DOCUMENTATION AND NUTRITIVE EVALUATION OF TRADITIONAL FOODS OF KERALA – ALAPPUZHA DISTRICT

PROJECT SUBMITTED

In the Partial Fulfillment of the Requirement for the Award of the Degree of

B.Sc. NUTRITION AND DIETETICS

BY

SNEHA MARIA ELIZABETH O.J

Register No - SB20ND030

DEPARTMENT OF CLINICAL NUTRITION AND DIETETICS

ST. TERESA'S COLLEGE (AUTONOMOUS)

ERNAKULAM

APRIL 2023

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CERTIFIED AS BONAFIDE RESEARCH WORK

Signature of the Internal Examiner

Signature of the External Examiner

DECLARATION

I hereby declare that the project entitled **"DOCUMENTATION AND NUTRITIVE EVALUATION OF TRADITIONAL FOODS OF KERALA – ALAPPUZHA DISTRICT"**, submitted in partial fulfillment of the requirement for the award of the degree of B.Sc Nutrition and Dietetics is a record of original research work done by me under the supervision and guidance of **Dr. Soumya P.S,**, Assistant Professor, Department of Clinical Nutrition and Dietetics, St. Teresa's College (Autonomous), Ernakulam and has not been submitted in part or full of any other degree/diploma/fellowship or the similar titles to any candidate of any other university.

Place: Ernakulam

Sneha Maria Elizabeth O.J

Date: 18/04/2023

CERTIFICATE

I hereby certify that the project entitled "**DOCUMENTATION AND NUTRITIVE EVALUATION OF TRADITIONAL FOODS OF KERALA – ALAPPUZHA DISTRICT**", submitted in partial fulfilment of the requirement for the award of the degree of B.Sc. Nutrition and Dietetics is a record of original work done by **Ms. Sneha Maria Elizabeth O.J**, during the period of the study under my guidance and supervision.

Signature of the HOD

Ms. Surya M. Kottaram

Head of the Department

Department of Clinical Nutrition and Dietetics

St. Teresa's College (Autonomous)

Ernakulam

Signature of the Research Guide with designation

Dr. Soumya P.S

Assistant Professor

Department of Clinical Nutrition and Dietetics

St. Teresa's College (Autonomous)

Ernakulam

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SNEHA MARIA ELIZABETH O.J

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1. INTRODUCTION

"Food is not simply organic fuel to keep body and soul together, it is a perishable art that must be savored at the peak of perfection."

– E.A. Bucchianeri

Food is a culture, emotion, hospitality, prestige and power and is closely knitted with tradition. Traditional knowledge is a community based functional knowledge system, developed, preserved and refined by generations through continuous interaction, observation and experimentation with their surrounding environment. It includes beliefs, values, and practices gathered from the practical experience of older generation,and its whole function is survival and development of culture of people.

Traditional foods, originated from ancestral kitchens are developed through ages, invented, modified, utilised and evolved to improve nutritional and social well being of the people around the world. Most of them are culture specific, region specific, environment specific, community specific and season specific. These foods are socially, culturally and economically important and provide food security, enhance livelihood and improve nutritional and social well being of people. Food culture arises out of the place of a people‟s origin, and so traditional local foods hold the potential to bind and stabilise communities and enable a cultural continuity through conserving their histories. Indian cuisine is represented as a wide spectrum of food cultures with distinctive regional differences and preferences (Achaya,1998).

Traditional food products are socially, culturally and economically important. These are developed on the basis of the domestic agricultural produce to meet the nutritional needs of the people and have great potential to develop new food industries. Moreover, traditional foods provide food security, enhance livelihood, improve nutritional and social wellbeing of people around the world, particularly the marginalized and vulnerable groups.

Rao and Srivastava (1998) defined traditional foods as those evolved out of necessity to make maximum use of local foods, utilizing available artifacts and expertise and carried down through generations.

Traditional food for a region is usually identified as the dietary system inherent within a culture that grows out of the social and natural resources available and accepted by the culture (Kuhnlein & Receveur, 1996). The definition is somewhat comprehensive since it involves socio-cultural factors such as the sourcing of materials and the preparation activities. Traditional food is a valuable part of a people's culture. It can be deduced from the literature that the various indigenous peoples in different regions who have assimilated with the local populace have tried all possible means to preserve and promote their traditional food, albeit with some difficulties because of environmental influences.

According to Preetam Sarkar et.al(2015) , traditional Indian foods have been prepared for many years and preparation varies across the country. Traditional wisdom about processing of food, its preservation techniques, and their therapeutic effects have been established for many generations in India.

The substitution of traditional foods not only led to a loss of production of traditionally and culturally appropriate food, but also in the loss of traditional knowledge related to food production. It created serious health and socio economic problems among community members (Diaz, 2005). Hence, the traditional foods which reflect the rich heritage of regional cultures should be saved from extinction and the skills gained through generations have to be preserved.

Factors such as international migration, the communication revolution and culinary tourism have contributed to globalisation of food habits and this has paved the path towards global food culture (Everett, and Aitchison, 2008). According to Hollingsworth (2000),one of every sevenfold dollar over the next decade would be spent on ethnic foods and efforts to export them are now expanding. Hence,traditional foods are now considered competitive products, with its unique materials and production techniques.

Upliftment of these regional food items from local standards to global standards necessitates development of new policies and strategies for quality standardisation.

The traditional Indian food culture should not be forgotten by every generation as it shows the identity of the Indian people itself in terms of culture and norms. Each of the instruments has its own tales and sentimental values along with it. Without them, the indian food will not have its own distinctiveness and cannot achieve the accomplishment that can be seen nowadays. Thus, several commendations should be made in supporting the cultures in order to preserve it for longer period

There is no reliable sources or texts which contain authentic information on traditional recipes that currently exist. Our effort here is to generate a study entitled "Documentation and Nutritive Evaluation of Traditional Foods of Kerala- Alappuzha district" with the following objectives.

1. To identify and collect information on the various traditional foods of different districts of Kerala and to document their methods of preparation

2. To evalute the nutritional characteristics of the selected traditional food.

2. REVIEW OF LITERATURE

Literature relevant to the present study entitled "Documentation and quality evaluation of traditional foods of central zone of Kerala" is reviewed under the following heads.

2.1. Importance of traditional knowledge

2.2. History of traditional foods

2.2.1. Traditional foods of India

2.2.2. Traditional foods of Kerala

2.2.3. Meaning, Concepts and Definition

2.2.4. History and Ethical Background

2.3. Traditional foods of adequacy of different group

2.4. Health and nutritional aspects of traditional foods

2.5. Key challenges of traditional foods

2.6. Future scope of traditional foods

2.1. Importance of traditional knowledge

Ranjay *et al.* (2021) reported that the critical role of lesser-known local plant species in the food, nutrition and livelihood security of traditional community in India. Considering women as a major custodian in knowledge and practices on foods, a total of 90 traditional women and 60 key knowledgeable community members (thus a total of 150 participants) were selected from East Siang and Upper Siang.

Ojha *et al.* (2022) reported that himalayan communities illustrate a rich agriculture-medicine use system that not only provides adequate dietary diversity and nutrition but also delivers therapeutic security. This study explores the food-medicine interface as observed by the marginal hill communities in the central Himalaya with an aim to assess traditional agriculture and

food plants with relation to dietary diversity and nutritional and medicinal values based on comprehensive research.

According to Boesi (2014) tibetans have traditionally exploited few wild food plants. These mainly compensate for the lack of vegetables and fruit in traditional Tibetan diet, notably among pastoralists, and are far more important during famines as substitutes for roasted barley flour. Today few wild food plants are regularly consumed, less in the main towns and villages and moreso in remote areas and among pastoralists. Younger generations from towns have almost lost traditional botanical knowledge. Owing to modernisation and globalisation processes, many local people have specialised in collecting natural products increasingly demanded in China and abroad. Tibetan people strongly benefit from these activities. Tibetan medicine sees diet as a way of curing diseases and medical treatises describe therapeutic properties of several wild food plants that Tibetans nowadays consume.

Choudhary *et al* (2015) reported that traditional foods and their dietary guidelines are prescribed in Ayurveda. There is so much similarity in ayurvedic dietetics and traditional foods that many of the traditional health foods in India can be called ayurvedic foods. This review article introduces the concepts of ayurvedic health foods in India and describes several traditional heath foods across various regions of India. Recommended dietary guidelines according to age and health condition of the consumer, and seasonal considerations are presented for each of the traditional health foods of India. In the era of globalization of the population and international food trading, health-conscious citizens around the globe will benefit from the wealth of knowledge on traditional Indian and ayurvedic health foods of Indian origin.

Aneena (2009) reported in her study "Documentation and quality evaluation of traditional foods of central zone of Kerala" was taken up with the objectives of identifying and collecting information on the various traditional foods of central zone of Kerala and documenting their mode of processing, and evaluating quality characteristics of the selected less used traditional foods. The study was conducted in four districts namely Eranakualm, Thrissur, Palakkad and Malappuram comprising the central zone of Kerala. Senior citizens who possess the details of traditional food

items and preparations in each locality were selected as the respondents. The respondents were categorised based on the communities they represent.

Payyappallimana (2010) described 'The United Nations' Decade of Education for Sustainable Development (DESD) aims, among other objectives, to foster and promote the mainstreaming of intercultural approaches within a social learning process through multi-sectoral, collaborative and interdisciplinary methods. Biological as well as cultural diversity are inherently linked and form an important part of the sustainable development education process. Traditional knowledge (TK), a central dimension of bio-cultural diversity, is also receiving increased attention in this context. However, there are several socio-political and methodological challenges of integrating TK in Education for Sustainable Development (ESD) programs. Using the case of traditional medicine from Kerala state, India, this paper attempts to highlight the importance of and the issues pertinent to such integration in a local context.

According to Ramesh Chandran (2016) one of the visible impacts of globalization in Kerala is the transformation of the food habits of urban population, particularly the youth. The urban dietary pattern visibly shows that there is a conspicuous shift from traditional foods to fast foods. Along with that is the larger consumption of processed foods and packaged fruit juices.

Asha John *et al.* (2019) reported that just like in any art form, trends in the food service industry are constantly shifting to reflect the ever changing interests and needs of people. Keeping up with these trends is highly important to restaurant owners, chefs, are really anyone working in the foodservice industry.

Edward (2017) reported that traditional food and healthy eating habits has been one of the fast-growing areas. All humans, both men and women, require food for their survival. However, both men and women indulge in food as if it were their sole purpose of existence. Hence, eating disorders are common among men and women.

2.2. History of traditional foods

2.2.1. Traditional foods of India

Traditional Indian foods have been prepared for many years and preparation varies across the country. Traditional wisdom about processing of food, its preservation techniques, and their therapeutic effects have been established for many generations in India. Food systems can deliver numerous biological functions through dietary components in the human body. Indian traditional foods are also recognized as functional foods because of the presence of functional components such as body-healing chemicals, antioxidants, dietary fibers, and probiotics.

Subramanyam *et al*, 2010 reported that, India has a rich and highly diverse food, and its various diets are well closely linked to social identity, religion and other cultural influences as well as local agricultural practices and wide range of food availability Vecchio *et al*, 2014.

Traditional food processing in India began when man ceased to be a food hunter (Potty, 1986). Each and every community in India have their own and distinct food ethos (Achaya, 1998). According to Pratima (2000), India has been the home for ageless culinary art, and had a rich heritage of a wide variety of traditional foods. According to Pattanayak (1986), traditional foods varied not only around the world but also within a region.

Vegetarianism in countries like India has been adopted mainly due to socio-economic and cultural factors rather than the health benefits of vegetarian diet (Kakade and Agte, 1997).

Egg halva is a traditional Indian sweet dish which is a combination of milk, liquid, whole egg and sugar (Kalra *et al*. 1998). Khoa is an important indigenous heat coagulated and partially dehydrated milk product (Sharma and Lal, 1999).

Documentation of vast range of traditional convenience foods across the different zones of North Karnataka was carried out by Ishwarappagol (2009). The study revealed that 162 traditional convenience foods (106 ready-to-eat and 56 ready-to-use) documented across the regions were preferred more among urbanites (134) compared to rural group (81). Cereal based foods dominated (60) the category (ready-to-eat 32, ready-to-use 28). Family size, type and number of generations living together negatively influenced the preparation of traditional convenience foods.

Khoa- jalebi, a unique traditional product of central India was studied by Pagote and Rao (2012). Devi and Kumar (2012), worked on the traditional, ethnic and fermented foods of different tribes of Manipur. The traditional foods of Manipuri's comprised of iromba, champhu, kangshoi, hawaichar, sibum, ngare, paknam, chagempomba, kungshu, hentak, khazing and heitak. Alcoholic beverages made up of rice, locally called as 'yu' are very common in almost all the festivals of the tribal people of Manipur.

Though a significant portion of Indian food is vegetarian, many traditional Indian dishes also include chicken, goat, lamb, fish, and other meats. Cuisine across India has also been influenced by various cultural groups that entered India throughout history, such as the Persians, Mughals, and European colonists (IAS Charisma, 2013).

Indian traditional foods are also recognized as functional foods because of the presence of functional components such as body-healing chemicals, antioxidants, dietary fibers, and probiotics. These functional molecules help in weight management and blood sugar level balance and support immunity of the body. (Hotz ,2007)

Indian traditional foods can be classified into eight broad categories: (1) processed grain products, (2) fermented foods, (3) dehydrated products, (4) pickles, chutneys, sauces, and relishes, (5) ground spice and spice mixtures, (6) fried food products, (7) dairy products, and (8) confections and sweets. (Srinivasan, 2010).

The cooked rice kept overnight in water was consumed as a delicious breakfast item by South Indians after mixing with curd (Subbalakshmi, 2005). Realization of functional properties of Indian traditional food eventually led to development of one of the world’s oldest medicinal systems, the Ayurveda (Sarkar *et al*. 2015).

Angchowk *et al*. (2009) made an attempt to study the traditional foods and beverages of Ladakh, and to bring forth those dishes and beverages, which are true representative of the region. The traditional foods and beverages included in the study were tagikhambir (browned sour dough bread), tagibushuruk (puffed unleavened bread) tagitsabkheer (ground sprouted wheat bread), sepheag/ (freshly sprouted wheat bread) etc. These recipes have been described in detail including their method of preparation.

2.2.2. Traditional foods of Kerala

Traditional and Indigenous Knowledge have been used for centuries by indigenous and local communities under local laws, customs and traditions. It has been transmitted and evolved from generation to generation. Traditional knowledge has played, and still plays, an important role in vital areas such as food security, the development of agriculture and medical treatment. The importance of traditional and indigenous knowledge for its creators and for the world community at large, and the need to foster, preserve and protect such knowledge, has gained growing recognition at international level (Aneena,2009).

Foreign influence on the cuisine of Kerala is marked, with each religion from Muslims to Syrian Christians developing their own cuisine and style of preparation. The Moplah cuisine of the Malabar region has a distinct flavour, borrowed from the traders who regularly visited the region. Kerala cuisine has an abundance of coconut, rice, tapioca and spices like black pepper, cloves, cinnamon and ginger. The Portuguese introduced cassava, now widely eaten in Kerala. The region is also famous for its Sadhya, served at the Hindu festival Onam and consisting of boiled rice and a host of vegetarian dishes on a banana leaf. Kerala cuisine also features a lot of sea food like fish, prawns, mussels and crabs because of its long coastline.

2.2.3. Meaning, Concepts and Definition

Kerala cuisine is a culinary style originated in the Kerala, a state on the southwestern Malabar Coast of India. Kerala cuisine offers a multitude of both vegetarian and non-vegetarian dishes prepared using fish, poultry and red meat with rice as a typical accompaniment. Chillies, curry leaves, coconut, mustard seeds, turmeric, tamarind, asafoetida and other spices are also used in the preparation.

Kerala, in the south-western part of India, is known for its rich heritage and cultural diversity. Situated along the Malabar coast, Kerala has had regular interaction with the West since ancient times. From the coming of the Arab traders to the Portuguese, and later the British, Kerala has witnessed it all. This greatly influenced the socio-cultural fabric of the region, making it one of the most diverse states of India.

Traditional foods are foods based on solid foundation of culture, customs and natural environment of a country or a region of the world and eaten by the people for a long time (Tokuji, 1986). Kuhnlein and Receveur (1996) defined a traditional food as food from a particular culture available from local resources and culturally accepted andincludes socio cultural meanings, acquisition/processing techniques, use, composition, and nutritional consequences for peopleusing the food.

Azarand (1996) defined traditional food as a specific food in a region whose raw materials are locally available and which is not used in other regions. Rao and Srivastava (1998) defined traditional foods as those evolved out of necessity to make maximum use of local foods, utilizing available artifacts and expertise and carried down through generations. According to Jordana (2000) a traditional product is a "representation" of a group, which belonged in a defined space, and is part of a culture that implies the cooperation of the individuals operating in that territory. The author also indicated that in order to be traditional, a product must belinked to a territory and it must also be part of a set of traditions, which will necessarily ensure its continuity over time.

Traditional food is at the core of indigenous cultures and economies and practices regarding harvesting, preserving and preparing food reinforce indigenous culture andidentity (Damman et al.,2008).

2.2.4. History and Ethical Background

Food is an integral part of any culture-Bhagavad Githa says "from food do all creatures come into being".Traditional food processing in India began when man ceased to be a food hunter (Potty, 1986). Traditional foods evolved hundreds of years ago are indispensable for majority of people (Tyn, 1986).

According to Achaya (1998) food choices and food habits are an outcome of cultural heritage and economic and social factors. The traditional foods and cuisines in India could be traced as far back as to the Aryan times, some even to the pre-Aryan times, with the Muslim and European influence contributing later to new dishes that enriched the native cuisine of India. The author also pointed out that every community in India had their own and distinct food ethos.

According to Azizi *et al. (*1998) traditional foods have evolved through centuries taking intoconsideration the prevailing climatic conditions, availability of local materials and socio-economic conditions. Parpia (1999) indicated that traditional Indian foods were developed as part of at least forty indigenous cultures over centuries.

Pratima (2000) reported that India is the home for ageless culinary art, and had a rich heritage of a wide variety of traditional foods. Traditional foods are an expression of culture, historyand lifestyle (Slimani et al, 2002).

Traditions, region and culture linked to the food products were considered as important quality features (Holt and Amilien, 2007).

The authors also indicated traditional and regional products as part of the national cultural heritage which hold the potential to bind and stabilize communities. According to Trichopoulou *et al.* (2007) investigation and registration of traditional foods contribute to the preservation of important elements of a nation's culinary heritage and culture and allows future generations, both from the native population and from other countries, to be acquainted with traditional foods.

2.3 Traditional foods of different groups

Traditional Indian meal patterns differ from region to region, but all contain a wide range of foods, normally including foods from each food group. (Kalpana, 2020)

According to Somnath Basak *et.al*. (2023) The recipes of traditional foods have been perfected, practiced, and handed over from generation to generation. A typical Indian "vegetarian" diet includes plant-based and dairy-based foods, while a "non-vegetarian" diet includes egg, fish, and meat. While the northern region is majorly dependent on wheat products, the eastern, north-eastern, and southern parts of India majorly depend on rice-based products.

According to Agilandeswari and Mohan (2017), Traditional South Indian foods provide a perfect combination of proteins from legumes and coconut, carbohydrates from rice, fats both visible and invisible from curry and fried savory items, vitamins and minerals from sprouted grams, and vegetables which contain functional components such as β-carotene, Vitamins C and E, thiamine, tocopherol, and antioxidant compounds. *Rasam* is a traditional South Indian food,

prepared using tamarind juice as a base, with a variety of spices. *Rasam*, with all its ingredients medicinally claimed for various ailments, is a functional food.

Idli, is a popular steam cooked traditional Indian food prepared from a wet ground fermented batter of rice and black gram dhal (in the ratio of 3:1) by steaming in a mold. It is famous for its soft, spongy texture, desirable sour taste and characteristic aroma. (Nisha *et.al*., 2005)

Dosa is another fermented dish like *idli* mainly found in the south Indian region. It is a highly seasoned pancake, contains rice and black gram as primary ingredients. *Nannari sharbat* is a traditional herbal beverage prepared using the roots of *Decalepishamiltonii*. In Ayurveda the plant is called *Ananthamula.* Beverage is used in summer time for thirst quenching and it acts as a hepatoprotective agent, which is good for stomach health, (Preetam Sarkar *et.al*., 2015)

South Indian parotta is wheat flour-based circular, unleavened, multi-layered flat bread. It is one of the staple food items in the southern states of India. Parotta is made from wheat flour, salt, water, and oil for spreading of the dough; however, optional ingredients such as sugar and egg are also used in the preparation of parotta. (Dasappa and Gandham Venkateshwara Rao, 2021)

2.4 Health and nutritional aspects of traditional foods

2.4.1. Health and nutritional advantages of traditional foods

Proximate and mineral composition of 30 traditional and popular Indian foods were evaluated by Prasad *et.al*. (2000) and indicated that traditional foods provided approximately 350-660 Kcal/100 g and found that the lead and aluminium content of traditional foods were well below the permissible limits. Pattan *et.al*. (2001) evaluated the nutritional qualities of madeli, a traditional ready to eat sweet product and found that it contained 6.98g protein, 4.4g fat, and 1.19g of crude fibre per 100g and had a shelf life of 21 days. Khakhra Consumed for breakfast, snack or in the main meal was considered as a carrier of dietary fibre and minerals (Shirsath and Landge, 2006). Sattu, the nutritious popular traditional food of North India is an energy drink with medicinal properties like prevention of gastritis and sunstroke (Prakash and Swamy, 2006).

Modakams prepared during Ganesh Chaturthi and Naivedyam prepared during Gokulashtami complemented amino acids and provided good quality protein (Subbulakshmi,

2005). Halubayi, the traditional processed food product of Karnataka was found to be highly nutritious with good protein, carbohydrate and vitamins (Nagaraja, 2006). Kulkarni *et.al.*(2006) indicated the nutritional advantages of chakli, sev, khara gritters, laddu and hurigalu the traditional snack items of Karnataka.

Traditional supplementary foods consumed by lactating women of Gujarat namely wheat rab, budh gond ka soonthad high energy, protein and fibre respectively Mulimani *et.al*., (2001). The authors also indicated superior nutritional quality of kotta and battisaladu. Gupta *et.al*., (2003) observed high calcium, iron, zinc, copper and phosphorus in ajwain followed by gondpanjiri, kangni andhalwathe traditional foods consumed by lactating women of India. The authors also indicated better protein and starch digestibility in traditional supplementary foods.

Lalithambika (2007) indicated the importance given to kanji, the traditional food of Kerala in ayurveda especially in diseased conditions due to its easy digestibility. Sharon *et.al.*(2006) indicated the nutritional significance of puttu, ada, and idiyappam, the traditional breakfast foods of Kerala with high protein, carbohydrate and energy density. Paal kanji,a traditional cereal and milk based Kerala delicacy was reported to be rich in protein, phosphorous, vitamin C, thiamin, riboflavin, iron, calcium, choline, copper, manganese and magnesium with good digestibility (Achuthan and Emmanuel, 2006). Chendamurian, the traditional banana delight of southern Kerala was found to contain highly nutritive milk proteins, milk solids and potassium and had laxative properties (Sudhakaran, 2006). The nutritional advantages of traditional foods namely putu, laddu, ada and coffee prepared using rice bran as the main ingredient were reported by Aneena and Indira (2007) and indicated that the foods had good amount of B complex vitamins, fibre, calcium and iron.

Nutritional advantages and the importance of traditional foods in Human physiological activities were indicated by Shin (2004).

Kuhnlein *et al*. (2002) evaluated 236 Canadian Arctic foods for macronutrients, minerals and fatty acids and indicated a considerable amount of nutrients in these traditional foods. A study conducted by Evans *et.al.,* (2003) on 36 traditional and imported foods of Tonga indicated that people preferred traditional foods and perceived traditional foods as more nutritious. Considerable micronutrients were found in traditional foods namely karat banana and pulque prepared from Agave species, and gac fruit (Kuhnlein, 2004). The water extract prepared from the

brown algae, the traditional food of Noto area in Japan, had strong antioxidant activity (Kuda, *et al*. 2005).

Rasala, the dahi based milk product with good nutritional and medicinal attributes was found to be effective against bleeding disorders, burning sensation and thirst (Warrier and Sudhakaran, 2006). Karkkidakamarunnu kanji,a traditional herbal concoction, was found to be beneficial for the purification of the body and soul, providing nourishment to the whole body and augmenting the immune status Asha *et.al*. (2006). Pulissery, a prominent culinary item prepared from curd in Kerala, had health promoting and therapeutic properties with the nutritional benefits of fermented milk products (Shifa, 2006). Vijayakrishnan (2007) indicated excellent medicinal value of Kerala sadya and reported that the combination of pepper, cumin seeds and curd in Kalan, a side dish of the traditional sadya gave protection against three doshas of ayurveda. Sour curd used inKalanwas reported to be good for digestion and pepper and cumin seeds avoided gastritis and acted as antimucotic agent.

Uauy *et al*. (2001) indicated the protective effect of traditional diet in chronic diseases and obesity. Li *et.al*. (2004) observed functional materials in traditional fermented soybean foods namely sufuanddouchi. Apparent health benefits of traditional Greek foods were reported by Trichopoulou *et.al.* (2007). The traditional Mediterranean diet of Greece was associated with reduced total mortality as well as reduced mortality from coronary heart disease and cancer (Trichopoulou, *et al*., 2007).

2.4.2. Impact of dietary transition on health and disease

The nutrition transition had direct implications in the upsurge of non-communicable diseases (Zimmet, 2000). Dietary transition refers to changes in the quantity and composition of the diet due to improved economic development leading to lack of physical activity, weight gain, lifestyle changes, development of diabetes mellitus, high blood pressure and increased risk of heart diseases and some forms of cancer (Seshadri, 2005).

South Indian food is mainly based on Idli and dosa enhances probiotic activity. Indian traditional rasam has high antipyretic, hypoglycemic (Preethikaa and Brundha, 2018) and reduces hypertension (Alleyne *et al*., 2005). Some Indian foods are proven to cure cancer also (Brundha and Pathmashri, 2019). Food especially made from beet root is proven to have a significant effect

on haemoglobin value. Doctor check ups also suggest eating healthy food improves the health of the patient in many ways (Varshini and Brundha, 2020), (Timothy, Samyuktha and Brundha, 2019). Inclusion of clove to food has a beneficiary effect on teeth.

In developing countries, the rate of obesity, diabetes, cardiovascular disease and cancer increased as a consequence of urbanisation and socioeconomic changes (Albala *et al*., 2001 and Popkin *et.al.,* 2001). Jimaima *et al.,* (2001) reported an increased consumption of introduced foods and an increased prevalence of diabetes among the indigenous population. The authors also indicated increased incidence and prevalence of non-communicable diseases due to deviation from the traditional food consumption pattern and traditional lifestyle. Lako (2001) also observed increased incidence and prevalence of non-communicable diseases among Fijians due to drastic changes in the dietary pattern and deviation from the traditional food consumption pattern and traditional lifestyle.

Direct relationship between decreased consumption of traditional foods and decreased physical activity with obesity and related chronic diseases was observed by Uauy *et.al.,* (2001) and Kuhnlein *et al.* (2004). Yusuf *et al*. (2001), Kuhnlein *et al*. (2002) and Kumanyika *et al*. (2002) also documented the relationship between the dietary changes associated with urbanisation and globalisation and increased prevalence of numerous obesity-related chronic diseases around the developing world, including diabetes and cardiovascular diseases.

Consumption of market food and decreased consumption of traditional food, coupled with decreased physical activity, resulted in increased incidence of obesity and its correlated diseases like diabetes, heart disease and dental caries. Kuhnlein (2003) indicated that in addition to obesity and other associated diseases, increased consumption of industrially processed foods lead to poor intake of micronutrients.

Urbanisation and westernisation forced people to give up their traditional food habits and inclusion of high saturated fat containing processed foods leading to various health hazards (Roy, 2001). As an impact of westernisation, Blazose (2002) indicated that traditional plant-based cuisines became energy dense due to increased proportion of animal food and fat and decreased proportion of plant foods.

Mendez *et al.* (2004) compared the diets in urban areas with traditional diet and indicated increased consumption of fat and more prevalence of obesity among low and middle income groups residing in urban areas. Damman *et al*. (2008) also indicated increased prevalence of chronic disease among indigenous communities due to nutrition transition characterized by a rapid westernisation of diet and lifestyles.

Transition in the dietary pattern characterized by shift towards high intake of calorie, saturated fat and cholesterol was observed by Schmidhuber (2004). Substantial decline in the intake of potassium was observed due to consumption of westernised diet by Demigne *et.al.*(2004) when compared to traditional diet. Seshadri (2005) also indicated the presence of high sodium content in processed foods compared to their natural counterparts and its health impact. Nutrition related problems due to consumption of processed, ready to cook and ready to serve foods among career women was pointed out by Subbulakshmi (2005) due to their increased purchasing power and lack of time for cooking traditional foods.

2.5 Key Challenge in the production and use of Traditional foods

Oniang'o(1999) indicated that the faster the people adapt to the new globalized food patterns, the less likely traditional knowledge will be transferred to the next generation. Traditional foods and food habits were progressively replaced by the globalized food culture of the multinational corporations leading to disastrous impact over the past several decades stated by (Zimmet, 2000).

Indigenous and traditional foods and food systems were found to disappear, leading to significant loss and threat to personal health and security at the regional and international level (Kuhnlein, 2003). Diaz (2005) stated that substitution of traditional foods not only led to a loss of production of traditional and culturally appropriate food, but also led to loss of traditional knowledge related to food production.

Evans *et al.* (2003) indicated one of the important effects of globalisation as the increased reliance on imported foods, rather than traditional foods. The impact of globalisation of food industry on the food habits and dietary patterns of people of Tanzania, Asia, Latin America and some African nations and Korea were reported by Kinabo (2004): Erdos(2004): Roe (2004): and Shin (2004)

Urbanisation an globalisation enhance access to no traditional foods due to changing prices and production practices, as well as trade and marketing practices (Lang, 1999; Evans *et al.,* 2003 and Chopra, *et al*., 2002).

Foreign investment had contributed to the rise of fast food restaurants and western-style supermarkets, which also influenced consumer food choices by offering greater variety, quality, convenience and competitive prices in high-value added foods (Regmi and Gehlar 2001; Reardon, *et al.*,2003).

Increased purchasing power, change in socio-economic status and life styles were considered as the factors which contributed to enhanced consumption of processed and convenience products (Kumar and Anjaneyalu, 1998). Ranjini *et al.* (2000) also indicated the availability of processed foods as the main reason for the tremendous change in the modern day consumption pattern of convenience and fast foods.

The diversity of India is reflected in diverse nature of traditional foods and this restricts the market potential of traditional foods (Chaudhry, 2006). Kulkarni and Unnikrishnan (2006) observed limited shelf life as the key challenge in the marketing of traditional products.

Bedekar (2006) indicated that majority of traditional Indian processed foods were made most unhygienically in unorganized sector with an adoption of low level of mechanization. The main challenge in the traditional food industry according to Ramesh (2006) was the design of machineries because of lack of adequate data on engineering properties of traditional foods. stability was reported as the prime challenges in traditional food industry (Chaudhry, 2006).

2.6 Future scope of Traditional foods

Traditional foods, used more as seasonal and banquet food or for religious ceremonies rather than as staple food, had become popular as a delicacy food (Shin,1999). According to Hollingsworth (2000) one of every sevenfold dollar over the next decade would be spent on ethnic food. The author also predicted that food manufacturers would compete for market share in the faster growing ethnic cuisines like Thai, Caribbean, Mediterranean and Indian. According to Parpia (2004) the value of traditional processed foods accounts for nearly 75 per cent of the

processed foods in the market in India. Since, traditional food has been considered as a competitive product, with unique materials and production techniques, efforts to export them are expanding nowadays (Shin, 2004). Traditional food market in India had witnessed a rapid growth over last five to eight years and large scale production and preservation of traditional foods had become the need of the hour due to the scope of these products for indigenous consumption, export purposes and the interest showed by multinational companies (Dipali and Rodrigues, 2006). With rapid urbanisation and advancement of heritage food production technologies, traditional convenience and ready to serve foods were pouring in the market from time to time (Manjula *et al.*, 2006).

Ohiokpehai (2003) indicated that women's indigenous knowledge on traditional foods could be harnessed to improve nutrition security. Though, the traditional food system of indigenous people contained a wealth of micro nutrients, in public – health promotion programmes and health training programmes, this information was not used due to lack of scientific coverage (Kuhnlein, 2003)

Everett and Aitchison (2008) indicated correlation between increased levels of food tourism interest and the retention and development of regional identity. The authors ago stressed the conservation of traditional heritage, skills and ways of life, the social and cultural benefits and the benefits of the production of local food.

Jacob (2007) examined the role of NGOs in the economic and community development of Kerala. A case study of Peermade Development Society (PDS), one of the prominent and major NGOs in Kerala in the Peermade Taluk of Idukki district, was undertaken. NGOs are somewhat stable groups with defined activities and programmes and have, barring some exceptions, an urge and also an exposure to the horizontal and sometimes vertical linkages within and across their chosen sectors of activity.

Tourists are gradually moving towards niche travel like adventure, luxury, ethnic, indigenous, heritage, health and many other such new tourism products. They look forward to experience and to be part of the culture and heritage of the destinations they seek to explore (Divecha, 2012).

Nanotechnology is the emerging revolution having great potential in every sectors from mechanics to medicine including food industry. It is the study of manipulation and control of matter on atomic and molecular scale having at least one characteristic dimension in nanometer mostly ranging from 1 to 100 nm (Chellaram *et al.,* 2014). It can even be used to detect food pathogens acting as food quality and safety indicators (Bott, Stormer and Franz, 2014). In food processing, nanoencapsulation of food (nano-sized) ingredients, nutritional supplements.

Nowadays, high technologies are widely adopted into agricultural production, biological diversity conservation and crop improvement. (Thao, 2016). The Indian foodservice market is projected to grow at a rate of 10.3% during the forecast period (2018–2023). Food industry of Kerala is also booming at a high rate so importance of this highly immense as it will help us in understanding the various changes under going in this industry. (Sujith and John, 2019)

Under present circumstances, conventional breeding techniques are not sufficient. Innovation in plant breeding is critical in managing agricultural challenges and achieving sustainable crop production. Novel plant breeding techniques, involving a series of developments from genome editing techniques to speed breeding and the integration of omics technology, offer relevant, versatile, cost-effective, and less time-consuming ways of achieving precision in plant breeding. Opportunities to edit agriculturally significant genes now exist as a result of new genome editing techniques. (Fiaz *et al.* (2021).

The food industry seeks development of new products that follow modern trends and traditional method and are able to conquer today's consumers, while at the same time maintaining the identity of specific products, valued as traditional. (Raquel *et al.*, 2021)

3. MATERIALS AND METHODS

3.1 Locality of Study

3.2 Selection of Sample

3.3 Plan of Study

3.3.1 Collection of Information Regarding Traditional food habits in Alappuzha.

3.3.2 Documentation of Traditional Foods in Alappuzha

3.3.3 Preparation of Selected Traditional Foods in Alappuzha

3.3.5 To Develop a Nutritive Value of Selected Traditional Foods in Alappuzha District.

3.1 Locality of Study

Alappuzha (or Alleppey) which is located in central Kerala is a city on the Laccadive Sea in the southern Indian state of Kerala. It's best known for houseboat cruises along the rustic Kerala backwaters, a network of tranquil canals and lagoons.

Five different locations in the district of Alapuzha were selected for the study, among which each of one household was visited to list out the traditional recipes they followed from ancestors.

List of samples were chosen and data is gathered to be useful for research

Table. 1 Details of the location selected for the study

Sl.No	Places
1	Kuttanad
2	Ambalappuzha
3	Cherthala
4	Cheppad
5	Chengannur

3.2 Selection of Sample

For our study we selected elderly persons in the age group of 50 to 60 with experience and expertise in traditional food preparation from our study locality. As the traditional food habits change with respect to region, religion etc. the selected peoples were mainly Hindus, Christians and Muslims. There are certain differences in cooking style and all among the different religions, so the selection from all the three religions was helpful for our study. A total of 20 elderly persons were selected as the sample for study and the number of respondents belonging to each community is given in the table 2.

Table. 2 Distribution of respondents selected for study

Sl.No	Religion	Number
1	Hindu	9
2	Christian	7
3	Muslim	4

3.3 Plan of Study

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

3.3.1 Collection of Information Regarding Traditional food habits in Alappuzha

3.3.2 Documentation of Traditional Foods in Alappuzha

3.3.3 Preparation of Selected Traditional Foods in Alappuzha

3.3.5 To Develop a Nutritive Value of Selected Traditional Foods in Alappuzha District.

3.3.1 Collection of Information Regarding Traditional Food Habits in Alappuzha

For the collection of information regarding the traditional foods of Alappuzha we used a questionnaire which collect information regarding the preparation , the occasions in which they are prepared , their shelf life and also about the equipment's which were used for the preparation of the selected traditional foods years before (like mud pot etc.) . Through the questionnaire we also got information regarding the traditional food habits of each community associated with religious customs , festivals , special occasions , rituals , the changes that happened in the method of preparation over year's.

3.3.2 Documentation of Traditional Foods in Alappuzha

From the questionnaire that we have used to collect information regarding the traditional foods, the details of different traditional foods of different communities were identified. In-depth interviews were also conducted with experts to collect information regarding method of preparation of selected traditional foods. The documentation of the process through photographic and written methods was done. Through the questionnaire we also collected information regarding the history of selected traditional foods and also the changes that has occurred to the traditional food preparation. The information regarding the shelf life of different traditional foods and also the occasions in which they are prepared were also collected using the questionnaire**.**

Table. 3 Collected Recipes

Sl.No	**Dishes**
1	Kakka Irachi Roast
2	Cherumaniyaram
3	Karimeen Pollichathu
4	Squid Roast
5	Cheera Parippu thoran
6	Kumbilappam
7	Pulissery

8	El Ada
9	Tapioca with Thenga pal meen curry
10	Puttu kadala

From these dishes we selected only five of them which are unique and special dishes of Alappuzha. Which are Kakka irachi roast, Cherumaniyaram , Squid roast , Kumbilappam , and Tapioca with thenga pal meen kari .

3.3.3 Preparation of Selected Traditional Foods in Alappuzha

Clam Roast or Kakka Irachi Roast

Ingredients

Small Onion – ½ Cup (100gm)

Clam – 2 Cup (500gm)

Coconut – ½ Cup (100gm)

Oil – 1/8 Cup (30ml)

Chilly – 4 nos

Ginger – 1 large piece

Pepper Powder – 1 table spoon spoon

Salt – As needed

Mustard seeds – ½ table spoon

Chilly powder – 2 table spoon

Garlic – 4 pieces

Curry leaves – 4gm

Preparation

Heat some coconut oil in the kadayi and then put ½ table spoon mustard seeds into it and after all of them burst put coconut (small pieces) into it and make them a little crisp . Then put the small onion , ginger , garlic and chilly into it and stir well till brown colour. Then after that put the masala made by grinding pepper and cumin seeds. Then put one table spoon kashmiri chilli powder and stir well for few seconds. Then put the clam which has been boiled and cooked with salt and turmeric powder, then stir well and join it . After that put some curry leaves into it and close the kadayi and cook in low flame for 5 to 10 minute.

Plate 1

Cherumaniyaram

Ingredients

Rice Powder – 1 Cup (250gm)

Small Onion –1/3 Cup (100gm)

Sesame Seed – 2gm

Salt – As needed

Cooking Oil – 1/3 Cup (80 ml)

Egg – 2 nos (100gm)

Sugar – 2 table spoon (28gm)

Coconut – 1/3 cup (100 gm)

Preparation

To ½ kg rice flour put 1/3 kg chopped small onion , 2 eggs , 2 gm sesame seeds , two table spoon sugar, 1/3 cup grated coconut and salt as needed. Then put some warm water to the flour and blend / mix well using hand. Then make them into small balls. Then heat some oil in a pan and deep fry the balls and serve it hot.

Plate 2

Kumbilappam

Ingredients

Jackfruit – ½ kg

Jaggery – 1 cup (125 gm)

Rosted rice flour – 1 cup (125 gm)

Sugar –1 teaspoon

Bay leaf –10 nos

Cardomom – 4 nos

Preparation

Melt jaggery in ½ cup water.Combine jaggery, jackfruit pieces, grated coconut, cumin powder, cardamom powder and rice flour in a vessel. Combine well to form a smooth dough.Take each bay leaf and make cone out of it. Add a small portion of dough depending on the size of the leaf. Bend the upper edge of the leaf to close the cone. Repeat this procedure with remaining dough and leaves.Place a steamer with enough water on medium flame. Steam these cones for 30 – 35 minutes. Serve these hot kumbilappams with tea.

Plate 3

Tapioca with Thenga pal meen curry

Ingredients

Fish – ½ kg (500gm)

Green raw mango – 150 gm

Shallots – 50gm

Mustard seeds –1 teaspoons

Ginger – 2 teaspoons

Green chilli –2 nos

Kashmiri chilli powder – 2 teaspoons

Turmeric powder – ½ teaspoons

Coconut milk –200ml

Curry leaves –2 springs

Tapioca- ½ kg (500gm)

Preparation

In a pan, add coconut oil and heat it for few seconds. Add mustard seeds and allow it to crackle .Add shallots and curry leaves, sauté until onions are just soft (do not brown them).Add slit green chilies and ginger and raw mango slices sauté for another minute .Add red chili powder, turmeric and mix well.Add ¾ cup of water and cook for another 2 minutesIn Chatty (typical Earthen Pot from Kerala), Place fish slices in even layer and pour the prepared gravy over the fish slices, bring it to boil.Once gravy start boiling cover and simmer for 4-5 minutes or until fish is just done.Lower the flame, add coconut milk, mix and simmer for only 2-3 minutes. Do not over cook it or milk may curdle spoiling the gravy.Serve hot with boiled tapioca(30 mins), Enjoy!!

Plate 4

Squid Roast

Ingredients

Squid – ½ kg (500gm)

Coconut oil- 43gm

Mustard – 3 gm

Ginger – 4gm

Garlic –4gm

Green chilli –4gm

Onion –50gm

Tomato -50gm

Salt – as needed

Coriander powder – ¼ tablespoon

Kashmiri chilli powder – ½ tablespoons

Curry leaves – 2 spring

Turmeric powder – ¼ tablespoon

Lime juice –1/2 teaspoon

Preparation

Cut the cleaned squids into rounds, use the tentacles as well. It's better to get the pre-cleaned squids.To the squid add all the ingredients mentioned "to marinate squid".Place a saucepan over medium heat, add the marinated squid to the pan & cook covered for 10 minutes. Keep aside the cooked squid along with any liquid in the pan.Place a saucepan over medium heat, add oil.Add mustard seeds, let it splutter.Add dried Kashmiri red chilies and curry leaves, saute for a few seconds.Add onions and shallots, season with salt. Cook covered till the onions turn

translucent.Add ginger-garlic paste, saute and cook till onions turn golden brown in color.Add chopped tomatoes, cook till they are mashed up.Add chili powder, coriander powder, fennel powder, garam masala and salt. Combine well and cook for a minute.Add the cooked squid along with any liquid from the cooked squid.Combine well and cook covered for 15 minutes or till the squid has cooked well.Open the lid and stir fry till all the liquid dries off.Add Few spoons of lemon juice and cook for a few seconds.Taste and add more salt if needed. Remove the pan from the heat and keep it covered.Enjoy the squid roast along with rice or roti.

Plate 5

3.3.5 To Develop a Nutritive Value of Selected Traditional Foods in Alappuzha

So , for developing the nutritive value of selected traditional foods from Alappuzha we used all the macro nutrients like energy , protein , carbohydrate and fat. And as Alappuzha is a place famous for its canals , backwaters , beaches and lagoons , the traditional recipes that we selected also include marine and fresh water fishes . Because of that we used micronutrients like calcium , phosphorus , iron , potassium and magnesium.

Energy

Energy fuels your body's internal functions, repairs, builds and maintains cells and body tissues, and supports the external activities that enable you to interact with the physical world. Water, your body's most important nutrient, helps facilitate the chemical reactions that produce energy from food.

Like an automobile only runs on gasoline, the human body runs on only one kind of energy: chemical energy. More specifically, the body can use only one specific form of chemical energy, or fuel, to do biological work – adenosine triphosphate (ATP).Energy fuels your body's internal functions, repairs, builds and maintains cells and body tissues, and supports the external activities that enable you to interact with the physical world. Water, your body's most important nutrient, helps facilitate the chemical reactions that produce energy from food.

Protein

Protein is found throughout the body—in muscle, bone, skin, hair, and virtually every other body part or tissue. It makes up the enzymes that power many chemical reactions and the hemoglobin that carries oxygen in your blood. At least 10,000 different proteins make you what you are and keep you that way.

Proteins are large biomolecules and macromolecules that comprise one or more long chains of amino acid residues. Proteins perform a vast array of functions within organisms, including catalyzing metabolic reactions, DNA replication, responding to stimuli, providing structure to cells and organisms, and transporting molecules from one location to another

Fat

In nutrition, biology, and chemistry, fat usually means any ester of fatty acids, or a mixture of such compounds, most commonly those that occur in living beings or in food. The term often refers specifically to triglycerides (triple esters of glycerol), that are the main components of vegetable oils and of fatty tissue in animals.

A small amount of fat is an essential part of a healthy, balanced diet. Fat is a source of essential fatty acids, which the body cannot make itself.

Fat helps the body absorb vitamin A, vitamin D and vitamin E. These vitamins are fat-soluble, which means they can only be absorbed with the help of fats.

Carbohydrates

Carbohydrates are found in a wide array of both healthy and unhealthy foods - bread, beans, milk, popcorn, potatoes, cookies, spaghetti, soft drinks, corn, and cherry pie. They also come in a variety of forms. The most common and abundant forms are sugars, fibers, and starches.

Foods high in carbohydrates are an important part of a healthy diet. Carbohydrates provide the body with glucose, which is converted to energy used to support bodily functions and physical activity. But carbohydrate quality is important; some types of carbohydrate-rich foods are better than others. The healthiest sources of carbohydrates - unprocessed or minimally processed whole grains, vegetables, fruits and beans - promote good health by delivering vitamins, minerals, fiber, and a host of important phytonutrients.

Calcium

Your body holds an abundance of calcium. Around 99% of this mineral is stored in your bones and teeth. The other 1% is in your blood and soft tissues.

Eating foods rich in calcium is critical to growing and maintaining strong bones. It’s also an important nutrient for healthy cell function. Your body requires calcium to support muscle and

nerve function, regulate blood pressure and hormone levels, as well as facilitate communication between cells.

Phosphorous

Phosphorus is a mineral that naturally occurs in many foods and is also available as a supplement. It plays multiple roles in the body. It is a key element of bones, teeth, and cell membranes. It helps to activate enzymes, and keeps blood pH within a normal range. Phosphorus regulates the normal function of nerves and muscles, including the heart, and is also a building block of our genes, as it makes up DNA, RNA, and ATP, the body's major source of energy.

The kidneys, bones, and Intestines tightly regulate phosphorus levels in the body. If the diet lacks phosphorus or too little phosphorus is absorbed, several things happen to preserve its stores and try to maintain normal levels: the kidneys excrete less phosphorus in urine, the digestive tract becomes more efficient at absorbing phosphorus, and the bones release its stores of phosphorus into the blood. The opposite actions occur in these organs if the body has adequate phosphorus stores.

Magnesium

Magnesium is naturally present in a variety of foods, available as a supplement, and an ingredient in antacids and laxatives. The mineral plays an important role in assisting more than 300 enzymes to carry out various chemical reactions in the body such as building proteins and strong bones, and regulating blood sugar, blood pressure, and muscle and nerve functions. Magnesium also acts an electrical conductor that contracts muscles and makes the heart beat steadily.

More than half of the magnesium in our body is stored in bones, and the remaining in various tissues throughout the body.

Iron

Iron is a mineral that serves several important functions, its main one being to carry oxygen throughout your body as a part of red blood cells.

The Daily Value (DV) for iron is 18 mg. A deficiency can occur if your intake is too low to replace the amount you lose daily (2Trusted Source).

Interestingly, the amount of iron your body absorbs is partly based on how much you have stored.

Iron deficiency can cause anemia and lead to symptoms like fatigue. Menstruating women who don’t consume iron-rich foods are at a particularly high risk of deficiency.

Potassium

Potassium is an essential mineral that is needed by all tissues in the body. It is sometimes referred to as an electrolyte because it carries a small electrical charge that activates various cell and nerve functions. Potassium is found naturally in many foods and as a supplement. Its main role in the body is to help maintain normal levels of fluid inside our cells.

Sodium, its counterpart, maintains normal fluid levels outside of cells. Potassium also helps muscles to contract and supports normal blood pressure.

4. RESULT AND DISCUSSION

The results of the present study "Documentation and nutritive evaluation of traditional foods of Kerala- Alappuzha" district is presented under the following headings.

4.1 Traditional food habits of different communities in Alappuzha.

4.1.1 Preference of traditional foods of different communities.

4.1.2 Reasons for preference of traditional foods.

4.1.3 Frequency of Preparation of traditional food items.

4.1.4 Frequency of preparation of traditional health foods.

4.1.5 Traditional food items prepared on special occasions.

4.1.6Traditional kitchen utensils.

4.2 Nutritive value of selected traditional foods.

4.1 Traditional food habits of different communities in Alappuzha

Traditional foods evolved through hundreds of years, is still an inevitable segment of our culture. In every part of the society, people had diverse food habits which are strongly bound to the region, religion, economic status and cultural beliefs.Kerala, the Emerald of south, besides its natural wealth is proud of its exquisite cuisines ,In this section , traditional food pattern prevailing in the central zone of Kerala with particular reference to traditional foods and traditional food pattern of various communities are discussed.

Traditional food habits of the respondents of different communities were ascertained with respect to the preference for traditional foods, reasons for the preference, frequency of preparation of traditional foods, traditional foods prepared during special occasions,

Frequency of preparation of traditional health foods and details of traditional kitchen utensils and equipment's used.

4.1.1 Preference of traditional foods of different communities

The details regarding the preference for traditional foods among different communities are given in Table 4 below.

Table 4. Preference of traditional foods

Communities (n)	**Preference for traditional foods**	
	Preferred	**Not Preferred**
Christians	5 (71.42%)	2 (28.57%)
Muslims	1 (25%)	3 (75%)
Hindus	9 (100%)	---

Numbers in parenthesis are percentage

It was found that all respondents from Hindu community residing in allappuzha preferred traditional foods. Majority of the Christian respondents also preferred traditional foods(71.42%), and only minor prefrences were given by Muslim communities (25%).

In a study conducted by Shyna (2001), it was seen that more than 70 per cent of respondents preferred traditional foods due to their variety, purity and palatability. Invasion of tin food culture which caused many hazardous health implications have brought up a preference towards traditional eating habits(Leena 2007). Mageshwari and Thilagamani (2006) in a study on popularisation of traditional recipes observed a high overall acceptability among consumers for traditional foods.

4.1.2 Reasons for preference of traditional foods

The reasons indicated by the respondents for the preference given for traditional foods are presented in Table 5 given below.

Table 5. Reasons for preference of traditional foods

Reasons	Christians (5)	Muslims (1)	Hindus (9)	Total (n = 15)
Healthy	4 (80%)	---	4 (44.4%)	8 (53.3%)
Tasty	1 (20%)	1 (100%)	3 (33.3%)	5 (33.3%)
No Adulteration	---	---	---	---
Less Expensive	---	---	1 (11.1%)	1 (6.6%)
Ingredients are locally produced	---	---	1 (11.1%)	1 (6.6%)

Numbers in parenthesis are percentage

Most of the respondents belonging to the Hindus of Alappuzha who gave preference to traditional foods indicated that they preferred traditional foods because of their health benefits (44.4%) and only few because of its taste(33.3%). All the Muslims preferred traditional foods since they are very tasty(100%).Most of the Christians preferred traditional foods because of their health benefits(80%). Among 15 respondents who preferred traditional foods 53.3% and 33.3% per cent of respondents considered that they are healthy and tasty and 6.6% preferred traditional foods due to lower cost and availability of ingredients that are locally produced.

Rajashekhar (2005) opined that there occurred a markedchange inthe food habits of Keralitesand indicated that the abolition of joint family system, the increased demands of the working women, and change in life style were the major reasons for these transitions. Seshadri (2005) also mentioned that in a short life span of about 50 years, food choices and dietary pattern have changed quite dramatically especially in urban areas of India.

4.1.3 Frequency of Preparation of traditional foods

The frequency of preparation of different traditional foods by different communities are given below in Table 6 given below.

Table 6. Frequency of Preparation of traditional foods

Frequency	**Christians (7)**	**Muslims (4)**	**Hindus (9)**	**Total (n=20)**
Daily	5 (71.4%)	---	5 (55.5%)	10 (50%)
Occasionally	2 (28.5%)	2 (50%)	3 (33.3%)	7 (35%)
Never	---	2 (50%)	1 (11.1%)	3 (15%)

Numbers in parenthesis are percentage

Most of the respondents from Christian community prepared traditional food items daily (71.4%).Most of the respondents from Muslim community was found to prepare traditional food items either occasionally(50%) or never(50%) , meanwhile majority of the respondents from the Hindu community prepared traditional foods daily(55.5%) and a few prepared it occasionally(33.3%).Among the 20 respondents 50% prepared traditional food items daily , 35% occasionally and 15% never.

Abraham (2007) reported that either pazhankanjior kanjialong with puzhukkuwere consumed for breakfast by Christians. Abraham (2007) noticed the inclusion of parboiled rice, fresh or dry fish preparations, thoranwith vegetables or pulses like cowpea or horse gram and varutharachacurry in the lunch of Syrian Christians.

4.1.4 Frequency of preparation of traditional health foods

Details of frequency of preparation of different health foods by different communities is given below in Table 7.

Table 7. Frequency of preparation of traditional health foods

Frequency	Christians (7)	Muslims (4)	Hindus (9)	Total (n=20)
Occasionally	5 (71.4%)	1 (25%)	8 (88.88%)	15 (75%)
Never	2 (28.57%)	3 (75%)	1 (11.11%)	5 (25%)

Numbers in parenthesis are percentage

Enlisted information indicated that majority of the respondents from Hindu community prepared traditional healthy foods occasionally, whereas only small proportion of respondents from Muslims prepared traditional foods occasionally. Among the 20 respondents 75% prepared traditional health foods occasionally and 25% admitted that they never prepared.

Kurunthotti kanjiof Ezhavas, oralappamand paniyaramof Hindus of Palakkad, and gingelly oil given by Scheduled Castes were found to be the special foods given to the pregnant women traditionally. Rekha (2007) also observed the same traditional health foods given to pregnant women. In general, special foods given to pregnant women consisted of green gram, gingelly oil, jaggery and different types of herbs which were found to be rich in protein, fat, vitamin E and iron essential for the increased demands of the body during pregnancy.

4.1.5 Traditional food items prepared on special occasions

The traditional food items prepared on special occasions are given in Table 8.

Table 8. Traditional food items prepared on special occasions

Occasion	Items
Christians	
X‟mas	Appam, muttayappam, traditional feast with non vegetarian dishes.
Easter	Appam, vattayappam,Beef roast,Duck curry
Palm Sunday	Kozhukkatta,Pidi and chicken curry
Muslims	
Noyambu thura	Jeeraka kanji, thari kanji, kuzhal pathiri, unnakkaya, niracha pathiri, aleesa, kalathappam,meals with non vegetarian items/biriyani/ghee rice
Ramadan	Pathiriand non vegetarian curry Non vegetarian meals/ ghee rice/biriyani withnon vegetarian side dishes
Muharam	Paalayikkappam, wheatverakiyathu
Hindus	
Onam	Ada, varuthupperi, sharkkaravaratty, and sadya
Vishu	Vishu katta , Vegetarian sadya with ada and payasam
Attukal pongala	Therali appam,Mandaputtu ,vella choru ,vella payasam

The special items for Palm Sunday and Osana perunnalincluded kozhukkatta or peecham pidi. Vattayappamandappam were prepared on the day of Easter. For Christmas, vattayappam,muttayappam,vettappam, etc. were made at home and on Christmas day a non vegetarian feast was also arranged.

For noyambu thurawhich is the breaking of religious fast observed in the evening during the month of Ramadan, variety of special dishesnamelyjeeraka kanji, thari kanji, kuzhal pathiri, unnakkaya, niracha pathiri, aleesaandkalathappamwere some of the typical traditional items prepared and served.On the day of Ramadan(perunnal) a religious festival celebrated by Muslims, a grand feast was arranged in all households in which the major items prepared included pathiri, neichoru, and biriyani. Beef curry or mutton curry was also served as side dishes. Variety of fried snacks were prepared and exchanged between friends, relatives and neighbours during this occasion. Muharamwas celebrated with paalayikkappamand wheat verakiyathu. In some families instead of this, a dish with cooked and mashed bengal gram dhal and dried cowpea was prepared in coconut milk so as to get a semi solid consistency. Navadhanya kanji, kakkum kaya kanjiand thenga choruwere the important items prepared by Muslims during the month of Karkkidakam.

During Onam, on the uthraadamday, adawas prepared and offered to thrikkakkarayappan. Non vegetarian items were also prepared on this day. On the day of thiruvonam,a feast was arranged for lunch in which different curries were prepared with locally cultivated vegetables. Ada, varuthupperi and sharkkaravarattywere the special items prepared for Onam. Vishuwas celebrated by preparing vishu katta, a traditional item consumed along with jaggery syrup in the morning. Attukal Pongala , a famous 10 day religious festival celebrated among Hindu community takes place in honour of the Goddess at the Attukal Bhagavathy temple in Thiruvananthapuram during which various traditional recipes are made including vellachor, therali appam, mandaputt and Vella payasam as a part of peace offering.

Rajashekhar (2005) indicated that sadyais a common style of food service for festivals and celebrations.

Shyna (2001) also observed that Muslims prepared neichoru for their marriage feast.

The dishes on this occasion were reported to be different by the Muslim respondents of the present study which strongly suggest significant regional differences in the food pattern during special occasions within the community.

Hussain (2007) also mentioned about different types of dishes prepared during puthiyapla salkaram. During ancient times, in Christian families, betrothal, marriage, baptism and holycommunion were celebrated by preparing typical Christian non vegetarian feast.

harma (2000)and Andarjanam (2003) reported that red chillies, tamarind and mustard were avoided for shradhasadyaand includederissery, pulissery, olan, mezhukkupuratti, inchithairu, inchi nurukku, plantain, jaggery, ada pradhamanand ada.

4.1.6 Traditional kitchen utensils and equipments

Different types of kitchen utensils and equipments used by respondents are given below in Table 9.

Table 9. Traditional kitchen utensils and equipments

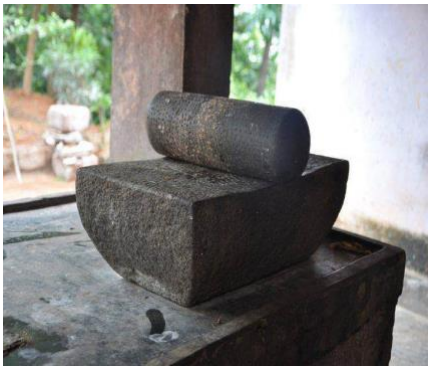
Sl.No	**Utensils and Equipments**	**Purpose of Use**
	Equipments	
1	Aattukallu	Wet grinding
2	Chirava	For scraping coconut
3	Muram	Grading, sorting and cleaning
4	Thirikallu	Dry grinding
5	Ural and Ulakka	Pounding
6	Ammi	Mashing and grinding
	Utensils	
1	Achappam achu	Moulding achappam
2	Appa chatti	Making vellayappam
3	Cheena chatti	Cooking and frying
4	Arivetti	For washing rice and keeping cooked rice
5	Edangazhi	Measuring food items
6	Kalchatti	Preparing curries
7	chiratta	For making puttu

8	kuzhi uruli	Preparing karolappam/ kuzhiyappam
9	Korika	For serving rice
10	Kuzhalappam achu	Moulding kuzhalappam
11	Manchatti	Cooking
12	Nazhi	Measuring fod items
13	Ottu kalam	For cooking rice
14	Otturuli	Boiling, cooking, roasting, frying
15	Para	For measuring food items
16	Neyyuruli	For boiling butter and keeping ghee

It was seen that different traditional kitchen utensils like chottu kotta, ada palaka, arivetti, korika, neyyuruli, pancha paathram, mara pathi, marika, gomukhi etc. were used by different families residing in Alappuzha.

Shyna (2001) also reported the use of marika for keeping salt and marapathi for keeping prepared curries. Various metal vessels like cheenachatti, neyyuruli, pichala chembu, kuzhiuruliwere traditionally used by all the communities. Different types of earthenware pots called chattiwere commonly used in ancient days in Kerala to prepare delicious fish curries with distinctive flavor and taste.

The pictures of utensils and equipment's used by respondents are given below.




Zipbag

4.2 Nutritive value of selected traditional foods.

Table 10. Nutritive value of selected traditional foods

Name of food	Energy (kcal)	Protein (g)	Fat (g)	Carbohydrates (g)	Calcium (mg)	Phosphorus (mg)	Potassium (mg)	Iron (mg)	Magnesium (mg)
Clam Roast or Kakka Irachi Roast	171.72	10.79	12.95	2.97	46.29	177.76	271.49	1	80.05
Cherumaniyaram	583.73	13.04	26.01	73.11	32.59	182.27	213.53	1.5	29.64
Kumbilappam	249.67	5.19	0.72	54.79	63.66	65.65	428	1.16	85.42
Tapioca with Thenga pal meen curry	376.54	38.95	49.3	33.63	49.08	422.5	780.14	2.58	84.16
Squid Roast	168.96	17.68	1.66	1.5	47.99	156.91	170.4	0.42	41.42

Clams are popular shellfish that have a high nutritional density and are high in vitamins and minerals. They're a terrific energy source. Like other seafood, there's plenty of clean protein Clams are one of the best sources of vitamin B12 available and they also contain vitamin C, other B vitamins, Potassium, Selenium, and Iron.The Clam roast contains 171.72 kcal ,10gm protein ,12.92gm fat and only little carbohydrates , 2.97.

Cherumaniyaram contains mainly rice flour and oil so its rich in carbohydrates and fat ie , 73.11gm carbohydrates and 26.01gm fats .And is also rich in protein and other minerals and vitamins.

Kumbilappam is a traditional sweet snack from Kerala Cuisine. They are nothing but steamed sweet dumplings flavored with bay leaf. It is also known as Therali Appam . It mainly contains jack fruit and , Jackfruit contains vitamin A, vitamin C, thiamin, riboflavin, calcium, potassium, iron, sodium, zinc, and niacin, among many other nutrients.It contains 54.79gm carbohydrates and249.67 calories .

Tapioca is a starch extracted from the storage roots of the cassava plant .It consists of almost pure carbohydrates and contains very little protein, fiber, or other nutrients. Fish is filled with omega-3 fatty acids and vitamins such as D and B2 (riboflavin). Fish is rich in calcium and phosphorus and a great source of minerals, such as iron, zinc, iodine, magnesium, and potassium. So Tapioca with Thenga pal meen curry is high in almost all macro nutrients and micro nutrients.

Squid is a good source of vitamin B12 and B6 which the body needs for neural health and blood health and vitamin B6 for heart protection from strokes. Squid has Selenium and Vitamin E. Selenium, which is present in a minute quantity in the body, works with vitamin E in the promotion of normal body growth and fertility.The Squid roast contains 168.96 calories and 17.68gm protein and is also rich in vitamims and minerals , but is low in carbohydrates.

Sharon et al.(2006) also reported high carbohydrate content in traditional foods of Kerala which varied from 24 to 79 per cent.

Mageshwari and Thilagamani (2006) in a study on popularisation of traditional recipes observed a high overall acceptability among consumers for traditional foods.

The present study entitled on “Documentation and nutritive evaluation of traditional foods of Kerala- Alappuzha district” was undertaken with the aim of identifying and collecting information on the various traditional foods of central zone of Kerala and to document their nutritive value. The respondents were categorised into different communities , Christians, Muslims and Hindus. As traditional food habits were highly diversified and these items have strong link with religious and cultural practices.

SUMMARY AND CONCLUSION

The Study entitled 'Documentation and nutritive evaluation of traditional foods of Alappuzha district' was taken up as a research project in order to collect various information on traditional foods among the citizens who resided in the beautiful district of Alappuzha. Alappuzha or Allepy famous for its backwaters, long coconut trees, sea food,house boats has always been the main source of tourist attractions.

Five different locations of Alappuzha were chosen for study which included Kuttanad, Ambalappuzha, Cherthala, Cheppad, Chengannur.

The purpose of this study was to find various recipes of traditonal foods among different communities, the impact they had on households and family wellbeing, whether the family followed the ancestry ingredients passed onto them and if any transition has occurred during the past years.

Senior citizens from each noted households were selected as samples who were happy in parting their experiences and knowledge about traditional foods, most of them who were able to reminisce through their childhood memories whereas few were excited to share their recipes in front of their grand children.

Details of traditional food habits with respect to preference for traditional foods, the reasons for the preference, frequency of preparation of traditional foods, traditional foods preparationsduring special occasions festivals/rituals, the process of storage and the traditional utensils used.

Majority of the respondents preferred traditional foods due to increasing health benefits , less disease risks , minimal additives and incredible taste. The frequency of preparing traditional foods daily was found to have a percentage of 71.4% which was denoted as the highest among all.

It was found traditional foods prepared on occasions varied among each other for different communities, for instance the Christians prepared Appam and duck curry for Christmas, Hindus prepared Sadhya for Onam and Muslims prepared non-veg biriyani for Ramadan, to which the list has a long run.

Major five traditional foods were chosen at the end that was found to be unique and considered as the proud dishes which included Kakka irachi roast, Cherumaniyaram, kumbilappam, Tapioca with thenga paal meen curry and Squid roast. The nutritive value for each of these traditional foods were calculated and estimated in a table that included energy, macro nutrients and micro nutrients. It was also identified as a safe consumption for younger generation.

In conclusion, from the present study it was found that the selected traditional food items could be replicated for further generations under prevailing conditions without change in their quality aspects. Hence the technologies should be popularized as an attempt to conserve the traditional cuisines of Kerala.

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APPENDIX

SEMI STRUCTURED INTERVIEW SCHEDULE TO ELICIT INFORMATION REGARDING TRADITIONAL FOODS OF ALAPPUZHA.

The following pattern of questions were used a Questionnaire to collect information on traditional foods recipes from various respondents of different communities which included Hindus, Christians and Muslims . The district in which interview took place was Alappuzha.

Questionnaire for Traditional Recipe

1. Name:
2. Age:
3. Sex: Male/ Female

4. Mostly used traditional preparations for breakfast?

…….

5. Mostly used food item for lunch/ dinner?

……

6. What are the snack that were used during your childhood?

……

7. What is the traditional recipe that you know or followed till now?

Snack/ Beverage/Others

8. How to prepare it?

……

……

……

……

……

9. Traditional food item used for special occasions?

……

10. Do you use any traditional food items for health care?

Yes/No

11. If yes, what is it? …….

12. How often do you prepare traditional healthy food ?

(Occasionally/Never)

13. How do you keep seasonal food for long period without getting spoilage?

……..

14. What were the different dry products used for lunch/dinner?

[papads/vattals/vadakams/kondattams/others]

15. Do you make it from home?

Yes/ No

16. Do you had any traditional kitchen utensils/equipment's now?

……

17. Are you using it now? If no, give reason.

……

18. Which type of food do you prefer mostly ?

(Traditional/Non traditional)

19. Major reasons for preferring traditional food ?

(Healthy/Tasty/No adulteration/Less expensive/Ingredients are locally produced)

20. How often do you prepare the traditional food ?

(Daily/Weekly thrice/Weekly twice)