IMPACT OF DIETARY COUNSELING ON THE FOOD HABITS OF FISHERFOLK

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DECLARATION

I hereby declare that th s tl esis entitled **Impact of Dietary Counseling on The Food Habits of Fisherfolk** s a bo af de eco d of eseaich wo k lone by me durin_ the course of research and that the thesis hns i ot previously fo med tl e bas s for the awaid to me of any degree d ploma assoc ateship fello vsl p o othe s milai t tle of any other un versity o society

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CERTIFICATE

Cert f ed that thesis ent tled **Imp act of dietary counseling on the food habits of fisherfolk** is a record of research work done ndependently by Ms Ramlath P H (2004 16 06) under my gu dance and supervision and that t has not previously formed the basis for the award of any degree fellowsh p or associatesh p to her

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INTRODUCTION

1 INTRODUCTION

Kerala with a total terrestrial area of 38 000 square kilometers has a coastal line of 590 kilometers The fisherman population of the state are scattered through out the coast line of Kerala More than a billion people belonging to the fishing communities live in 2222 fishing villages in the state and is considered as an underprivileged section of the society Govt of Kerala (2003) fishermen are always found to be at a low level of socio economic development and poor living conditions Because of the social backwardness compounded by poor living conditions of this community specific health and social problems are found to be the characteristic features of this population In addition the fishing household suffer from economic problems like underemployment poverty indebtedness and social problems like dowry and alcoholism

The fisherman population is recognized as socially and economically vulnerable The r lifestyles and food habits are different from that of their urban neighbors Statistics indicate that fishing communities that l ve on the narrow tract of the near seashore have not benefited from the mainstream achievements development but are rather the outliers in the Kerala model (Kurien 2000) while this status of outlier applies to the commun ty as a whole

Apart from the large proportion of house holds suffering from poverty fisherman households also suffer from deprivat on n terms of diet nutrition and health

Nutritionally nadequate diets among the household coupled w th the male biased intra household food d stribution and lack of care for the nutritionally vulnerable members of the households especially women and children may result in widespread nutritional disorders Pecul ar environmental s tuations prevalent in the coastal areas further negat vely influence the nutritional status of fisherman community

The food consumption of fisher folk is dependent on the vagaries of nature and varies from extreme deprivation in the lean season to satisfactory intake in the peak season Majority of the coastal areas people are not able to fulfill their nutritional requirement Chakphak (1986) reported that insufficiency of food consumption particularly in terms of quality is a main problem resulting in malnutrition among fisherman families According to Osborne (2001) low food intake is one of the major cause of under nutrition in fisherman families Due to poverty and lack of knowledge in nutrit on they tend to sell their catch completely and often buy less nutritious food

Alcohol and substance abuse is increasing at an alarming rate causing serious threats to every nations by deteriorating health increasing crimes hampering productivity destroying relationships erod ng social and moral values and impeding the overall progress of societ es Young people are becoming the largest hostage of the menace of substance abuse and their vulnerab lity is increas ng day by day

The problem of alcoholism and substance abuse is more rampant among the high risk population in the coastal areas

According to Neelakantan (1991) the Village people are illiterate and ignorant particularly on matters of health and they should be given awareness on the importance of right food for health and healthful living Health education and diet counseling induces desirable behavioral changes for the ultimate improvement in the nutritional and health status of the ind viduals Unlike the impact of other nutrit onal interventions like supplementary feedu g or prophylaxis with v tamin and mineral supplements nutrition educat on and counsel ng has long term effect Hence the present study on the impact of dietary counselmg on the food habits of fisher folk in Thiruvananthapuram district was undertaken To evaluate the beneficial effect of d etary counseling on the food habits and health related personal habits of fisher folk w th special reference to gender variation

REVIEW OF LITERATURE

2 REVIEW OF LITERATURE

The review of literature relevant to the study entitled impact of dietary counseling on the food habits of fisher folk is listed under the following headings

2 1 Demographic profile of fisher folk
2 2 Socio economic conditions of fisher folk
2 3 Personal habits of fisher folk
2 4 Food consumption and dietary pattern of fisher folk
2 5 Nutritional and Health status of fisher folk
2 6 Gender variation among fisher folk
2 7 Nutrition and d et counseling

2 1 DEMOGRAPHIC PROFILE OF FISHER FOLK

International conference of Fish Workers and their Supports (ICFWS 1984) defined fish workers as children women and men engaged as crew members small fishers processing workers and settlers Fishermen community or fishing commun ty means the society of those who are a part of the ancestry and culture of fishing (Thaddeus 1990)

Accord ng to Kurien (1992) there are 1800 fishing villages in India w th about one m llion trad tional fishermen who accounted for the total marine fish production According to Veeraputhran (1998) the fishermen population in Ind a is 5 38 million representing about 0 80 per cent of the total population Fishing has provided direct employment to about 1 80 million fishermen 0 90 million being engaged in fish ng and fish seed collection and rest in related activities such as fish curing and marketing Srinath (1998) reported that in India 6 million people are directly engaged in marin e fisheries and live in coastal areas According to Ananth (2000) nearly 25 per cent of the total population in In dia live in coastal areas

James et al (1991) stated that Kerala located in the southern part of Indian sub continent has a narrow stretch of land with long coastline on the west side with its 590 Km long coastline t enjoys one of the world s most productive seas bordering it James et al (1991) reported that the projection of fishermen population in Kerala during 1990 was 66 10 the annual growth rate of the population being 0 3 per cent The number of active fishermen formed 22 74 per cent and fishermen in the productive age group about 53 74 per cent

According to the reports by Government of Kerala (2004) the population of fisher folk in Kerala is about 10 85 lakh and the number of fisherman actively engaged in sea fishing is about 2 20 lakhs

According to State Planning Board (1997) and Government of Kerala (2004) more than a million people belonging to the fishing communities live in 222 fish ng village in the state Average fishermen population per village is 825 The ratio of men and women in the fishing sector is 1000 972 in Kerala According to Devaraj et al (1999) the coastline of Kerala supports about 0 64 million fisher folk

2 2 SOCIO ECONOMIC CONDITIONS OF FISHERMEN

Achievements in the area of social sectors viz health education and social welfare of Kerala cannot be cla med in the case of three major categories of backward sections of state i e tribal commun ty marine fish workers and floating Tamil Nadu population Of these fisher folk is a community that contribute s gnificantly to economic out put and nutrition of the people of Kerala But the socio econom c cond tions of fishermen community is one of the most backward in India (George and Domi 2002)

Regarding the type of families Kurien (1993) reported that majority of the fishermen families of Trivandrum district we e of nuclear type But in contrast Aneena (2003) observed joint family system among most of the fishermen families of Thrissur district

Panikar (1990) observed an average family size of 5 5 among the fisher folk families in Orissa In Kerala also Balakrishnan (1990) and Mani (1995) noticed an

average size of 5 5 among the f sher folk house holds Sehara et al (1992) observed an average family size of 6 among fishermen families of Goa Raj (1997) reported an average fam ly size of 5 19 among the f sher folk in Kerala Kumar (2001) observed that average house hold size of fishermen of Kaaramkulam fishing villages is 8 3 Accord ng to Jameela (2000) fishermen families in Trivandrum district have big fam ly s ze Patil and Jadhav (2002) reported an average family size of 4 47 in the fishermen house holds of Andaman and Nicobar Island of India

Different religions exist in the f shermen community A study by Tiets and Groenwold (2000) found that less than one fourth of the fisher folk were Christian and more than three fourth of them were Hindus According to George and Domi (2002) Muslims predominate in the marine fishing villages is northern district and Christian and Hindu in southern districts of Kerala A study by Aneena (2003) revealed that majority of the fishermen famil es in Thrissur district were Hindu who belonged to Dheevara commun ty The mportant fishing castes in Kerala are Valan Arayan mukkuva and marakkar (Govt of Kerala 2004)

In a study by Devaraj et al (1999) on coastal zone in Ernakulam and Alleppy districts they found 96 per cent of male and 91 per cent of female as illiterate Tietz ad Groenwold (2000) reported that 37 per cent of men in fishing villages had secondary education 53 per cent had primary education and one percentage had college education Kumar (2001) observed that 50 per cent of fishermen had secondary education and 48 per cent had primary school education Akinbile (2003) reported that a majority of the fishermen s N geria were literate with only 6 per cent of them not having formal education

Ananth (2000) is of the opin on that adage G ve a man fish and feed him for a day teach a man to fish and he can feed himself for a long time no longer holds true to today s world Famil es that relay on fishing for their sustenance and livelihood are facing poverty and food insecurity

A study conducted by Kurien (1980) indicated poor socio economic status among fishermen families Sukumar et al (1987) reported that the low

educational and income status of fishermen famil es resulted n the r general poverty and economic backwardness

Kurien and Achari (1998) observed that the fishermen community has remained at the margins of society geographically economically socio culturally and politically Edwin (1998) conducted a study on the socio economic conditions of the fishermen in Narakal and Kandakadavu and found that the average income of the fishermen in both villages ranged from Rs 5 000 to Rs 8 000/ per annum Sathiadas and Panikar (1994) observed an average annual income of Rs 7 600 among the fishermen households of Padumanikkupam and an average annual income of Rs 4 500 at Thiruvatiyoorkuppam The percapita income was Rs 1417 in the former and Rs 837 in the later Jessy (1989) stated that 10 percent of fishermen were below poverty line and majority of them have monthly income less than Rs 3000 Bay of Bengal Programme (1990) revealed that majority of f shermen n Orissa had an average monthly ncome in between Rs 1500 3000/ A study conducted n Trivandrum district by Karuna (1993) reported that most of the fishermen families belonged to the income groups of Rs 1000 2000 per month Tietz ad Groenwold (2000) found an average annual income of Rs 46 400 is fishermen house holds Saleena (2004) also reported an average monthly income of Rs 1500 3000/ among the fishermen families of Thrissur district

Sivasubramanian (1991) and Ananth (2000) opined that fishermen stay as poor as ever and remain at the bottom of the social scale in term of ncome and during lean seasons these people will be cut off employment and do not earn anyth ng for their livelihood Kumari (1991) and Beena and Sehara (1993) reported that low living standards poverty unemployment malnutrition and inequalities in income persist among coastal folk Jameela (2000) ind cated poverty low ncome and low purchas ng power among fishermen families of Trivandrun district

Beena and Sehara (1993) reported a state of poverty and indebtedness among fishermen community of Ernakulam coastal villages Nayik (1993) and

Sathiadas and Panikar (1994) reported that a considerable number of fishermen house holds took loans for house hold expenditure probably to tide over the lean seasons Ananth (2000) also observed a vicious cycle of poverty and ndebtedness among 15 percent of fishermen

Mani (1995) in his study in Kerala found that 9 percent of the fishermen borrowed money for marriage purposes 8 percent took loan for land purchase and the rest of the families alived loans for other purposes According to Raj (1997) majority of the loans taken by fishermen were used for purposes such as the purchase of fishing equipment Muhamad (2000) reported that lack of alternate employment in off seasons lead to indebtedness n fishermen community and they were forced to borrow money from money lenders at very high interest rate He further stated that though they work hard in peak season they could hardly pay it back and then they were caught in the vicious cycle of indebtedness Tietz and Groenwold (2000) conducted a study on the coastal zone of India and found that the average annual loans for each fishermen households was Rs 24 900

Datta et al (1998) studied the role of middle men in marine fish marketing in Orissa and revealed that 90 percent of mechan zed and non mechanized fishing units were compelled to sell their catch extensively to traders whom they were already indebted

Sehara et al (1992) noted that the ho ise hold income during monsoon is very low and consequently f shermen become permanent debtors During monsoon the level of employment is reduced about 80 percent According to Nayik (1993) the local money lenders played an important role g v ng cred t The borrowing was proportionately highest among fishermen who purchased motors individually Mani (1995) reported that the role of moneylenders and middle men in the economic life of the fisher folk indirectly increased their d ab lity and indebtedness In a study on coastal zone in Thrissur d strict Aneena (2003) ob erved majority of them borrowed from private agencies and money lenders to meet their daily house hold expenses and medical treatment during off seasons

Sehara et al (1992) revealed that fishermen are not in the habit of saving and in most of the cases their income is not sufficient to cover day to day expenses and they are forced to take further loans for repayment of loans during lean seasons

Pat l and Jadhav (2002) reported that in Andaman and Nicobar Island 73 86 per cent fishermen were members in socio political institutions and their participation score was 0 74 Aneena (2003) also reported that majority of the fishermen famil es were members in Matsyafed in Thrissur district and they have received benefits

In a study conducted by Rao (2004) it was observed that fisheries provide direct employment to about 2 6 million full time fishermen l 4 million part time fishermen and 2 1 million occasional fishermen in India

Coastal fishing communit es are typically characterized by intensive competition for scarce resources The known consequences of habitual changes include less or lowering of productivity and associated threat to local food security contaminated aquatic food products reduced economic viabil ty increased level of conflicts involving fishermen increased unemployment and loss of trade opportunities (FAO 1999)

Jessy (1989) noticed poor health and hygiene and high morbid ty and mortality among Kerala f shermen community The much accla med social progress in Kerala is found to be lacking among fishing communities The well being of fishermen measured on the basis of capab lit es l ke morbidity longevity and nutritional knowledge was found to be very low (Pushpangathan and Murughan 2000) Study by Tietz and Groenwold (2000) also found poor hygiene and sanitary conditions among coastal fishing communities of India

Aneena (2003) and Saleena (2004) reported poor housing conditions and living facilities in majority of the fishermen families of Thrissur district In Kerala fishing villages are densely populated located by the side of the sea and have only very poor infrastructure facilities and nearly 80 percent of house holds d d not have

any san tation facilities and two th rd of the villages lack safe drinking water sources (Government of Kerala, 2004)

Pickering et al (1997) reported the sexual behaviour of men and women in a fishing village on the shores of Lake Victoria South West and indicated very high rate of sexual mixing with in the villages but little contact with people from outside The authors also observed that all sexually active men and women are at risk of sexually transmitted diseases including HIV

2 3 HEALTH RELATED PERONAL HABITS OF FISHERFOLK

An individuals health depend on his habits and way of living Aneena (2003) reported that the habit of chewing is prevalent among 16 percent people in fishermen families of Thrissur district Sankaranarayanan (1990) observed in that the south Indian states of Kerala and Tamil Nadu 40 percent to 70 per cent of adult man and 20 per cent to 40 per cent of adult women chew pan A study by George (2002) found that among fisherwomen in Trivandrum habituated with chewing tobacco and 50 percent of them were accustomed to this habit for more than 30 years

Jinraj (1997) noticed that the habit of smoking is prevalent among the fisherman communities of Trivandrum district Jaishankar (2002) observed that smoking rates were high (60 per cent) among the fisherman families of Tamil Nadu Rottii (2002) found that fishermen were smoking cigarette beedi and more than one variety and the smoking rates were also h gh among the f sher folk in Pondicherry Mohner et al (2000) po nted out that lung cancer among f shermen n Germany was due to their excessive smoking habits Margera et al (1995) concluded that the greatest health hazards among fisherman in north east Italy is lung cancer due to smoking which is linked with long hours at sea

Charyalu and Narayana (1987) have reported that large scale addict on of liquor is the major reason for not having adequate food and nutrition among fishermen Selvaraj et al (1993) observed social problems of alcoholism and this habit is a major cause of the socio economic backwardness of this community Tackur

(1995) also identified unhealthy habits like alcoholism as a major cause of economic backwardness of fishermen community George and Domi (2002) indicated that majority of the fishermen of Trivandrum district were addict to alcohol

2 4 Food consumption and dietary pattern of fisher folk

Food consumpt on pattern of people is essential not only for assessing the nutrit onal status of the community but also for ducidat ng the food needs of the population at a national or regional levels (Thimmaya and Rao 1996)

Chakkphak (1986) reported that insufficiency of food consumption particularly in terms of quality is the main problem resulting in malnutrition among fishermen famil es According to Osborne (2001) low food intake is one of the major cause of undernutrition in fishermen families

Behermen and Deolalikar (1986) found that Seasonal variations in environmental conditions food availability food prices and labour demands have considerable impact on nutrition and health status of fishermen

Prema and Menon (1986) observed that 96 percent of the fam lies consumed only two meals a day and only 4 percent took three meals a day among fishermen fam lies

As revealed in earlier studies conducted n Thiruvananthapuram district by Suja (1989) Felsy (1989) Sujatha (1990) Karuna (1993) and George (2002) the food consumption pattern of the fishermen families was observed to be habitual non vegetarian type

Yagammai and Ambili (1992) found that majority of the fishermen families of Alleppy district were non vegetarians Aneena (2003) and Saleena (2004) in their study among f shermen families of Thrissur district showed that all the families were non vegetarians with a pattern of three major meals a day

According to Birch (1998) tapioca is the most commonly consumed tuber by the fishermen population of Thiruvananthapuram Th s trend among the fisher folk is observed by Prema (1982) Karuna (1993) and George (2003)

Aneena (2003) observed rice roots and tubers as the staple food among the fishermen house holds of Thrissur district Krishna (1998) stud ed the food consumption pattern of the marine fishermen ıı cochin It seemed that their diet consisted mainly of rice and fish which met only 75 percent of calories and 50 per cent of protein needs of the body

Popkin (1990) observed the occas onal use of protein rich foods n the f shermen families of Nepal Gordon (1996) studied the diet of adults in coastal areas of Tamilnadu and he found that the consumption of meat and fresh milk was rare among them Sathiadas (2003) found that the use of protein rich foods such as pulses egg and meat are occasional in the diet of fishermen families of Thiruvananthapuram district Similar trend was seen in the study carried out by Karuna (1993) and George (2003)

Aneena (2003) and Saleena (2004) carried out a study on food consumption pattern of fisher folk in Thrissur district The result showed that protein rich foods like pulses egg and meat were rarely included in their diet

Gordon (1996) found that intake of vegetable was seasonal and the average fiber ntake was therefore surprisingly low at approximately 10 gm / day/ individual in the fishermen community Sreenivasan et al (1991) and Karuna (1993) and George (2002) also reported this feature in the diets of fishermen community Amarasingh (1997) reported that the consumptio ı of green leafy vegetable yellow vegetables fresh fruits and carrots were rare in the diet of f shermen in Srilanka Such finding were reported by Prasad et al (1995) Kurien (2000) revealed that the frequency of use of protect ve foods such as green leafy vegetables other vegetables and fruits are occasional The same trend is observed among the f shermen families of Thrissur district by Aneena (2003) and Saleena (2004)

Prema and Menon (1980) observed that nutrients like Calcium iron and Vitamin A were also not available in adequate amount n the d ets of fishermen fam l es of Thiruvananthapuram district The diet of fisherfolk are poorly balanced thus fail to meet the requirement of Vitamin C & beta carotene and Iron (Bhavani

1986 and Ramanama 1993) George (2002) reported that the ntake of nutrients such as Vitamin A (35 per cent RDA) Iron (60 per cent of RDA) Vitamin c (50 per cent of RDA) were very low compared to RDA

Ramachandran (2001) observed that the ava lability of retinol thiam ne niacine and riboflavin were inadequate w th diets of fishermen community in Kerala Panikar and Soman (1990) Karuna (1993) and George (2003) also reported this feature in the diets of fishermen community

Chundha et al (1995) indicated that the intake of retinol thiamine riboflavin and Vitamin c were less than the RDA in the coastal population of Tamilnadu

2 5 Nutritional & Health status of fisher folk

Rajammal (1986) made an attempt to present the nutritional status and nutritional problem of fishermen house holds of the coastal areas of Kerala She was of the view that the nutritional improvement of fishermen could come about only as a part and parcel of an over all programme of socio economic development

Mathew and Saritha (1989) conducted study on the nutritional status of females belonging to fishermen commun ty and found that only 11 per cent of the subjects were free from symptoms of deficiency diseases while remaining 89 per cent of the subjects suffered from mild or moderate form of anemia

Karuna (1993) observed that the major ty of the f sher women (66 67per cent) were anemic in the fishermen families of Valiyaveli n Thiruvananthapuram A study by George (2002) in Th ruvananthapuram revealed that the hemoglobin level of the fisher women was below the normal level of 11g /100ml Dhanapal (2003) found that 62 per cent of the women were anemic in the fishermen families of Tamilnadu

Hassan (2003) reported that 31 per cent of the children belonging to the fishermen com nunity in Karnataka are anemic

Jayam (1984) conducted a study to identify the main illness and nutr t onal deficiency diseases prevalent among fisher folk in Kanyakumari district and

found that a considerable number of women and children suffered from partial blindness because of Vitamin A deficiency Karuna (1993) observed that the serum Vitamin A level was very poor among fishermen community in Vahyaveli in Thiruvananthapuram

Bhavani (1986) observed that in some villages of Uttarpradesh the diet of fishermen was inadequate and there was a general deficiency of Vitamin A which causes night blindness

According to Jonge (1994) a considerable number of fisher women in Kanyakumari district suffered from partial blindness because of Vitamin A deficiency In Gujarath 23 64 per cent of the f sher women had different types of Vitamin A deficiency symptoms reported by Antia (1989) Kadhar et al (2003) observed that 32 5 per cent of the children suffer from Vitam n A deficiency among fishermen families in Andrapradesh 60 per cent of the children and 35 per cent of the women are anemic in the fishermen families of Kenya (http www epu gov/ms/intrlorg)

Oshorne (2001) reported that diseases like nutritional anaemia xerophthalmia and nfectious diseases were caused generally by the deficiencies of specif c nutrients n the diet even when the content of calories was adequate

Mohiuddin (1989) while studying tl e food consumption and nutritional deficiency diseases among people res ding in the fish ng villages in Uttar Pradesh observed that although diet of the women was adequate in most respect it did not necessarily ensure adequate nutrition General deficiency of vitamins was found with wh ch d seases like anaemia scurvy and n ght blindness we e associated

Pamkkar (1999) reported a high rate of d rrhoeal disorders and hookworm infestation in the coastal populat on Kannan et al (1991) have reported that during monsoon month the ncidence of dirrhoea increases among people in coastal areas

Jaisankar (2002) observed that respiratory infections were high among f sher folk which included cough upper respiratory infections and pulmonary tuberculosis

Kannan et al (1991) reported the incidence of tuberculosis n the fishermen families of Pulluvila village A field survey done by municipality in Ponnan in the year 1998 1999 and also the information from records indicated high rate of respiratory infections in the costal wards

A study conducted by Iyer (1997) reported out break of malaria n Valiyathura and he found that epidem cs like malaria was more prevalent among fishermen families

A study on the health status of coastal people in Ponnani by Nayak (1993) showed that chronic diseases like filaria and leprosy prevailed n this area

J nraj (1997) reported that 18 per cent of the fishermen had high risk of heart disease in Anchuthengu in Thiruvananthapuram d strict Rotti (2002) found that 50 per cent of the fishermen had h gh risk of heart disease in Pondicheri Ariyanakuppam (2002) observed that 60 per cent of the fishermen are suffering from heart disease in Tamilnadu Jansen (1990) reported that 27 per cent of death in fishermen families of Denmark are due to card ovascular d seases Hata et al (1994) found that the incidence of heart disease is very high (33 per cent) n adults of coastal populat on in Japan

Chow et al (1994) reported that the incidence of colon cancer is relatively high among fishermen families of Sweden According to Sankaranarayanan (1997) the incidence of oral cancer is more prevalent among the f shermen families of France Studies by Buris et al (1998) showed that a total of 60 87 per cent men w th prostrate cancer d ed during the period from 1984 1993 in the fishermen families of Belgrade Vunturi et al (2000) indicated that thyroid and gastric cancer are w dely prevalent among fishermen commun ty in Italy Aragous et al (2002) reported the occurrence of stomach cancer among fishermen families of Spain

Axelson (2002) in h s study revealed that the incidence of lung cancer (44 7 per cent) is high among fishermen famil es of Sweden Results of the survey by

Sern (2003) evidenced that fishermen in England were found effected with skin cancer due to excessive sun exposure

2 6 Gender variation among fisher folk

Srisena and Gamlath (1999) ind cated that men took vital decis on in the f shermen family as they play the instrumental leadership role while women play only the supportive role in accordance with their gender role

Fang et al (1998) reported that fisherwomen were more highly represented in the fish processing sector than men and in other activities they were under represented Goverment of Kerala (2004) revealed that fishermen engage themselves in agriculture and fish ng women find work in fish and vegetable vending envelope making and petty trade

Gopalakrishna (1998) observed that fisher women constitute about 40 percent of the labour force involved in shrimp farm activities in Tamilnadu According to shaleesha (1998) fisher women are also actively involved in the collect on of bivalves and their marketing to ornament dealers and lime collectors

Ramanamma (2003) opined that in certain parts of the marine fishing villages fisher women have to spend major parts of their time for fish vending The author also reported that they take decision on the expenditure on food for the households and also decide on the house hold activities

2 6 Nutrition and diet counseling

Counseling involves talking with a person in a way that helps to solve his/her problem or helps to create conditions that will cause the person to understand and improve his behavior character values or life circumstances (word reference com definition counseling)

Accord ng to lybequlioh (1990) nutrition counseling is concerned with try ng to persuade an indiv dual or group of people to mod fy the r way of life with a view of improving their health and nutrition by better use of available resources both traditional and modern and both manmade and natural

Farquhar et al (1990) opined that exposure achieved by disseminating messages through mult ple channels is expected to result in changes such as greater levels of knowledge about health high levels of self eff ciency and ultimately healthier behavior at both ind v dual as well as broader community vide level

Tam larasi and Saradha (2004) have stated that counseling brings scientifically sound nutrition practices

Accord ng to Neelakantan (1991) health education means helping to change peoples behavior so as to make their health better

According to (NCPM) National Conference on Preventive Medicine in USA Health education is a process that informs motivates and helps people to adopt and maintain healthy pract ces and life styles advocates environmental changes as needed to facilitate this goal and conducts professional training and research to the same end

Yagammai (1993) made an impact in the acquisition of knowledge development of des rable att tude and adoption of nutritional pract ces of rural home makers through nutrition education

Neelakantan (1991) opined that properly organized health education act vities will produce good result

Mathew and Saritha (1989) in their study on health education evaluation bel eves and practices of rural Tamilnadu reported that behaviors regarding diet and weaning can be changed more effectively in a comparatively shorter time

Jaya and Selvaraj (1996) pointed out that the educational programmes emerge as most effective method of creating awareness in the aspects of health practices

Bosely (1986) says that the fundamental objective of educat on in n trition is to help individuals to establish food hab ts and practices that are consistent w th nutritional needs of the body and adapted to the cultural pattern and food resources of the area they live in

According to Rajammal et al (1986) nutrition and health education is an important ingredient of good family living and better nutrit on

Rajammal et al (1986) in their study on improving the health nutrition and sanitary condition of women and children revealed that rural women adopted desirable health practices as a result of their exposure to the education programmes The study has shown the scope for imparting education to rural women and children in nutrition health and sanitation along with strengthening and expand ng the infrastructure for health and sanitation at the grass root level

According to Neelakantan (1991) the step in planning any health education s to decide what the key problem are and what advice should be g ven

Neelakantan (1991) opined that free group discussion are particularly effect ve as the participants can attain information and gain knowledge in many ways they have the opportunity to ask questions to contribute ideas and to clear the r doubts

MATERIALS AND METHODS

3 MATERIALS AND METHODS

The objective of the study was to evaluate the beneficial effects of dietary counseling on the food hab ts and health related personal habits of fisher folk

To achieve the above objective the study entitled Impact of dietary counseling on the food habits of fisher folk was carried out under the following steps

3 1 Selection of area

3 2 Selection of subjects

3 3 Baseline study

3 3 1 Socio economic status of the respondents

3 3 2 Personal habits and personal hygiene of the respondents

3 4 Dietary habits

3 5 Food consumption pattern of the respondents

3 6 Nutritional profile and general health status of the respondents

3 6 1 Anthropometric measurements

3 6 2 Clinical exammat on

3 6 3 Morbidity pattern

3 6 4 Heamoglobin level

3 7 Conduct of dietary and health counseling

3 8 Impact of counseling

3 9 Analysis of data

3 1 SELECTION OF AREA

The area selected for the study was Adimalathura in Kotukal Panchayath belonging to Trivandrum district This coastal Village is located about 30 k m away from the Arabian sea coast It is a small fishermen village which comprises of nine wards There were about 1800 famil es n this fishermen colony and the population was around 6000

Basic criteria for select on of this fishermen village was

Fisher folk in this village was at high risk of health related personal habits like smoking chewing and alcoholism

The fishermen colony is approachable by bus from the college

Willingness of the people to co operate and provide the necessary information during survey (Shukla and Saxena 1988)

3 2 SELECTION OF SUBJECTS

The investigator initially approached the Parish priest of Adimalathura church and thereby the parish council co ordinators and Samoohyasamithi leaders were introduced to the investigator With the help of these leaders contact and rapport with the people in fishermen hamlets were established

One hundred subjects belonging to the age group of 40 50 years and habituated with chewing smoking and alcoholism were screened using a check l st Fisher folk from both sexes were included in this study The group consisted of 60 men and 40 women The reason for includ ng more male members in this study was that certain unhealthy personal habits were found to be existing more among the men folk compared to females

3 3 BASE LINE STUDY

3 3 1 Socio economic status of the respondents

The Socio economic level and the i fam ly background in general have a very d st nct part to play in determ ning the attitude food consumption health and behav oral pattern of the respondents Meer et al (1999) have op ned that the socio econom c condition in which one lives is said to have a direct impact on food habits and nutritional status

In order to elicit information regarding personal and Socio economic back ground of the respondents and their families details on age rel gion fam ly type and size educational status occupation monthly income and expend ture pattern soc al and env ronmental problems faced by the community related to health were

ascertained using a structured and pre tested interview schedule The schedule used is given n Appendix I

3 3 2 Personal habits and personal hygiene of the respondents

Ramankutty et al (1993) indicated that habits such as alcoholism and tobacco chewing should be viewed as important as they are one of the contributory causes to a number of chronic and fatal d seases Personal habits that have an adverse defect on their health are prevalent among people in this coastal area Hence information related to personal habits were also taken into account Such health related personal habits assessed in this study included smoking chewing and alcoholism The information on personal habits was collected by interview technique using suitably structured schedule (Appendix II) Status related to personal hygiene of the subjects was also recorded by observat on

3 4 DIETRARY HABITS

Accordmg to Swaminathan (2003) diet survey constitute an essential part of any complete study of nutritional status of individuals or groups providing essential information on dietary habits source of n trients and nutrient intake So a diet survey was conducted and the schedule given as Appendix III was used

The questionnaire consisted of quest ons regard ng food habits meal pattern frequency of use of various foods and also the use of antioxidant and phytochemical rich foods

Interview method was used to conduct the diet survey Accordmg to Bigsten (1995) interv ewing is a well established research technique Gupta (1987) had stated that the informat on received from an nterv ew s more rel able

3 4 1 Frequency of use of foods from basic food groups

The frequency of use of foods from various groups would give an ndication to the adequacy of the daily d et pattern as observed by Nelson (1995)

Hence the frequency of use of foods from basic seven group was ascertained The questionnaire used for this purpose is given in Appendix IV

Food use frequency for different food items was measured on a six po nt scale On the basis of the frequency of use scores were assigned as shown below

Frequency of use	Score
Never	1
Occasionally	2
Once in a week	3
Twice in a week	4
Thrice in a week	5
Daily	6

3 4 2 Frequency of use of foods rich in antioxidants and phytochemicals

Antioxidants are substances whose presence in relatively low concentrations significantly inhibits the rate of oxidative damage to the cells (Scott 1996) Phytochemicals have protective effects against various forms of d seases (Dragsted 1993) Vegetables and fruits are rich in int oxidants and phytochemicals like carotene vita nin C vitam n E and flavanoids Several studies have indicated that the consumption of fruits other vegetables and leafy vegetables were poor among people in the f shermen commun ty (Saleena 2003) Hence the frequency of consumption of those foods rich in ant ox dants/ phytochemicals was also studied (Append x V)

Frequency of use of foods rich in antioxidants/ phytochemicals was measured on a four point scale as detailed below

Frequency of use	Score
Never	1
Occasionally	2
Once in a week	3
Daily	4

The total score for foods in each group was calculated the formula given by Reaburn et al (1979) and is given in Appendix VI

3 5 FOOD CONSUMPTION PATTERN OF THE RESPONDENTS

Availability of food in the house hold alone does not guarantee access to food by individual family members So in order to assess the food intake of the respondents 24 hour recall was carried out with the help of a suitably structured questionnaire (Appendix VII)

In this recall method the meal menu and the weight of each raw food that has gone into the menu and the weight of cooked foods on a random day were measured The quantity of food consumed by each subject was calculated From the actual food intake nutrient intake of the respondents were computed using the food composition table

The adequacy of the diet consumed by the respondents was assessed by comparing the actual food and nutrient intake with Recommended Dietary Allowances (ICMR 2003)

3 6 NUTRITIONAL PROFILE AND GENERAL HEALTH STATUS OF THE RESPONDENTS

Assessment of nutrit onal status of a community is one of the steps in the formulation of any public health strategy to combat malnutrit on Techniques used for the assessment of the nutritional status of the respondents in this study include anthropometric measurements clinical examination and heamoglobin estimation

3 6 1 Anthropometric measurements

Beaton (1990) have reported that anthropometry is useful because it provides the best general proxy for constraints to human welfare of the poorest including inadequacies infections diseases and other environmental risk Anthropometric data recorded in this study were height and we ght

Measurement of Height

According to Gopal Das and Seshadrinath (1987) he ght or the total length apart from nutritional and other environmental factors is influenced by hereditary factors The extent of height deficit in relation to age as compared to reference standard may be regarded as a measure of the durat on of malnutrition Hence the height of all the subjects were measured using a stadiometer and compared w th standard values

Measurement of weight

According to Kaul and Nyamongo (1990) a change in body weight may be the result of change in the health of an ind vidual changes in dietary supplies or even changes in one s physical activity We ght is considered as an indicator of nutritional status A platform balance was used to measure weight of the subjects The measurements were compared with standards values

The techniques outlined by Jelliffee (1966) was used for the measurement of both height and weight

Body Mass Index

The deficit in height and weight could be due to both stunting and thinness BMI can be used to grade Chronic Energy Deficiency (CED) and s regarded as a good indicator of nutritional status BMI which is expressed as the ratio of Weight to Height Square gives the magnitude of protein calorie malnutrition (WHO 1995) Hence the BMI of all the respondents were computed and was compared with standard values Body Mass Index of the respondents was computed using the formula BMI Weight (kg)/Height (m^2)

3 6 2 Clinical Examination

Clinical examination is a means to assess levels of health of ind viduals in relation to the food they consume (Sreelekshmi 2003) It is a part of nutritional assessment through which d rect information of signs and symptoms of dietary deficiency can be collected

To assess prevalence of deficiency and clinical manifestations of health disorders among the f sher folk under study a medical camp was arranged in the coastal village The nvestigator contacted the subjects individually at repeated visits to their houses and persuaded them to attend the medical camp

The clinical examinations was conducted with the help of a medical practitioner from the Primary Health Centre Pulluvila The schedule g ven by Bamji (2003) was adopted for clinical assessment (Appendix VIII) The general health status of the subjects were also assessed

Heamoglobin Estimation

Park and Park (1991) had stated that heamoglobin level is an useful index of the overall states of nutrit on rrespective of its sign f cance in anaemia Heamoglobin est mation was carried out for 50 subjects (g/100ml) by cyanmethaemoglob n method 20 ml blood was taken for the estimation of heamoglobin Estimation was carried out by the investigator in the laboratory

FLASH CARD

Fruits rich in antioxidants and phytochemicals




FLASH CARD

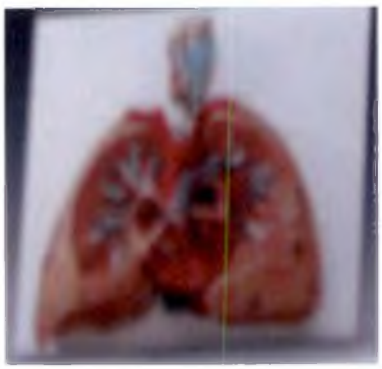
Vegetables rich in antioxidants and phytochemicals




Fig. 7 Visual aids used for counselling

FLASHCARD

Consequences of smoking and chewing



PICTOGRAPH

CHART

POSTER

Fig. 8 Visual aids used for counselling

3.7 CONDUCT OF DIETARY AND HEALTH COUNSELING.

Counseling brings scientifically sound nutrition practices and available food sources to awareness. According to Iybequlioh (1990) nutrition counseling is concerned with trying to persuade an individual or group of people to modify the way of life with a view of improving their health and nutrition by better use of available resources.

People living in this coastal belt are most socially deprived and are less exposed to health information. Their social backwardness compounded with illiteracy necessitated to have a systematic approach and an earnest effort for creating an effective change in the dietary practices and their unhealthy personal habits.

Base line study revealed that the fisher folk under study lack knowledge regarding ideal dietary pattern. Their unacceptable practices and poor personal habits were also a major problem, that required immediate action for their overall development. Based on the problems identified, counseling sessions were planned to give five messages to cover the major aspects for which the group were to be sensitized. Group counseling to all the subjects as well as individual counseling to selected subjects were conducted. Visual aids were also used for making the counseling sessions more comprehensible to the participants. The messages identified for counseling and the visual aids used are shown in the table given below.

Sl.No	Messages	Visual aids
1	Diet and disease	Posters, charts
2	Balanced diet and nutrient sources	Flip chart, pull chart
3	Antioxidants vitamins and phytochemicals	Flash card, chart
4	Dietary practices and habits	Flip chart, poster
5	Personal habits and diseases	Pictograph, flash card, pie chart

Fig: 7 & 8 depicts selected visual aids used for counseling

In consultation with the subjects the place and time for the counseling programme was fixed.

Fig.1 Measurment of height

Fig.2 Measurment of weight

Fig. 3 Clinical examination

Fig. 4 Biochemical assessment

Fig.5& 6 Conduct of diet and health counselling

3 7 1 Group counseling

Hundred subjects enrolled for counseling were divided into two groups of fifty each in order to make the sessions more effective Each group was counseled separately by giving one message at a time on a weekly interval Each group intervention comprised of intensive counseling sessions of one hour to 1½ hours durat on Such five sessions were conducted for both the groups

The investigator succeeded in creating good rapport with the subjects which helped a long way in carrying out the counseling sessions successfully

After each session discussions were also held during which the subjects were given opportunity to clear their doubts through an interactive process Discussions were effective as the counselor (investigator) and the respondents participated actively in the question answer session

3 7 2 Individual counseling

Ind vidual counseling was proven to be more effective method than adv ce in a group Reports revealed that counselmg carried out n a one to one basis is liable to build more confidence in the minds of the clients Therefore 32 subjects who were addicts to multiple unhealthy personal hab ts viz smoking chewing and alcoholism were dentified for the second stage of intervention v z individual counsel ng Th s was performed face to face n confidential sessions between the counselor and the cl ent (respondent) No t me l mit was f xed for interact on with each subject Simple and practical suggestions were reinforced nto the minds of all the cl ents who underwent individual counsel ng

3 8 IMPACT OF COUNSELING

The mpact of group and indiv dual counseling was assessed by studying the post evaluat on changes after a period of one month since the completion of counseling on the following aspects

3 8 1 Change in dietary habits

Extent of changes adopted in the dietary habits of the subjects was studied through diet survey after counselmg usmg the same interview schedule applied initially

3 8 2 Changes in personal habits

Effectiveness of counseling in quit rates and alterations in health related personal habits of the fisher folk viz smoking chewing and alcoholism was measured through the same check l st developed and used for this purpose at the beginn ng of the study

3 8 3 Changes in personal hygiene

Progress levels on personal hygiene was studied from observat onal records made before and after counselmg allott ng scores

3 8 4 Changes in general health status

Clinical examination and heamoglobm estimat on were repeated as post evaluation process with the help of med cal off cer and laboratory techn cian to assess changes if any in the general health status of the f sher folk

3 8 5 Knowledge gain

Awareness programme on deal d etary habits and healthy living are generally evaluated on the basis of gain n knowledge of the participants Accordingly a pre test to measure the existing knowledge with respect to topics covered through counselmg ntervention was conducted A post test to quantify the knowledge ga n was also conducted with the same procedure

A teacher type test schedule (Appendix IX) carrying 25 statements consisting of 5 statements relevant to each message was prepared Scores of one and two were awarded to each correct and wrong answer respect vely The score obta ned for each statement by an ndividual was summed up to work out the total score

3 9 STASTISTICAL ANALYSIS

The data collected were subjected to statistical analysis and interpreted in terms of percentage analysis mean and percentage deviat on

RESULT

4 RESULT

The results of the present study entitled Impact of dietary counseling on the food habits of fisher folk is presented under the following headings

4 1 Soc o economic status of the respondents

4 1 1 Personal profile of the respondents

4 1 2 Social and environmental problems of the respondents

4 2 Personal habits of the respondents

4 3 D etary habits of the respondents

4 3 1 Frequency of use of foods from basic food groups

4 3 2 Frequency of use of foods rich in antioxidants/ phytochemicals

4 4 Food consumption pattern of the respondents

4 5 Nutritional profile and general health status of the respondents

4 5 1 Anthropometric measurements

4 5 2 Clinical examination

4 5 3 Morbidity pattern

4 5 4 Heamoglobm levels

4 6 Impact of counseling

4 6 1 Dietary practices

4 6 2 Personal habits

4 6 3 Personal hygiene

4 6 4 General health status

4 6 5 Knowledge gain

4 1 SOCIO ECONOMIC STATUS OF THE RESPONDENTS

The Socio economic profile of the ndividuals were studied as they have a profound influence on the dietary habits of any group or community

4 1 1 Personal profile of the respondents

In order to study the personal profile age sex and religion of the subjects were enumerated and the details are given below

Table 1 Age Sex and religion of the respondents

Sl No	Variable	Category	Male	Female	Total (percent)
1	Age	40 45	20	23	43
		46 50	40	17	57
		Total	60	40	100
2	Religion	Hindu			
		Muslim			
		Christian	60	40	100
		Total	60	40	100

The data given in Table I revealed that 43 per cent of the subjects were between 40 45 years of age while 57 per cent were between 46 to 50 years

All the respondents selected for study belonged to the Christian community The study group comprised of those male and female subjects Among the hundred respondents sixty percentage of them were male and 40 percentage were female

Table 2 g ves information related to the distribution of the respondents according to their educational and occupational status

Table 2 Educational and occupational status of the respondents

Sl No	characteristics	Category	Male	Female	Total (percent)
1	Education	Illiterate	39	28	67
		Primary	4	6	20
		Upper primary	7	6	13
		Total	60	40	100
2	Occupation	Fishing	60		60
		Fish vending		40	40
		Total	60	40	100

Education helps the individual to seek and use information and disseminate the same The educational level of the respondents are shown n Table 2 When educational status of the respondents were analyzed it was observed that 67 per cent of the subjects were illiterate Twenty per cent of the subjects had attained primary level education while 13 per cent were educated up to upper primary level and none of the subjects had acquired an education above this level

Table 2 also indicates the occupational status of the respondents showing that 60 per cent of them (males) were engaged in fishing and the rest 40 per cent of the subjects (females) were engaged in fish vending

Two important social factors that are reported to influence nutritional status are type of family and family size and hence the distribution of families according to the type and size were collected and the details are presented in Table 3

Table – 3 Family characteristics of the respondents

Sl No	Characteristics	Category	Male (No)	Female (No)	Total (per cent)
1	Type of family	Nuclear	54	37	91
		Joint	6	3	9
		Total	60	40	100
2	Family size	Small (1 5 members)	9	6	15
		Medium (6 8)	25	15	40
		Large > 8	26	19	45
		Total	60	40	100
3	Number of children	1	1	2	3
		2	9	7	16
		3	6	12	18
		>3	44	19	63
		Total	60	40	100
4	Number of earning members in the family	1	14	4	18
		2	42	35	77
		> 2	4	1	5
		Total	60	40	100

As summarized in Table 3 the distribution of the subjects in relation to the type of family revealed that majority of the respondents (91 per cent) were having nuclear type families Only 9 per cent of the respondents belonged to joint families

The family size of the subjects indicated that 15 percent had small sized families (up to five members) Forty per cent of the families were medium

sized having six to eight members wh le majority of the families (45 per cent) were large sized having more than eight members

Table 3 also revealed that 63 per cent of the families were having more than 3 children and 18 per cent of the families were found to have three children Sixteen per cent of the families were having two children and the rest (3 per cent) had only one child

Details pertaining the employment status of the family members showed that 77 per cent of the subjects belonged to families with two employed persons It was noted that five per cent of the subjects were categorized under families with more than two employed persons and 18 per cent belonged to families with only one employed member

Table 4 reveals informat on related to the distribution of subjects with respect to their monthly income

Table 4 Distribution of subjects based on monthly income

Sl No	Monthly income of the subjects (Rs)	Male (No)	Female (No)	Total percent
1	1000 1250	34	32	66
2	1250 1500	9	6	15
3	1500 – 1750	7	2	9
4	1750 2000	5		5
5	> 2000	5		5
	Total	60	40	100

Table 4 revealed that 66 percent of the subjects had a monthly income between Rs 1000 1250 while 15 per cent had a monthly income between 1250 1500 Out of the hundred families surveyed only five per cent had an income above Rs 2000/ It was also noticed that the income status of the male respondents was found to be better than the female respondents

Economic status of the family members

In the present study total family income was taken into consideration as it determines the financial status and also socio economic strata of the society to which they belong

Table 5 shows the d stribution of subjects with respect to their family monthly income

Table 5 Distribution of respondents based on family monthly income

Sl No	Monthly income of the subjects (Rs)	Male (No)	Female (No)	Total percent
1	1000 1250	2	6	8
2	1500 2000	16	24	40
3	2000 2500	32	8	40
4	>2500	10	2	12
	Total	60	40	100

Figures given in Table 5 revealed that eight per cent of the respondents had a monthly family income between Rs 1000 1500 while 40 per cent between 1500 2000 and 40 per cent had a monthly family income ranging Rs 2000 2500 Only 12 per cent of the respondents had a total family income above Rs 2500

Data presented m Table 6 reveals expenditure on food

Table – 6 Distribution of respondents based on food expenditure pattern

Sl No	Monthly food expenditure (Rs)	Male (No)	Female (No)	Total per cent
1	500 – 600	5	3	8
2	601 700	18	3	21
3	701 800	12	19	31
4	>800	19	21	40
	Total	60	40	100

It can be from Table 6 that the monthly food expenditure of 8 per cent families ranged from Rs 500 600 Twenty one per cent of families had a monthly food expenditure ranging from Rs 601 – 700 and 31per cent of them were found to spend an amount between Rs 701 800 It was also found that 40 per cent of the families were spending more than Rs 800 on food per month Table 7 depicts the details related to monthly expenditure on medicine

Table 7 Details on monthly expenditure for medicine

Sl No	Monthly expenditure for medicine (Rs)	Male (No)	Female (No)	Total percent
1	100 200	7	4	11
2	201 – 300	11	8	19
3	301 400	16	12	28
4	>400	26	16	42
	Total	60	40	100

The details regarding the expenditure on medicine revealed that 11 per cent of the families spent Rs 100 200 and 19 per cent were spending an amount ranging between Rs 201 300 The amount spent by 28 per cent ranged from Rs 301 to 400 Majority of the families (42 per cent) were found to be spending more than 400 rupees for medicine during a month

4 1 2 Social and environmental problems of the respondents

Enquires were made to find out any incidence of religious and social clashes in the village during the recent years It was reported that there were no such conflicts in this pocket Information regarding common public facilities available in the fishing village was collected and the data is given below

Table – 8 Details on nearness to drinking water facility

Sl No	Distance for collecting water	Male (No)	Female (No)	Total percent
1	Close by	32	38	70
2	½ Km	9	14	23
3	1 Km	3	4	7
4	More than 1 Km			
	Total	44	56	100

As far as drinking water facility was concerned there was absolutely no water connection to individual house holds All the families had to collect drinking water from public tap provided under the financial support of the church in the locality It was further annoying to note that 23 per cent of the families had to walk ½ kilometer to collect water and for 7 per cent of the families the drinking water accessibility was one kilometer away However majority of the respondents ie 70 per cent were residing close by to the water source

Table 9 reveals the information regarding the latrine facility of the respondents

Table – 9 Details regarding latrine facility

Sl No	Latrine facility	Male (No)	Female (No)	Total percent
1	Available	14	12	26
2	Not available	46	28	74
	Total	60	40	100

The sanitary and hygienic conditions of the house holds were also taken into account The data showed that 74 per cent of the families had no latrine facility and they adopted unhygienic practices of using open ground/sea shore for

defecation Moreover none of the households had drainage facility Waste water from the households was not disposed off in the proper way but it was drained to the homesteads itself

Table 10 gives the information related to disposal of household waste by the respondents

Table 10 Details regarding disposal of household waste

Sl No	Mode of house hold waste disposal	Male (No)	Female (No)	Total percent
1	Thrown at the road side	46	30	76
2	Burning	14	10	24
	Total	60	40	100

From the table it was evident that of 76 per cent of the respondents disposed off their household garbage by simply throwing them aside While the remaining 24 per cent disposed their household waste by burning it

Regarding the availability of Health Care facility cent per cent of the respondents pointed out that there exist no primary health centre in their locality and hence they had to depend totally on the nearby Panchayat which is 5 kilometers away

Information was collected with respect to the utilization of public health centre by the respondents and the details are furnished in Table 11

Table – 11 Utilization of Primary Health facility by respondents

Sl No	Primary Health Centre facility	Male (No)	Female (No)	Total percent
1	Utilized	36	29	65
2	Not utilized	24	11	35
	Total	60	40	100

First hand nformation collected through of soc o economic survey mdicated that 65 per cent of the families were utilizing facilities of Primary Health Centre for medical aid It was also seen that 35 per cent of families were utilizing private hospitals for treatment depending upon the nature of disease The above subjects reported that they were not able to use the medical facility available in Primary Health Centre due to the inconvenient working hours of the centre

4 2 PERSONAL HABITS OF THE RESPONDENTS

The health related personal habits and way of life are important factors which help to maintain good health an individual Accordingly details on the personal habits of the respondents viz smoking chewing and alcoholism were collected and data is given below

Habit of smoking

Distribution of respondents based on their habit of smoking is given in Table 16

Table 12 Smoking habit of the respondents (No)

SL No	Smoking hab t	Male (No)	Percentage
1	Smoker	20	33 33
2	Non smokers	40	66 66
3	Total	60	100

As observed from the table 12 among the 60 male subjects interviewed 33 33 per cent of them were smokers and the rest were free from this habit

Details on the duration in years for which respondents were victims to smoking is given in Table 13

Table 13 Years of smoking

SL No	Years of smoking	Male (No)	Percentage
1	15 20 years	4	20 00
2	More than 20 years	16	80 00
3	Total	20	100

Table 13 indicated that among the smokers 80 per cent of them were addicted to this habit for more than 20 years The remaining 20 per cent have a history of smoking for a period between 15 20 years

Details on the preferable item for smoking by the respondents given in Table 14

Table 18 Details on the preferable item for smoking

SL N	Pieferable item	Male (No)	Percentage
ϕ	Beedi	11	55 00
2	Cigerettes	9	45 00
3	Total	20	100

On enquiring the items commonly used it was evident (Table14) that 55 per cent of the subjects used beedi for smoking and the remaining 45 per cent were users of cigarette

When the frequency of smoking was studied the data revealed that cent percent of them were in the habit of smoking more than fifteen times a day Survey also revealed that none of them were conscious on the health hazards of smoking

Habit of chewing

Tobacco chew ng habit of the respondents were studied and the details are given below

All the subjects (100 per cent) both male and female were regular chewers of betel quid While analyzing the ingredients included by

respondents in their chewing quid it was evident that all the subjects (100 per cent) were using betel chunna tobacco and arecanut

Frequency distribution of respondents based on tobacco chewing is given in Table 15

Table 15 Frequency distribution of respondents based on tobacco chewing

Sl No	Frequency of chewing (per day)	Male		Female	
		No	%	No	%
1	Upto 5 times				
2	6 10 times	24	40 00	21	52 50
3	More than ten times	36	60 00	19	47 50
4	Total	60	100	40	100

Considering the frequency of chewing betel quid it was found that 40 per cent of male and 52 50 per cent of female subjects chewed 6 to10 times a day The chewing frequency of 60 per cent of male and 47 50 per cent of female subjects were found to be more than 10 times a day

The length of time for which the quid was allowed to remain in the mouth was also noted and the data indicated that on each chewing the ingred ents were kept in the mouth for more than one and half hours on an average by all the subjects

Habit of alcohol consumption

Table 15 depicts the data on alcoholism among the respondents

Table 16 Details on the habit of alcoholism

Sl No	Alcoholism	Male (No)	Percentage
1	Alcoholic	32	53 33
2	Not alcoholic	28	46 67
	Total	60	100

Alcoholism is common among the fisher folk It was observed that 53 33 per cent of the respondents were regular alcohol users while 46 67 per cent were non users of alcohol It was also noted that none of the female respondents were habituated to alcoholism

Age at which the respondents become victims of alcoholism is presented in Table 17

Table 17 Details on the age of starting alcoholism

Sl No	Age of starting alcoholism(years)	Male (No)	Percentage
1	20 25	20	62 50
2	25 30	12	37 50
3	Total	32	100

Table 17 revealed that among the alcoholics 62 50 per cent started the use of alcohol at an early age of 20 25 years and 37 50 per cent started this habit between 25 30 years of age

Data regarding the number of years for which the respondents were habituated w th alcohol use is depicted in Table 18

Table 18 years of alcohol use

Sl No	Years of alcoholism	Male (No)	Percentage
1	15 20 years	12	37 50
2	Above 20 years	20	62 50
3	Total	32	100

From Table 18 it is clear that among the alcoholics 62 50 per cent had been accustomed to this habit for more than 20 years The rest 37 50 per cent of the subjects were habitual to this practice since 15 20 years

Considering the frequency of use of alcohol it was found that 53 33 per cent of the respondents were consuming alcohol regularly

Information collected on the awareness of the respondents to the consequences of drinking is presented in Table 19

Table 19 Awareness of the respondents on consequences of drinking

Sl No	Awareness of the health hazards	Male (No)	Percentage
1	Aware	14	23 33
2	Not aware	46	76 66
ɔ	Total	60	100

Table 19 crystallizes that 23 33 per cent of the subjects were aware of the health hazards of drinking alcohol while 76 66 per cent were not bothered about the ill effects of alcohol consumption

4 3 FOOD CONSUMPTION PATTERN OF THE RESPONDENTS

A diet survey was conducted as a primary step to determine the dietary profile of the subjects The diet survey revealed information regarding food habits dietary practices frequency of meal consumed frequency of use of antioxidant and phytochemicals rich foods da ly meal pattern etc The results obta ned from the diet survey are presented below

4 3 1 Food habits of the respondents

An enquiry on the food habits of the subjects under study revealed that all the subjects (100 per cent) were non vegetarians Though they were all branded non vegetarians it was observed that fish was the single non vegetarian food item they consumed It was seen that they rarely consumed other non vegetarian items Other details pertaining to food habits and consumption pattern were collected and analyzed

With regard to the meal timings followed by the fisher folk it could be gathered that none of them followed a specific meal pattern

Information was collected with respect to the number of meals taken by the respondents and the deta ls are presented in Table 20

Table 20 Data on number of meals taken by the respondents

Sl No	Number of meals taken	Male		Female	
		No	Per cent	No	Per cent
1	One meal / day	23	38 33	11	27 50
2	2 meal / day	35	87 50	23	57 50
3	3 meal / day	2	5 00	6	15 00
	Total	60	100	40	100

An enquiry on the meal pattern of the subjects revealed that majority of the subjects (87 50 per cent of male and 57 50 per cent of female) followed two meal a day pattern Out of the 100 subjects surveyed 23 subjects among male (38 33 per cent) and 11 subjects among females (27 50 per cent) were consuming one meal a day Only two male subjects (5 00 per cent) and 6 female subjects (15 per cent) were sticking on to the habit of consuming three meals a day

Details were collected regarding food taken outside the homes by the respondents and the data is given in Table 21

Table 21 Details regarding food taken out side the home

Sl No	Food taken out side	Male		Female	
		No	Per cent	No	Per cent
1	Breakfast+lunch+dinner	2	3 33		
2	Lunch+dinner	4	6 67		
3	Lunch alone	7	11 66		
4	Dinner alone	29	48 33		
5	Only snacks / drinks	18	30 00	40	100
	Total	60	100	40	100

Enquiry made on the habit of taking food outside the home which may negatively influence the family food budget revealed that 30 per cent of male and all the female (100 per cent) subjects took snacks/drinks from outside About eleven per cent of male subjects took one meal i e dinner from outside and more than six per cent of the male subjects were in the habit of eating lunch and dinner outside the home Only three per cent of the males were in the habit of taking breakfast lunch and dinner away from their home It was further observed that female subjects in general resorted to consume home made foods

4 3 2 Frequency of use of foods (basic food groups)

Frequency of use of various food items among the subjects were assessed by assigning scores ranging from one to six depending upon the frequency of use viz never occasionally once in a week twice in a week thrice in a week and daily Data collected based on these scores to determine the frequency of use of different food items in the daily diet is presented in Table 22

Table 22 Frequency of use of various food items by the respondents

Food item	Sex	Daily	Thrice in a week	Twice in a week	Once in a week	Occasional	Never
Cereals	M	60(100)					
	F	40(100)					
Pulses	M		11(18 33)	21(35 00)	18(30 00)	10(16 67)	
	F		6(15 00)	4(10 00)	12(30 00)	18(45 00)	
Roots and tubers	M	16(26 67)	18(30 00)	18(30 00)	7(11 67)		
	F	9(22 57)	13(32 50)	11(27 50)	7(17 50)		
Green leafy vegetables	M					16(26 67)	44(73 33)
	F					13(32 50)	27(67 50)
Fruits	M					20(دد دد)	40(66 67)
	F					11(27 50)	29(72 50)
Milk and milk products	M	60(100)					
	F	40(100)					
Egg	M		16(26 67)	15(25 00)	23(38 33)	6(10 00)	
	F					23(57 50)	17(42 50)
Fish	M	60(100)					
	F	40(100)					
Meat	M		10(16 66)	16(26 66)	34(56 66)		
	F					37(92 50)	3(7 50)
Oil seeds	M	60(100)					
	F	40(100)					
Fats and oil	M	60(100)					
		40(100)					
Other vegetables	M					29(48 دد)	31(51 67)
	F					17(42 50)	23(57 50)

(Figures in parenthesis denotes percentage)

As it may be seen from Table 22 the energy rich foods like cereals nuts & oil seeds (coconut) fats and oil sugar & jaggery were used daily by all the subjects

Considering the frequency of use of roots and tubers 26 67 per cent of male and 22 50 per cent of female subjects included this item daily in their diet However 41 67 per cent male and 53 per cent female subjects included roots and tubers thrice in a week

Data regard ng the frequency of use of protein rich foods revealed that fish was used daily by the families of all male and female subjects It was found that 18 33 per cent of male and 15 per cent female subjects included pulses thrice in a week in their diet Thirty five per cent of males and ten per cent of females used this item twice in a week Thirty per cent of male and female subjects included pulses only once in a week Data indicated that 16 67 per cent of males and forty five per cent of females included pulses occasionally in their diet It was also observed that milk and milk products were used daily by the families of all male and female subjects

Regarding the frequency of use of egg it was found that 26 67 per cent of male subjects included it thrice in a week while twenty five per cent of the male subjects included it twice in a week and 38 33 per cent of them included egg once in a week Ten per cent of male and 57 50 per cent of female subjects used it occasionally in their diet However 42 50 percent of female subjects never included egg in their diet Meat was included thrice in a week by 16 66 per cent of male subjects while 26 66 per cent of male subjects included meat twice in a week More than 56 per cent of male subjects included meat once in a week in their diet While 92 50 per cent of the female subjects consumed it occasionally Data also indicated that 7 50 per cent of female subjects never ncluded meat in their diet

Data regarding the frequency of use of protective foods viz other vegetables green leafy vegetables and fruits evidenced that 48 33 per cent of male and 42 50 per cent of female subjects used vegetables only occasionally while 51 67 per cent of male and 57 50 of female subjects never used vegetables in their diet

Green leafy vegetables were occasionally used by 26 67 per cent of male and 32 50 per cent female subjects Data indicated that majority of the subjects i e 73 33 per cent of male and 67 50 percent of female subjects never used green leafy vegetables in their diet

Enquiry on frequency of consumption of fruits revealed that 33 33 per cent of male and 27 50 per cent of female subjects used them occasionally

while most of the subjects i e 66 67 per cent of male and 72 50 percent female subjects avoided fruits in their diet

4 3 3 Frequency of use of foods rich in antioxidants & phytochemicals

Data regarding the frequency of use of foods rich in antioxidants & phytochemicals in the daily diet is presented in Table 23

Focussing on the use of different leafy vegetables it was observed that amaranth was used occasionally by 25 per cent and 23 percent of the male and female subjects while majority (75 per cent and 77 per cent) never used amaranth in their diets Thirteen per cent of male and 15 per cent of female subjects were using agathi leaves in their diet at the same time 86 66 per cent of male and 85 per cent of the female subjects never used agathi leaves as a food item

Regarding the frequency of use of curry leaves it was revealed that 43 33 per cent of male and 42 50 per cent of the female subjects were occasional users and the rest never used this item in their diet Chekkurmanis was used occasionally by 18 33 per cent of male and 72 50 per cent of female subjects and majority of them were not using this at all Most of the subjects i e 63 33 per cent of male and 72 50 per cent of the female subjects used cabbage occasionally Data revealed that drumstick leaves was used occasionally by 46 67 per cent of male and 52 50 per cent of female subjects and 53 33 per cent of male and 47 50 per cent of female subjects never used drumstick leaves as a food item

It was noticed that beetroot was included occasionally by majority of the subjects (65 per cent of male and 67 50 per cent of females) Carrot was included occasionally by fifty five per cent of male and about 48 per cent of female subjects It was found that garlic was used once in a week by 18 33 per cent of male and 17 50 per cent of female subjects and the majority (48 33 per cent of male and 45 per cent female) used it only occasionally 33 33 per cent of male and 37 50 per cent of female subjects never used garlic Onion was used once in a week by few subjects 23 33 per cent of male and 15 per cent of female subjects used this item occasionally and a majority i e 68 33 per cent of

Table 23 Frequency of use of foods rich in antioxidants and phytochemicals

Food items	Group	Da ly	Once in week	Occas onally	Never
Green leafy vegetables	M			15(25 00)	45(75 00)
Amaranth	F			9 (23 00)	31(77 00)
	M			8(13 33)	52(86 66)
Agath leaves	F			6(15 00)	34(85 00)
Curry leaves	M			29(48 33)	31(51 67)
	F			17(42 50)	23(57
	M			29(48 33)	31(51 57)
Chekkurman s	F			17(42 50)	23(57 50)
Cabbage	M			38(63 3)	22(36 67)
	F			29(72 50)	11(27 50)
	M			28(46 67)	32(53 33)
Drumst ck leaves	F			21(52 50)	19(47 50)
Roots and tubers	M			39(65 00)	21(35 00)
Beetroot	F			27(67 50)	13(32 50)
	M			33(55 00)	27(45 00)
Carrot	F			19(47 50)	21(52 50)
	M		11(18 33)	29(46 33)	20(33 33)
Garl c	F		7(17 50)	18(45 00)	15(37 50)
	M		5(8 33)	14(23 33)	41(68 33)
On on	F		3(7 50)	6(15 00)	31(77 50)
	M		7(11 67)	23(38 33)	30(50 00)
Drumst ck	F		5(12 50)	15(37 50)	20(50 00)
	M		4(6 67)	37(61 67)	19(81 67)
Tomato ripe	F		3(7 50)	17(42 50)	20(50 00)
	M			6(10 00)	54(90 00)
Sweet potato	F			8(20 00)	32(80 00)
On on stalk	M			13(21 67)	47(76 33)
	F			9(22 50)	31(77 50)
Fruits	M			21(35 00)	39(65 00)
Amla	F			11(27 50)	29(72 50)
	M		12(20 00)	48(80 00)	
Banana	F		5(12 50)	35(87 50)	
	M			18(30 00)	42 (70 00)
G apes	F			14(35 00)	26(65 00)
	M			23(38 33)	37(61 67)
Guava	F			19(47 50)	21(52 50)
	M			22(36 67)	38(63 33)
Jackfru t	F			16(40 00)	24(60 00)
	M	12(23 33)	17(28 33)	29(48 33)	
Lemon	F	3(7 50)	6(15 00)	31(77 50)	
	M			21(35 00)	39(65 00)
Mango(r pe)	F			15(37 50)	25(62 50)
	M			15(37 50)	25(62 50)
Orange	F			11(27 50)	29(72 50)
	M			31(51 67)	29(48 33)
Papaya (r pe)	F			29(72 50)	11(27 50)
	M	60			
Tea	F	40			

male and 77 50 per cent of female subjects were in the habit of not using onion in their diet

It was found that drumstick was included once in a week by 11 67 per cent of male and 12 50 percent of female subjects Fifteen per cent of male and 38 33 per cent of female subjects consumed drumstick occasionally and majority of them were not in the habit of using drumst ck Sweet potato was used occasionally by ten per cent of male and twenty per cent of female subjects and the remaining were not in the habit of using sweet potato as a food item Frequency of use of tomato (ripe) found that 12 50 per cent males and 6 67 per cent females used tomato once in a week 37 50 per cent of male and 61 67 per cent female subjects used it occasionally and 31 67 per cent of male and 50 per cent of female subjects were not found to be using tomato

Onion stalk a seasonal vegetable and a good source of β carotene was used occasionally by 21 67 per cent of male and 22 50 per cent of female subjects However a majority i e 78 33 per cent males and 77 50 per cent females were not users of this food item

Data pertaining to the freque icy of use of foods rich in antioxidants and phytochemicals revealed that fruits like guava was used occasionally by 38 33 per cent male and 47 50 per cent female subjects The rest of them have never used guava It was found that papaya was included occasionally by 51 67 per cent of male and 72 50 per cent of female subjects while 48 33 per cent male and 27 50 per cent female subjects were not including papaya in their diet Banana was used only once in a week by 20 per cent male and 12 50 per cent female subjects The remaining eighty per cent male and 87 50 per cent females used banana as an occasional food item

The seasonally available jackfruit was found to be using occasionally by 36 67 per cent male and 40 per cent female subjects and majority of them were not found to consume this fruit Ripe mango was used occasionally by 35 per cent of males and 37 50 per cent of females Sixty five per cent of male and 62 50 per cent of female subjects were not in the habit of using mango as a

fruit Amla was used occasionally by 35 per cent of male and 27 50 per cent of females subjects while 65 per cent of males and 72 50 p

r cent females were not using amla n their diet The conventional fruit orange was used occasionally by 28 33 per cent of male and 27 50 per cent of female subjects Majority of them i e 62 50 per cent males and 71 67 per cent females reported that they never consumed orange

It was observed that lemon was more or less used by the fisher folk under study This was used daily by 23 33 per cent of male and 7 50 per cent of female subjects 28 33 per cent of male and 15 per cent of females used lemon once in a week 48 33 per cent of male and 77 50 per cent of female subjects used lemon occasionally

Data pooled indicated that tea was an item used regularly in the diet by all the subjects (Both male and female)

4 4 FOOD CONSUMPTION PATTERN OF THE RESPONDENTS

The actual food intake of the subjects (male & female) was assessed by conducting diet survey by 24 hour recall method in order to determine the quality and quantity of their diet and also to find out the nutrient content of the diet consumed by the subjects

From the data collected by the recall method the raw equivalent of the foods consumed was computed The nutritive value of diet consumed were calculated using the food composition tables of ICMR (1999 and 2003) The quantity of each food group consumed was compared with RDA specified as per balanced diet ICMR(2003)

Table 24 represents the mean of actual food intake of the male respondents

F g 1 Percentage food intake (RDA) of male respondents

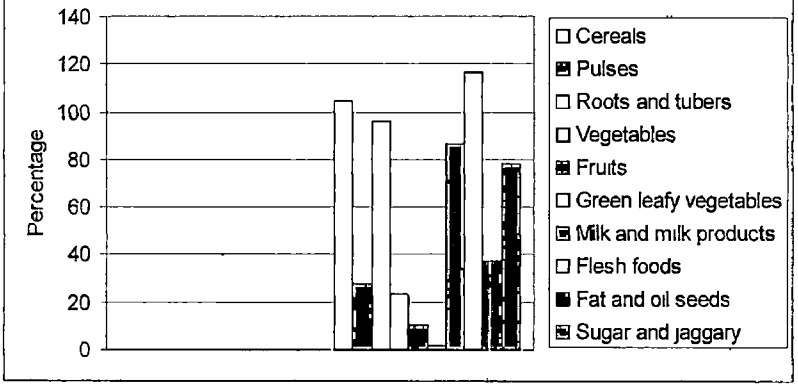


Fig 2 Percentage nutrient intake (RDA) of male respondents

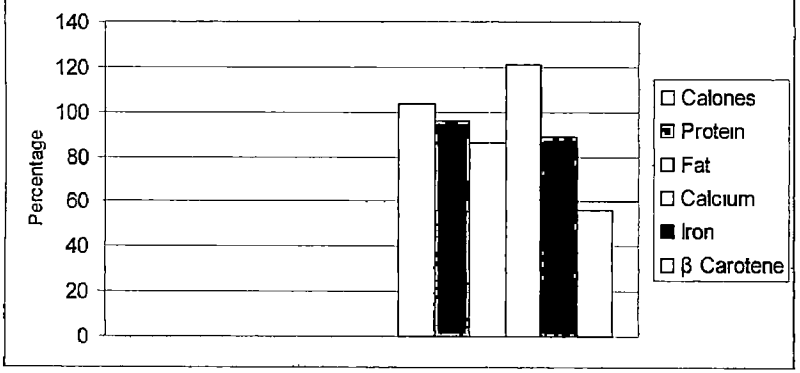


Table 24 Actual food intake of the male respondents(Mean values)

Food item	RDA (g)	Average food intake (g)	Percentage of RDA met
Cereals	420	438 60	104 42
Pulses	80	21 90	27 35
Roots and tubers	100	96 30	96 30
Vegetables	75	17 80	23 73
Fruits	100	7 40	10 20
Green leafy vegetables	125	2 10	1 68
Milk and milk products	600	521 36	86 75
Flesh foods	100	116 70	116 70
Fat and oil seeds	40	12 40	37 20
Sugar and jaggary	40	25 00	78 00

Source ICMR (2003)

Among the various food items consumed by the male subjects the average intake of cereals was found to be higher than the RDA (103 41 per cent) However the intake of pulses fruits green leafy vegetables and other vegetables was very poor and the consumption rate was below the RDA The intake of milk and milk products and fats and oils met 86 75 per cent and 37 20 per cent of RDA respectively Intake of fleshy foods was above RDA Consumption of sugar and jaggery met only 78 per cent of RDA

The mean nutrient intake of the male subjects per day is presented in Table 25

Table 25 Mean nutrient intake of male respondents

Nutrients	RDA (g)	Average intake of nutrient	Percentage of RDA met
Calories (kcal)	2875	2973 20	103 41
Protein (g)	60	51 60	96 00
Fat (g)	20	17 30	86 50
Calcium (mg)	400	484 20	121 05
Iron (mg)	28	24 90	88 92
β Carotene (µg)	2400	1360 00	56 67

Source ICMR (2003)

The energy intake was found to be satisfactory Protein intake was 96 per cent of RDA The intake of iron was 88 92 per cent The study also

revealed that dietary intake of vitamin A (beta carotene) was poor Intake of fat met 86 per cent of RDA However calcium intake was found to be higher than the RDA ie 21 5 per cent above RDA

Mean actual food intake of the female subjects are presented in Table 26

Table 26 Actual food intake of the female respondents (Mean values)

Food item	RDA (g)	Average food intake (g)	Percentage of RDA met
Cereals	350	262 93	75 60
Pulses	50	6 00	12 00
Roots and tubers	50	42 30	84 90
Vegetables	75	8 90	11 87
Fruits	60	1 85	3 08
Green leafy vegetables	100	2 80	2 80
Milk and Milk products	250	192 60	37 40
Flesh foods	90	69 11	75 80
Fats and oil seeds	35	13 20	31 71
Sugar and jaggary	30	11 20	37 33

Source ICMR (2003)

Table 26 reveals that the consumption of cereals met only 75 60 per cent of RDA The intake of pulses fruits and green leafy vegetables were very poor The mean consumption rate of pulses and vegetables were 12 and 11 87 per cent respectively RDA for fruits and green leafy vegetables was met by just 3 08 per cent and 2 80 percent respectively When the intake of milk and milk products were taken into account the percentage of RDA met was 37 4o per cent The mean intake of fats and oils sugar and jaggery were also poor and the consumption rate was 31 71 per cent and 37 33 per cent of RDA respectively The average consumption of roots and tubers met 84 90 per cent of the RDA Intake of flesh foods met 75 80 per cent of RDA However fish was the only item that was consumed by the female subjects among flesh foods

The mean nutrient intake of the female subjects per day is presented in Table 27

Fig 3 percentage food intake (RDA) of female respondents

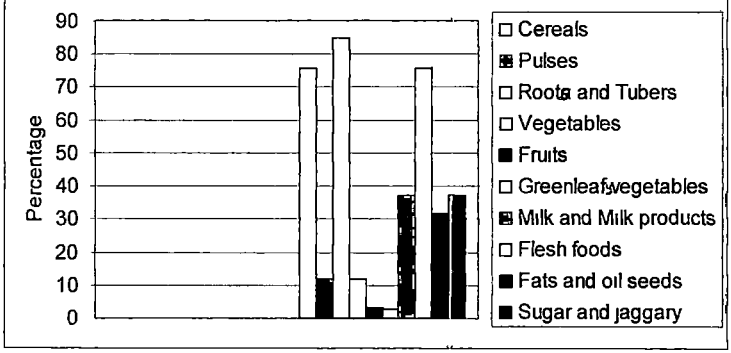


Fig 4 Percentage nutrient intake (RDA) of female respondents

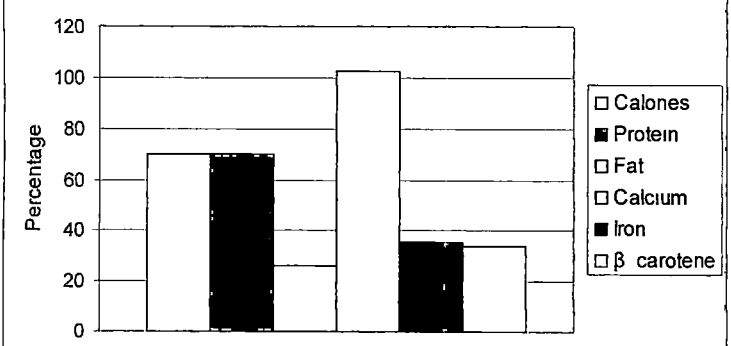


Table 27 Mean nutrient intake of the female respondents / day

Nutrients	RDA (g)	Average intake of nutrients	Percentage of RDA met
Calories (kcal)	2255	1579 40	70 03
Protein (g)	50	35 12	70 24
Fat (g)	20	5 30	26 50
Calcium (mg)	400	409 30	102 30
Iron (mg)	30	10 60	35 33
B Carotene (µg)	2400	810 60	33 78

Source ICMR (2003)

The intake of calories was 30 per cent below the RDA Protein intake was 70 24 per cent of the RDA The intake of fat met only 26 50 per cent of the RDA The iron intake was low and the percentage ntake noted was 35 33 per cent Survey also revealed that dietary intake of beta carotene was very poor and was as low as 33 06 per cent of the RDA However calcium intake was found to be slightly higher than the RDA ie 102 30 per cent

4 5 NUTRITIONAL PROFILE AND GENERAL HEALTH STATUS OF THE RESPONDENTS

Assessment of nutritional status of the fisher folk under study was carried out using anthropometry clinical examination and heamoglobin estimation

4 51 Anthropometric measurements

Anthropometry was used as a tool to assess the nutritional status which gives an indication to adequacy or inadequacy of food intake to a certain extend

Weight and height of the respondents

Height and weight of the respondents were measured and the distribution of subjects based on their mean body height and weight are given in Table 28

Table 28 Mean height and weight of the respondents

Sex	No	Height (cm)		Weight (kg)	
		Observed value(mean)	Standard	Observed value(mean)	Standard
Male	60	162 24	Reference men (160)	60 18	Reference men (60)
Female	40	146 81	Reference Women(155)	43 21	Reference Women(50)

As observed from Table 28 the mean height and weight of the male subjects were 162 24 cm and 60 18 kg respectively The mean height and mean weight of the female subjects were 146 81 cm and 43 21 kg It is seen that the mean height and mean weight of the male subjects were comparable to standard value for a reference man While the mean height and mean weight of the female subjects were found to be lower than the standard values

Body mass index

From the recorded height and weight of the respondents body mass index was computed using the formula kg/m^2 Body mass index of the respondents are given in Table 29

Table 29 Distribution of the respondents based on their BMI (Mean)

Sex	No	BMI (Mean)	Normal BMI value
Male	60	24 32	20 25
Female	40	16 21	

Data presented in Table 29 further discloses the fact that the mean BMI of male respondents were 24 32 which is within the normal range of 20 25 At the same time the mean BMI of the female subjects was found to be 16 21 which was very low when compared to the normal BMI value

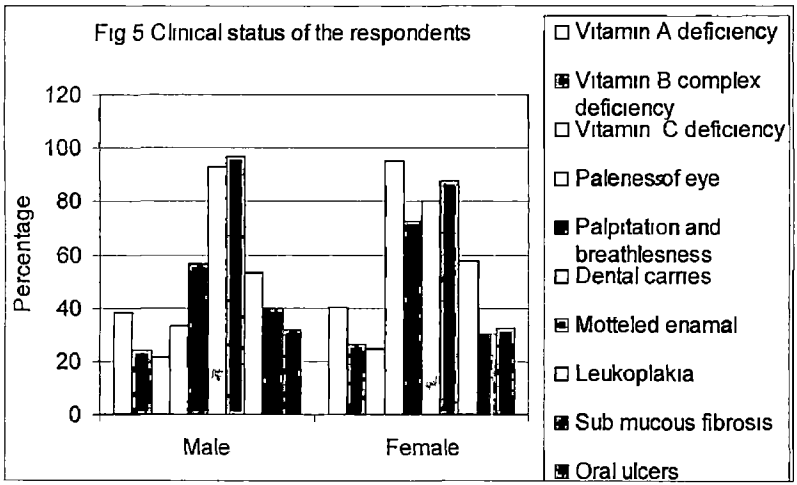


Fig 5 Clinical status of the respondents
Percentage
120
100
80
60
40
20
0
Male
Female
Vitamin A deficiency
Vitamin B complex deficiency
Vitamin C deficiency
Palenessof eye
Palpitation and breathlesness
Dental carries
Motteled enamal
Leukoplakia
Sub mucous fibrosis
Oral ulcers

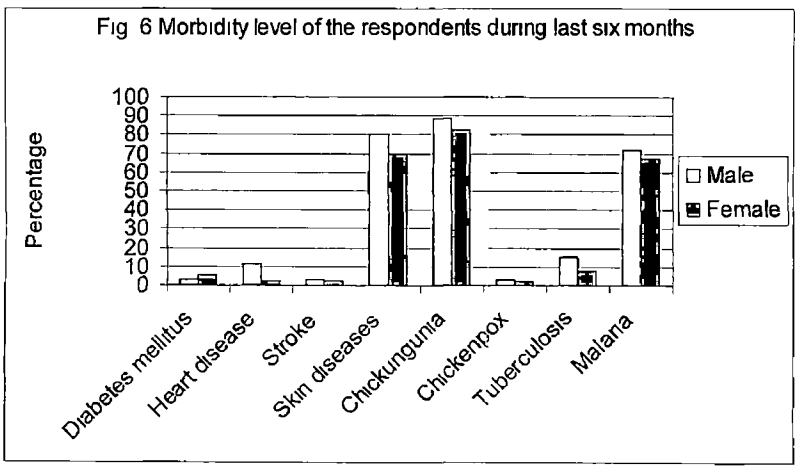


Fig 6 Morbidity level of the respondents during last six months
Percentage
100
90
80
70
60
50
40
30
20
10
0
Diabetes mellitus
Heart disease
Stroke
Skin diseases
Chickungunia
Chickenpox
Tuberculosis
Malaria
Male
Female

4 5 2 Clinical examination

The clinical examination of the subjects under study was carried out by conducting medical camps with the help of a medical practitioner and a laboratory technician Park (1997) observed that ultimate objective of a clinical examination is to assess the level of health of individuals in relation to the food they consume Details obtained through clinical examination are furnished in Table 30

Table 30 clinical status of the respondents

Sl No	Symptoms observed	Male		Female	
		No	Per cent	No	Per cent
1	**Vitamin A deficiency** Conjuctival xerosis Bitoe spot Corneal xerosis Nightblindness	92	38 33	65	40 62
2	**Vitamin B complex deficiency** Angular stomatitis glossitis	29	24 16	21	26 25
3	**Vitamin C deficiency** Spongy bleeding gums	13	21 67	10	25 00
4	Paleness of eye	24	33 33	38	95 00
5	Palpitation and breathlessness	34	56 67	29	72 50
6	Dental caries	56	93 33	32	80 00
7	Mottled enamel	58	96 67	35	87 50
8	Oral lesion				
	a) Leukoplakia	32	53 33	23	57 50
	b) Sub Mucous Fibrosis (SMF)	24	40 00	12	30 00
	c) Oral ulcers	19	31 67	13	32 50
9	Presence of cough				
	a) Chronic	49	81 67	6	15 00
	b) Chronic with blood in	6	10 00		
10	sputum				
	Changes in bowel/bladder	3	5 00		
	a) Bleeding	21	35 00	13	32 50
	b) Black coloured stool	22	36 67	19	47 50
	c) Alternate constipation and diarrhoea	45	75 00	20	50 00

The clinical signs of vitamin A deficiency were observed in 38 33 per cent of male and 40 62 per cent of female subjects Visible

symptoms of vitamin B complex and vitamin C were also observed in 24 16 percent and 21 67 per cent of male subjects and 26 25 per cent and 25 per cent of female subjects respectively Paleness of eye was noticed among 33 33 per cent of male and 95 per cent of female subjects Palpitation and breathlessness were observed among 56 67 per cent of male and 72 50 per cent of female subjects Clinical symptoms like dental caries and mottled enamel were present in 93 33 per cent 96 67 per cent of male and 80 per cent and 87 50 per cent of female subjects respectively 53 33 per cent of male and 57 50 per cent female subjects had leukoplakia Sub Mucous F bros s (SMF) and oral ulcers were present in 40 percent and 31 67 per cent of male subjects and 50 percent and 32 50 per cent of female subjects respectively On assessing the occurrence of respiratory ailments 81 67 per cent of male and 15 per cent of female subjects had cough as a major symptom Ten per cent of the male subjects were found to be affected with chronic cough or cough with blood in sputum

Five per cent of male subjects reported that there was blood in their stools and thirty five percent of male and 32 50 per cent of female subjects remarked that they were passing black coloured stools About thirty six per cent per cent of male and 47 50 per cent female subjects complained that they have alternate incidence of constipation and dirrhoea

4 5 3 Hemoglobin level

Biochemical assessment represents the most objective assessment of nutritional status of an individual frequently providing pre or sub clinical information The biochemical assessment of the subjects were conducted by estimating the hemoglobin level Table 30 and 31 shows the distribution of respondents based on their heamoglobm level

Table 31 Heamoglobin level of the male respondents

Grade	Heamoglobin level	No	Percentage
Below normal	< 13 g / dl	11	18 33
Standard	13 14 g /dl	42	70 00
Above normal	> 14 g / dl	7	11 67
4	Total	60	100 00

Fig 7 Heamoglobin level of the male respondents

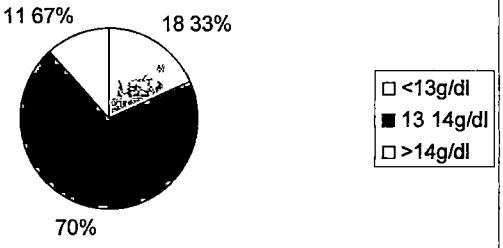
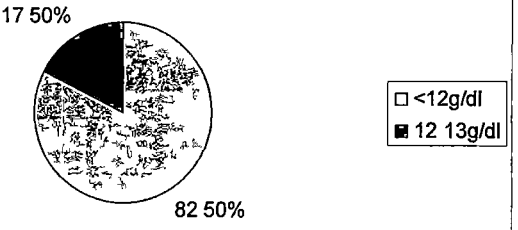


Fig 8 Heamoglobin level of the female respondents



The result presented in Table 31 revealed that the heamoglobin level of 18 33 percent of the male subjects were below normal ie 13g/dl However majority of the males (70 per cent) were having their heamoglobin value between 13 14g/dl Data also showed that 11 66 per cent of males were having hemoglobin level above 14 g/dl

Table 32 Heamoglobin level of the female respondents

Grade	Heamoglobin level	No	Percentage
Below normal	< 12 g / dl	33	82 50
Standard	12 13 g /dl	7	17 50
Above normal	> 13 g / dl		
	Total	40	100 00

The same data with respect to female presented in Table 32 revealed that 82 50 per cent of the female subjects were with heamoglobin levels below normal (12g/dl) The data showed that only 17 50 per cent were having a heamoglobin value between 12 13g/dl and none of the female respondents showed a value above 13g/dl heamoglobin

4 5 4 Morbidity pattern

Morbidity levels of the respondents during the previous six months of the study were recorded and the details are presented in Table 33

Table 33 Morbidity level of the respondents during last six months

Sl No	Diseases	Male(No)	Per cent	Female(No)	Per cent
1	Diabetes mellitus	2	3 33	2	5 00
2	Heart disease	7	11 67	1	2 50
3	Stroke	2	3 33	1	2 50
4	Skin disorders	48	80 00	28	70 00
5	Chickungunia	53	88 33	33	82 50
6	Chickenpox	2	3 33	1	2 50
7	Tuberculosis	9	15 00	3	7 50
8	Malaria	43	71 67	27	67 50

Table 33 indicated that fever like chickengunia was affected by 88 33 per cent of male subjects and 82 50 per cent of female subjects Fifteen per cent of male and 7 50 per cent of female subjects were succumbed to an attack of tuberculosis and 71 67 per cent of male and 67 50 per cent of female subjects were infected by malaria Data also showed that 3 33 per cent male and 2 50 per cent female subjects were affected by chicken pox Eighty percent of male and 70 per cent of female subjects suffered from skin diseases during the last six months The data also showed that diabetes mellitus was observed among 11 67 per cent of male and five percent of female subjects Further analysis of data showed that 3 33 per cent of male and 2 50 per cent of female subjects suffered from heart diseases While 3 33 per cent of male and 2 50 per cent of female subjects were affected by stroke during the last six months

4 6 IMPACT OF COUNSELING

Counseling is concerned with trying to persuade an individual or a group of people to modify their way of life with a view to improve the r health and nutrition (www word counsl com)

Unlike the impact of other nutritional interventions such as supplementary feed ng or prophylaxis with vitamin and mineral supplementation nutrition counseling has long term effects Thus the effects of counseling on the respondents were evaluated by assessing the changes in the food habits gain in knowledge as well as alterations in their personal habits and personal hygiene

Impact of counseling on the changes in the food habits were studied and the details are given below

The frequency score on use of different food items before counseling and after the counselmg programme were analyzed The variations found are depicted in the Table 34

Table – 34 Effect of counseling on food use frequency scores

Food items	Male		Female	
	Before	After	Before	After
Cereals	100	100	100	100
Pulses	41	53	39	55
Roots & tubers	50	52	50	52
Green leafy vegetables	23	30	22	35
Other vegetables	24	60	23	62
Fruits	21	35	20	33
Milk and milk products	100	100	100	100
Egg	67	67	26	26
Fish	100	100	100	100
Meat	56	56	23	23
Oil seeds	100	100	100	100
Fat and oil	100	100	100	100
Sugar and jaggery	100	100	100	100

Food items like cereals fish nuts fat and oil seeds sugar and jaggery had a maximum score (100 per cent) before counseling itself for both male and female subjects and the same score was retained when assessed after the counseling also This was followed by roots and tubers with scores of 50 each among male and female subjects before counseling and the same was increased to 55 Before counseling the score for the use of vegetables was found to be 24 and 23 respectively among male and female subjects As an effect of counseling the scores for the same increased to 60 in males and to 62 in females Prior to the education programme the frequency score obtained for green leafy vegetables was 22 for males and 23 for females As a result of education the score for the same improved and it was found to be 35 among male subjects and 38 among female subjects Before counseling fruits recorded a frequency score of 21 and 20 in males and females After the counseling programme frequency score of fruits

increased and the score was shifted to 35 in males and 33 in females Items like egg and meat recorded frequency score of 67 and 56 respectively in males and 26 and 23 in females before counseling The score for the egg and meat remained the same after the counseling programme

The food use frequency score for different antioxidants/ phytochemicals rich food prior and after counseling was studied The results are presented in Table 35

Table 35 Effect of counseling on the frequency of use of foods rich in antioxidants and phytochemicals

Food item	Frequency score(Mean values)			
	Male		Female	
	Before	After	Before	After
Amaran h	3	44	30	46
Agath leaves	28	43	29	44
Curry leaves	37	52	35	59
Cl ekkurman s	30	41	30	44
Cabbage	40	52	43	52
Drumst ck leaves	37	40	36	43
Beetroot	41	50	40	50
Carrot	39	55	37	55
Garl c	46	51	45	50
On on	35	54	32	50
Drumst ck	40	50	39	53
Tomato r pe	44	52	41	60
S veet potato	27	46	25	48
On on stalk	30	41	28	43
Amla	33	44	31	43
Banana	55	61	50	63
Grapes	33	42	31	44
Guava	35	42	34	45
Jackfru t	35	43	35	48
Lemon	59	75	51	81
Mango r pe	34	42	34	47
Orange	32	43	31	46
Papaya r pe	38	42	33	59

Use of fruits like lemon and banana remained at maximum frequency scores of 55 and 57 respectively in male subjects and 52 57 in female

subjects before the counseling However these scores were found to improve after counseling and had reached values of 75 and 67 in males and 78 and 63 in females respectively Prior to the education class tomato (ripe) and beetroot had frequency scores of 44 and 41 respectively by male subjects Scores for the same item among female subjects were 40 and 41 As an effort of education through counseling frequency scores tomato ripe and beetroot reached a level of 50 and 52 respectively in males and 53 and 59 in females Before counseling cabbage drumstick and carrot recorded scores of 40 40 and 39 respectively for female subjects As a result of counseling the frequency score of same were enhanced to 52 50 and 50 in male subjects and 53 54 and 55 in female subjects Prior to the counseling items like papaya(ripe) and drumstick leaves gained frequency scores of 38 and 37 respectively for males and 43 and 38 for female subjects The score for the same items were increased and were recorded at 42 and 40 respectively in males and 48 and 45 in female subjects after the counseling sessions Before the counseling programme curry leaves jackfruit and guava recorded the frequency scores of 35 34 and 34 in male subjects and tl e same were 32 34 and 40 in female subjects After the education programme the frequency scores for these items improved and the scores were enhanced to 52 43 and 42 among males and to 59 49 45 among females Items like grapes and orange had frequency score of 33 and 32 respectively among males and 32 and 31 among female subjects prior to counseling After counseling the scores for grapes and orange increased to 38 and 40 in male subjects and 42 40 in female subjects Mango (ripe) and amla were items rarely used by the fisher folk The frequency scores before counselmg were 34 and 33 among male subjects and 34 and 31 among female subjects As a result of counseling the same item secured the frequency scores of 42 and 44 among males and 47 and 45 among females Before counseling the agathi leaves and sweet potato recorded the frequency score of 28 and 27 respectively among males and 23 and 25 among females As an effort of counseling the frequency score of the same were improved and became 30 and 36 among males and 35 and 40 among females

4 6 1 Effect of counseling on the personal habits of fisher folk

The effectiveness of counseling with respect to personal habits of the respondents viz smoking chewing and alcoholism were measured and the improvement level expressed in percentage is presented below

4 6 1 1 Effect of counseling on the smoking habit of the respondents

The change in the smoking habit of the respondents as an impact of counselmg is furnished in Table 36

Table – 36 Effect of counseling on the frequency of smoking

Sl No	Frequency of use	Before		After	
		Male (No)	Per cent	Male (No)	per cent
1	Up to 5 times a day				
2	5 10 times in a day			2	10 00
3	10 15 times a day			4	20 00
4	More than 15 times a day	20	100 00	14	70 00
	Total	20	100	20	100

As a result of counseling a total of 30 per cent of subjects reduced their frequency of smoking Out of this twenty percentage of the subjects shifted to the category of 5 10 cigarettes per day and 10 per cent of them came down to five numbers on a day However smoking frequency among the rest (70 per cent) could not be altered within the short counselmg duration that could be imparted by the investigator

4 6 1 2 Effect of counseling on the chewing habit of the respondents

The alteration made by the fisher folk in their chewing habit was recorded and the extent of changes observed are given below Effect of counseling on the ingredients included for chewing s depicted in Table 37

Table – 37 Effect of counseling on the ingredients used for chewing

Sl No	Ingredients used for chewing	Before				After			
		M	Per cent	F	Per cent	M	Per cent	F	Per cent
1	Betel+Chunna+Tobacco+ Areca nut	60	100	40	100	29	48 33	14	35 00
2	Betel+Chunna+Arecanut					31	51 67	26	65 00

As an effort of group and individual counseling 51 67 per cent of male and 60 per cent of female subjects could be made to switch over to the exclusion of tobacco in the chewing quid At the same time 48 33 per cent of male and 35 per cent of female subjects continued this habit of inclusion of tobacco which was a long existing practice among them

Effect of the physiological intervention on the length of time for which quid was retained in the mouth while chewing is depicted in Table 38

Table – 38 Effect of counseling on the duration of chewing

Sl No	Duration used of chewing	Before				After			
		M	Per cent	F	Per cent	M	Per cent	F	Per cent
1	30 minutes					8	13 33	23	57 50
2	One hour					11	18 33	4	20 00
3	One and half hours					13	21 67	3	5 83
4	More than 1½ hours	60	10	40	100	28	46 67	10	16 67

From the above table it was evident that 13 33 per cent of male and 57 per cent of female subjects reduced the duration of chewing to thirty minutes as against more than 1½ hours while 8 33 per cent of male and ten female subjects reduced the same to one hour About 21 per cent of male and 5 per cent

of female subjects were able to cut down the r chewing time to 1½ hours At the same time 46 67 per cent of male and 16 67 per cent of female subjects were found to the still continuing the same period of keeping the quid in the month and chewing it at a stretch

Results of the behavioral change due to counseling on the practice of washing mouth after tobacco chewing was also studied It was revealed that before the awareness programme none of the subjects had the practice of washing their mouth after chewing It was seen that 100 per cent of the subjects followed the practice of washing mouth after chewing which was a notable change

4 6 1 3 Effect of counseling on alcoholism

There was no concrete effect noticed with respect to alcohol consumption Even after counseling all the respondents who were regular alcoholics continued to drink alcohol

4 6 4 Effect of counseling on the personal hygiene of the respondents

The content analysis of practices pertaining to personal hygiene of the respondents before and after counseling is presented in Table 41

Table 39 Details regarding the practices pertaining to personal hygiene of the respondents before and after counseling

Personal Hygiene	Before				After	
	Satisfactory (Percentage)		Poor (Percentage)		Satisfactory (percentage deviation)	
	Male	Female	Male	Female	Male	Female
General appearance	3(5 00)	3(7 50)	57(95 00)	37(92 50)	31 (51 67)	20 (50 00)
Daily bath	3(5 00)	3(7 50)	57(95 00)	37(92 50)	30 (50 00)	26 (65 00)
Neatness of hair	4(4 67)	3(7 50)	56(93 33)	37(92 50)	35 (58 66)	25 (62 50)
Hygiene of teeth		2(5 00)	60(100)	38(95 00)	17 (28 33)	9 (22 50)
Hygiene of nail	_	_	60(100)	40(100)	41 (68 33)	33 (82 50)
Hygiene of feet	1(1 67)		59(98 33)	40(100)	20 (33 00)	19 (47 50)

Before imparting counseling 95 per cent of male and 92 50 per cent of female subjects were observed to be poor in their general appearance As the importance of personal hygiene was also included in the counseling schedule the subject were found positively responding this aspect also It was observed after the counseling that 51 67 per cent of male and 50 per cent of female subjects seemed to be ranked as satisfactory when their general appearance was assessed

On considering the habit of taking bath it was noticed that before counseling 95 per cent of male and 92 50 per cent of female subjects were not n the habit of taking bath daily However a noticeable change was observed with 15 per cent of male and 65 per cent of female subjects having started the healthy habit of taking bath daily as a result of attending the counseling programme

Neatness of the hair seemed to be poor earlier among 93 33 per cent of male and 92 50 per cent of female subjects As an effort of counseling a noteworthy change in the way of combing hair or tying it up neatly was observed among 58 67 per cent of male and 62 50 per cent of female subjects

Likewise the hygiene of teeth was also observed to be very poor among 95 per cent of females and all the male subjects But a remarkable change in maintaining the neatness of teeth was noticed after the counseling programme among 23 33 per cent of male and 22 50 per cent of female subjects

With regarded to the hygiene of nail it appeared to be very poor among all the subjects By including a habit of washing hands and cutting nails through the awareness programme 63 33 per cent of male and 82 50 per cent of female subjects were able to keep their nails and hands in a satisfactorily hygienic condition

Similarly cleanliness of feet was also assessed to be very poor among all the male subjects and 98 33 per cent of female subjects before the counseling programme An appreciable change was noticed after the counseling sessions among the 33 33 per cent of male and 47 50 per cent of female subjects who tried to keep their feet in a satisfactory condition especially by cutting the nails in time and cleaning the feet

4 6 4 Impact of counseling on the general health status of the respondents

Assessment of general health status of the respondents as an effect of counseling revealed that notable changes were not recorded with respect to deficiency symptoms and heamoglobin status observed after counseling However absence of deficiency symptoms like spongy bleed ng gums paleness of eye and angular stomatitis were observed among very few subjects within the short period Slight improvement in the heamoglobin level w is also noted among a minority of subjects

4 6 5 Impact of the counseling on the knowledge gain of the respondents

The content analysis of knowledge of participants pertaining to the messages given viz diet and disease balanced diet and nutrient sources antioxidants and phytochemicals dietary practices/ habits personal habits and disease before and after the counseling sessions Five statements related to each message were formulated to test the knowledge gain on these topics by the fisher folk and the respondents were given to a teacher type test before and after the counseling session The pooled data is presented in Table 39 The scores obtained before and after counseling are expressed in percentages

Diet and diseases

As an effort of nutrition and diet counseling 71 67 per cent of male and 90 per cent of female subjects answered correctly to the statement that synthetic beverages highly coloured and fast foods are not good for health On pretest only 3 33 per cent of male and 2 50 per cent of female subjects had correct information on this earlier After the nutrition counseling seventy percent of male and 95 per cent of female subjects understood the fact that it is better to avoid burnt foods and reheated oils to prevent degenerative diseases while only 5 per cent of the subjects (both male and female) had a vague information on this prior to counseling After the counseling attempt 75 per cent of male and 97 50 per cent female subjects were equipped with the information that low intake of fruits and vegetables is associated with an increased risk of cancer whereas only 3 67 per cent of male and 5 per cent of female subjects had given positive answer to the same Statement earlier before imparting dietary counseling only very few (3 33 per

Table 39 Knowledge gain of respondents

Sl No	Statements	Pre test score		Post test score	
		Male	Female	Male	Female
	Diet and Diseases				
1	Synthetic beverages highly coloured and fast foods are good for health	2(3 33)	1(2 50)	43(71 67)	36(90 00)
2	It is better to avoid burnt smoked foods and use of reheated oils to prevent degenerative diseases	3(10 00)	2(5 00)	42(70 00)	38(95 00)
3	Low intake of fruits and vegetables is associated with an increased risk of cancer	3(50 67)	2(5 0)	45(75 00)	39(97 50)
4	Consumption of leafy vegetables and fruits will provide bulk in the diet and help to prevent degenerative diseases and constipation	2(3 33)	1(2 50)	48(80 00)	38(95 00)
5	Tap water is safe for drinking even without boiling	8(3 33)	5(12 50)	60(100)	40(100)
	Balanced diet and nutrient sources				
6	Preparation using rice flakes and jaggery is a low cost food rich in iron content	3(5 00)	6(15 00)	56(93 33)	39(97 50)
7	Locally available and low cost food stuffs are not useful for the preparation of balanced diet	5(8 33)	4(10 00)	57(95 00)	40(100)
8	A balanced diet is a combination of food materials from all food groups	6	0	58(96 67)	39(97 50)
9	Milk fish pulses are food items that are important for growing children	6(10 00)	5(12 50)	60(100)	40(00)
10	Vegetables like Banana flower and pseudo stem of plantain are not valuable items in planning diet	0	0	60(100)	40(100)
	Antioxidants vitamins and phytochemicals				
11	Fruits vegetables and spices are good sources of antioxidants and phytochemicals which protect body against degenerative diseases	0	0	55(91 67)	39(97 50)
12	Carrot ripe papaya tomato and leafy vegetables are poor source of Beta carotene content	0	0	58 (96 67)	39(97 50)
13	Turmeric added to food provide only colour and does not have an nutraceutical effect	0	0	56(93 33)	39(97 50)
14	Indegenous fruits like jamun roseapple ovlov cherry etc are rich in phytochemicals and therefore protects our health	0	0	52(86 67)	36(90 00)
15	Garlic ginger and pepper contain phytochemicals which helps to lower cholesterol level	0	0	53(88 33)	36(90 00)
	Dietary practices/Habits				
16	Rice cooked by absorption method contains more nutrients than cooked by straining method	9(15 00)	8(20 00)	50(83 33)	40(100)
17	There is no harm in washing vegetables after cutting	9(15 00)	5(12 50)	60(100)	40(100)
18	Skipping breakfast is not a good practice	2(3 32)	1(2 50)	58(96 67)	39(97 50)
19	Fried foods are better for health compared to steamed foods	3(5 00)	2(5 00)	56(93 33)	38(95 00)
20	It is not necessary to heat left over food	4(6 660	2(5 00)	60(100)	40(100)
	Personal habits and diseases				
21	Tobacco chewing is an important reason for the occurrence of oral cancer dental caries and bad breath	0	0	50(8 33)	30(75 00)
22	Cigarette/beedi smoking may lead to diseases like Tuberculosis and cancer	2(3 30	2(3 00)	52(86 6	37(92 50)
23	Excessive consumption of alcohol can lead to liver damage and increases anger and irritability	7(11 67)	2(5 00)	55(91 67)	36(90 00)
24	Washing mouth after chewing does not have a beneficial effect	[illegible]	1(2 50)	60(100)	40(100)
25	Sniffing tobacco causes chronic sinusitis and nasal cancer	0	0	49(81 67)	3 (77 50)

cent of male and 2 5 per cent of female) subjects had a concept that consumption of leafy vegetables and fruits can provide bulk to the diet and can help to prevent degenerative diseases and constipation It was encouraging to note that at the end of counseling session knowledge about this aspect could be increased A notable change was observed among 80 per cent of male and 95 per cent of female subjects As high as hundred percent subjects positively answered that tap water s not safe for drinking with out boiling Before counseling only 1ɔ 33 percent male and 12 50 percent female subjects gave positive answers to this statement

Balanced diet and nutrient sources

Knowledge gain of the respondents regarding the five statements on balanced diet and nutrient sources revealed that nearly 8 33 per cent of male and 10 per cent of female subjects were previously aware of the fact that locally available and low cost food stuffs are useful for the preparation of balanced diet However after the diet counseling as high as 95 per cent of male and cent per cent of female subjects were able to gain this knowledge After the counseling class 93 33 per cent of the male and 97 50 per cent of the female subjects were able to learn that preparation using rice flakes and jaggery is a low cost food rich in iron while only 5 per cent of the subjects (both male and female) had this knowledge before Prior to counseling none of the respondents could answer that balanced diet is a combination of food materials from all food groups A surprising knowledge gain was observed among the subjects (96 67 per cent of male and 97 50 per cent of females) Before imparting the nutrition knowledge through counseling only 10 per cent of male and 12 50 per cent of female subjects could answer correctly that milk fish pulses are food items that are important for growing children However a remarkable change was observed among all the subjects after counseling Cent percent of the subjects were able to believe that vegetables like banana flower and pseudo stem of plantain are valuable items in planning a good diet as an effect of counseling session while information on the same was very low among the subjects (5 per cent) before counseling class

Antioxidants vitamins and phytochemicals

Antioxidants vitamins and phytochemicals play an important role in the prevention of chronic diseases Five statements were given to the subjects based on this very important aspect Knowledge gain of the respondents on five statements related to antioxidants and phytochemicals revealed that none of the subjects could attempt any of the statements positively at the pre counseling stage To the surprise a large majority of the participants (91 67 per cent of male and 97 50 per cent of female) expressed that fruits vegetable and spices are good sources of antioxidants and phytochemicals which would protect body against degenerative diseases After the counseling session 96 67 per cent of male and 97 50 per cent of female subjects readily expressed that carrot ripe papaya tomato and leafy vegetables are good sources of β carotene As high as 93 33 per cent of males and 97 per cent of females could positively respond to the fact that turmeric added to food not only contributes to enhancing colour but also imparts neutracutical benefits About 85 per cent of the subjects (both male and female) could answer positively that indigenous fruits like rose apple jamun lovilovi cherri etc are rich in phytochemicals and therefore effective in promoting health After the counseling programme 88 33 per cent of male and 90 00 per cent female subjects expressed that garlic ginger and pepper contain phytochemicals which helps to lower cholesterol level

Dietary practices and habits

In the pre counseling session only 15 per cent male and 20 per cent female fisher folk could agree that rice cooked by absorption method contains more nutrients than that cooked by straining method But subsequent to counseling session these figures increased to 83 per cent for male and cent per cent for female subjects Before attending the counseling 15 per cent of males and 12 5 per cent of females were expressed that washing vegetables after cutting is not a good practice After the counseling session a surprising change was noticed among all the subjects (100 per cent) They were rightly equipped with the information that washing vegetables before cutting prevents nutrient loss Prior to counseling class only five per cent of the subjects (both male and female) agreed that fried foods are

not good for health when compared to steamed foods On completion of the counseling classes a marvelous knowledge gain was observed among the subjects in this aspect as 93 33 per cent males and 95 50 per cent females could produce a correct answer to this By the time of the post session test as high as hundred per cent of the participants could be persuaded to believe that it is necessary to heat left over food before use Whereas only 6 66 per cent of male and 5 per cent of female were found to have this knowledge before the counseling sessions

Personal habits and diseases

Poor personal habits like smoking alcoholism and chewing are risk factors of a number of chronic and fatal diseases Knowledge gain based on the risk of these wrong personal practices was assessed At the pre counseling session none of the respondents could realize that tobacco chewing is an important reason for the occurrence of oral cancer dental carriers and bad breath At follow up a remarkable change was noticed among the subjects and it was observed that 86 67 per cent of male and 90 per cent of female subjects become correctly exposed to this information During the post test a higher percentage of the (86 67 per cent of male and 92 50 percent of female) subjects were able to express that cigarette / beedi smoking may lead to diseases like tuberculosis and nasal/oral/lung cancer Whereas this was expressed by only very few subjects (3 32 per cent of male and 5 per cent of female) prior to counseling After the counseling intervention 91 67 per cent of males and 90 per cent of females stated that excessive consumption of alcohol can lead to liver damage and increase irritability and anger But only 11 67 per cent of male and 5 per cent of female subjects had this awareness initially Before counseling only 3 55 per cent of male and 2 50 per cent of female subjects opined that there is beneficial effect on washing mouth after chewing However knowledge of the respondents on this fact could be enhanced by counselmg None of the respondents had any knowledge on the relationship between sniff ng tobacco and nasal cancer before counseling A good number 81 67 per cent of male and 77 50 per cent female subjects learned the harmful effects of sniffing tobacco after the counseling session

DISCUSSION

5 Discussion

The present study entitled Impact of dietary counseling on the food habits of fisher folk was under taken w th a view to assess the impact of counseling on the food habits and health related personal habits of the subjects

The result of the study are discussed under the following head ngs

5 1 Socio econom c profile of the respondents

5 2 Social and environmental problems of the respondents

5 3 Personal habits of the respondents

5 4 Dietary habits of the respondents

5 5 Food consumpt on pattern of the respondents

5 6 Nutritional and general health status of the respondents

5 7 Assessment of impact of counseling

5 1 SOCIO ECONOMIC STATUS OF THE RESPONDENTS

People living in the coastal area are not able to lead a life worthy of human beings due to poverty and the health condition was the result of the pernicious combination of several socio economic factors l ke unemployment lack of material advancement poor housing poor sanitation malnutrition social apathy absence of will power and nitiative to change for the better as opined by (Rao 2004) A clear cut co nceptualizat on is a pre requis te foi national est mat on of the mc dence of socio economic situation of the population and to formulate and implement appropriate programmes for the alleviation and er idication of the problems ident fied With this concept socio economic prof le of the subjects in fishermen community of Adimalathara in Trivandrum District was ascertained

5 1 1 Personal profile of the subjects

Age Sex and religion of the respondents

Data on the age of fishermen n the present study revealed that 43 per cent of the subjects belonged in the age group of 40 45 years ad 57 per cent of them belonged to the age group of 46 50 years

The religion wise break of the respondents was assessed as it has been observed by Arora (1991) that religion plays a dominant role in the process of socialization and it maintains the stability of the social system and social relation ship As per the findings of the study all the subjects surveyed were Christians According to Government of Kerala (1990) m the marine sector Christian community predominated espec ally in Trivandrum and Alleppy districts A report on a survey conducted around Trivandrum coastal area revealed that almost all fi hermen families in southern region were from Christian religion (Jinraj 1999) The result obtained in the present study also ind cated that the fishermen families in the area belonged to Christianity

5 1 2 Educational and occupational status of the respondents

Education status and literacy rate have been proved to be powerful determinants of nutritional status as it may influence the awareness about mportance of good nutrition which can affect food choice In the current invest gation majority of the respondents (67 per cent) were illiterate twenty percent of them had primary level of educat on and only 13 per cent had an education up to upper primary level Jinraj (1999) had also reported that majority (68 per cent) of the fisher folk of Trivandrum area are illiterate Present findings were si milar to the study done by Saleena (2004) also among f shermen families in Thrissur district

An observation made during the survey was that the present generation of fisher folk were better in education compared to the older generation However none of the respondents had attained an educational status above the high school level and this may be due to mass poverty and their preference for the traditional caste based occupation of the f sher folk which did not demand h gh educational qualificat on Financ al inadequacy could also be the major reason while lack of motivation and

diseases were also seemed to be other major cause of ill teracy But compared to male population females appear to be better educated contrary to the usual trends in most commun t es especially f shermen community This is probably due to the fact that men are in the habit of going to sea from a very early age and thus miss primary schooling At the same time females are also made to stop schooling beyond primary level education and hence the trend gets reversed igain at secondary and high school stage

The occupational status influences the life style of family which directly or indirectly affects the health of the individuals In the present study all the male respondents were engaged in fishing and all the female respondents were engaged in fish vending as their occupation Karuna (1993) revealed that 75 30 per cent of the families in the fishermen community were mainly engaged in fishing and f sh vending Government of Kerala (1990) reported that in the marine sector of Kerala 61 94 per cent of the fishermen were engaged in fishing and the rest n fish marketing These findings are in support with the findings of Pushpangathan (2000)

The data further revealed that season seems to play a role in deciding the days of employment F shing is a seasonal occupation and catch will be very low during off season (i e period of heavy rain and storm) A sizable majority of the fisher folk will be jobless during this period lead ng to economic dependence and hence meeting the household expenses during this period would be a burden to them This observat on supports the findings of Muhammed (2000) who reported that lack of alternate employment n off seasons leads to indebtedness in fishermen community

Thus non availabil ty of work throughout the season as well as incompetence in any other work aggravates the problem of under employment wh ch results in poverty among fisher folk This state of affair calls for su table interventions to alleviate poverty In order to overcome this situation they may be motivated and or tra ned to take up other work during the lean periods

5 1 3 Family characteristics of the fisher folk

Type of family and family size have an influence on the dietary habits of the subjects At present most commun ties in general are following nuclear system instead of traditional joint family system This study also evidenced that most of the families belonged to nuclear type (91 0 per cent) and only 9 per cent belonged to joint families This shows that modern concept of nuclear family has gained much momentum among fishermen families also Predominance of nuclear type of families among those residing in Thiruvananthapuram has been reported by Ramachadran (2001) Saleena (2004) observed nuclear family system among the fishermen families in Thrissur district The same pattern of family system is reflected in the present study also

Family size has an important bearing on the nutrition of its members The present study revealed that most of the subjects belonged to the families with more than eight members According to Kumar (2002) the average house hold size of fishermen of Kaa akulam fishing village is 8 3 The findings of Jameela (2000) is also in tune with the above trend

On assessing the number of ch ldren in the fam lies of the subjects it was found that majority of the families (63 per cent) had more than three children

5 1 4 Economic status of the respondents

According to Arora (1991) income is an important mdicatoi of the soc al and economic status of individuals Low income affects the purchasing power and this n turn affects thei food security by limiting food cho ces and thereby leading to malnutrition In the present investigat on majority of the subjects (66 per cent) were earning a low monthly income vhich was between Rs 1000 1250 A s milar income level was noted among the fisher folk of Ernakulam and Alleppy districts by Yagammai and Ambl (1992) Reports by Kamal (2000) also showed such low income status among fisher folk

House hold income had to be taken into cons deration because it is the family income which determ nes tl e socio economic strata to vhich a person belongs

The main source of income of the fam lies surveyed was from fishing and fish vending A sizable majority (80 per cent) of families were categorized under the monthly income range of Rs 1500 2500 The monthly income level of fishermen families in Thrissur as reported by Aneena (2003) was also in the above range Kurien (2000) also observed a similar level of ncome among the fishermen families in Trivandrum

A natural inference that would come to the mind from the above result is that the increased number of male breadwinners would inturn increase the purchasing power of the families leading to better nutritional status But during the survey majority of the fisherwomen reported that though men were employed a large part of the income they earned was not utilized for the benefit of the other members of the family especially children and women Men reportedly spend major portion of their wages on liquor cigarettes gambling entertainment and to satisfy their petty personal desires Because of the above trend which was prevalent among the employed fishermen it can be inferred that the women played the central role in child care and food procurement The pivotal role would lead to a conflict between the fisherwomen s economic roles and their own nutritional needs with the later be ng sacrificed

5 1 5 Monthly expenditure pattern of the respondents

In general the monthly expenditure pattern of the fishermen families was found to increase in accordance with the rise in income In the present study it was observed that food expend ture was the major item Fourty per cent of the fam lies spend more than 800 rupees on food It is an established fact that poor house holds have to spent h gher proportion of the r income o i food A survey conducted by NIN (1991) revealed that the dietary intake was found to be markedly influenced by income Earlier studies conducted in Trivandrum coastal areas revealed that on an average each family spent major part of income on food alone (Karuna 1993) Observations of George and Domi (2002) also revealed the same fact

Data on the expenditure ncurred on maintenance of health revealed that 42 per cent of the subjects were spending an amount above Rs 400 per month on medicine These families consisted of sick elderly persons or infants who needed

sizable portion of income for their health care Many of the subjects expressed that major share of the amount kept apart for medical expenses had to be spent on hiring vehicles to transport the sick and to pay the Doctors fee rather than on purchase of medicines In this context it is also to be mentioned that the unhygienic cond tions of this area resulted in continuous attack of infectious diseases which forced them to incur heavy expenditure on purchase of medicines

5 2 SOCIAL AND ENVIRONMENTAL PROBLEMS OF THE RESPONDENTS

Apart from the soc oeconom c dimensions it was felt that the study should focus on the environmental and sanitation aspects also in order to relate such factors to the health of the community under focus Thus information on the safe drinking water facilities and sanitary facilities were collected and the results are discussed below

The environmental factors that mainly affected the health status people in this community were poor sanitation and poor drinking water facilities The facility for drink ng water supply in this area s rather poor All the families depended on the public tap provided under the financial support of the church in the locality Although fishing community at Adimalathura were beneficiaries of tap water provided by the assistance of church water was available only for two hours in a day More over women alone were found to be responsible for fetch ng water Due to th s scarcity of water sea water was often used for cleaning purposes UNICEF (1990) had reported that lack of ready access to water and poor environmental sanitat on were important unde lying causes of various type of infections resulting in malnutrit on

The availability of latrine and drainage facilities were looked nto n order to assess the sanitary cond tions of the house and the surroundings It showed that 74 80 per cent of the fam l es were not having latrine facilit es and they defecate in the near by open places around their houses Open yard defecation and walking barefooted and other associated unhyg enic environmental conditions n and around their houses leads to infection and infestation resulting in poor health and nutritional status

The lack of sanitary facilities in coastal region cause misery to the fisher folk especially the womenfolk And the absence of proper technology of toilet construct ons suitable to the water logged topography of this region makes the problem still worse

Drainage facilities

Data regarding the drainage facilities of this area revealed that none of the families had drainage facility in their houses It was further noticed that waste water from the house holds was not disposed off but instead it was drained to their surroundings itself This situation worsened the problem of mosquitoes and even created a foul smell around It is a fact that unsanitary cond tions like environmental pollut on by human excreta improper disposal of waste and stagnation of water due to improper dra nage promotes breeding of mosquitoes and flies More over there was pollut on with strong stretch of swarms of flies in common during the f sh ng season All these together would further lead to spread of infection and nfestat on

Enqu ry in to the utilization of health care facilities revealed that the Public Health Centre available at the nearby panchayath is situated more than 5 km away from this colony However 52 per cent of the fam l es were utiliz ng th s primary health centre for medical aid Forty eight per cent of the families were utilizing private hospitals for treatment depend ng upon the nature of disease

It was seen that health facilities were generally poor in this coastal belt For the solated hamlets there is no direct assess to health centers Non accessibility of primary health care serv ces is also due to the reason that the working hours of fisher folk coincides w th the working hours of primary health centers Due to this fact they were not much benefited by the PHCS available at present This low accessibility to affordable health care makes them more vulnerable to chronic diseases

5 3 PERSONAL HABITS OF THE RESPONDENTS

The health related personal habits and way of life are also important factors wh ch helps to maintain good health of an ndividual

5 3 1 Smoking habit of the respondents

Smoking has been brought to the limelight by the scientific community elaborately along with its detrimental effects on health of the individuals It was observed that 33 33 per cent of the subjects were smokers in this study while Jaisankar (2002) observed that nearly 60 per cent were smokers among the fishermen families in Tamil Nadu Clinical examination proved that smokers among the respondents suffered more with respiratory problems like cough asthma and lung complaints than the non smokers Margara et al (1995) concluded that the greatest health hazards among fishermen in north east Italy is lung cancer due to smoking which the author had linked with long hours at sea

On assessing the gravity of smoking it was found that 80 per cent of the subjects were addicted to this habit for more than 20 years This again is an evidence to the fact that the subjects seem to get w th the habit of smoking as and when they start going to sea for fish ng On enquiry about the preferable items n use it was evident that 55 per cent of the subjects used beedi for smoking and the remaining used cigarettes Rotti (2002) found that fishermen were smoking cigarette beedi and more than one variety and also that the smoking rates were also high among the fisher folk in Pondicherry They are preferring beedi for smoking because t is cheaper than cigarette

The frequency of smoking was also found to be rather high as all the subjects reported that they smoke more than fifteen times a day According to them intens ve smokmg is a need to keep them awake during deep sea fishing althrough the night

5 3 2 Habit of chewing

When the tobacco chewing habit of the fisher folk were examined it gave an aston shing picture that all the respondents (100 per cent) both male and female were regular chewers of betel quid Findings made by Soman (1999) in a study conducted in the coastal areas of Madras supports this fact However in the above

study he found that chewing habit was more common among females than males But the current study revealed that chewing habit was found almost equally in both males and females in the fishermen community On analyzing the ingred ents used for chewing it was evident that all the subjects (100 per cent) were using betel chunna tobacco and arecanut for this purpose In a study conducted by Vijaykumar et al (1994) it was found that 60 96 per cent of men and 38 62 per cent of women habitually chewed tobacco along with betel leaves and areca nu t

The reason for chewing also as reported by fishermen was to remain awake during late night f shing while the reason for this habit among women varied ranging from getting pleasure or to relieve the strain and stress of work

Enquiry on the frequency of chewing betel quid revealed that cent per cent of the subjects chewed five to ten times a day George (2002) in her study among fishermen reported that majority of the fishermen chewed five to nine times a day

The length of time at which the qu d was allowed to remain n the mouth was also noted and the data ndicated that on each chew ng the ngredients were kept in the mouth for more than one and half hours on an average Some of the subjects were also in the habit of keeping the quid in their mouth overnight According to Hashiba et al (2000) tobacco chewing was a stronger risk factor for oral leukoplakia Leukoplakia and oral patches were observed among the fisher folk under study on clinical examination

It was noticed that all the subjects never washed their mouth after chewing and their oral cavity was continuously exposed to the ingredients included in the qu d This trend was reported by George (2002) also m her study among fishermen

5 3 3 Alcohol consumption habit of the respondents

Alcohol consumption is a socio cultural habit which influences the health status and quality of life In the present study consumption of alcohol was a common phenomenon among the men folk in the coastal belt It was observed that 53 33 per cent of the respondents were regular alcohol users George and Dom (2002)

had ndicated that majority of the fishermen of Trivandrum District were addict to alcohol Selvaraj et al (1993) observed that majority of male members of the fishing house holds suffered from social problems of alcoholism and this habit is a major cause of the socio econom c backwardness of this community

It was a noteworthy observation that the fishermen are nit ated to the habit of alcoholism at a very early age The data showed that 62 50 per cent of the subjects started drinking at an young age between 20 25 and 37 50 per cent started this habit between 25 30 years They opined that the habit of alcoholism develops when they start going to the sea for fishing at an early age The justification that they give towards this is that alcohol helps them to physically face the hazards of cold weather and strenuous job situat on with courage

Lavecchia et al (1992) reported that alcohol consumption was common among less educated individuals The author further reported alcohol consumption as an important correlate of dietary pattern Similar observation was found in our study also The frequency of consumption evidenced that all the male respondents were consuming alcohol every day The frequency of consumption of alcohol was found to have significant nfluence on the number of meals consumed by the subjects More over the consumption of alcohol was found to be sign ficantly influence by the frequency of dining out Along with the alcohol they might be consuming some food also wh ch would contain more fat saturated fats and cholesterol compared to home made foods Alcohol being calorie rich (1gm of alcohol provides 7 k cals) has a tendency to reduce the appetite resulting in a comparative reduction in the intake of other fiber rich foods It was also found that the alcoholics are liable to suffer cardiac and gastro ntestinal ailments A significant positive correlation was found between alcohol consumpt on and diseases in a study conducted by L sa (1996) among adults Observation w th fishermen n the present study were also sim lar

Awareness of the respondents regarding the health risks indicated that majority of the fishermen (76 66 per cent) were not at all bothered about the ill effects of alcohol consumption

Among the risk factors on health associated w th personal habits tobacco chewing seems to be the most important and widely reported (Thomas and Kearsly 1997 Gupta 1999) The features of the study on personal habits of the subjects threw light on the fact that all the fisher folk in the study were chronic tobacco chewers The habits were pract ced by them from a younger age itself and they find it difficult to stop these habits at later age However in the present study personal habits like alcoholism and chewing had profound influence on the dietary intake and in the number of meal consumed while smoking habit had no profound influence Keeping chewing quid in the mouth for long hours refrain them from taking food at that time Similarly their appetite dimin shes due to the consumption of alcohol

5 4 DIETARY HABITS OF THE RESPONDENTS

For the success of nutrition counseling it is necessary to make it pragmatic by studying the food habits actual food and nutrient intake and modifying the dietary pattern according to the local availability of foods

Information gathered on the food habits of the fisherfolk revealed that all the subjects (100 per cent) were non vegetarians As revealed in earlier stud es conducted in KAU by Felsy (1989) Suja (1989) Sujatha (1990) Karuna (1993) and George (2002) the food consumpt on pattern of the coastal population in Thiruvananthapuram was habitual non vegetarian type Though they were all stamped as non vegetarians it was observed that the consumption of fish was high among the respondents and they rarely consumed other non vegetarian items especially the women folk

Through a close watch on the meal t m ngs of the subjects it could be understood that none of them followed a specific meal pattern Meal timings varied from person to person mainly due to the vary ng t ming in which they worked and also the extent of time for wl ich they engage themselves in the work

Frequency of meal consumed by the subjects ind cated that majority of them had the habit of consuming only two meals Lunch was the major meal of the day and the time of taking lunch was between (2-4 O clock) D van (2002) observed that

96 per cent of the fam l es consumed only two meals a day and only 4 per cent took three meals a day among the fishermen famılies ın Kanyaakumarı Twenty eight per cent of the fishermen famıl es of Tamılnadu skıpped either one or two meals due to lack of money or t me as seen ın reports of Behermen (2001) Staphıne (1995) observed that among the fishermen famılies two or three meals are consumed daily dependıng on the workıng tıme and affordabılity

Habıt of eatıng food outsıde the home was common among the male subjects Forty eight per cent of male subjects reported that they take d nner from outsıde Thıs ıs due to the reason that the men folk venture ınto sea for fishıng ın the evenıng tıme were ın the hab t of consumıng food ıtems lıke porotta chappathı chıcken beef or egg curry from hotels accessıble to the fishıng outsets at the sea shore

Another group of the male subjects (11 67 per cent) take lunch from out sıde the r home and a few (6 67 per cent) subjects take both lunch and dınner from hotels Thırty per cent of the male subjects depended on hotels only for snacks and beverages At the same tıme s m lar data regard ng womenfolk was a noteworthy observat on showıng that all the women under study never took any major meals outsıde home but only for snack and beverage at work tıme they reported to eatıng out

It was clearly evident that the men folk spend a major share of their ıncome foı havıng food from outsıde and their dietary ıntake was quite satısfactory beıng hıgh ın fat and energy because of the type of food that they take from hotels

5 4 1 Frequency of use of vaıious foods

Detaıls perta nıng to the frequency of use of varıous food ıtems by fisherfolk showed that energy rıch foods lıke cereals nuts and oıl seeds (coconut) fats and oıls sugar and jaggary were used daıly by all the subjects ırrespectıve of their sex

Frequency of use of varıous food ıtems depıcted that the daıly dıet ın most of the famılies const tuted of ıngredıents l ke rıce fish coconut sugar and beverages lıke tea Earlıer surveys conducted ın Trıvandrum dıstrıct among f sherfolk by Karuna (1993) and George (2002) had observed the peculıarıty ın their dıet Aleena

(2003) and Saleena (2004) reported that the diet of fishermen in Thrissur was found to predominate in cereals

Considering the use of roots and tubers 26 67 per cent of male and 22 50 per cent of female subjects included this item daily in their diet Majority of the subjects included roots and tubers thrice a week in their diet According to ICMR (1994) and Birch (1998) tapioca is the most commonly used tuber by the fishermen populat on of Thiruvananthapuram Vijayan (2003) analyzed the food intake of the coastal families in Tam lnadu and it was reported that their diet ma nly consisted of cereals & tapioca

Data regarding the frequency of use of protein rich foods revealed that fish was used daily by all the fam lies including male and female subjects Dietary studies conducted among the low income populat on n Thiruvananthapuram d strict revealed that low cost varieties of fish are a major food tem of the r diet Moreover with respect to fisherfolk this food item is easily accessible and available to them at cheaper rates Fish based preparations were found to be preferred by all the respondents Earlier observations made by Karuna (1993) Nayak (1993) and George (2002) also brings this fact n to light At the same time there was an occasional use of other prote n rich foods such as pulses meat egg milk and milk products Frequency of consumption of egg and meat were h gh among male members wh ch can be accounted clearly to their habit of taking food from out side Sathyadas (2003) found that the use of protein rich foods such as egg and meat were occasional in the d et of f shermen families in Puthukuruch of Trivandrum Gordon (1991) studied the diet of adults n coastal areas of Tam lnadu and the author found that the consumption of meat and egg was rare among them Popkin (1990) observed an occasional use of protein rich foods in the fishermen families of Nepal All the respondents used sugar daily just as sweetener in tea Fats and oils was also used by all the respondents but the use was found to be restricted to seasoning in curry

Even though milk was reported to bc used daily by all the respondents the quantity that is consumed was very low Use of m lk and milk products in the

dietaries was also observed to depend on tea or coffee drinking habits of the respondents The same trend was reflected in the reports of Karuna (1993) and George (2002) Studies by Kumar (1993) Jameela (2000) and Hassan (2003) among fishermen families was also similar Lakshmamma et al (2003) studied the diets of adults in coastal areas of Andrapradesh and found that the consumption of meat and fresh milk were rare among them

Protective foods like green leafy vegetables fruits and other vegetables were not found included in the diets of fisherfolk under the study Lack of knowledge on the importance of the foods financial constra nts and their long standing dietary practices etc can be narrated as the reason for these major lacunae in the use of d fferent food items that constitute a balanced diet

A study by Kurien (2000) revealed that the frequency of use of protective foods such as green leafy vegetables other vegetables and fruits are occasional in the fishermen communities The same defect was observed in the diet of fisherfolk by Jameela (2000) Karuna (1993) and George (2002) Such findings were reported by Nayak (1993) and Saleena (2004) also

In general the frequency of use of various foods by the respondents revealed that there was no d fference among male and female subjects in the use of food items from basic groups except the non vegetarian foods Study evidenced that majority of the men folk regularly consumed prote n rich foods such as egg and meat from outside but female respondents were solely depending on home food except tea during their work hours Fisher women usually cook during evenings after their fish vending hours and the left over fish was the ma n food item used other than rice Their menu often consisted of tapioca and fish curry (with coconut) alone Ignorance and low purchasing capac ty also play a role in omitting the food items like fruits and vegetables in the diet

5 4 2 Frequency of use of foods rich in Antioxidants and phytochemicals

Vegetables and fruits are rich in phytochemicals and antioxidants like β carotene vitamin C vitamin E and flavanoids Observational studies have found that person whose diet is deficient of antioxidants and phytochemicals exhibit an increased risk of several chronic diseases including cancer (Edge et al 1997) Phytochemicals have a protective role against various forms of diseases such as lung cancer and heart diseases (Schwatz 1993)

Antioxidants and phytochemicals are substances whose presence in relatively low concentrations significantly inhibits the rate of oxidative damage to cells There is an association between phytochemicals and antioxidants in health and disease Since dietary inadequacy of antioxidants and phytochemicals were pointed out as a major dietary correction to be made by fishing community information regarding the use of these foods were also collected

The findings of the study clearly brought to light that antioxidant and phytochemical rich leafy vegetables like amaranth agathi leaves curry leaves chekkurmanis cabbage and drumstick leaves were never included in diets of majority of the subjects (both male and female) while very few subjects used this item occasionally Other vegetables like carrot sweet potato and onion stalk were never used by most of the subjects while a very small of percentage were consuming these items occasionally There was only an occasional use of phytochemical rich foods like garlic onion tomato (ripe) and drumstick by majority of the subjects While very few subjects were including the same once in a week

Fruits like amla guava grapes jackfruit and orange were consumed rarely Most of the subjects never consumed the antioxidant rich foods but some of them were found to be using of these items occasionally Ryam et al (1996) pointed out that fruits were invariably absent in the diets of people living in all coastal areas Omission of these neutraceuticals also completely from the dietaries of fisherfolk constitute the major risk factor in their health

5 5 FOOD CONSUMPTION PATTERN OF THE RESPONDENTS

Though food is necessary to satisfy the emotional and social requirements of men from the nutritional point of view food is also required to meet the supply of different nutrients that are required either to provide energy or to build up the body or to regulate body process In order to maintain the homeostasis of the body the nutrients are also to be supplied in amounts recommended for healthy living

5 5 1 Actual food intake of the respondents

Food weighment survey indicated a general deficit of various foods in the dietary regime of fisherfolk of this area Intake of cereals among the female subjects was 25 per cent below the RDA Dhanapal (2003) reported that the diets of fishermen families in Kerala had rice as a major source of calorie George (2002) reported that cereal intake of fisherwomen in Trivandrum was below 75 per cent of the RDA Aneena (2004) also revealed the same result among the marine fisherwomen in Thrissur The consumption level of cereals among fisherwomen in this study area was also similar However males seemed to consume a slightly higher quantity of this food item (104 42 per cent) The tendency of male subjects to have one or two meal outside their home could be accounted for this difference among male and female fisherfolk

The intake of pulses was below the RDA for both sexes The intake of pulses was sufficient to meet only 27 35 per cent of RDA among males and as low as 12 per cent among females Sathiadas (2003) found that the use of pulses were occasional in the diets of fishermen families in Kerala Rotti (2003) has also reported that the intake of pulses were below the RDA for adults in coastal population of Pondicherry Reports of Saleena (2004) regarding the consumption of pulses among the fishermen families in Thrissur was corroborating with the above data

In the case of roots and tubers the deficit was not high in males (3 70 per cent) but females recorded a shortage of 13 50 per cent when compared to RDA Tapioca was the most commonly used tuber by the respondents NNMB (1994) has also reported that tapioca is the most commonly used tuber by the coastal population The intake of vegetables was found to be poor among the subjects The average intake

of vegetables was 17 80 g in males and 8 90 g n females out of the required 75 g per day A study by Lakshmi (2003) revealed that the consumption of protective foods like green leafy vegetables and other vegetables were occasional among the fishermen families in Kerala Karuna (1993) had reported that the intake of vegetables was below RDA among the fisher women engaged in fish vending Kassim (2003) observed that the consumption of vegetables were below the RDA among the f shermen families in Karnataka. Studies conducted in Pondicherry by Rotti (2003) also established same consumption pattern with respect to vegetables among the fishermen families

Consumption rate of fruits was also poor among the fisherfolk Intake of fruits met only 10 20 per cent of RDA among males and even low (3 08 per cent) among females This was evident from the data obtained on the frequency of use of fruits which was very low AmaraSingh (1997) observed that the consumption of fresh fruits and vegetables were rare among the fishermen families Aleena (2003) reported that fruits were invariably absent in the d ets of people living in the coastal areas of Thrissur Findings by Aleena (2003) on the consumption trend of fruits by fisher fam l es was agreeable to the results of present investigation

The data pooled on the consumpt on of leafy vegetables aga n gave alarmingly low figures Intake of leafy vegetables was 98 per cent below RDA among males and 99 per cent below RDA among the females Sudhakar (2003) revealed that the consumption of protective foods like green leafy vegetables and yellow vegetables vere rare among the fishermen families in Trivandrum George (2002) had reported that the i ntake of green leafy vegetables was very poor among fishermen fam l es n Trivandrum Survey conducted by Narayanakumar (2003) among the coastal population in Tamil Nadu also established the same fact

To discuss the consumption pattern of milk and milk products the intake met 86 75 per cent of RDA among males but the ntake level was only 37 50 per cent of RDA among females This shows that when compared to female population the intake of milk among males was better It was noted that almost all the male respondents were groomed with a habit of tak ng (8 cups of tea daily One serving of

tea contains approximately 90 ml of milk and thus provides a satisfactory dietary intake of milk by the male members The male respondents also included curd and butter milk in their diet

On verifying the consumption levels of flesh foods by the population the intake status of males exceeded the RDA by 116 70 per cent while the per cent of RDA met by females was 75 80 per cent Fish was an item used daily in the dietaries of fishermen community The reason stands self explanatory and the easy availability close proximity to the sea and the utilization of the after sale portion

Food consumption survey also revealed the fact that the men folk tend to consume an excess amount of flesh foods above the RDA This can be attributed to the practice of them preferring food item like meat and egg in the meals taken outside their homes To the contrary the female folk were not observed with the practice of taking non vegetarian food item outside the house Their diet is confined to fish cooked at home

Data on the consumption of fats and oils gave a general status of low intake among the subjects The intake of RDA by both males and females since only 37 20 percent was met by males and ɔ1 71 percent was met by females It was observed in the survey that use of oil for cooking was very less as fish curry is the only item in which few drops of oil was used as part of season ng In this context it is worth to mention the fact that the diet of men folk carries good share of invisible fat contributed from the meat preparat on they consume outside the home which is not accounted in the food weighment survey

W th regard to the consumption of nuts and oil seeds coconut used for food preparation (fish curry) was the only item consumed from this group Karuna (1993) had reported on the practice of using very low quantity of coconut for food preparation by fishermen community in Thiruvananthapuram

Similarly the consumption of sugar jaggery were also very less compared to RDA among females (37 33 per cent) Kumar et al (1999) studied the diet pattern of women belonging to fishermen community and observed that the intake of

sugar and jaggery was not satisfactory While the consumption of sugar and jaggery among male respondents in the presents study was nearly satisfactory (78 per cent) A better intake compared to women could be due to the frequent consumption of beverages like tea or soft drinks by the men folk Dhanapal (2003) also reported that the intake of sugar and jaggery among male members of fishermen community remain comparable to that of RDA

5 5 2 Nutrient intake of the respondents

The adequacy of the diet can be judged from the nutrients suppl ed with respect to recommended allowances Nutrient intake of the fisher folk revealed that the diet was inadequate n several nutrients

The calorie intake was inadequate among females having a shortage of 30 per cent from the RDA Meanwhile the calorie consumption of male subjects were found to be satisfactory Cereals roots tubers sugar and jaggery contributed to the total calorie intake in the d ets of the study group Consumption of these items were better among males compared to females Fisherwomen were found to be depend ng on home made food alone for their major meals At the same time the men folk regularly take meals from the shops Kassim(2003) reported that the diets of the fisherwomen in Kerala were deficient in calories George (2002) observed that calorie intake of fisherwomen was below 75 per cent of the RDA

Regarding the amount of protein contributed in the diet men were able to meet 96 per cent of the RDA but the same was met only 70 24 per cent among females This difference can also be assigned to the same reason as ment oned with respect to the higher calorie intake among males Consumption of meat and egg other than home food enables to have better protein intake Fish prepared at home is the major protein source for females Walkar (2001) found that the intake of protein foods was sat sfactory among the f shermen families However in this study the intake of protein among female subjects were not satisfactory George (2002) and Karuna (1993) had reported that the protein intake of fisherwomen was below 75 per cent of the RDA

S milarly the fat content of the diet was also found rather satisfactory n males (86 per cent) Meanwhile fat contributed in the diet of female fisher folk met only 26 50 per cent of RDA Consu npt on of egg meat and milk add on to the fat content recorded in the diets of male Walkar (2001) studied the food consumption pattern of the marine fishermen in Italy and he found that the intake of fat among males were comparable to RDA The author also reported that the intake of fat was below the RDA among female subjects A study by Karuna (1993) and George (2002) on fisherwomen revealed that their diet was inadequate n fat Aleena (2003) also observed the same trend among the fishermen in Thrissur

Among the important minerals calcium intake was found to be satisfactory by both sexes meeting more than the RDA by man Regular consumption of fish enables the fisher folk to meet their calcium requ rement adequately According to NNMB (1994) the calcium intake of the fishermen families is slightly higher than the RDA George (2002) also confirms the above findings in her study among the fisherwomen m Trivandrum district

Iron intake was noticeably low among the females as only 35 33 per cent of the RDA was met However in males 88 92 percentage of the RDA was met The absence of green leafy vegetables pulses fruits and other iron rich foods makes their diet deficient in this important nutrient Ramachandran (2001) reported that the availabil ty of iron was inadequate n the d ets of f shermen families in Kerala Kassim (2003) observed a deficiency of iron in the diets of fishermen in Kerala Similarly George (2002) and Karuna (1993) also revealed that the d ets of fisherwomen was found to be deficient in iron and vitamin C

It could be emphasized that beta carotene is the most limiting nutrient found in the diets of these subjects Only 33 78 per cent of the RDA among females and 56 67 per cent of RDA among males was met in their diet The poor consumption of greenleafy vegetables carrot other vegetables and fru ts is clearly accountable to this grave deficiency of beta carotene It was s gnificant to note that though the fishermen community are non vegetarians by habit a consequent neglect of meat and

egg was noticed in the diets of female members which could have precipitated the above state of affairs According to Chunda (1995) the intake of retinol was less than the RDA in the coastal population of Tamilnadu Sudhakar (2003) had conducted a study on the nutrient intake of fisher folk in Karnataka and found that their mean dietary beta carotene intake was inadequate Yagammai and Ambili (1992) have reported that the intake of vitamins were low among the fishermen famil es in Ernakulam and Alleppy d stricts

5 6 NUTRITIONAL AND GENERAL HEALTH STATUS OF THE RESPONDENTS

5 6 1 Anthropometric profile of the respondents

Diet has been acclaimed to be one of the primary factors that help to promote growth and maintains life The adequacy of diet consumed by the subjects can also be est mated through their anthropometric profile Persons receiving good food and who are maintaining optimal dietary habits are expected to maintain the body structure form and compos tion of the body even while aging ICMR (1994) reported that in field studies to assess nutrit onal status heavy reliance must be placed n the measurement of external morphology of the body

Anthropometry was used in the study as one of the methods to f nd out the adequacy of food intake by the f sher folk It was also used as a tool to measure their nutritional status Anthropometric data pertaining to weight and height of male and female subjects revealed prec se facts

According to ICMR (1994) reports the mean weight of male and female elderly citizens were 60 kg and 55 kg respectively While in the present study the mean weight of male was 60 18 and that of female was 43 21 kg The mean weight of male subjects in this study was observed to be more compared to ICMR standards and tl e phenomena was reverse among the females This indicated that males had better body weight compared to the standards of their female counterparts According to Kannan et al (1998) alterations in weight is complex and it differs between sexes so that

women appear to have a lower body weight whereas men frequently showed an increase in body weight

However difference in standard weight among sex in this study could be due to their occupational status personal habits and dietary intake Chumlea et al (1995) opines that body weight is easily affected by short term environmental aspects of life in addition to the effects of acute and chronic diseases or under nutrition Such factors particularly under nutrition might have influenced the body weight of the female subjects in this study

Regarding height the data revealed that mean height for male and female subjects were 162 24 cm and 146 81 cm respectively The height of male and female subjects compared with ICMR (1994) data It was found that the standard height for reference man and woman is 160 cm and 155 cm respectively The mean height of male subjects in the present study was above the standards while the mean height of females in this study remained below the standard level

Overall results of the study have proven the fact that the men were better in stature compared to the women In a study by Vijayan (2003) the mean height of the male subjects recorded significantly more than females Results of the present study was coinciding with the above trend

The data on BMI of the respondents revealed that the mean BMI among males was 24 32 and that of females was 16 21 Experts of NIN (1999) are of the opinion that BMI values between 20 to 25 can be considered as compatible with health for both men and women In the present study the mean BMI of male subjects was observed to be within the normal range But the BMI of females subjects recorded a value below 20 which indicated their poor nutritional status and could be due to infections along with a low dietary intake Karuna (1993) observed that the low BMI of fisherwoman in Trivandrum was due to too much energy expenditure and high nutritional depletion due to constant infections as well as low dietary intakes

Thus we can assume that the commonly accepted anthropometric indicators of nutritional status such as he ght weight and BMI observed in the f sherwoman are influenced by food intake as well as other health factors such as diseases stress and poor living conditions The data threw light into the fact that the nutritional status of fisherwoman remained much lower than the nutritional status of male fisher folk

5 6 2 Clinical status

Consumption of nutritionally inadequate diet result in signs of nutritional deficiencies On evaluating the clinical status of the subjects presence of several clinical manifestations were evidenced

Vitamin A def ciency affecting conjunctiva cornea and eyelids were observed among 38 33 per cent of male and 40 62 per cent of female subjects The main reason for the presence of vitamin A defic ency observed among the subjects could be their poor dietary intake of v tamin A or its precursor (Beta carotene) rich foods Aneena (2003) observed that vitamin A deficiency were more common among the fishermen famil es A study done by George (2002) in Trivandrum revealed that the serum beta carotene level of the fisherwomen was low Kadar et al (2003) observed that 32 50 per cent of the subjects among fishermen famil es m Andrapradesh suffer from v tamin A deficiency

Symptoms of v tamin B complex deficiency such as angular stomatitis and glossit s were more or less same among the male and female subjects (24 16 per cent and 26 25 per cent respectively) In a cereal based d et riboflavin is found to be the most limiting nutrient (Bamji 2003) Cereals was found to be a predominant food item in the diet of these respondents A study done by Chandran (2005) the low income among rural population found that there was a h gher inc dence of vitamin B complex deficiencies such as angular stomatittis and gloss tis Symptoms of spongy bleeding gums was observed among 21 67 per cent male and 25 per cent among females It could be due to the decreased intake of vitamin C as evidenced by the negligible consumption rate of vitam n C rich fruits and green leafy vegetables Accord ng to

Chunda (1995) the intake of retinol and vitamin C were less than the RDA in the coastal population of Tamilnadu

The data further revealed that paleness of eye was more among females (95 per cent) than males (31 67 per cent) The paleness of eye observed among the fisherwomen was due to anemia

Health ailments viz palpitation and breathlessness were also recorded However nutritional deficiency symptoms were present more among females (72 50 per cent) than males (56 67 per cent) Study done by Rotti (2002) among f sher folk in Pond chery found that 50 per cent of f shermen faced problem of breathlessness and palpitation

Slight to prom nent levels of dental caries and mottled enamel were observed among majority of the subjects Dental caries was noticed among 93 33 per cent of male and 80 per cent of female subjects It could be stated that poor oral hyg ene and unhealthy personal habits such as chewing and smoking are causative factors for dental caries Poor personal hygiene of teeth due to continuous chew ng and heavy smoking were observed among the subjects in this study Fina and Oberg (1995) observed that dental caries was commonly caused by bacterial infection

Other major cl nical manifestations of the oral cavity were leukoplakia and precancerous lesions It was revealed that 53 33 per cent of male and 57 50 per cent of females were identified with leukoplakia Similarly Sub Mucous F brosis (SMF) and oral ulcers were present among 40 per cent and 31 67 per cent of male subjects respectively The same was observed among 30 per cent and 32 50 per cent of females

Occurrence of precancerous lesions and leukoplakia in the oral cavity may lead to cancer of the mouth The incidence of oral cancer among individuals who smoke drink alcohol and chew betel qu d s 123 fold higher than for abstainers as reported by Ko et al (1995) The investigation do ie by George(2002) also established the fact that fisherwomen in Trivandrum suffer from oral precancerous lesions due to tobacco chewing

Respiratory problems were found among 81 67 per cent females and 15 per cent of females subjects Kawamoto (1994) is of the opinion that the most frequent and acute health problem found among 1916 patients belonging to low socio econom c strata were acute infections of the upper respiratory tract followed by chronic cough with blood in sputum Increase in respiratory problems among males could be due to their early invitation to smoking habit

It was found that among 5 per cent of male subjects there was presence of blood in their stool Alternate occurrence of constipation and diarrhoea was also noticed among the subjects The incidence of constipation and stomach upset among subjects in this study might be due to lack of fiber rich foods such as raw fruits and vegetables Stomach upsets could also be due to infection as well as due to unhealthy habits such as smoking and alcoholism wh ch were common among the men folk

5 6 3 Morbidity pattern

Among the diseases attacked by the fisher folk ch ckengun a and skin diseases were found to be high Environmental pollution by human excreta improper disposal of waste refuse and stagnation of water due to improper drainage also promotes breeding of mosquito and flies The water logging surroundings in which the respondents live itself proved to be a disease prone location More over their poor personal hyg ene had also attributed to such repeated attack of th s disease

About 71 67 per cent of male and 67 50 per cent of female subjects reported attack of malaria in the past 6 month durat on According to park and Park (1991) housing plays an important role in the epidemiology of malaria As per reports of Malayala Manorama daily 12 August (1996) and Indian Express 12 June (1996) even the eradicated diseases like malaria small pox are reappearing in the fragile marine villages The ill ventilated and ill lighted houses provide ideal indoor resting place for mosquitoes Iyer (1997) reported that outbreak of malaria was prevalent among fishermen families

According to Park and Park (1991) tuberculosis is a social disease and social factors include poor quality of life poor housing over crowding under nutrition large family and early marriage and all the above factors are part and parcel of the life style of the fishermen community In the present study a h story of tuberculosis was reported by 15 per cent of male and 7 50 per cent of female Kannan et al (1997) reported that very high incidence of tuberculosis in Pulluvila village of fisherman families A field survey done by municipality in Ponnani in the year 1998 to 1999 and also the nformation from records indicated high rate of respiratory infections in the coastal wards Increase nc dence of tuberculosis among males can be accounted to their alcoholism and smoking habits

The data further revealed that card ovascular problems were also reported as occurred among the fisher folk However the incidence was more among males (11 67 per cent) than females (2 50 per cent) subjects surveyed Kannan et al (1998) in Trivandrum coastal areas also showed tl at heart disease s more among men (55 per cent) than women (17 per cent) A study conducted by Pushpangathan (2000) also revealed the same fact that card ovascular problems were common in males than females Stroke were observed among 3 33 per cent of male and 2 50 per cent of female subjects

5 6 4 Biochemical estimation

As another reliable method to assess the nutritional status the haemoglobin levels of the respondents were measured Park and Park (1991) stated that haemoglobin estimation is an useful index of the overall state of nutrition irrespective of its signif cance in anemia

Haemoglobin level

The haemoglobin level of the subjects indicated that 82 50 per cent of female and 18 33 per cent of male subjects were anemic It was an important observation that anemia was more common among females compared to males and the percentage of anemic women were alarmingly h gh

The present findings on heamoglobin level is in tune with the earlier studies and previous findings Karuna (1993) observed that 66 67 per cent of the fish vend ng women have haemoglobin levels ranging from 7 5 to 11 9 g /100 ml which was much below the normal levels George (2002) in her study among fisherwomen also reported the same fact Saleena (2004) observed that the average haemoglobin level of f sherwomen suffering from mild to moderate iron deficiency was 8 to 10g /100ml

According to Garcia and Mason (1992) there are multiple causes for anemia and they include iron deficiency malaria, intestmal parasites other nutrient deficiencies such as foliate and vitamin B12 and genetically determined haemoglobin apathies such as thalassemia The main reason for the low haemoglobin level among the fisherwomen could be clearly attributed to their poor dietary habits It had been revealed that the diets consumed by the women were poor as they contained lesser amounts of iron containing foods such as green le ify vegetables dried fruits meat and egg The nutrient level also indicated that their iron requirement met below the normal level (iron ntake of male is 88 92 per cent and female is 52 67 per cent of RDA) More over the diets were poor in vitamin C which is expected to decrease the iron utilizat on

5 7 IMPACT OF COUNSELING

5 7 1 Impact of counseling on the food use frequency

Nutrition counsel ng is concerned with promoting health as well as reduc ng behavior induced d seases In other words d etary and health counseling is concerned with establishing or nducing changes in personal and group attitudes and behaviour that promote healthier l fe Thus the effect of counseling in the present study was evaluated by assessing the changes in the food habits gam in knowledge as well as alterations in the personal habits and personal hygiene of the fisherfolk

The frequency score of different food items used by the respondents analysed before and after counseling revealed that food items like cereals fish oilseeds (coconut) milk and milk products sugar and jaggery had maximum score

before counseling itself Karuna (1993) and Kumar (2001) from their study on the food habits of fisher folk found that these items were used frequently in fisher families Even when assessed after counseling a regular use of these items were observed

Counseling could invest a very good impact in the use of vegetables as revealed by the increase in the frequency scores to 61 from the previous score of 24 According to Neelakantan (1991) properly organized health and dietary counseling activit es produce good results The results obtained evidenced the mean ngful effect of counsel ng

Even in the use of green leafy vegetables the frequency score was very less and due to counseling the fisher folk made an attempt to use this very important food item more often This proved that the fisher folk could be convinced about the nutritional and dietary importance of green leafy vegetables In spite of there being a dearth in the availability of green leafy vegetables in this area it was seen that the fisherwomen started collecting leafy vegetables from the homesteads they visited during fish vending Bargale (2005) stated that the awareness about nutrit on can be created through nutrition counseling

In the original diet pattern of fisher folk the frequency of use of fruits recorded scores of 21 and 20 in males and females respectively Assessment after the counseling sessions showed an increase in the frequency score of this protective food tem which was sh fted to 35 in males and 33 in females The diet of fisher folk were lacking in fruits ma nly due to poor knowledge and financial constra nts The study group could overcome both this problem to a certain extent when counseled as they started collecting low cost and locally available fru ts l ke papaya rose apple jack guava and similar indigenous fruits for consumption Sumedha (2005) conducted a study on the food consumption pattern of the rural illiterates and found that the ntake of green leafy vegetables and fruits were considerably low After nutrition education on the mportance of fruits and vegetables and a post counseling study conducted among them revealed that their consumption of these items have mproved These

results remains to be good examples for the success of awareness creation good dietary practices among the poor and illiterates

Items like egg and meat recorded frequency score of 67 and 59 respectively in males and 36 and 26 m females before counseling and the frequency level were maintained rather same even after the counseling programe It was noted that the frequency scores of these items were higher among males compared to females This finding clearly explains the variat on in food consumpt on pattern of male and female fisher folk

From the overall results obtained on the food use frequency after diet counseling evidenced the pos tive impact created on the subjects Tamilarasi and Saradha (2004) have opined that counseling brings sc entifically sound nutrition practices Boosley (1996) says that the fundamental objective of awareness creation in nutrition and diet is to help individuals to establish food habits and practices that are consistent with nutritional needs of the body and are adapted to the cultural pattern and food resources of the area in which they live in

5 7 2 Impact on the frequency of use of foods rich in antioxidants and phytochemicals

Significant modifications in the use of ant ox dant and phytochemical rich foods were made by the fisher folk as an outcome of dietary counsel ng Frequency of use of different leafy vegetables l ke drumstick leaves amaranth and curry leaves ever seen to be very low before counseling Several studies had pointed out the negl gible use of green leafy vegetables by the coastal populat on (George 2002 Aneena 2003 and Saleena 2004) Howevei better changes in this poor d etary practice could be made after counseling by persuading the fisher folk to use green leafy vegetables According to Rajammal et al (1986) nutrit on and health counseling is an important ingredient of better nutrition and good family l ving

Similarly the frequency of use of vegetables like beetroot carrot drumstick and cabbage was very poor earlier The use of these items could be appreciably increased through the series of awareness programme conducted among

the people in this coastal belt Sumedha (2005) observed changes in slum dwellers when they adopted desirable nutrition practices as a result of their exposure to the nutrition education programme

Promising results were also observed in the use of certain fruits rich in antioxidants and phytochemicals due to counseling Before imparting nutrition counseling fruit items secured very poor frequency score among the subjects After imparting counseling class the frequency score for indigenous fruits like papaya guava rose apple jack etc were recorded to be higher

5 7 3 Impact of counseling on the personal habits of fisher folk

National Conference on Preventive Medicine in USA (NCPM) defines health counseling as a process that inform motivates and helps people to adopt and maintain healthy practices and lifestyles and advocate environmental changes as needed to facil tate this goal The effectiveness of counseling imparted to the fisher folk with respect to their personal habits such as smoking chewing and alcoholism was obvious mainly by the way of their desire to quit these practices The participants felt that the interventions helped them to make a good effort in changing their existing unhealthy pract ces

According to Neelakantan (1991) health counseling means help ng to change people s behav our so as to make their health better A satisfactory and consistent outcome was registered in the smoking habit of the fisher folk due to counseling 30 per cent of the subjects could be persuaded to reduce the frequency of smoking

The fact that smoking had been practiced from the i younger age stood as the barrier in mot vating larger number towards smoking cessation with the fe v attempts of counsel ng done in this study Although most subjects had expressed the r desire to qu t they appeared unable to implement quitting within this short span for the reason that they found it unbearable when they run out of smoking In th s context it is to be mentioned that continuous trials with a minimum follow up for a period of six

months would definitely give better cessation rates in smoking Research reports have shown that cessation rates were generally higher in trials where nicotine therapy was also used However such attempts could not be made in the present study

The successful effect of intervention in the chewing habit of fisher folk was unfolded by the consistent alterations made by the subjects in chewing beta quid As a result of the effort taken through counseling majority of the fisher folk in this study (51 67 per cent male and 60 per cent female) could be made to switch over to the practice of excluding tobacco in the chewing quid in contrary to their previous practice of including this item by all the chewers George (2002) had reported that a remarkable change could be made in the chewing habit of fisherwomen with nutrition and health education

Another promising result obtained on the behavioral counseling conducted in this study was evidenced in the reduction of chewing time Majority of the subjects were able to cut down the duration of chewing betel quid As confessed by the fisher folk they were in the habit of chewing for more than 1 hour on each attempt It was welcoming to note that counseling given on the topic personal habits and diseases could influence 53 63 per cent male and 83 33 per cent female subjects and persuaded them for removing the chewing quid earlier from their mouth as they realized the consequences and the oral health problems related to it Knowledge and awareness helped the fisher folk to follow better practices

Transforming them to follow a healthy practice of washing mouth after chewing was also made possible with counseling Better behavioral change could be inculcated among all the subjects by replacing the long existed habit of keeping their mouth unclean after chewing This again is an indication to prove that counseling could convince the fisher folk on the importance of oral hygiene

Patterns of certain behaviours are difficult to change The problem of alcoholism and substance abuse has aggravated in all under developed communities Several reasons have been attributed to the increased use of alcohol by the fishermen Stress is the major contributor for the initiation and continuation of the use of alcohol

by fishermen They start going for off shore fishing overnight at their teenage itself By this age itself they start the use of alcohol Unfortunately n this study a concrete impact on alcohol use could not be made with counseling alone Whether successful in changing their habit or not most of the fishermen expressed their concern for the investigator who earnestly tried to make an effective changes in this practice Even though few fishermen have showed a readiness to stop taking alcohol at the time of counsel ng it could not be made practical On post evaluation it was felt that combined approaches like medical therapy may be required for withdrawal from the regular alcohol use Counseling delivered by a physician in the context of a clinical encounter may have better impact then that provided by a non cl mcal counselor (investigator)

5 7 4 Impact of counseling on the general health status of the respondents

Counseling could g ve beneficial results in the r general health status also The absence of deficiency symptoms like bleeding gums paleness of eye and angular stomatitis among few subjects when assessed after a period of one month to counsel ng justifies this result This gives a positive ind cation on the effect of dietary counseling which enables to state that the changes made by the f sher folk in their diet by ncluding vegetables and ind genous fruits would make significant improvement in their health status provided the practice is continued further In th s context it is to be mentioned that the time gap between counsel ng and evaluation being too short signif cant results regarding mprovement in health could not be ach eved as desired

More over the challenges in dietary counsel ng lies not alone in making an n tial change n health but also n maintaining them throughout their life To ach eve th s an ongoing process last ng for months or years may be required Follow up counseling would also essential for achieving this goals

5 7 5 Impact of counseling on personal hygienc of fisher folk

Jaya and Selvaraj (1996) have po nted out that the educational programmes emerge as the most effective method of creating awareness in the aspects of health pract ces The exist ng personal hygiene of the fisher folk seemed to be very poor However when counseled on the necessity for the self upkeep in hygiene they

responded positively which was measured through the satisfactory improvement observed in their general appearance and their aspects like bathing habit hygiene of teeth hair feet and nails

On assessment after counseling 50 per cent of male and 65 per cent of females were found to be taking bath daily Nails were found satisfactorily clean by majority of the fisher folk Hair was kept neat and combed by 58 66 percent males and 62 50 per cent females Few of them even started using slippers as a result of their awareness regard ng personal hygiene

Neelakantan (1991) reported that exposure to suitable education programme help people belonging to the lower strata of the community to adopt desirable health practices The effort taken by the investigator through counseling strengthens the above statement on the success in changing the mindset of the fisher folk and on persuading them to adopt better person l hygienic practices

5 7 6 Impact of counseling on the knowledge gain of fisher folk

According to Ravikumar (2000) information educat on communication is a concreted and planned endeavor of reaching people as individuals group or masses putting across scientific knowledge and equipping them to develop expected behavioural pattern and creating cond tion in which they direct themselves towards the accomplishment of predestinated programme The extent of knowledge gained by the fisher folk as a result of counseling in this study was highly encouraging

The results have proved that the attempt made by the investigator really motivated the fisher folk to improve the r wrong dietary practices and personal behaviour Post test scores on aspects viz d et and disease balanced diet and nutrient sources antioxidants vitamins and phytochemicals d etary pract ces/habits and personal habits and d seases showed a remarkable increase compared to that of pre test scores None of the subjects were aware about antioxidants and phytochemicals its role as nutracuticals as well as about low cost nutrit ous foods Later after counseling a sizable majority of the subjects learn much on the e basic health aspects Even though

very few subjects seemed to have some knowledge on these matters earlier they were not in a capacity to adopt them due to lack of motivation or self desire

Navajot (2005) had made an impact in the acquisition of knowledge development of desirable attitude and adoption of nutrit onal practices through diet counseling Chowla (2005) could made a significant improvement in the knowledge level of people from socially deprived communities on the importance of balance diet as result of nterventions and awareness programmes Likew se the results obtained in this study highlights that in general the knowledge level of fisher folk could be improved thus reflecting the advantage of counseling given in this study

SUMMARY

SUMMARY

The study entitled Impact of dietary counseling on the food habit of fisher folk was undertaken with an object ve to evaluate the beneficial effects of dietary counseling on the food habits and health related personal habits of fisher folk

The study was carried out at Ad malathura, a coastal village in Trivandrum district One hundred samples both men and women belonging to the age group of 40 50 years and habituated with chew ng smoking and alcoholism were screened for the study

The socio economic status of the subjects were collected Personal profile of the fisher folk revealed that majority of the subjects (57 per cent) were between the age of 46 50 years All the respondents belonged to the Christian community Educational status of the respondents revealed that 67 per cent of the subjects were illiterate Occupational status showed that 60 per cent of them were engaged in fishing and the rest were engaged in fish vending The family size of the subjects indicated that 15 per cent of the respondents have small sized fam lies fourty per cent medium sized while majority of the families (45 per cent) were large sized having more than 8 members

Economic status of the f sher folk revealed that the monthly income of majority of the subjects (66 per cent) ranged between 1000 1250 Monthly expenditure pattern of the families revealed that 40 per cent of the fam lies were spend ng more than Rs 800 on food wh le 31 per cent of them were spending an amount of Rs 700 800 Expenditure on med cine for most families was Rs 400 or more

Information regard ng common public facilities available in this fishing village disclosed that for drinking water there was no fac lity of water connection to individual households Twenty three per cent of families had to collect water from a distance of ½ Km and the rest had public water outlet closer to their houses The sanitary and hygien c conditions of the households were poor Seventy four per cent of the fam l es had no latrine facility and they adopted the unhygienic practices of using

open ground/seashore for defecation None of the families had drainage facility and hence waste water from the house holds was not disposed off in the proper way Seventy six per cent of the respondents d sposed their household garbage by simply throwing at the road side There was no primary health centre in their locality and hence fisher folk in Adimalathura had to depend on PHC located at the nearby Panchayat which is more than 5 Km away Fourty eight per cent of the subjects reported that they were not able to use the medical facility available in primary health centre since the working hours of the centre coincided with the time of fish vending

Details on the personal habits of the fisher folk viz smok ng chew ng and alcoholism were collected Out of the 60 male subjects under study 33 37 per cent of them were smokers and majority of them were accustomed to this habit for more than 20 years The frequency of smoking revealed that all of them smoke more than 15 times a day All the subjects both males and females were regular chewers of betel quid All the respondents used betel tobacco chunna and arecanut as ngredients in their chewing quid Sixty per cent of male and 47 50 per cent of female subjects chew more than ten times a day and also the quid was allowed to remain in the mouth for more than 1½ hours With regard to alcohol consumption 53 33 per cent of the men folk were regular users of alcohol and the majority started taking alcohol at an early age of 15 years None of the female subjects were hab tuated to alcoholism

Dietary habits of the f sher folk indicated that all of them were habitual non vegetarian Frequency of use of different food item revealed that rice and f sh were the ma n items of their daily diet Majority c f the subjects (87 50 pe cent male and 57 50 per cent female) followed two meal a day pattern Majority of the male subjects were in the hab t of tak ng breakfast lunch or dinner away from their home but the female fisher folk were not found to consume any food purchased from shops other than beverages

Frequency of use of various foods revealed that rice coconut fish sugar and beverages like coffee or tea were the food items included daily in the diet of fisher folk Consumption of egg pulses green leafy vegetables other vegetables and fru ts

were either occasional or never included in their diet Observation also revealed that the male subjects were consuming food items like egg and meat frequently since they take meals at hotels or restaurants Information on the frequency of use of foods rich in antioxidants and phytochemicals indicated that such neutracuticals were either not included in the diet or occasionally used by the fisher folk

Average food intake of the males respondents revealed that among the various food items they take of cereals was found to be just above the RDA (103 41 per cent) The intake of roots and tubers milk and milk product sugar and jaggary were also satisfactory At the same time the consumption of pulses vegetables fruits fats and oils and leafy vegetables were found to be below the RDA With regarded to nutrient intake the supply of calories and calcium were above the RDA level and the intake of protein iron and fat were satisfactory But the allowance of β carotene in the diet was found to be very low

Results of the survey on the actual food intake of female respondents revealed that their diet was inadequate in all the foods The intake of cereals met only 75 60 per cent of RDA The consumption of pulses fruits vegetables and leafy vegetables were very poor compared to RDA and the percentage of RDA for fruits and leafy vegetables were low as 3 08 per cent and 2 80 per cent The consumption of milk and milk product fats and oils sugar and jaggary were also poor W th regarded to nutrient ntake the supply of calories was below average S milarly the intake of protein iron and β carotene also remained very low among the female subjects

Anthropometric measurement of the fisher folk revealed that the mean height and weight of the male subjects were comparable to the standards for reference man while the mean he ght and weight for females were below the standard weight and height suggested for the reference woman

Clin cal examination of the fisher folk revealed that deficiency symptoms of vitamin A vitamin B complex and v tamin C were observed among the subjects Paleness of eye was noticed among 33 33 per cent of the male subjects and 95 per cent of the female subjects Clinical manifestations of dental caries and mottled

enamel were present among majority of the subjects 53 33 per cent of male and 57 50per cent of female subjects were ident fied with leukoplakia Sub Mucous Fibrosis and oral ulcers were present among 40 per cent and 31 67 per cent of male subjects and 30 per cent & 32 50 per cent female subjects respectively Respiratory a lments like cough was prevalent among male subjects (81 67per cent) and among 5 per cent of female subjects 37 67 per cent male and 47 50 per cent female subjects were suffering alternatively with constipation and diarrhea

Biochemical examination for heamoglobin status of the fisher folk showed that 18 33 per cent of male and 82 50 per cent female subjects were anemic

Morbidity pattern of the fisher folk during previous six months of study indicated that ch ckengun a and skin disorders were affected by majority of the male and female subjects Incidence of tuberculosis diabetes mellitus chickenpox and heart d seases were also reported to have occurred w th n the previous six months of study

The impact of dietary counseling was assessed in the terms of dietary habits personal habits personal hygiene general health status and knowledge gain of the respondents

The frequency score of many protective food items have found increased as an effect of dietary counsel ng The score for vegetables leafy vegetables and fruits which were found very low before counseling have been improved considerably due to counselmg The frequency score of many ndigenous foods that are rich in antioxidants and phytochemicals which recorded very low frequency score before imparting nutrition and diet counseling could be enhanced to a rather h gh score as a result of counselmg

Counselmg could bring benef c al changes in certa n unhealthy personal habits of the fisher folk viz smoking and cl ewing Changes adopted by the respondents with respect to the r smoking habit revealed that 30 per cent of the subjects could be persuaded to reduce the r freq iency of smoking as an mpact of counseling

S milarly changes were observed in their betel chewing habit also As an effort of counseling 51 67 per cent of male and 60 per cent of female subjects could be made to switch over to the healthy practice of excluding tobacco in the chewing quid Impact of counseling on the durat on of chewing exhibited that 31 67 per cent of male and 36 67 per cent of female subjects reduced the length of time on each attempt of chewing The fisher folk had never followed a practice of washing mouth prior to the counseling programme A notable effect of health counseling was that cent per cent of the subjects became aware of the consequences of this practice and there by adopted a habit of wash ng mouth soon after chewing Even though concrete effect could be made with the alcohol consumption habit of the respondents a small level of motivation to get rid of this habit could be induced in the minds of fishermen

Personal hygiene of the respondents could also be improved Majority of the fisher folk who appeared themselves to be very poor in their hygienic status turned to be having satisfactory hygienic practices and appearance after the counseling

Counseling alone was not effective in producing a noticable change in any clinical symptoms or deficiency diseases as well as the heamoglobin levels of the fisher folk

Impact of counseling on the knowledge gain of the respondents revealed that post test scores on different aspects like diet and diseases balanced d et and nutrient sources antioxidants vitamins and phytochemicals dietary practices/ habits and personal habits and diseases recorded a remarkable increase compared to that of the pre test scores clearly ev dencing the gain in knowledge in the above mentioned topics by the f sher folk

On the bas s of the salient observat on made in this study following recommendations are made

Continued efforts are needed to educate the fisher folk on the fundamentals of nutrition emphasizing the role of good nutrition to improve their dietary hab ts and health status

- Teach them to mprove the consumption of foods rich in antioxidants and phytochemicals utilizing low cost indigenous food items
- Provision for targeted supplementation and health care for those with under nutrition especially for women
- Counseling to motivate the adolescent and youth for inculcating good habits and way of living to be carried out by formation of clubs and conduct of campaigns
- Promote good health practices such as good sanitation and good hygiene through proper orientation and training

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ABSTRACT

IMPACT OF DIETARY COUNSELING ON THE FOOD HABITS OF FISHERFOLK

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Abstract of the

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ABSTRACT

The study entitled Impact of dietary counseling on the food habits of fisher folk was undertaken with an objective to evaluate the beneficial effects of dietary counseling on the food habits & health related personal habits of fisher folk

The study was carried out among fisher folk at Adimalathura in Trivandrum district One hundred samples both men and women in the age group of 40 50 years who were habituated with chew ng smoking and alcoholism were screened for the study

Personal profile of the fisher folk indicated that majority of the subjects were between the age of 46 50 years and all of them l elonged to Christ an community Majority of the subjects were illiterate and their occupation is fishing or fish vend ng 91 per cent of the families were of nuclear type and it was found that majority of the families were medium to large sized having 6 to 8 me nbers

Majority of the subjects had monthly income ranged between 1000 1250 Most of the families were spending more than 800 rupees on food and up to 400 rupees on med cine

Details on the personal habits of the fisher folk viz smoking chew ng and alcoholism were collected Out of the 60 male subjects under study 33 37 per cent of them were smokers and majority of them were accustomed to th s habit for more than 20 years The frequency of smok ng revealed that all of them smoke more than 15 times a day All the subjects both males and females were regular chewers of betel quid All the respondents used betel tobacco chunna and arecanut as ingredients in their chewing quid Sixty per cent of male and 47 50 per cent of female subjects chew more than ten times a day and also the quid was allowed to rema n in the mouth for more than 1 ½ hours W th regard to alcol ol consumption 53 33 per cent of the men folk were regular users of alcohol and the majority started taking alcohol at an early age of 15 years None of the female subjects were habituated to alcoholism

All the subjects were non vegetarians and none of them followed a specific meal pattern Most of the male subjects had the habit of taking food from hotels or restaurants

Frequency of use of various foods revealed that rice coconut f sh sugar and beverages like coffee or tea were the food items included daily in their diet Consumption of egg pulses green leafy vegetables other vegetables and fruits were either occasional or never used in their diet Male subjects were consum ng food items like egg and meat frequently since they take meals outside home

Frequency of use of foods rich in antioxidants & phytochemicals ind cated that such neutraceuticals were mostly not included in the diet or occasionally used by the fisher folk

Actual food intake of the male respondents revealed that the d et was satisfactory in all the foods except green leafy vegetables other vegetables and fru ts Their nutrient intake was also satisfactory except β carotene when compared to RDA

Actual food intake of the female respondents revealed that their diet was inadequate in all the foods A deficiency in all nutrients except calcium when compared to RDA was found

Anthropometric data of the subjects showed that majority of the male subjects had normal height we ght and BMI While majority of the female subjects had poor body parameters for weight height and BMI

Clinical examination of the fisher folk revealed that deficiency symptoms of vitamin A vitamin B and vitamin C were observed among the subjects Majority of the subjects showed symptoms like mottled enamel and dental caries Cl nical manifestations of leukoplakia was observed among 53 33 per cent male and 57 58 per cent female subjects symptoms like Sub Mucous Fibrosis (SMF) and oral ulcers were also present in many of the subjects

Haemoglobin level of the subjects ind cated that 18 33 per cent of male and 52 50 per cent of female subjects were anaemic

Morbidity pattern of the subjects for the previous six months of study indicated that chickungunia chicken pox skin diseases and malaria were the diseases occurred widely among the fisher folk

The impact of dietary counseling was assessed in terms of changes in dietary habits personal habits personal hygiene general health status and knowledge gain of the subjects

The frequency score of many protective food items (vegetable & fruits) and foods rich in antioxidants & phytochemicals have been increased as an effect of dietary counseling

Counseling could bring beneficial changes in certain unhealthy personal habits of fisher folk viz smoking chewing and alcoholism 30 per cent of the subjects could be motivated to reduce their frequency of smoking As an effect of counseling majority of the subjects were persuaded to exclude tobacco in their chewing quid and 31 67 per cent of male and 36 67 per cent of female subjects were made to reduce their chewing time Oral hygiene of the subjects could also be improved Better personal hygienic habits could be inculcated among the respondents due to counseling

The knowledge level of the fisher folk could also be improved considerably as an impact of d etary counseling

APPENDICES

APPENDIX I

Questionnaire to elicit information on the socio economic status, Social and Environmental problems, of fisher folk in TVM coastal area

A Socioeconomic status

Serial number of the household

Name of the respondent

Address

1 Age

2 Sex

3 Education

4 Occupation

5 Income/pm

6 Religion

7 Type of family

a Nuclear

b Joint

c Extended

8 Family size

Children	No earning members

9 Total income of the family

10 Monthly expenditure pattern of the family

Item	Amount
Food	
Medicine / health	

B **Social and Environmental problems**

11 Do you have adequate drinking water facility in your locality?

Yes / No

12 a Do you have water connection for your house?

Yes / No

b If No What is your source for drinking water?

a Public taps

b Wells

c Bore wells

d River

e Others (Specify)

13 How much distance do you have to walk for collecting water?

a Close by

b / KM

c 1 KM

d More than 1 KM

14 a Do you have toilet facility in your house

Yes / No

b If No What alternative facility you opt?

1 Open ground / Sea shore

2 Share Neighbors Toilet

3 Co nmun ty Toilet

4 Any other

15 a Do you have dramage fac lity fo your house

Yes / No

b If No How do you dispose the waste watei?

16 How do you dispose house hold waste?

1 Thrown in to the compound

2 Disposed in p t

3 Thrown at the road side

4 Other Method (Specify)

17 a Do you utilize medical facility n your PHc?

Yes / No

b If No what is your reason for not utiliz ng the fac lity?

1 No transportation facility to the locat on of PHc

2 Cannot spare t me du n the voik ng hou s of PHc

3 Non availnbil ty of phys c n du ing the t me of visit

4 Not satisfactory with the fac lity

5 Not satisfactory w th the service rendeied

6 Otheis (specify)

APPENDIX II

Questionnaire to elicit information about the personal habits and personal hygiene of the respondents

Alcoholism

1 a Do you have the habit of taking alcohol? Yes / No

b If yes how long s t now s ice you started?

1 Less than 5 yea s

2 5 10 10 years

3 10 20 yea s

4 Above 20 years

2 At what age d d you start taki ng alcoholic di nks?

3 Ho v f equent do you dr nk?

a Occasio nally

b Once in a week

c Two th ee t mes i a veek

d Da ly

4 If daily how many t mes do you d nk?

a Oi ce

b Twice

c Thr ee

d Moie than th i ce

Smoking

5 Do you have the habit of smok ng? Yes /No

If Yes How long is it si ice you sta ted smok i g?

a Less than 5 years

b 5 10 years

c 10 20 years

d More than 20 years

6 Which do you prefer to smoke?

a Pipe

b Beedi

c Cigar

d Cigarette

e Others

7 How frequently do you smoke?

a Occasionally

b Once in a day

c Twice in a day

d 4 5 times

e More than 5 times

8 How much do you spend da ly for smoking?

a Less than 5 rupees

b 5 10 rupees

c 10 20 rupees

d More than 20 rupees

9 Free you aware of any of the health hazards due to smoking? Yes / No

Chewing

10 Do you have the habit of chewing Yes / No

11 What is your first inspiration for starting this hab t? Yes / No

12 How many times do you chew?

a Occasio ially

b Once in a day

c Twice in a day

d Thrice in a day

e More than thrice

13 How long do you retain the quid in your mouth ?

a 30 minutes

b 1 hour

c 1 ½ hours

d More than 1 ½ hours

14 Do you wash your mouth after chewing? Yes / No

Personal Hygiene (Observation)

Name of the respondent

Name of the investigator

Personal hygiene	Highly Satisfactory	Satisfactory	Average	Poo	Very poor
General Appearance					
Daily Bath					
Skin					
Hair					
Teeth					
Eyes					
Nose					
Nails					
Hands					
Feet					
Clothes					

APPENDIX III

Questionnaire to elicit information about the dietary Profile of fisher folk

Se al Number of Household

Name of Responde nt

1 Food hab ts of the responde nt

a Vegetarian

b Non Vegetai an

2 a) Do you have a specif c meal pattern?

Yes / No

b) If yes spec fy the meal patte n?

1 1 meal day

2 2 meal day

3 3 meal day

4 4 meal day

3 Which are meals you take f om the ho ne?

a Breakfast + Lu nch + D n ne

b Lu ch + D nne

c Lunch alone

d Dinner alone

4 a) Do you take food prepared out side your home?

Yes / No

b) If Yes wh ch meal

a Breakfast

b Lunch

c Dinner

d Snacks / Drinks

APPENDIX-IV

Questionnaire to elicit the information regarding the frequency of use of various food item of the respondents

Food item	Frequency					
	Daily	Thrice in a week	Twice in a week	Once in a week	Occasional	Never
Cereals						
Pulses						
Roots & Tubers						
Green leafy Vegetables						
Other Vegetables						
Fruits						
Milk & Milk products						
Egg						
Fish						
Meat						
Nuts & Oil Seeds						
Fats & oils						
Sugar & jaggary						

APPENDIX- V

Questionnaire to elicit the information regarding the frequency of use of Beta Carotene antioxidant and photochemical rich foods

Food items	Daily	More than twice in a week	Occasional	Never
Green leaf Vegetables				
Amaranth				
Agathi leaves				
Coriander leaves				
Curry leaves				
Celery				
Chekkurmanis				
Cabbage				
Drumstick leaves				
Spinach (palak)				
Roots and Tubers				
Beetroot				
Carrot				
Colocasia				
Garlic				
Onion small				
Onion big				
Potato				
Sweet potato				
Tapioca				
Yam				
Other Vegetables				
Beans				
Drumstick				
Cauliflower				
Lady's finger				
Tomato				
Mango (green)				
Papaya				
Onion stalk				
Fruits				
Amla				
Apple				
Banana				
Cherries				
Grapes				
Guava				
Jamun				
Jackfruit				
Lemon				
Mango (ripe)				
Orange				
Papaya (ripe)				
Watermelon				
Beverages				
Tea				

APPENDIX – VI

Formula For Making Food Use Frequency Table

$$\text{Score} \quad \frac{R\ S + R\ S \qquad R_n S}{N}$$

S_n	Scale of rating
R	Percentage of response selected at each
N	Maximum Scale rating

APPENDIX VII

Schedule used to ascertain the actual food intake of the respondents (24 hour recall method)

Meal	Composition of Meal	Raw quantity of each ingredient(g)	Total cooked amount (g)	Individual intake (cooked volume) (g)
Early morning				
Break fast				
Lunch				
Evening				
Dinner				

APPENDIX –VIII

Schedule to elicit information on clinical symptoms of the fisher folk

1	Na ne of the ıespondent		
2	He gl t		
3	Weıght		
4	H B		
5	Cunju ctıval Xeıosıs		
6	Bıtot s spot		
7	Co nel Xeros s		
8	N ght blındness		
9	Palp tatıo ı and b eathless ıess		
10	Angula Tomt ts		
11	Gloss t s		
12	Spongy bleed nɡ gums		
13	Mottled e ıamel		
14	Dental carıes		
15	Paleness of eyes		

16 Oral lesıon

a Leukoplak a

b SMF

c Oral ulce s

17 P ese ıce of cough

Chı onıc cough Co gh vıtl blood n Sputu

18 Hoa seness of voıce

Persıstent ot Pe s ste t

19 Change in Bowel / bladder habits

a Bleeding

b Black coloured stools

c Alterating Constipat on / d arihea

20 Morbidity Pattern

Have you had any attack of the following diseases dui i _ the last 6 months?

Diabetes melees			Jaund ce		
Hypertension			Epilepsy		
Heart disease			Skin diseases		
Kidney diseases/stones			Ch ckenpox		
Fevers Viral fever			Leptospiros s		
Chickunguma			Measles		
Denkey fever			Mumps		
Tuberculosis					
Malaria					
Typhoid					
Any other (Mention)					

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APPENDIX-IX

EXAMINATION OF HEAMOGLOBIN

(Cyanmethaemoglobin method)

Principle

He noglobin is converted into cyanmeth aemoglobin method by the addition of KCN and ferric cyanide The colour of cyanamethaemoglobin is read in a photo colour meter against a standard solution Since cyanide has the maximum affinity for heamoglobin this method estimates the total heamoglobin

Procedure

The procedure for estimation of the haemoglobin is by taking 20 ml of blood measured accurately from a hemoglobin pipette and delivered on to Whatman No 1 filter paper of size 2 x 4 cm The filter paper is then air dried and labeled This can be stored up to one week The portion of filter paper containing the blood is cut and dipped in 5 ml of Drabkin s solution taken in a test tube Wait for mix the contents 30 minutes mix the content against a reagent blank (Ragland anulu et al 2003) This procedure was followed here in the haemoglobin estimation of the sub sample and the reading obtained was tabulated for further investigation