# CULTURAL INLUENCES ON DIET AND THE EFFECT ON HEALTH

REPORT ON A STUDY TOUR TO GOA
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## 1. Introduction– reason for trip, method used in study.

The prevalence of cardiovascular disease and diabetes are both increasing in western societies leading to increase in morbidity and premature mortality. Obesity related to consumption of a high calorie diet and relative lack of physical activity is a major risk factor. The National Service Frameworks for cardiovascular disease and diabetes sets out standards for primary prevention and secondary care management of these conditions with attention to lifestyle factors including dietary management and increased physical activity. For people with newly diagnosed diabetes a structured education programme is advised.

Primary Care Trusts are tasked with ensuring implementation of these programmes in their populations. Health needs assessments carried out within the different communities and localities can help identify particular vulnerable groups or local needs. People from different ethnic backgrounds may have specific needs. The population in the Swindon PCT area is predominantly white British but there are increasing numbers of people from different ethnic backgrounds moving into the area following continuing expansion of the European Union, including those from the Indian subcontinent and from Eastern Europe.

People from the Indian subcontinent appear to have a higher incidence and prevalence of cardiovascular disease and diabetes. In Swindon there is a large community of people from the Indian state of Goa who have moved here over the last 7-8 years with their families, settling mainly in the centre of town in the Broadgreen area where the red brick Victorian terraced housing of the old railway workers provides affordable rented and privately owned housing stock. This community is noted to have a high risk of cardiovascular disease and diabetes though there is no system of ethnicity recording in place to quantify this. Most people in this community come the central area of the state around Panjim and tend to be working class catholic families who seek employment in a number of factories in and around Swindon.

The purpose of this study was to find out more about the dietary habits of this community, their perception of risk of heart disease and diabetes and what if any changes could be advised to help maintain optimum health and reduce the risks of heart disease and diabetes. The approach chosen for the study which was based on pragmatic reasons of limited time and resources, was to interview a number of families currently living in Swindon and then ask them to nominate a family member still living in Goa who would also be agreeable to being interviewed. The interviews were semi structured fairly informal interviews carried out in the persons home following a topic guide to explore peoples eating habits, culinary practices and cultural influences on changes in eating patterns in different generations and with the effect of migration. I spent a month in Swindon and a month in Goa visiting different family members and building up a picture of traditional and changing eating patterns.

The findings would be used to help develop suitable interventions in health education and health improvement in the Goan community in Swindon.

## 2. Geography, history, demography and culture of Goa

### i) Geography

Goa is one of the smallest states in India located on the west coast between Maharashtra and Karnataka. The eastern boundary is demarcated by the mountains of the Western Ghats and the west by the Arabian Sea. Nine main river systems drain from the Ghats across the central plateau area to form the khazans or saline flood plains in the tidal estuaries which have been carefully reclaimed over centuries with an intricate system of bunds (dykes) and sluice gates creating land for paddy fields and mangrove swamps which have been used for aquaculture. The Ghats and upper plateau area were originally heavily forested though much clearing has taken place for mining activities and replanting with cash crops such as cashew, arecanut, oil palm or rubber plantations. The plateau area comprising the red laterite stone used extensively for building throughout Goa, has been heavily affected by open cast mining for iron ore, manganese and bauxite. Every year over 80 million tonnes of iron and manganese ore are excavated using open cast mining producing 13 million tonnes to be shipped down the rivers to the ports to be exported mainly to Japan. This has caused serious ecological damage in the country. The rivers bringing silt and nutrients provide a rich environment along the coast for fish which is part of the staple diet for all Goans. Traditional fishing from nets cast from the wooden boats is still practiced along Goa's coastline but over the last twenty years the numbers of larger mechanised trawlers have risen leading to the dangers of overfishing and export of the best catch.

### ii) The history of Goa

Before the Portuguese colonisation of Goa in the early sixteenth century, Goa was a thriving Hindu city with important trade routes between East Africa, the Middle East and the interior of India, across Asia and into Europe. The large river estuaries of the Mandovi and the Zuari provided safe anchorage for trading vessels and caravans of spices, silk and precious stones from the interior were traded with goods from Arabia including ship loads of horses. The Hindu dynasties ruled over Goa for over seven hundred years. Muslim merchants from East Africa and Arabia also settled here. However between the tenth and fourteenth centuries series of Muslim raids giving rise to the destruction of many of the older Hindu temples and shrines. This led to a decisive Hindu reprisal in the fifteenth century and the resiting of the capital on the Mandovi river where the capital of Paniji remains to this day.

The arrival of the Portuguese, who were expanding their trade routes following the successful voyage round Cape of Good Hope in 1488 and the routing of the Muslim sea faring traders at the Battle of Diu in 1508, led to the establishment of the first European trading stations in India by Vasco da Gama and later the colonisation of the area by Albequerque. Not only were they able to capture control of the wealthy trading port but they also were responsible for the introduction of Christianity with the arrival of the missionary Roman Catholic Jesuits and the priest St Xavier followed by the introduction of the feared Inquisition. The majority Muslims had already fled the country but many of the larger population of Hindus, in the area known as the Old

Conquests, underwent conversion in order to appease the new rulers and to enable them to keep their land. The heyday of the Golden Age of Goa during the sixteenth century led to the expansion of the city of Old Goa with its huge churches and basilicas but by the later part of the century it was in decline following silting of the estuary, epidemics of malaria, plague and cholera linked to its location in low lying swampland, further offensives from Muslim invaders and increasing competition from other European powers especially the Dutch Protestants.

The weakened Portuguese rule was further damaged by British who were gaining control of other footholds on India's west coast and the Hindu Maharathas who were gaining control of land further north around Bombay. They responded by increasing and strengthening their control of more territory in Goa expanding to take over more inland areas now known as the New Conquests. The town of Old Goa was relocated further downstream to the current site of Paniji.

The Portuguese rule was to last over four hundred years altogether leaving a strong influence of western European culture. Disenchantment with colonial rule was most keenly felt by the Hindu community who were denied access to government jobs and positions of influence and a growing movement for independence emerged. This was exacerbated by the long rule of the right wing dictator Salazar who refused to relinquish control over Goa despite the British withdrawal from India in 1947.

During the 1950s many freedom fighters were imprisoned, tortured, shot or exiled to Africa or Portugal. During the twentieth century hundreds of thousands of Goans left the country in search or work, moving to Bombay, Bangalore or other Portuguese colonies in East Africa. Many men from poorer, low caste fishing families also took jobs in the merchant marine and in cruise liners, a tradition that still endures to this day.

India's first Prime Minister Nehru supported Goa's attempts for independence from colonial rule and eventually led the Indian army to enter the country and establish independence in 1961 initially as a Union Territory. Widespread economic changes rapidly changed the country from a traditional colonial society to an industrial capitalist one. Attempts by political parties to merge with Hindu Maharashtra state were eventually over ruled by a national opinion poll and in 1987 Goa was declared a separate state with it's own national language of Konkani.

**iii) Culture**

The long period of Portuguese rule (450 years compared to 150 years of British rule in the rest of India) has led to a distinct cultural identity quite apart from any other part of India. The general way of living is also markedly different with European influence evident in both dress, food and other habits. The people are hospitable, friendly and generally peace loving.

Despite the influence of Portuguese Roman Catholicism the majority of people in Goa are Hindus (around 65% of the population) especially in the hilly interior around Ponda and in the far north and south of the state in the areas known as the New Conquests where most of the Hindu temples and shrines are to be found. The Christian heartland (30%) is mainly in the centre of the state and the coastal regions of the Old Conquests where hundreds of whitewashed churches and wayside crosses are seen. Only a small number of Muslims live in the state (5%). The two main religions co-exist harmoniously with Goan people maintaining a strong identity with similar ways of life and use of the Konkani language. Some of the older Christian population still speak Portuguese but the numbers are dwindling with English becoming the major second language taught in schools and Hindu or Marathi spoken by many. People often participate in others religious festivals with Easter and Divali being popular national holidays for everyone.

Traditionally Goan families lived in villages in homesteads with surrounding land used for paddy fields that provided enough rice to feed the family and local farm workers for the year, and trees that provided coconuts used for food, making coconut oil and the local brew toddy, and seasonal fruits and vegetables. Families would have easy access to fresh fish which forms the staple ingredient of the Goan fish curry. The Portuguese introduced the use of beef and pork as well as chicken into the diet.

The rapid economic development that has taken place since liberation has led to many changes in the way of life from primary rural agrarian and fishing communities to more urban western lifestyles. During the period of colonisation by Portugal, which itself was comparatively unindustrialised compared to other European countries, Goa was able to access consumer goods without having industries to produce them itself. The main industry that Portugal encouraged was the mining of iron and manganese ore and bauxite and many mining concessions were granted to powerful families in Goa to foster their support during the unrest leading to independence. Over 13 million tonnes of ore is extracted by open cast mining and is carried by barges down to the coast for export mainly to Japan. Other developments since independence have been the building of multinational factories producing toxic pesticides and synthetic fertilisers.

The road and rail system has led to easier travel and communication and the building of the airport has led to the expansion of the tourist industry. This started in the sixties with the arrival of hippies from the west and has now grown extensively with the marketing of Goas golden beaches and palm trees to give rise to an influx of wealthy Indian tourists and package holidays for people from Europe, Israel and Russia.

Despite increasing development in both industrial and tourism sectors many people from Goa still seek the opportunity to work abroad. The opportunity to obtain a Portuguese passport and thus gain entry to other European countries in the European Union leads to a steady outward migration mainly to the UK Men also seek work in the Middle East for a number of years leaving their families back in Goa. This outward migration is countered by an inward

migration of transient workers from adjoining states of Utter Pradesh and Karnataka who seek work as labourers on construction sites.

The fishing industry has also changed significantly over the last fifty years with the introduction of mechanised fishing using large trawlers which threaten the livelihood of the traditional fishermen or ramponkars who used small wooden rowing boats. Much of the catch from the trawlers is sold to the tourist trade or exported leading to depletion of fish stocks for the local population.

Following independence in 1987 the political situation has been extremely unstable. Since becoming a state in 1987 there have been frequent changes of governments and reports of prolific corruption by the political class. Considerable concerns have been expressed about the ecological damage caused by the extensive mining industry and rampant violation of environmental regulations by the construction industry. The rapid rise of road traffic, unwanted refuse and plastic pollution continue unabated despite public protest. Over development of beach resorts is causing a tremendous strain on the infrastructures and local resources of water, food and electricity that are being diverted to the tourist trade at the expense of the local population.

However despite the problems of poor governance and environmental damage measures of human development have shown considerable improvement. Education is nearly universal and literacy rates (90%for boys and 70% for girls) are higher than other states in India (average 50%), and standards of living are generally higher. The per capita income is Rs 34,000 – among the highest in India.

**iv) Demography**

The population of Goa at the 1991 census was 1.34 million having grown from 590,000 at independence in 1961. This partly reflects the large numbers of immigrants from elsewhere in India who come to work as labourers and also traders from neighbouring states of Karnataka and Kerala and further afield from Rajasthan and Kashmir who bring goods to sell to tourists.

The decennial growth rate of the population has slowed from 26% between 1971 and 1981, to 16% from 1981 to 1991, compared to 24% and 26% for the rest of India. Fertility rates have now fallen below replacement levels so that apart from inward migration, population levels have stabilised. A high proportion of the population are urban dwellers (41% compared to 25% in the rest of India) and the growth rate in the cities is higher (48% compared to 36% for the rest of India) making it one of the most urbanised states in India. It also has one of the highest proportions of older people compared to other Indian states (7% over 60years). Only 4% of the population are from scheduled castes or tribes.

Life expectancy at birth for women is comparatively high at 72 years as against 62 years for all India, and for men is around 70 years. Around 90% of all births take place in medically supervised settings and the Infant Mortality Rate (IMR) is 20 per 1000 live births compared to the Indian average of 79 per 1000. However 1 in 13 infants still die before their first birthday – this includes

early neonatal deaths which account for 75% of the IMR. Respiratory infections are the major cause of death in the early neonatal period and road traffic accidents and drowning are major causes of death in older children.

## 3. Health services in Goa

### i) Hospitals

Goa has one of the most extensive health services in India with a medical school and tertiary referral hospital near Paniji, and two secondary care District Hospitals in Mapsa in the north and Margao in the south. A network of smaller hospitals and private nursing homes mean that there are nearly 4 hospital beds for every 1000 people in the state (as compared to 4 beds for 6,000 for India as a whole). About half these beds are in the private sector. Special hospitals are also available for the care of severely mentally ill and tuberculosis and chest diseases.

The first hospital was built in the old City of Goa by Albequrque in 1511 and was the first European hospital in India catering for the needs of Portuguese seamen recovering from long sea voyages, wars of conquests and infectious diseases prevailing in the city. The death rates were high mainly from infectious diseases such as malaria and sexually transmiited infections were common. General management and medical care were poor. Attempts were made to improve conditions and the hospital was moved to Paniji in 1842 to the former site of the Goa Medical College and teaching of medicine was started. The Portuguese were probably the first to teach western medicine and surgery in a systematic way in India and in Asia as a whole. As it was difficult to entice medical doctors from Portugal to practice in Goa the setting up of the medical school enabled local people to be trained. A number of other hospitals were set up by the Jesuits, Carmelites and other missionary groups to provide care for the local population including the poor and destitute offering aid to both Christians and non Christians.

### ii) Indigenous health care

The local population relied on indigenous and folk medicine for the greater part of Portuguese rule. An extensive network of practioners of all kinds existed such as herbolarios (herbalists), curandieros (quacks), feiticeiros (witch doctors), ghadis (shaman), sangradores (bleeders), priests, astrologers, magicians, charm sellers, surgeons, bone setters and others who have passed on skills from one generation to the next. Hakims (Muslim practitioners) and Vaidyas (Hindu practitioners) received knowledge passed on by their families using remedies prepared from bark, herbs and other local products. Vaidyas practiced ayurvedic medicine based on the principles of balancing the three elements wind, fire and water. Unani medicine introduced by the Arabs and homeopathy were also widely practiced. Vaidyas played an important role in early Goan society and were in great demand by both Portuguese and local people at a time when there was limited access to western trained doctors. They had good knowledge of tropical diseases and the basic subjects of medicine and therapeutics and the use of medicinal plants and many became well established in privileged roles in society.

**iii) Rural health care**
With the liberation of Goa in the sixties the state became part of the Indian health care system. Following independence in India it was recognised that a western hospital based system with highly trained doctors was not feasible or appropriate for providing comprehensive care in a developing country with a huge rural population, and following the Bhore Committee report of 1946 a system of rural health care had been developed with trained health workers providing basic care and advice in the villages. This system was rolled out across Goa to ensure access to the whole population and health care is now available near people's homes as a result of an extensive network of Primary Health Centres, Community and Urban Health Centres and Rural Medical Dispensaries. A team of rural health care workers including Anganwadi workers are now in place to help provide basic health care, preventive health measures and health promotion in all areas.

The basic tenets of the health care system stands on the three pillars of education, awareness and communication. Great emphasis is paid to the training and appropriate orientation towards community health personnel and their capacity to function as an integrated team. Initial focus in the early sixties was on the Family Welfare Programme to promote family planning and limitation of family size to help address the burgeoning birth rate and to promote improved mother and child nutrition and antenatal care. The rather draconian approach of this programme led to a change in policy and renaming as the Integrated Child Development Service targeting pregnant women, nursing mothers, and children under 3 and between 3 and 6yrs. The service was embedded in the local rural health system using trained health workers in each Primary health Centre.

In addition there are private medical practitioners in all parts of the state providing 1 doctor for every 1000 persons in Goa compared to every 2000 in the rest of the country. They usually provide a sliding scale of fees so that people with lower incomes are still able to access care. Although operating as independent practitioners, increasingly they attend regular educational sessions under the auspices of the Indian Medical Association so that quality of care and clinical governance issues can be improved. Frequently they work in loose associations or groups with neighbouring practitioners, referring patients to the same specialists and private hospitals or nursing homes for further care.

**iv) Vertical programmes**
As well as the system of locally provided rural health care India has a number of centrally driven vertical health programmes which are set in place across the whole country providing management and treatment for a number of infectious diseases including Malaria, Tuberculosis, Filaria and Leprosy. Other programmes included a national control of blindness, mental health and nutrition.

**v) Non governmental organisations**
As in other parts of India, Goa has a Voluntary Health Association which provides a forum for non governmental bodies working in the area on health

issues. These groups funded by charities and run by committed health professionals and academics are able to carry out research projects and set up initiatives which can highlight areas of need and provide examples of innovative practice and solutions. In Goa the organisation Sangath works with children, adolescents and families in the field of mental health and has carried out innovative work around child development and family guidance. Another group is looking at diet and nutrition in schools and there is a current study looking at cardiovascular disease and diabetes in adults. Some groups are concerned with vulnerable groups such as commercial sex workers and people with HIV/AIDS.

**vi) Public health issues**

Great emphasis has been placed on communicable disease control by the World Health Organisation and other international funders and these programmes tend to receive priority in resources leaving less time and energy on wider public health issues. This is a cause for concern especially in Goa which has seen rapid development over recent years and is now experiencing the epidemiological shift from the burden of disease of a developing country to that of a developed country but currently carrying a double burden. There is a growing awareness of the problems of chronic diseases of heart disease and diabetes, mental health problems, alcohol related issues and high rates of road traffic accidents. There is little motivation or capacity within the health department to develop strategies to assess local health needs and formulate policies to address these.

In 2001 the Voluntary Health Association of India helped initiate a report on the State of Goa's health and a group of governmental and non governmental health professionals contributed to its production. The report highlights the plight of a number of vulnerable groups and a range of issues affecting peoples health with some recommendations of the way forward.

The main strengths of the state were considered to be:

- high levels of literacy
- high status of women in the society
- fertility levels below replacement level
- relative good indicators of human development
- extensive network of health services in private and public sectors.

The main concerns were:

- excessive political interference in the public health sector
- poor standards of care in health facilities
- high rates of non-communicable diseases particularly road traffic accidents suicide rates and alcohol abuse
- persisting high rates of infectious diseases especially TB and malaria
- rising rates of HIV/AIDS
- health issues of vulnerable groups such as children, migrant workers and women experiencing domestic violence and the irrational production prescription and dispensing of medications

Although mentioned briefly, the report did not examine the rise of cardiovascular disease and diabetes. Over the last seven years since the report was published the concern about these diseases has increased as they become more widely prevalent and longer term effects become more apparent leading to high burden of morbidity and mortality with increasing costs to the health care system and to individuals.

## 4. Communicable Diseases

### i) Tuberculosis

Worldwide TB remains one of the major causes of death with over 8 million people developing TB each year and 2 million people dying from the effects of the disease. India accounts for one third of the global TB burden with 1.8 million people developing the disease each year and 0.4 million deaths annually. There is now increasing concern with the rise in multidrug resistant disease and with the association in people with HIV/AIDS.

The national programme was launched in 1962 and extended across the whole country. Review of the programme in 1992 revealed poor case detection rates of only 30% and low cure and treatment completion rates of only 30%. The annual incidence of one million new sputum positive cases and 0.5 million deaths annually depicted a depressing scenario.

The revised programme brought in the DOTS strategy (Directly Observed Treatment) which has helped counter the high default rates. The other main components are political commitment, diagnosis by sputum smear microscopy, ensured supply of drugs and accountability. The targets for the programme were to detect 85% of new smear positive pulmonary cases; so far the rates have increased to 65% (2005) with 86% successfully treated with DOTS and with sputum conversion rates of 90%.

The programme was launched in Goa in 2004 and by December 2005, 2245 patients had been put on the DOTS scheme. This has been carried out through a home based treatment service managed through 18 Designated microscopy centres with over 300 active DOTs providers who range from doctors, nurses, pharmacists, health workers, anganwadi workers or other socially minded citizen and overseen by the District Centres. Attention is paid to identifying a person who is trusted by the patient and who agrees to be accountable to the programme managers. If a person defaults from treatment and the DOTS provider is unable to locate them the programme manager will make every attempt to locate them within 48 hours. This is of vital importance to avoid the development of multi-drug resistant forms of TB.

### ii) Malaria

Although malaria had been a problem in the early part of the colonisation period by the 1960's it had been almost eradicated and doctors who have trained in Goa hardly saw a case during their medical studies. Recently however the picture has changed and since the 1980s it is making a comeback thought to be linked to the period of raopid construction work and

development which has led to an influx of migrant workers from other states where the prevalence is higher and who carry malaria infection with them and the increasing numbers of mosquitoes breeding in stagnant water in the construction sites. Outbreaks along the coast have become more frequent increasing from 100 cases in the mid nineties to 26,000 cases in 1997 with 97 deaths between 1995 and 1999. Both Plasmodium Vivax and Plasmodium Falciparum are seen. Considerable efforts have been made to control the spread of the disease with better awareness of the disease, issuing of health cards and health checks for migrant workers, more testing and presumptive treatment of people presenting with a fever while blood tests are awaited. This has led to a reduction of cases with 11,300 cases identified in 2003 of which 8,600 were in migrant workers and 2,700 in the local population and only 1 death was recorded in this year.

An extensive anti- malaria control programme is also underway with interventions to reduce the mosquito breeding areas, spraying of infected areas and rationalising drug treatment regimes.

**iii) Filaria**

This condition, also spread by mosquitos, is caused by an organism known as Wuchereria bancrofti which causes chronic damage to the lymphatic system leading to gross lymphoedema of the legs or elephantiasis. Definitive diagnosis is by recognition of the micofilariae in a night time blood sample. The national filarial control programme in Goa is run through 4 control units and 7 clinics. Over 18,000 people were examined by night time surveys in 2003 of which 10 new carriers were detected and treated, 600 domiciliary visits were carried out and 276 were seen in clinics and treated. The national programme involves mass treatment of the population every year over a five year period using a one off dose of medication.

**iv) Diarrhoeal diseases**

Improvement in sanitation and water supplies have helped reduce the burden of illness due to infectious diarrhoeal illness. Practically all dwellings have piped water nowadays although some people still rely on drawing well water when there is a water shortage. Most people also boil the water before using it for drinking. Septic tanks have been built in most villages providing drainage access for private homes and public toilets replacing the traditional method of pig loos where each home had back yard pigs which would scavenge of human excreta. The rural health workers provide advice and information on basic hygiene. In the main towns sewage systems have been built. However there are still problems with the infrastructure with leakage of septic tanks causing pollution of the underground water table and supplies to well water.

**iv) HIV/AIDS**

The number of known cases of people with HIV has increased from over 2,000 in 200, to over 11,000 in 2003. The epidemic has spread from the urban and coastal areas particularly where there are areas of commercial sex work, to rural areas as well. The problem has been increased by greater movement of people with the state highways and railways and increasing influx of migrant workers and tourists from other states in India as well as outside the

country. The population of Goa is around 13 million but there are around 12 million tourists visiting each year. The AIDS control programme is based on the three tenets of information, education and communication. Activities include a focus on clinical management and control of STDs, surveillance research, condom promotion, blood safety and reduction in the impact of AIDS. There is also an emphasis on AIDS advocacy through political and other opinion leaders. One of the problems is that many people seek help through private practitioners who are not always able to offer adequate follow up or preventive work. Other barriers are the difficulty in filling posts, the need to improve co-ordination with the TB programme and the low uptake of condom use is some sections of the community.

## 5. Non communicable diseases

The state of Goa demonstrates a society in 'epidemiological transition' where the diseases of poverty of a developing country like infectious diseases, diarrhoea and malnutrition are still present but the increasing wealth, urbanisation and changes in life style are leading to a rise in non communicable diseases such as heart disease and diabetes. Mental health problems, tobacco and alcohol related disease and traffic accidents are also becoming more common. This leads to a double burden of disease in the population and a challenging agenda for the health services to develop health policy and strategies for tackling these different problems with scarce resources and limited experience of trained professionals.

The state health service continues to follow the policy set out by the national government agenda of tackling communicable disease and rural health. The majority of primary care is still provided by independent private practitioners who are used to dealing with illness on a reactive basis and are not yet equipped to provide preventive public health programmes for their populations and do not have a fixed registered population as in the UK which can help in the management and monitoring of chronic diseases.

Some of the non governmental organisations working under the umbrella of the Voluntary Health Association of Goa have started carrying out valuable work in the area. Sangath has been surveying health of children and adolescents, helping to improve health promotion and education in schools relating to healthy eating, mental health issues and child development. Another group is carrying out a cohort study of people looking at cardiovascular disease. Some groups and charities help with particular vulnerable groups such as commercial sex workers, people with HIV and children needing care.

### i) Mental health issues

Depression and anxiety are amongst the most frequent illnesses in primary care attenders in Goa. One study carried out in 1996 showing more than a third of attenders at two government primary health clinics suffering from a clinically significant depression or anxiety disorder. Despite being one of the wealthier states in India many people present with unexplained physical symptoms such as loss of interest in daily activities, sleep problems, loss of

appetite or suicidal feelings. A clear relationship has been shown between female gender, economic difficulties and emotional illness. Two particular triggers are loneliness following children leaving home or husband working abroad and secondly having a problem drinker in the family. Poverty and disability are also strongly associated with emotional disorders. Many people do not necessarily discuss the underlying problems with a doctor and end up with prescriptions of vitamins or sleeping tablets rather than treatment with antidepressants or talking therapies which could be more beneficial.

**ii) Alcohol**

Alcohol is freely available in Goa which has the lowest taxes on drink in India. It has always been part of the traditional Goan culture with toddy tappers collecting sap from coconut trees to make a local brew known as toddy and another drink from cashew nuts called feni. Tavernas and bars are widespread and the availability of cheap beer and spirits is renowned in Goa. Kingfisher beer made in Goa is widely advertised and hoardings for different makes of spirits are common along road sides. Increasing numbers of mainly men now have serious addiction to alcohol leading to loss of livelihood, domestic violence and breakdown of families and early deaths due to cirrhosis. Many road traffic accidents are also attributable to alcohol. There is currently no public health program to help address the issues related to problem drinking.

**iii) Road Traffic Accidents**

The state of Goa has one of the highest incidence of road traffic accidents in the country. Most of the victims are between 20 and 40 and are earning members of the family. Accidents may lead to either mortality or disability with either temporary or permanent loss of functioning, giving rise to major burden both to the families involved and the society as a whole. The rise in accidents is demonstrated by the increase in head injury cases admitted to Goa Medical College from 250 in 1984 to 1500 in 1999. Causes are attributable both to human error, non observance of traffic regulations or safety measures (such as use of helmets) and to poor road conditions with lack of adequate pavements, poor lighting and lack of traffic safety signs. The rise in vehicles including cars, buses, lorries and two wheelers together with the numbers of stray cows and dogs on the road is a potent mix. Major efforts will need to be made to change from the status quo, to introducing and enforcing preventive measures which are adhered to by all the road users.

## 6. Coronary artery disease and Diabetes

The incidence of coronary heart disease and diabetes is increasing in South Asian populations. Not only do they have higher rates of acute myocardial infarction but also at younger ages. The reasons for this is unclear and a number of hypotheses have been put forward to explain this finding. Firstly central adiposity associated with glucose intolerance, dyslipidaemia and hypertension has been found to be higher in men from South Asia compared to those from the UK. Secondly dietary differences has shown an increase in certain fatty acids and a decrease in others as well as antioxidants in Indian

diets that have been partially adapted by western influences. The simple substitution of polyunsaturated fats for saturated fats may not be entirely beneficial. The third hypothesis is that high rates of obesity and less physical activity particularly vigorous activity are important risk factors. A fourth hypothesis implicates lower levels of Vitamin D that may impair pancreatic endocrine function. Fifthly while cigarette smoking may be less common than in the UK population chewing of betel nut (Areca catechu) one of the main constituents of paan masala is common together with chewing tobacco and both of these may play a part in affecting risk. The sixth hypothesis suggests that the access to health care services may differ including use of exercise stress testing and thrombolysis and people may present later in the disease process. Lastly psychosocial stress may play a part in both onset of cardiovascular disease and diabetes.

The traditional risk factors are age, gender, race and family history which an individual is born with and cannot be changed. Other risk factors or raised serum cholesterol, smoking, diabetes and hypertension can be modified