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Tourism, Nutrition and Women's Health in Goa

Shaila Desouza*

Abstract

This paper studies the links between contemporary development practice and gender concerns, particularly, the impact of tourism related development on the nutritional entitlement of women, and the consequent impact on their health. This has public policy implications for Goa, as it raises questions about the role of the state in tourism promotion. By examining the intersection between development and nutrition in Goa, we question the effectiveness of current development strategies in meeting women's fundamental right to health. The paper reveals that women living and working in tourism areas have a less-desirable nutritional status than those in non-tourism areas.

I. Tourism, Nutrition and Women's Health in Goa

Goa is renowned both nationally and internationally as a holiday destination and tourism has been prominent in the development policies of the state since its liberation from Portuguese colonial rule in 1961 (Newman, 1984; Equations 1993; Routledge 2000; Ecoforum 2002; Regional Plan Goa 2021). Tourism is often considered to be a 'non-polluting,' industry, which can generate substantial economic benefits with a minimum level of inputs, thereby making it an ideal channel for development. Tourism has grown to be one of the main pillars of the Goan economy (GoG Economic Survey 2007-2008) and is a significant source of income to people in Goa. According to Sawkar *et al.* (1998) tourism generates 13.7% of the state's net domestic product, 7% of employment and 7% of tax revenues and in the last decade it has grown substantially as is evident from tourism arrivals. In the year 2010, domestic tourist arrivals in Goa were 22,01,752, foreign tourist arrivals

* Centre for Women's Studies, Goa University. E-mail: shailagoa@yahoo.com

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were 4,41,053, making a total of 26,42,805 tourist arrivals. This is almost double the population of Goa, which was 14,57,723 (GoG and Census 2011).

Goa's reality, despite having a high per capita income (Rs. 1,05,582 (NSDP at factor cost at current prices) in 2007 – 2008 when the all India average was Rs. 24,295) and a high literacy rate (76 % female literacy and 89 % male literacy, when the all India average was 54 % and 76 % respectively (Census 2001)), has also an alarmingly high incidence of anaemia and a high rate of malnutrition among women (NFHSII and III), coupled with a declining sex ratio. While tourism is an income earner for the state, there is a great demand from tourists for local foods, particularly fish, prawns and fruit, which has resulted in a high cost of living in the state, apart from a host of other impacts that are discussed further.

The study on which this paper has been based, is aimed at a better understanding of the health effects of tourism development practice on gender. It raises questions about the impact of tourism on women's health. Have women really benefited from high growth in the tourism industry? Can tourism be a prime industry for the state? What has been the impact of the booming tourism industry on the health of the population, specifically on the accessibility and entitlement of women to nutrition? In this paper, we highlight how the development strategy of relying on tourism-led growth has impacted nutrition and the health status of women, who despite all the gains of the state continue to be vulnerable.

Gender, Nutrition and Health

According to the United Nations report about 80,000 pregnant women and new mothers die each year in India from preventable causes such as anaemia (UNICEF 2008). Women suffer disproportionately from iron-deficiency anaemia, iodine-deficiency disorders, and from stunting, caused by protein-energy malnutrition often due to stresses associated with the reproductive system, such as menstruation and pregnancy (Kitts and Roberts 1996; de Benoist, *et al.* 2008).

However, another equally significant cause of ill-health and lower nutritional status of women in relation to men is gender discrimination, which is often overlooked by the medical profession. Cultural practices related to food and nutrition often reflect the social biases against girls and women, starting in infancy with male children being breastfed longer than girl children. This inequality persists with an unequal distribution of food within the household where women and girls eat less and receive food of inferior quality and nutritive value (Sethuraman & Duvvury 2007).

The low nutritional status of women in India is largely a result of socially imposed food deprivation despite the fact that women 'control' the kitchen. Unequal food distribution within the household is exacerbated by inflation and poor access to nutritious food. A scarcity of natural sources of fuel such as twigs, dry leaves, and firewood, due to large-scale deforestation or urbanisation has been equally

detrimental to nutritional status of women (Kitts and Roberts 1996). Without adequate cooking fuel, women decrease the time food is cooked over fire or reduce the number of cooked meals, which contributes to worsening the nutritional status of women.

In India, it was only in 1983 that the Central Government through its National Health Policy included nutrition as an integral part of health care and directed the states to raise 'the level of nutrition and the standard of its people', as part of its core duty towards public health and reiterated the goal of 'Health for All by the Year 2000 A.D'. This policy placed greater priority on 'preventive, promotive and rehabilitative' aspects of health care (Kamalamma 1998: 79). But today, how far have we been able to meet this goal? Have the rest of the development policies been in sync with the National Health Policy?

II. Tourism Development in Goa

Goa saw many changes post liberation from Portuguese rule in 1961. Apart from the establishment of industries and banks, villages were electrified, roads and bridges were built and homes were connected with running water (ISS 1989).

The 1960s and 1970s saw tourists come to Goa in small numbers. The foreign tourists were mostly 'backpackers'. But, after the 1970s Goa became renowned both nationally and internationally as a tourist destination and tourism development began gaining prominence. Tourism was promoted as 'the' channel for development in Goa and was considered an ideal industry, which would generate substantial economic benefits with the least ecological footprint.

In 1987, the Government of Goa announced a Master Plan for Tourism, which outlined a plan for 19 five-starred hotels, 7 golf courses and the new 'chartered tourism' or mass, package tourism with foreign collaborations (GoG 1987). Tourism was critiqued by activists in the early years for being a neo-colonial power that would have dire socio-economic impacts (Equations 1995). Some of the feared consequences of tourism in the initial years of its development in Goa were the growth of prostitution, increase in drug abuse, incidence of AIDS, violence against women, cultural degradation with the commercialisation of traditional 'peoples' festivals, the promotion of a negative image of Goan women through advertisements and tourism brochures, the destruction of beaches through sand extraction for construction, the displacement of traditional occupations of fisher-folk, toddy tappers and others, etc. (ISS 1989).

With the growth of tourism there was a corresponding impact on the host community and the anti-tourism movement shifted its critique to environmental impacts such as the demand for water by tourist outlets resulting in a scarcity of water for locals, the nature of employment for locals, which were merely servile positions of waiters, room service personnel, etc. (Desouza 2004). They questioned the tourism infrastructure that was being set up, and critiqued the government's

move to set up a special police force for the protection and guidance of tourists from locals (*ibid*).

While the anti-tourism movement was initially seen as an ivory-tower intellectual movement, after the declaration of tourism as an 'industry', the 1990s saw many more join the movement with village-level anti-tourism 'NagrikSamitis' as the adverse effects on the host population became evident (Equations 1995). One reason was that in addition to financial concessions, the tourism industry could also get land though the state acquisition in the name of 'public purpose' and 'development'.

Transitions in the Tourist Industry

The expansion of the Konkan Railway, budget airlines and the concerted efforts of the State Tourism Department to draw domestic tourists due to fluctuations in the number of foreign tourists has resulted in a remarkable rise in the number of domestic tourists. Since the 1990s there has been a hard sell of the small state and now the tourist inflow is greater than the size of the local resident population. The population of Goa was 13,43,998 in 2001 (Census of India) while the tourist population in that year was 13,80,313 (GoG 2008). The population of Goa in 2010 was 14,57,723 (Census 2011), while the tourist population in 2010 was 26,42,805 (GoG). Earlier the 'peak' tourist season was between the months of October and March, but there has been a concerted effort to keep the numbers flowing 'all year round'.

Environmental concerns about Tourism

Critics of tourism in Goa have long argued that there have been a broad range of environmental and social costs of tourism development in the state and on its population. Tourism development in Goa has been undertaken without due regard for its environmental effects such as the destruction of mangroves, khazans and saltpans of Goa (Sonak *et al.* 2006). A study estimating the resource-use patterns in Goa found that the high-budget and luxury hotels had the least built-up area in relation to their total land area, implying that they exerted the least congestion pressure on land resource (Kazi and Siqueira 2006). In contrast, the low-budget hotels required the least land per tourist. In other words, the land usage per tourist hosted, is more intensive in the high-budget and luxury hotels. Furthermore, most hotels of all categories were built in previously open or 'barren' land, with a number of these hotels and their facilities having been constructed in agricultural lands, especially khazan lands (Noronha *et al.* 2002).

Another concern was ground water pollution. Given that the most of rural Goa's sewage disposal is through septic tanks in the ground, with the increased tourist population in the coastal belt it is a possibility that wells could get contaminated with the overflow and seepage of sewage into the ground water supply, as much of the coastal belt still relies on well water (Gardner 1998).

In this paper we do not focus on the environmental question but concentrate

on two related impacts, both of which pertain more directly to women's health and therefore, on well-being. We examine the impact of food availability specifically farm foods and fish on women's nutrition and health. We examine the secondary data on agricultural output and fish production and match this with data from field surveys in tourism and non-tourism areas. We question whether tourism by offering livelihood options, improves well-being or not. Does tourism lead to a decline in farm output by wooing scarce land? Does it make fish unaffordable by increasing market prices? Has tourism affected food availability and nutritional intake, especially for women, who are known to be discriminated against even within the family in terms of nutrition distribution[1].

Tourism and Land Use: Agriculture and Food Production

When tourism was notified as an 'industry', the government permitted land to be acquired in the name of 'development' for the purpose of golf courses as well as other large tourism related projects (Deccan Herald, Bangalore, 2 May 1992).[2] The land acquisition for golf courses and then for large hotel projects has raised concern about the impact on people's livelihoods. Purportedly using 'barren land' for these projects over-looked the fact that these lands actually supported multiple life forms, the most visible use being fodder for animals. Tourism development resulted in large-scale land conversions from agricultural to settlement zones. It has also been argued that tourism has accelerated the decline of agriculture in Goa, by providing locals a lucrative alternative for the lateral transfer of investment capital, land, and labour (ISS 1989).

Agriculture in Goa has also been affected by a neglect of '*bundhs*' (barriers maintained earlier by the community to protect fields from flooding) (Mukhopadhyay 2005), which has resulted in flooding of fields particularly during the monsoons. Many reasons are attributed to the decline in farming:

1. *Unprofitability and labour*: A decline in farming has also resulted from the fact that it is no longer considered a viable profession. The younger generation of farmers now find jobs in the tourism sector, or migrate and send remittances (Equations 1995; Sawkar *et. al.* 1998; Mukhopadhyay 2005; Desouza *et. al.* 2009). Goa has one of the highest remittance rates in the country. High labour costs, shortage of water in the *khullaghars* (plantations) of coconut, *arecanut*, pepper and bananas, pests, and the low market rates of produce such as sugarcane, cashew, and varieties of fruits are just some of the reasons why traditional farmers are turning to other jobs. The percentage of cultivators and agricultural labourers has dramatically decreased (GoG 2008).

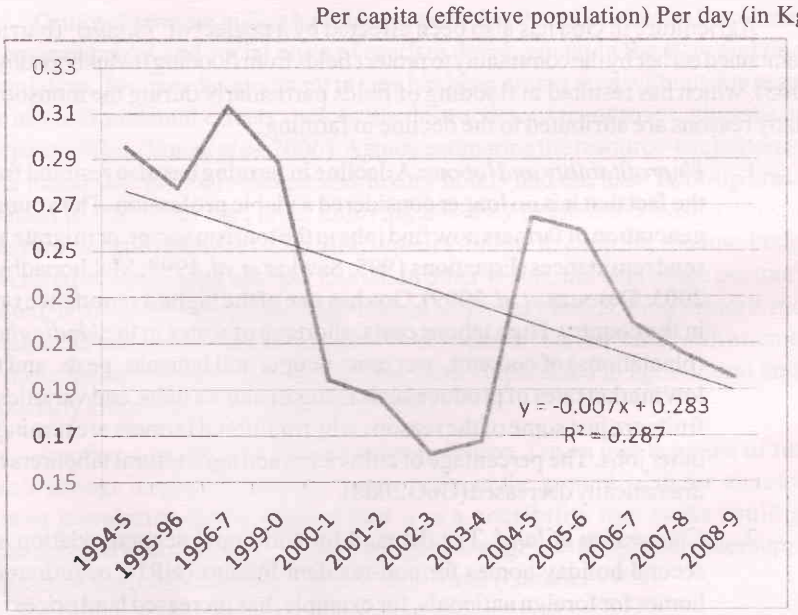
2. *Conversion of land*: The demand for additional accommodation and second holiday homes for non-resident Indians (NRIs) or retirement homes for foreign nationals, for example, has increased land prices and motivated coastal residents to sell their land. There has also been massive

legal and illegal land conversion from agriculture to settlement zones.

3. *Declining productivity & salinity ingress*: There have been reports that there has been a decline in productivity in some parts of Goa either due to soil exhaustion or due to salinity ingress. In areas close to the coast *khazan* lands were protected by *bunds* from tidal movements, but of late there has been a perceptible decline in their maintenance. There are reports that there is frequent loss of production due to salinity ingress (Mukhopadhyay 2008).

The traditional Goan diet consisted of fish, curry and rice *(xithcoddinistem)*, which was based on the Goan ecosystem, a symbiotic relationship between people and nature. The traditional diet also included local produce such as red millet (*nachne*), coconut, vegetables such as pumpkins, gourds, tubers, green banana, green papaya, white radish (*moolim*), cluster beans, brinjals, and leafy vegetables like red amaranth *(tambdibhaji)*, root vegetables such as several types of yams and tapioca, and of course, a wide variety of seafood (Narayan 2005). Meals throughout the year, except during monsoon, revolved around fish from different water bodies including rivers, lakes, ponds and inland waters. Even during the monsoon when large-scale fishing is banned, Goans ate fish that they had dried, salted and/or pickled for this period. The diet was complemented by other local produce such as cashews, wild mango (*ambade*), *kokum*, and tamarind.

Figure 1: *Rice production in Goa 1994- 2009*



Source : GoG (Several years) and author's calculations

Data presented in Figure 1 indicates that production of Goa's staple, namely rice, has also been on the decline. The current per capita production of rice is 200 gms per person per day[3] while the average per capita consumption of rice in India is 208 gms (Kennedy *et. al.* 2002). At first glance this difference seems negligible. However, given that the staple for large sections of India's population is wheat, *bajra* and *jawar*, the scenario in Goa where the staple is rice, becomes more evident. Further if we were to compare the per capita production of rice in Goa with the average per capita consumption of rice per day in countries where the staple is also rice, such as Vietnam (465), Bangaladesh (441), Thailand (285), Phillipines (261) and China (251) (gms per person per day), the gap in local production (namely 200 gms per person per day in Goa) would be more glaring (*ibid*).

A study based in Goa, discussed later in this paper, revealed notable changes in food consumption patterns, in the last 10 years. There is a shift from traditional foods like red millet (*nachne),* thick non-polished red boiled rice, locally grown vegetables, fruits and berries to polished rice, processed foods in cans or ready-to-serve packages, 'junk' foods, and fruits and vegetables imported from other parts of the country. Simultaneously, there has been an entry of more exotic and expensive vegetables such as: broccoli, mushrooms, capsicums and other such foodstuff preferred by both Indian and foreign tourists.

We now turn our attention to another important component of Goa's staple – fish.

III. The Impact of Tourism on Fishing

There has been a debate on the fishing industry, which is basically along the following broad contours:

1. *Over-fishing & exhaustion of stocks*: Local and global demand for fish lead to introduction of high intensity fishing using mechanised trawlers.
2. *Livelihood*: Tourism displaces the traditional fishers (*ramponkars*) by occupying physical space on the beaches thereby affecting the livelihood of traditional fishers. With the growing number of shacks on the beaches, deck chairs and the recent entry of water sports operators, the effective space for fishers to park their boats, repair the nets, etc., has shrunk remarkably. The shacks are erected at the start of the tourism season, i.e., around September, which coincides with the start of the fishing season resulting in a battle for space on the beach and access to the sea (see Sawkar *et. al.* 1998).

With the introduction of water sports, motorised water scooters, speedboats with outboard motors and jet skis are all responsible for damaging fishing nets, disturbing fishing activity and affecting the catch (Equations 1995).

Particularly affected are traditional fishermen who rely on canoes, the

Ramponkars, those using gill nets and those involved in collecting shell fish (*tisryo and kubear*). Their access to the sea and the beaches, which constitute public space, has been severely restricted or even denied. The water sports activity also tear up their fishing nets.

Even deep-sea fishing is affected by the 'off-shore' casinos and cruise boats, which were introduced with the Government of Goa's promotion 'Go Goa 365 days'.[4] Five of the six jetties in Goa, which were used by fishermen have been leased out to off-shore casinos or the tourism industry to dock various luxury cruises without making adequate alternative arrangements to the fishing communities.

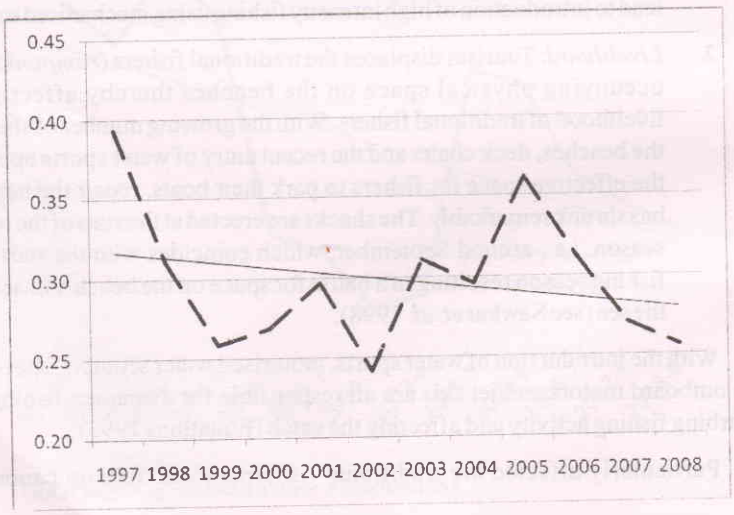
a) *Environmental concerns*: The quality of fish caught has also been questioned for its quality because of increasing pollution upstream and in high seas by ocean liners, which could damage the fish cycle and have adverse human health impacts.

b) *Cost and availability of fish*: Large inflow of tourists reduces availability of fish to the local resident population and also makes it too expensive for local consumption as restaurants catering to high paying tourists buy the bulk of fresh fish caught thereby depleting availability for resident population.

It is evident from Figure 2 that availability of fish for domestic resident consumption (per capita) has been declining steadily in the last decade. Considering that this is a staple diet in the state it is a cause for concern.

Figure 2 : *Domestic availability of fish to resident population in Kgs/per person per year*

(Excludes exports and estimated demand from tourists from total fish catch)



Changes in the fish catch with a decline in the fishing communities' access to the seas and pollution of the marine eco-system have contributed to inflation in the cost of fish and low availability of fish in the local market. This can have short- and long-term effects on the nutritional status of the local population whose staple for generations has been 'fish curry and rice'. Further the demand for food by the tourism industry in Goa has been one of the causes for the inflated cost of living and has made even the local staple food, fish and fruit in particular, inaccessible to the local population (VHAI 2001: 18). The shortage of fish supply, the rising costs of fish and other foods may cause a reduction in women's daily nutritional intake of protein, vitamins and minerals, leading to other health-related problems.

Given that there has been a decline in both the production of rice and the domestic availability of fish to the local population, we now need to investigate whether this has had any adverse impact on nutritional intake and health of the local population. In order to do that, we examine recent survey data in Goa that involved 300 women from two different villages in Goa – one, a popular tourist area and the other, with no tourist accommodation available and therefore minimal links to tourism. In the next section we discuss some of the findings of this study.

IV. Studying the Nutritional Status of Women

Selection of Study Sites and Respondents

The field survey involved two villages: Candolim (a coastal village) and Mandur (an interior village); each represent contrasting levels of tourism development. The two panchayat villages are equidistant from the state capital Panaji and had similar population sizes (8000 – 10,000 persons).[5] The study was restricted only to areas that are *not* considered 'urban' by definition of whether they are panchayat or municipal areas as per the census classification. The reason for this was that urban areas have a more diverse population and also several other forces that might regulate the diet of that population. A list of all the villages in the 20 km radius from the state capital was made and the populations recorded. Information was then collected about the tourist accommodation in these villages from data provided in the Tourism Directory published by the Department of Tourism, Government of Goa. From the list of villages with high tourist accommodation available, we randomly selected one village and from the list of villages with no tourist accommodation we randomly selected the second village for the comparative study. Candolim, the coastal tourist village was chosen from the list with a high number of tourist accommodations available in the village and Mandur, the non-tourist agricultural village was chosen from the list, which had none. Candolim in Bardez Taluka, is a coastal tourist village, and Mandur in Tiswadi Taluka, is located in the interior part of the state with virtually no direct influence of tourism. Although both the villages are equi-distant from the capital city Panaji, the availability of tourist accommodation and the population size of the villages were the primary criteria for selecting them for the study.

The electoral rolls were collected from the Panchayats of both villages. A list of eligible women in the age group 18 – 60 was drawn up from the electoral rolls. A sample of 300 respondents was drawn up from this list by systematic random sampling method, selecting every tenth woman in the list in each of the two field-sites. Data collection was done between October 2007 and March 2008. Quantitative data through individual questionnaires was gathered through a survey of 150 women between the ages of 18 and 60 years in each village. The respondent's height and weight was also measured during the time of the interview and the Body Mass Index (BMI) calculated.

BMI as a Measure of Nutritional Status

The Food and Agriculture Organisation (FAO) recommends BMI (see Table 1) as the anthropometric measurement to assess the weight adequacy of adults (FAO 2001). BMI, otherwise known as Quételet's index, is calculated based on the following formula: Weight/Height^2 (W/H^2). In the metric system, the weight is calculated in kilograms and the height in meters. Of the four primary methods of ascertaining the nutritional status of an individual, namely anthropometric measurements, clinical examination, biochemical analysis and a diet survey, BMI measurements are not only simple to carry out but also sensitive to the food consumption levels, physical activity, socio-economic changes and seasonal fluctuations in food consumption levels. Furthermore, BMI measurements can be carried out quickly by lay professionals and the results are available immediately, thereby making them more conducive to community-based studies (Rao and Vijayaraghavan 2004). Since the study had a limited budget and a sample size of 300 respondents, it was essential to employ methods that could be easily administered and would provide a fairly accurate assessment of the health status.

Table 1 : *BMI classification system*

Category	BMI range – kg/m^2
Severely underweight	less than 16.5
Underweight	from 16.5 to 18.5
Normal	from 18.5 to 25
Overweight	from 25 to 30
Obese Class I (obese)	from 30 to 35
Obese Class II (clinical obesity)	from 35 to 40
Obese Class III (morbidly obese)	over 40

Source : WHO 2009

Table 2 : *Significant Difference in Mean Expenditure Village-wise (Unequal Variance, T-test)*

	Items (N=297) (Mandur 150 &Candolim 147)	Ho:: Mean(Mandur)-Mean(Candolim), H1:: Diff <0
1	Vegetables	Pr(T < t) = 0.0052
2	Fish	Pr(T < t) = 0.0007
3	Meat	Pr(T < t) = 0.0000
4	Milk	Pr(T < t) = 0.0429
5	Fruit	Pr(T < t) = 0.0177
6	Non-Fuel Expenditure	Pr(T < t) = 0.0003

The same results emerge with equal variance test also.

Our choice to employ BMI was confirmed by many other studies which use the same tool to assess the nutritional status of populations around India and the world (Bailey and Ferro-Luzzi 1995; Popkin and Doak, 1994; Rotimi *et al.* 1999; Shetty and James 1994). In a study conducted by the FAO, for example, it was found that BMI was not influenced by ethnicity, age and height in various population groups across the world. A study in Brazil also revealed that socio-economic status had an effect on the BMI of both adult male and female populations. Similarly, changes in the BMI were reported with corresponding changes in the socio-economic status of populations in India and Africa. Even in situations where height cannot easily be measured, such as that of elderly people suffering from spinal deformities, BMI remains the basic anthropometric measurement tool with arm-span as a substitute for height, as in the case of Ethiopia (de Lucia *et. al.* 2002).

V. Discussion of Findings

The survey revealed that the coastal tourist village, Candolim, not only had visible impacts of development, such as large-scale construction activity, large hotels, shops and other tourism infrastructure but also intangible development indicators as well. These impacts include: (a) a higher education level of women: 32% of the women had completed the higher secondary level and even studied beyond in Candolim as compared to only 13.3% in Mandur; (b) there was a higher age for marriage in Candolim and a larger number of unmarried women in the 26–35 age group in Candolim (11.3%) compared to Mandur (6.7%); and (c) women's participation in decision making in relation to household expenditure was also greater in Candolim.

Using the BMI as the main indicator of nutritional and health status, we examined how different socio-economic characteristics of women matched their health status. It is assumed that everyone desires to have a normal BMI and therefore any deviation from it is either a compulsion of economic circumstances, a lack of awareness, or a lifestyle choice. A deviation below the normal BMI is indicative of

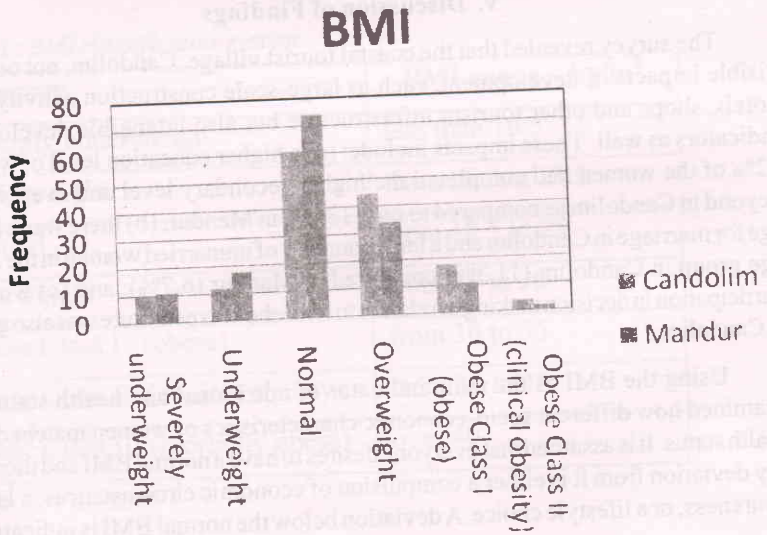
Table 3 : *Difference in Proportion of people with Normal BMI (T-test for difference n proportion with equal variances)*

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	136	.51	0.04	0.5	0.4	0.59
1	127	0.41	0.04	0.49	0.3	0.496
Combined	263	0.46	0.03	0.499	0.39	0.5
Diff		0.098	0.06		-0.02	0.22

Diff = mean(0) - mean(1) t = 1.5935
Ho: diff = 0 Degrees of freedom = 261
Ha: diff > 0
Pr(T > t) = 0.0561

Figure 3 : *Distribution of BMI's in Tourism and Non-Tourism areas*



undernourishment and a deviation above the normal range indicates obesity.

The variable *BMI_devNorm* measured the deviation of an individual respondent's BMI from the normal range. In the first instance we found the correlation between variables that may have links with BMI, e.g., *Tourism* (if the individual is working in a tourism related activity), *Paidwork* (whether the individual is paid for participating in the labour force), *Decision Role* (whether the woman makes the household decisions in a majority of instances), *Agri Land* (whether the household owns any agricultural land), and *Candolim* (whether the resident is from Candolim village).

BMI_devNorm was not significantly correlated to any other variable except *Candolim* (at the 10% level). Interestingly, however, *Candolim*, *Tourism* and *Paidwork* are significantly and positively correlated, implying that availability of paid work is more likely in Candolim, and in the tourism sector. Further, ownership of agricultural land was significantly negatively correlated to *Paidwork* and residence in Candolim. This implies that respondents in Mandur reported greater ownership of agricultural land but the women in Mandur did less paid work than in Candolim. It could also imply that those who owned agricultural land are less likely to be in the paid workforce.

The data collected in this survey also revealed that the role played by women in household decision-making is significantly and positively correlated to residence in Candolim, the tourism area. This, when read in conjunction with the result that paid work is more in Candolim, suggests that women have a greater say in household decisions when they are economically empowered.

When tested for equality of means in expenditure on all the main items of food in the two villages (see Table 2, for one-sided T-test), we found a significant difference (a=0.05). Respondents in Mandur on average spent significantly lower amounts on vegetables, fish, meat, milk, fruit and all non-fuel items taken together. Does that mean that they had a lower nutritional status than women in Candolim? In order to test that we did a T-test for proportion of people who were in the normal BMI range and those who were not. It turns out that the proportion of women with normal BMI in Mandur is significantly higher than the proportion in Mandur (see Table 3).[6] This implies that women in Mandur despite spending less on food and non-fuel items reported a significantly larger proportion of women who had a normal BMI than that of Candolim (see Figure 3). This is contrary to expectations. It is well accepted that the economic opportunities are greater in tourism areas as are average incomes and this is borne out by our earlier findings that more women are in the paid workforce in Candolim than in Mandur. However, there is evidence in the literature that income and health are not correlated in developing countries (Deaton 2007).

There could be a number of reasons for this. One possibility is that the cost of living is higher in Candolim. This survey could not confirm this hypothesis, as we did not collect any data on cost of living.

Table 4 : *Expected Outcomes*

Dependent variable: deviation of BMI from Normal

Sl No.	Independent Variable	Expected Outcome	Reason
1	Non-fuel expenditure	Can't say	High cost of living in Tourism areas may negate any income gains
2	Candolim	Positive	Exposure to Junk foods
3	Decision making by male	Can't say	Can depend on many factors
4	Paidwork	Can't say	Depends on the kind of work
5	Change in food habits,	Positive	There has been shift to junk foods over the years and any change from traditional diet is expected to show deviation from normal BMI
6	Age	Positive	Higher age should show higher BMI as women tend to put on weight as they grow older when income/expenditure has been controlled for.
7	Education	Expect Normal	Higher education should lead to normal BMI

Table 5 : *Summary Statistics for Variables in Regression Analysis (N=262)*

Variable	Mean	SD	Min	Max
BMI_devNorm	1.16	2.83	-4.7	14.1
NonFuelMon	1851	1209	734	6020
Candolim	0.48	0.50	0	1
ChngFood	0.4	0.49	0	1
Decision_Male	0.18	0.39	0	1
Edu	4.7	1.97	1	8
Age	40.7	11.2	18	62
Paidwork	0.2	0.4	0	1

Table 6 : *Regression results for BMI deviation from Normal range*

Source	SS	df	MS		
Model	175	7	25	Number of obs = 262	
Residual	1918.6	254	7.6	F(7, 254) = 3.31	
Total	2093.8	261	8	Prob > F = 0.0022	
				R-squared= 0.084	
				Adj R-squared = 0.058	
				Root MSE= 2.75	

BMI_devNorm	Coef.	Std. Err.	T	P>|t|	[95% Conf. Interval]	
NonFuelMon	0.00036	0.00014	2.35	0.019	0.00006	0.00064
Candolim	0.37	0.37	1	0.3	-0.36	1.1
ChngFood	0.98	0.53	1.8	0.07	-0.07	2.02
Decision_M~e	0.56	0.46	1.23	0.22	-0.34	1.47
Edu	-0.06	0.09	-0.67	0.5	-0.24	0.12
Age	0.007	0.02	0.31	0.76	-0.04	0.05
Paidwork	-0.16	0.45	-0.35	0.73	-1.05	0.74
constant	-0.15	1.04	-0.15	0.8	-2.2	1.89

Since the correlation matrix did not reveal any causal relationships, as a further step, we attempted to find reasons that would explain the deviation of BMI from the Normal range (reasons for poor health). In order to do this, we set up a regression model:

Deviation from Normal range of BMI = f

[Non-fuel expenditure, Candolim (Tourism area)
Decision making by male, Change in food habits,
Age, Education, Paidwork)]

It is expected BMI deviation from normal is influenced by the variables summarized below. The expected sign of the co-efficient is also indicated in Table 4.

It may be noted that we have used non-fuel monthly expenditure (essentially expenses on food) instead of income, as it is less reliable. Further as has been noted earlier, income and health are not correlated (Deaton 2007).

The summary statistics are presented in Table 5 and the regression results in Table 6.

The Ordinary Least Squares (OLS) regression analysis informs us that, non-fuel monthly consumption and change in tastes and preferences are individually significant. Candolim and male decision-making are individually not significant but add to the overall goodness of fit.

This implies that expenditure in non-fuel food consumption is expected to increase the deviation in the BMI from its normal range. The fact that the Candolim variable is jointly significant suggests that this deviation from Normal (on the above normal range indicting obesity) could be attributed to greater exposure to junk food

as argued in an earlier section. This is further strengthened by the result that change in food habits is highly significant. These results further suggest that the likelihood of such deviation taking place is more likely when men make household decisions.

The survey findings also confirm the expectation in terms of routine diet in Goa. The two primary components of the daily intake apart from rice for 84 – 90% of the women are dairy products (milk or curd) and fish. About 97% of the respondents in both villages together eat fruits either daily or weekly. However, less than one-fourth of the total sample population consume pulses or beans, eggs, vegetables, including green leafy vegetables, and meat on a daily basis. Only 56% of the sample population consumes pulses or beans on a weekly basis and a dismally low 3% consume these on a daily basis.

While the respondents felt that there was no significant change in the food consumption in terms of quantity over the past ten years, over 70% of respondents felt that the food quality has degenerated.

VI. Conclusion

Although tourism might have brought certain affluence to households in the tourism belt, it has not translated to better health status. The increase in tourist traffic in the state has pushed up the demand and prices of basic food making access to nutrition a hurdle to the health of the host community. Women's health is a critical component of development due to their essential productive and reproductive roles. Yet, women often bear a greater brunt of malnutrition, illness, and disability than men. Women's nutritional status and subsequently, health are affected not only by their biological constitution but also by two critical social features, namely gender discrimination in food consumption patterns and an unstable ecosystem. Both of these could be present in Goa and caused by tourism.

With a decline in agriculture and forest land in and around tourist areas such as Candolim, the population is more dependent on the market for food, while in non-tourism areas such as Mandur agriculture, kitchen gardens and forest cover still exist. As the state moves towards a greater dependency on the market for food it becomes imperative to: (1) create greater economic opportunities for people, (2) support local produce and encourage agriculture, (3) implement supplementary nutrition schemes in areas with low BMI, (4) educate people on healthy eating habits and low-cost nutritious diets, (5) curtail the conversion of agricultural land into settlement area (6) control food prices so that basic food is accessible to all. Instituting cards for local residents to enable them to purchase food at a lower price than tourists could also be considered.

Notes

1 In order to measure the impact of a floating tourist population we have assumed that an average tourist stays for 5 days but has a spending intensity, which is 10 times the average spending propensity. This assumption is supported by other

studies like Sawkar *et al.* (1998) and GoI (undated).

2 Two sites selected for golf courses covered a total of 16.40 lakh square metres (Director of Tourism letter No. 3/6(117)/93-DT/2006 dated 8/6/93 to *Bailancho Saad*) resulted in a massive protest raised by the women's movement in Goa.

3 The average per capita rice production per day in Goa is calculated by dividing the annual production by the effective population and the number of days in a year (365). The calculation of the effective population is described in endnote 2.

4 In March 2009, all six off-shore casinos were directed to suspend all operations by the Goa State Pollution Control Board (GSPCB) under section 5 of the Environment (Protection) Act 1986 read with Hazardous Waste (Management and Handling) Rules 1989 as amended in 2008. This was because they were violating basic regulations in relation to pollution of the sea and rivers. The off-shore casino vessels on inspection were found to be generating used oil and waste oils that were being dumped into the sea. Press releases in March 2009 also reported garbage was thrown and sewage tanks emptied into the sea and rivers, thereby adversely affecting the marine eco-system.

5 The process of village selection involved a listing of all the villages within a 20 km radius from the state capital, Panaji. Information was then collected about tourist accommodation in these villages from the Department of Tourism, Government of Goa. From the list of villages that had high tourist accommodation, we randomly selected one village and from the list of villages without any tourist accommodation we randomly selected the second village for the study. Candolim in Bardez Taluka, has a high number of tourist accommodation and Mandur in Tiswadi Taluka, located in the interior part of the state has virtually no direct influence of tourism.

6 In both Candolim and Mandur a similar percentage (7%) of women were severely undernourished with a BMI of less than 16.5. However, the percentage of women with a 'normal' BMI of 18.5 to 25 was higher in Mandur (49.3%) than in Candolim (40.7%). A higher percentage of women who were overweight with a BMI of 25 to 30 were found in Candolim (30%) than in Mandur (23%) and the percentage of respondents with a BMI indicating clinical or morbid obesity in Candolim (12.0% and 2.7%) was almost twice the percentage of women in the same categories in Mandur (7.3% and 1.3%).

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