 (53.33)	6 (10.00)	-	-	-	-	-	60 (100)
Roots & tubers	-	-	5 (8.33)	18 (30.00)	34 (56.67)	3 (5.00)	-	-	60 (100)
Fruits	-	-	-	-	14 (23.33)	41 (68.34)	5 (8.33)	-	60 (100)
Fats & oils	60 (100)	-	-	-	-	-	-	-	60 (100)
Sugar	60 (100)	-	-	-	-	-	-	-	60 (100)
Spices & condiments	60 (100)	-	-	-	-	-	-	-	60 (100)
Milk & milk products	21 (35.00)	1 (1.67)	-	1 (1.67)	-	-	37 (61.66)	-	60 (100)
Meat	-	-	-	13 (21.66)	10 (16.66)	36 (60.00)	1 (1.67)	-	60 (100)
Fish	4 (6.67)	11 (18.33)	27 (45.00)	10 (16.66)	5 (8.33)	2 (3.33)	-	1 (1.67)	60 (100)
Egg	-	-	-	1 (1.67)	9 (15.00)	48 (80.00)	1 (1.67)	1 (1.66)	60 (100)
Others	-	-	-	-	-	30 (50.00)	30 (50.00)	-	60 (100)

(Figures in parentheses are percentages) D- Daily, W₄- Weekly four times, W₃ – Weekly three times, W₂ – Weekly two times, M – Monthly, O – Occasionally, N – Never.

tubers, fruits, fish and egg, unorganized sector scored the highest score compared to organized sector.

Table 27. Frequency score (%) of different food items

Food items	Frequency score	
	Organised	Unorganised
Cereals	100	100
Pulses	78.6	64.17
Green leafy vegetables	65.55	51.25
Other vegetables	90.95	86.67
Roots and tubers	56.1	68.33
Fruits	56.67	71.66
Fats and oils	100	100
Sugar	100	100
Spices and condiments	100	100
Milk and milk products	75	46.19
Meat	64.66	64.58
Fish	64.99	68.57
Egg	26.67	53.34

Based on the percentage scores obtained for different food items, the foods were classified into three groups viz., most frequently used (percentage score above 75%) medium frequently used (percentage score 50 to 75%) and less frequently used (percentage score below 50%) food stuffs.

The results (Table 28) indicated that cereals, other vegetables, fats and oils, sugar and spices and condiments were the most frequently used food items in both the sectors. Pulses and milk and milk products were used most frequently by the organized sector. Green leafy vegetables, roots and tubers, fruits, meat and fish were moderately used by both the sectors. Egg was the least

frequently used food item in organized sector while milk was least frequently used in the unorganized sector.

Table 28. Details of frequency of use of different food items.

Frequency of use	Organised	Unorganised
Most frequently used (Scores above 75%)	Cereals, pulses, other vegetables, milk and milk products, fats and oils, sugar, spices and condiments	Cereals, other vegetables, fats and oils, sugar and spices and condiments
Medium frequently used (Scores 50 – 75%)	Green leafy vegetables, roots and tubers, fruits, meat and fish	Pulses, green leafy vegetables, roots and tubers, fruits, meat, fish and egg.
Less frequently used (Scores below 50%)	Egg	Milk and milk products

4.2.4. Meal pattern of the family

The analysis of the meal pattern of the families indicated that except for two families in the organized sector and four families in the unorganized sector, all the families planned their meals in advance. (Table 29)

Regarding the specific time schedule for taking meals, it was observed that 96.67 per cent in the unorganized sector adopted a specific time compared to 91.67 per cent in the organized sector. The rest of the families consumed foods as and when they liked.

All the families in both the sectors had a three meal a day pattern.

Table 29. Details regarding meal pattern of the families.

Facilities	Number of families	
	Organised	Unorganised
Plan meals in advance	58 (96.67)	56 (93.33)
No meal planning	2 (3.33)	4 (6.67)
Time schedule for taking meals	55 (91.67)	58 (96.67)
No time schedule	5 (8.33)	2 (3.33)
Total	60 (100)	60 (100)

(Figures in parentheses are percentages)

Table 30. Details regarding nutritional awareness of the families.

Details	Number of families	
	Organised	Unorganised
No. of times washing cereals		
1	-	-
2	1 (1.67)	-
3	38 (63.33)	46 (76.67)
>3	21 (35.00)	14 (23.33)
Use soaked pulses	59 (98.33)	59 (98.33)
Not using soaked pulses	1 (1.67)	1 (1.67)
Washing green leafy vegetables before cutting	57 (95.00)	55 (91.67)
Not washing GLV	3 (5.00)	5 (8.33)
Eat raw vegetables	30 (50.00)	21 (35.00)
Not eating raw vegetables	30 (50.00)	39 (65.00)
Use boiled water for drinking	50 (83.33)	14 (23.33)
Use water without boiling	10 (16.67)	46 (76.67)

(Figures in parentheses are percentages)

4.2.5 Nutritional awareness of the families

Majority of the families in the organized (63.33%) and unorganized sectors (76.67%) used to wash cereals three times before cooking. Most of the families in both the sectors used to soak pulses before cooking and wash green leafy vegetables before cutting. It was found that 83.33 per cent and 23.33 per cent of the organized and unorganized sectors respectively were in the habit of drinking only boiled water while the rest drank water without boiling. (Table 30)

Fifty per cent of the families in the organized sector and thirty five per cent of the families in the unorganized sector consumed vegetables like tomato, carrot, onion and cucumber in the raw state.

4.2.5.1 Preservation and storage practices

Only 40 per cent and 11.67 per cent in the organized and unorganized sectors respectively processed mango, lime and gooseberry at home mainly in the form of pickles. Most common storage methods adopted by the families in both the sectors were drying and storing in tight containers for cereals and pulses.

4.2.6 Food consumption pattern at the work site

Majority of the respondents in the organized (91.67%) and unorganized (90%) sectors took packed food to the work site.

4.3 PER CAPITA FOOD AND NUTRIENT INTAKE

Per capita food and nutrient intake of the respondents in the two sectors were determined by three day recall method.

4.3.1 Per capita food intake

From Table 31, it was observed that in both the sectors, the per capita intake of cereals, green leafy vegetables, fruits, milk and milk products and fats and oils was significantly lower than the recommended allowances suggested by ICMR (1984). The consumption of pulses, other vegetables, flesh foods and sugar was found to be higher than the suggested quantity in both the sectors which was found to be statistically significant except the intake of pulses in the unorganized sector.

Statistical analysis done to compare the intake of different food items, indicated significant difference in the intake of cereals, green leafy vegetables, roots and tubers, milk and milk products and fats and oils between the two sectors while the intake of pulses, vegetables, fruits, flesh foods and sugar were statistically insignificant between the sectors.

4.3.2 Per capita nutrient intake

The nutrients present in the different ingredients consumed by the respondents were computed using the food composition tables (Gopalan *et al*, 1989). The per capita nutrient intake was compared with the RDA of nutrients suggested by ICMR (1990).

The results (Table 32) indicated that the per capita intake of calories, protein, calcium, iron and retinol was significantly lower than the RDA in both the sectors. The intake of niacin and vitamin C was found to be higher than the RDA in organized sector while the intake of thiamin and riboflavin was significantly lower than the recommended levels in unorganized sector.

Table 31. Per capita food intake per day of respondents.

Food items	RDA (g)	Organised sector		Unorganised sector		t value (between the sectors)
		Mean (g) ± S.E.	t value (Compared with RDA)	Mean(g) ± S.E.	t value (Compared with RDA)	
Cereals	440	274.17 ± 7.26	22.8**	293.67 ± 1.92	27.49**	2.18*
Pulses	25	30.33 ± 2.52	2.11*	28.75 ± 4.23	1.95 NS	0.5 NS
Green leafy vegetables	100	6 ± 1.81	51.84**	18.5 ± 5.13	19.24**	2.73**
Other vegetables	40	68.86 ± 5.98	4.82**	68.08 ± 7.34	5.47**	0.1 NS
Roots and tubers	50	80.73 ± 11.83	2.59**	23.85 ± 1.75	3.55**	4.12**
Fruits	30	12.97 ± 2.42	7.02**	10.75 ± 2.88	10.95**	0.74 NS
Milk and milk products	150	23.5 ± 4.8	26.3**	6 ± 4.91	49.8**	3.15**
Meat/Fish/Egg	30	64.93 ± 4.75	7.35**	54.87 ± 0.79	5.05**	1.48NS
Fats and oils	30	28.5 ± 0.42	3.57**	24.92 ± 0.028	6.38**	4**
Sugar	20	24.67 ± 0.16	28.46**	24.95 ± 0.92	176.78**	1.76NS

** Significant at 1% level NS: Not significant

* Significant at 5% level

Table 32. Per capita nutrient intake per day of respondents

Nutrients	RDA	Organised sector		Unorganised sector		t value (between the sectors)
		Mean \pm S.E.	t value (Compared with RDA)	Mean \pm S.E.	t value (Compared with RDA)	
Energy (kcal)	2225	1626.82 \pm 34.49	17.34**	16.27 \pm 17.78	16.37**	0.01NS
Protein (g)	50	40.75 \pm 1.29	7.64**	37.99 \pm 1.1	5.29**	1.64NS
Calcium (mg)	400	220 \pm 15.23	11.8**	166.19 \pm 8.67	26.96**	2.72*
Iron (mg)	30	9.15 \pm 4.73	4.39**	6.7 \pm 0.194	30.7**	1.95NS
Retinol (μ g)	600	199.82 \pm 43.43	9.21**	99.2 \pm 20.5	24.37**	2.11*
Thiamin (mg)	1.1	0.895 \pm 0.54	1.07NS	0.82 \pm 0.013	20.9**	1.46NS
Riboflavin (mg)	1.3	0.522 \pm 0.26	1.57NS	0.32 \pm 0.008	109.07**	4.04**
Niacin (mg)	14	14.2 \pm 0.4	0.49NS	13.92 \pm 0.3	0.26NS	0.51NS
Vitamin C (mg)	40	38.8 \pm 3.72	0.32NS	39.4 \pm 4.98	0.12NS	0.09NS

** Significant at 1% level NS: Not significant

* Significant at 5% level

Statistically significant difference in the intake of calcium, retinol and riboflavin was observed between the sectors while the intake of energy, protein, iron, thiamine, niacin and vitamin C between the organized and unorganized sectors were statistically insignificant.

4.4 HOUSEHOLD FOOD SECURITY

From table 33 it was observed that 76 per cent of the households with children and 80 per cent of the households without children in the organized sector reported no problems or concerns in meeting their food needs. In the case of unorganized sector this was found to be 9.09 per cent and 25.93 per cent in the households with and without children respectively. However, households that reported only one or two indications of food insecurity with a raw score of 1 and 2 was found to be 17.14 per cent and 14.81 per cent (without children) in the organized and unorganized sectors respectively. Among unorganized sector 6.06% of the families with children also reported such indications of food insecurity. All these households with a raw score ranging from 0 to 2 were categorized as food secure with a code value of zero as given in table 34.

In the unorganized sector about 33.33 per cent and 14.81 per cent of the households with and without children respectively reported three indications of food insecurity. While in the organized sector 24 per cent of the households with children also reported same indications of food insecurity. About 15.15 per cent of households with children in the unorganized sector reported 5 to 7 indications of food insecurity. All these households with a raw score ranging from 3 to 7 (with children) and 3 to 5 (without children) were classified as food insecure without hunger with a code value of one. (Table 34)

About 36.37 per cent and 44.45 per cent of the households with and without children had food insecurity with moderate hunger in the unorganized sector. None of the families in the organized sector experienced this type of food insecurity.

Figure 3. Box diagram showing extent of hunger in organised sector



Food insecurity was found to be more in the households with children in both the sectors. Individual scale and code value scored by the different households in organized and unorganized sectors were taken and the mean scale and code value of the two sectors were represented in fig. 3 and 4.

Table 33. Distribution of households on the basis of food security raw score.

Number of affirmative responses. (Raw score)	Number of households					
	Organised		Total	Unorganised		Total
	With children	Without children		With children	Without children	
0	19 (76.00)	28 (80.00)	47 (78.33)	3 (9.09)	7 (25.93)	10 (16.67)
1	-	6 (17.14)	6 (10.00)	-	4 (14.81)	4 (96.66)
2	-	-	-	2 (6.06)	-	2 (3.33)
3	6 (24.00)	-	6 (10.00)	11 (33.33)	4 (14.81)	15 (25.00)
4	-	-	-	-	-	-
5	-	1 (2.86)	-	3 (9.09)	-	3 (5.00)
6	-	-	1 (1.67)	1 (3.03)	5 (18.52)	6 (10.00)
7	-	-	-	1 (3.03)	6 (22.22)	7 (11.67)
8	-	-	-	4 (12.13)	1 (3.71)	5 (8.33)
9	-	-	-	7 (21.21)	-	7 (11.67)
10	-	-	-	1 (3.03)	-	1 (1.67)
Total	25 (100)	35 (100)	60 (100)	33 (100)	27 (100)	60 (100)

(Figures in parentheses are percentages)

Figure 4. Box diagram showing extent of hunger in unorganised sector

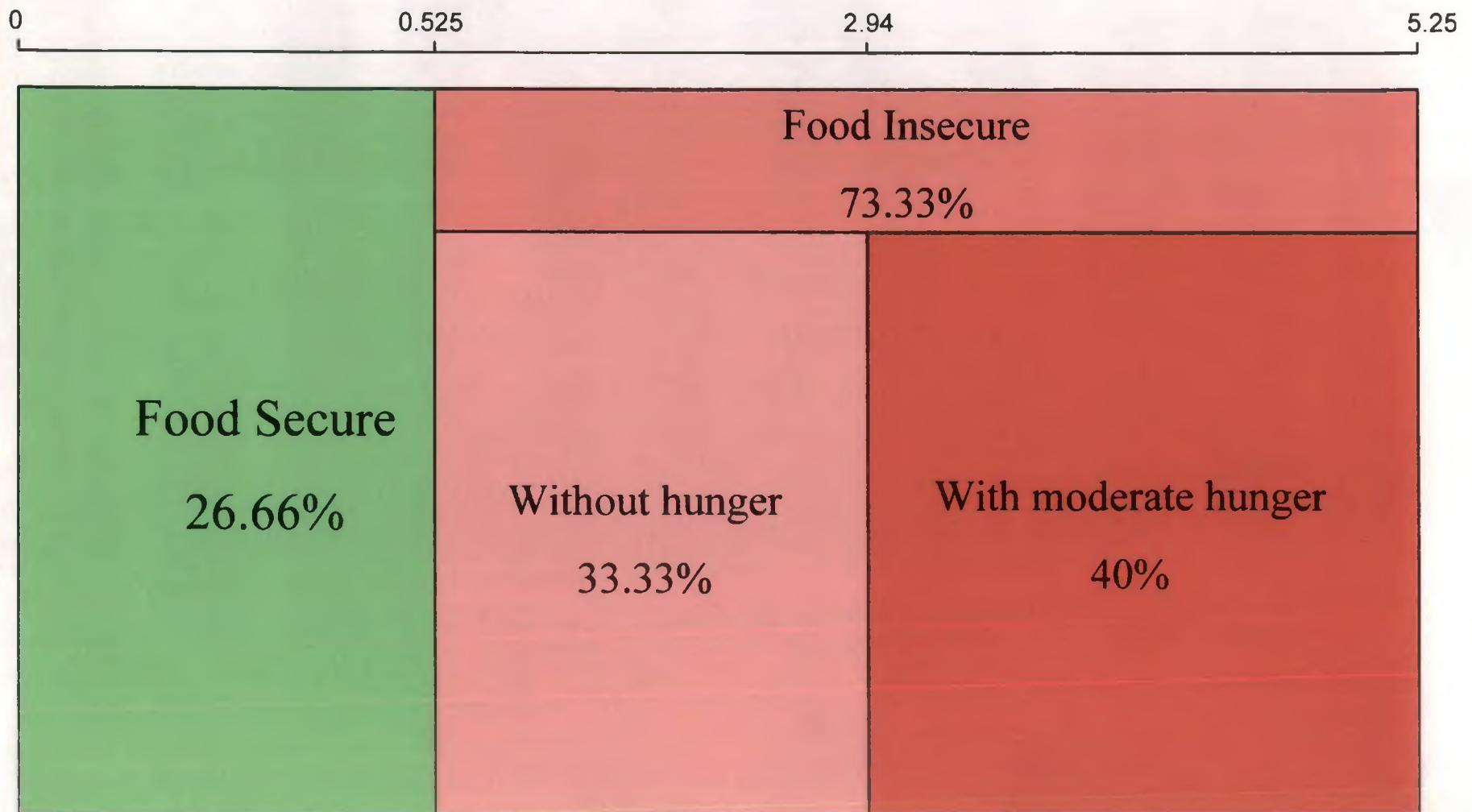


Table 34 Distribution of family members on the basis of food security status.

Food security status	Code Value	Organised		Total	Unorganised		Total
		Number of households			Number of households		
		With Children	Without Children		With Children	Without Children	
Food secure	0	19 (76.00)	34 (97.14)	53 (88.33)	5 (15.15)	11 (40.74)	16 (26.67)
Food insecure without hunger	1	6 (24.00)	1 (2.86)	7 (11.67)	16 (48.48)	4 (14.81)	20 (33.33)
Food insecure with moderate hunger	2	0	0	0	12 (36.37)	12 (44.45)	24 (40.00)
	Total	25 (100.00)	35 (100.00)	60 (100.00)	33 (100.00)	27 (100.00)	60 (100.0)

(Figures in parentheses are percentages)

Food security status was more or less the same between the households with and without children in the organized (t value=0.233 NS) and unorganized (t value=1.059 NS) sectors. Statistically significant difference was observed in the food security status of the households with (t value=7.32*) and without (t value=5.28*) children between the sectors. The food security scale value and the corresponding code value of each of the respondent in the organized and unorganized sectors are given in Appendix VII and VIII respectively.

4.5 NUTRITIONAL STATUS OF THE RESPONDENTS

Nutritional status of women agricultural labourers was ascertained through anthropometric methods, clinical examination and one day food weighment method.

4.5.1 Anthropometric measurements

The weight of the respondents in the organized sector varied from 35 kg to 81 kg with a mean weight of 51.07 kg whereas in the unorganized sector it varied from 35 kg to 62 kg with a mean weight of 46.95 kg. There was significant difference in the weight of the respondents between the sectors.(Table 35)

The height of the respondents in the organized sector varied from 137 cm to 166 cm with an average height of 152.35 cm while in the unorganized sector, the respondents had a height in between 137 cm to 162 cm with an average of 152.15 cm. No significant difference was observed in the height of the respondents between the sectors. (Table 36)

Further analysis of weight and height of the respondents revealed that 43.33 per cent and 51.67 per cent of the respondents in the organized and unorganized sectors respectively were under weight when compared with the standard weight suggested for a reference Indian woman. Only 35 per cent and 36.66 per cent of the respondents in the organized and unorganized sectors respectively had their height equal to or above the standard height of 155cm recommended for an Indian reference woman as depicted in Table 37.

Table 35. Distribution of respondents on the basis of weight

Weight (kg)	Number of respondents	
	Organised	Unorganised
30-39	6 (10.00)	7 (11.67)
40-49	20 (33.33)	24 (40.00)
50-59	22 (36.67)	27 (45.00)
60-69	11 (18.33)	2 (3.33)
70-79	-	-
80-89	1 (1.67)	-

(t value between the sectors=2.85**)

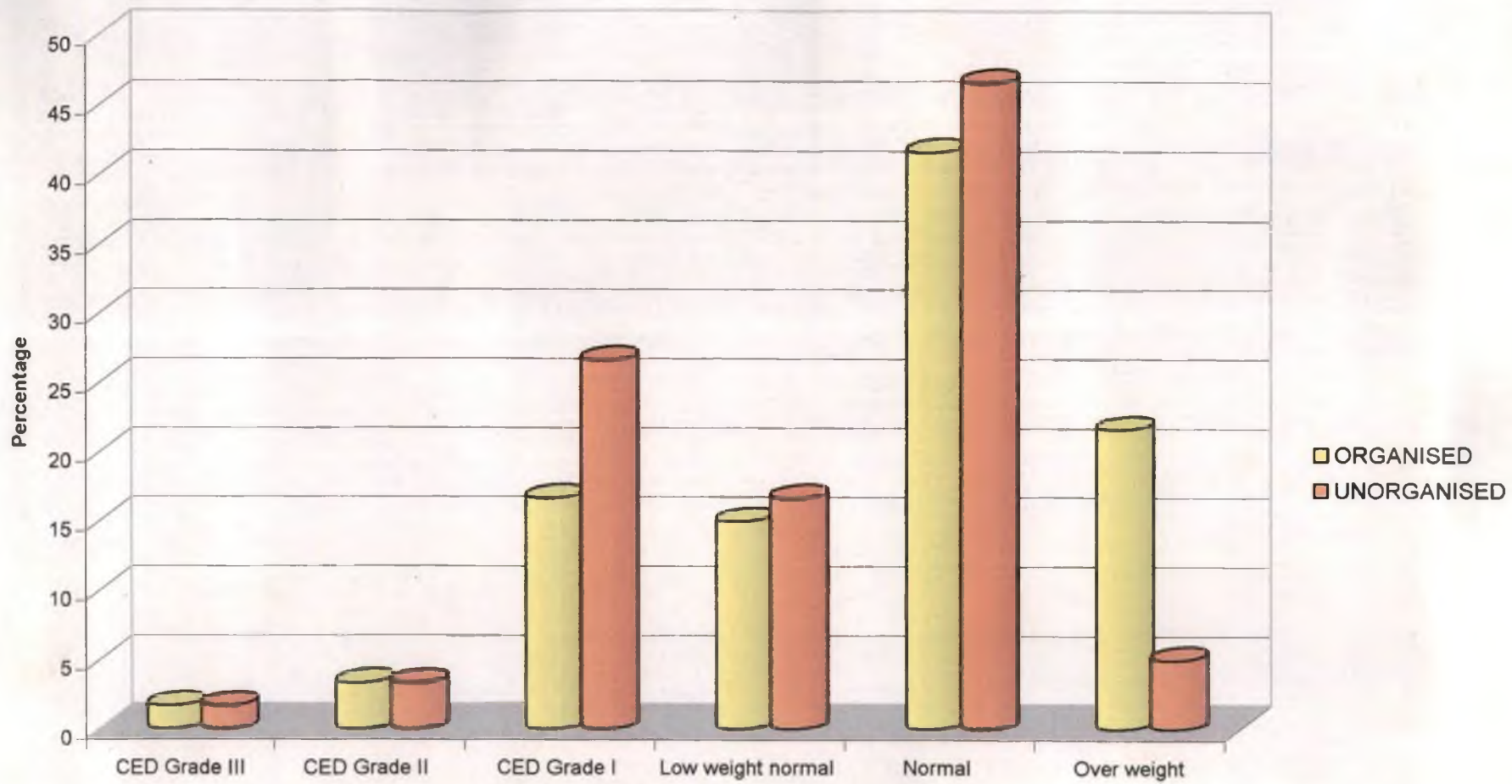


Fig. 5. Percentage distribution of respondents based on BMI

Table 36. Distribution of respondents on the basis of height

Height (cm)	Number of respondents	
	Organised	Unorganised
135-140	1 (1.67)	1 (1.67)
140.1-145	1 (1.67)	5 (8.33)
145.1-150	21 (35.00)	19 (31.67)
150.1-155	22 (36.66)	21 (35.00)
155.1-160	8 (13.33)	10 (16.66)
160.1-165	6 (10.00)	4 (6.67)
165.1-170	1 (1.67)	-

(t value between the sectors=0.195NS)

Table 37. Comparison of anthropometric measurements of the respondents with standard weight and height

Sl. No.	Category	Standard*		Number of families			
		Weight (Kg)	Height (Cm)	Organised		Unorganised	
				Weight	Height	Weight	Height
1.	Below normal	< 50	< 155	26 (43.33)	39 (65.00)	31 (51.67)	38 (63.34)
2.	Normal	50	155	1 (1.67)	6 (10.00)	19 (31.66)	8 (13.33)
3.	Above normal	> 50	> 155	33 (55.00)	15 (25.00)	10 (16.67)	14 (23.33)
	Total			60 (100.00)	60 (100.00)	60 (100.00)	60 (100.00)

(Figures in parentheses are percentages)

* ICMR (1990)

4.5.2 Body mass index of respondents

The prevalence of chronic energy deficiency among the respondents on the basis of body mass index are presented in Table 38.

The results indicated that 21.67 per cent (organized sector) and 31.67 per cent (unorganized sector) had various grades of chronic energy deficiencies. The extent of malnutrition as mild (CED Grade I) moderate (CED Grade II) and severe (CED Grade III) was found to be 16.67 per cent, 3.33 per cent and 1.67 per cent in the organized sector and 26.67 per cent, 3.33 per cent and 1.67 per cent respectively in the unorganized sector. Women belonging to normal group with a BMI in between 20 to 25 was found to be 41.66 per cent in the organized sector and 46.67 per cent in the unorganized sector.

Table 38. Distribution of respondents on the basis of Body Mass Index.

Sl. No.	Category (BMI)	Grades of malnutrition	Number of respondents	
			Organised	Unorganised
1	CED grade III (<16)	Severe	1 (1.67)	1 (1.67)
2	CED grade II (16-17)	Moderate	2 (3.33)	2 (3.33)
3	CED grade I (17-18.5)	Mild	10 (16.67)	16 (26.67)
4	Low weight normal (18.5-20)	Normal with low weight	9 (15.00)	10 (16.67)
5	Normal (20-25)	Normal	25 (41.66)	28 (46.66)
6	Over weight (>25)	Obese	13 (21.67)	3 (5.00)
	Total		60 (100)	60 (100)

(Figures in parentheses are percentages)

About 15 per cent and 16.67 per cent had normal nutritional status with low body weight in the organized and unorganized sectors respectively. The rest of the respondents in the two sectors were found to be obese.

Table 39 depicts the mean values of weight and height by CED grades among the respondents in both the sectors. It can be seen that the mean weight and BMI decreased consistently with the severity of under nutrition from normals followed by CED grade I and CED grade II. However, Grade II women had taller stature by 3 cm to 6 cm than the CED grade I, low weight and normal women.

Table 39. Mean anthropometric measurements by CED grades

Categories	Weight (kg) Mean \pm S.E		Height (cm) Mean \pm S.E		BMI (kg/m ²) Mean \pm S.E	
	Organised	Unorganised	Organised	Unorganised	Organised	Unorganised
Grade II	40.5 \pm 0.7	40.00 \pm 0	156.5 \pm 3.5	154.5 \pm 0.7	16.5 \pm 0.42	16.74 \pm 0.19
Grade I	41 \pm 0.96	41.06 \pm 0.73	151.5 \pm 1.8	150.6 \pm 1.45	17.82 \pm 0.13	18.08 \pm 0.08
Low weight normal	43.17 \pm 1.59	45.1 \pm 1.75	149.66 \pm 2.33	152.4 \pm 2.72	19.17 \pm 0.11	19.32 \pm 0.11
Normal	53.2 \pm 1.12	50.58 \pm 0.65	153.8 \pm 1.07	152.83 \pm 0.87	22.39 \pm 0.32	21.59 \pm 0.22

Table 40. Correlation coefficient of anthropometric measurements in different grades of CED

Variables	Normal		Low weight		Grade I	
	Organised	Unorganised	Organised	Unorganised	Organised	Unorganised
Weight and BMI	0.74**	0.54**	0.88**	0.71*	0.107NS	-0.26NS
Height and BMI	0.09NS	-0.3NS	0.06NS	0.05NS	-0.22NS	-0.48NS
Weight and height	0.73**	0.63**	0.99**	0.99**	0.94**	0.97**

* Significant at 5% level

** Significant at 1% level

NS – Not significant.

Table 40 reveals that the correlation between weight and BMI and weight and height is highly significant in both the sectors whereas in both the two sectors there is insignificant difference relation between height and BMI.

Table 41. Relationship between anthropometric measurements with BMI.

Details	Correlation coefficient	
	Organised	Unorganised
Weight Vs Height	0.39**	0.47**
Weight Vs BMI	0.90**	0.72**
Height Vs BMI	0.03NS	0.13NS

** Significant at 1 % level.

NS Not significant.

The relationship between anthropometric measurements in different grades of CED among women agricultural labourers in both the sectors is shown in the Table 41.

The results indicated that there is significant relation between weight and height in both the sectors. The correlation between weight and BMI was significant only for normal and low weight in both the sectors. There was no significant correlation between height and BMI for normal and CED grade I.

4.5.3 Clinical assessment

The clinical examination of the respondents (subsample) indicated that about 83.33 per cent in the organized sector and 71.67 per cent in the unorganized sector were good in appearance (Table 42). Different clinical symptoms related to nutritional deficiencies like mild conjunctival xerosis (15%), pale conjunctiva (5%), angular stomatitis (13.33%), gingivitis (5%), dental caries (83.33%), hyperkeratosis in skin (6.67%), symmetrical suborbit pigmentation in face (28.33%) and oedema on dependent parts (16.67%) were observed among the respondents of the organized sector. In the unorganized sector the above

4.5.2 Body mass index of respondents

The prevalence of chronic energy deficiency among the respondents on the basis of body mass index are presented in Table 38.

The results indicated that 21.67 per cent (organized sector) and 31.67 per cent (unorganized sector) had various grades of chronic energy deficiencies. The extent of malnutrition as mild (CED Grade I) moderate (CED Grade II) and severe (CED Grade III) was found to be 16.67 per cent, 3.33 per cent and 1.67 per cent in the organized sector and 26.67 per cent, 3.33 per cent and 1.67 per cent respectively in the unorganized sector. Women belonging to normal group with a BMI in between 20 to 25 was found to be 41.66 per cent in the organized sector and 46.67 per cent in the unorganized sector.

Table 38. Distribution of respondents on the basis of Body Mass Index.

Sl. No.	Category (BMI)	Grades of malnutrition	Number of respondents	
			Organised	Unorganised
1	CED grade III (<16)	Severe	1 (1.67)	1 (1.67)
2	CED grade II (16-17)	Moderate	2 (3.33)	2 (3.33)
3	CED grade I (17-18.5)	Mild	10 (16.67)	16 (26.67)
4	Low weight normal (18.5-20)	Normal with low weight	9 (15.00)	10 (16.67)
5	Normal (20-25)	Normal	25 (41.66)	28 (46.66)
6	Over weight (>25)	Obese	13 (21.67)	3 (5.00)
	Total		60 (100)	60 (100)

(Figures in parentheses are percentages)

Table 40 reveals that the correlation between weight and BMI and weight and height is highly significant in both the sectors whereas in both the two sectors there is insignificant difference relation between height and BMI.

Table 41. Relationship between anthropometric measurements with BMI.

Details	Correlation coefficient	
	Organised	Unorganised
Weight Vs Height	0.39**	0.47**
Weight Vs BMI	0.90**	0.72**
Height Vs BMI	0.03NS	0.13NS

** Significant at 1 % level.

NS Not significant.

The relationship between anthropometric measurements in different grades of CED among women agricultural labourers in both the sectors is shown in the Table 41.

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Table 42. Clinical manifestations observed among the respondents

Sl. No.	Clinical details	Number of respondents	
		Organised	Unorganised
1	General appearance		
	Good Fair	50 (83.33) 10 (16.67)	43 (71.67) 17 (28.33)
2	Eyes		
	Conjunctival xerosis (mild) Pale conjunctiva No symptoms	9 (15) 3 (5) 48 (80)	12 (20) 7 (11.67) 41 (68.33)
	Lips		
3	Angular stomatitis (mild) No symptoms	8 (13.33) 52 (86.67)	11 (18.33) 49 (81.67)
	Buccal mucosa		
4	Gingivitis No symptoms	3 (5) 57 (95)	3 (5) 57 (95)
	Teeth		
5	Caries No symptoms	50 (83.33) 10 (16.67)	54 (90) 6 (10)
	Hair		
6	Loss of lustre No symptoms	8 (13.33) 52 (86.67)	9 (15) 51 (85)
	Skin		
7	Loss of lustre Hyperkeratosis Diminished elasticity No symptoms	12 (20) 4 (6.67) 3 (5) 41 (68.33)	11 (18.33) 4 (6.67) 5 (8.33) 40 (66.67)
	Face		
	Symmetrical suborbit pigmentation No symptoms	17 (28.33) 43 (71.67)	19 (31.67) 41 (68.33)
	Oedema		
9	Oedema on dependent parts No symptoms	10 (16.67) 50 (83.33)	15 (25) 45 (75)

(Figures in parentheses are percentages)

manifestations were present among 20 per cent, 11.67 per cent, 18.33 per cent, 5 per cent, 90 per cent, 6.67 per cent, 31.67 per cent and 25 per cent of the respondents respectively.

4.5.4 Actual food and nutrient intake

An indepth study among 15 agricultural labourers in each sector was conducted by one day food weighment method to determine the actual food and nutrient intake and to assess the quality of the foods.

The quantity of each food item was compared with the quantity specified for a balanced diet suggested by ICMR (1984). The nutrients present in the diet were calculated using the food composition table (Gopalan *et al.*, 1989). The results were compared with the Recommended Dietary Allowances (RDA) of nutrients suggested by ICMR (1990). Both the food and nutrient intake of women were statistically analyzed. The results are furnished in Tables 43 and 44.

4.5.4.1 Food intake

The mean food intake of the respondents (Table 43) assessed by one day food weighment method indicated that the intake of cereals, pulses, green leafy vegetables, roots and tubers, fruits and fats and oils was lower than the recommended allowances in both the sectors. Milk and milk products were not at all included in the diet of respondents in the unorganized sector. Only 57.5 per cent of RDA of flesh food was met by the respondents of the unorganized sector while in the organized sector the intake was more than the RDA (121%). The intake of cereals, green leafy vegetables, other vegetables, roots and tubers and fruits was found to be significantly lower than the RDA in both the sectors.

Significant difference in the intake of other vegetables, milk and milk products and flesh foods was noticed between the two sectors. Mean food intake of the respondents as percentage of RDA is illustrated in fig 6.

Table 43. Mean food intake of respondents.

Food items	RDA (g)	Organised sector			Unorganised sector			t value (between the sectors)
		Mean (g) ± S.E.	% of RDA	t value (Compared with RDA)	Mean (g) ± S.E.	% of RDA	t value (Compared with RDA)	
Cereals	440	269 ± 8.03	61.14	21.29**	276.07 ± 4.42	62.74	37.02**	0.79NS
Pulses	25	24.13 ± 1.84	96.52	0.47NS	18.4 ± 3.03	73.6	2.17*	1.67NS
Green leafy vegetables	100	12 ± 5.66	12	15.54**	3.33 ± 2.75	3.33	35.15**	1.42NS
Other vegetables	40	53.93 ± 5.92	13.82	2.35*	24 ± 5.85	60	2.7*	3.72**
Roots and tubers	50	14.33 ± 6.18	28.6	5.77**	7.33 ± 3.56	14.66	11.97**	1.01NS
Fruits	30	3.67 ± 2.11	12.23	12.49**	2.6 ± 1.11	8.67	24.54**	0.52NS
Milk and milk products	150	14.13 ± 2.86	9.42	47.47**	Nil	Nil	Nil	5.1**
Meat/Fish/Egg	30	36.33 ± 6.1	121.10	5.48**	17.33 ± 6.1	57.7	57.7	2.18*
Fats and oils	30	13.87 ± 1.1	46.23	14.54**	11.47 ± 0.62	38.23	38.2	1.95NS
Sugar	20	22.07 ± 0.6	110.35	3.39**	21.33 ± 0.61	106.5	106.7	0.87NS

** Significant at 1% level

NS: Not significant

*Significant at 5% level

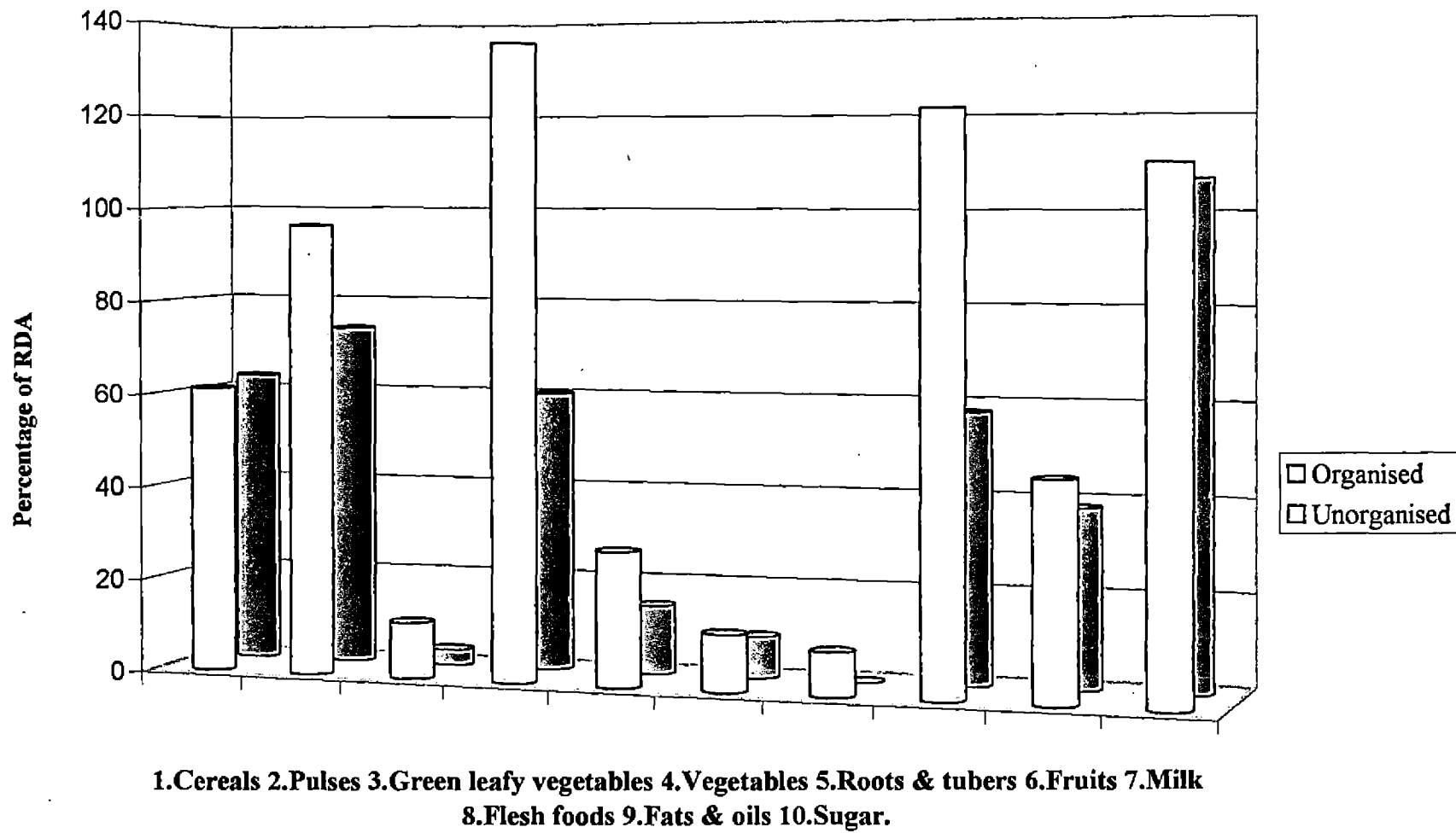


Fig 6. Food intake of labourers as percentage of RDA

Table 44. Mean nutrient intake of respondents.

Nutrients	RDA	Organised sector			Unorganised sector			t value (between the sectors)
		Mean \pm S.E.	% of RDA	t value (Compared with RDA)	Mean \pm S.E.	% of RDA	t value (Compared with RDA)	
Energy (kcal)	2225	1324.04 \pm 25.22	59.51	35.73**	1259.77 \pm 21.86	56.62	44.15**	1.99NS
Protein (g)	50	30.98 \pm 1.03	61.9	18.42**	26.9 \pm 0.89	53.8	25.79**	3.09**
Calcium (mg)	400	163.06 \pm 18.81	40.7	12.59**	98.23 \pm 9.15	24.56	32.95**	3.2**
Iron (mg)	30	5.59 \pm 0.35	18.65	69.03**	4.36 \pm 0.15	14.52	164.26**	3.29**
Retinol (μ g)	600	259.08 \pm 85.97	43.18	3.97**	281.93 \pm 150.2	46.99	2.12NS	0.14NS
Thiamin (mg)	1.1	0.75 \pm 0.01	68.18	18.95**	0.78 \pm 0.05	70.91	5.98**	0.7NS
Riboflavin (mg)	1.3	0.47 \pm 0.07	36.15	10.92**	0.22 \pm 0.02	16.92	49.1**	3.33*
Niacin (mg)	14	12.2 \pm 0.43	87.14	4.09**	11.77 \pm 0.21	84.07	10.86**	1.02NS
Vitamin C (mg)	40	30.4 \pm 6.67	76.00	1.44NS	9.35 \pm 3.31	23.38	9.76**	2.96*

** Significant at 1% level NS: Not significant

* Significant at 5% level

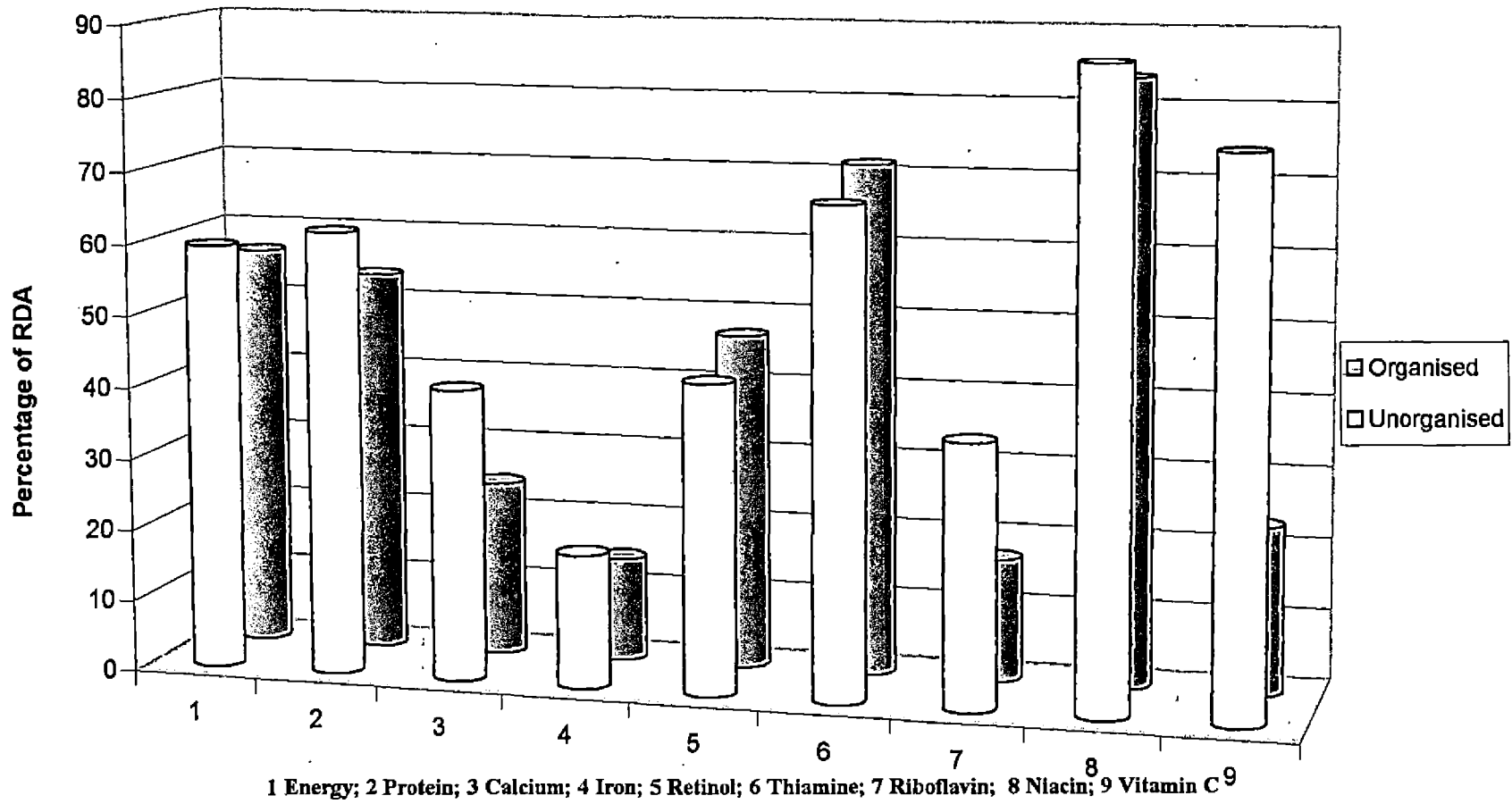


Fig 6. Nutrient intake of labourers as percentage of RDA.

4.5.4.2. Nutrient intake

The mean intake of nutrients by the respondents was calculated from the quantity of the food consumed and compared with the RDA. This is furnished in Table 44.

The intake of all nutrients was found to be lower than the recommended levels in both the sectors. The decrease was found to be statistically significant with respect to all nutrients except vitamin C in organized sector and retinol in unorganized sector.

The percentage intake of calcium, iron, retinol and riboflavin was found to be below 50 per cent of RDA in both the sectors. The mean nutrient intake as percentage of RDA is illustrated in fig 7.

A significant difference in the intake of protein, calcium, iron, riboflavin and vitamin C was observed between the two sectors.

4.5.5 Nutritional Status Index

The results of the nutritional status index developed from the measurements of weight, height, BMI, food intake and nutrient intake of the respondents in the organized and unorganized sectors are presented in table 45.

From table 45 it was revealed that majority (71.58%) of the respondents in the organized sector were having nutritional status index in between 40 to 50, whereas in the unorganized sector majority (90%) had a nutritional status index in between 30 to 35. None of the respondents in the unorganized sector had a nutritional status index of above 45.

The mean Nutritional Status Index of the respondents in the organized was found to be 43.31 while in the unorganized sector it was 33.44 (Table46). Significant difference in the nutritional status index was observed

between the two sectors (t value= 14.609**). The details of the nutritional status index of each respondent are given in the Appendix IX.

Table 45. Distribution of respondents on the basis of nutritional status index

Nutritional status index	Number of respondents	
	Organised	Unorganised
Between 25 – 30	-	3 (5.00)
30 – 35	2 (3.33)	54 (90.00)
35 – 40	11 (18.33)	3 (5.00)
40 – 45	29 (48.34)	-
45 – 50	14 (23.34)	-
50 – 55	2 (3.33)	-
55 – 60	2 (3.33)	-
Total	60 (100)	60 (100)

(Figures in parentheses are percentages)

The distribution of respondents into different categories of nutritional status by classifying the nutritional status index into low, medium and high (table 45 and fig 8) revealed that low nutritional status was more in the unorganized sector (66.67%) when compared to organized sector (53.33%). None of the respondents in the unorganized sector had high nutritional status while 20% of the respondents in organized sector had high nutritional status. Rest of the respondents in the organized (26.67%) and unorganized (33.33) sectors had medium nutritional status. The nutritional status index of the respondents is given in Appendix IX.

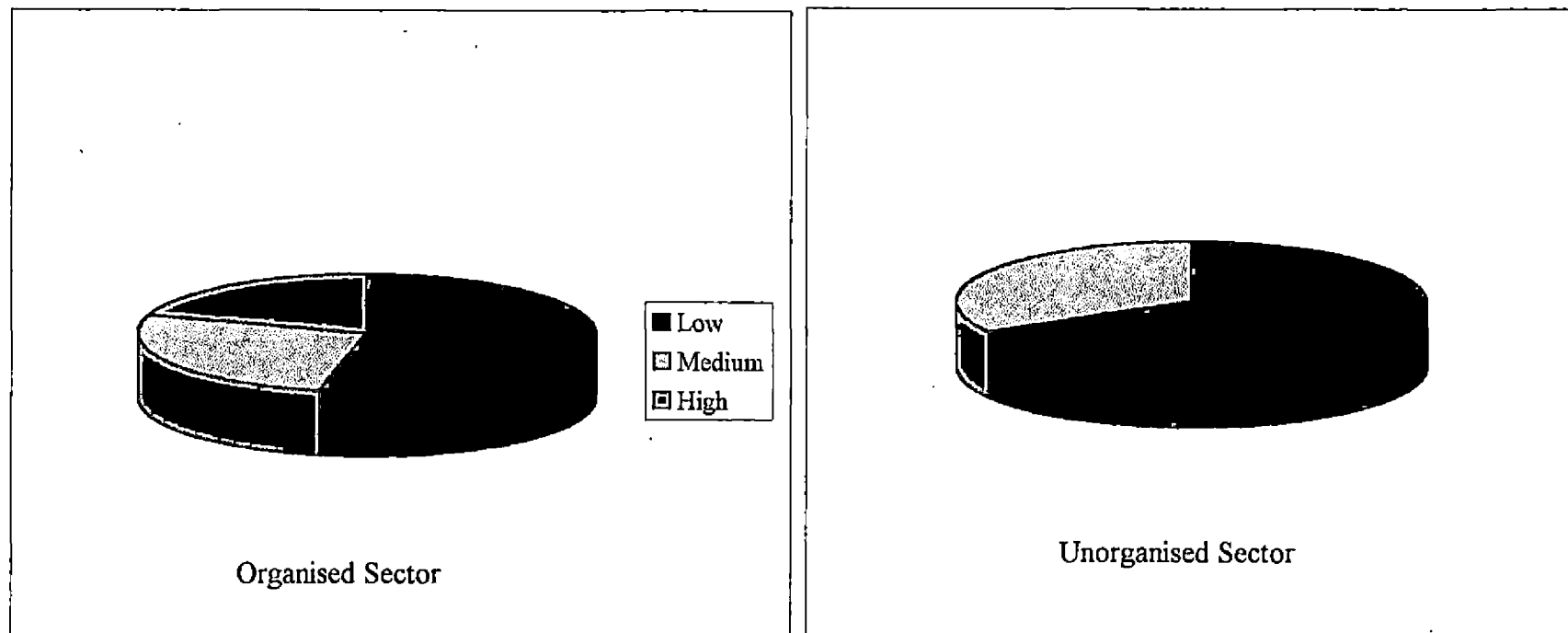


Fig.7 Percentage of respondents on the basis of nutritional status index.

Table 46. Mean nutritional status index of the respondents

Details	Sample size	Nutritional status index
		Mean \pm SD
Organised sector	60	43.31 \pm 5.27
Unorganised sector	60	33.44 \pm 1.58

Table 47 Distribution of the respondents on the basis of Nutritional status index

Particulars	Quartile deviation		Number of respondents	
	Org	Unorg	Organised	Unorganised
Low	< 42.84	< 33.55	32 (53.33)	40 (66.67)
Medium	42.84 – 48.58	33.6 – 36.36	16 (26.67)	20 (33.33)
High	60.25	36.36	12 (20.00)	-
Total			60 (100.00)	60 (100.00)

Highly significant positive correlation was found between the nutritional status index and food security status in the organized and unorganized sectors (correlation coefficient = 0.525* and 0.81** respectively)

4.6 FACTORS INFLUENCING FOOD SECURITY.

Path coefficient analysis was performed to sort out the factors that influence food security (Table 48, 50 and 51). The parameters viz; type of family, family size, caste, income, land, educational status of the head and food expenditure were taken as the explanatory variable and food security score as dependent variable. The analysis was performed separately for organized and unorganized sectors as also for both combined. The individual analysis revealed that many other causative factors were affecting food security in addition to the factors under observation as the residuals were high. Any way based on the factors under observation the following inferences were drawn.

In the organized sector among the parameters under study, the type of family has a moderate direct effect and food expenditure had a high direct effect on food security, whereas all other factors had low direct effect. With regard to the indirect effects, none of the factors had any type of indirect effect. Food expenditure had a positive correlation on food security.

Regarding unorganized sector, family size had a negative direct effect whereas income had high positive direct effect. Family type did not have any type of direct or indirect effect. Family size also had moderate negative indirect effect via income. Income had a high negative indirect effect via family type. Whereas it had a high positive indirect effect via family size, land and food expenditure. Income and food expenditure had positive correlation on food security. Education had a negative correlation on food security. Education had a moderate negative direct effect on food security.

In general to evaluate the factors affecting food security of agricultural labourer class, data on organized and unorganized sectors put together and path coefficient analysis was carried out.

Only food expenditure had a high positive direct effect on food security where as income had moderate direct effect on food security. Family type,

Table 48. Matrix of direct and indirect effects of the various factors on food security in the organized sector.

	1	2	3	4	5	6	7	Correlation with food security
1	0.2315	-0.0630	0.0052	-0.0324	0.0095	-0.0035	0.0161	0.1634NS
2	-0.0921	0.1583	0.0281	0.0089	-0.0201	-0.0054	-0.0346	-0.0431NS
3	0.0104	0.0382	0.1162	-0.0328	-0.0111	-0.0276	-0.0428	-0.0505NS
4	-0.0532	0.0100	-0.0270	0.1411	-0.0144	-0.0020	0.1784	0.2328NS
5	-0.0214	0.0310	0.0126	0.0199	-0.1024	0.0019	-0.0203	-0.0786NS
6	0.0056	0.0059	0.0218	0.0019	0.0013	-0.1468	0.0697	-0.0406NS
7	0.0116	-0.0170	-0.0154	0.0781	0.0064	-0.0317	0.3223	0.3542**

** - Significant at 1% level

Residual=0.7885

NS- Not significant

1. Family type
2. Family size
3. Caste
4. Income
5. Land
6. Educational status of the head
7. Food expenditure

Table 49. Scales for path analysis

Values for direct and indirect effect	Rate or scale
0.00 to 0.09	Negligible
0.10 to 0.9	Low
0.20 to 0.29	Moderate
0.30 to 0.99	High
More than 1.00	Very high

Table 50. Matrix of direct and indirect effects of the various factors on food security in the unorganized sector.

	1	2	3	4	5	6	7	Correlation with food security
1	-0.0648	0.3313	-0.0008	-0.3499	0.0116	0.0057	0.0263	-0.0406NS
2	0.0435	-0.4932	0.0016	0.4041	-0.0221	-0.0382	-0.0191	-0.1234NS
3	-0.0027	0.0397	-0.0193	-0.0198	-0.0283	0.0377	-0.0023	0.0050NS
4	0.0285	-0.2509	0.0005	0.7944	-0.0541	-0.0057	-0.1088	0.4038**
5	0.0065	-0.0944	-0.0047	0.3725	-0.1154	0.0311	-0.0566	0.1389NS
6	0.0016	-0.0793	0.0031	0.0190	0.0151	-0.2376	0.0017	-0.2765*
7	0.0111	-0.0612	-0.0003	0.5616	-0.0424	0.0026	-0.1540	0.3173*

** - Significant at 1% level

* Significant at 5% level

NS- Not significant

Residual=0.6150

1. Family type
2. Family size
3. Caste
4. Income
5. Land
6. Educational status of the head
7. Food expenditure

Table 51. Matrix of direct and indirect effects of the various factors on food security in the organized and unorganized sectors

	1	2	3	4	5	6	7	Correlation with food security
1	0.1169	0.0501	0.0034	-0.0417	-0.0003	-0.0048	0.9241	0.1477NS
2	-0.0644	-0.0909	0.0030	0.0414	0.0106	-0.0049	-0.0184	-0.1235NS
3	0.0065	-0.0045	0.0614	-0.0218	0.0126	-0.0007	-0.0002	0.0534NS
4	-0.0168	-0.0136	-0.0046	0.2901	0.0281	-0.0130	0.2489	0.5197**
5	-0.0005	-0.0124	0.0099	0.1046	0.0780	-0.0046	0.0926	0.2676**
6	0.0073	-0.0057	0.0006	0.0489	0.0047	-0.0771	0.0877	0.0663NS
7	0.0081	0.0048	0.000	0.2084	0.0209	-0.0195	0.3465	0.5691**

** - Significant at 1% level

NS- Not significant

Residual=0.6045

1. Family type
2. Family size
3. Caste
4. Income
5. Land
6. Educational status of the head
7. Food expenditure

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size, caste, land and education did not have any sort of indirect effect. Income had a moderate indirect effect via food expenditure whereas food expenditure had positive moderate direct effect via income.

DISCUSSION

5. DISCUSSION

A critical and brief discussion of the major findings of the study are presented in this chapter. The discussion is categorized into the following broad sections.

1. Socio-economic profile of women agricultural labour household
2. Food consumption pattern of the agricultural labour households
3. Per capita food and nutrient intake
4. Household food security among the families
5. Nutritional status of the respondents
6. Factors influencing food security

5.1 SOCIO-ECONOMIC PROFILE OF WOMEN AGRICULTURAL LABOURER HOUSEHOLDS

In the present study most of the households in the organized and unorganised sectors belonged to the Hindu community and among them majority of the families either belonged to backward communities (79.59% and 62.22%) or scheduled caste (12.25% and 28.89%) in the organized and unorganized sectors respectively.

Due to urbanization and changes in social values, joint family system is disintegrating in different communities of Kerala. In the present study also nuclear family system was seen among majority of the households in both the sectors. According to Saxena (1986) nuclear families are better than joint families in health and development. Similar findings were observed among the different labour groups of Kerala by Seshadrinath (1993), Karuna (1993), Ranganathan (1996), Shyna (1996), Jose (1998), Smitha (1999), Anil *et al.* (2001), Ukkru (2001), Pratheesh (2002) and Jyothi (2003). Nuclear type family system was also reported by NIN (1995) in the households of Kerala, Gujarat and Andhra Pradesh. Similar findings were reported by Swamy *et al.* (2000) in the households of

Kerala is a state which represents a different spectrum as far as sex ratio is concerned. Among the different states, Kerala has the highest sex ratio with 1058 females for 1000 males. (Government of Kerala, 2002) and is a solitary exception, while in all other states and union territories the sex ratio is adverse to women. In the present study, it was found that in the organized sector sex ratio was 1170 whereas in the unorganized sector it was 1277. Pratheesh (2002) in a study conducted among agricultural labourers observed a sex ratio of 1092 females per 1000 males in Thrissur district. In contrast to this the sex ratio of India according to 2001 census was 933. Similar result was reported by Jyothi (2003) among agricultural labourers of Palakkad district of Kerala.

Literacy is an important demographic characteristic which is an indicator of the level of advancement of the people. Education is considered to be a catalyst of change and its role in the process of national development cannot be over emphasized (Manorama Year Book, 1996). The present study revealed that majority of the male and female members in the organized and unorganized sectors were literate. The female members were found to be more educated than their male counterparts in the organized sector, while in the unorganized sector male members were found to be more literate. Similar results were reported by Augustine (1993), Shyna (1996), Udaya (1996), Anil *et al.* (2001) and Jyothi (2003) in the different districts of Kerala. Sujatha (1990), NIN (1996) and Mathen (1998) reported a higher percentage of literacy among the male members. Lower percentage of literacy among females was also observed by (Choudhary, 1990) and (Smitha, 1999) in rural areas of Hyderabad and Thrissur district respectively.

Occupational status of the family members indicated that majority of the male members in both the groups were working in the unorganized sector. Similar results were reported by Sujatha (1990), Jose (1998), Smitha (1999) and Jyothi (2003) among the labourer households of Kerala.

Land is one of the chief determinants of resource position. The present study indicated that majority of the families in the organized sector

(86.66%) and unorganized sector (100%) owned less than 15 cents. Cherian (1992), Seshadrinath (1993), Mathen (1998), Smitha (1999) and Jyothi (2003) also observed similar findings. Contrary to this result Saikia (1982) pointed out that small farmers who owned landholdings upto 5 acres constituted nearly 70 per cent of the total number of farmers in India.

Though, all the households had land as their own, only 5 per cent of the families in the organized sector cultivated different crops in their land. Among this, only 1.67 per cent of the families cultivated paddy. Smitha (1999) and Jyothi (2003) observed that only 7.68 per cent and 1.67 per cent of the families of agricultural labourers in Thrissur and Palakkad district respectively cultivated paddy in their land. None of the families in the unorganized sector cultivated any crops.

Immink *et al.* (1981) opined that possession of cattle, poultry, kitchen garden and use of home produce are positively linked with the nutritional status of the family. In the present study it was observed that only few families in both the sectors possessed livestock and kitchen garden. Similar reports with respect to domestication of animals and kitchen garden were given by Smitha (1999) and Jyothi (2003) among the agricultural labourer families. However, Udaya (1996) reported that about 78 per cent of farm families in Thrissur district possessed domestic animals and received income from these animals. Contradictory to the present finding Jose (1998) observed kitchen garden among majority of the households of casual labourers of Thrissur district.

The economic status of a family is reflected by land holdings, family income, number of earning members in the family and monthly expenditure pattern (Wood and Baylock, 1982). The major source of income in all the surveyed families was found to be the wage they received as agricultural labourers. Majority (93.34%) of the families in the organized sector had a monthly income ranging from Rs.1000 to Rs.6000. Partly similar findings were reported by Prema (1996), Ranganathan (1996) and Jose (1998) among majority of the labourer households of different sectors of Kerala in which the authors observed a monthly income of

above Rs.3000. In the unorganized sector the monthly income of majority of the families was found to be in between Rs.1000 to Rs.3000. Karuna (1993), Varma (1996) and Udaya (1996) reported a mean monthly income of below Rs.3000 among the families of fish vending women, casual labourers and farm women. Shyna (1996), Smitha (1999) and Jyothi (2003) also reported a monthly income in between Rs.1000 - 2500 among the agricultural labourer families.

Monthly expenditure pattern of the families indicated that about 30 to 55 per cent of the monthly income of families was spent for food by 60 per cent and 58 per cent of the families in the organized and unorganized sectors respectively. Similar findings were reported by Usha *et al.* (1990), Udaya (1996), Mathen (1998), Jose (1998), Smitha (1999) and Jyothi (2003). In contrast, studies conducted among the families of unorganized sectors by Augustine (1993), Karuna (1993), Prema (1996) and Ranganathan (1996) reported that the expenditure incurred for food varied from 65 to 75 per cent of their monthly income. Moreover, studies conducted by Moorthy *et al.* (1983) and Devadas and Easwaran (1986) indicated that the rural households in Hyderabad and Tamil Nadu spent nearly 84 per cent and 90 per cent of their monthly income respectively on food.

The present study indicated that majority of the families spent less than 10 per cent of their income on clothing, shelter, transport, recreation, electricity, health and luxury in both the sectors. Similar findings were reported by Usha *et al.* (1990), Augustine (1993) and Karuna (1993), Udaya (1996), Mathen (1998) and Jose (1998) in various labourer categories. Contrary to this Jyothi (2003) reported that majority of the families of agricultural labourers spent upto 20 per cent of their monthly income on clothing, transport, recreation, electricity, health and luxury.

There was significant difference in the expenditure on food, clothing, transport, recreation, electricity, health, fuel, luxury and remittance between the two sectors.

Majority of the families in both the sectors did not have the habit of saving money for future purpose. However studies conducted by Cherian (1992), Shyna (1996) and Smitha (1999) among the farm families and agricultural labourer households of Kerala reported that majority of the families saved money to meet their future necessities. Jyothi (2003) reported that none of agricultural labourer households in Palakkad district saved money.

Results highlighted that 93.33% of the families in the organized sector and 62.66% in the unorganized sector took loans from co-operative bank, University or both for construction of house, marriage of their children and for clearing the old debt. This finding is in line with the findings of Udaya (1996) among the families of farm women and Smitha (1999) and Jyothi (2003) among agricultural labourers in Thrissur and Palakkad districts respectively. Jose (1998) observed that casual labourers of Thrissur district took loan mostly from government agencies for the purchase of household articles and construction of house.

The housing conditions of the families in the two sectors indicated that majority of families lived in their own houses which are single storied with 4 to 5 rooms, brick walls and tiled or concrete roofs and separate kitchen. Similar results were obtained by Sujatha (1990) and Ranganathan (1996) in the unorganized sectors of Kerala. Udaya (1996), Jose (1998), Smitha (1999) and Jyothi (2003) also reported similar housing conditions among the households of farm women, casual labourers and agricultural labourers. In contrast, Karuna (1993) revealed that the fisher folk of Kerala belonging to the unorganized sector lived in one room apartments.

The main source of drinking water for majority of the households in both the sectors was from their well and neighbour's well. Sujatha (1990), Usha *et al.* (1990) and Ranganathan (1996) reported that most of the families in the unorganized sector depended on wells and taps in the neighbourhood as source of drinking water. But Jyothi (2003) observed that source of drinking water for agricultural labourers in Palakkad district was public tap and well.

The lavatory facilities in both the sectors was found to be satisfactory. However the drainage facilities in most of the households were unsatisfactory. Proper drainage and lavatory facilities were reported by Shyna (1996), Udaya (1996), Jose (1998) and Smitha (1999) among the labourer households of Thrissur district. But improper lavatory and drainage facilities in the labourer households of Kerala was reported by Sujatha (1990), Karuna (1993), Ranganathan (1996) and Jyothi (2003).

In Kerala, electrification has occurred even in remote villages. In the present study also it was found that majority of the families in both the sectors had electricity facilities. This finding is in concurrence with the observations of Shyna (1996), Mathen (1998), Jose (1998), Smitha (1999) and Jyothi (2003) among the labour families of different sectors.

Recreational facilities were present in 93.33 per cent and 70 per cent of the households in organized and unorganized sectors respectively. Udaya (1996), Shyna (1996), Smitha (1999) and Jyothi (2003) also observed recreational facilities among the farm families and agricultural labourer families. However, the findings of Jose (1998) were found to be contradictory to the present findings in which the author observed fewer recreational facilities among the casual labourer households.

Majority (78.33%) in the unorganized sector used firewood as the major source of fuel. Similar findings were observed by Udaya (1996), Smitha (1999) and Jyothi (2003) in their studies among the households of farm women and agricultural labourers.

Regarding health care services it was observed that majority of the families in the organized (83.33%) and unorganized (100%) sectors depended mainly on the primary health centre. Similar results were reported by Shyna (1996), Smitha (1999) and Jyothi (2003) in their studies among women agricultural labourers.

The position of India women in the unorganized sector is characterized by increasing concentration of the work force with no job security, arduous working condition and low wages (Sundari,1990). Mukherjee (1992) reported that employment in informal sector is strenuous and provides low returns.

In the present study, the working pattern of the respondents was observed by frequency of work, working time, work performance, work during different seasons and wage of the respondents.

Majority of the respondents (80 %) in the unorganized sector used to get work for 3 to 5 days in a week whereas in the organized sector all the respondents used to get work for whole week except Sundays. Lack of work in the field is the main reason for the decrease in the working days among unorganized sector. Contradictory to this finding Augustine (1993), Batliwala (1998) and Jyothi (2003) reported that women in the unorganized sectors worked almost 6 days in a week.

Variation in the working time was also observed in the two sectors in which the working time of the respondents in the organized sector varied from 6 to 7 hours while in the unorganized sector they worked for 8 – 8 ½ hours in a day. Augustine (1993) and Jyothi (2003) also observed similar working time among the women engaged in stone breaking and agricultural labourers. In contrast to these findings Sujatha (1990) and Smitha (1999) observed that the working time of agricultural labourers varied for 8 to 10 hours in a day.

Seasonal variation in the working days was noticed only among unorganized sector in which during summer season majority used to get work for 20 to 25 days in a month whereas during rainy season they used to get work for 10 days in a month. Since, majority of the respondents in the organized sector were permanent no variation in the working days was noticed during different seasons. Cherian (1992) and Jyothi (2003) reported that majority get 20 – 24 days per month for agricultural operations.

As observed by Jyothi (2003) among women agricultural labourers of Palakkad district, transplanting, weeding, harvesting, threshing and winnowing were the tasks performed by women.

Tanden and Dhondyal (1971) reported that farm wages vary from region to region depending upon the local custom, nature of work, standard of living and supply of demand for labour. Sharma and Sharma (1981) stated that the wage rates depended upon the labour availability and its demand in a particular locality.

Wide disparity in the wages was observed among the respondents of the organized and unorganized sectors. Majority in the organized sector used to get Rs.170/- as their daily wage while in the unorganized sector it was Rs.80 per day. However, Jyothi (2003) reported a lower wage rate of Rs.40 per day among women agricultural labourers of Palakkad district.

5.2 FOOD CONSUMPTION PATTERN OF THE AGRICULTURAL LABOUR HOUSEHOLDS.

Precise information on the food consumption pattern of people is essential not only for assessing the nutritional status of the community but also for elucidating the food needs of population groups at national or regional levels (Thimmayamma and Rau, 1996).

The present study revealed that except for one family, all the families in both the sectors were non vegetarians. Rice was the staple food item in both the sectors. Similar findings were reported by Sujatha (1990), Karuna (1993) and Ranganathan (1996) in Thiruvananthapuram district and Udaya (1996), Mathen (1998), Jose (1998) and Smitha (1999) in Thrissur district and Jyothi (2003) in Palakkad district among the families in different sectors. The findings of the present study is also in line with the observations of Stephanie (1984) who observed that in South India majority were non vegetarians.

Food expenditure is an important factor influencing the dietary habits. Food expenditure pattern of the families revealed that in both the sectors maximum amount was spent on cereals, mainly for the purchase of staple food items. This is in line with the findings of Panicker (1979), Sujatha (1990), Jayanthakumari (1993), Ranganathan (1996), Jose (1998), Smitha (1999) and Jyothi (2003) among different labour categories of Kerala.

With regard to the purchase of pulses, green leafy vegetables, roots and tubers, fruits, egg, sugar and spices and condiments majority of the respondents in both the sectors spent less than 10 per cent of the total food expenditure. Most of the families in both the sectors spent up to 15 per cent on milk and milk products, flesh foods and fats and oils. Similar result was reported by Jose (1998).

Money spent on different food items except roots and tubers, fruits, milk and milk products, meat and egg were found to be statistically insignificant between the two sectors.

Frequency of purchase of different food items in the two sectors indicated that the families in the organized sector purchased most of the food items in bulk on monthly basis since they are getting a fixed monthly income while in the unorganized sectors most of the families purchased the different food items including cereals and pulses either daily or weekly since they used to get wages daily. Similar result was reported by Jose (1998) among casual labourers in Thrissur district.

The economic status of the families and the local availability of food items are the two important factors which influence the frequency of use of various foods. The food use frequency score revealed that most frequently used food items were cereals, pulses, other vegetables, milk and milk products, fats and oils, sugar and spices and condiments in the organized sector while all the above food items except pulses and milk and milk products were included most frequently by the families of unorganized sector. This may be due to the higher

cost of pulses and milk and milk products. Similar dietary pattern in the organized sector was reported by Jose (1998) and Ranganathan (1996) and in the unorganized sector by Augustine (1993), Seshadrinath (1993), Smitha (1999) and Jyothi (2003).

Advance meal planning helps in better organisation and faster completion of household chores. Majority of the families in both the sectors planned their meals in advance and the meal planning was based on availability of foods in the house.

Meal pattern of the families indirectly indicate their dietary habits. Analysis of the meal pattern of the families in the present study revealed that three meals a day was common in both the sectors. Similar findings were observed by Usha *et al.* (1990), Cherian (1992), Jayanthakumari (1993), Karuna (1993), Udaya (1996), Smitha (1999), Rahman and Rao (2001) and Jyothi (2003). In contrast to this, Jose (1998) reported that majority of the casual labourers consumed more than 3 meals a day.

Majority in both the sectors maintained a routine time schedule for consuming meals. Karuna (1993), Ranganathan (1996), Udaya (1996), Jose (1998) and Jyothi (2003) observed similar findings.

Boiled water was used by 83.33 per cent of families in the organized sector as against 23.33 per cent in unorganized sector. Jose (1998) reported that about 60 per cent of the families of casual labourers in Thrissur district used only boiled water for drinking. In contrast to this, Ranganathan (1996), Udaya (1996), Smitha (1999) and Jyothi (2003) reported that majority did not have the habit of drinking boiled water. Drinking water without boiling was observed in majority of the households in the unorganized sector, may be due to their ignorance about the hazards of water born diseases.

Only 50 per cent of the families in the organized sector and 35 per cent in the unorganized sector were having the habit of eating raw vegetables which included tomato, carrot, onion and cucumber. Udaya (1996), Smitha (1999)

and Jyothi (2003) observed that majority did not include any raw vegetables in their daily diet.

Though, food preservation was not practised by majority of the families in both sectors, mango, lime and gooseberries were preserved by salting and pickling by about 40 per cent and 11.67 per cent of the families in organized and unorganized sectors respectively. Similar observations were reported by Udaya (1996), Jose (1998), Smitha (1999) and Jyothi (2003).

Most common storage methods adopted by the families were drying and storing in tight containers for cereals and pulses. This is in line with the results reported by Cherian (1992), Udaya (1996), Smitha (1999) and Jyothi (2003).

5.3 PER CAPITA FOOD AND NUTRIENT INTAKE

Agarwal (1980) reported lower food consumption among rural population than the minimum requirement of physical sustenance required for healthy living. The results of three day recall survey conducted to find out the per capita food and nutrient intake revealed a decreased intake of most of the food groups and nutrients among the respondents of both the sectors. Similar findings were reported by Augustine (1993) and Srinivasan *et al* (1991). A very low intake of green leafy vegetables and milk and milk products among the respondents of both the sectors might be due to the ignorance about the nutritional importance of these protective foods in the diet.

5.4 HOUSEHOLD FOOD SECURITY AMONG THE FAMILIES

The questions from which the food security scale was calculated ask about the conditions, experiences and behaviours that characterize a wide range of severity of food insecurity and hunger.

In the present study it was found that majority (88.33%) of the households in the organized sector were food secure while in the unorganized

sector only 26.67% were found to be food secure. Food insecurity was found to be more in the households with children in both the sectors. In the organized sector 11.67% were found to be food insecure without hunger, whereas in the unorganized sector about 33% and 40% of the households were found to be food insecure without hunger and with moderate hunger respectively.

In the present study, most of the households in the organized and unorganized sectors affirmed one or both of the first two questions, indicating uncertainty about having enough food or about exhausting their food supply, but did not indicate actual disruptions of normal eating patterns or reductions in food intake. Although these households were classified as food secure, the food security of some of them might have been tenuous at times, especially in the sense that they lacked assured ability to acquire acceptable foods in socially acceptable ways.

Studies conducted by Kigutha *et al* (1998), Albert and Sanjur (2000) and Nnakwe and Yegamma (2002) in Kenya, United States and Coimbatore indicated higher percentage of food insecurity in households with children. Nord *et al* (2001) observed that in the United States 83% and 92% of households with children and without children respectively were found to be food secure.

Mekuria and Moletsane (1996) observed that 25%, 17% and 58% were food secure, vulnerable and food insecure respectively in the selected districts of the Northern Province. Blumberg *et al* (1999) reported that 97.7% and 0.3% of the households in Kenya were food insecure without hunger and with hunger respectively. Vijayaraghavan *et al* (1998) in a study conducted among the households of low socioeconomic background in the backward areas of Orissa also reported food insecurity among 92% of the households. Studies conducted by Ray *et al* (2000) and Kasper *et al* (2000) also reported food insecurity among 40 - 48% of the families in the West Bengal and California, Texas and Illinois respectively. While Derrickson *et al* (2001) reported food security among 85% of the households in Hawaii.

5.5 NUTRITIONAL STATUS OF THE RESPONDENTS

Weight for age is the most sensitive index to evaluate the current nutritional status. In the present study the body weight of 43.33 per cent and 51.67 per cent of the respondents in organized and unorganized sectors respectively were lower than the reference body weight of 50 kg suggested for an Indian reference woman. Higher percentage of women in the unorganized sector was found to be having lower body weight and this may be due to their hazardous working condition. Lower body weight among women agricultural labourers was reported by Cherian (1992), Smitha (1999) and Jyothi (2003). However, Jayanthakumari (1993) reported a higher body weight among farm women of Thiruvanthapuram district.

Height is an indicator of long term nutritional status. The height of majority of the respondents in both the sectors was lower than the reference height for an Indian reference woman. Karuna and Prema (1993) observed a lower body weight and height among women engaged in fish vending.

There was significant difference in the weight of the respondents whereas in the case of height no significant difference was observed between the sectors.

Body mass index describes the chronic energy deficiency among adults and is an important indicator of current nutritional status. The BMI of the respondents revealed that about 41.67 per cent and 46.67 per cent in the organized and unorganized sectors respectively were in the normal group. The proportion of various grades of CED was found among 21.66 per cent and 31.66 per cent in the organized and unorganized sectors respectively. Here also different grades of CED were observed among more respondents belonging to unorganized sector. Udaya (1996) and Smitha (1999) also reported almost similar nutritional status among farm women (38.33%) and agricultural labourers (50.67%). The authors also reported various grades of CED among 19 per cent and 21.33 per cent of the

respondents. However, Mohapatra *et al* (2001) indicated various grades of CED among 52.2 per cent of Oriya women.

It was seen that the mean weight and BMI decreased with the severity of undernutrition from normal followed by CED grade I,II and III. However grade II women had a taller stature than the normal, CED grade I and low weight. Cherian (1992) also reported significant correlation between weight and BMI. Mohapatra *et al* (2001) and Jyothi (2003) also reported similar observations of consistent decrease in weight and BMI with the severity of undernutrition among women. The authors also observed a taller stature among women suffering from CED grade II, III by 1 to 2 cm than the normal and CED grade I.

The relationship between anthropometric measurements in different grades of CED in the form of correlation coefficient indicated that the correlation between weight and BMI was significant only for normal and women with low body weight. Mohapatra *et al* (2001) and Jyothi (2003) observed significant relationship between weight and BMI among normal and grade III. The correlation between height and BMI was insignificant in both the sectors. Similar observation was reported by Jyothi (2003). Baily and Luzzi (1973) and Naidu and Rao (1994) reported that the reason for selecting BMI in estimating nutritional status of adults is due to the insignificant correlation of BMI with height.

The results of the clinical examination to find out the deficiency symptoms among the respondents indicated different clinical manifestations related to nutritional deficiencies. Mild conjunctival xerosis, pale conjunctiva, mild angular stomatitis, gingivitis, dental carries, hyperkeratosis and diminished elasticity in the skin, diffuse pigmentation in face and odema on dependent parts were the important symptoms observed among the respondents in organized (83%) and unorganized (90%) sectors. The clinical manifestations were found among lower per cent of respondents in the organized sector. In accordance to these findings incidence of diffuse depigmentation in face, angular stomatitis, goiter, xerosis in skin, pale conjunctiva, koilonychia and dental carries among women agricultural labourers was reported by Udaya (1996) and Smitha (1999). Seralathan

et al (1993) reported severe anaemia and clinical symptoms of vitamin A and iron deficiencies among farm women of Coimbatore. Contradictory to this finding, Jayanthakumari (1993) and Chandralekha (1993) reported absence of clinical manifestations of nutritional deficiencies among farm women and women workers of tata tea estates of Kerala.

The nutritional problems of developing countries are due to the fact that majority of the population subsist on an inadequate diet in terms of quality and quantity (Gopalan, 1991). Hence, determination of the food and nutrient intake of different groups is of utmost importance.

The results of the one day food weighment survey indicated that the intake of cereals, pulses, roots and tubers, fruits and fats and oils was lower than the RDA in both the sectors. Consumption of other vegetables, flesh foods and sugar in the organized sector was found to be higher than the RDA. In the unorganized sector the intake of these food items were found to be lower than the recommended levels. Seshadrinath (1993) and Seralathan *et al* (1993) observed deficient intake of all food groups among women agricultural labourers.

The weighment survey also indicated lower intake of milk and milk products among both the sectors. The women in the unorganized sector did not include milk in their diet. Jyothi (2003) also reported that none of the women agricultural labourers in Palakkad district included milk in their diet. In contrast to this Cherian (1992) and Udaya (1996) reported a higher intake of milk and milk products among women agricultural labourers and farm women in which they met about 112 per cent to 165 per cent of RDA.

As observed in the recall survey the intake of green leafy vegetables was found to be very low in the weighment survey also. Lower intake of green leafy vegetables in the diet of women agricultural labourers of Kerala was reported by Rao *et al* (1976), Pushpamma *et al* (1982), NNMB(1989), Cherian (1992), Jayanthakumari (1993), Smitha (1999) and Jyothi (2003). The intake of all

food groups except other vegetables, milk and milk products and flesh foods was found to be statistically insignificant between the sectors.

The nutritional quality of the diet also indicated lower intake of all nutrients in both the sectors. Similar findings were reported by Jyothi (2003) among women agricultural labourers. Deficient intake of protein, calories, iron, retinol and riboflavin in the diet of women was reported by Udaya (1996) and Smitha (1999) in their studies among farm women and women agricultural labourers. Significant difference in the intake of protein, calcium, iron, riboflavin and vitamin C was noticed between the sectors.

In the present study, the mean nutritional status index of the respondents was found to be higher in the organized (43.31) than the unorganized (33.44) sector. Good nutritional status was noticed among 20 per cent of the respondents of the organized sector. Whereas poor nutritional status was found to be more in the unorganized sector (66.67%). Studies conducted by Augustine (1993) and Ranganathan (1996) reported a mean nutritional status index of 74.39 and 23.31 among women labourers.

There was significant difference in the nutritional status index between the two sectors.

In the present study highly significant positive correlation was observed between food security status and nutritional status index. Similar result was reported by Matheson *et al* (2002).

5.6 FACTORS INFLUENCING FOOD SECURITY

The influence of the type of family on food security may be due to the joint family set up. Of course, the joint families in the current days are very rare. The allocation of a major portion of the income towards food expenditure causes the risk of an imbalance of expenditure for other essential items. The heavy burden on food expenditure which is disproportionate to family income

of the families was for food. Significant difference in the amount spent for food, clothing, transport, recreation, electricity, health, fuel, luxury and remittance was observed between the sectors.

More families in the organised sector (33.33%) saved money than those in the unorganised sector (21.67%). Majority of the families in both the sectors borrowed money from University, co-operative bank and private chitties mainly for purposes like house construction, marriage and old debt clearance.

All the families in the unorganised sector and 98.33 per cent in the organised sector had their own houses with brick as the wall material and with tiled or concrete roof and four to five rooms. All the families in both the sectors had separate kitchen and proper lavatory facilities. The drainage facilities of the houses in both the sectors were found to be inadequate. Adequate recreational and electricity facilities were found in majority of the houses in both the sectors.

Majority of the families in both the sectors used wood as the fuel material and most of the families in the organised sector purchased wood from outside whereas in the unorganised sector majority collected wood from surroundings.

Health care facilities revealed that majority of the families in both the sectors depended on primary health centre of the locality.

Regarding the working pattern, majority of the respondents in the unorganised sector get work for 3-5 days a week while all the respondents in the organised sector get work for 6 days in a week. All the respondents in the organised sector worked for 6-7 hours a day while in the unorganised sector all the respondents worked for 8-8½ hours a day.

Transplanting, weeding, harvesting, threshing and winnowing were the main tasks performed by women agricultural labourers.

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The influence of the type of family on food security may be due to the joint family set up. Of course, the joint families in the current days are very rare. The allocation of a major portion of the income towards food expenditure causes the risk of an imbalance of expenditure for other essential items. The heavy burden on food expenditure which is disproportionate to family income

automatically results in heavy borrowing in certain months. So in subsequent months the borrowed effect is carried over, resulting in curtailing the food expenditure which directly causes a threat to food security.

In contrast to the above findings, in the unorganized sector fluctuations in income are more compared to the organized sector. As a result the unorganized sector is not in a position to support a large family size because of unstability of income. The family planning practices have very much influenced in bringing down the family size especially in Kerala which is most literate. It goes on saying that higher the income more the food secure. The expenditure on land is proportionate to its size as regards Kerala state. The exorbitant rates for any type of land operations causes a threat to the food security as income does not increase in such a manner. Lack of education especially in unorganized sector retards the saving mentality which intum possess a heavy expenditure as when it occurs. Even if there is increase in the level of education of the head in the unorganized sector they are not in a position to ward off unexpected expenditure as the income is in a fluctuating position.

In general the food security is not very much affected by the factors under consideration. The only factor which had a high influence is the food expenditure. The inflationary tendency might also be one of the factors which excaudate the food expenditure.

Manan (1995) reported that socioeconomic variables like level of education, income and monthly expenditure were significantly correlated with food security.

Vijayaraghavan *et al* (1998) observed that major factors contributing to food insecurity were low per capita income, high level of illiteracy, nonownership of agricultural land and lower agricultural production. According to Albert and Sanjur (2000), determinants of food security were per capita monthly income, social class and number of children in the households. The location of residence, income, nature of family – type and size, composition, sex ratio and

dependent to earning members ratio were having direct relationship for food security. (Prema, 2001)

SUMMARY

6. SUMMARY

The present study entitled "Household food security and nutritional status of women agricultural labourers" was conducted among 60 women agricultural labourers from each of the organised and unorganised sectors in Ollukkara Block Panchayat of Thrissur district.

The study carried out threw light on the socio economic and dietary habits of the families, nutritional status and working pattern of the respondents and type of household food security among the families.

Information regarding socio economic condition of the families indicated that majority of the families were Hindus and belonged to other backward communities. Nuclear family system was followed by most of the families in both the sectors having upto four to six members.

Composition of the families showed that 62.71 per cent and 59.08 per cent of the total population in the organised and unorganised sectors respectively were in the age group of 20 to 50 years. Most of the male and female members in both the sectors were literate.

Most of the family members of the respondents in the organised (86.66%) sector owned upto 15 cents of land whereas in the unorganised sector 95 per cent had only upto 10 cents of land as their own. The crop cultivation details indicated that only 5 per cent of the families in the organised sector cultivated various types of crops, while in the unorganised sector none of the families cultivated crops. Majority of the families in both the sectors did not have kitchen garden and domestic animals.

Monthly income of the families in the organised sector (93.33%) varied from Rs.1000 to Rs.6000 while in the unorganised sector 98.33 per cent of the families had an income in between Rs.1000 to Rs.4000. The major expenditure

of the families was for food. Significant difference in the amount spent for food, clothing, transport, recreation, electricity, health, fuel, luxury and remittance was observed between the sectors.

More families in the organised sector (33.33%) saved money than those in the unorganised sector (21.67%). Majority of the families in both the sectors borrowed money from University, co-operative bank and private chitties mainly for purposes like house construction, marriage and old debt clearance.

All the families in the unorganised sector and 98.33 per cent in the organised sector had their own houses with brick as the wall material and with tiled or concrete roof and four to five rooms. All the families in both the sectors had separate kitchen and proper lavatory facilities. The drainage facilities of the houses in both the sectors were found to be inadequate. Adequate recreational and electricity facilities were found in majority of the houses in both the sectors.

Majority of the families in both the sectors used wood as the fuel material and most of the families in the organised sector purchased wood from outside whereas in the unorganised sector majority collected wood from surroundings.

Health care facilities revealed that majority of the families in both the sectors depended on primary health centre of the locality.

Regarding the working pattern, majority of the respondents in the unorganised sector get work for 3-5 days a week while all the respondents in the organised sector get work for 6 days in a week. All the respondents in the organised sector worked for 6-7 hours a day while in the unorganised sector all the respondents worked for 8-8½ hours a day.

Transplanting, weeding, harvesting, threshing and winnowing were the main tasks performed by women agricultural labourers.

Seasonal variation in the working days was noticed only among unorganised sector in which during summer season majority used to get work for 20 to 25 days in a month while during rainy season. They used to get work for 10 days in a month. Since, majority of the respondents in the organised sector were permanent no variation in the working days was noticed during different seasons. Wide disparity in wages was observed among the respondents of both the sectors.

Food consumption pattern of the families indicated that rice was the staple food and majority was non vegetarians. Food expenditure pattern of the families revealed that in both the sectors maximum amount was spent on cereals. With regard to the purchase of pulses, green leafy vegetables, roots and tubers, fruits, egg, sugar and spices and condiments majority of the respondents in both the sectors spent less than 10 per cent of the total food expenditure. There was significant difference in the money spent on various food items between the sectors.

Purchasing pattern revealed that the families in the organised sector purchased most of the food items in bulk on monthly basis while in the unorganised sector most of the families purchased different food items either daily or weekly. The most frequently used food items were cereals, pulses, other vegetables, milk and milk products, fats and oils, sugar and spices and condiments in the organised sector while in the unorganised sector all the above food items except pulses and milk and milk products were found to be the most frequently used food item.

Advance meal planning was popular in both the sectors. Three meals a day pattern was common in both the sectors.

Boiled water was used by 83.33 per cent of families in the organised sector as against 23.33 per cent in the unorganised sector. Only 50 per cent of the families in the organised sector and 33% in the unorganised sector were having the habit of eating raw vegetables.

Salting and pickling were found to be the preservation methods adopted by 40 per cent and 11.67 per cent of the families in the organised and unorganised sectors respectively. Most common storage methods adopted by the families were drying and storing in tight containers for cereals and pulses.

The percapita food and nutrient intake indicated that cereals, green leafy vegetables, fruits, milk and milk products and fats and oils were significantly lower than the recommended levels as suggested by ICMR (1984) in both the sectors.

Regarding food security among the families, majority (88.33%) of the households in the organised sector were food secure while in the unorganised sector only 26.67 per cent were found to be food secure. Food insecurity was found to be more in the households with children in both the sectors. In the organised sector 11.67 per cent were found to be food insecure without hunger. Whereas in the unorganised sector about 33 per cent and 40 per cent of the households were found to be food insecure without hunger and with moderate hunger respectively.

The nutritional status of the respondents was assessed through anthropometric methods, clinical examination and one day weighment method.

Anthropometric measurements revealed that the body weight of 43.33 per cent and 65 per cent of the respondents in organised and unorganised sectors respectively and the height of the majority of the respondents in both the sectors were lower than the reference body weight and the height for an Indian reference woman. The body mass index of the respondents indicated that about 41.67 per cent and 46.67 per cent of the respondents in the organised and unorganised sectors respectively were in the normal group and 21.66 per cent and 31.66 per cent in the two groups had different grades of CED.

Various nutritional deficiency symptoms such as mild conjunctival xerosis, pale conjunctiva, mild angular stomatitis, gingivitis, dental caries, hyperkeratosis and diminished elasticity in the skin, diffuse pigmentation in face

and odema on dependent parts were observed among the respondents in both the sectors

Actual food and nutrient intake of the respondents showed that the intake of cereals, pulses, roots and tubers, fruits and fats and oils was lower than the RDA in both the sectors. Lower intake of milk and milk products was found among both the sectors.

The nutritional status index was found to be higher in the organised sector than in the unorganised sector. There was significant difference in the nutritional status index between the sectors.

Highly significant positive correlation was observed between food security status and nutritional status index.

Food expenditure, monthly income, family size and family type are the important factors influencing food security.

Food security was found to be better in the households of women agricultural labourers sector mainly due to their better purchasing power. In the households of unorganized sector food insecurity without hunger and with moderate hunger were prevalent. To improve the food security status of the households consistent income of the households should be assured. This could be achieved by increasing employment opportunities of the family members mainly through developmental schemes of the panchayat and other government programmes aimed for the socio-economic upliftment of the families and promoting self employment avenues through training programmes. Such measures will improve the purchasing power of the households and thereby ensure food security.

The nutritional status of the respondents in the unorganized sector was also found to be low when compared to the organized sector. To achieve nutritional security and to improve the nutritional status of women agricultural

labourers, nutritional education programmes should also be organized so as to improve their nutritional awareness. Along with the nutrition education programmes proper followup should also be conducted by the training agency to ensure nutritional security and good nutritional status among the agricultural labourers through the intake of proper low cost balanced diet and nutritious food.

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Appendices

APPENDIX I

INTERVIEW SCHEDULE TO ELICIT INFORMATION REGARDING THE
SOCIO-ECONOMIC CONDITIONS OF THE FAMILIES

1. Name of the family :
2. Address :
3. Place of survey :
4. Panchayath, House No. :
Ward :
5. Name of the respondent :
6. Age of the respondent :
7. Type of the family : Joint/Nuclear
8. Religion/Caste :
9. Family size :
No. of adults :
No. of children :

10. Composition, education and occupation of family members.

Sl. No.	Name	Relatiosh ip with the head	Age	Sex	Occup ation	Educational status				Income
						Illite rate	Primary school	H.S.	College	

11. Do you have any other source of income :
a) If Yes, specify :
b) Amount :
12. Do you have your own land : Yes / No
a) If yes, total area :

b) Area under cultivation :
 13. Do you cultivate any food crops in the land :
 : Yes / No

If, yes area under cultivation

14. Details regarding the cultivation of food crops :
 during the previous year

Sl. No.	Name of the crop	Total produce per year	Quantity used at home	Quantity sold	Income

15. Do you have kitchen garden in your home :
 : Yes /No

If, yes specify

Sl. No.	Items of cultivation	Use of produce			Income
		By the family	Gift	Sale	

16. Do you have any domestic animal :
 : Yes/No

1) If, yes, specify

2) From where did you get it : 1) Purchased

20. Monthly expenditure pattern

Sl. No.	Items	Amount spent/month	Mode of payment	% total income
1.	Food			
2.	Clothing			
3.	Shelter			
4.	Transport			
5.	Recreation			
6.	Education			
7.	Electricity			
8.	Health			
9.	Fuel			
10.	Luxury (personal)			
11.	Remittance			

21. a) Housing conditions

- (i) Type of house : Own/rented
- (ii) Number of rooms : 1/2/3/4/5/more
- (iii) Walls : Brick/mud/thatched
- (iv) Roof : Thatched/tiled/terrace
- b) Other characteristics
- (i) Separate kitchen : Yes/No
- (ii) Source of drinking water : Own/well/public tap/public well
tank/river/neighbours
- (iii) Lavatory facilities : Own latrine/Public latrine
- (iv) Drainage facilities : Open drains/closed drains/nothing
- (v) Electricity facilities : Yes/No
- (vi) Recreational facilities : Yes/No
If yes, specify :
Radio/transistor/TV/VCR/Others
- (vii) Transport facilities : Bus/Van/Bicycle/Motor bike/

Jeep/Auto

22. Details regarding using fuel for cooking

(i) Type of fuel used at home

Wood/agricultural waste/cowdung/sawdust/kerosine/electricity/LPG/others

(ii) Source of fuel : Purchased/collected from surroundings

23. Do you have any health facilities in your locality : Yes / No

If yes, specify

PHC/Private hospital/District hospital/Medical college hospital/Private doctor/Ayurvedic doctor/Homeopathic doctor

24. When anybody is ill do you make use of the facilities of health centre: Yes/No

25. a) Epidemic prevalent in the locality in the past one year

i) Measles ii) Chicken pox iii) Typhoid iv) Whooping cough
v) Mumps vi) Others (Specify)

b) Was any member of the family affected by the above disease : Yes/No.

If yes, Specify

i) Name of the disease

ii) Name of the individual

26. Details of working pattern of the respondent

a) Are you a permanent employee of an organisation : Yes / No

If yes, when did you join for work? :

b) How many days you get work in a week :

c) Do you have any off day in a week? : Yes/ No

If yes, give details :

d) How frequently you go for work : Daily/weekly once/weekly
twice Thrice / occasionally

e) At what time do you go for work :

f) How many hours you get interval : Morning/Lunch/Evening

g) At what time you return from work :

h) If you are not going for work daily give the :
reasons

- (i) No work in the field
- (ii) Work seasonal
- (iii) Health problem
- (iv) Nobody to look after children
- (v) Low wage
- (vi) Tedious
- (vii) Others (Please specify)

m) Do you go for any other work during off days: Yes / No

If yes, give details :

Details of work	Days	Wage

n) Do you got work daily during summer and rainy season: Yes / No.

If yes, give details

Season	Number of days/week	Wage/day

27. Details regarding personal habits

Do you have the habit

a) Smoking : Yes/No

If yes, number of cigarettes per day

b) Tobacco chewing : Yes/No.

d) Others (Specify) :

APPENDIX II

INTERVIEW SCHEDULE TO COLLECT INFORMATION ON FOOD
CONSUMPTION PATTERN OF THE FAMILIES

1. Name of the respondent :
2. Place of survey :
3. Food habit : Veg/Non-Veg.
4. Staple food :
5. Details of food expenditure :

Sl. No.	Food items	Frequency of purchase					Total cost spend/month	% of total income
		Daily	Weekly	Monthly	Occasionally	As required		
1	Cereals							
2	Pulses							
3	Green leafy vegetables							
4	Other vegetables							
5	Roots and tubers							
6	Fruits							
7	Oils & fats							
8	Spices and condiments							
9	Sugar							
10	Milk & milk products							
11	Meat							
12	Fish							
13	Egg							
14	Others (Specify)							

6. Details of frequency of using various food items

Sl. No.	Food items	Frequency of use				Monthly once	Occasionally	Never
		Daily	Weekly					
			4	3	2			
1	Cereals							
2	Pulses							
3	Green leafy vegetables							
4	Other vegetables							
5	Roots and tubers							
6	Fruits							
7	Oils and fats							
8	Spices and condiments							
9	Sugar							
10	Milk and Milk products							
11	Meat							
12	Fish							
13	Egg							
14	Others (specify)							

7. Number of meals/day :
- 1) One major meal :
- 2) Two major meals :
- 3) Three major meals :
9. Details regarding nutritional awareness :
- a) Do you plan your meals in advance :
- b) Do you keep any time schedule for taking meals:
- c) Do you boil the drinking water :
- d) How many times do you wash cereals :

APPENDIX III

FOOD SECURITY CORE MODULE (USDA, 2000)

1. Stage 1. Which of these statements best describes the food eaten in your household in the last twelve month
- a) We have enough of the kinds of food we want to eat
 - b) We have enough but not always the kinds of food we want
 - c) Sometimes we do not have enough to eat
 - d) Often we do not have enough to eat

- 1a. If the answer is C or D in question No. 1

Why do you don't always have enough to eat (mark all that apply)

- a) Not enough money for food
- b) Not enough time for shopping or cooking
- c) Very difficult to go to the market
- d) On dieting
- e) Not able to cook or eat due to health problems

- 1b. If the answers 'b' in question No.1

Why you don't always have the kinds of food you have want to eat

- a) Not enough money for food
- b) Kinds of food required are not available
- c) Not enough time for shopping or cooking
- d) Too difficult to go to the market
- e) On a special diet

For the following statements please put tick mark for the answers for the last 12 months

2. We are worried whether our food would run out before we get money to buy more in the last 12 months.

- a) Often true b) Sometimes true c) Never true d) Refuses

3. The food we brought just didn't last and we didn't have money to get more in the last 12 months

- a) Often true b) Sometimes true c) Never true d) Refuses

4. We could not afford to eat balanced meals in the last 12 months

- a) Often true b) Sometimes true c) Never true d) Refuses

If the family is having children below 18 years ask

5. We relied on only a few kinds of low cost food to feed our children because we were running out of money to buy food.

- a) Often true b) Sometimes true c) Never true d) Refuses

6. We could not feed our children balanced meal because we couldn't afford that

- a) Often true b) Sometimes true c) Never true d) Refuses

Stage 2: If the answers for questions 2 to 6 is often true or sometimes true or the response is 'c' or 'd' to Questions No. 1 then continue stage 2. Otherwise skip to end. If there are children below 18 in the household.

7. Our children were not eating because we just couldn't afford enough food in the last 12 months

- a) Often true b) Sometimes true c) Never true d) Refused/Don't know

8. In the last 12 months did you or other adults in your household ever cut the size of meals or skip meals because there wasn't enough money for food.

Yes

No

If yes, how often did this happen

- a) Almost every month b) Some months but not every month
c) Only 1 or 2 months d) Refused/Don't know

9. In the last 12 months did you ever eat less than you felt you should because there wasn't enough money to buy food.

Yes

No

Refused/Don't know

10. In the last 12 months, when you were hungry you didn't eat because you could not afford enough food.

Yes

No

Refused/Don't know

11. In the last 12 months, did you lose weight because you didn't have enough money for food.

Yes

No

Refused/Don't know

If the answer is yes to questions 7 to 11 please ask 12-16

12. In the last 12 months did you or other adults did not eat for a whole day because there wasn't enough money for food.

Yes

No

Refused/Don't know

If yes, how often did this happen.

APPENDIX IV

FOOD SECURITY SCALE VALUES AND STATUS LEVELS CORRESPONDING TO NUMBER OF AFFIRMATIVE RESPONSES (USDA, 2000)

Number of affirmative responses:		1998 Food security scale values	Food security status level	
(out of 18) Households with children	(out of 10) Households without children		Code	Category
0	0	0.0	0	Food Secure
1		1.0		
	1	1.2		
2		1.8		
	2	2.2		
3		2.4	1	Food Insecure Without Hunger
4		3.0		
	3	3.0		
5		3.4		
	4	3.7		
6		3.9		
7		4.3		
	5	4.4	2	Food Insecure With Hunger, Moderate
8		4.7		
	6	5.0		
9		5.1		
10		5.5		
	7	5.7		
11		5.9		
12		6.3		
	8	6.4	3	Food Insecure With Hunger, Severe
13		6.6		
14		7.0		
	9	7.2		
15		7.4		
	10	7.9		
16		8.0		
17		8.7		
18		9.3		

APPENDIX V
Schedule For Clinical Assessment
(N.A.C.I.C.M.R)

- | | | |
|-----------------------|---|--|
| 1. Sex | : | |
| 2. Age | : | |
| 3. Height | : | |
| 4. Weight | : | |
| 5. General appearance | : | 1. Good
2. Fair
3. Poor
4. Very poor |
| 6. Eyes | | |
| (a) Conjunctiva | | |
| i) Xerosis | : | 1. Absent, glistening and moist.
2. Slightly dry on exposure for a minute/ lack of luster.
3. Conjunctiva dry and wrinkled
4. Conjunctiva very dry and bitot's spots present. |
| ii) Pigmentation | : | 1. Normal colour
2. Slight discolouration
3. Moderate browning in patches
4. Severe earthy discolouration. |
| iii) Discharge | : | 1. Absent
2. Watery, excessive lachrymation |
| (b) Cornea | | |
| i) Xerosis | : | 1. Absent
2. Slight dryness and diminished sensibility
3. Hazy and diminished transparency
4. Ulceration. |

- ii) Vascularization :
 1. Absent
 2. Circumcorneal infection
 3. Vascularization of cornea

©

- i) Excoriation :
 1. Absent
 2. Slight excoriation
 3. Blepharitis
- iii) Folliculosis :
 1. Absent
 2. A few granules
 3. Lids covered with extensive granules
 4. Hypertrophy

(d) Functional

- i) Night blindness :
 1. Absent
 2. Present

7. Mouth

a) Lips

- i) Condition :
 1. Normal
 2. Angular stomatitis, mild
 3. Angular stomatitis, marked

b) Tongue

- i) Colour :
 1. Normal
 2. Pale but coated
 3. Red
 4. Red and raw
- ii) Surface :
 1. Normal
 2. Fissured
 3. Ulcered
 4. Glazed and atropic

c) Buccal mucosa

- i) Condition :
 1. Normal
 2. Bleeding and / or gingivitis
 3. Pyorrhoea
 4. Retracted

d) Gums

i) Condition : 1. Normal

e)

i) Fluorosis : 1. Absent
2. Chalky teeth
3. Pitting of teeth
4. Mottled and discoloured teeth

ii) Caries : 1. absent
2. Slight
3. Marked

8. Hair

i) Condition : 1. Normal
2. Loss of luster
3. Discoloured and dry
4. Spares and brittle

9. Skin

a) General

i) Appearance : 1. Normal
2. Loss of luster
3. Dry and rough or crazy pavement
4. hyperkeratosis, phrynoderma

ii) Elasticity : 1. Normal
2. Diminished
3. Wrinkled skin

b) Regional

i) Trunk : 1. Normal
2. Collar like pigmentation and
dermatitis around the neck

ii) Face : 1. Normal
2. Nasolabial seborrhea
3. Symmetrical suborbit pigmentation
4. Moon face

iii) Perineum : 1. Normal

- | | | | |
|--------------------|--------------------|---|--|
| | iv) Extremities | : | 2. Scoral or pudental dermentation
1. Normal
2. Symmetrical dermatitis |
| 10. oedema | | | |
| | i) Distribution | : | 1. Absent
2. Oedema on dependent parts
3. Oedema on face and dependent parts |
| 11. Bones | | | |
| | i) Condition | : | 1. Normal
2. Stigmata of past rickets |
| 12. Heart | | | |
| | i) Size | : | 1. Normal
2. Apex outside the nipple line
3. Enlarged |
| 13. Alimentary | | | |
| | i) Appetite | : | 1. Normal
2. Anorexia |
| | ii) Stools | : | 1. Normal evacuation
2. Diarrhoea |
| | iii) Liver | : | 1. Not palpable
2. Palpable |
| | iv) Spleen | : | 1. Not palpable
2. Palpable |
| 14. Nervous system | | | |
| | i) Calf tenderness | : | 1. Absent
2. Present |
| | ii) Paresis | : | 1. Absent
2. Present |

APPENDIX VI

SCHEDULE FOR INDIVIDUAL FOOD WEIGHMENT SURVEY (ONE DAY WEIGHMENT METHOD)

1. Name of the respondent :
2. Age of the respondent :
3. Place of survey :
4. Details of food consumption :

Name of the menu	Menu	Food consumption		
		Weight of raw ingredients used by the family (g)	Weight of cooked food used by the family (g)	Weight of total cooked food used by the individual (g)
Breakfast				
Lunch				
Evening tea				
Dinner				
Others				

Appendix VII
Household Food Security in the organised sector

Number of affirmative responses				Number of affirmative responses			
sample No (out of 18)	Scale Value	Code		Sample No. (out of 10)	Scale Value	Code	
1	0	0	0	1	0	0	0
2	3	2.4	1	2	0	0	0
3	0	0	0	3	0	0	0
4	0	0	0	4	0	0	0
5	0	0	0	5	0	0	0
6	0	0	0	6	0	0	0
7	0	0	0	7	1	1.2	0
8	0	0	0	8	1	1.2	0
9	0	0	0	9	0	0	0
10	3	2.4	1	10	0	0	0
11	0	0	0	11	0	0	0
12	0	0	0	12	0	0	0
13	0	0	0	13	0	0	0
14	0	0	0	14	0	0	0
15	0	0	0	15	0	0	0
16	3	2.4	1	16	0	0	0
17	3	2.4	1	17	1	1.2	0
18	0	0	0	18	0	0	0
19	3	2.4	1	19	5	4.4	1
20	0	0	0	20	0	0	0
21	3	2.4	1	21	1	1.2	0
22	0	0	0	22	0	0	0
23	0	0	0	23	1	1.2	0
24	0	0	0	24	0	0	0
25	0	0	0	25	0	0	0
				26	1	1.2	0
				27	0	0	0
				28	0	0	0
				29	0	0	0
				30	0	0	0
				31	0	0	0
				32	0	0	0
				33	0	0	0
				34	0	0	0
				35	0	0	0

APPENDIX VIII
Household Food Security in the unorganised sector

Sample N	number of affirmative responses (out of 18 scale)			code	Sample n	number of affirmative responses (out of 10 scale)			code
	questions)	value				questions)	value		
1	9	5.1		2	1	1	1.2	0	
2	9	5.1		2	2	6	5	2	
3	9	5.1		2	3	0	0	0	
4	8	4.7		2	4	0	0	0	
5	9	5.1		2	5	6	5	2	
6	10	5.5		2	6	6	5	2	
7	2	1.8		0	7	7	5.7	2	
8	8	4.7		2	8	1	1.2	0	
9	5	3.4		1	9	3	3	1	
10	3	2.4		1	10	0	0	0	
11	3	2.4		1	11	7	5.7	2	
12	9	5.1		2	12	3	3	1	
13	5	3.4		1	13	0	0	0	
14	6	3.9		1	14	0	0	0	
15	5	3.4		1	15	3	3	1	
16	0	0		0	16	0	0	0	
17	3	2.4		1	17	7	5.7	2	
18	0	0		0	18	0	0	0	
19	0	0		0	19	8	6.4	2	
20	3	2.4		1	20	7	5.7	2	
21	3	2.4		1	21	6	5	2	
22	2	1.8		0	22	6	5	2	
23	3	2.4		1	23	1	1.2	0	
24	8	4.7		2	24	1	1.2	0	
25	3	2.4		1	25	7	5.7	2	
26	3	2.4		1	26	3	3	1	
27	3	2.4		1	27	7	5.7	2	
28	7	4.3		1					
29	8	4.7		2					
30	9	5.1		2					
31	9	5.1		2					
32	3	2.4		1					
33	3	2.4		1					

Appendix IX

Nutritional Status Index of the Respondents

Nutritional status index

S.I. No.	Organised Sector	Unorganised Sector
1	35.23	34.56
2	49.85	33.01
3	42.22	33.99
4	40.46	33.39
5	38.54	33.29
6	44.2	31.69
7	43.78	33.49
8	49.4	30.84
9	47.46	34.88
10	43.5	34.55
11	45.78	32.96
12	41.03	31.55
13	42.97	33.6
14	48.5	34.47
15	41.93	30.42
16	41.04	34.35
17	49.25	32.29
18	42.22	32.69
19	39.48	32.55
20	40.18	32.58
21	42.86	34.04
22	39.32	33.62
23	31.63	33.19
24	41.42	31.51
25	38.56	32.94
26	59.13	31.29
27	50.15	34.2
28	40.25	32.99
29	49.9	31.73
30	41.24	32.82
31	35.53	29.36
32	50.2	33.51
33	43.24	27.07
34	40.42	35.45
35	38.74	33.18
36	43.34	32.84
37	44.17	35.58
38	48.63	32.62
39	48.35	34.04
40	42.86	32.91
41	45.04	33.37
42	41.3	32.45

43	43.4	32.45
44	48.23	30.81
45	41.45	33.64
46	40.15	30.26
47	48.97	32.37
48	42.11	31.56
49	38.92	33.66
50	39.98	32.52
51	41.78	29.95
52	39.44	34.25
53	31.95	34.35
54	40.44	33.25
55	39.46	36.04
56	59.36	34.39
57	49.09	34.9
58	40.16	33.45
59	49.13	33.31
60	41.15	32.06

**HOUSEHOLD FOOD SECURITY AND
NUTRITIONAL STATUS OF WOMEN
AGRICULTURAL LABOURERS**

By
LINCY LAWRENCE

ABSTRACT OF THE THESIS

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requirement for the degree of

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ABSTRACT

A study on "Household Food security and Nutritional Status of Women Agricultural Labourers" was carried out in Ollukkara block panchayat of Thrissur district. The study was conducted among women agricultural labourers belonging to organized and unorganized sectors.

The results of the study indicated that Hindus were the majority in organized and unorganized sectors. Majority of the families were of nuclear type and family size ranged in between 4 to 6.

Most of the male and female members in both the sectors were literate. Upto 15 cents of land was owned by majority of the respondents in the organized sector whereas in the unorganized sector majority had only upto 10 cents. Majority of the families in both the sectors did not have kitchen garden and domestic animals.

Monthly income of the families in the organized sector varied from Rs.1000 to Rs.6000, while in the unorganized sector majority had an income in between Rs.1000 to Rs.4000.

Maximum proportion of income was spent on food items.

More families in the organized sector saved money than the unorganized sector. Majority of the families in both the sectors borrowed money from university, cooperative bank and private chitties.

All the families in the unorganized sector and majority in the organized sector had their own houses with brick as the wall material and with tiled or concrete roof. The houses were occupied with separate kitchen with 4 to 5 rooms. Drinking water, electricity, recreational and lavatory facilities were satisfactory whereas drainage facilities were found to be inadequate.

Majority of the respondents in the organized sector get work for 6 days in a week while in the unorganized sector majority get work for 3 – 5 days. Seasonal variation in the working days was noticed only among unorganized sector.

Majority of the families in both the sectors were nonvegetarians and consumed rice as the staple food. Maximum percentage of the food expenditure was for cereals.

The families in the organized sector purchased most of the food items in bulk on monthly basis while in the unorganized sector most of the families purchased food items either daily or weekly.

The most frequently used food items were cereals, pulses, other vegetables, milk and milk products, fats and oils, sugar and spices and condiments in the organized sector while in the unorganized sector all the above food items except pulses and milk and milk products were found to be the most frequently food items.

Advance meal planning was popular in both the sectors. Three meals a day pattern was common in both the sectors.

The per capita food and nutrient intake indicated decreased intake of cereals, green leafy vegetables, fruits, milk and milk products and fats and oils.

Majority of the households in the organized sector were food secure, whereas in the unorganized sector only 26.67 per cent were found to be food secure. Food insecurity was found to be more in the households with children in both the sectors. None of the families in the organized sector experienced food insecurity with hunger.

The nutritional profile revealed that the body weight and height of the respondents in both the sectors were lower than the reference body weight and

height for an Indian reference woman. About 21.66 per cent and 31.66 per cent in the organized and unorganized sectors respectively had different grades of CED.

Clinical examination showed various symptoms of nutritional deficiencies among the respondents in both the sectors.

Actual food and nutrient intake revealed deficient intake of cereals, pulses, green leafy vegetables, roots and tubers, fruits and fats and oils. The intake of all nutrients was lower than the recommended levels.

Factors influencing food security are food expenditure, monthly income, family size and family type.