CHAPTER VII

SUMMARY AND CONCLUSION

7.1 Introduction

The study is concerned with the broader theme of identifying and studying various determinants of food security in India, Karnataka and study area Chamarajanagara district, with a aim to throw some light on food and nutrition security of rural women and children at household level and individual level. The present chapter is divided into three sections; the first section of this chapter describes the summary of the major findings which is based on both primary and secondary data. The second section is focused on summary of the results of the hypotheses testing and the last section of this chapter includes the policy suggestions and focused on future research. At the end, these three chapters are followed by the conclusion of the study.

SECTION 1

7.2 Findings

Findings are important part of the thesis for the reason that the key findings of the study have been discussed here. In order to understand the findings, section one is divided into three subdivisions as given below

1. Findings based on secondary data.
2. Findings based on primary data.
3. Findings based on field observations and Focused Group Discussion

7.2.1 Findings based on secondary data

The key findings based on secondary data have been discussed in the following points.

A) Flaws in the PDS and other food related policies

- Failed in identifying the rural poor is the most important drawback of PDS and major hidden problem is high income families were also found to have BPL ration cards in rural areas.

- Reselling the subsidized food in open market at higher prices.
- Rampant corruption in the process of public distribution system which was negatively influenced on food security.

B) Neglect of Agriculture sector.

- This study considered the cultivators and agricultural workers to total population for measuring the agricultural performance. Though there was increasing trend in the total population, the percentage of cultivators was decreased but percentage of agricultural workers was increased up to 9.3%.
- Growth rate of agriculture sector was declined and the area of agricultural land from total area also declined but total production of food grains and yield per hectare were increased drastically.
- Net availability of food grain per annum was increased in the last 4 decades of before globalization (1950 to 1991). After 1991, net availability of food grains per annum was decreased may be because of population explosion and changing pattern of food habits.
- Sectoral composition to GDP is decreased every year by agriculture sector. Paradoxically the dependence of agriculture for livelihood was increased with the composition of agriculture sector was found to increased only 13% followed by industrial sector (18%), construction (10%) and finally service sector (59%) (2015).

C) Agricultural Performance and Food security in Karnataka.

The State has 4 regions; this study has outlined the findings through region wise. As per the 3 pillars of food security, findings were mentioned in the following way such as, Availability of Food, Accessibility of food and absorption of food across the divisions of Karnataka.

Availability of Food

- Across four divisions the share of agricultural workers to total workers were increased by 12.78% from 1961 to 2011 in Gulbarga Division. Remaining 3 divisions were followed by Bengaluru, Belgaum and Mysore was decreased by -17.01, -11.68 and -12.78 from 1961 to 2011 respectively. But the shares of Cultivators to total workers among all 4 divisions showed negative growth. Cultivators were decreased by -6.5, 3.78, 4.66 and 4.16 in Bangalore, Belgaum, Gulbarga and Mysore respectively. Karnataka also showed negative growth of cultivators with the value of -4.76%.

- In Karnataka, total food grain production was increased from 3930 tonnes to 10804 tonnes from the year 1961 to 2011 and growth rate was 5.11 in percentage.

- In early decades, Belgaum division had highest total production of food grain which was 29.55 (00 Million tonnes) in 1961 followed by Bangalore 19.88 (00 MT), Gulbarga 16.21 (00MT) and Mysore 15.35 (00 Million tonnes), but in year 2010 -2011, Gulbarga had highest total food grain production with 56.21(00 MT) followed by Bangalore 40.79 (00 MT), Belgaum 38.11 (00 million tonnes) and Mysore 29.19 (00 MT) respectively.

- Division wise yield of total food grain production was mentioned in kilogram per hectare. In the year 1960-61, Mysore division had highest yield of total food grain production was 493 kg/hectare and even in 2010-2011 also 2138 kg/hectare in Mysore division, followed by Belgaum, Gulbarga and Bangalore division.

- Availability of percapita food grain production was mentioned in kilogram per year. In 1971 Gulbarga division had 206.3 kg/year percapita availability of food grain and 270.12 kg/year in 2011. The percentage change in the growth from 1971 to 2011 was 63.75% which shows that positive growth.

- In 1971, Bangalore division had 182.3 kg/year percapita availability of food but in 2011 it was decreased by 165.22 kg/year and growth rate was

negative (-17.09). Actually Belgaum division had least percapita availability of food grain in 1971 which was 99.12 kg/year, but after 5 decades it had increased enormously to 186.23 kg/year in 2011. Belgaum division had highest percentage change in the growth from 1971 to 2011 i.e. 87.1%. Total average of Karnataka percapita food availability was 164.09 kg/year in 1971 and 117.91 kg/year in 2011 which was decreased enormously.

- Growth rate of total food grain production in Karnataka was 3.25% in 1955 to 1970-71, 3.40% in 1970-1971 to 1990-91 and 1.9% in 1991-1992 to 2011. The Growth rates become gradually declined.

Accessibility of Food

Under broad heading the accessibility of food has considered major three indicators such as poverty ratio, accessibility of drinking water and percapita income. The following findings were identified.

- Trends in incidence of poverty ratio was declined from 1993-94 to 2009-10 by 56.6% to 26.1% in Karnataka. India's rural poverty was 50% in 1993-94 and in 2011-12 it was 25.7%. In urban area it was 31.8% in 1993-94 and 13.7% in 2011-12 overall percentage of India was 21.67%.

- Division wise poverty ratio is highest in Gulbarga division it was 36.82% in rural and urban was 40.74%. Total percentage was 38.3% in Gulbarga division followed by Belgaum division was 30.68% in rural area, 29.8% in urban area and the total percentage was 28.11%. Likewise Bangalore division rural poverty ratio was 19.77%, in urban area it was 13.72% and total percentage was 20.75%. Similarly Mysore division had least poverty ratio in rural area it was 11.01%, in urban area it was 9.97% and total percentage is 10.66%. Total Karnataka rural poverty was 24.5% and urban poverty was 15.3%. Average percentage of Karnataka's poverty 21.2%. But the division wise, Gulbarga division had highest poverty ratio.

- Safe drinking water is another indicator to determine the access to food. Bangalore division had highest tap water facility with 65.08%, under this,

water facility under hand pump was found to be only 3.21%, availability of water in tank/pond/lake was also very few with the percentage of 0.22%.

- Belgaum division had least tap water facility which was 60.22%, but in Gulbarga division under hand pump water facility was 22.1%, tube well and open well was 13.55% and river is 1.63% which was highest compare to all divisions.

- Within premises the availability of water facility was highest in Mysore division with 51.59%, near premises (within one kilometer) availability of safe drinking water facility was 35.88% and above one kilometer premises the availability of water facility was only12.53%.

- Gulbarga division has least availability of safe drinking water facility within premises the availability of water was 31.17%, above one kilometer distance, the availability of water facility was only 33.33% which was highest when compared to all divisions.

- Division wise percapita income was calculated on the basis of current prices. In 1970-71 Mysore division had highest percapita income of Rs.972, till 2001 Mysore division had highest percapita income but 2011-12 Bangalore division had highest percapita income which was Rs. 68521. In 1971 Bangalore division had lowest percapita income. Gulbarga division had least percapita income when compare to all divisions in 2011 is Rs. 43,505.

Hence, Gulbarga division had lowest food access capacity in all three indicators and Mysore division had highest food access capacity when compared to all divisions.

C. Absorption capacity of food

Under absorption capacity, two major indicators were selected to measure food security such as women nutrition and children nutrition.

- Bangalore division has least undernutrition of women that is 19.23% and highest in Mysore division which was 30.58% in rural areas. But in total anemic women Gulbarga Division has highest with 47.83%.

- Among 0-5 years children, Gulbarga division has highest underweight children that is 51.23% in rural areas and in total also highest with 38.85% and the last was in Mysore division with 24.58%

- Anemic children were highest (66.24%) in rural Bangalore division, but Gulbarga division had highest anemic children with 68.1% and least was in rural Mysore and total anemic children in the Mysore division were 55.0 and 54.34% respectively.

- Stunted children rate was highest in the Gulbarga division with 48.83% and the least was in Mysore division with 29.22%. Wasted children were also highest in the Gulbarga division with 29.85% and the last was in Mysore division with 19.71%. Severely wasted children were 12.78% in Gulbarga division, which was highest in rural areas.

Hence, among all three pillars of food security, the absorption capacity of food among women and children had more differences across regions of Karnataka. Gulbarga division had lowest accessibility to food and the lowest absorption capacity for food, but paradoxically highest availability of food. The following table 7.1 confers the major findings of food security in Karnataka.

Table 7.1Major Findings of Food Security Indicators across Divisions of Karnataka

Divisions	Availability	Accessibility	Absorption
Bengaluru division	Initially Food availability was reasonably well; however it is declining over the period.	Access to food relatively better as the proportion of the poor is very low	Absorption capacity of food is better as per nutrition security of women and children
Belgaum division	Food availability is low initially, but better availability over the period	Access to food is relatively low as the proportion of the poor and very poor are high.	Relatively good absorption capacity of food as undernutrition of women and children are higher.
Gulbarga division	Regularly better food availability over the period.	Access to food is very low as the proportion of the poor and very poor is highest, percapita income is low and accessibility of drinking water is low.	Food utilization is very low. Since extent of children and women undernutrition is highest in the division.
Mysore division	The highest decline in food availability over the period.	Better food accessibility because poverty is less and accessibility of drinking water is best compare to other divisions.	Better absorption capacity of food as nutrition security of women and children is higher or undernutrition of women and children is lower.

Source: Compiled by Author.

7.2.2 Findings Based on Primary Data

The key research findings of the primary data collected from the field study area have been discussed in this section. The important findings were classified based on determinants of food security, health practices, hygienic practices and socioeconomic conditions.

Availability of Food in Study area

- In Chamarajanagara taluk 54.12% (193) respondents were found to have cultivation land of 30.34%, 61 respondents had dry land and 23.88(48) respondents had wet land in sample area and 45.73% (191) respondents did not have land in Chamarajanagara taluk. Whereas, in Yelandur taluk 54.34(100) respondents does not have land for cultivation, 43.37% (80) have irrigation land and only 2.17%(4) respondents have dry land, dry land area for cultivation smaller in Yelandur taluk when compared to Chamarajanagara taluk .

- In Chamarajanagara taluk 9.45% (19) respondents had shown to have less than one hectare land, 37.81(76) respondents had1 to 5 hectare land and 6.96% (14) respondents had above 5 hectare land. In Yelandur 10.86% (20) respondents had less than one hectare land, 25% (46) respondents had 1 hectare to 5 hectare land and 9.78% (18) respondents had more than 5 hectare land.

- Main source of accessing food for households over previous 30 days, in Chamarajanagara 49.25% respondents showed access to food from own production and Public distribution System. 50.75% respondents showed main access to food from different sources and PDS. In Yelandur taluk 41.84% respondents showed access to food from own production and Public distribution System. 51.86% respondents were found to have access to food from different sources and PDS.

- All respondents showed similar consumption pattern that is cereals daily in both taluks, but 96.5% respondents showed their consumption patterns with pulses and cereals daily in Chamarajanagara taluk, remaining 3.5% respondents showed lowest pulses consumption pattern. 77.1% respondents showed vegetable consumption practices daily and whereas 21.93% respondents showed weekly vegetables consumption patterns. Where as in Yelandur taluk, 90.8% respondents showed daily consumption pattern of cereals and pulses, only 9.2% respondents have showed weekly consumption pattern. And 69.6% respondents showed daily vegetables consumption pattern,

28.3% respondents showed weekly consumption pattern of vegetables in Yelandur taluk.

- Only 9.0% respondents have found to have daily fruits consumption pattern, 18.1% (55) respondents showed weekly fruits consumption practices, whereas 29.58% (115) respondents showed monthly fruits consumption pattern and remaining respondents showed occasional fruits consumption practices in Chamarajanagara taluk. Likewise in Yelandur taluk 20.1% respondents showed daily fruits consumption pattern, 38.0% respondents have found to have weekly fruit consumption pattern, remaining 24.5% and 17.4% respondents have shown to have monthly and occasional fruits consumption pattern respectively in Yelandur taluk.

- 35.49% respondents showed daily milk and its product consumption trends, 34.53% respondents showed weekly consumption pattern of milk. Remaining respondents were found to have occasional consumption pattern in Chamarajanagara taluk. Subsequently in Yelandur taluk 62.5% respondents were found to have daily milk consumption trends, 37.5% respondents showed weekly milk consumption patterns.

- Monthly percapita expenditure on food items is major issue to determine food security. Only 2.98% respondents showed per capita expenditure of only Rs. 100 per month on their food items. Expenditure of Rs.250 on food items was showed by 14.58% (56) respondents. Majority of 75.05% respondents have expenditure pattern of Rs.500 on food items monthly and only 7.4% respondents have expenditure pattern of Rs.1000 on food items per month in Chamarajanagara taluk. Whereas in Yelandur taluk 1.1% respondents showed expenditure pattern of only Rs.100 per month on their food items, 5.51% respondents showed expenditure trend of only Rs. 200 per month on their food items, majority of respondents (69.56%) respondents showed expenditure pattern of Rs. 500 per month and remaining 23.91% respondents showed expenditure pattern of Rs. 1000 per month on their food items.

- Majority of 90.54% respondents were found to have below poverty line card to access their food items from Public distribution system, 1.99% respondents

were found to have above poverty line ration card, 5.47% had Anna Anthyodaya card and 0.99 respondents had no ration card, for remaining respondents ration card was not issued due to some technical problem in Chamarajanagara taluk. Similarly 85.32% respondents were found to have BPL card, 2.71% respondents were found to have APL card, 3.8% respondents had Anna Anthyodaya card, and for remaining 4.47% respondents ration card was not issued due to technical problem in Yelandur taluk.

- 97.51% respondents were found to purchase their food items from PDS regularly; remaining 2.48% respondents were not found to purchase food items regularly from PDS in Chamarajanagara taluk. 91.84% respondents were found to purchase food items from PDS regularly remaining 8.15% respondents were not found to purchase food items regularly from PDS in Yelandur taluk.

- Only 5.58% respondents have used coping mechanism to overcome daily food insecurity in last 30 day, remaining respondents did not use any coping mechanism in Chamarajanagara taluk. Whereas 1.2% respondents have used coping mechanism to purchase food items in credit system in Yelandur taluk.

Accessibility of Food in Study area

- Piped water supply is provided freely by Gram Panchayats for drinking water according to 89.99% (246) respondents. Net major source of drinking water is bore well only 5.38% (20) have used bore well water. Remaining respondents were dependent on lake or pond or open well for drinking water. Whereas in Chamarajanagara 93.03% respondents have shown to have accessibility to drinking water from piped water, 0.99% and 5.97% respondents were found to have accessibility to water by well/lake/pond respectively. Likewise in Yelandur, 86.95% respondents were found to have accessibility to drinking water from piped water, 11.78% respondents were found to have accessibility to water from hand pump and 1% respondents were found to have accessibility to water by lake/ well/pond.

- 42.44% (163) respondents were shown to have low economic status, 48.69% (171) respondents were observed to be in medium economic status of

household and 8.85% (50) respondents were found to be lived in high economic status of household. 80.5% respondents were found to be lived in low economic status of household, 8.5% were found to be lived in medium level of household and 7.2% respondents were found to be lived in high economic status of households in Chamarajanagara taluk. In Yelandur taluk 52.71% respondents were found to be lived in low economic status of households, 21.73% respondents were found to be lived in medium economic status of household and 25.54% were found to be lived in high economic status of household.

- In Chamarajanagara taluk 84.59% respondents have practiced open defecation. 13.93% respondents were practiced pit toilets and 1.49% respondents had western flush commode facility. Whereas in Yelandur taluk 78.09% respondents were shown to be practiced open defecation, 19.02% respondents were to be used pit type of toilets and 2.71% respondents were to be used flush type of toilets.

- Only 0.99% respondents have said regarding surrounding clean is highly satisfactory, 89% respondents have opined about keeping surrounding clean was satisfactory and remaining respondents 10.01% respondents have opined about keeping surrounding clean was not satisfactory in Chamarajanagara taluk. In Yelandur taluk 5.97% respondents a had opinion about keeping surrounding clean was highly satisfactory and remaining respondents 93.47 respondents had opined about keeping surrounding clean was satisfactory and 1.54% respondents have said about keeping surrounding clean is not satisfactory.

- 97.4% respondents had found to dump their waste material slight far away from the house. 2.4% respondents were found to dump their waste material far away from the house and only 1.30% respondents have shown to dump their waste material near the house in Chamarajanagara taluk. Whereas 10.32% respondents have shown to dump their waste material far away from the house and 88.58% respondents have shown to dump their waste material slight far away from the house in Yelandur taluk.

- Only 5.49% (21) respondents were found to have habit of hand washing with soaps before going to eat food, 86.01% (333) were aware about practicing hands but not practiced, remaining were not found to have practice of washing hands. In Chamarajanagara taluk 1.49% have shown to have habit of hand washing with soaps before going to eat food, 95.02% respondents were aware about washing their hands but not practiced, remaining 1.49% respondents have not found to have habit of washing hands. Whereas in Yelandur taluk 19.7% respondents have shown to have habit of washing hands with soaps before going to eat food, 76.63% respondents were aware about washing hands with soaps before going to eat food, remaining 2.71% respondents were not found to be practiced washing their hands with soaps before going to eat food.

- 95.02% respondents were aware about washing their hands after going to toilet but not practiced in Chamarajanagara taluk, 2.48% respondents have shown to have habit of washing hands after going to toilets. Remaining were unaware about to practice washing their hands after going to toilets. Similarly in Yelandur taluk 21.32% respondents have shown to have practice of washing their hands after going to toilets but 69.15% respondents were aware about washing their hands after going to toilets but not practiced and 2.1 % respondents have not found to be practiced the same.

- 94.28% (262) respondent dependent on electricity for lighting purpose at night, remaining 5.9% (23) respondents have shown to use no electricity still they have been used kerosene for lighting purpose.

- Among 384 respondents 97.65% (375) respondents have to be own pacca house and 2.34% (9) respondents did not shown to have own kaccha house.

- Only 6.04% (23) respondents have shown to be used LPG gas for cooking food, among 384 respondents only 1.5% (6) respondents have shown to be used kerosene stove for cooking food, 6.41% (25) respondents have shown to be used gobar gas and majority of 85%(330) respondents have showed to be used wooden fuel for cooking purpose.

Absorption of Food in study area

- Among 384 respondents 76.26% (285) respondents had normal weight and height or Body Mass Index is 18.5 to 24.9 which considered as normal. Remaining 25.45% (99) respondents are underweight or their Body Mass Index is below 18.5 which considered as underweight. In Chamarajanagara taluk undernutrition women are 27.36% and normal women were 72.6%. Whereas in Yelandur taluk undernutrition of women is 24.45% and normal women were 79.89%.

- In study area, collected sample of total children is 145. Among 145 children 66%, (97) children were normal in anthropometric measurements. 19.3% (28) children were found to be underweight, 2.7% (4) children were found to be wasted and 11% (16) children were found to be stunted. In Chamarajanagara taluk normal children were observed to be 62.5%, underweight children were found to be 28.12% followed by wasted children (8.37%) and stunted children (1%). But in Yelandur 78.12% children were found to be normal, 20.87% were found to be underweight and 1% children were found to be stunted in Yelandur taluk.

Socio economic conditions of Study area

- Out of the 384 respondents, 55.3% (212) respondents were belonged to 25 to 40 years age group in the study area. Around 90% of the sample respondents were below the age group of 49 years and the average age of the respondents in the study area is 36 years in both the taluks.

- 35.8% (138) respondents were found to be belonged to scheduled caste, 16.6% (64) respondents were found to be belonged to scheduled tribe and majority of the respondents were observed to be other backward classes which consisted of 47.5% (182) in both taluks.

- Out of 384 respondents, 94.3% (360) respondents were married and rests of the respondents were either unmarried or separated or widows in the study area.

- Educational status of sample respondents reflected that 37% (144) were illiterates, while rests of them were literates. However under the literate group, 33.58% (132) had primary education, 16% (62) respondents had secondary education and only11.5% (46) had completed college education. In Chamarajanagara 38.80% respondents were illiterates, under the literates group 36.81% respondents studied 1 to 7^{th} standard, 15.92% respondents have studied 8^{th} to 10^{th} standard and only 8.45% respondents found to be finished college education. Only 36.41% respondents were illiterates, under the literates group 31.52% respondents studied 1 to 7^{th} standard, only 16.30% respondents have studied 8^{th} to 10^{th} standard and only 15.76% respondents had college education in Yelandur taluk. Hence college studied women and illiterates were relatively low in Yelandur taluk when compared to Chamarajanagara taluk.

- In study area, 80.3% (308) respondents were identified as nuclear family and 19.7% (76) respondents were belonged to joint family. Gradually joint families have decreased in both taluks.

- Educational status of family head reflects that 49.86% (189) were illiterates. While rest of them were literates. However among literates group's 21.37% (47) family head had studied below 10^{th} standard and remaining 16% (15.94%- 57) had studied college education. In Chamarajanagara literates were more compared to Yelandur taluk, but in Yelandur taluk family head's who studied high school and college were more.

- Among total respondents 66.32% (254) were occupied in various sectors, 40.15% (151) respondents are occupied under in non agriculture sector and only 8.5% (27) respondents have occupied in agriculture sector. It showed that, people who were depending on the agricultural sector jobs were very less because of uncertain income in that particular sector.

- Paradoxically 12.58% (48) respondents have been working in animal husbandry were observed to be higher than agriculture sector data. In Yelandur taluk animal husbandry was found to be 25% which was more than the Chamarajanagara taluk.

- 29.63% (112) respondents did not earn or get remittance any incomes remaining had shown earned income under different sector. However under different groups of income, 22.10% (99) respondents have shown earning below Rs.500 per month, 30.43%(118) respondents had earning between Rs. 1000 to 2000 per month, 12.66%(46) respondents had earning between Rs. 2000 to 5000 per month and only 5.69% (20) respondents had earning above Rs. 5000 per month in the study area.

- 61.56% (123) respondents have found to spent their income on purchasing of food includes fruits and milk. Only 1.99% respondents have found to spent their income on purchasing cloths, 19.41% (65) respondents have shown to spent their income on children education and 6.46% (26) respondents have found to spent their income on health issues, remaining 44.27%(170) respondents do not show any income to spend. In Chamarajanagara 33.32% respondents have shown to spent their income on purchasing food includes fruits and vegetables, 12% respondents have found to spent to purchasing cloths and remaining 25.37% respondents have found to spent their income on health and education. Whereas in Yelandur taluk 47.84% respondents have fund to spent on purchasing food which included fruits and vegetables. 7.04% respondents have found to spent on education, and remaining 5.97% respondents have found to spent on cloths and 5.97% respondents have shown to spent on health. In this taluk, priority was found to be given to food items first than education.

- Who had dry and wet land majority of respondents 31.50% (122) own small land holdings (1 to hectare), 10.15% (3) respondents own marginal land holdings (0 to 1 hectare) and 8.37% (32) respondents own semi medium land holdings (2 to 5 hectare) but not even a single respondents have found to have large scale land holdings. Almost in both taluks land holdings were same.

Health Practices in Study area.

- 0.49% (2) respondent's children have night blindness in both the taluks.

- Fetal death and neonatal death is one of the major issues regarding nutritional security. 4.48% (16) respondents said that, fetal death was occurred during

pregnancy and 6.47% (24) respondents said that, neonatal death was occurred in Chamarajanagara taluk. In Yelandur taluk 3.48% of fetal death and 5.47% of neonatal death was found during survey time.

- Child mortality is directly linked with food and nutrition security of children. 11 children were died within age of 5 years old during survey period in Chamarajanagara, and in Yelandur taluk 7 children were died within age of 5 years old.

- Gap between child births is also one of the major issues regarding nutrition security of mother and children. 13.92% respondents had 1 year gap between 1st children to second children. Majority of respondents 59.80% (231) had 2 years gap between 1st children to second children in both Chamarajanagara and Yelandur taluk.

- 5.62% (23) respondents had 9 months gap between two children, only few of them had 3 years gap between two children.

- Facilities provide by Anganawadi Centers to promote nutrition security is one of the supplementary nutrition programme. Among 384 respondents 88.57% (340) respondents do not get any facility from AWC's, may be this facility is only for pregnant and lactate mothers and children under 0-5 year's age group. Remaining 9.84% (36) respondents said that, they need supplementary nutrition providing by AWC's and 1.17% (5) respondents said that, they strongly need supplementary nutrition. In both two taluks same kind of opinion were found.

- Cash assistance from government to pregnant and lactate mothers is one of the state Govt. programme to promote nutrition security among lactate women and their off springs those who have under BPL people. 23.38% respondents received cash assistance from govt. 73.59% respondents did not receive cash assistance because they are not eligible for above mentioned scheme in Chamarajanagara taluk. Whereas 13.58% respondents received cash assistance from govt. 78% respondents is not eligible for receiving cash assistance from government in Yelandur taluk.

- While deciding nutrition security of children, colostrums and breast feed is long term major factors for nutrition security. 89.97% (346) respondents said that, they have practice of giving colostrums immediately after baby born and 10.01% (38) respondents said that, they did not have practice of giving colostrums (first milk after delivery) to babies. 93.88% (361) respondents have said to have practice of breast feeding up to one year and above and 5.9% (23) respondents said they had practice of breast feeding up to 6 months.
- Immunization is helpful for children's future life. 92.5% (353) respondents said that vaccination is done for their children. 7.81% (30) respondents said that, vaccination was not done for their children and in both taluks immunization is success up to 95%.

7.2.3 Findings Based on Field Observation and FGD

- Mothers were found to have no idea about differentiation of healthy food items and junk food items. Even, they considered bakery items also as healthy food. They were found to have no idea that, Bakery items or fried items composed of carbohydrates than essential protein, vitamins and minerals.
- Small children of age 2-3 years old were found to have fried chips at lunchtime.
- Living conditions of some households were observed to be very unhygienic but still television was found in their houses.
- At Chamarajanagara dry region area's living conditions was miserable when compared with Chamarajanagara wet area and Yelandur taluk.
- School dropouts among girls of age between 12-16 years were common in many families.
- Females were found to be double burdened in many households with too much of work load in both farm and household activities.
- Domestic violence of women is very common in several households, alcoholism was found among head of the family especially in male headed

families. In some family's female were also found to be practiced with alcohol drinking regularly.

- Those who completed 10^{th} standard to PUC or college level education; they were not preferred to stay in rural areas.
- Huge consumption or purchase of unwanted items was found but which was not related to health.
- In some Anganawadi centers, hygienic was found but some AWC's were observed to be under non hygienic condition. Few drains were found to be present regarding food items in many Anganawadi centers.
- Many households were found to collect food items from AWC have to be used for domestic animals rather than their own consumption. Even purchased food items from Public distribution system were found to be resold to others at higher cost.
- In BR Hills many households had curved flat Televisions and men were found to be used to smoke foreign cigarettes simultaneously who were in below poverty line as per the records.
- Stree Shakti organizations are very strong in study area and almost all women were found to be members of these organizations. This organization had found to create monitory benefits for members, but those who were already beneficiaries were found to be endowing this monetary benefit for purchasing conspicuous items than productive purpose.

SECTION II

7.3 SUMMARY RESULTS OF HYPOTHESES TESTING

On the Basis of literature reviewed 6 hypotheses were formulated in order to be tested in this study. Both primary and secondary data were used to test the hypotheses. The techniques to test hypotheses have been uniform for all sets of data. ANOVA, Logit model, linear regression, sample t test have been used to the test hypotheses in the present study. Thus the summaries of results of hypotheses testing have been presented one by one as follows below.

1 There are significant differences in trends of food security across Karnataka State.

This hypothesis was tested by using ANOVA tool with the help of secondary data in the 3rd chapter. The following 3 variables represent indicators or determinants of food security such as physical availability of food, accessibility of food and absorption of food. In these three variables many sub variables were mentioned in third chapter. These three determinants were observed to have differences in four regions of Karnataka. The result of ANOVAs showed significant differences in trends of food security in Karnataka. Availability of food variable was found to be significant at 0.005 levels within groups and between groups. The F value was 12.65. Another variable accessibility of food was also showed significant level at 0.010 levels with F value of 13.32. Further absorption of food was observed to be statistically significant at 0.005 levels with the F value of 14.79. Therefore first hypothesis is failed to reject.

2 Factors like off farm income, age & education of household head, size of land and family, livestock assets and Public Distribution System (PDS) have significant influence on household food security in the study area.

The above mentioned hypothesis was tested for Chamarajanagara district. Logit model was used to test this hypothesis. The results revealed that, AHH (age of household head) was significant at 5% level in explaining food security status, but inverse relationship was found between food security of households and household age. Further SOF was significant at 5% level in exploring the household food security status. This showed that the size of family in negative relationship with food security

of households. Receiving food items from fair price shops was statistically significant at 10% level in exploring the household food security status. PDS showed positive relationship between food securities at household level with purchasing of food items from fair price shops, Odds Ratio was in favor of being food security increased by a factor of 6.291 when other factors were remained constant. Additionally LSA (livestock assets) was significant at 1% level in exploring the household food security status which showed positive relationship with food security. The binary logistic model was predicted up to 76% of goodness of fit. The hypothesis was significant at 1% level provided the evidence for the hypothesis which showed a significant influence on household food security at 1% level and failed to reject.

3 There are regional variations in socioeconomic conditions, women and children nutrition, hygienic conditions and monthly per capita consumption expenditures.

The above mentioned hypothesis was tested by chi-square test in 5th chapter of 3rd section. Among socioeconomic indicators, education of women, working of women and size of land showed variation significantly across the taluks at 10% level significance in study area as per the chi square test. Income of women showed significantly differences across the taluks at 1% level. Monthly per capita expenditure on food items varied across the taluks at 1% level significance in study area. People were found to spend only Rs. 200 to 500 on food items in Chamarajanagara taluk, but in Yelandur taluk people were found to spend Rs.1000 to 1500 on food items. Under hygienic conditions significantly varies across the taluk at 10% level. Nutritional status of women and children significantly varied at 1% level across the taluks. Underweight or Body Mass Index of women at the age 15-49 years was found to be less than 18.5 are 64.6% in Chamarajanagara taluk and 35.4% in Yelandur taluk. In the same way body mass index was found normal with 44.7% in Chamarajanagara taluk and 56.2% in Yelandur taluk respectively. Nutritional status of children was significantly varied at 5% level. Hence above said hypothesis is failed to reject at 1% level, 5% and 10% level.

4. Women Nutrition Security is positively influenced by their education, employment, control over resources and role in decision making

The above said hypothesis was tested by using logit regression model in 5th chapter of second section. The variable CVF on daily basis was significant at 1% level in explaining the chronic energy deficiency in study area. The positive relation was observed with nutrition security of women. Further (Consumption of Milk Daily) CMD the consumption of milk on daily basis was significant at 5% probability level in explaining chronic energy deficiency of women and also showed positive relation with nutrition security of women. Its magnitude level was 1.996. The variable NS was not at significant level in explaining nutrition security of women. This implies that women, those who were not entering to school or not having primary education were found to be under less nutrition secure. This showed negative relationship between BMI with no schooling. Its magnitude level was observed to be 0.350 OR odds ratio. In simple words by 65 % of chronic energy deficiency was observed to be increased in women. The second variable in education is Higher primary to high school (HPHS) showed significant at 10 % level of probability level in explaining the nutrition security status of women. It showed positive relationship with chronic energy deficiency. This revealed that, those who had completed higher primary to high school education were endow to experience decreased chances to chronic energy deficiency by a factor of 0.709. In simple words 29% of chronic energy deficiency was decreased. The third variable is College education, which showed significant at 5% in exploring chronic energy deficiency. It showed positive relation with CED. It indicated that, people going to college and above education showed decreased chances of CED by a factor of 0.658 (34 Additional, control over income or taking decision by women is another important variable in determination of nutrition security of women. In logit model the variable COI showed significant at 5% probability level in explaining the chronic energy deficiency in study area. It showed positive impact on nutrition security of women. Its magnitude level was observed to be 1.404. It indicated that an increasing trend of decision making ability by women or control over income by women which was observed to be increased the nutrition security of women by a factor of 1.404. This logistic model predicted up to 80% goodness of fit. Above said variables showed significant at 1% level. So hypothesis was found to be

significant at 1% level and provided evidence for the hypothesis which showed positive impact on women nutrition security at 1% level and thus hypothesis was failed to reject under this study.

5. **ICDS has positive impacts on the reduction of undernutrition of children in 0-5 year's age group in Karnataka state in general and Chamarajanagara District in particular.**

Above mentioned hypothesis was tested by independent sample t test in 6th chapter of first section. For this, the study was considered secondary data of 36 months, of moderately malnourished and severely malnourished children of 0-3 years and 3-5 years age groups. After implementation of nutrition security programme through AWC's from ICDS department the severely malnourished children growth rate was declined when compared to moderately malnourished children in both Karnataka and Chamarajanagara district. The independent sample t test revealed that hypothesis was failed to reject, the probability level is significance at 1% level.

6. **Factors such as mother education, employment of women, monthly percapita expenditure on food items and sanitation facilities have a significant impact on children nutrition.**

The above said hypothesis was tested by correlation analysis and linear regression model in 6th chapter of second section. Correlate analysis considered the actual age and income of women. Both variables showed probability level at 1% significant. Bivariate analysis provided evidence for failed to reject the above hypothesis. Linear regression model revealed that, a value 76% (.766) indicated a good level of prediction. R square (R^2)represents co-efficient of determination which showed proportion of variance in the dependent variable which was explained by independent variables, in this case 65% (0.652) of variability was observed under dependent variable. Adjusted R square (R^2)also accurately predicted. The F ratio of ANOVA (summary table) showed that, the independent variables was found statistically significant and observed that dependent variable at the degree of freedom F=17.38 (7,138). P<.0005 i.e., regression model is good fit of data estimated model co-efficient. Hence the hypothesis is failed to reject.

Table 7.2 Summary Results of Hypotheses Testing

Sl No.	Hypotheses	Methodology			Results
		Statistical methods	Statistical/coefficients	P value	
1.	There is a significant difference in trends of food security across Karnataka State	One –way-ANOVAs	Availability of food F= 12.65 Accessibility of food, F=13.32 Absorption of food , F=14.79	0.006 0.004 0.003	Accepted
2.	Factors like off farm income, age and education of household head, size of land and family, livestock assets and Public Distribution System (PDS) have significant influence on household food security in the study area.	Logistic Regression	OFI (.001) AHH (-.277) SOF (-1.670) PDS (1.839) PEHH (-2.418) HHEHH (2.134) GEH (20.913) MH (-.403) SH (4.151) LSA (5.770)	0.082	Accepted
3.	There are regional variations in the study region regarding socioeconomic conditions, nutrition of women and children, hygienic conditions and Monthly Per Capita consumption Expenditures.	Chi-square Test.	Socioeconomic indicators $\times^2$=11.06 Availability of food $\times^2$=4.321 Accessibility of food, $\times^2$=12.314 Absorption of food , $\times^2$=13.168	0.006 0.001 0.009 0.004	Accepted
4.	Women Nutrition Security is positively influenced by their education, employment, control over resources and role in decision making.	Logistic Regression	CVF (3.561) CMD (1.719) CMCT (2.399) NS (-19.101) HPHS (.343) CGE (.419) WE (.412) COI (.906) HSL (-1.770)	0.076	Accepted

			HSMH (1.755) AGE (-.001)		
5.	ICDS has positive influence on the reduction of undernutrition of children in the age group of 0-5 year in Karnataka State in general and Chamarajanagara District in particular.	Independent sample t- test	Karnataka t=52.589 Chamarajanagara t= 12.502	0.000 0.000	Accepted
6.	Factors such as mother education, employment of women, monthly percapita expenditure on food items and sanitation facilities have a significant impact on children nutrition.	Multiple linear Regression	MPCE (3.261) EOW (4.185) AGE (.752) IOW (1.100) HYP (3.001) TOF (.622) DWF (3.834)	0.000	Accepted

Source: Authors Compilation.

SECTION III

7.4 POLICY IMPERATIVES

Food security is an important part of nutrition security for rural women and children. The State was implemented and maintained variety of policies and programmes in the development of food and nutrition security for women and children. However implemented policies and programmes achievements were not failed utterly but the desired results were not achieved in case of rural women and children health issue. If the rural women and children were considered to be important for nation or development of the economy then better outcomes would expected. So with the knowledge of the issues mentioned above based on primary and secondary data along with the field observation, this study was presented convinced policy measures which can support to formulate and implementation of policy for rural women and children's food and nutrition security. They are as follows,

STRENGTHEN THE PUBLIC DISTRIBUTION SYSTEM.

Government facilitated food security net through food security Act 2013 for citizens of India who are living under below poverty line and some extent, above poverty line also. But this Act provide only food security not nutrition security because of facilitating only cereal based food through PDS. Thus it's important to take an immediate measure to concentrate on high protein food like pulses and millets, so that accessibility of protein based food should not be a constraint for a people below poverty line.

The major problem was found to be false card, the State should identify target groups very carefully, because in rural areas those who are rich were also endow to be under below poverty line cards for this, the State should implement digitalization of ration cards which should includes land details and bank details of beneficiary.

IMPROVING DRY LAND CULTIVATION AND OFF FARM INCOME

The State should encourage cultivation of minimum water consuming crops with high nutrition value like pulses, small millets such as Sajje; Navane to ensure greater nutrition at minimal cost to monetary benefits.

The study found that off farm income improved the household food security, in this regard the state should facilitate to provide different sources of earning money like cottage industry, Khadi industries which does not require skilled rural women thus helps to improve purchasing power and household food security.

Stree Shakti organizations are very strong in rural areas, but monetary beneficiaries of rural areas were found to be used for unwanted consumption. Awareness should be created and make them to invest money in productive activities. In this regard the State should make a strict law through concerned banks and make that beneficiaries should follow the guidelines.

STRENGTHEN THE GIRLS NUTRITION EDUCATION SYSTEM IN RURAL AREAS

In Study area many dropouts were found especially girls between 11-16 years old, in this regard the State should provide nutritional education for dropout girls

before marriage, through either Anganawadi centers or Gram Panchayat level or television or both Medias in the following way…

- Adverse health consequences of undernutrition.
- Adverse effects of infection and unwanted fertility on nutritional status.
- Micro nutrient deficiencies and their health consequences.

PROVIDE NUTRITIONAL PRODUCTS THROUGH AWC's AND SCHOOLS

Spirulina is one of blue green algae highly enriched with vitamins and minerals with proteins like A, B1, B12, K, C, E. Minerals like iron, calcium and magnesium. This will helps to children to come out from undernutrition. Karnataka State already initiated at Vijayapura district as pilot study in 2015. The State should universalize providing spirulina tablets to overcome undernutrition. The state should encourage the farmers to grow spirulina - the State should provide training programmes to farmers through horticulture departments. It will be benefited doubly for farmers, one is financially they strengthened, second is they easily overcome from undernutrition.

Affordable yoghurt containing 12 nutrients which will help to recovered the undernourished children. The State should introduce Yogurt in AWC's which will help to overcome undernutrition problems, moreover undernutrition never occur in future also[79].

CREATE AWARENESS TO PRACTICE HYGIENIC

Awareness should be created regarding hygienic practices of rural areas. The State should initiate programmes regarding practicing of hygienic and personal hygienic at all age of people especially for young mothers.

The State should provide toilet facilities effectively, in rural areas and provide water purifier tanks in rural areas for safe drinking water and primary health care centers to maintain hygienic and good health practices at village level.

7.5 Suggestions for Future Research

- Food and nutrition security of urban women in Chamarajanagara district.

[79] Grameen Danone aims to reduce undernutrition in women and children in Bangladesh by selling yoghurts. Source: Bash (2010), http://www.io.tudelft.nl/en.

- PDS and its role relating to provide nutrition security among rural people need to be study separately.
- Stability of the food security needs to be studied separately at State level and district level.
- This study considered food and nutrition security for only female and children under five. Male food and nutrition security needs to be studied separately in urban regions.
- The relationship between food and nutrition security and labour productivity of women in rural areas needs to be studied separately because in rural areas, women's are doubled burdened; they are working in both farm and inside the house.

7.6 Conclusion

The central theme of this study is to examine the Food and Nutrition Security in Karnataka in general and Chamarajanagara district is particular. The study has analysed Food and Nutrition Security policies in India along with empirical evidences which disclose that the food security Act is not properly implemented. The analysis of trends on Food and Nutrition Security and the results of Anova reveal the existence of significant differences in FNS across four divisions of Karnataka. In order to identify the food security status the study has employed calorie intake method (7day recall period) and Radimer/cornell hunger scale method. The study considered food security status as dependent variable and PDS, off farm income, education of household head, family size, size of land holdings and livestock assets as independent variables. The results of logistic regression method show that all independent variables have positive effect on household food security where as the age of household head, marginal land holdings and size of family have a negative impact on household food security. However the impact of marginal land holding on food and nutrition security is statistically insignificant.

The study also examined nutrition security of women and children. In order to identify the determinants of women nutrition security, the study used ordered logistic regression model. Body Mass Index of women is taken as dependent variable and

consumption of vegetables and fruits daily and weekly once, consumption of whole milk and milk with coffee and tea, education of women's, economic independence of women and household status of women are considered to be independent variables. The result shows that all independent variables are positive and statistically significant. Except absence of schooling, consumption of vegetables and fruits weekly once has a negative impact on nutrition security of women. But low household status has a negative and statistically significant impact.

The study has made correlation and regression analysis between underweight children with income of mother and age of mother. The correlation results have shown that with decreases in income of mother number of underweight children increases. The results of regression analysis clear that the independent variable namely Monthly Percapita Expenditure on food items, education of mother, income of mother, sanitation facility includes toilet facility and age of mother have positive influence on dependent variable that is underweight of children.

To conclude, the proper policy interventions are absolutely essential for ensuring Food and Nutrition Security among women and children. As a first step in this direction the government should regulate issuing false/duplicate ration cards. Similarly the state should also encourage investment to increase off farm income to rural households. Creating awareness and promoting sanitations and hygienic facilities also go along way in improving food and nutrition security. More than anything else, creating proper awareness through education as well as mass media is equally important. There is also a need for rethinking on multiple and coordinated approaches to ensure sustainable food and nutrition security. A comprehensive, holistic and an integrated approach are most essential to achieve the desired goals.