Food Security – A Case Study of Dakshina Kannada District

Abstract

The human development and food security are codependent, with nutrition outcomes at their intersecting point. This joint relationship is founded on the availability of and access to food, which is critical for achieving food security. Malnutrition is the result when these prerequisites for food security are flawed, which in turn impedes human development. This paper examines Dakshina kannada's district's food security scenario through food availability, food accessibility, and nutrition indicators. The study is based on secondary data and this is a Working **paper, under ICSSR (Under IMPRESS Scheme) sponsored project on, Food Security in India : A case Study of Coastal Karnataka.**

Key words: Food security, nutritional security and inter taluk disparity

1. Introduction

The concept of food security generally defined as both physical and economic access to food that meets people's dietary needs as well as their food preferences. But food security is a complex sustainable development issue, linked to health through malnutrition. Theoretically, food security and human development are codependent, with nutrition outcomes at their intersecting point. This joint relationship is founded on the availability of and access to food, which is critical for achieving food security. Malnutrition is the result when these prerequisites for food security are flawed, which in turn impedes human development. Review of literature reveals that ensuring food and nutrition security is a challenge for India given its huge population and high level of poverty and malnutrition Food security has four components, viz., availability, access, and absorption (nutrition) and utilization and all the four are interconnected. Many studies have shown that improvement in nutrition is important, even for increase in productivity of workers. Thus, food security has intrinsic (for its own sake) as well as instrumental (for increasing productivity) value.

2. Objectives and Methodology

This paper examines Dakshina kannada's district's food security scenario through food availability, food accessibility, and nutrition indicators. In this backdrop, this research paper aims to examine the trend of inconsistent in nutritional security vis-a vis human development and economic growth rates in Dakshina Kannada district. The research question presented is why, despite accelerating economic growth, and good human development this progressive coastal district of Karnataka experiencing increasing malnutrition among children and women. We hope to argue that, although District has shown sufficient success in

economic and human development, persisting of malnutrition may traced to the inter taluk disparities in employment and poverty levels and lack of food diversity among the people leading to increasing malnutrition cases. This research paper is based on secondary data.

3. Discussion

Dakshina Kannada ranks third in total Gross Domestic Product (GDP) and 2nd in per capita income out of 30 districts in the Karnataka state. In terms of all indicators of human development Dakshina Kannada district remained one among top five district of the Karnataka state. The district has lowest level of poverty. The factors contributed to this virtuous cycle of development are the earlier rapid progress in the industrial and service sectors, enabling infrastructure, education and health facilities, remittance from migrants, conducive cultural heritage and enterprising nature of the people.

Here we are trying to analyse Dakshina kannada's food security scenario through food availability, food accessibility, and nutrition indicators. Food availability can be measured according to area, yield, and production (AYP) to examine overall growth trends in the district. Food accessibility will be measured by income and unemployment rates and an analysis of the Public Distribution System (PDS). Nutrition will be measured by malnutrition rates, anemia, and health data.

Food Availability

To understand the food availability it is necessary to understand about the cropping pattern, yield and land utilization in the district. The cropping pattern in the district is mainly concentrated on paddy. Other food crops grown are pulses. Important pulses grown are black gram, horse gram, green gram and cowpeas. Sesamum is the only oilseed grown in the district. The important Plantation crops grown are coconuts, areca nuts cashew nuts and rubber. Major fruit crops grown are mango, banana, pineapple, sapota, lemon and guava.

Table 1 Yield of Important Crops Unit: in kg/hectares

Year	Rice	Horse Gram	Black Gram	Green Gram	Cowpea	Total Pulses	Total Food Grains
2014-15	2673	530	446	352	490	418	2512
2015-16	2735	372	611	250	325	473	2609
2016-17	2888	554	695	268	407	538	2747
2017-18	2888	554	695	268	407	538	2749
2018-19	2877	668	607	236	341	460	2808

Source: Dakshina Kannada District at a Glance 2018-19

Table 2 Agricultural Indicators of the District

Year	Area under total food grains	Total cropped area	% of area under food grains	% of area under Horticultural cropped to Total cropped area	% of area under commercial crops to total cropped area	% of area irrigated to net sown area
2010-11	57883	157168	36.82	24.85	37.90	53.76
2011-12	58449	157683	37.06	38.17	18.57	55.06
2012-13	57147	156945	36.58	39.41	18.69	54.64
2013-14	55112	158682	34.73	49.81	8.50	55.08
2014-15	55320	168735	32.78	47.32	19.72	56.68
2015-16	51953	166155	31.26	63.13	20.11	55.94
2016-17	40624	158761	25.59	71.25	41.68	49.87
2017-18	34146	157947	21.62	78.38	42.07	52.10
2018-19	34146	157947	21.62	27.48	64.73	52.10

Source: Dakshina Kannada District at a Glance 2018-19

The district witnessed deceleration in the cropped area during the last two decades. The area under food production is steadily declining. The declining trend in food grains production in the district is almost similar in all taluks. Farmers in the district are abandoning food crop production mainly because of labour scarcity, high cost of cultivation and non viability of growing these crops.

The Land utilization pattern in the district shows that of the total geographical area of 4.77 lakh hectare (ha), the area under forest is 1.29 lakh ha (27 percent), area under net cultivation, 1.31 lakh ha. (28 percent) and fallow land, 11774 ha (2.5 percent). The remaining 42.5 percent of the geographical land is either not available for cultivation or uncultivable (Table 3).

Table 3 Land Utilisation in Dakshina Kannada District (Hectares, Figures in bracket percentage)

Taluk/District	Geographical Area	Forest	Non-available for cultivation	Uncultivated Land	Fallow land	Net cultivated area	Gross cropped area
Bantwal	71758 (100.00)	5069 (7.06)	23323 (32.50)	14699 (20.48)	957 (13.34)	27710 (38.62)	34720
Belthangady	137510 (100.00)	49837 (36.24)	29976 (21.80)	18253 (13.28)	1170 (0.85)	38274 (27.83)	45934
Mangaluru	85385 (100.00)	2902 (3.41)	33244 (39.04)	20233 (23.76)	7439 (8.74)	21335 (25.05)	29647
Puttur	99697 (100.00)	27386 (27.47)	31101 (31.20)	17013 (17.06)	2103 (2.11)	22094 (22.16)	24926
Sullia	83031 (100.00)	43282 (52.13)	6576 (7.92)	11035 (13.29)	105 (0.13)	22033 (26.53)	22456
District	477149 (100.00)	128476 (26.93)	124220 (26.03)	81233 (17.02)	11774 (2.47)	131446 (27.55)	157683
State	19049836 (100.00)	3071833 (16.12)	2173931 (11.41)	1614677 (8.48)	1785288 (9.37)	10404107 (54.62)	12873308

Dakshina Kannada District at a Glance 2018-19

As regard land under cultivation, the district has one of lowest percentage of land area under cultivation in the state. As against the state average of 55 percent, the net area under cultivation in the district is only 27.5 percent. The gross cropped area Is 1.58 lakh ha. The cropping intensity works out to 1.2, which is one of the lowest in the state.

Though Dakshina Kannada district is blessed with many rivers. Important rivers of the district are: Phalguni, Nethravathi, Kumaradhara, Nandini and Shambhavi. Besides these perennial rivers, there are number of tributaries and streams, all running from east to west. They normally become dry during summer. In spite of many rivers, the district has no major and medium irrigation schemes. The lowest cropping intensity in the district is mainly due to lack of irrigation facilities. Out of 157683 gross cropped areas, only 26237 ha are under double cropped area through irrigation. In the case of food grains crops, the proportion of irrigated area works out to only 20 percent of total cultivated area. The total area irrigated in the district is 72378 ha, most of which is used for horticulture crops like coconut and areca nut. Out of 72378 ha irrigated area, 41104 ha (57 percent) is irrigated by open wells and 9916 ha (14 percent) by tube-wells. The lift irrigation accounts for 2147 ha (3 percent). The remaining is mainly through tanks and check dams.

Food Accessibility

Improving accessibility to food can be achieved in two ways: first by creating productive jobs that provide remunerative work to the poor, which will enhance their purchasing power, and the second by increasing incomes and subsidizing food. The accessibility indicator of food insecurity is commonly determined by incidence of poverty and unemployment in a region. Other significant micro-level factors that influence food

accessibility include social disparities or gender inequality. Here we are using poverty rates, unemployment rates, and Targeted Public Distribution System (TPDS) of subsidized food grains to assess the degree of food accessibility in the district.

The district level poverty estimates shows that Dakshina Kannada district has the poverty ratio of 2.5 percent in rural areas and 14.1 percent in urban areas (2011 census). In other words, according to this estimates, the poverty in the district is more an urban phenomenon rather than the rural.

Employment and Unemployment across the district

The concept "work force" is different from the concept "labour force". The labour force includes all people in the age group of 16 to 60 years, who are working and those seeking or available for work. The workforce, on the other hand, includes only people who actually participate in work. It refers to employment ; those who are fully or partially employed and does not include unemployed As shown in the table 4, the total workforce in the district has increased from 9.46 lakh in 2001 to 9.98 lakh in 2011. The decadal increase in employment works out to 5.4 percent. It is significantly lower than the state decadal growth rate of 18 percent. This is a matter of serious concern.

Table 4 Growth of Work Forces in Daskhina Kannda District

Details		2001		2011		Decadal Growth Rate
		Number	Percent	Number	Percent	Percent
Dakshina Kannada District	Male	546404	57.74	620903	62.23	13.63
	Female	399986	42.26	376818	37.77	-5.80
	Total	946390	100.00	997721	100.00	5.42
Karnataka State	Male	15235355	64.74	18270116	65.55	19.92
	Female	8299436	35.26	9602481	34.45	15.70
	Male	23534791	100.00	27872597	100.00	18.43

Source: Census -2001 and 2011

The composition of the workforce in the table 4 shows that while the proportion of male workers in total work force increased from 58 percent in 2001 to 62 percent in 2011, there is a decline in the share of female workers from 42.3 percent to 37.8 percent during this period. The analysis of the data on growth rate of workforce in different taluks in the district in Table 5 clearly demonstrates wide inter-taluk gender disparities in the employment of men and women during 2001-11.

Table 5 Taluk-wise Work Participation Rates in Dakshina Kannada District (Percentage)

Taluk	2001			2011		
	Male	Female	All	Male	Female	All
Bantwal	59.47	50.95	55.16	60.64	43.25	51.92
Belthangady	58.31	45.70	51.90	61.58	42.19	51.79
Mangaluru	55.79	34.10	44.78	58.37	30.13	44.07
Puttur	62.61	50.49	56.54	62.05	40.23	51.06
Sullia	61.68	42.27	52.06	62.35	32.92	47.54
District	58.23	41.70	49.87	60.00	35.77	47.75

Source: Census – 2001 and 2011

In all taluks, women employment declined, while employment of men increased significantly during the last decade. As against this, the urban workforce increased from 314168 to 429170, representing an increase of 37 percent during this period.

Table 6 Rural and Urban Work Participation Rates in Dakshina Kannada District (Percentage)

District / State	Gender	2001		2011	
		Rural	Urban	Rural	Urban
Dakshina Kannada District	Male	59.71	55.88	62.00	57.82
	Female	48.69	30.33	42.17	28.64
	Total	54.10	43.08	51.99	43.09
Karnataka State	Male	58.10	53.85	59.76	57.81
	Female	39.87	16.37	38.75	20.81
	Male	49.09	35.67	49.38	39.66

Source: Census – 1991, 2001 and 2011

Unemployment occurs when people who are eligible, but unable to find suitable gainful employment. Usually, it is estimated as the difference between labour force in the productive age group of above 16 years and below 60 years excluding those studying. The unemployment rate is the percentage of persons not having work or unemployed in the total labour force. National Sample Survey, the only source of unemployment data, does not provide district-wise data. In the absence of these data, it is very difficult to determine the extent of unemployment prevailing in rural and urban areas in the district. The Census 2011 provides data on non-workers. It includes children, students and retired aged people, who cannot be considered as unemployed. In absence of data on age-wise distribution of the population, at present the census data on non-workers shows to some extent the magnitude of dependent and unemployed people. Hence it can be considered as proxy to unemployed. Table 7 sets out taluk-wise data on non-workers in the district. From the table, it may be seen that in the district as a whole, the total number of non workers increased from 9.51 lakh in 2001 to 10.92 lakh in 2011. The decadal growth among non-workers in the district works out to 14.7 per cent. It is significantly higher than the decadal growth in population (10 percent). It is also slightly higher than the state average of 13 percent. Out of 10.92 lakh non-workers in 2011, 5.25 lakh (48 percent) are in rural areas and 52 per cent in urban areas. The taluk-wise analysis of the data shows intertaluk differences in the growth of non-workers.

Table 7 Taluk wise growth of non workers

Taluks	2001	2011	Decadal Growth (percent)
Bantwal	1621130	19007 7	17 .24
Belthangady	118555	12852 3	8 .41
Mangaluru	487545	556317	14.10
Puttur	115634	140822	21.78
Sullia	67476	76189	12.91
District	951340	1091928	14.74

Source: Dakshina Kannada District at a Glance 2018-19

Puttur witnessed highest decadal growth of 22 percent; followed by Bantwal, 17 percent .Belthangady has the lowest decadal growth of 8 percent. Mangaluru and Sullia have growth percentage 14 and 13 respectively

Work Participation Rate

The work participation rate (WPR) is usually computed as the proportion of total number of workers to the total labour force. Since no data on age group 16 to 60 available, total population is taken into consideration as proxy for computing work participation rate. In Table 8 the trend in the WPRs for male and female workforce for the district is shown . From the analysis of the data, it may be observed that there is no significant inter-taluk variation in the work participation pattern. In all taluks, the WPR of male workers is significantly higher than the WPR of female workers.

Table 8 Taluk-wise Work Participation Rates in Dakshina Kannada District (Percentage)

Taluk	2001			2011		
	Male	Female	All	Male	Female	All
Bantwal	59.47	50.95	55.16	60.64	43.25	51.92
Belthangady	58.31	45.70	51.90	61.58	42.19	51.79
Mangaluru	55.79	34.10	44.78	58.37	30.13	44.07
Puttur	62.61	50.49	56.54	62.05	40.23	51.06
Sullia	61.68	42.27	52.06	62.35	32.92	47.54
District	58.23	41.70	49.87	60.00	35.77	47.75

Source: Census – 2001 and 2011

Table 9 Rural Urban Work participation in D.K District (percentage)

District / State	Gender	2001		2011	
		Rural	Urban	Rural	Urban
District	Male	59.71	55.88	62.00	57.82
	Female	48.69	30.33	42.17	28.64
	Total	54.10	43.08	51.99	43.09
State	Male	58.10	53.85	59.76	57.81
	Female	39.87	16.37	38.75	20.81
	Total	49.09	35.67	49.38	39.66

Source: Census: 2001 and 2011

Compared to the state's average, the district has higher WPR in both male and female workers.

The analysis of the rural and urban work participation rates in Table 9 shows that the WPR for both male and female workforce in rural areas is considerably higher than those of the urban areas.

Public Distribution System (PDS), in order to ensure food security to the people below poverty line (BPL), the Government of Karnataka directed districts to identify BPL families based on 14 eligibility criteria. The eligibility criteria to qualify as BPL families included *inter alia* exclusion of income taxpayers, government/public sector/private sector employees, professionals, land holders above 3 ha dry land or having irrigated land, two/three/four-wheeler vehicle owners, house rented income earners and those who have monthly electricity bill above RS.450. The total number of BPL Card holders in the district is **428983**. The percentage of BPL families eligible for BPL card in the total number of families in the district works out to 50.13 percent. Bantwal taluk has the highest number of BPL cardholders (63.91) , Belthangdy is second highest number of BPL card holders (59.52) and Mangalore has the lowest number of BPL card holders (40.87).

Chart 1 Showing percentage of people below poverty line in D.K. District

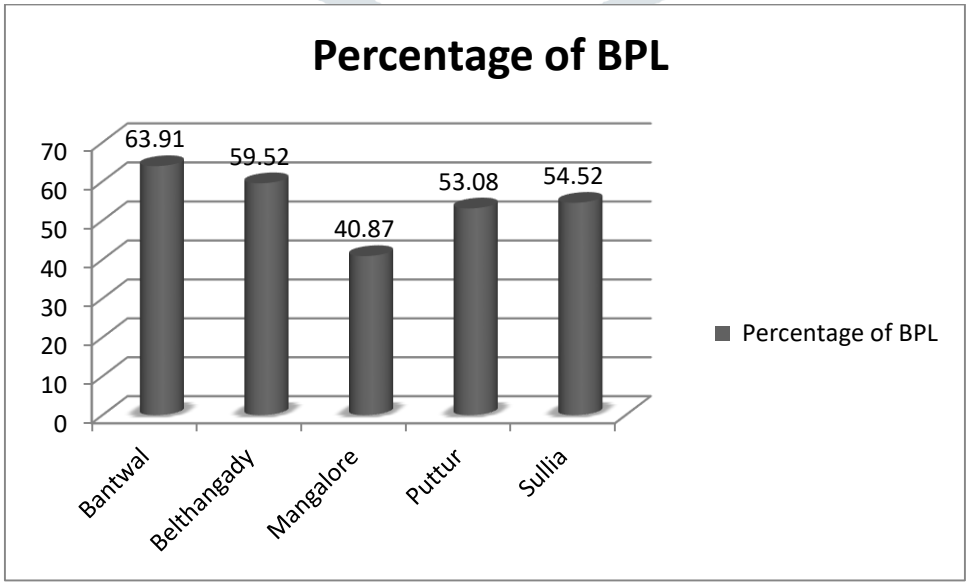
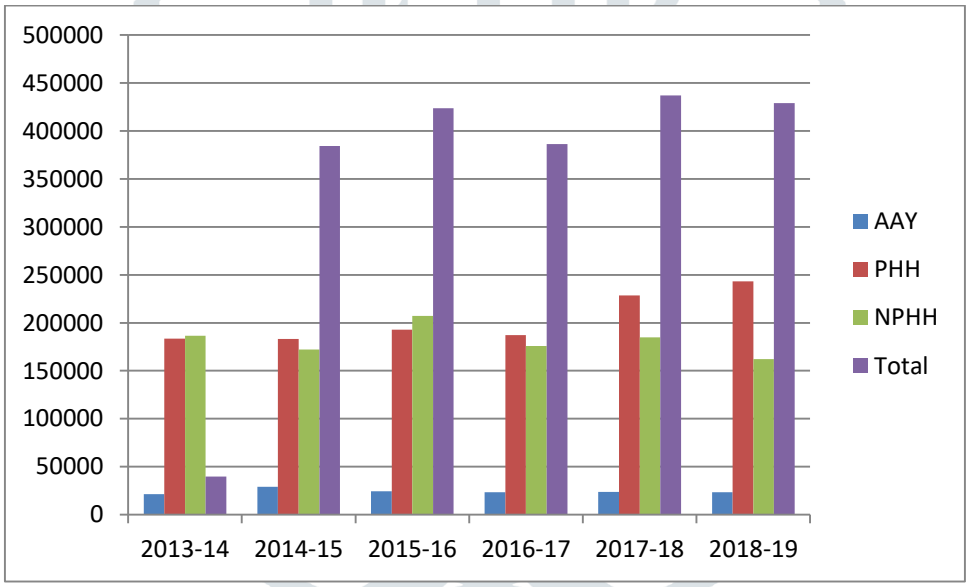


Table 10. Types of Ration Card Holders in D.K. District

Years	AAY	PHH	NPHH	Total
2013-14	21448	183542	186585	39575
2014-15	29024	183235	172111	384370
2015-16	24373	192729	207123	423865
2016-17	23266	187201	175950	386417
2017-18	23704	228665	184793	437162
2018-19	23489	243370	162124	428983

Dakshina Kannada District at a Glance 2018-19

Chart 2 . Types of Ration Card Holders in D.K. District



The total number of ration card holders in the district is 437162. The percentage of BPL families eligible for BPL card in the total number i.e. Anthyodhya(AAY) and Priority Card Holders PHH (23489 +243370) i.e. 62.2/ of families in the district.

Table 11. Number of Ration Shops in the District

Sl No	Taluks	No. of Shops
1	**Bantwal**	101
2	**Belthangadi**	66
3	**Mangaluru**	149
4	**Puttur**	79
5	**Sulya**	62
Total		**457**

Note: The statistics as on April 2020 & ahara.kar.nic.in

i. AAY Ration Card Holders are eligible to get 35 Kgs of food grains free of cost. Besides 1 Kg of turdal @Rs.38/Kg.

ii. Priority House Hold (PHH) (BPL) are eligible to get 7 Kgs of food grains per month

iii. Non priority ration holders (APL) are eligible to get 5kgs of food grains per single family member and 10 kgs of food grains for a family of 2 members at subsidized rate of Rs 15/kg. Family income shall not exceed Rs1.20 lakhs per year to be eligible under the scheme.

Nutritional Scenario in Dakshina Kannada District

The nutrition security is defined as "adequate nutritional status in terms of protein, energy, vitamins and minerals for all household members at all times" (Quisumbing et.al.1995; p.12). According to this definition food and nutrition security are interlinked with each other, but food security does not necessarily mean that nutrition security is ensured. Thus nutrition security mainly depends on adequate intake of calorie which includes minerals, protein and energy. Nutritional security is measured universally in terms of health indicators like Infant Mortality Rate (IMR), Child Mortality Rate (CMR) and Maternal Mortality Rate (MMR) along with Life Expectancy at Birth (LEB) which are considered as important indicators of overall health status of any community. On all these indicators D.K district performance is better than State. The IMR for the district works out to 19. The comparative IMR at national level is 47 and in the state level, 35.

Chart 3: Important nutritional health indicators of the district

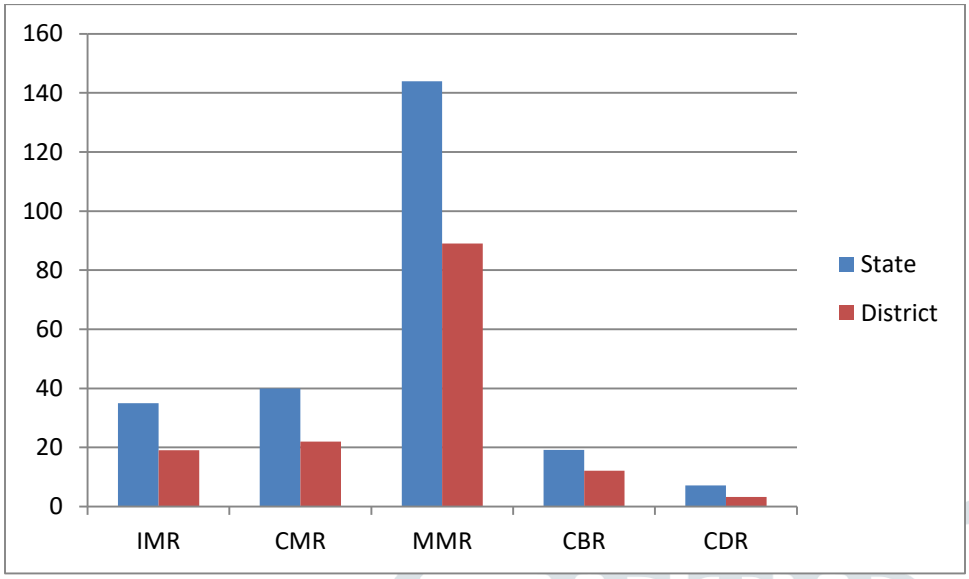
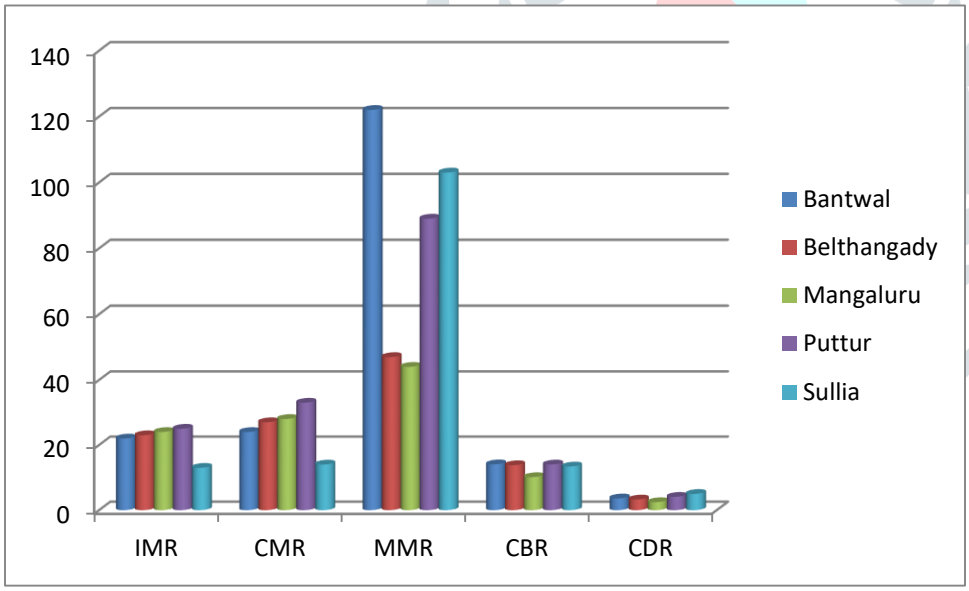


Chart 4 Taluk-wise IMR and MMR and other Health Indicators



Taluk-wise it varies from 13 in Sullia to 25 in Puttur, which has the highest IMR. Mangaluru taluk has the next highest IMR (24). In CMR also, the district stands third after Udupi and Bengaluru. The CMR for the district works out to 22 as against the state average of 40. CMR varies from 14 in Sullia to 33 in Puttur. Mangaluru and Belthangady taluks have also higher CMR. The Taluk-wise, MMR is very high in Bantwal (122) and Sullia (103) and; very low in Mangaluru (44). In Belthangady, it is 47, whereas in Puttur, it is on par with the district's average of 89. It is interesting to note that Sullia has the lowest IMR and CMR but its MMR is one of the highest in the district. The district has also one of the lowest CBR and CDR. Taluk wise, CBR varies from 10.14 in

Mangaluru to 14.06 in Bantwal. Similarly, CDR ranges from 2.45 in Mangaluru to 4.98 in Sullia. Inter-taluk differences in both CBR and CDR are marginal.

Children born Under-weight and BMI Ratio

The weight of an infant at birth is an important measure of the nutritional status of the mother and an indicator of the child health and survival rate. An infant with birth weight lower than 2.5 Kg is considered at high risk. The mother's nutritional status also determines the weight of child born. As shown in the Table 12 the district has relatively lower percentage of children born underweight in the state. Taluk-wise, there are no wide differences in the proportion of underweight children. Puttur has the highest underweight children (7.37 percent), followed by Mangaluru (6.39 percent). Belthangady has the lowest percent of underweight children (4.70 percent). Bantwal has 4.95 percent and Sullia, 4.73 percent underweight children.

Table 12 Taluk-wise Status of Underweight Children and Malnutrition: 2019-20 (Percentage)

Taluk	Percentage of Children born Underweight			Percentage of Children Malnourished
	Male	Female	All	
Bantwal	2.95	2.0	4.95	19.06
Belthangady	2.44	2.26	4.70	25.59
Mangaluru	3.05	3.34	6.39	17.89
Puttur	3.83	3.54	7.37	22.89
Sullia	2.31	2.42	4.37	31.54
District	2.72	2.54	5.26	21.23

Source: Census 2011 and DHFW and Education Department, ZP, Mangaluru

The data in the table shows that the district has one of the highest percentages of malnourished children in the state. It is 21 percent Taluk-wise, it varies from 17.9 percent in Mangaluru to 31.5 percent in Sullia. The high malnutrition among children in all taluks is, thus, a serious issue faced by the health system in the district.

Conclusion: At the outset the food security condition in Dakshina Kannada district looks very satisfactory. But closer observations shows that the cropping pattern in the district is mainly concentrated on paddy. The district witnessed deceleration in the cropped area during the last two decades. The area under food production is steadily declining. Farmers in the district are abandoning food crop production mainly because of labour scarcity, high cost of cultivation and non viability of growing these crops. As result the district has one of lowest percentage of land area under cultivation in the state. Despite many rivers, the district has no major and medium irrigation schemes.

As per the health indicators are concerned the district is performing very well due to very good health infrastructure and high literacy. However, despite these developments the data on the nutritional security is

showing that the district has one of the highest percentages of malnourished children in the state. It is 21 percent Taluk-wise, it varies from 17.9 percent in Mangaluru to 31.5 percent in Sullia. The high malnutrition among children in all taluks is, thus, a serious issue faced by the health system in the district. This is something questioning the food and nutritional security status of the district and required urgent attention of district as well as state government.

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