Information Sources and Awareness Level of Rural Communities on Food and Nutrition Security

Discussion Paper 7

MANAGE-Centre for Agricultural Extension Innovations, Reforms, and Agripreneurship (CAEIRA)

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Director General's Message

Smt. V. Usha Rani, IAS
Director General, MANAGE

I appreciate Ms. Anjana S R, MANAGE intern and a post graduate student from University of Kerala, Kerala to opt an appropriate topic of the day "Information Sources and Awareness Level of Rural communities on Food and Nutrition Security" with thorough data collection and field analysis.

This study encompasses the awareness level and sources of information about food and nutrition security in rural communities in Thiruvananthapuram and Kollam districts of Kerala. Nutrition is vital and a prerequisite to a healthy life. Food and nutrition security is essential for reducing hunger in the world. Awareness about food and nutrition among the people are very essential for maintaining the food and nutrition security of the family. Awareness level of men and women are different about food and nutrition and their sources of information are also different.

In today's world, due the lack of proper information sources and awareness level about food and nutrition security several health issues like Under nutrition, overweight and their associated non-communicable diseases now coexist in many regions, countries and even households.

It is high time that every member of the family should know about the food and nutrition security. But in majority of the families, only women had awareness about it. Men are unaware about the food and nutrition security, it will affect the whole family. Women get much information compared to men. Various information sources help to increase the awareness about food and nutrition that is needed for the welfare of the family.

The various channels of information for food and nutrition security of the rural families and also access their impacts on the food and nutrition security of the families is being investigated and the perception of rural families about information / services provided towards food and nutrition security is analyzed.

(V.Usha Rani)

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Abbreviations

FAO	Food and Agriculture Organization
GHI	Global Hunger Index
HDI	Human Development Index
GNI	Gross National Income
PDS	Public Distribution System
APL	Above Poverty Line
BPL	Below Poverty Line
MDMS	Mid day meal Scheme
WHO	World Health Organization
ICDS	Integrated Child Development Service
ANP	Applied Nutrition Programme
BNP	Balwadi Nutrition Programme
NIDDCP	National Iodine Deficiency Disorders Control Programme
NGCP	National Goiter Control Programme
ASHA	Accredited Social Health Activists
NNAPP	National nutritional anemia prophylaxis programme
NNW	National nutrition week
NHM	National Health Mission
NNP	National nutrition policy
RGSEAG	Rajiv Gandhi Scheme for Empowerment of Adolescent Girls
KSY	Kishori Shakthi Yojana
PMMVY	Pradhan Mantri Matritva Vandana Yojana
VHND	Village health nutrition day
AAY	Anthyodaya Anna Yojana

Abstract

Security (Food and Human) is one of the major challenges confronting the world today. Food security, along with poverty eradication and ecological conservation, is one of the most significant elements of the millennium development goals. Food Security is pedestal on three essential pillars of Food availability on a consistent basis, Food access for appropriate nutritious diet and Food use for basic nutrition and care as well as adequate water and sanitation. Nutrition is a basic human need and a prerequisite to a healthy life. A proper diet is essential from the very early stages of life for proper growth, development and to remain active. Food consumption mainly depends on production and distribution, determines health and nutrition of the population. An important part of the nutrition gap is the information gap. Lack of knowledge is one of the major causes for poor nutrition among the people. Under nutrition, vitamin and mineral deficiencies, obesity and diet-related chronic diseases exist side by side in many countries. Whether food supplies are scarce or abundant, it is essential that people know how best to make use of their resources to ensure nutritional wellbeing. To be adequately nourished, individuals need to have access to sufficient and good quality food and they need an understanding of what constitutes a good diet for health, as well as the skills and motivation to make good food choices. Awareness level of men and women about food and nutrition is different. They attain information from different sources. Nutrition education is a major source of information about nutrition. It helps to promote access to a variety of nutritious food, increase knowledge of the nutritional value of foods and develop personal skills and motivation to adopt healthy eating practices.

Executive summery

Food and nutrition security is essential for reducing hunger in the world. Food security is a complex sustainable development issue, not only linked to health through malnutrition, but also to sustainable economic development, environment, and trade. Poverty is the main cause of malnutrition and others, such as lack of education and information about good or adequate nutrition, failure to consume vitamin supplements or fortified foods, and the cost of food. Awareness about food and nutrition among the respondents are very essential for maintaining the food and nutrition security of the family. Each member of the every family should be aware about food and nutrition security. Awareness level of men and women are different about food and nutrition and their sources of information are also different.

The study was mainly focused to identify the awareness level and sources of information about food and nutrition security in rural communities in Thiruvananthapuram and Kollam districts. In the study, Majority of the respondents in Thiruvananthapuram district (67.5 %) belonged to the age group of 18 – 35 years. But in the Kollam district, majority of them belonged to the age group of 36 – 60 years (62.5 %). Monthly income of the family was comparatively low in Kollam district because 50 percent of the respondents had monthly income less than Rs 1000. But in Thiruvananthapuram district, majority of the respondents had monthly income between Rs 5000 – 10000 (40 %). Majority of the respondents were not aware about food and nutrition security, though comparatively women had more awareness than men in both the district. Majority of them were aware about basic five food groups because basic five food groups are used every day in the diet. The result also shows that in both the districts, women respondents were more aware about basic five food groups than men. Being mostly involved in food preparation and other household things related to food preparation, they are more aware about food and nutrition. In Thiruvananthapuram district, Male respondents got information mainly from TV/radio (80 to 90 %), while female respondents got information mainly from books and newspaper (80 to 85 %). But in Kollam district, books and news papers are the major sources of information among both the respondents. Public distribution System and Local wholesale & retail stores are the major sources for the purchase of food items in both the districts. Majority of the respondents in Thiruvananthapuram district had kitchen garden in their home and lack of availability of good seeds is the major constraint faced by the respondents in kitchen garden. All the respondents in both the districts faced food accessibility problem because of increase in price of food items. Taste preference is the major reason of food accessibility problem among both the district among male respondents (95 % in Thiruvananthapuram and 85 in Kollam district), while in female respondents personal and social factors are the major reason of food accessibility problem. Majority of male respondents in both the districts skipped their meals due to lack of time, but female respondents skipped their meals due to lack of appetite and religious reason. Majority of the female respondents are fully aware about proper cooking methods than male respondents and boiling, pressure cooking, shallow frying and deep frying are the commonly used cooking methods among the respondents. Awareness about bad effects of cooking oil, food safety, iron rich foods and health benefits of leafy vegetables are also high among the female respondents than male respondents. In both

the district, majority of the male respondents preferred fast food once in a week while female respondents mostly preferred home cooked food. They are aware about the bad effects of fast food. Comparing two districts, consumption of fast food was lower in Kollam. Majority of the respondents in both the districts had awareness about heart diseases, obesity, goiter, anemia and hypertension. These diseases are very common in Kerala and so they got lot of information from various sources such as friends and relatives, TV and radio etc. ICDS, mid day meal programme and NHM (National health Mission) are more aware among the female respondents in both the district. Nutrition and health education, midday meal programme and supplementary nutrition are the main incentives received by the female respondents through various programmes. Awareness about nutrition related information like nutritional diseases, feeding of children and prenatal and postpartum care of women is higher in female respondents than male respondents. They got information about it from various sources, like friends and relatives, books and newspaper etc. Impacts of information and services were mainly seen among the female respondents. Information about food and nutrition had to make impacts in their knowledge level, consumption pattern, purchasing pattern, nutritional attitude and cooking methods. Government agencies are the main service providers to the respondents.

Introduction

> Every man, woman and child has the inalienable right to be free from hunger and malnutrition in order to develop fully and maintain their physical and mental faculties
>
> **United Nations, 1974**

Adequate nutrition is a basic human need satisfying the nutritional requirements on a regular basis, and utilization of adequate and safe food with the respective energy, protein, vitamin and mineral content, is one of the most important pre-condition for an active, healthy and decent life. Households are food secure when they have year-round access to the amount and variety of safe foods their members need to lead active and healthy lives. At the household level, food security refers to the ability of the household to be secure, either from its own production or through purchases, adequate food for meeting the dietary needs of all members of the household. FAO recognizes that healthy, well-nourished people are both the outcome of successful social and economic development and constitute an essential input into the development process. 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 in order to benefit from the food consumed. Lack of awareness about the dietary requirements and nutritive value of different food is the main cause for prevailing malnutrition among school children, pregnant women, lactating mother and other vulnerable sections of the community. Nutrition education should be practical and should be easily adaptable to the socioeconomic status, food habits and the available local food resources generally needed for the purpose of demonstration and feeding of the locally available audience. Nutrition education programme should become a part of the community.

Food and Nutrition Security

Food Security

Life can be sustained only with adequate nourishment. Man needs food for growth, development and to lead to an active, productive and healthy life. According to FAO (2000), Food Security is achieved when it is ensured that all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life". Food is anything eaten or drunken, which meets the needs for energy, building, regulation and protection of the body. Intake of right kinds and amounts of food can ensure good nutrition and health, which is evident in appearance, efficiency and emotional well-being. Over the coming decades, a changing climate, growing global population, rising food prices, and environmental stressors will have significant yet highly uncertain impacts on food security. Adaptation strategies and policy responses to global change, including options for handling water

allocation, land use patterns, food trade, post – harvest food processing and food processing and safety are urgently needed. Economic growth is only sustainable if all countries have food security. Food security needs to encompass women and other vulnerable and disadvantages groups. (www. ifpri.org)

Nutrition Security

Nutrition has been defined as food at work in the body. It includes everything that happens to food from the time it is eaten until it is used for various functions in the body. Nutrients are components of food that are needed by the body in adequate amounts in order to grow, reproduce and lead a normal and healthy life. Nutrients include water, carbohydrates, proteins, fats, vitamins and minerals. "Food and Nutrition Security is achieved, if adequate food (quantity, quality, safety, socio-cultural acceptability) is available and accessible for and satisfactorily utilized by all individuals at all times to live a healthy and happy life." The concept nutrition focus adds the aspects of caring practices and health services and healthy environments. This aims at what is more precisely called 'Nutrition Security', which can be defined as adequate nutritional status in terms of protein, energy, vitamins, and minerals for all household members at all times and thus in principle is more than food security. Achieving food and nutrition security is still a great challenge for the poorest around the world. The world continues to consume more food every year as the population grows, and due to rising demand for industrial uses of food. Food security and nutrition security are different but related concepts. Availability of—and access to—food are necessary but not sufficient conditions for nutrition security. The latter is achieved when secure access to food is coupled with a sanitary environment, adequate health services, and knowledgeable nutrition care. Food Security is pedestal on three essential pillars of Food availability on a consistent basis, Food access for appropriate nutritious diet and Food use for basic nutrition and care as well as adequate water and sanitation. For accomplishing the objective of self-sufficiency in the developing countries, the main concern is specified to food stability and availability (Chadha, 2016). A person is considered nutrition-secure when she or he has a nutritionally adequate diet and the food consumed is biologically utilized such that adequate performance is maintained in growth, resisting or recovering from disease, pregnancy, lactation, and physical work (Fereydoun Siassi, 2015).

Dimensions of food and nutrition security

Table no: 1 Dimensions of food and nutrition security

S.No.	Dimensions of food and nutrition security
1.	**Availability** refers to the physical existence of food, be it from own production or in the markets. On national level food availability is a combination of domestic food production, commercial food imports, food aid, and domestic food stocks, as well as the underlying determinants of each of these factors.

2. **Access** is ensured when all households and all individuals within those households have sufficient resources to obtain appropriate foods for a nutritious diet (**Riely et al. 1995**). It is dependent on the level of household resources – capital, labor, and knowledge – and on prices. Food access also is a function of the physical environment, social environment and policy environment which determine how effectively households are able to utilize their resources to meet their food security objectives.

3. **Use and utilization** of food refers to the socio-economic aspect of household food security. If sufficient and nutritious food is both available and accessible the household has to make decisions concerning what food is to be purchased, prepared and consumed (demanded) and how the food is allocated within the household. In households where distribution is unequal, even if the measured aggregate access is sufficient, some individuals may suffer from food deficiency.

4. **Stability** describes the temporal dimension of food and nutrition security, respectively the time frame over which food and nutrition security is being considered. Stability is given when the supply on household level remains constant during the year and in the long-term. That includes food, income and economic resources. Furthermore it is important to minimize external risks such as natural disaster and climate change, price volatility, conflicts or epidemics through activities and implementations improving the resilience of households. Such measure include insurances e.g. against drought and crop failure as well as the protection of the environment and the sustainable use of natural resources like land, soil and water. **(https://wocatpedia.net)**

Food and Nutrition Security in the world

World hunger is on rise: In 2016, the number of undernourished people in the world increased to an estimated 815 million, up from 777 million in 2015 but still down from about 900 million in the year 2000. The recent increase is cause for great concern and poses a significant challenge for international commitments to end hunger by 2030. This sobering news comes in a year in which famine struck in parts of South Sudan for several months in 2017 and food insecurity situations at risk of turning into famines were identified in other conflict-affected countries, namely Nigeria, Somalia and Yemen. The food security situation visibly worsened in parts of sub-Saharan Africa, South Eastern and Western Asia. Over the past ten years, the number of violent conflicts around the world has increased significantly, in countries already facing food insecurity, hitting rural communities the hardest and having a negative impact on food production and availability (FAO, 2017).

Under nutrition, overweight and their associated non-communicable diseases now coexist in many regions, countries and even households. Six nutrition indicators – Stunting among children under the age of five, Wasting among children under the age of five, the number of children overweight under the age of five, obesity among adults, Anemia in women of reproductive age, levels of exclusive breastfeeding (FAO, 2017).

Stunting is evidence that children are too short for their age, which in turn is a reflection of a chronic state of under nutrition. When children are stunted before the age of two, they are at higher risk of illness and more likely than adequately nourished children to develop poor cognitive skills and learning abilities in later childhood and adolescence. According to the latest estimates for 2016, 155 million children under five years of age across the world suffer from stunted growth. Globally, the prevalence of stunting fell from 29.5 percent to 22.9 percent between 2005 and 2016. However, at current trends, there would be 130 million stunted children by 2025. Among the key determinants of stunting are: compromised maternal health and nutrition before and during pregnancy and lactation, inadequate breastfeeding, poor feeding practices for infants and young children, and unhealthy environments for children, including poor hygiene and sanitation (FAO, 2017).

In 2016 wasting affected 7.7 percent of children under five years of age worldwide. About 17 million children suffered from severe wasting. Southern Asia stands out with a high prevalence of 15.4 percent. At almost 9 percent, South-Eastern Asia is also far off the targets set by the internationally agreed global nutrition target. While the prevalence is somewhat lower in Africa, it still stands above the global nutrition target. Childhood overweight is a growing problem in most regions. Worldwide, an estimated 41 million children under five were overweight in 2016, up from 5 percent in 2005 (FAO, 2017).

Childhood overweight is a growing problem in most regions. Worldwide, an estimated 41 million children under five were overweight in 2016, up from five percent in 2005. With the exception of Western Africa, South America and Eastern Asia, where slight declines were recorded between 2005 and 2016, and Eastern Africa where the prevalence remained constant, all other regions registered increases in the prevalence of children overweight, the fastest rising being South – Eastern Asia and Oceania (FAO, 2017).

The global prevalence of obesity more than doubled between 1980 and 2014. In 2014, more than 600 million adults were obese, equal to about 13 percent of the world's adult population. While it varies across regions, the problem is most severe in Northern America, Europe and Oceania, where 28 percent of adults are classified as obese, compared with 7 percent in Asia and 11 percent in Africa. In Latin America and the Caribbean roughly one quarter of the adult population is currently considered as obese. Historically the prevalence of adult obesity has been much lower in Africa and Asia. However, more recently it has spread rapidly among larger parts of the population in these regions as well. Hence, while many low- and middle-income countries still face high levels of under nutrition and prevalence of infectious, communicable diseases, they are now also experiencing an increasing burden of people suffering from overweight and obesity and an associated rise in certain non-communicable diseases such as diabetes (FAO, 2017).

The most recent estimates for 2016 indicate that anemia affects 33 percent of women of reproductive age globally (about 613 million women between 15 and 49 years of age). In Africa

and Asia, the prevalence is highest at over 35 percent. It is lowest in Northern America, Europe and Oceania (below 20 percent) (FAO, 2017).

More women are feeding their infants solely with breast milk than ever before, providing a critical cornerstone for children's survival and development. Globally, 43 percent of infants younger than six months were exclusively breastfed in 2016, up from 36 percent in 2005 (FAO, 2017).

Global Hunger Index (GHI) is a multi-dimensional measure that describes state of hunger situation on regional, national and global level. It is published annually by International Food Policy Research Institute (IFPRI) since 2006. It ranks countries on 0 – 100 point scale calculated by taking into account four indicator parameters. Zero means best score (no hunger) and 100 is worst. The four parameters are (a) Undernourished population (b) Child wasting (c) Child stunting (d) Infant mortality rate. The 2017 Global Hunger Index (GHI) indicates that worldwide levels of hunger and under nutrition have declined over long time: At 21.8 on a scale of 100, the average GHI score for 2017 is 27 percent lower than the 2000 score (29.9). At the regional level, South Asia and Africa south of the Sahara have the highest 2017 GHI scores – 30.9 and 29.4 respectively, indicating serious levels of hunger. The GHI scores, and therefore the hunger levels, for East and Southeast Asia, the Near East and North Africa, Latin America and the Caribbean, and Eastern Europe and the Commonwealth of Independent States are considered low or moderate, ranging from 7.8 to 12.8 points. Within each region in the low range, however, are also countries with serious or alarming GHI scores, including Tajikistan in Central Asia, which is part of the Commonwealth of Independent States; Guatemala and Haiti in Latin America and the Caribbean; and Iraq and Yemen in the Near East and North Africa region. Seven of 14 countries in East and Southeast Asia have serious scores, though the low score of highly populous China improves the regional average (Global Hunger Index, 2017)

Food and Nutrition Security in India

Global Nutrition Report-2016 clearly indicates how India still lags behind in tackling malnutrition effectively. Malnutrition manifests in the form of stunting, wasting, micronutrient deficiencies and overweight / obesity. In terms of stunting, India ranks 114th out of 132 nations (incidence at: 38.7%) while for wasting, it is 120th among 130 countries (incidence at: 15.1%). Regarding anemia prevalence among women of reproductive ages, India ranks 170th out of 185 countries (incidence at: 48.1%) – and this is a matter of grave concern (Jain Passi and Jain, 2016).

India with 2.5 percent of the global land mass and 16 percent of the global population recognized the importance of human resources as the engines powering national development and gave high priority to improvement of the health and nutritional status of the population. Article 47 of the Constitution of India states that, "the State shall regard raising the level of nutrition and standard of living of its people and improvement in public health among its primary duties". India's Five-Year Plans enunciated the policies, laid down multi-pronged strategies, outlined multi-sectoral

programmes to improve food security and nutritional status of the population, laid the goals to be achieved in a specified time frame, and provided the needed funds to implement the interventions (Ramachandran, 2013).

India ranked 100th position among 119 countries on Global Hunger Index (GHI) 2017. This year slipped by three positions as compared to 97th rank in 2016 GHI. In 2017 GHI, India scored 31.4 and was placed in high end of "serious" category. Low ranking of India also influences South Asia's regional score as three quarters of South Asia's population reside in India (Global Hunger Index, 2017).

The last two decades have witnessed rapid economic growth, increasing mechanization of the transport, work and household activity domains and consequent steep reduction in physical activity in all segments of population. Reduced physical activity and unaltered dietary intake have led to the increasing prevalence of obesity and other associated non-communicable diseases. In affluent segments of population inappropriate dietary choices and increasing sedentary life-style have aggravated the problem. Henceforth the country has to gear itself up to prevent and combat the dual burden of under-nutrition and over-nutrition and associated health problems. India has made rapid strides in improving rates of under- and malnutrition. Between 2006 and 2016, stunting in children below five years declined from 48% to 38%. Yet, India continues to have one of the world's highest child under-nutrition rates, impacting the child's health and development, performance in school and productivity in adult life. With nearly 195 million undernourished people, India shares a quarter of the global hunger burden. Nearly 47 million or 4 out of 10 children in India are not meeting their full human potential because of chronic under-nutrition or stunting. Stunting has consequences such as diminished learning capacity, poor school performance, reduced earnings and increased risks of chronic diseases. The impacts are multi-generational as malnourished girls and women often give birth to low birth-weight infants. There has also been an increase in the prevalence of overweight and obesity in children and adolescents in India, which has life-long consequences of non-communicable diseases in adulthood (http://in.one.un.org).

The Human Development Index (HDI) was developed by the United Nations as a metric to assess the social and economic development levels of countries. Four principal areas of examination are used to rank countries: mean years of schooling, expected years of schooling, life expectancy at birth and gross national income per capita. (https://www.investopedia.com) A country scores higher HDI when the lifespan is higher, the education level is higher and the GNI per capita is higher. India's HDI value for 2015 is 0.624— which put the country in the medium human development category— positioning it at 131 out of 188 countries and territories. Between 1990 and 2015, India's HDI value increased from 0.428 to 0.624, an increase of 45.7 percent. Between 1990 and 2015, India's life expectancy at birth increased by 10.4 years, mean years of schooling increased by 3.3 years and expected years of schooling increased by 4.1 years. India's GNI per capita increased by about 223.4 percent between 1990 and 2015. Kerala has the highest human development index (HDI) among the all the states in India (Human Development Report, 2016).

There are nearly 800 million people who suffer from hunger worldwide and out of this 511.7 million are in Asian countries. The incidence of the poverty in India was estimated at 264.9 million in 2011-12. Further, calorie and protein intake of large number of people in India especially in rural areas are lower than normal. As per the State of Food Insecurity in the World 2015 (FAO) India has the second highest number of undernourished people at 194.6 million which is around 15.2 percent of the world's total undernourished population. In order to reduce the incidence of poverty and to attain food security Government of India enacted National Food Security Act 2013 to provide subsidized food grains to approximately two thirds of India's 1.2 billion people (http://spb.kerala.gov.in).

Food and Nutrition Security in Kerala

Kerala has been deficient in the production of food grains. Of the total requirements of food grain only 15 per cent is produced in the state. In the case of vegetables too, the state relies heavily on neighboring states. There is a strong correlation between stability in agricultural production and food security. Therefore, along with provision of food subsidy, stability in agricultural production and strengthening of supply chain management needs to be addressed to ensure food security. Although Kerala is a highly progressive state in terms of education, healthcare facilities and awareness among beneficiaries, nutritional security especially of the most vulnerable is extremely critical to fulfill the vision of a Hunger Free Kerala. Various schemes run by the state for poverty alleviation along with the Central Government schemes such as Public Distribution System, Integrated Child Development Services and Mid Day Meal which approach food security through a life cycle approach need more strengthening, integration, modernization and monitoring. One of the main objectives of the 13th Five Year Plan is to make Kerala a hunger free state by supplying meals at nominal prices to the needy (http://spb.kerala.gov.in).

In pursuance of the Essential Commodities Act 1955 enacted by Government of India, the Public Distribution System came into existence on July 1,1965. Timely lifting of commodities allocated from the Central pool and ensuring timely and effective distribution of the same through 14,335 ration shops in the State is a major responsibility of the PDS. Kerala has made pioneering achievements in the implementation of a Universal Rationing System. The number of ration card holders in the State reached 83.14 lakh in 2015-16 from 83.13 lakh in 2014-15. Similarly, number of APL cardholders also increased slightly to 62.64 lakh in 2015-16, from 62.52 lakh in 2014-15. There are 5.82 lakh Anthyodaya Anna Yojana (AAY) card holders in 2015-16 which was 5.83 lakh in 2014-15. As on October 31, 2016, there were 83.19 lakh ration card holders in the State. Of the total, 62.54 lakh card holders are under APL, 14.80 lakh are under BPL and 5.85 lakh card holders are under AAY. During 2015-16 rice allotment to APL card holders was 4.64 lakh MT and BPL card holders 3.78 lakh MT. At the same period rice allotment to AAY card holders was 2.71 lakh MT (http://spb.kerala.gov.in).

In pursuance of the National Food Security Act 2013, Government of Kerala has decided to implement NFSA in the State with effect from 01.11.2016 and Kerala State Civil Supplies

Corporation (Supplyco) is entrusted to implement door step delivery of public distribution system (PDS) articles. Kerala has a universal public distribution coverage which has been instrumental in providing food security to most of its population. In addition, state run Supplyco is mandated to control the prices of 13 essential commodities by distributing it at subsidized prices through its 1406 stores spread across the state. Anthyodaya Anna Yojana is to provide 35 kg of food grains per month to the poorest of the poor families under BPL and is being implemented in the State since December 25, 2001. There were 5.82 lakh Anthyodaya Anna Yojana (AAY) card holders in 2015-16 which was 5.83 lakh in 2014-15. In 2015-16, the allotment of rice under AAY continued at the level of 2,50,260 MT. Govt. of India supplies food grains under AAY to the state at the rate of `3/kg and the State Govt. in turn provides it to the beneficiaries at the subsidized rate of `1/kg. Allotment of sugar to Kerala in 2015-16 was 53664 MT and that of Kerosene, 1,14,422 KL. Allotment of sugar is restricted to BPL/AAY card holders. Kerala State Civil Supplies Corporation (Supplyco) being the second line of Public Distribution System is instrumental in stabilizing the prices of essential commodities in the State. It was set up in 1974 to provide food security to the state. Kerala, being a consumer oriented state, controlling the undue rise in prices is not possible without a powerful public distribution system that intervenes in the open market effectively throughout the year. The system ensures the distribution of essential items to every person in the state through Fair Price Shops and Supplyco outlets. Mid-day Meal Programme in schools is implemented in the state with the financial support of State govt. and Central assistance. The programme was introduced in 1995 by the Ministry of Human Resources Development, Government of India, to provide nutritional support to primary school going children and to boost universalisation of primary education by increasing enrollment, retention and attendance. Supply co is entrusted with the responsibility of providing commodities to mid-day meal programme in the state (http://spb.kerala.gov.in).

"Hunger Free Kerala" is a new project launched by Government of Kerala intended to provide one time free meal a day for the needy. It aims to provide highly subsidized meals once a day to public at designated centers in a city and it is aimed at ensuring that no person in the city goes without at least one square meal a day. Kozhikode is the first city chosen for this. Now it's implemented in Malappuram, Kollam & Trivandrum as well. It is proposed to provide rice based meal with vegetable curry during lunch time. The patients will be given meal totally at free of cost at the hospitals/ specified location. Lunch will be provided at free of cost to general public including bystanders. About 2500 persons on an average are presently being provided free lunch in Kozhikode Medical College. The Scheme is being extended to Trivandrum Medical Colleges/ Government Hospitals also. Patients and bystanders will be free to come to these centers to take food during lunch time (http://www.socialsecuritymission.gov.in).

Causes of food insecurity in India

In rural and tribal areas: This is mainly due to lack of improvement in agricultural productivity owing to inadequate resources and markets needed to obtain agricultural stability. Lack of education and job opportunities in rural areas have further added to the problems. Climate change

has an impact on the agricultural productivity, which affects the availability of food items and thus, food security. Major impact of climate change is on rain fed crops, other than rice and wheat. For the tribal communities, habitation in remote difficult terrains and practice of subsistence farming has led to significant economic backwardness (Prakash Upadhay and C Palanivel, 2011).

In urban areas: The key issue which catalyzes the problem of food insecurity in urban areas and needs to be addressed is the large proportion of informal workforce resulting in unplanned growth of slums which lack in the basic health and hygiene facilities. A striking issue is that in India, all the privilege of the government schemes and programmes, aimed at helping the urban slum people, is enjoyed only by those slums that are notified. Ironically, around 50 % of the urban slums are not notified and thus are deprived of the government schemes. People from these un-notified slums have to buy their food from the common market at the competitive price and are devoid of the subsidized food made available through Public Distribution System (PDS) (Prakash Upadhay and C Palanivel, 2011).

In children and mothers: The children are food insecure because of factors attributed to overpopulation, poverty, lack of education and gender inequality. Poverty is a major cause as it limits the amount of food available to children. Overpopulation is linked to competition for food and can lead to malnutrition amongst children, especially in rural areas where access to food is limited. Lack of adequate knowledge amongst mothers regarding nutrition, breast-feeding and parenting is another area of concern. Gender inequality places the female child at a disadvantage compared to males and causes them to suffer more because they are last to eat and considered less important. Also, there is neglect in form of lack of preventive care (specifically immunization) and delays in seeking health care for disease. Girl children have far less opportunity of schooling than men and boys do. Even where women may have access to basic facilities such as primary health care and elementary education, lack of opportunities for higher education, vocational and professional training for women limits their capacity to become independent (Prakash Upadhay and C Palanivel, 2011).

Faulty food distribution system: Inadequate distribution of food through public distribution mechanisms (PDS i.e. Public Distribution System) is also a reason for growing food insecurity in the country. The Targeted Public Distribution System (TPDS) has the disadvantage in the sense that those people who are the right candidates for deserving the subsidy are excluded on the basis of non-ownership of below poverty line (BPL) status, as the criterion for identifying a household as BPL is arbitrary and varies from state to state. The often inaccurate classification as above poverty line (APL) and below poverty line (BPL) categories had resulted in a big decline in the off take of food grains. Besides this, low quality of grains and the poor service at PDS shops has further added to the problem (Prakash Upadhay and C Palanivel, 2011).

Unmonitored nutrition programmes: Although a number of programmes with improving nutrition as their main component are planned in the country but these are not properly

implemented. For instance, a number of states have yet to introduce the Mid Day Meal Scheme (MDMS). In states such as Bihar and Orissa where the poverty ratio is very high, poor implementation of nutritional programmes that have proven effectiveness has a significant impact on food security (Prakash Upadhay and C Palanivel, 2011).

Lack of intersectoral coordination: Lack of coherent food and nutrition policies along with the absence of intersectoral coordination between various ministries of government such as Ministry of Women and Child Health, Ministry of Health and Family Welfare, Ministry of Agriculture, Ministry of Finance etc have added to the problem (Prakash Upadhay and C Palanivel, 2011).

Gender and Food and nutrition security

Female workers play an important role in agriculture and thus in food production. They average 43% of the agricultural work force in developing countries, ranging from about 20% in Latin America to almost 50% in Eastern and South-eastern Asia and sub-Saharan Africa (FAO, 2012). Women are also responsible to feed their families, and when the self produced food is low in volume, women must find the financial means to buy market food. Yet many women in developing countries lack control over the household income, as well as income generation possibilities (GIZ, 2013).

Research in Africa, Asia and Latin America has found that improvements in household food security and nutrition are associated with women's access to income and their role in household decisions on expenditure as women tend to spend a significantly higher proportion of their income than men on food for the family. Women's wage income from farm and non-farm employment and from other income-generating opportunities is of particular importance for landless and near-landless rural households. Women's purchasing power may not only be used to buy food and other basic assets for themselves and their families, but also to pay for the inputs used in food production. Since food crops are consumed, the inputs for these have to be provided from income earned in other agricultural enterprises or non-farm income generating activities. Thus, to improve food production for the household, greater priority has to be given to increasing women's participation in market production as well as other income-generating ventures (http://www.fao.org).

In most rural areas, the two most time consuming activities of women are fetching water and firewood. Widespread deforestation and desertification mean that these tasks are becoming more burdensome and are preventing rural women from devoting more time their productive and income – generating tasks. In some cases, women also pass part of the burden of these activities to their children, usually female children. Relieving women from such drudgery as fetching water and firewood and food processing would allow them to have more time for productive work and would enable their children to attend school. Thus development interventions to reduce women's drudgery can significantly enhance their contribution to household food security. The provision of water supplies; the introduction of light transport facilities for carrying firewood, farm produce and other loads; the introduction of labour saving agricultural tools, the introduction of

grinding mills and other crop processing equipment are crucial means of freeing women's time. Such technologies not only create possibilities of women to enter into more income-generating activities, but also help in reducing their stress and in improving the health and nutrition of women and children (FAO, 1990).

Women face many obstacles in attaining the adequate food and nutrition security. In the 21st century India, women are still discriminated against with lesser access to education, healthcare, higher unaccounted working hours and responsibilities, and so on which translates to low birth weight of babies, lower information level in families in terms of nutrition and well being, and ultimately, lower living standards (Mahendra et.al, 2010).

Nutrition education and food and nutrition security

Nutrition is coming to fore as a major modifiable determinant of chronic disease with strong effects, both positive and negative on health throughout life (WHO, 2003). Nutrition is defined as the study of foods in relation to the needs of living organisms. (Sharma and Caralli, 2011). Nutrition education is that form of education that provides people with knowledge, skills and confidence to change harmful food habits while adopting positive and lasting healthy nutrition practices. According to Food and Agricultural Organization (FAO, 1997), malnutrition for the poor a question of lack of food and knowledge and for the rich lack of knowledge of basic nutrition and application - knowledge of what to eat and how to prepare food. This calls for nutrition education. Nutrition education can be defined as a planned use of any educational process to modify and improve food and nutrition behavior in the pursuit of improved health.

Nutrition education goes beyond simple accumulation of knowledge to positive action and change in behavior. As a medium of change in behavior, nutrition education provides awareness on the relationship between diet and health, nutritional requirements of groups and individuals, nutritional value of food, making appropriate food choices and purchases, storage, processing and presentation of food, conservation of nutrients during cooking and nutritional needs of family members in sharing food. Nutrition education shall be designed to help recipients learn; nutritional knowledge, including, but not limited to, the benefits of healthy eating, nutritional deficiencies, principles of health weight management, the use and misuse of dietary supplement, safe food preparation, handling and storage; nutrition related skills, including, but not limited to, planning a healthy meal, understanding and using food labels, assessing and critically evaluating nutrition information, misinformation and commercial food advertising; how to assess and manage one's personal eating habits, set goals for improvement and achieve these goals; and How to communicate, make healthy decisions and advocate for developing life- long healthy habits (Nnennia, 2014).

According to Teresa and Cheryl (n.d), the nutritional status of a country's population is an important indicator of national development. The causes of poor food habits are complex. The

simple provision of food or supplements does little to resolve long-term nutritional problems. Nutrition education and communication can have a significant impact on a population when there is political stability, social coherence, and a favorable economic climate. Nutrition education and communication provide people with the knowledge, know-how, motivation, and reinforcement to empower them to effectively address their own long-term food and nutrition problems.

Strategies for utilization of nutrition education to improve household nutrition

The fundamental objective of education in nutrition is to help individuals to establish food habits and practice that are consistent with the nutritional needs of the body and adapted to the cultural pattern and food resources of the area in which they live (https://sol.du.ac.in). Some strategies for utilization of nutrition education to improve household nutrition are as follows:

1. **Recognition and Promotion of Local Foods:** Local foods are those that are acceptable to a community, through habit and culture, as appropriate and desirable source of food (FAO, 1998). People are used to their local foods, they know how to grow them, make dishes from them and enjoy eating them. Nutrition education would be more effective and sustainable if households are helped to identify nutritious unexploited or underutilized local foods.
2. **Promoting Missed Diet or Diversification of Diets:** No single food supplies all the nutrients that are required for a healthy balance diet, except mother's milk during the first few months of life. The quality of diet in households can be improved by mixing variety of food at each meal.
3. **Promotion of home grown fruits and vegetables:** In order to ensure sustainability of household nutrition, home growing of fruits and vegetables should be encouraged. Home grown fruits and vegetables are a good source of micronutrients for the family. They are usually referred to as natural pharmacy due to their abundant richness in antioxidants and phytochemicals which have medicinal properties. Pamplona-Roger (2004) stated that a healthy meal begins with raw vegetables in the form of a salad. The cost of fruits and vegetables in the market is rapidly increasing due to increased demand based on their nutritional importance. Growing them at home would make them handy and also reduce the cost of having them as regular part of the family's meal
4. **Preservation of food:** Nutrition education should also encourage food preservation. Seasonality makes it difficult to have food all year round. So at the end of the raining season, most household preserve some vegetables, grains, legumes and others that are regularly consumed to ensure continued food supply. The common method of preservation is sun drying and foods that are commonly preserved are local vegetables like pumpkin, leaves, grains like maize, millet, sorghum, rice as well as legumes.
5. **Encouraging eating fruits and vegetables raw whenever possible:** Eating fruits and vegetables raw is the best way to take advantage of their nutritional and medicinal properties as cooking and other forms of processing lead to considerable loss of most of the vitamins and crispiness. All vegetables with the exception of tubers, mushrooms and fruits such as eggplant can be eaten raw in their natural state (Pamplona-Rogers, 2004). If it is safe to eat any fruit or vegetable raw do not choose to cook it.

6. **Giving special considerations to vulnerable members of the group:** The most vulnerable groups are children under five years of age, women of child bearing age, pregnant mothers, school going children, the elderly and the disabled. In planning and sharing family meal, the needs of these vulnerable groups should be taken into consideration
7. **Adoption of correct preservation and cooking methods:** Processing include practices such as cutting, chopping, milling, fortification, canning, drying, freezing while cooking involves treating raw food by applying heat. The quality of food in terms of nutritional value depends eventually on the type and severity of processing and method of cooking adopted.

Programmes for food and nutrition security

1. **Integrated Child Development Service Scheme:** Launched on 2nd October 1975, it is one of the flagship programmes of the Government of India and represents one of the world's largest and unique programmes for early childhood care and development. It is the foremost symbol of country's commitment to its children and nursing mothers, as response to the challenge of providing pre-school non-formal education on one hand and breaking the vicious cycle of malnutrition, mortality, reduced learning capacity and morbidity on the other. The beneficiaries under the scheme are children in the age group of 0 -6 years, pregnant women and lactating mothers. Objectives of the scheme are: 1) to improve the nutritional and health status of children in the age-group 0 – 6 years; 2) to lay the foundation for proper psychological, physical and social development of the child; 3) to reduce the incidence of mortality, morbidity, malnutrition and school dropout; 4) to achieve effective co-ordination of policy and implementation amongst the various departments to promote child development; and 5) to enhance the capacity of the mother to look after the normal health and nutritional needs of the child through proper nutrition and health education. It offers six services: supplementary nutrition, nutrition and health education, preschool non-formal education, immunization, health check-ups and referral services (http://www.icds-wcd.nic.in).
2. **Midday meal programme:** Mid Day Meal in schools has had a long history in India. In 1925, a Mid Day Meal Programme was introduced for disadvantaged children in Madras Municipal Corporation. By the mid 1980s three States viz. Gujarat, Kerala and Tamil Nadu and the UT of Pondicherry had universalized a cooked Mid Day Meal Programme with their own resources for children studying at the primary stage by 1990-91 the number of States implementing the mid day meal programme with their own resources on a universal or a large scale had increased to twelve states. Mid-day meal (MDM) is a wholesome freshly-cooked lunch served to children in government and government-aided schools in India. It aims to: 1) avoid classroom hunger; 2) increase school enrolment; 3) increase school attendance; 4) improve socialization among castes; 5) address malnutrition 6) empower women through employment (https://www.akshayapatra.org).
3. **Applied nutrition programme**: The Applied Nutrition Programme (ANP) was introduced as a pilot scheme in Orissa in 1963 which later on extended to Tamil Nadu and Uttar Pradesh with the objectives of: a) promoting production of protective food such as vegetables and fruits

and b) ensure their consumption by pregnant and nursing mothers and children. During 1973, it was extended to all the state of the country. The nutritional Education was the main focus and efforts were directed to teach rural communities through demonstration how to produce food for their consumption through their own efforts. The beneficiaries are children between 2-6 years and pregnant and lactating mothers. Nutrition worth of 25 paise per child per day and 50 paise per woman per day are provided for 52 days in a year. No definite nutrient content has been specified. The idea is to provide better seeds and encourage kitchen gardens, poultry farming, beehive keeping, etc., but this programme does not produced any impact. The community kitchens and school gardens could not function properly due to lack of suitable land, irrigation facilities, and low financial investment (http://www.nihfw.org).

4. **Balwadi nutrition programme:** The Balwadi Nutrition Programme (BNP) was started in 1970-71. This programme aims to supply about one-third of' the calorie and half of the protein requirements of the pre-school child as measure to improve nutritional and health status. Beneficiaries are pre-school children between the age of 3 to 5 years. Priority is given to children belonging to low income group. The supplementary nutrition consisting 300 calories and 10 g of protein per child per day is given for 770 days a year. Apart from nutritional supplementation, the activities for social and emotional development are undertaken at balwadis (http://nutrition-health-education.blogspot.in).
5. **National anemia prophylaxis programme:** The programme was launched in 1970 to prevent nutritional anemia in mothers and children. Under this programme, the expected and nursing mothers as well as acceptors of family planning are given one tablet of iron and folic acid containing 60 mg elementary iron which was raised to 100 mg elementary iron, however folic acid content remained same (0.5 mg of folic acid) and children in the age group of 1-5 years are given one tablet of iron containing 20 mg elementary iron (60 mg of ferrous sulphate and 0.1 mg of folic acid) daily for a period of 100 days. This programme is being taken up by Maternal and Child Health (MCH) Division of Ministry of Health and Family Welfare. Now it is part of Reproductive Child Health (RCH) programme (http://www.rfhha.org).
6. **National goiter control programme:** The Government of India launched a 100 per cent centrally assisted National Goiter Control Programme (NGCP) in 1962. In August, 1992 the National Goiter Control Programme (NGCP) was renamed as National Iodine Deficiency Disorders Control Programme (NIDDCP) with a view of wide spectrum of Iodine Deficiency Disorders like mental and physical retardation, deaf mutism, cretinism, still births, abortions. The main goal is to ensure 100 % consumption of adequately iodized salt (http://dghs.gov.in).

Rationale of the study

From the above discussion it was found that food and nutrition security is very important in our life. Food and nutrition are the basic human need and a prerequisite to a healthy life. Intake of the right kinds and amounts of food can ensure good nutrition and health, which may be evident in our appearance, efficiency and emotional well-being. The study of science of nutrition deals with what nutrients we need, how much we need, why we need these and where we can get them.

Information about these things is very essential to life of human beings. Lack of awareness about the dietary requirements and nutritive value of different food is the main cause for prevailing malnutrition among school children, pregnant women, lactating mother and other vulnerable sections of the community. Nutrition education is to help individuals to establish food habits and practice that are consistent with the nutritional needs of the body. Lack of knowledge will create many health problems in their daily life, such as malnutrition, it is an undesirable kind of nutrition leading to ill health. It results from a lack, excess or imbalance of nutrients in the diet and it includes over nutrition and under nutrition. In rural areas knowledge about nutrition related things are low because literacy level of people comparatively lower than urban areas. People will get knowledge about balanced diet, nutritious foods and their impacts on their life from various sources, such as TV/ radio, Newspaper, books, Extension agents (Anganwadi workers, ASHA workers), etc. This information will make many impacts in their life. So there is need for analyzing different information sources and their awareness level about food and nutrition security.

Objectives

1. To identify the various channels of information for food and nutrition security of the rural families
2. To access their impacts on the food and nutrition security of the families.
3. To identify the perception of rural families about information / services provided towards food and nutrition security.

Research Methodology

Locale of the study: Kerala is the southernmost state of India. It was formed on 1 November 1956 following the state reorganization Act by combining Malayalam speaking regions. Kerala is the thirteenth largest Indian state by population (Census, 2011). It is divided into 14 districts with the capital being Thiruvananthapuram, which is the largest city in the state. As of 2015, Kerala has a Human Development Index (HDI) of 0.712, which is in the high category ranking it first in the country, which is better than that of many developed countries. Because comparatively higher spending by government on primary level education, health care and the elimination of poverty. According to the 2011 census, Kerala has highest literacy rate (93.91%) compared to the national literacy rate of 74.04%. Thiruvananthapuram and Kollam district was selected as the locale for the present study. Rural areas of these districts are used for the study. Rural areas are randomly selected for the study.

Selection of samples: According to Best and Khan (2006), a sample is a proportion of the population that is selected for observation and analysis. By observing the characteristics of the sample, one can make certain inferences about the characteristics of the population from which it is was drawn.

Twenty rural families in each district were selected as the samples for the study. In each family, one woman and one man were selected for the study. Information sources and awareness level of men and women are entirely different. Random sampling method was used for the selection of samples.

Study design: Interview method was used for the collection of data. Interviewing is one of the prominent methods of data collection. It may be defined as a two-way systematic conversation between an investigator and an informant, for obtaining information relevant to a specific study (Krishnaswami and Ranganatham, 2014).

Interview Schedule: A detailed and structured interview schedule was developed to collect the data regarding the baseline information of the respondents, it comprised of questions regarding their age, type of family, educational qualification, sources of information about food and nutrition security, their impact on their daily life and perceptions of respondents about the information and services related to food and nutrition security.

Collection of data: Both primary and secondary data were collected for the study. Primary data was collected using interview method. The secondary data was collected by reviewing the literature pertaining to the study.

Statistical analysis and interpretation of data: The collected data was tabulated, analyzed and interpreted using percentage analysis.

Results and Discussions

Nutrition is the science that interprets the interaction of nutrients and other substances in food in relation to maintenance, growth, reproduction, health and disease of an organism. It includes food intake, absorption, assimilation, biosynthesis, catabolism and excretion. For humans, a healthy diet includes preparation of food and storage methods that preserve nutrients from oxidation, heat or leaching, and that reduce risk of food borne illness. Lack of knowledge about nutrition negatively affects the healthy life of human beings.

Socio economic profile of the respondents

Socio economic profile of the respondents includes the data regarding to their age, type of family, educational qualification, monthly income of the family and food habit to give better understanding about socio economic condition of the respondents that influence their choice of food and nutrition security of the households. This clearly depicted in table 2

Table 2 : Socio economic profile of the respondents

Training needs	Thiruvananthapuram (n = 40)	Kollam (n = 40)
Age		
18 – 35 yrs.	27 (67.5)	10 (25)
36 – 60 yrs.	13 (32.5)	25 (62.5)
Above 60 yrs.	0 (0)	5 (12.5)
Type of family		
Nuclear family	32(80)	30 (75)
Joint family	8 (20)	10 (25)
Educational Qualification		
Below SSLC	6 (15)	8 (20)
SSLC	14 (35)	19 (47.5)
Plus two	9 (22.5)	6 (15)
Graduation	9 (22.5)	6 (15)
Above graduation	2 (5)	1 (2.5)
Monthly income of the family		
Less than Rs 1000	4 (10)	20 (50)
Rs 1000 - 5000	8 (20)	8 (20)
Rs 5000 – 10000	16 (40)	10 (25)

Above Rs 10000	12 (30)	2 (5)
Food habit		
Vegetarian	3 (7.5)	4 (10)
Non-vegetarian	37 (92.5)	36 (90)

(* Numbers in parenthesis are percentages)

Majority of the respondents in Thiruvananthapuram district (67.5 %) belonged to the age group of 18 – 35 years. But in the Kollam district, majority of them belonged to the age group of 36 – 60 years. Considering the type of family of the respondents, majority of them belonged to nuclear family in both the district. In the case of educational qualifications of the respondents, majority of them in both the district studied up to SSLC (47.5 % in Kollam district and 35 % in Thiruvananthapuram district). Monthly income of the family was comparatively low in Kollam district because 50 percent of the respondents had monthly income less than Rs 1000. But in Thiruvananthapuram district, majority of the respondents had monthly income between Rs 5000 – 10000 (40 %) and some of them had monthly income above Rs 10000 (30 %). Non-vegetarianism was the preferred food habit in both the districts.

Awareness about food and nutrition security

Food and nutrition security is achieved, if adequate food (quantity, quality, safety, socio-cultural acceptability) is available and accessible for and satisfactorily utilized by all individuals at all times to live a healthy and happy life. So Awareness about food and nutrition security among the family members is very essential.

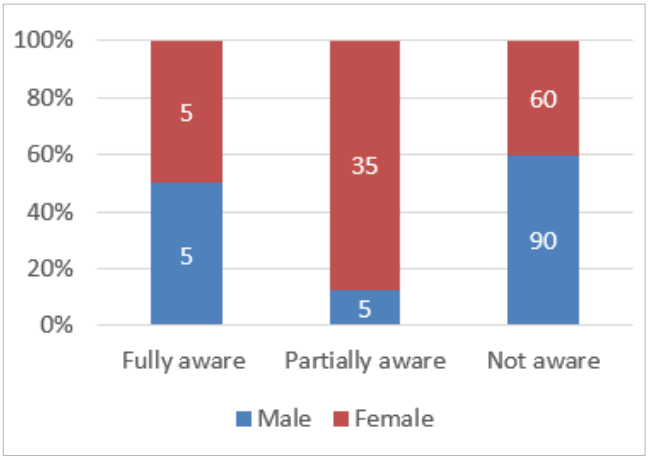

Fig. 1 (a) Awareness about food and nutrition security in Thiruvananthapuram

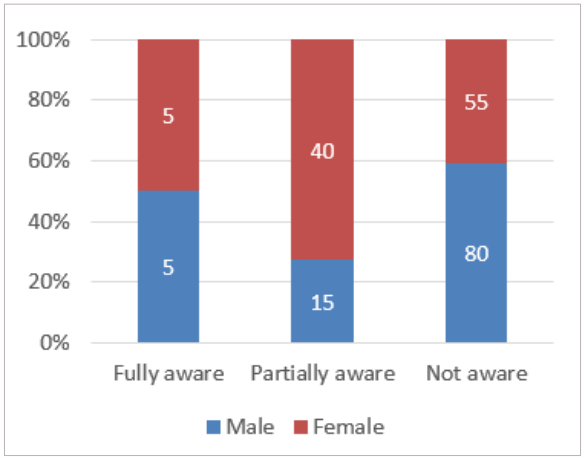

Fig. 1 (b) Awareness about food and nutrition security in Kollam

Fig. 1 (a) and Fig. 1(b) shows the awareness about food and nutrition security among the respondents in Thiruvananthapuram and Kollam district respectively. Majority of the respondents were not aware about food and nutrition security, though comparatively women had more awareness than men in

both the district. Women got information related to food and nutrition security through various sources such as Anganwadi workers, family members though passed on traditional knowledge, and also from their practical experience in kitchen. Meetings and awareness classes conducted about nutrition was only attended by women. So their awareness about food and nutrition security was comparatively higher than that of men.]

Awareness about basic five food groups

The basic five food groups are cereals, grains and their products, pulses and legumes, milk and meat products, fruits and vegetables and fats and sugars. They provide the nutrients essential for life and growth. These foods are also known as 'everyday foods'. Each of the food groups provides a range of nutrients, and all have a role in helping the body function. In particular, vegetables, legumes and fruits protect against illness and are essential to a healthy diet.

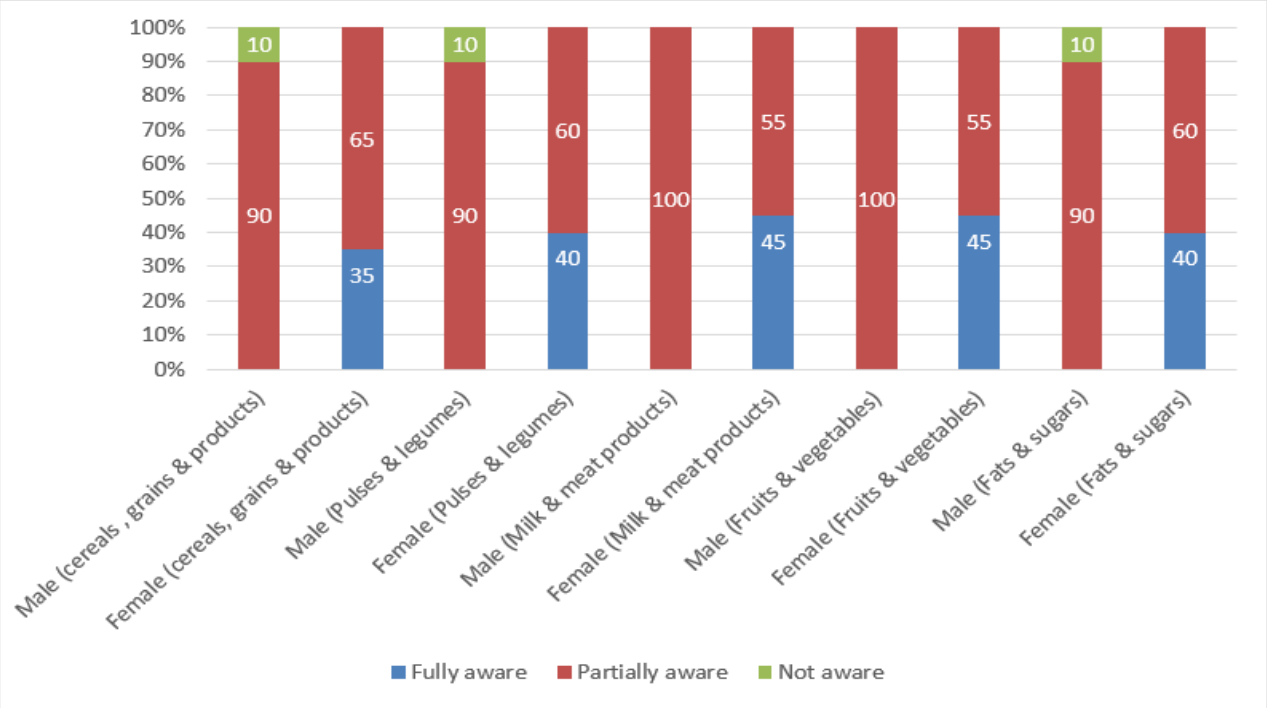

Fig. 2 (a) Awareness about basic five food groups in Thiruvananthapuram

Fig. 2 (a) and Fig. 2 (b) shows that the results regarding the awareness about basic five food groups among the respondents in Thiruvananthapuram and Kollam district respectively. It shows that majority of them were aware about basic five food groups because these five basic food groups are used every day in the diet. The result also shows that in both the district, women respondents were more aware about basic five food groups than men. Being mostly involved in food preparation and other household things related to food preparation, they are more aware about food and nutrition. Information about nutrition in the form of traditional knowledge is also passed on to the younger generations, mostly female. They also get information about food and nutrition from different sources such as relatives and friends, books, and media (newspapers and TV and radio). Anganwadis were also important source for information on food and nutrition security.

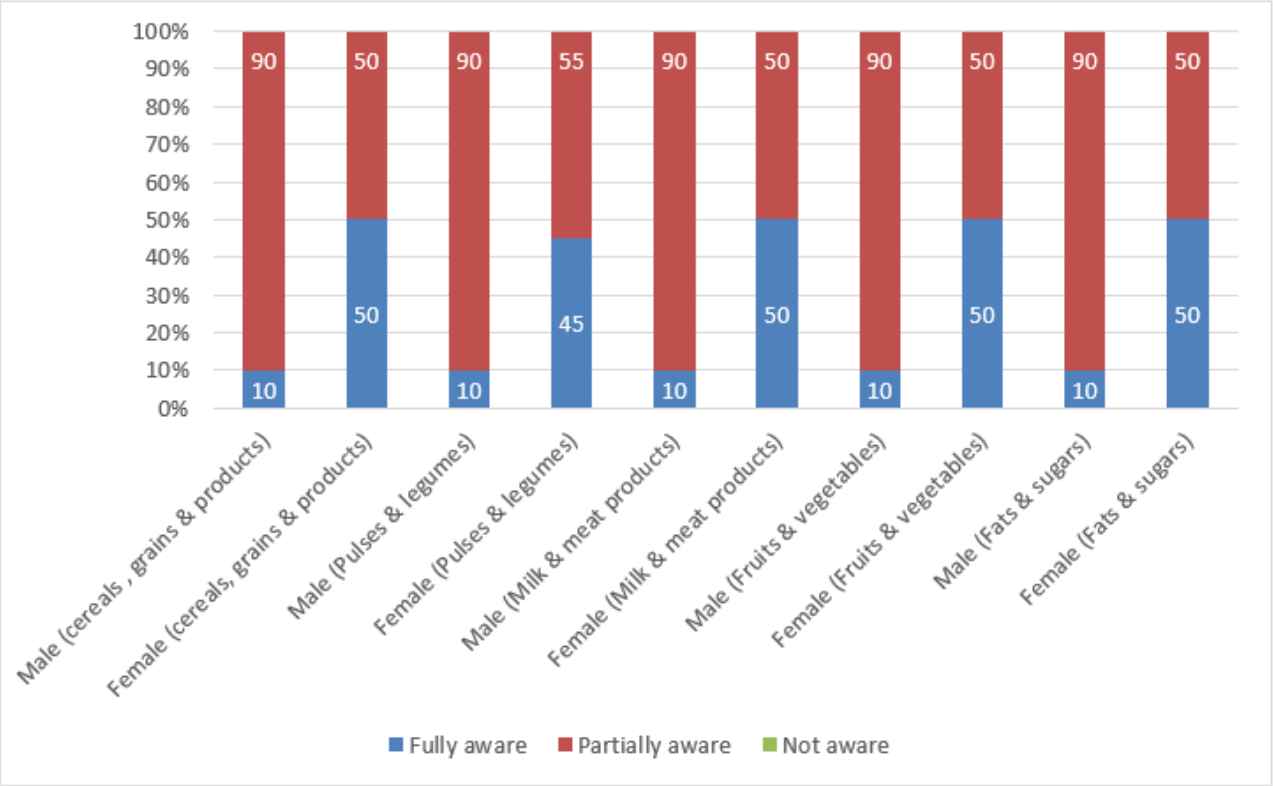

Fig. 2 (b) Awareness about basic five food groups in Kollam

Sources of information about basic five food groups

Information about the basic five food groups are very essential to the people as they are the common food for the daily consumption. It helps to maintain growth and metabolic activities of the body. People get information about basic five food groups through various sources such as, books and newspaper, friends and relatives, TV/radio, school going children and daily experiences etc. Table 2 shows that sources of information about basic five food groups among the respondents in Thiruvananthapuram and Kollam district.

Table 3 : Sources of information about basic five food groups

Sources of information	Basic five food Groups									
	Cereals, grains and their products		Pulses and legumes		Milk and meat products		Fruits and vegetables		Fats and sugars	
	Male n = 20	Female n = 20	Male n = 20	Female n = 20	Male n = 20	Female n = 20	Male n = 20	Female n = 20	Male n = 20	Female n = 20
Thiruvananthapuram										
Anganwadi Worker	0 (0)	1 (5)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Asha Worker	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Books & newspaper	9 (45)	17 (85)	9 (45)	17 (85)	9 (45)	17 (85)	9 (45)	16 (80)	9 (45)	17 (85)
Internet	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
TV / Radio	16 (80)	6 (30)	14 (70)	5 (25)	18 (90)	6 (30)	16 (80)	5 (25)	14 (70)	4 (20)
Friends & Relatives	4 (20)	2 (10)	4 (20)	2 (10)	4 (20)	2 (10)	4 (20)	3 (15)	5 (25)	2 (10)
School going children	0 (0)	3 (15)	0 (0)	2 (10)	0 (0)	2 (10)	0 (0)	1 (5)	0 (0)	1 (5)

Kollam										
Anganwadi worker	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Asha Worker	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Books & newspaper	15 (75)	13 (65)	15 (75)	13 (65)	15 (75)	13 (65)	15 (75)	13 (65)	15 (75)	13 (65)
Internet	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)
TV / Radio	6 (30)	4 (20)	7 (35)	7 (35)	7 (35)	4 (20)	6 (30)	4 (20)	6 (30)	4 (20)
Friends & Relatives	3 (15)	10 (50)	4 (20)	4 (20)	4 (20)	11 (55)	4 (20)	11 (55)	4 (20)	11 (55)
School going children	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)

(Note : Numbers in parenthesis are percentages)

In Thiruvananthapuram district, Male respondents got information mainly from TV/radio (80 to 90 %), while female respondents got information mainly from books and newspaper (80 to 85 %). Because male respondents of the families spend more time for entertainment through media channels, they accessed their information from the same sources. In TV and radio, there were lots of programmes related to food and they also give tips for healthy diets. 'Taste Time', 'Nalla Ruchi', 'Thaninadan', 'Magic Oven', 'Pachamulaku' and 'Shaappile kariyum naavile ruchiyum' are different the programmes telecasted in television channels related to food and nutrition. In radio, different FM channels also give health tips and cooking tips to the audience. In the case of female respondents, their reading habits were high compared to male respondents. They read magazines like 'Vanitha' and 'Grihlekshmi' where they got lots of information related to basic five food groups. In Kollam district, both the male and female respondents got information about basic five food groups mainly from books and newspaper. They also read magazines like 'Aarogyam', 'karshakashree', 'Aarogyamasika', etc. Newspapers also contain information related to foods and the respondents routinely read local as well as national newspapers.

Awareness about health benefits of basic five food groups

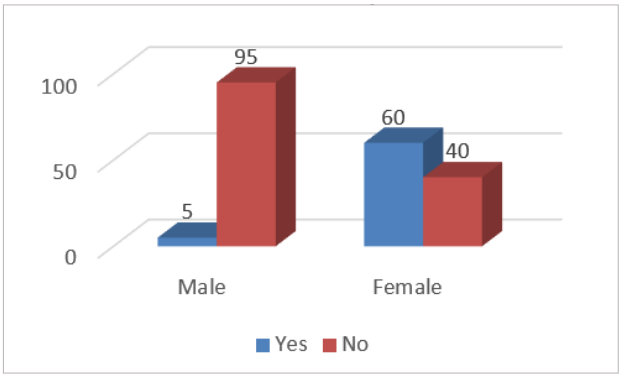

Fig. 3 (a) Awareness about health benefits of five food groups in Thiruvananthapuram

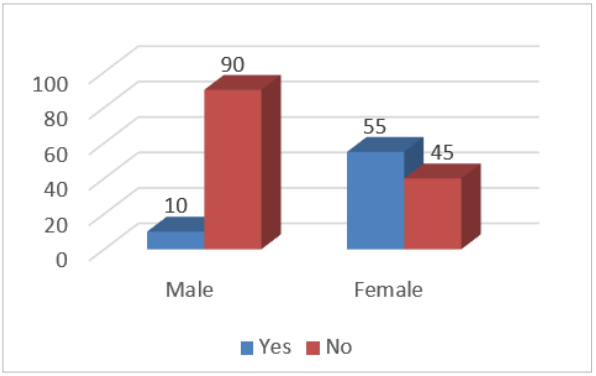

Fig. 3 (b) Awareness about health benefits of five food groups in Kollam

Basic five food groups have many health benefits and are important to meet daily nutrition requirement. It is essential for growth and development. It contains many nutrients such as, carbohydrates, proteins, vitamins, minerals, fats, etc. They are very essential for metabolic activities of the body. Basic five food groups have three major functions - energy giving, body building and regulatory and protective

function. Fig. 3 (a) and Fig. 3 (b) shows that results of awareness about basic five food groups among the respondents of Thiruvananthapuram and Kollam district.

The women were more aware about health benefits of basic five food groups (60 % in Thiruvananthapuram district and 55 % in Kollam district) while majority of the male respondents were not aware about health benefits of basic five food groups. The women had access to more information sources compared to men. Major sources were health and family related books or magazines ('Aarogyam', 'Vanitha' and 'Grihlekshmi') and awareness classes conducted in anganwadi. These awareness classes were very informative to the women. Women also got information from food related programmes that are telecasted in TV such as "Nalla ruchi" and 'Taste Time'. These programmes provided much good information related to health benefits of basic five food groups.

Awareness about balanced diet

A balanced diet is a key to healthy lifestyle. It is one which provides all the nutrients in required amounts and proper proportions. Nutrients that we obtain through food have vital effects on physical growth and development, maintenance of normal body function, physical activity and health. It can easily be achieved through a blend of the five basic food groups. The quantities of foods needed to meet the nutrients requirements vary with age, gender, physiological status and physical activity. In addition, a balanced diet should provide other non-nutrients such as dietary fibre, antioxidants and phytochemicals which bestow positive health benefits (vikaspedia.in, 2018). Fig. 4 (a) and fig. 4 (b) shows results regarding the awareness about balanced diet among the respondents in Thiruvananthapuram and Kollam district.

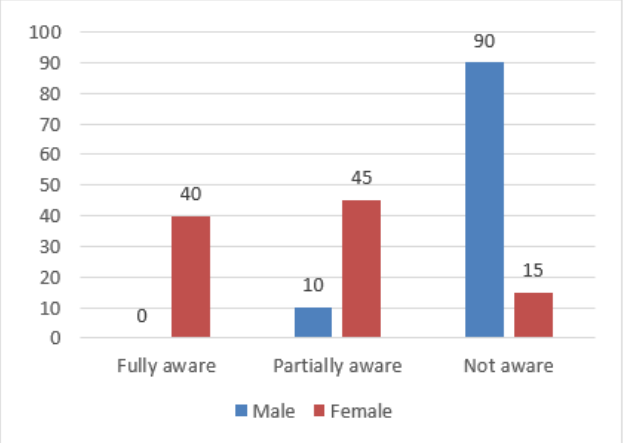

Fig. 4 (a) Awareness about balanced diet in Thiruvananthapuram

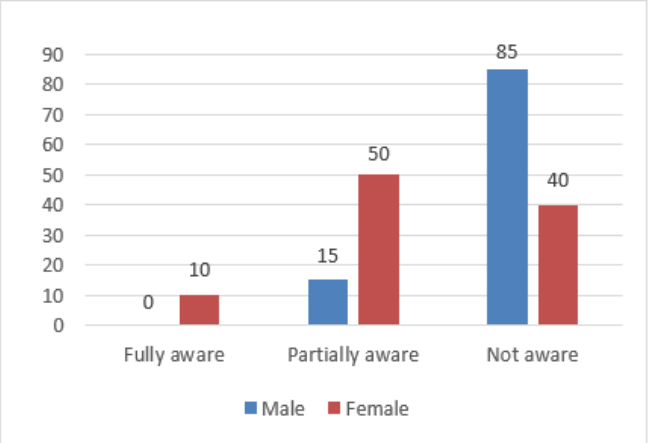

Fig. 4 (b) Awareness about balanced diet in Kollam

In both the district, majority of the male respondents were not aware about balanced diet while female respondents had more awareness. Anganwadi workers, Asha workers, and friends and relatives were the major sources of information for the respondents. Through Anganwadi, they got information about importance of balanced diet among children, pregnant women, lactating mother, etc. Comparing both the district, women in Thiruvananthapuram district had more awareness than Kollam district.

Because in Thiruvananthapuram district, women got required information from anganwadi. But in Kollam district, many women respondents do not participate in the classes conducted by anganwadi. Because they are unaware about that classes. Other reasons are some of respondents belonged to above 60 years. Through anganwadi, elder people do not get any services.

Sources of purchase of food items

While information and awareness are important for healthy food habits, access to the food decided the consumption, and ultimately the nutrition security of rural households. Affordability is also considered important to access for consumption, in which public distribution system plays an important role.

Public distribution system, local wholesale and retail stores, Supply co, Maveli store and Triveni store are main sources of purchasing food items among respondents in Thiruvananthapuram and Kollam district.

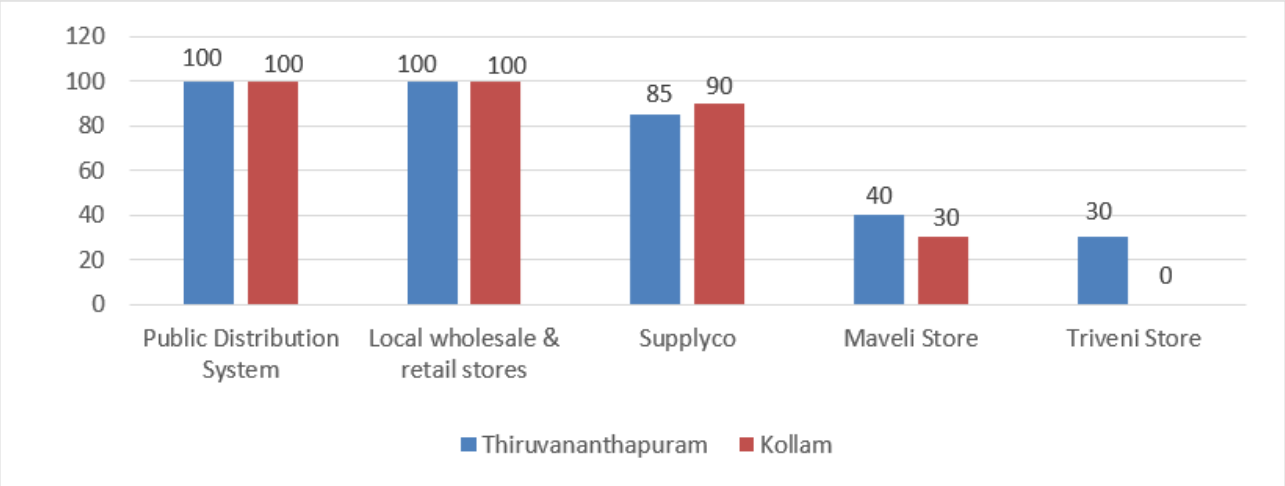

Fig. 5 Sources of purchase of food items (multiple responses)

Public distribution system is to distribute subsidized food and non-food items to the poor people. Major commodities distributed include staple food grains such as wheat and rice, sugar, and kerosene through a network of fair price shops (also known as rations shops).

The Kerala State Civil Supplies Corporation Limited is also known as Supply co is another source of quality food items to the people. The main motto behind the Supply co was to regulate the rise in prices of essential commodities in the open market. Under the Government programme of market intervention, pulses and spices are purchased and sold to the consumers at subsidized prices fixed by the Government.

Maveli stores are a branch of Supply co. Through Maveli store, people get essential commodities in subsidized prices. It also markets its own branded products of tea, coffee, milled wheat products, curry products, iodized salt, washing soaps and detergents.

Triveni supermarket is a chain of retail supermarkets operating in the co-operative sector in the state of Kerala. It was controlled by Govt. of Kerala, hence this chain is in principle used as a form of governmental intervention in the retail market in the state to control and limit retail prices.

Fig. 5 shows the sources of purchase of food items among the respondents in Thiruvananthapuram and Kollam district. All the respondents in both the district purchased food items from public distribution system and local wholesale and retail stores. Majority of the respondents also purchased from Supply co. Because Supply co is working well in both the districts. Through this they got food items in subsidized price. Some of the respondents told at the time of survey, sometimes they got bad quality of food items from Maveli store. Respondents in Kollam district do not purchase from Triveni store. Because Triveni stores were not working properly in the Kollam district. But in Thiruvananthapuram district, they were working well.

Subsidies from PDS

A Public distribution shop, also known as fair price shop (FPS), is a part of India's public system established by Government of India which distributes rations at a subsidized price to the poor. They sell wheat, rice and sugar at a price lower than the market price called issue price. To buy items one must have a 'Ration Card'. Two types of ration cards, such as BPL card and APL card. Under Public distribution system (PDS) Scheme, each family below the poverty line is eligible for 35 kg of rice or wheat every month, while a household above the poverty line is entitled to 15 kg of food grain on a monthly basis. Public distribution system also distributes subsidized non-food items.
Fig. 6(a) and fig. 6(b) shows that 70 percent of the respondent's got subsidies from PDS in Thiruvananthapuram district while 95 percent of the respondents got subsidies in Kollam district. Because in Kollam district, majority of the respondents comes under below poverty line. So they got subsidies from the public distribution system.

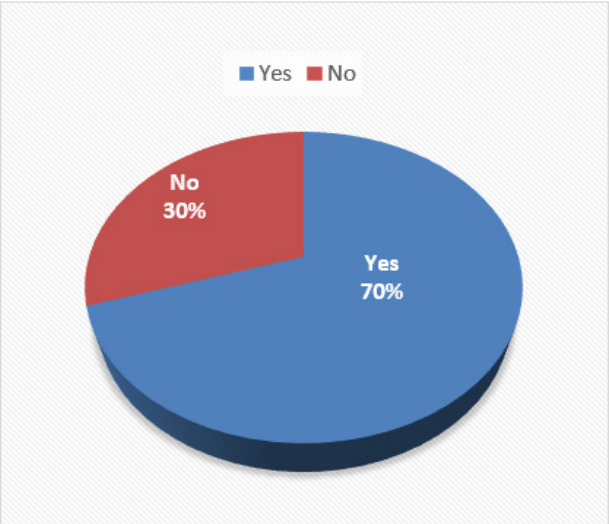

Fig. 6 (a) Respondents get subsidies from PDS in Thiruvananthapuram

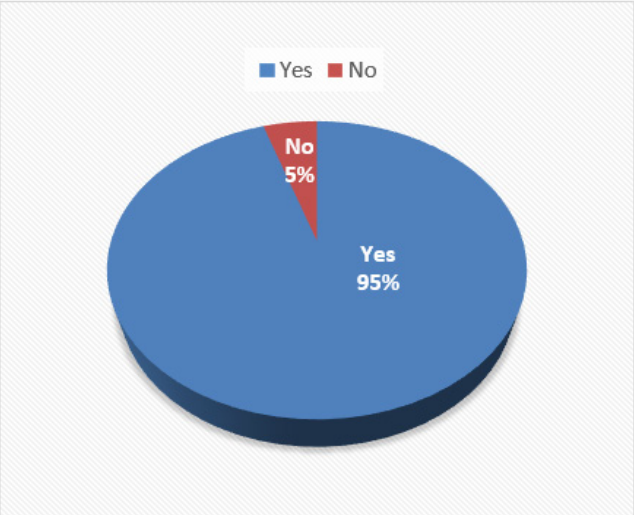

Fig. 6 (b) Respondents get subsidies from PDS in Kollam

Kitchen garden in Home

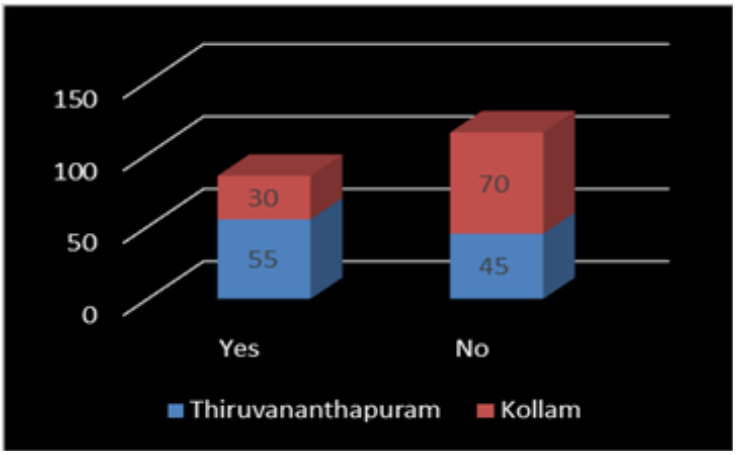

Fig. 7 Kitchen garden in home

Kitchen gardens are used to grow vegetables and other plants useful for human consumption. It is usually located to the rear of property in the back garden or back yard. Many families have kitchen and vegetable gardens that are used to produce food. With worsening economic conditions and increased interest in organic and sustainable living, many people are turning to vegetable gardening as a supplement to their family's diet. Fig. 7 highlights respondents who had kitchen garden in their home. It was found that 55 percent of the respondents in Thiruvananthapuram district had kitchen garden in their home and 30 percent of the respondents in Kollam district also had kitchen garden in their home. Respondents in Thiruvananthapuram district had more interest in growing kitchen garden in their home. They were encouraged mainly from the activities of residence associations. Residence associations promote the making of kitchen garden in home. They also provide seeds and other materials that are needed for growing kitchen garden at lower cost. But in Kollam district, people did not get this type of encouragements.

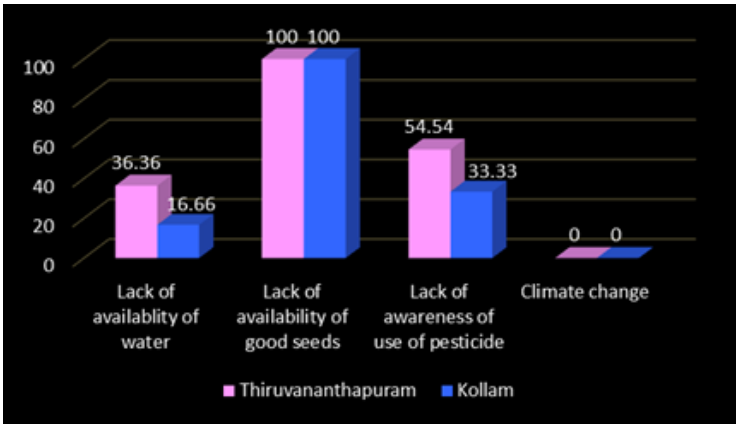

Fig. 8 Major constraints faced in kitchen garden

Kitchen gardens played a vital role in the life of rural community to meet dietary requirements. It offered great potential for improving household food security and alleviating micronutrient deficiencies. The respondents faced many constrains in maintaining of kitchen garden like availability of water, availability of good seeds, lack of awareness about the use of pesticide, and adverse conditions because of climate change. Because of these reasons, yields from kitchen garden were decreased. Fig 8 highlights the major constraint faced by the respondents of both district was lack of availability of good seeds for their kitchen garden because seeds received from various sources lost their viability. This resulted in low production. Lack of awareness about pesticide was also an important problem among the respondents as attack of insects is very high in kitchen garden. The respondents were aware about the health hazards of chemical pesticides and preferred organic ones. But lack of information about organic pesticides also posed a challenge in their scientific and judicious use.

Food accessibility problem

Food accessibility refers to the access by individuals to adequate resources for acquiring appropriate foods for a nutritious diet. It addresses whether the households or individuals have enough resources to acquire appropriate quantity of quality foods, it encompasses their income, expenditure and buying capacity. Fig. 9 highlights the food accessibility problem among the respondents in Thiruvananthapuram and Kollam district.

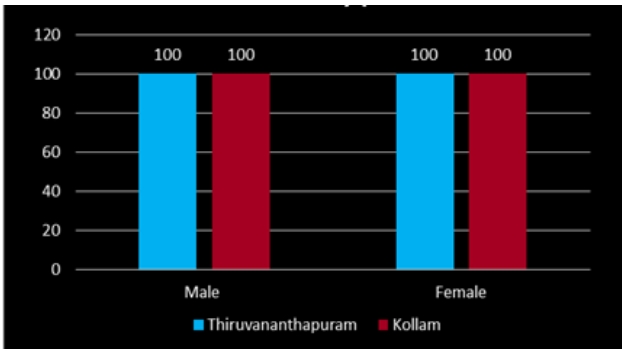

Fig. 9 Food accessibility problem

It was clearly found that majority of the respondents from both the district had to face food accessibility problem due to various reasons like increase in price, lack of knowledge, etc. Cost of food in India increased 4.70 per cent in January of 2018 over the same month in the previous year. Food inflation in India averaged 6.91 percent from 2012 until, 2018, reaching an all-time high of 14.72 percent in November of 2013 and record low of -2.12 percent in June of 2017 (http://tradingeconomics.com). The increasing inflation definitely affected the food accessibility of the respondents.

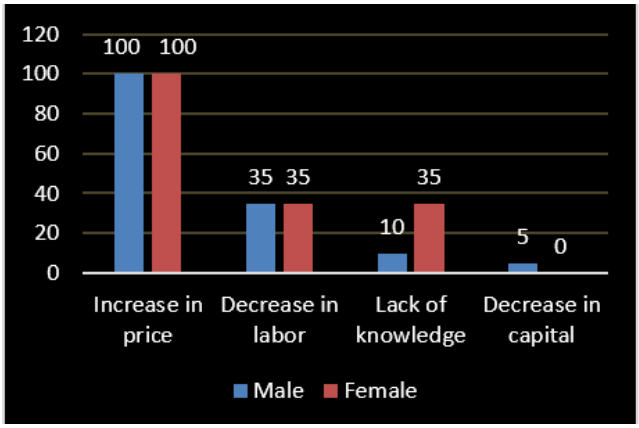

Fig. 10 (a) Major reasons of food accessibility problem in Thiruvananthapuram

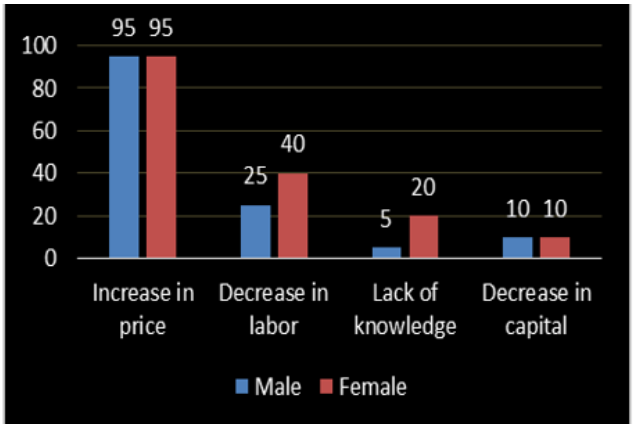

Fig. 10 (b) Major reasons of food accessibility problem in Kollam

Fig. 10 (a) and fig 10 (b) depicts the major reasons of food accessibility problem in Thiruvananthapuram and Kollam district. Majority of the respondents faced food accessibility problem because of increase in price of food items as the prices of edibles and essential commodities in Kerala have been on an uncontrolled spiral. Lack of knowledge and decrease in labor was also the major reason of food accessibility problem in Kerala. Because of lack of knowledge, they don't know about benefits of important foods that should be used for consumption and avoid those food items in their diet. With decrease in labor, they did not have proper income which resulted in reduced purchasing power of the respondents.

Other reasons of food accessibility problem

Food choices, taste preferences and personal and social factors were the other major reasons of lack of consumption of basic five food groups among the people. Food choices comprise psychological and sociological aspects, economic issues and sensory aspects. Factors that guide food choices include taste preference, sensory attributes, cost, availability, convenience and cultural familiarity.

Fig.11 (a) and Fig. 11(b) highlights taste preference as the major reason of lack of consumption of basic five groups among the male respondents in both the district. Food choices were also another reason because the male respondents mainly avoid five food groups due to their sensory attributes. But in the case of female respondents, majority of them avoid consumption of basic five groups due to personal and social factors. Women sacrificed their food mainly for the family. Lack of food stuffs and religious reasons are the major reason for the lack of consumption of food groups among the women respondents. Women follow many cultural and traditional practices that require them to avoid proper food at times. In many families, when there is scarcity of food, women generally forego their share for the men or children.

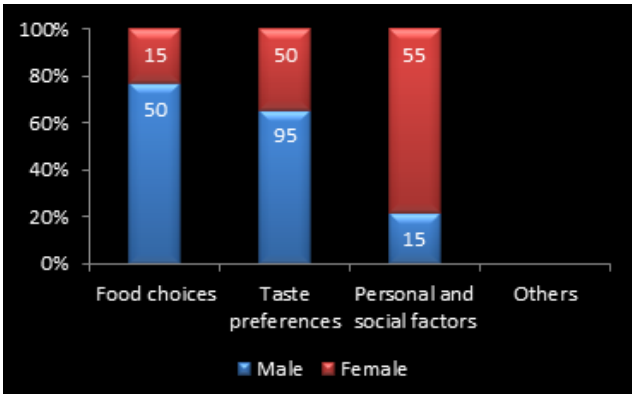

Fig. 11 (a) other reasons of food accessibility problem in Thiruvananthapuram

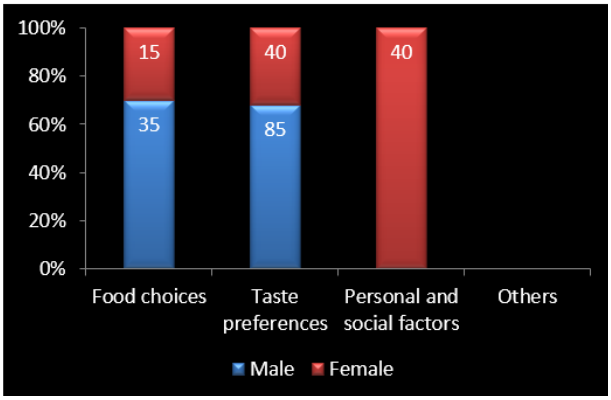

Fig. 11 (b) other reasons of food accessibility problem in Kollam

Awareness about fortifies foods

Food fortification is the process of adding micronutrients (essential trace elements and vitamins) to food. Fortifying food with nutrients has helped to eradicate many nutrition related conditions. The original purpose of food fortification was to decrease the occurrence of nutrient deficiencies, particularly in populations that lack access to sufficient amounts of essential nutrients. Iodized salt is an example of fortified food. Fig. 12 clarifies the awareness about fortified foods among the respondent's in Thiruvananthapuram and Kollam district. Majority of the respondents were not aware about fortified foods. Female respondents in Thiruvananthapuram district were slightly more aware than

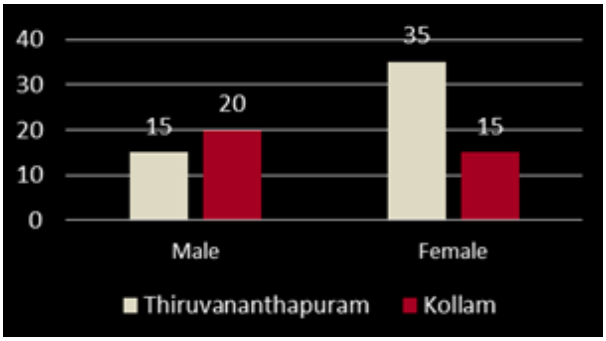

Fig. 12 Awareness about fortified foods

other respondents. They got information about fortified foods from books because many women in Thiruvananthapuram district moved to coaching classes for preparing Kerala public service commission's exam, they got information about fortified food mainly from these coaching classes. Advertisement about iodized salt was very common in TV and radio. But they did not explain about fortified foods and only mentioned the importance of iodized salt. So the people did not get the information about fortified foods through these advertisements.

Accessibility of fortified foods

Fig. 13 explains the accessibility of fortified food among the respondents in Thiruvananthapuram and Kollam district. It clearly shows the accessibility of fortified food were very low among the respondents in both the district. Because they were unaware about the fortified foods. Majority of the respondents not aware about the benefits of fortified foods and so they were not using fortified foods in their daily routine.

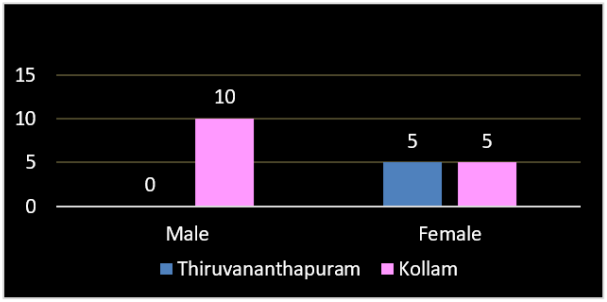

Fig. 13 Accessibility of fortified foods

Use of Iodized salt

Iodized salt is mainly used to prevent iodine deficiency related diseases like thyroid gland problems. In many countries, iodine deficiency is a major public health concern that can be cheaply addressed by purposely adding small amounts of iodine to salt. Fig. 14 highlights about the use of iodized salt among the respondents in Thiruvananthapuram and Kollam district. It was clearly found that hundred per cent of the respondents in both the district were using iodized salt in their kitchen for cooking purpose. It shows that the people were more aware about the importance of iodized salt in their diet. Majority of the respondents got information about the benefits of iodine salt from TV/ radio. A fairly large number of advertisements from Ministry of Health and Family Welfare are aired about usefulness of iodized salt, and so the awareness has spread far and wide among the people in both the district.

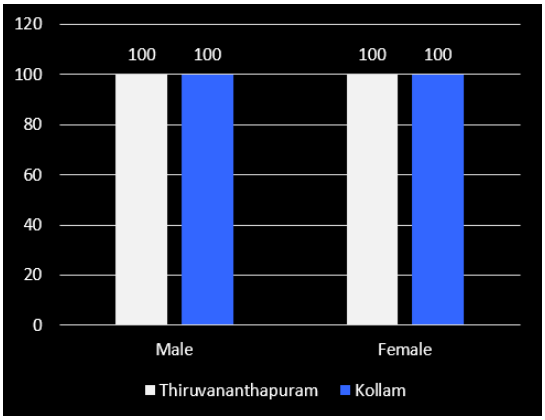

Fig. 14 Use of iodized salt

Frequency of taking meals per day

Most people probably eat about three main meals every day. Breakfast, lunch and dinner are the

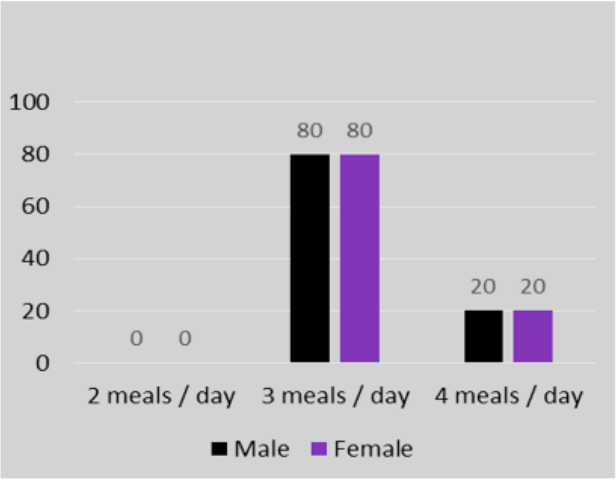

Fig. 15 (a) Number of meals per day in Thiruvananthapuram

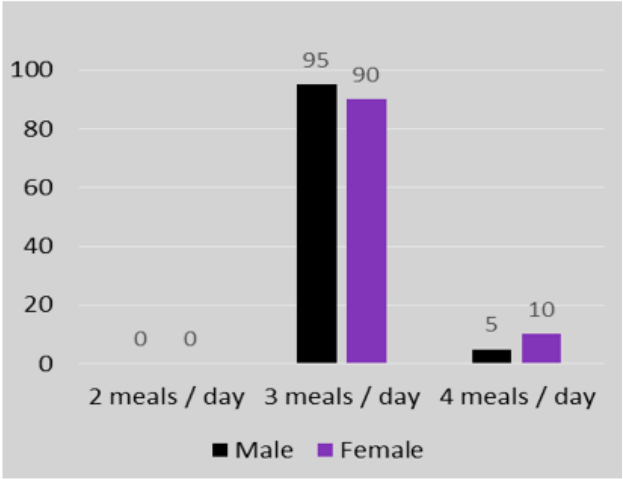

Fig. 15 (b) Number of meals per day in Kollam

main meals. Fig. 15 (a) and fig. 15 (b) shows that majority of the respondents in both the districts followed three meals per day. The number of meals eaten every day is a cultural pattern of people have adopted because there's comfort in predictability.

Skipping of meals per day and their reasons

Skipping meals is a major problem among the people in Kerala. It can cause many negative effects in body. It can affect the metabolic rate of human body. Table 4 shows that majority of the respondent in both the district skipped their meals due to various reasons. Majority of the respondents skipped their breakfast per day. Table 4 describes about the various reasons of skipping meals per day among the respondents in Thiruvananthapuram and Kollam district.

Table 4: Meals skipped every day by respondents

	Thiruvananthapuram		Kollam	
	Men	**Women**	**Men**	**Women**
Meals skipped	16 (80)	17 (85)	12 (60)	16 (80)

(*Note: The numbers in parenthesis are percentage)

It was found that majority of the male respondents skipped their meals due to lack of time. They were very busy in the morning because of their jobs and did not get enough time for taking breakfast. So they skipped their breakfast due to lack of time. They skipped their meals due to lack of appetite and lack of interest also. But majority of the female respondents skipped their meals due to religious reasons. They believed some myths and they avoid food for taking 'vratham' (fasting for religious reasons) for wellness of the family. They also skipped their meals due to lack of food stuffs. Because they give their food to other family members. And they give more preference to the health of

their family members, women and girls are overrepresented among those who are food-insecure. Worldwide, an estimated 60% of undernourished people are women or girls (FAO, 2013).

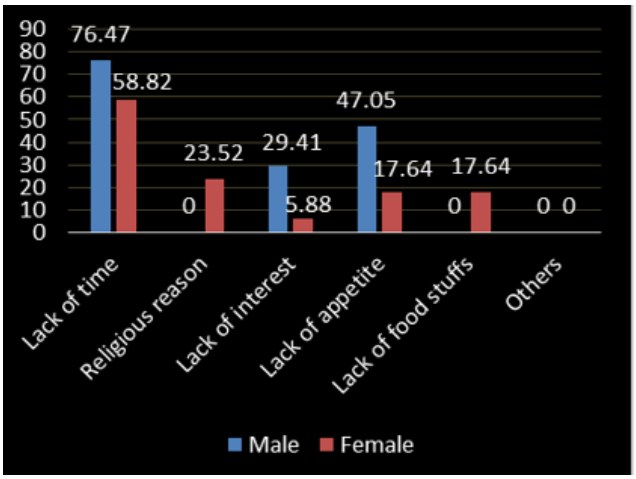

Fig. 16 (a) appropriate reasons for skipping meals per day in Thiruvananthapuram

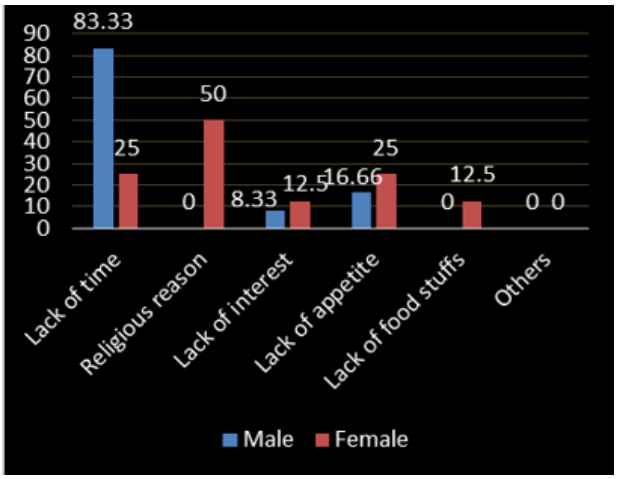

Fig. 16 (b) appropriate reason for skipping meals per day in Kollam

Awareness about cooking methods

In cooking, different types of methods are used. Dry heat cookery method and moist heat cookery methods are mostly used for cooking. In dry heat cooking methods, water is not used to cook food. Baking, steaming, grilling and roasting the examples of this cooking method. But in moist heat methods, liquid is used as a medium to cook the food. Such medium could be water or oil. Boiling, deep frying and shallow frying etc. are the examples of moist heat cooking methods. Fig. 17 (a) and fig. 17 (b) shows that awareness about proper cooking methods among the respondents in Thiruvananthapuram and Kollam district.

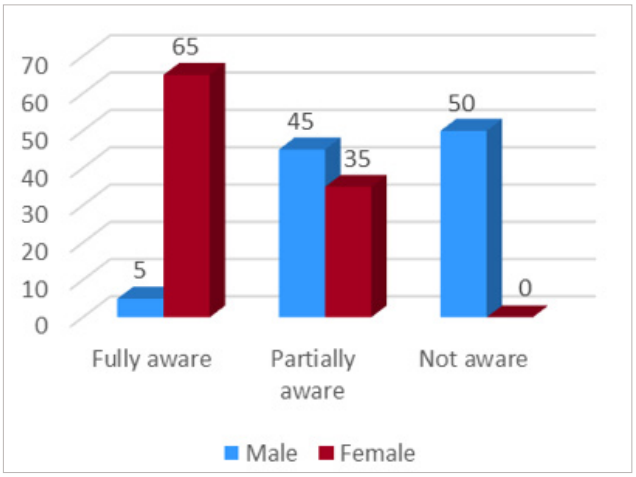

Fig. 17 (a) Awareness about proper cooking methods in Thiruvananthapuram

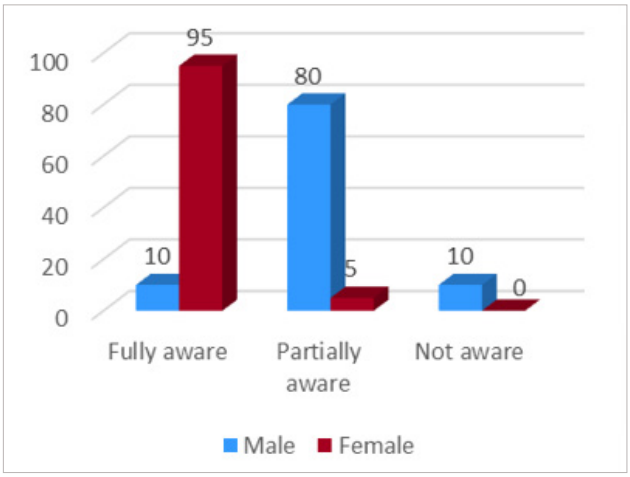

Fig. 17 (b) Awareness about proper cooking methods in Kollam

Majority of the female respondents in both the district were fully aware about the cooking methods that preserve food nutrition while majority of the male respondents were only partially aware. The difference was mainly because of gender roles which rarely needed men to work in the kitchen which

ensured they got lots of information about cooking from their daily experiences in kitchen as well as traditional knowledge which was mostly passed on to the women only.

Commonly used cooking methods in home

Boiling, pressure cooking, deep frying, shallow frying, steaming, baking are the commonly used cooking methods. Boiling is the simplest method in which enough water is added to the food and it is cooked over the fire. Pressure cooking is the process of cooking food, using water or other cooking liquid, in a sealed vessel known as pressure cooker. In shallow frying, food is cooked in a frying pan with a little amount of oil or fat. But in deep frying large amount of oil is used. This is very injurious to the health. Baking is a method of cooking, the food is cooked using convection heating in baking.

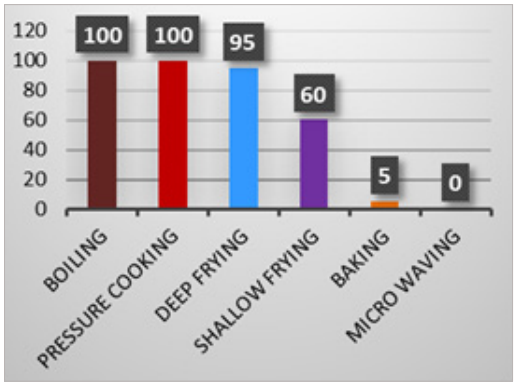

Fig. 18 (a) commonly used cooking methods in Thiruvananthapuram

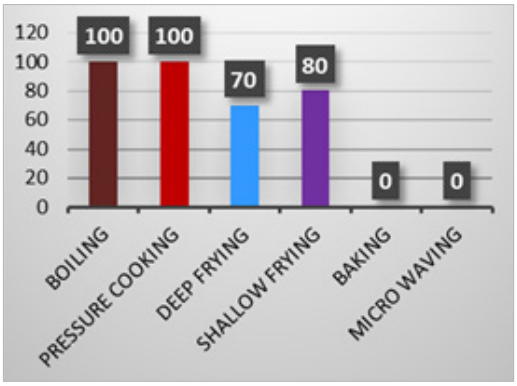

Fig. 18 (b) commonly used cooking methods in Kollam

Fig. 18 (a) and Fig. 18 (b) shows that commonly used cooking methods used among the respondents in Thiruvananthapuram and Kollam district. All the respondents in both the district used boiling and pressure cooking as in Kerala, rice is the staple food. Rice is cooked mainly by boiling. In Kerala people also used tubers like tapioca which is also cooked by using this method. 'Sambar' is the commonly used curry in Kerala. Preparation of this dish also need pressure cooker for cooking the pulses and other vegetables used. Deep frying was also used among the respondents as fish fry is common food item in Kerala and different types 'Vada' is a common evening snack. Over consumption of deeply fried food items are injurious to health. People in Thiruvananthapuram district used deep frying method slightly more than Kollam district but in Kollam district, majority of the respondents used shallow frying than deep frying.

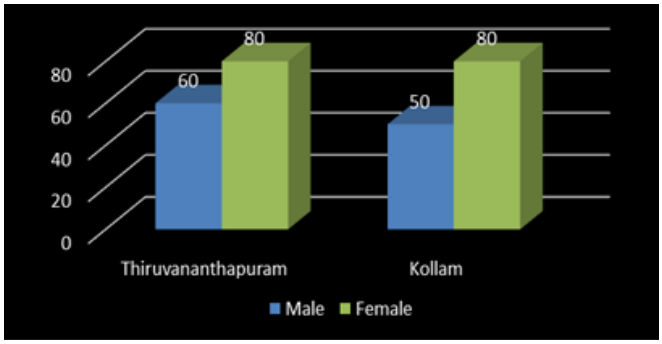

Fig. 19 Awareness about bad effects of high use of oil

Oil is a very essential part of cooking, especially in Indian cooking. But overuse of oil creates many health problems. Acidity and heart diseases was the major health problems related to overuse of cooking oil. So awareness about the bad effects of high

use of oil while cooking is very essential. Fig. 19 shows that majority of the respondents in both the district aware about bad effects of high use of oil. It also shows that female respondents were more aware than male respondents. Because women got knowledge about bad effects of high use of oil from many sources like magazines ('Vanitha'), and meetings related to nutrition conducted by Anganwadi's.

Awareness about food safety

Food safety refers to the conditions and practices that preserve the quantity of food to prevent contamination and food – borne illness. Fig. 20 (a) and Fig. 20 (b) shows that female respondents were more aware than male respondents in both the district.

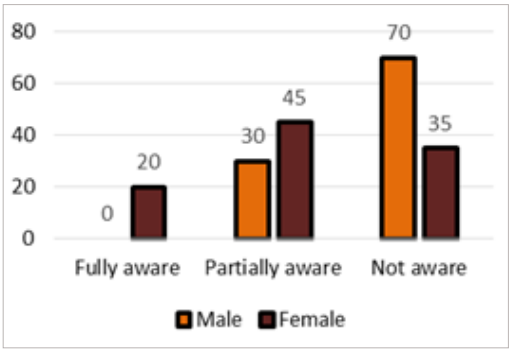

Fig. 20 (a) Awareness about food safety in Thiruvananthapuram

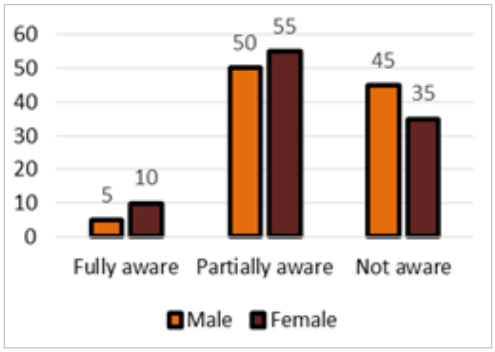

Fig. 20 (b) Awareness about food safety in Kollam

Female respondents were the major viewers of programs on TV about food and nutrition, which was found to be the principle source of information. Personal experiences related to food preparation, food storage, etc. also were crucial in this aspect along with discussions with friends and family, Anganwadi workers, etc. Men, who were mostly uninvolved in food preparation or storage rarely, concerned them with that were at best partially aware about food safety.

Awareness about iron rich foods

Iron rich foods are very essential to reduce iron deficiency diseases like Anemia. Awareness about iron rich foods are very essential to the people as anemia is very common among the people in Kerala.

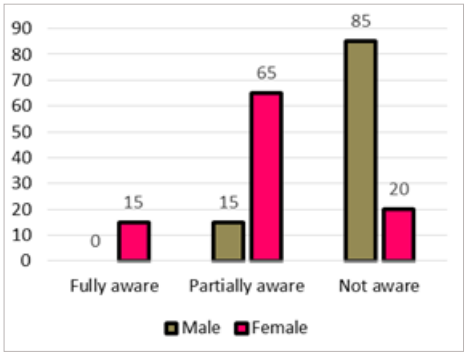

Fig. 21 (a) Awareness about iron rich foods in Thiruvananthapuram

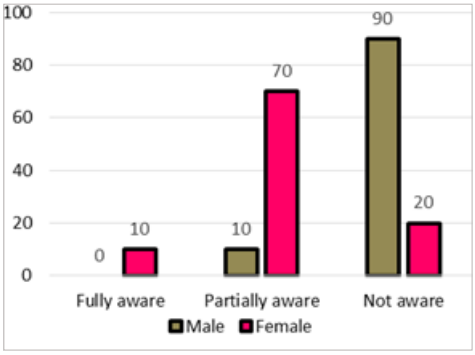

Fig. 21 (b) Awareness about iron rich foods in Kollam

Fig. 21 (a) and Fig. 21 (b) shows that women respondents were more aware than men as they got information about iron rich foods from anganwadi workers, books (magazines like 'Aarogyam') and TV programme ('Taste time'). In anganwadi, many awareness classes were conducted for women. Men, on the other hand, rarely viewed programmes related to food and nutrition, were part of Anganwadi programmes or other events that imparted nutrition related information, and hence, had little to no knowledge about the same.

Awareness about health benefits of leafy vegetables

Eating leafy vegetables provides health benefits – people who eat more vegetables as part of overall healthy diet are likely to have a reduced risk of some chronic diseases. It naturally low in fat and calories. It helps to maintain healthy blood pressure. It also contains dietary fiber. It helps to reduce constipation and regulate the bowel movement.

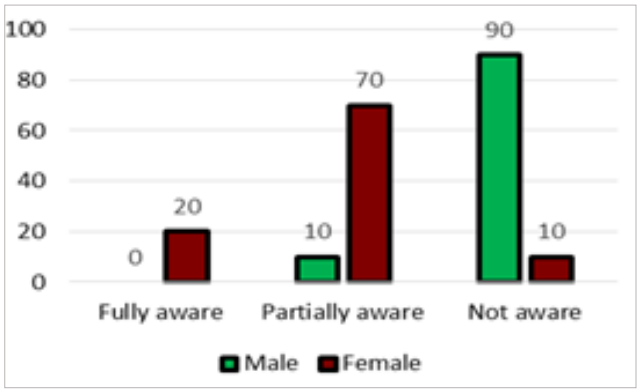

Fig. 20 (a) Awareness about food safety in Thiruvananthapuram

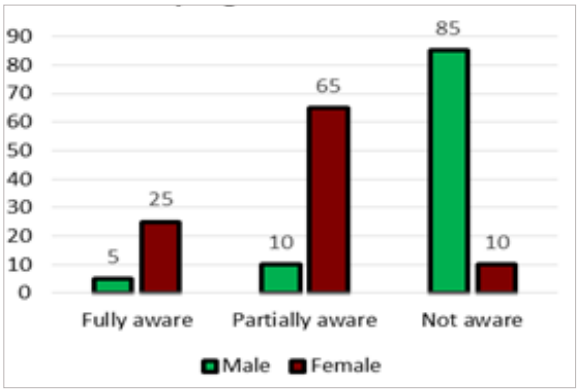

Fig. 20 (b) Awareness about food safety in Kollam

Fig. 22 (a) and Fig. 22 (b) shows that female respondents in rural families were more aware about health benefits of leafy vegetables compared to their male counterparts in both the districts. Traditional knowledge handed down through generations, TV and radio, books, and newspapers were the major sources of information on the importance of including green and leafy vegetables in everyday diet.

Awareness about food processing

Food processing is the transformation of cooked ingredients, by physical or chemical means into food, or of food into other forms. Food processing combines raw food ingredients to produce marketable food products that can be easily prepared and served by the consumer. Pickling, Pasteurization, canning and freezing are the major food processing methods. Fig. 23 (a) and Fig. 23 (b) depicts that awareness about food processing in Thiruvananthapuram and Kollam district. It depicts that all the respondents in both the district were aware about pickling method.

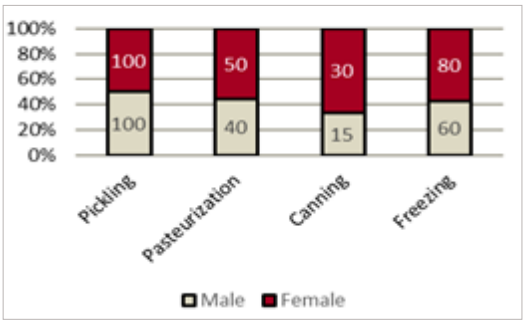

Fig. 23 (a) Awareness about food processing in Thiruvananthapuram

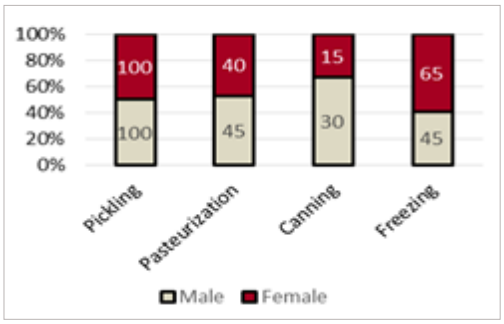

Fig. 23 (b) Awareness about food processing in Kollam

Pickling is commonly used method of food processing at household level. Majority of the respondents are also aware about freezing process. Because Kerala has tropical climate, freezing is the most common method of food preservation. Also, since fish is one of the major consumed food, freezing is an absolute necessity to preserve quality and hence the respondents were mostly aware of it. Pasteurization also common among the respondents in both the district as pasteurized milk was commonly used by the respondents. 'Milma' is a pasteurized milk that was commonly used in Kerala. Canning process was not so common and so awareness about it was low.

Awareness about bad effects of processed foods

Processed foods have many bad effects. Bad effects of processed foods are one of the major cause of metabolic disorders. This is because the body processes the natural food much differently from the refined and the processed foods. The processed foods are prepared in such a way that it has a longer shelf life. There are many chemicals that are added to this, which will weaken the bones on the long run. The phosphate additive augments the taste and texture of processed foods. The harmful effects of processed foods will include kidney problems and rapid aging. One of the harmful effects of processed foods is its effect on digestion process. This is because when foods are processed, natural fibers, vitamins and nutrients are stripped off. It creates many health problems to the human beings after consumption. Processed food contains many artificial ingredients. Preservatives, flavors, texturants, etc are included in processed foods. Most processed foods are low in nutrients. They are often high in Trans-fats or processed vegetable oils. It creates stomach problems among the human beings. Fig. 24 (a) and Fig. 24 (b) Shows that the results regarding the awareness about bad effects of processed food in Thiruvananthapuram and Kollam respectively.

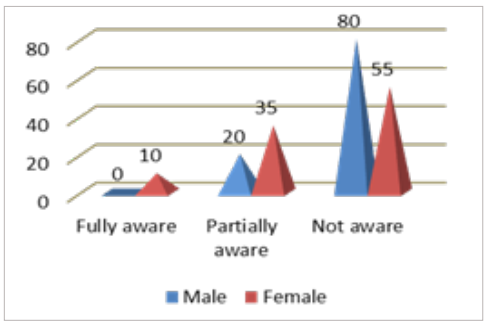

Fig. 24 (a) Awareness about bad effects of processed food in Thiruvananthapuram

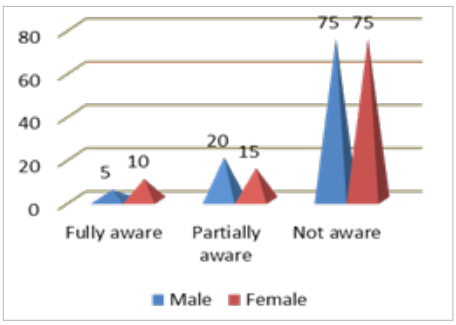

Fig. 24 (b) Awareness about bad effects of processed food in Kollam

Majority of the respondents were not aware about processed foods because use of processed foods are very limited among rural communities in both the district. It was found that comparitively awareness about processed foods was high in female respondents as 35 percent of the women were partially aware and 10 percent of them were fully aware. They got knowledge about processed food from various sources such as books and newspaper (magazines like 'Vanitha' and 'Aarogyam'), TV/ radio (health related programmes like 'Doctor Live') and friends and relatives. Also availability of processed is increasing in the form of noodles, fastfoods, etc. which are popular among the kids and youths. As their consumption is increasing among younger generations, awareness is increasing as well.

Prefernce of fastfood and their consumption

Fast-food is mass-produced food that is prepared and served quickly. The food is typically nutritionally less valuable compared to other foods and dishes. According to National Institute of Health (NIH), fast foods are quick alternatives to home – cooked meals. They are also high in saturated fat, sugar, salt and calories. Eating too much fast food has been linked to, among other things, colorectal cancer, obesity and high cholesterol.

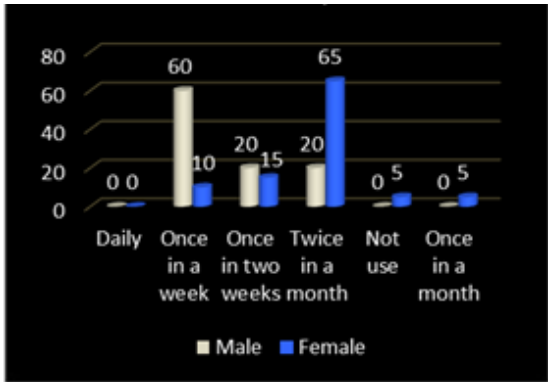

Fig. 25 (a) Preference of fast food among the respondents in Thiruvananthapuram

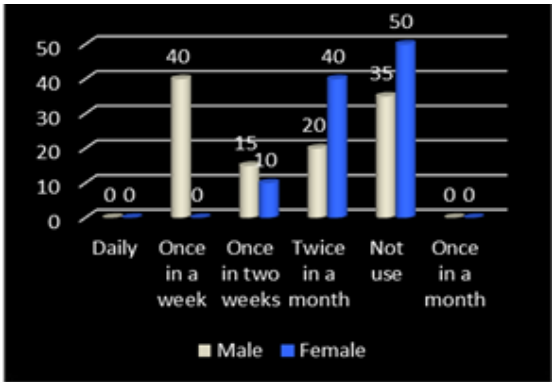

Fig. 25 (b) Preference of fast food among the respondents in Kollam

Fig. 25 (a) and Fig. 25 (b) represents the preference of fast food among the respondent in Thiruvananthapuram and Kollam district. In both the district, majority of the male respondents preferred fast food once in a week while female respondents mostly preferred home cooked food. They aware about the bad effects of fast food. Comparing two districts, consumption of fast food was lower in Kollam.

Awareness about harmful effects of fast foods

Fast food costs relatively little and tastes good, but the negative effects on physical health last much longer then these immediate concern. With the high calorie meals come more fats, cholesterol, salt and sugar and therefore fewer vitamins, minerals and other nutrients than in healthier foods. It contains high amount of cholesterol and salt that contribute to cardiovascular health problems. It also negatively effects on blood pressure.

Fig. 26 shows the awareness about bad effects of fast food among the respondents in both the districts. Majority of the respondents were aware about the harmful effects of fast food but women were slightly more aware than male respondents. Women generally are more interested in food preparation and sometimes procurement of the family. They are also custodians of nutrition security of the family and try to get more awareness about food and nutrition of the family compared to men. Because of this higher awareness, they restrict the consumption of harmful food as much as possible.

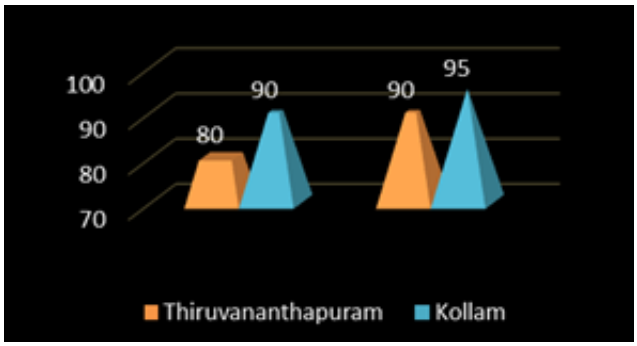

Fig. 26 Awareness about harmful effects of fast food

Awareness about sanitation and importance of water

Sanitation generally refers to the provision of facilities and services for the safe disposal of human urine and feces. Inadequate sanitation is a major cause of disease world-wide and improving sanitation is known to have a significant beneficial impact on health both in households and across communities. The word 'sanitation' also refers to the maintenance of hygienic conditions, through services such as garbage collection and wastewater disposal (www.who.int).

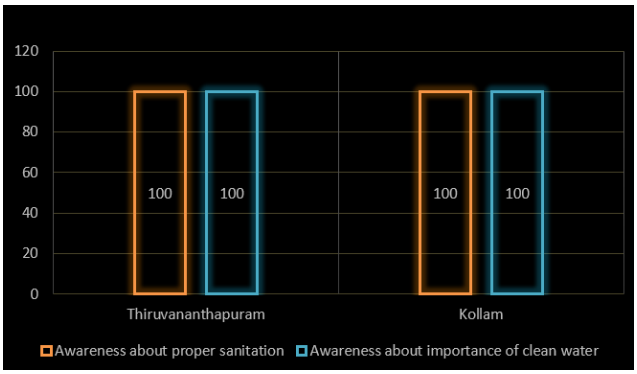

Fig. 27 Awareness about sanitation and importance of clean water

Fig. 27 shows the awareness of respondents about proper sanitation and importance of clean water. It was clearly found that all the respondents were aware about the proper sanitation and importance of clean water in both the district. Because the respondents got lots of information from books and newspaper and TV/radio. Health workers also went door to door informing about the importance of sanitation and clean water.

Awareness about nutrition related diseases

Nutritional disease are any of the nutrient-related diseases and conditions that cause illness in humans. They may include deficiencies or excess in the diet. Marasmus, Kwashiorkor, Night blindness, Iron deficiency Anemia, Goiter, heart diseases, obesity, hypertension, Scurvy, Pellagra, etc. are major nutritional diseases. Marasmus and Kwashiorkor was the severe form of malnutrition, due to the deficiency of protein and energy. It was mostly common in children. Night blindness is a vitamin A deficiency disease. Iron deficiency causes anemia which is mainly due to the lowered haemoglobin count caused by deficiency of iron. Heart diseases or cardio vascular diseases mainly occur due to the

consumption of high amount of fats. Obesity is most commonly caused by a combination of excessive food intake, lack of physical activity and genetic susceptibility. Goiter is an abnormal enlargement of thyroid glands due to iodine deficiency is the main cause of goiter. Hypertension is also called high blood pressure. Rickets is softening and weakening of bones in children, usually due to inadequate Vitamin D. Scurvy is mainly due to deficiency of vitamin C. Pellagra is a disease characterized by diarrhea, dermatitis and dementia. It occurs mainly due to niacin (vitamin B-3) deficiency.

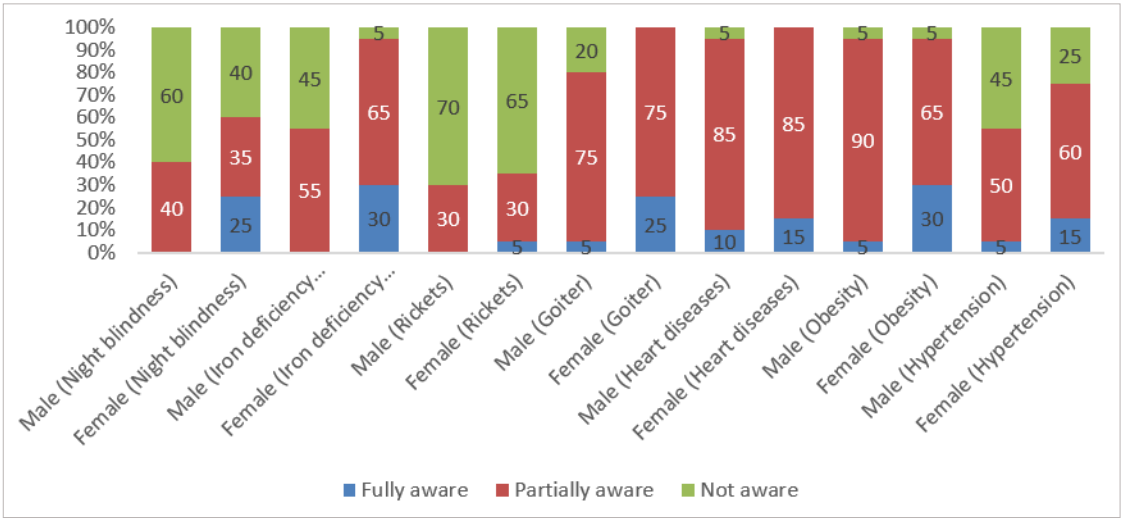

Fig. 28 (a) Awareness about nutrition related diseases in Thiruvananthapuram

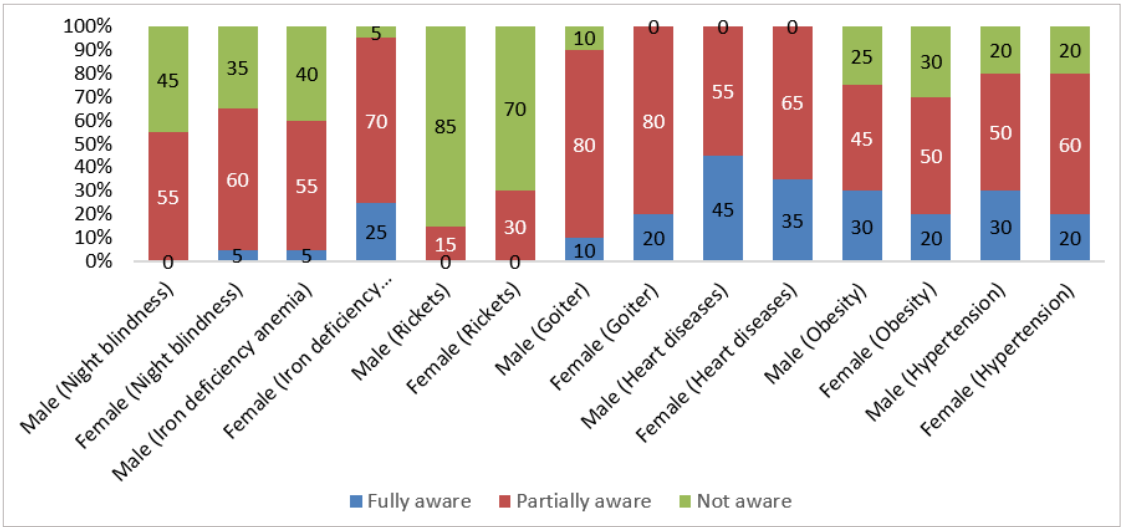

Fig. 28 (b) Awareness about nutrition related diseases in Kollam

Fig. 28 (a) and fig. 28 (b) depicts awareness about nutritional diseases among the respondents in Thiruvananthapuram and Kollam districts. Majority of the respondents in both the district aware about heart diseases, obesity, goiter, anemia and hypertension. These diseases are very common in Kerala and so they got lot of information from various sources such as friends and relatives, TV and radio (health related programmes like 'Medi talk' in TV; 'Radio health' telecasted in radio), etc. Anemia was very common among the women respondents; awareness about the disease was also highest. Anganwadi workers, health workers and doctors were the major source of information. Night blindness was another common disease. Marasmus, Kwashiorkor, pellagra and scurvy not of common occurrence in Kerala and so, information about these diseases were low.

Sources of information about nutritional diseases

Awareness about nutritional diseases is very important in daily life, especially for nutrition security. Table 5 shows the sources of information about nutritional diseases among the respondents in both the district.

Table 5 Sources of information about nutritional diseases

Sources of information	Marasmus		Kwashiorkor		Night blindness		Iron deficiency Anemia		Rickets		Goiter		Scurvy		Pellagra		Heart diseases		Obesity		Hypertension		Rank
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Thiruvananthapuram																							
Anganwadi worker	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	7 (35)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	8
Asha worker	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1
Books & newspaper	1 (5)	7 (35)	1 (5)	7 (35)	2 (10)	9 (45)	3 (15)	13 (65)	3 (15)	6 (30)	2 (10)	11 (55)	1 (5)	4 (20)	0 (0)	2 (10)	3 (15)	7 (35)	3 (15)	7 (35)	8 (40)	8 (40)	108
Internet	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	1 (5)	4 (20)	1 (5)	0 (0)	0 (0)	8
TV / Radio	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	2 (10)	5 (25)	3 (15)	0 (0)	0 (0)	8 (40)	11 (55)	1 (5)	0 (0)	0 (0)	0 (0)	4 (20)	5 (25)	7 (35)	5 (25)	0 (0)	0 (0)	52
Friends & Relatives	0 (0)	0 (0)	0 (0)	0 (0)	6 (30)	3 (15)	9 (45)	9 (45)	3 (15)	1 (5)	10 (50)	11 (55)	1 (5)	0 (0)	0 (0)	0 (0)	16 (80)	8 (40)	13 (65)	8 (40)	8 (40)	7 (35)	113
School going children	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	1 (5)	1 (5)	5
Kollam																							
Anganwadi worker	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (25)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5
Asha worker	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2
Books & newspaper	0 (0)	2 (10)	0 (0)	2 (10)	3 (15)	4 (20)	3 (15)	6 (30)	0 (0)	3 (15)	4 (20)	4 (20)	0 (0)	2 (10)	0 (0)	1 (5)	3 (15)	3 (15)	0 (0)	5 (25)	1 (5)	4 (20)	50
Internet	1 (5)	1 (5)	1 (5)	1 (5)	3 (15)	1 (5)	3 (15)	1 (5)	1 (5)	1 (5)	6 (30)	2 (10)	1 (5)	1 (5)	1 (5)	1 (5)	4 (20)	2 (10)	5 (25)	1 (5)	2 (10)	1 (5)	41
TV / Radio	1 (5)	1 (5)	1 (5)	1 (5)	3 (15)	2 (10)	4 (20)	7 (35)	1 (5)	1 (5)	6 (30)	6 (30)	1 (5)	1 (5)	1 (5)	1 (5)	7 (35)	7 (35)	4 (20)	3 (15)	2 (10)	4 (20)	65
Friends & Relatives	0 (0)	0 (0)	0 (0)	0 (0)	9 (45)	10 (50)	9 (45)	14 (70)	5 (25)	2 (10)	15 (75)	16 (80)	0 (0)	1 (5)	1 (5)	0 (0)	18 (90)	14 (70)	14 (70)	8 (40)	14 (70)	10 (50)	160
School going children	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (5)	2 (10)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	14

Table 5 shows that the results regarding the sources of information about nutritional diseases among the respondents in Thiruvananthapuram and Kollam district. Respondents in both the district had high awareness about heart diseases, obesity, goiter, hypertension (high blood pressure) and iron deficiency anemia. They got information mainly from friends and relatives. Because these diseases were very common in both the district. So people share the knowledge about these diseases among their friends and relatives. In both the district, the respondents also got information from TV programmes also. Many health related programmes like "Medi Talk" are aired in Television. They are very useful for the people. Female respondent in Thiruvananthapuram district also got information about nutritional diseases from books also. Because many women in Thiruvananthapuram go to coaching classes for getting government jobs. Many female respondents in both the district got information about iron deficiency anemia from anganwadi workers. Because anganwadi conducted many nutrition awareness programme mainly for the women. Through this programme, women got lots of information about nutritional diseases like iron deficiency anemia.

Awareness about food that prevent nutrition related diseases

Nutritional diseases are mainly due to poor nutrition. Good nutrition, based on healthy eating is one essential factor that helps us to stay healthy and active. Poor nutrition can impair our daily health and wellbeing and reduce our ability to lead an enjoyable and active life (www.sahealth.sa.gov.au). Awareness about foods that prevent nutritional diseases was very important in our daily life.

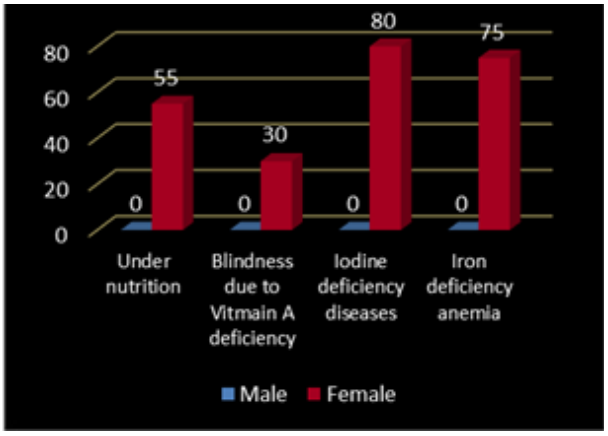

Fig. 29 (a) Awareness about foods that prevent nutritional diseases in Thiruvananthapuram

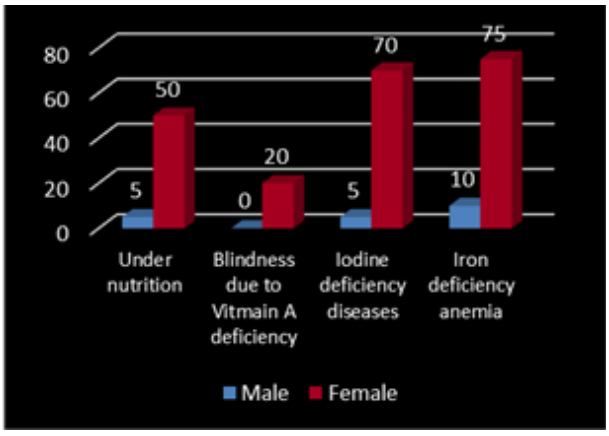

Fig. 29 (b) Awareness about foods that prevent diseases in Kollam

Fig. 29 (a) and Fig. 29 (b) indicates that female respondents in both districts were aware about the foods that prevent nutritional diseases such as iron deficiency anemia, iodine deficiency diseases, under nutrition and blindness due to vitamin A deficiency. Anemia and iodine deficiency were common in both district and information about these were highly publicized though public healthcare systems, Anganwadi workers, advertisements in print and Audio-Visual media, etc. According to Sreelatha. et. al, high prevalence of hypothyroidism and anemia were observed in women of age group 18–50 in Thiruvananthapuram district.

Awareness about programmes for nutrition security

Integrated child development service scheme and mid meal programme was running very well in Thiruvananthapuram Kollam district. ICDS is a programme which provides food, preschool education and primary health care to children under 6 years of age and their mother. The widespread network of ICDS has an important role in combating malnutrition especially for children of weaker groups. The mid-day meal programme is a school meal programme of the Government of India designed to improve the nutritional status of school-age children nationwide. Fig. 30 (a) and fig, 30 (b) represents the awareness about programmes for nutrition security among the respondents in Thiruvananthapuram and Kollam district.

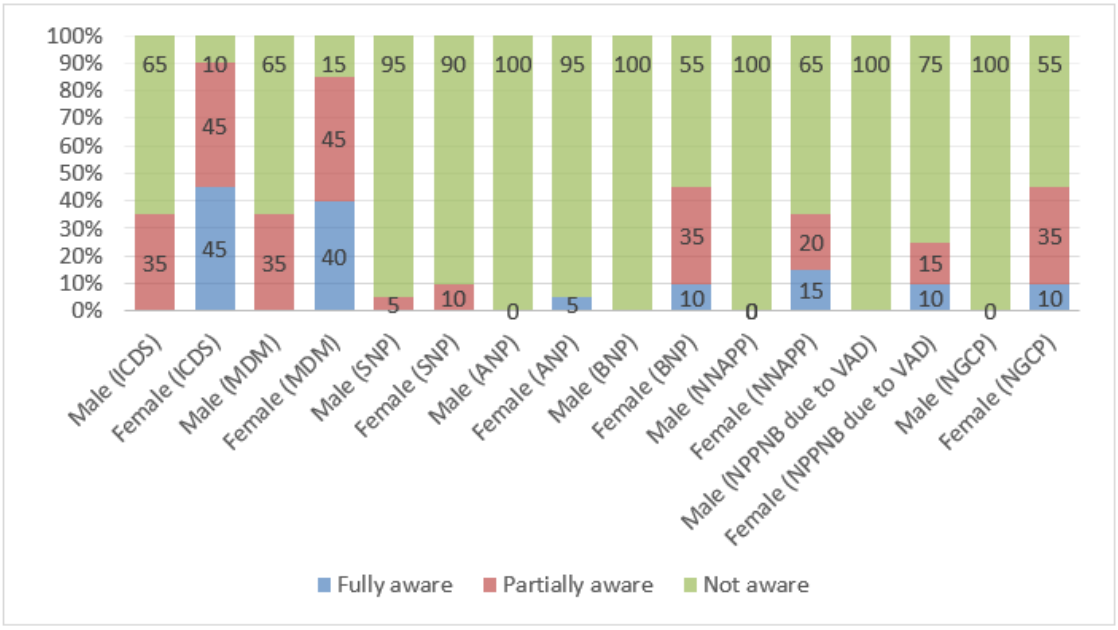

Fig. 30 (a) Awareness about programmes for nutrition security in Thiruvananthapuram

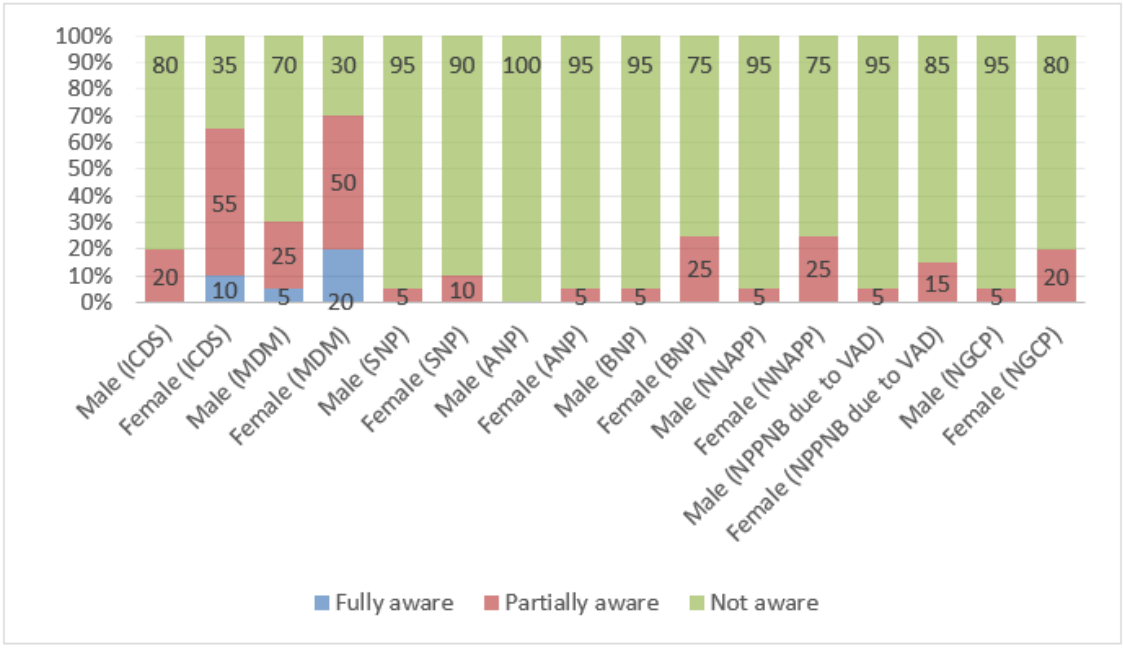

Fig. 30 (b) Awareness about programmes for nutrition security in Kollam

Note : (ICDS–Integrated Child Development Scheme, MDM–Midday meal programme, SNP–Special nutrition programme, ANP- Applied nutrition programme, BNP-Balwadi nutrition programme, NNAPP-National nutritional anemia prophylaxis programme, NPPNB due to VAD-National programme for prevention of nutritional blindness due to vitamin A deficiency, NGCP-National goiter control programme)

Fig. 30 (a) and Fig.30 (b) shows that majority of the female respondents in both the district were more aware about the ICDS programme and midday meal programme as they got many benefits from ICDS programme. Women are very conscious about the nutrition security of the family and their children got midday meals through this programmes. ICDS programme also conducted many awareness classes related to nutrition and mainly focused on women who participated in those classes. Awareness about other programmes was very low since they were not running very well in these districts. Some of the women respondents had less awareness about it which they got mainly from coaching classes for preparing PSC exam.

Awareness about other programmes for nutrition security

National Health Mission (NHM) was working well in Kerala. It was launched in April 2005. It had two branches- National Rural Health Mission (NRHM) and National Urban Health Mission (NUHM). The NRHM has a clear objective of providing quality health care in the remotest rural areas by making it accessible, affordable and accountable (nhm.nic.in).

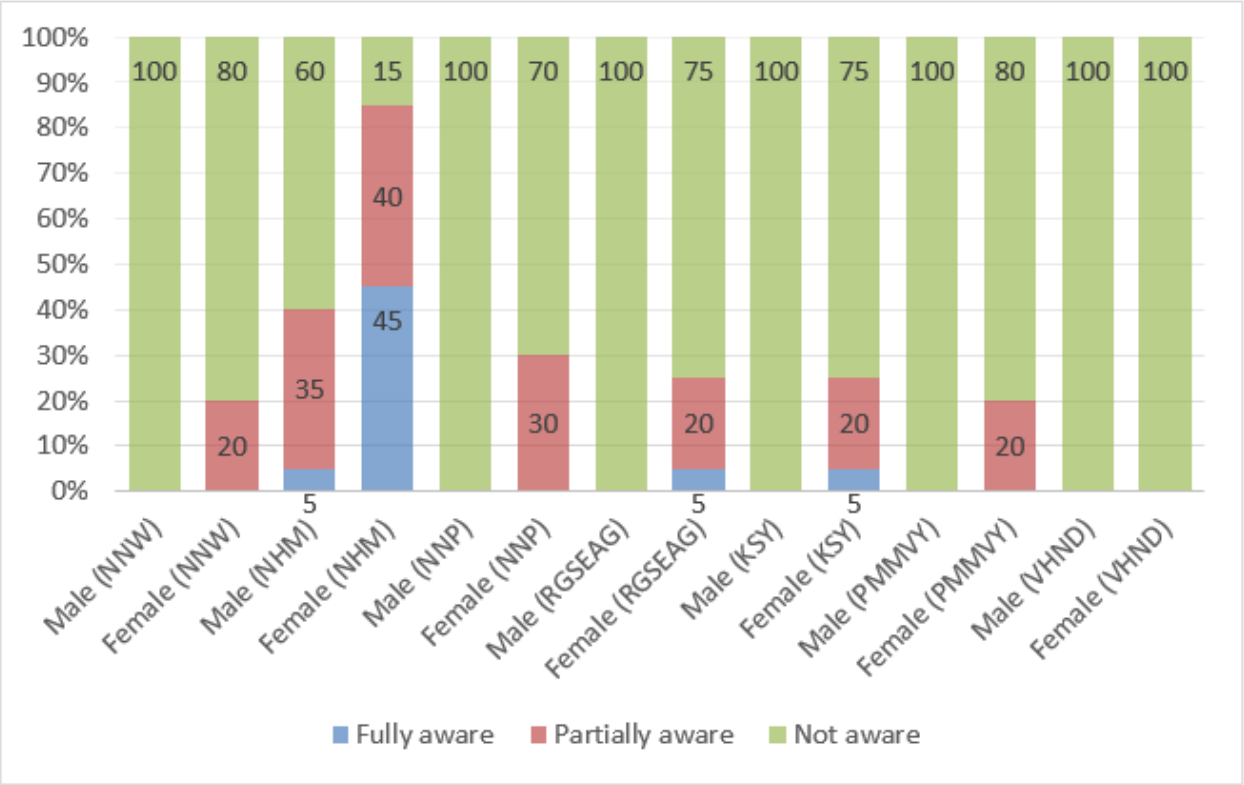

Fig. 31 (a) Awareness about other programmes for nutrition security in Thiruvananthapuram

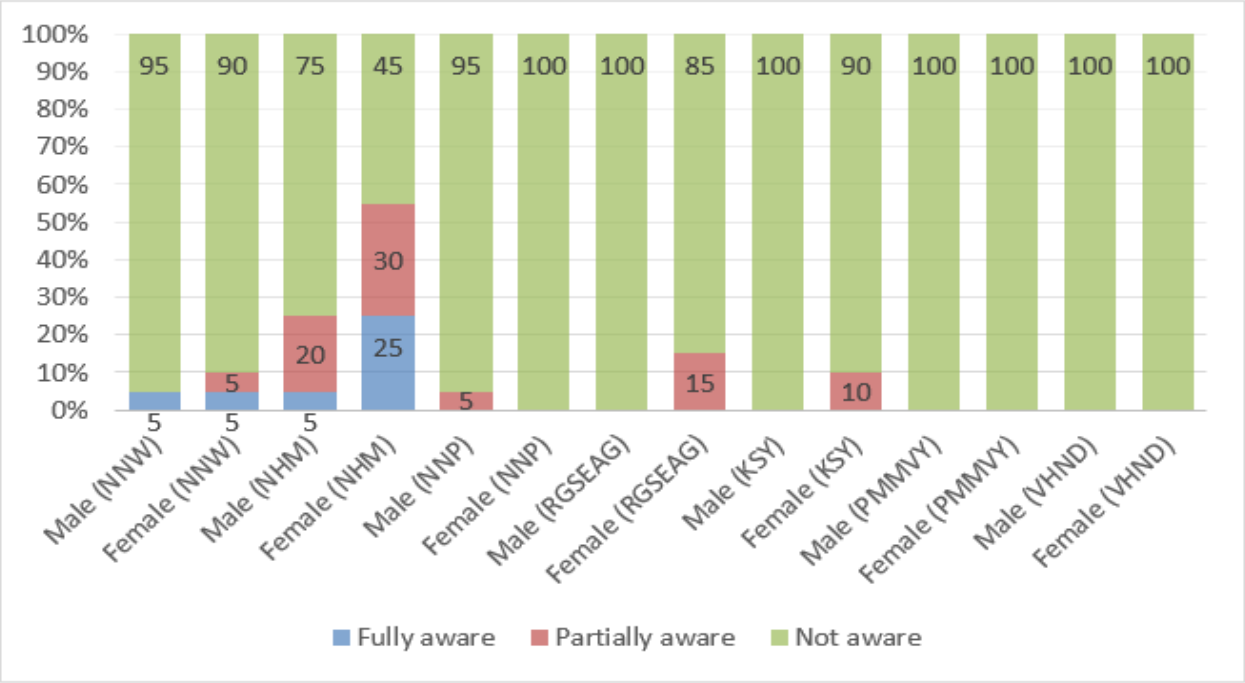

Fig. 31 (b) Awareness about other programmes for nutrition security in Kollam

Note : (NNW – National nutrition week, NHM – National Health Mission, NNP – National nutrition policy, RGSEAG – Rajiv Gandhi Scheme for Empowerment of Adolescent Girls, KSY – Kishori Shakthi Yojana, PMMVY – Pradhan Mantri Matritva Vandana Yojana, VHND – Village health nutrition day)

Fig. 31(a) and fig. 31(b) shows that awareness about other programmes for nutrition security in Thiruvananthapuram and Kollam district. National Health Mission (NHM) is an initiative undertaken by the Government of India to address the health needs of under-served rural areas. Majority of the female respondents in both district were more aware than male respondents. Because women got many services through this programme. NHM was mainly focused on the maternal health.

Agriculture education in school level

School vegetable gardens are a great way for children to learn about where their food comes from and to get them excited about eating fresh vegetables. It is also a chance to learn outdoors. It helps to increase the knowledge of nature and plant growth, positive social interactions around the garden, promotion of healthy development and increasing consumption of fresh fruits and vegetables.

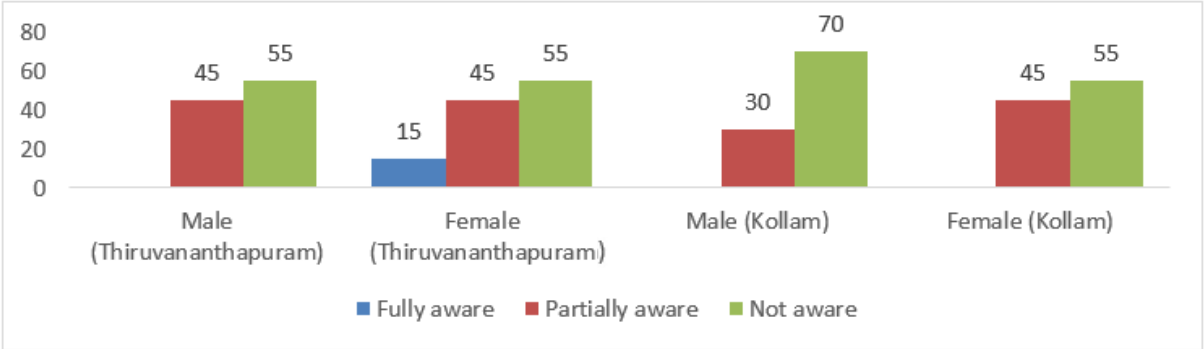

Fig. 32 Awareness about agricultural education in school level

Fig. 32 shows that results regarding the awareness about agricultural education in school level in Thiruvananthapuram and Kollam district. In both the districts, majority of the respondents are partially aware about the agriculture education in school level. Information about this education was mainly get through school going children. Because school going children shared about their experiences in kitchen garden of school to parents.

Sources of information about various programmes for nutrition security

Information about various programmes for nutrition security among the respondents through various sources. Table 6 (a) and table 6 (b) clearly shows that sources of information about the respondents about various programmes for nutrition security in Thiruvananthapuram and Kollam district.

Table 6 (a) : Sources of information about various programmes for nutrition security

Sources of information	Various programmes for nutrition security																				Rank
	ICDS		Midday meal		Special nutrition programme		Applied nutrition programme		Balwadi nutrition programme		National nutritional anemia pro-phylaxis		National programme for control of blindness		National goi-ter control programme		
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Thiruvananthapuram																	
Anganwadi worker	0 (0)	12 (60)	0 (0)	5 (25)	0 (0)	1 (5)	0 (0)	7 (35)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	17
Asha worker	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0
Books & news-paper	1 (5)	10 (50)	1 (5)	6 (30)	0 (0)	2 (10)	0 (0)	1 (5)	0 (0)	8 (40)	0 (0)	7 (35)	0 (0)	5 (25)	0 (0)	8 (40)	49
Internet	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0
TV / Radio	1 (5)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (10)	4
Friends & Rela-tives	5 (25)	4 (20)	2 (10)	1 (5)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	14
School going children	0 (0)	0 (0)	3 (15)	11 (55)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	14
Kollam																	
Anganwadi worker	0 (0)	6 (30)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	7
Asha worker	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0
Books & news-paper	0 (0)	4 (20)	0 (0)	4 (20)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	4 (20)	1 (5)	4 (20)	0 (0)	2 (10)	0 (0)	2 (10)	22
Internet	1 (5)	1 (5)	1 (5)	2 (10)	1 (5)	1 (5)	3 (15)	1 (5)	1 (5)	1 (5)	6 (30)	2 (10)	1 (5)	1 (5)	1 (5)	1 (5)	7
TV / Radio	1 (5)	1 (5)	2 (10)	2 (10)	1 (5)	1 (5)	0 (0)	1 (5)	1 (5)	1 (5)	1 (5)	0 (0)	1 (5)	0 (0)	1 (5)	1 (5)	15
Friends & Rela-tives	3 (15)	5 (25)	4 (20)	5 (25)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	1 (5)	0 (0)	0 (0)	0 (0)	19
School going children	0 (0)	0 (0)	1 (5)	5 (25)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	6

(*Note : Numbers in parenthesis are percentages)

Table 6 (b) : Sources of information about various other programmes for nutrition security

Sources of information	Other programmes for nutrition security																Rank
	National nutrition week		National health mission		National nutrition policy		Rajiv Gandhi Scheme for adolescent girls		Kishori Shakti Yojana		Pradhan Mantri Matritva Vandana Yojana		Village health nutrition day		Agriculture education in school level		
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Thiruvananthapuram																	
Anganwadi worker	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1
Asha worker	0 (0)	0 (0)	0 (0)	10 (50)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	10
Books & newspaper	0 (0)	4 (20)	2 (10)	8 (40)	0 (0)	5 (25)	0 (0)	4 (20)	0 (0)	5 (25)	0 (0)	3 (15)	0 (0)	0 (0)	0 (0)	1 (5)	32
Internet	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0
TV / Radio	0 (0)	0 (0)	5 (25)	3 (15)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	4 (20)	2 (10)	15
Friends & Relatives	0 (0)	0 (0)	1 (5)	2 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (20)	4 (20)	11
School going children	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (15)	9 (45)	12
Kollam																	
Anganwadi worker	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1
Asha worker	0 (0)	0 (0)	0 (0)	7 (35)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	7
Books & newspaper	1 (5)	1 (5)	0 (0)	4 (20)	1 (5)	0 (0)	0 (0)	1 (5)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	11
Internet	0 (0)	0 (0)	1 (5)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	1 (5)	4
TV / Radio	0 (0)	1 (5)	2 (10)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (15)	1 (5)	8
Friends & Relatives	0 (0)	0 (0)	3 (15)	1 (5)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	5 (25)	11
School going children	0 (0)	0 (0)	1 (5)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	3 (15)	6

*Note : Numbers in parenthesis are percentages)

Table 6 (a) shows that sources of information about major programmes related to nutrition security among the respondents. It shows that majority of the respondents in both the districts, got information mainly from books and newspaper. In newspapers advertisement of different of programmes related to food and nutrition are published by different ministries of India. Regarding the sources of information about ICDS scheme among respondents, it was found that majority of the female respondents in Thiruvananthapuram and Kollam districts got information about ICDS scheme from Anganwadi workers. Anganwadi workers provided good information related to nutrition and health to the female respondents. In the case of male respondents, it was found that majority of them got information about ICDS scheme from friends and relatives since female member in the family shared their knowledge about ICDS scheme to male members.

Majority of the female respondents in Thiruvananthapuram district got their information about mid day meal programme from school going children as in both the districts, public schools provide mid-day meal to the children. Anganwadi workers were another source of information. In Kollam district, the female respondents also got information from friends and relatives also. In the case of male respondents, they got information about mid-day meal programme from friends and relatives, TV/ radio, and school going children.

Table 6 (b) shows that sources of information about other programmes related to food and nutrition security in Thiruvananthapuram and Kollam district. Regarding the sources of information about National Health Mission, it was found that majority of the female respondents got information from ASHA workers in both the districts. Female respondents also got information from books (from PSC coaching classes) and newspapers (advertisements of programmes) also. In the case of male respondents, they got information mainly from TV/radio and friends and relatives but did not get the services of ASHA workers. Regarding source of information about agricultural education in school, it was found that 45 percent of the female respondents in Thiruvananthapuram district got information from school going children while in Kollam district, majority of them got information from friends and relatives and school going children. School going children shared their knowledge about agriculture education in school level mainly to their mother. So the female respondents got information about agriculture education in school level more than men through school going children. In the case of male respondents, they got information from TV/radio, friends and relatives and school going children in Thiruvananthapuram district. But in Kollam district, majority of them got information from TV/radio. And some of them got information from internet, friends and relatives and school going children. Other programmes were not going well in these districts. So people were not aware about it.

Services received from various programmes

ICDS scheme provides an integrated package of health, nutrition and education services targeted to the children aged below 6 years; pregnant and nursing mothers; and adolescent girls. Specific services through this programme include supplementary feeding, immunization, health checkups referral services, pre-school education to children aged 3-6 years and nutrition and health education to women.

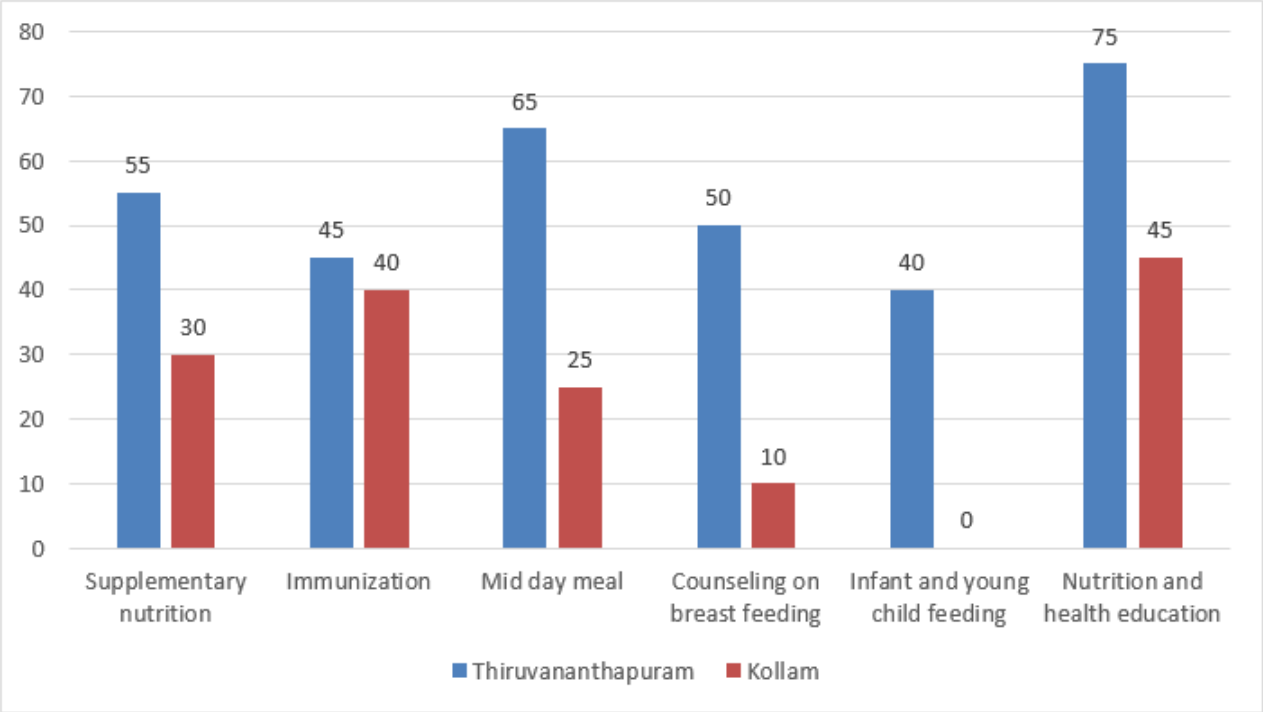

Fig. 33 Services from various programmes

Fig. 33 shows the services respondents received from various programmes in Thiruvananthapuram and Kollam. It was found that 75 percent and 45 percent of the female respondents got nutrition and health education through Anganwadi in Thiruvananthapuram and Kollam districts respectively. Anganwadi workers are mostly responsible for the implementation of these services. In Thiruvananthapuram district, 65 percent of the respondents said their children received mid-day meal, while in Kollam district, only 25 percent of them got mid-day meal. Mid-day meal programme was implemented also by Anganwadi workers and government schools. Regarding the supplementary nutrition to the respondents, it was found that 55 percent of the female respondents in Thiruvananthapuram district got supplementary nutrition and only 30 percent of them in Kollam district got supplementary nutrition. It was also implemented by Anganwadi workers. About 45 percent of the respondents in Thiruvananthapuram got immunization from various programmes while in Kollam district, 40 percent of them got immunization. Mainly Asha workers implemented this service in both the districts. Regarding the counseling on breast feeding, it was found that 50 percent of the respondents in Thiruvananthapuram district got counseling on breast feeding but in Kollam district, only 10 percent of them got counseling on breast feeding. Counseling on breast feeding was given by Anganwadi workers, Asha workers, and nutrition cell in the hospitals. Information about feeding of infants and young children was received by 40 percent of the female respondents in Thiruvananthapuram but none in Kollam. Anganwadi workers were mainly responsible to implement this service.

As evident from the above discussion, implementation of the projects were done more efficiently and effectively in Thiruvananthapuram compared to Kollam. One factor was the distribution of respondents. In the former district, majority of the respondents belonged to the age group of 18-35 years, while in Kollam the respondents were in the age group of 36-60 years. As majority of the services were provided by the Anganwadis, hence they rarely got access to those. Because anganwadis

mainly focused on children aged below 6 years, pregnant and nursing mothers, and adolescent girls. But aged women not get any services from Anganwadi's.

Awareness about nutrition related information

Nutrition related information is very essential to our daily life. It include information related to under nutrition, iron deficiency anemia, vitamin A deficiency, Iodine deficiency, food safety, personal hygiene, water and sanitation, food based dietary guidelines, over weight and obesity, feeding infants younger than 6 months, feeding young children (6-23months), diet of school-aged children, nutrition during pregnancy and lactation & use of pesticide and insecticide in the plants and their ill effects.

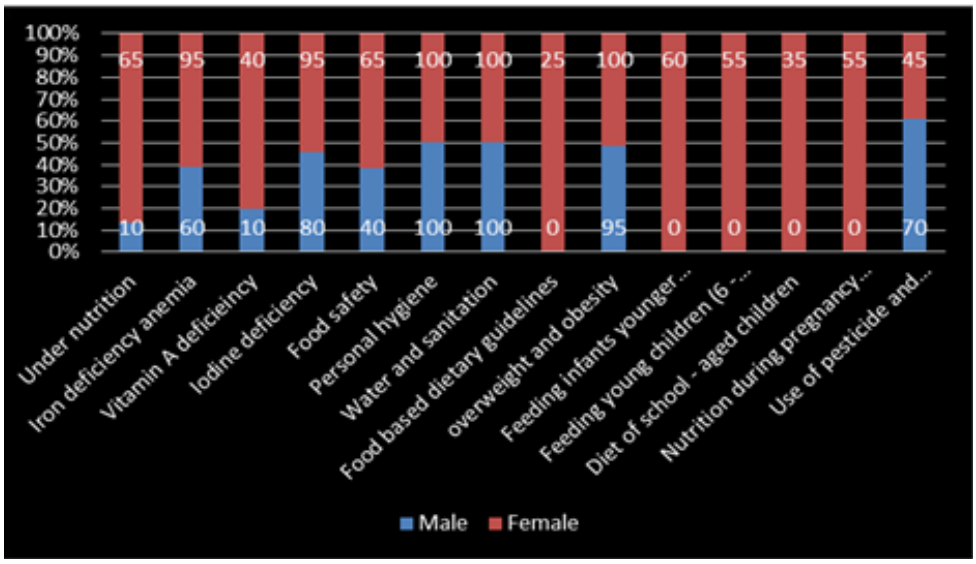

Fig. 34 (a) Awareness about nutrition related information in Thiruvananthapuram

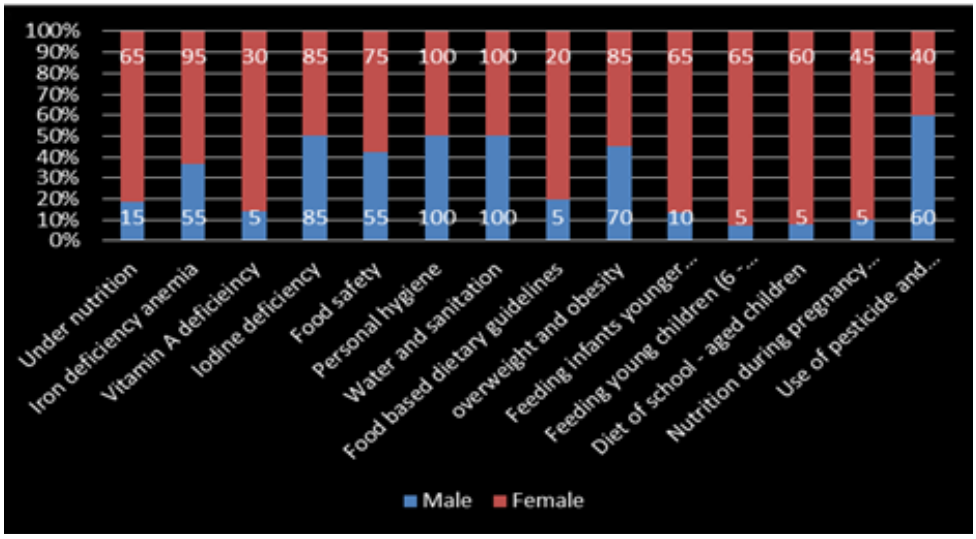

Fig. 34 (b) Awareness about nutrition related information in Kollam

Fig. 34 (a) and Fig. 34 (b) shows that all respondents in both the district were aware about personal hygiene and water and sanitation. Advertisement from Government agencies (Ministry of drinking water and sanitation) and basic information given in schools are mostly responsible for creating the

awareness. Majority of the respondents in both the districts aware about iron deficiency anemia, iodine deficiency and obesity and overweight because of their common occurrence. Only women were aware about feeding of children from different age group and nutrition during pregnancy and lactation in both the districts while the men were more aware about agricultural operations like pesticide and insecticide use because of the highly gendered nature of the jobs associated.

Sources of information about nutrition related information

Information about nutrition among the respondents gets through various sources. Table 7 clearly shows that sources of information about nutrition among the respondents in Thiruvananthapuram and Kollam district.

Table 7 Sources of information about nutrition

Sources of information	Other programmes for nutrition security																												Rank
	Under nutrition		Iron deficiency anemia		Vitamin A Deficiency		Iodine deficiency		Food safety		Personal hygiene		Water and sanitation		Food based dietary guidelines		Obesity		Feeding infants		Feeding children 6-23 months		Diet of school aged children		Nutrition during pregnancy & lactation		Ill effects of pesticide & insecticide		
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Thiruvananthapuram																													
Anganwadi worker	0 (0)	3 (15)	0 (0)	7 (35)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	7 (35)	0 (0)	6 (30)	0 (0)	0 (0)	0 (0)	5 (25)	0 (0)	0 (0)	28
Asha worker	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	4 (20)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	12
Books & newspaper	1 (5)	9 (45)	4 (20)	11 (55)	2 (10)	8 (40)	4 (20)	8 (40)	1 (5)	4 (20)	9 (45)	14 (70)	7 (35)	14 (70)	0 (0)	3 (15)	4 (20)	8 (40)	0 (0)	5 (25)	0 (0)	4 (20)	0 (0)	5 (25)	0 (0)	4 (20)	0 (0)	3 (15)	132
Internet	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	1 (5)	0 (0)	1 (5)	0 (0)	0 (0)	1 (5)	2 (10)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	1 (5)	11
TV / Radio	1 (5)	2 (10)	4 (20)	3 (15)	0 (0)	0 (0)	9 (45)	10 (50)	8 (40)	10 (50)	13 (65)	10 (50)	9 (45)	7 (35)	0 (0)	1 (5)	7 (35)	6 (30)	0 (0)	1 (5)	0 (0)	1 (5)	0 (0)	3 (15)	0 (0)	1 (5)	13 (65)	8 (40)	81
Friends & Relatives	0 (0)	2 (10)	4 (20)	7 (35)	0 (0)	0 (0)	9 (45)	8 (40)	2 (10)	1 (5)	4 (20)	0 (0)	4 (20)	1 (5)	0 (0)	0 (0)	14 (70)	11 (55)	0 (0)	4 (20)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	2 (10)	4 (20)	1 (5)	80
School going children	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4
Kollam																													
Anganwadi worker	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2
Asha worker	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	1 (5)	6
Books & newspaper	0 (0)	5 (25)	2 (10)	6 (30)	0 (0)	5 (25)	2 (10)	6 (30)	2 (10)	4 (20)	7 (35)	11 (55)	6 (30)	10 (50)	1 (5)	0 (0)	1 (5)	5 (25)	0 (0)	2 (10)	0 (0)	1 (5)	0 (0)	2 (10)	1 (5)	0 (0)	0 (0)	0 (0)	79
Internet	2 (10)	1 (5)	3 (15)	1 (5)	1 (5)	1 (5)	5 (25)	1 (5)	4 (20)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	5 (25)	1 (5)	2 (10)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	2 (10)	0 (0)	43
TV / Radio	2 (10)	4 (20)	4 (20)	6 (30)	1 (5)	2 (10)	5 (25)	8 (40)	8 (40)	14 (70)	14 (70)	9 (45)	15 (75)	6 (30)	1 (5)	3 (15)	9 (45)	5 (25)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	1 (5)	3 (15)	10 (50)	6 (30)	142
Friends & Relatives	1 (5)	6 (30)	7 (35)	14 (70)	0 (0)	0 (0)	14 (70)	12 (60)	3 (15)	2 (10)	5 (25)	6 (30)	4 (20)	5 (25)	1 (5)	2 (10)	12 (60)	13 (65)	0 (0)	10 (50)	0 (0)	11 (55)	1 (5)	10 (50)	0 (0)	6 (30)	2 (10)	1 (5)	148
School going children	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0

*Note : Numbers in parenthesis are percentages)

Table 7 shows that results regarding the sources of information about the nutrition related information among the respondents in Thiruvananthapuram and Kollam district. Considering the sources of awareness about under nutrition, it was clearly found that majority of the female respondents got information from books and newspaper (45%) in Thiruvananthapuram district and friends and relatives (30 %) in Kollam district. They also get information from TV/radio and internet also. But in male respondents, they got information from mainly from TV/radio. Regarding the awareness about iron deficiency anemia in Thiruvananthapuram district, it was clearly found that majority of the female respondents got information from books and newspaper. They also got information from anganwadi workers and friends and relatives also. But in the case of male respondents, it was found that they got information from books and newspaper, TV/radio and friends and relatives also. While in Kollam district, it was found that majority of the female respondents got information from friends and relatives. Because this diseases were very commonly seen in Female respondents of Kollam district, then the people share their knowledge to their friends. Regarding the sources of information about vitamin a deficiency in both the district, it was clearly found that majority of the female respondents got information mainly from books and newspaper (40 % in Thiruvananthapuram district and 25 % in Kollam district). They also get information from TV/radio also. Awareness among the male respondents was very low in both the district. Regarding the sources of information about iodine deficiency among the respondents in both the districts, In Thiruvananthapuram district, it was found that majority of the female and male respondents got information from TV/radio, friends and relatives and books and newspaper. But in Kollam district, it was found that majority of them got information from friends and relatives. Iodine deficiency diseases are very common in both the district. Then the people had to be more aware about it. So they shared their knowledge among their friends and relatives. Regarding the sources of information among the respondents in both the district, it was found that majority of the respondents got information from TV/radio. Because in TV/radio, news and advertisement about food safety was very common. So the respondents got lots of information about food safety through this. Regarding the sources of information about personal hygiene, it was clearly found that majority of the respondents got information from books and newspaper and TV/radio. Because importance of personal hygiene were studied by the respondents in their school days. There are lots of advertisements sponsored by the government were also seen in TV/radio. Through this advertisement, respondents got lots of information about personal hygiene. Regarding the sources of information about water and sanitation among the respondents in both the district, it was clearly found that majority of the female respondents got information from books and newspaper (70% in Thiruvananthapuram and 50 % in Kollam district). In the case of male respondents, majority of them got information from TV/radio. Because they spend their time more for entertainment than male respondents. So they gain more information about water and sanitation from TV/radio. Regarding the sources of information about food based dietary guidelines in both the district, it was clearly shows that 15 % of the female respondents in Thiruvananthapuram district got information from books and newspaper and 15 % of them in Kollam district also got information from TV/radio. This results clearly shows that majority of the male respondents were not aware about the food based dietary guidelines. Some of them in Kollam district got information about this from books and newspaper, internet, TV/radio and friends and relatives. Regarding the sources of information about obesity in

both the district, it was clearly found that majority of the respondent got information about obesity from friends and relatives. Because over weight and obesity was commonly seen in both the district. So majority of the people aware about overweight and obesity. Then they share their knowledge among their friends and relatives. They also got information about this from TV/radio and books and newspaper also. Regarding the sources of information about feeding infants younger than 6 months, it was clearly found that in Thiruvananthapuram district, majority of the female respondents got information from anganwadi workers (35 %) and they also got information from books and newspaper (25 %) and friends and relatives (20 %) also. But in Kollam district, it was clearly found that majority of the female respondents got information only from friends and relatives (50%). This result shows that anganwadi centres are working very well in Thiruvananthapuram district. So the respondents in Thiruvananthapuram district got lot of information from anganwadi workers. Regarding the sources of information about feeding young children (6-23 months), it was clearly found that majority of the female respondents in Thiruvananthapuram district got information from anganwadi workers (30%). But in Kollam district, it was found that majority of the female respondents got information from friends and relatives (55 %). Regarding the sources of information about diet of school-aged children in both the district. It was found that majority of the respondents in Thiruvananthapuram district got information from books and newspaper. But in Kollam district, majority of them got information from friends and relatives. Regarding the sources of information about nutrition during pregnancy and lactation, it was found that majority of the respondents in Thiruvananthapuram district got information from anganwadi workers. Because anganwadi workers provide more good information to the female respondents in Thiruvananthapuram district about nutrition during pregnancy and lactation. But in Kollam district, it was found that 30 % of the female respondents got information from friends and relatives. Regarding the sources of information about the use of pesticide and insecticide and their ill effects in both the district, majority of the respondents got information about use of pesticide and insecticide and their ill effects from TV/radio. In TV, the respondents got lots of information about pesticide through many programmes such as "Kissan Krishi Deepam", "Bhoomi Malayalam" etc.

Impact of information and services in food and nutrition security of the family

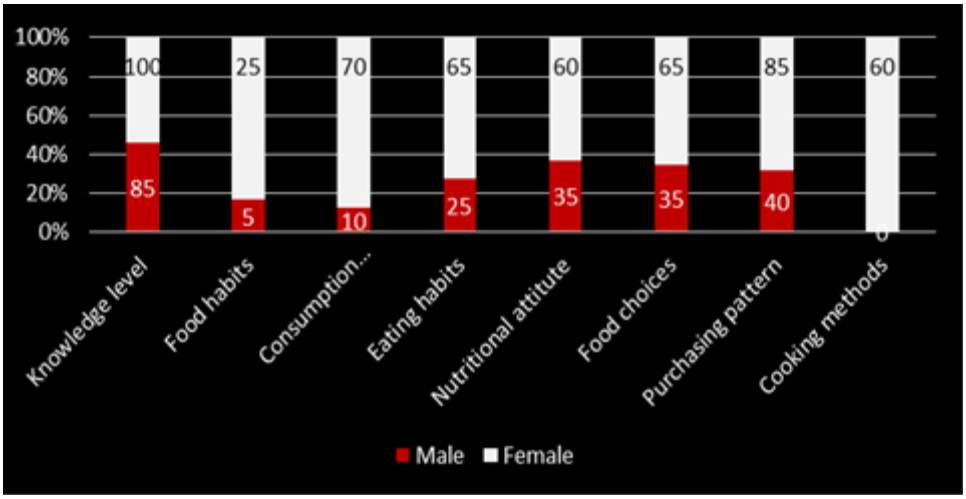

Fig. 35 (a) impact of information / services in Thiruvananthapuram

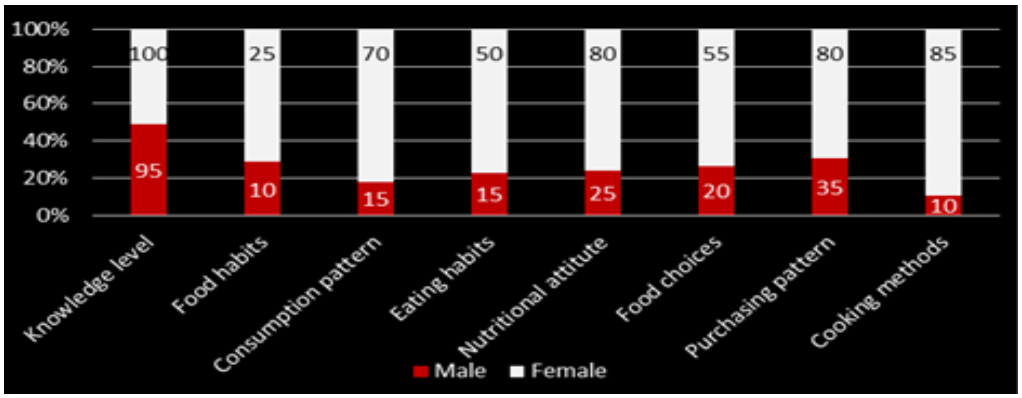

Fig. 35 (b) Impact of information / services in Kollam

Nutrition related information and services give many impacts in the food and nutrition security of the respondents. These information's were very essential for maintaining the food and nutrition security of the family. From the fig. 35 (a) and fig 35 (b), it was clearly found that female respondents in both the district had many impacts in their life after getting the information and services related to nutrition. After getting the information about nutrition related diseases such as iron deficiency anemia, iodine deficiency, under nutrition and vitamin A deficiency. Their consumption pattern, nutritional attitude and purchasing pattern changed. Because they purchase and use iron rich foods, iodine rich foods and protein rich foods. And they also impart these foods among their family. After getting the information about harmful effects of fast food, their habits of eating fast food reduced. Information about the bad effects of high use of oil helped to change the cooking methods in kitchen. So they reduced the use of oil at the time of cooking.

Other benefits of information / services

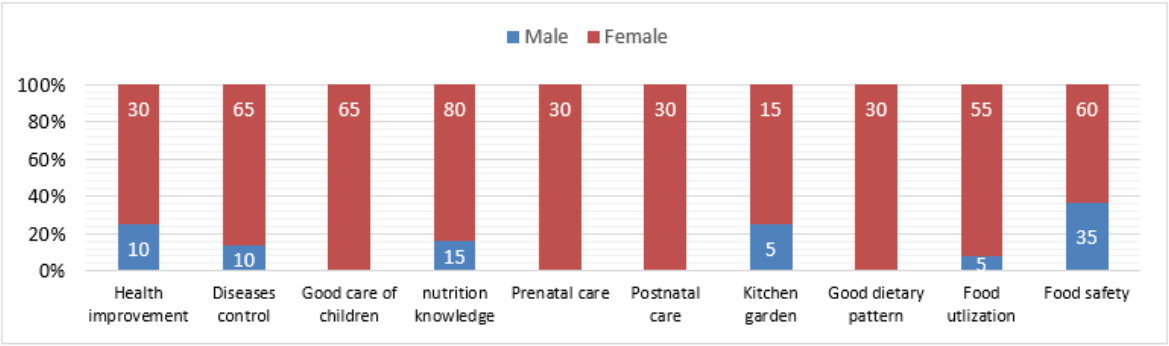

Fig. 36 (a) other impacts in Thiruvananthapuram

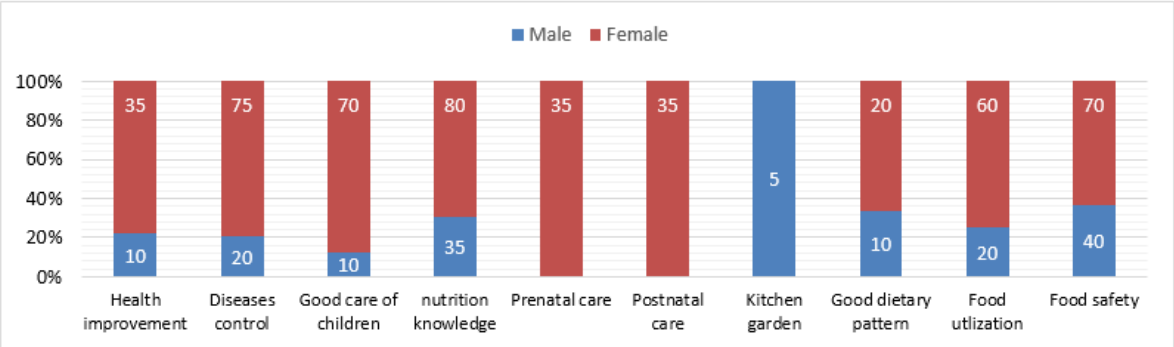

Fig. 36 (b) other impacts in Kollam

Information and services received from various sources also given other impacts among the life of respondents in Thiruvananthapuram and Kollam district. Fig. 36 (a) and Fig. 36 (b) gives the results of other impacts of information and services related to nutrition among the respondents in Thiruvananthapuram and Kollam district. In both district, impacts mainly came in the life of the women respondents. Because women got more nutritional information and services. Anganwadi centres conducted many awareness classes to women on nutrition related topics and they also gave supplementary nutrition and midday meal to the children below six years. This creates an awareness of importance of nutritious food to the children among the mothers. This awareness creates many good impacts in their life. Because of this information and services of anganwadi centres, women can provide good care to the children, pregnant mother and lactating mother. After getting these information's, women can also control many diseases. Information about food safety also made many impacts among the women respondents. Because of this information, they are very conscious about the handling, preparation and storage of food. Information also helped to proper utilization of food among the respondents. Nutritional knowledge among the women respondents also increased because of the information received from various sources.

Perception of rural families about information from different sources in their life

Effectives of information received from various sources were different among the respondents in both the districts. Fig. 37 (a) and fig. 37 (b) clarifies that the effectiveness of information received from various sources among the respondents in Thiruvananthapuram and Kollam district.

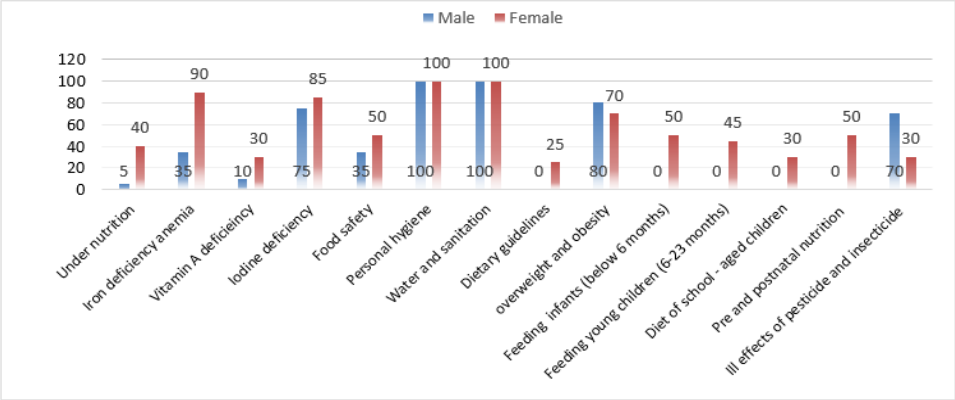

Fig. 37 (a) Effectiveness of information received in Thiruvananthapuram

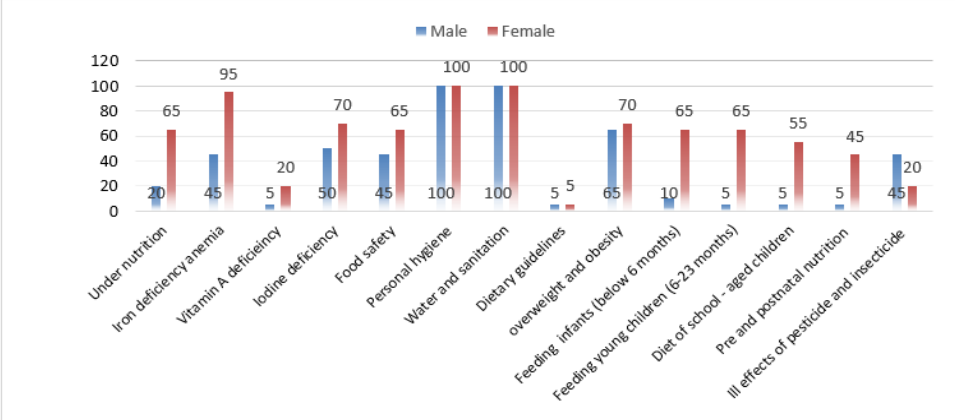

Fig. 37 (a) Effectiveness of information received in Kollam

It clearly shows that information about personal hygiene and water & sanitation were more effective in all the respondents in both the district. Because of these information about their knowledge was increased. So they can control many diseases due to the lack of proper sanitation and hygiene. Information about iron deficiency anemia was also highly effective in the life of female respondents. Because, this information was very useful for preventing anemia. Information about iodine deficiency was effective among the respondents. Because of this information, they used iodized salt daily, this helps to prevent iodine deficiency. Information about feeding of infants (below 6 months), young children (6 – 23 months), and school aged children and pre and postnatal nutrition were more effective among the female respondents. This information helped to give more nutritious food to children, pregnant women and lactating mothers. Information about obesity was effective among the respondents in both the district. Information about use and ill effects of pesticide and insecticide were more effective among the male respondents. Because in both the district, male respondents has more awareness about this and it was very helpful for maintaining kitchen gardens.

Perception of rural families about services of various schemes

Table 8. Perception about services

Services	Effectiveness		Satisfaction	
	Male	Female	Male	Female
Thiruvananthapuram				
Supplementary nutrition	0	55	0	50
Immunization	0	30	0	20
Mid-day meal	0	55	0	45
Counseling on breast feeding	0	45	0	35
Promotion of infant and child feeding	0	40	0	35
Nutrition and health education	0	55	0	30
Kollam				
Supplementary nutrition	0	30	0	25
Immunization	0	40	0	40
Mid-day meal	0	25	0	25
Counseling on breast feeding	0	10	0	10
Promotion of infant and child feeding	0	0	0	0
Nutrition and health education	0	45	0	40

Table 8 shows that perceptions about the services were different among both the male and female respondents in Thiruvananthapuram and Kollam district. Services received from various sources were more effective among the female respondents in both the respondents. Because only women respondents received these services. These services were mainly for the female respondents. Comparing both the districts, services were more effective among the female respondents in Thiruvananthapuram district, because women in this district got the services properly. And they were more effective in their life. Home based counseling for early child hood stimulation and agriculture education at school level were not effective among the respondents in both the district. Because these services was not getting to the respondents. Services were effective among the respondents, but they are not satisfied in those services. Because some services like midday meal and supplementary nutrition etc, among the female respondents were effective in their life, but they were not satisfied sometimes due to lack of getting the services on proper timing. Some services like counseling on breast feeding and nutrition & health education gave good information and they were more effective in their life, but sometimes some of the respondents did not know about how to impart these information's to their life, so that services were not satisfied in their life.

Services providing agencies

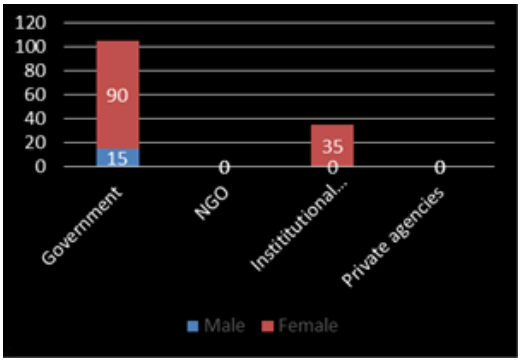

Fig. 39 (a) Service providing agencies in Thiruvananthapuram

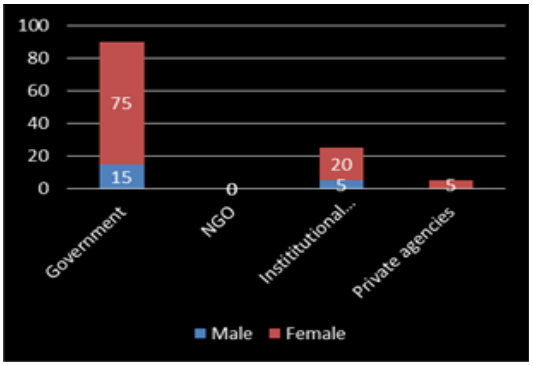

Fig. 39 (b) Service providing agencies in Kollam

Different agencies provide different services. Fig. 39 (a) and fig. 39 (b) states that the results regarding the service providing agencies of Thiruvananthapuram and Kollam district, it was clearly found that majority of the female respondents got services from government agencies, 90 percent of the respondents in Thiruvananthapuram and 75 percent of them in Kollam district. Fifteen percent of the male respondents in both the district also got services from government agencies. Thirty five percent in Thiruvananthapuram district and 20 percent in Kollam district also got service from institutional activities, such as schools. Five percent of the male respondents got services from institutional activities and private agencies

Conclusion and Recommendations

Food and nutrition security is an important part of each families in the world. Awareness about food and nutrition security is essential for each member of the family. Lack of awareness creates so many problems in their life. The present study "Information sources and awareness level rural communities on food and nutrition security in Kerala" conducted among 40 families of rural areas in Kerala. In each family, one male member and one female member selected for the study. Total 80 respondents were selected for the study. Thiruvananthapuram and Kollam are the two districts of Kerala, that districts are selected for the study. In this study, mainly focused on information sources and awareness level of the respondents on food and nutrition security of the family and also focused on impacts and their perception about information / services that they received from various sources.

Awareness level of food and nutrition security among the respondents in both the districts was very low. Because they did not get proper information about food and nutrition security. Basic five food groups are very commonly used in the daily life. So they had to more aware. Because Daily life experience, books and newspaper and TV/radio are the main sources of information about basic five food groups. Female respondents were more about it. Because they got knowledge about it higher than male respondents.' Public distribution system, Local whole sale and retail stores and Supplyco are the main sources of purchase of the food items among the respondents. Majority of the respondents in Kollam district got subsidies from the PDS. Because majority of the respondents in Kollam district are in below poverty level. All the respondents faced food accessibility problem because of the increase in price of food items. Women faced food accessibility problem mainly because lack of food items and follow some beliefs and take "vratham" for the welfare of their families. Man generally skipped their meals due to lack of time, while women skipped their meals due to lack of food stuffs and religious reasons. Boiling, pressure cooking, deep frying and shallow frying are the main cooking methods among the respondents. In Kollam district, people use of deep frying method was comparatively low. Because they were more aware about the bad effects of high use oil while cooking. Majority of the male respondents prefer fast food for their consumption. While female respondents do not prefer. Because they were more aware about the bad effects of fast food. Male respondents were also aware but they are not bothered. Iron deficiency anemia, heart diseases, goiter and obesity were highly aware among the respondents. Because these diseases were very common among the respondents. So they got information about it from various sources like friends and relatives, books and newspaper etc. Anganwadi workers are the main sources of information about anemia among the female respondents, because they conducted many programmes related to nutrition for women. They got much information about it from these awareness classes. Female respondents were more aware about food related nutritional diseases, because they got information about it mainly from various sources. These programmes are mainly focused in women. ICDS, NHM and mid-day meal programme were highly aware among the respondents, because these programmes were running very well in the districts. These services were available to the respondents in both the districts. Nutrition and health education, midday meal programme and supplementary nutrition are the main services received by the female respondents through various programmes. Awareness

about nutritional related information like nutritional diseases, feeding of children and prenatal and postnatal care of women are higher in female respondents than male respondents. Because they got information about it from various sources, like friends and relatives, books and newspaper etc. information about use of pesticide and insecticide was high among the male respondents. Because male respondents are the main person to maintaining kitchen garden in their home. So they acquire information about it from TV/ radio programmes and books etc. Impacts of information and services were mainly seen among the female respondents. Because they use that information and services properly. Information about food and nutrition had to make impacts in their knowledge level, consumption pattern, purchasing pattern, nutritional attitude and cooking methods. These impacts are very effective for the welfare of their families. Majority of the female respondents perceived that information about nutrition related things were very effective in their life. But in the case of male respondents, many information were not effective in their life. Because that information was not properly got to the male respondents. Services from various programmes were also effective in the female respondents. Because services are mainly get to the female respondents. Those services were very useful for their welfare. Government agencies are the main service providers of the respondents.

Women are more aware than men about the food and nutrition security of their family. Because women got many informative knowledge from various sources such as books and newspaper, friends and relatives, TV /radio and many extension worker such as Anganwadi workers and Asha workers. Information about food and nutrition is very essential for maintaining food and nutrition security of the family. Food and nutrition has four dimensions such as availability, accessibility, utilization and stability. Knowledge about these things are very essential for maintaining food and nutrition security of the family. Every members of the family should know about the food and nutrition security. But in majority of the families, only women had aware about it. Men are unaware about the food and nutrition security, it will affect the whole family. Because in many houses, men are responsible for purchasing food items from the markets. So they should know about important good quality food items needed for the family. Unawareness of man will create bad selection of food items from the market. It will create so many health problems to the family. Lack of awareness will create malnutrition in the family. This will create growth of future generations of the family. Women are aware about food and nutrition, but they have no purchasing power and they do not go for purchasing food items from the market. This is an important problem in many families. Women get much information from awareness classes conducted by anganwadi. This will help to increase the awareness about food and nutrition that needed to welfare of the family. But men did not get any opportunity to attend these programmes. This type of awareness classes also needed to men also. That will helps maintain food and nutrition security of the family.

Salient recommendations from the study are as follows:

- Services of Integrated Child Development Service Scheme (ICDS) should be on time.
- Vulnerable sections of the communities like aged persons should be included to get the services of the various schemes
- Male members should also be included under the services like nutrition and health education.

- Awareness classes related to making and maintenance of kitchen garden should be given to both male and female members of the every family.
- Awareness classes about harmful effects of fast-food should be given all members of the family.

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