MEASURING THE PRICE CHANGE IN ESSENTIAL FOOD ITEMS USED BY RURAL AND URBAN HOUSEHOLDS DURING THE PANDEMIC IN TELANGANA STATE

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B.Sc. (Home Science)

MASTER OF SCIENCE IN HOME SCIENCE

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BY

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THESIS SUBMITTED TO THE PROFESSOR JAYASHANKAR TELANGANA STATE AGRICULTURAL UNIVERSITY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF

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2022

DECLARATION

I, Ms. **SUNKA SHIVANI,** hereby declare that the thesis entitled **"MEASURING THE PRICE CHANGE IN ESSENTIAL FOOD ITEMS USED BY RURAL AND URBAN HOUSEHOLDS DURING THE PANDEMIC IN TELANGANA STATE" submitted to the PROFESSOR JAYASHANKAR TELANGANA STATE AGRICULTURAL UNIVERSITY** for the degree of **MASTER OF SCIENCE IN HOME SCIENCE** is the result of original research work done by me. I also declare that no material contained in the thesis has been published earlier in any manner.

Place : Hyderabad **(SUNKA SHIVANI)**

Date: **I.D. No. HHM/2020-04**

CERTIFICATE

Ms. SUNKA SHIVANI has satisfactorily executed the course of research and submitted thesis **"MEASURING THE PRICE CHANGE IN ESSENTIAL FOOD ITEMS USED BY RURAL AND URBAN HOUSEHOLDS DURING THE PANDEMIC IN TELANGANA STATE"** is the result of original research work and is sufficiently high standard to warrant its presentation to the examination. I also certify that neither the thesis nor its part thereof has been previously submitted by her for a degree of any University.

Place: Hyderabad **Dr. V. Vijaya Lakshmi**

Date: **Chairperson**

CERTIFICATE

This is to certify that the thesis entitled **"Measuring the Price Change in Essential Food Items Used by Rural and Urban Households During the Pandemic in Telangana State"** submitted in partial fulfilment of the requirements for the degree of **'Master of Science in Home Science'** of the Professor Jayashankar Telangana State Agricultural University, Hyderabad is a record of the bonafide original research work carried out by **Ms. SUNKA SHIVANI** under our guidance and supervision.

No part of the thesis has been submitted by the student for any other degree or diploma. The published part and all assistance received during the course of the investigations have been duly acknowledged by the author of the thesis.

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Place: Hyderabad **(SUNKA SHIVANI)**

Date:

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LIST OF ABBREVATIONS

%	-	Per cent
et al.	–	and other people
etc.	-	and so
F	-	Frequency
i.e.,	-	that is
WHO	-	World Health Organisation
WTP	-	Willingness To Pay
CPI	–	Consumer Price Index
EFI	–	Essential Food Items
Kg	-	Kilogram
L	-	Litres
Rs.	-	Rupees

Name of the author	**:**	**SUNKA SHIVANI**
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ABSTRACT

The virus originated in China had sent unprecedented situations to the whole world creating social and economic impacts. The spread of infection urged governments to implement immediate lockdown. This led to a break in the supply chain creating a shortage of food as there was no transport and labour to continue the production. Due to the shutdown of economies, employers faced financial problems and started laying off their employees. Many people faced salary reductions and loss of jobs during the pandemic. Therefore, it became harder to manage the expenses amidst the rising prices. The main reasons for the rise of prices were lack of storage place, lack of transportation and labour. People were forced to consume whatever was available in the market. This situation brought a lot of changes in the consumption behaviour of the people. the present study was

The current study aids in understanding the price changes that occurred in essential food items and changes in quantities of essential foods consumed. The study was taken up with following objectives:

Exploratory research design was adopted for this study and a total of 200 respondents i.e., 100 rural respondents from Undavelli and Kadukuntla villages and 100 urban respondents from Jogulamba Gadwal town and Wanaparthy town were selected for this study. Multi stage sampling technique was adopted for selection of location. A structured questionnaire was administered to avail the required information from the respondents. The data was analysed using frequencies and percentages. Correlation test, Chi-square test and ANOVA tests were used respectively to test the relation, association and variance between the independent variables and dependent variables.

The demographic information revealed that among 200 respondents, less than half (42%) of the respondents belonged to 41-60 years followed by one third belonged to 26-40 years and 17 per cent belonged to below 25 years. More or less an equal percentage of the respondents were graduates (26.5%) and completed up to intermediate (21%). Around 36.5 per cent were earning between Rs. 6000-18000 followed by 29.5 per cent were earning between Rs.18000-31000. Majority of the sample belonged to small families (67%). More or less equal per cent of the respondents belonged to families with adolescents (18%) and school going children (18.5%).

Regarding the quantities of essential foods consumed in rural area, majority of the consumption increase in was observed in dry fruits (71.9%), grapes (71.1%), apple (44%) and chicken (35.9%). A similar trend was observed in urban area. It was found that highest increase in expenditure was observed in milk and meat/ vegetables and fruit when compared to the pre-pandemic period. With the highest CPI noticed in milk and meat (174.09) and vegetables and fruits (149.5) in rural area, milk and meat products (172.17) and vegetables and fruits (152.1) in urban area.

It was found that fear of selection, lack of transport and restricted movement were major concerns during lockdown in both rural and urban areas. In both rural and urban area, people preferred nearby markets, multi-item grocery stores and brought larger quantities and stored due to restrictions. Due to the impact of Covid-19, people experienced more expenditure after pandemic, decreased junk food consumption, increase consumption of healthy products in both rural and urban areas. About, 76 per cent had reverted to their usual life style after the pandemic. Majority of the people were dependent on their savings and loans borrowed from others. Respondents had stored non-perishable for more than one month and perishable foods for 1-2 weeks in both rural and urban areas.

Statistical analysis performed using correlation test revealed that there was a significant relationship between family size, stages of family life cycle and expenditure incurred in 2020. Chi-square analysis had shown a significant association between family size, stages of family life cycle and expenditure incurred in 2019 and a significant association between family size and expenditure incurred in 2020. ANOVA test revealed that there was a significant difference between family size, stages of family life cycle and consumer price index.

The study concluded that fresh fruits, vegetables, milk and meat has shown the greatest consumption increase with products like milk and meat, vegetables and fruits showing highest expenditure and CPI when compared to other products. Lockdown has urged people to alter their consumption behaviour which led to a change in shopping behaviour, stocking food items, reducing store visit. Due to financial crisis people had sticked to basic needs. It was also found that people were dependent on savings and loans to survive the pandemic.

Chapter I

INTRODUCTION

A novel coronavirus identified as 2019-nCoV emerged in China, by the end of 2019. At least 830 cases had been diagnosed in nine countries as of January 24 2020: China, Thailand, Japan, South Korea, Singapore, Vietnam, Taiwan, Nepal, and the United States. Although details about the virus's origin and ability to spread among humans remain unknown, an increasing number of infections appear to have resulted from human-to-human transmission (Unhale *et al.*,2020). By the end of April 2020, the total number of Covid cases registered in India was 33,050 and 3.2 million in the world and 500 in Telangana.

Because of its rapid global spread, the World Health Organization declared it a 'pandemic' on March 11, 2020, and called on countries to plan preparatory and response actions in line with the Global Strategic Preparedness and Response Plan, in wake of this India moved quickly to implement a voluntary curfew (Janata Curfew), followed by a nationwide 21-day lockdown starting on March 25, 2020. WHO indicated that this outbreak is not just a public health crisis, but it is a crisis that will touch every sector. The Covid-19 pandemic and the associated contagion-control measures such as imposing restrictions on both domestic and international movement of people and goods triggered a historic halt in economic activity, resulting in significant changes in unemployment and GDP. Unemployment rates have reached levels not seen since the Great Depression, and oil prices have fallen to levels not seen in two decades. The agricultural sector has also been severely impacted, with disruptions in product demand and supply. It has also caused widespread disruption in global and regional food supply chains, potentially exacerbating the food crisis in many countries. On March 25, 2020, United Nations Secretary-General António Guterres described the pandemic as the most difficult global crisis since World War II (Longmuir, 2021).

The pandemic had a significant influence on supply chain businesses all across the world, including manufacturers, wholesalers, and retailers. Affected nations experienced supply chain issues for the shipment of essential goods. Retail trade was put on hold as a result, with the exception of items that are necessary for sustainability (such food, medication, and their supply chains). It also affected the provision of financial, banking, and insurance services. Industries struggled with supply chain issues

during COVID-19 for the transportation of commodities, especially essential food items.

The Standing Committee on Food, Consumer Affairs and Public Distribution has passed the Essential Commodities Act in 1995. Its goal was to make essential commodities easily available to consumers in times of need and to protect them from business monopolies when supply is limited. Essential food items (EFI) are those which are the basic required food items for a human being and are used regularly in their diet. The essential food items which are classified into 7 food groups include 1. Grains (Rice, Wheat, Atta, Gram dal, Arhar dal, Urad dal, Moon dal, Masoor dal) 2. Milk and Meat products (Milk, Meat, eggs) 3. Fruits (banana, guava, apples, grapes) 4. Vegetables (Potato, Onion, Tomato, carrots, brinjal, green leafy vegetables) 5. Fats and sugars (Sun flower oil, Palm oil Ground nut oil, Mustard oil, Vanaspati, Dry fruits, Sugar, Jaggery) 6. Beverages (Tea loose) 7. Salt and others(salt).

Public Distribution System Scheme, also known as PDS Scheme, is a social welfare pro gramme for the distribution of food and other necessities to underprivileged people thro ughout India. Under this scheme people below poverty line are provided with
35 kg of rice or wheat each month, while a household living above the poverty line is pr ovided with 15 kg.

Pandemic has not only affected nation’s economy but also impacted household economy. The lockdown caused a negative income shock for many daily wage earners. Many people lost their jobs. Household income fell for 37.9 percent of the sampled households (on March 29, 2020), then fell further to 43.5 percent (on April 5, 2020) and 43.7 percent (on April 6, 2020). (Statista, 2020).

Reduced income had an impact on consumption both in terms of quantity and pattern. Markets were unable to operate normally because of the government's limitations on agricultural-related operations, which fell during the harvest of the Rabi season (October to March). Although it was anticipated that markets would operate regularly due to the lifting of restrictions on agricultural activity, wholesale market closures hindered the supply of key food supplies. Due to the rapid depletion of the local market's stock and the resulting excess demand for vital goods (shortage of supply) and price hikes, all stakeholders’ livelihoods—from producers to consumers—were negatively impacted.

The country was greatly impacted by the rising cost of commodities; people were stressed, firms had less business, and some firms were shut down. Because of rise in product prices and decrease in consumers' disposable incomes, standards of living was declined. Consumers spent less on luxury goods and more on necessities as commodity prices raised in India. The effects of increased commodity prices were felt by business owners as well as by customers who pay for items. Generally, demand for goods decline in line with demand elasticity when commodity prices rise.

Demand shocks and problems with supply chains contributed to increased volatility in import, export, producer, and consumer prices in the months following the onset of the Covid-19 pandemic. Following the outbreak of Covid-19 and the associated lockdown measures to contain its spread, the behaviour of food price markups exhibited dramatic shifts. Though essential commodities, including food, were allowed to move during even the first phase of the lockdown, it has been observed that India's food markets and supply chains suffered during this time - arrivals in mandis dropped.

Product prices were directly affected by supply and demand. Theoretically, Prices rise when demand rises, and prices fall when demand falls. On the other hand, an increase in supply causes product prices to fall, whereas a decrease in supply causes price increases. When the population of a region grows, the supply of products/goods is more evenly distributed among them, causing product prices to rise. When people's salaries rise, they have more disposable income and thus spend more of their money; as a result, demand for goods rises and prices rise. Inflation is caused by an increase in the country's money supply; inflation is another term for price increases.

The term ‘lockdown’ creates a psychological fear that stops consumer from spending. (Mehta, 2020). All parties enthusiastically embraced the first step toward lockdown, i.e., ‘the Janta curfew’. However, due to the lack of planning, people became alarmed when the lockdown really occurred. Panic buying occurred during the first few weeks of the lockdown as people feared more restrictions may be imposed.

As the lockdown became stricter, period got extended from lockdown 1-5, each of 21 days which started in the month of March 2020. People started accepting the new norms, and a gradual shift was seen in their buying pattern. With a gradual decrease in panic levels, a shift could be felt towards online shopping. As per the Metro Cash & Carry India MD and CEO Arvind Mediratta in his interview to Economic Times told

that “Initially, customers were unsure of what the trickledown effect of the lockdown would be. Consumers started becoming vigilant and began hoarding essential commodities.

CPI gives the details of how prices of goods and services changed over a period of time. This includes food, clothing, transport, housing and leisure spending. The CPI doesn’t factor in non-tangible things consumers spend money on. Intangibles can include life insurance or investments. It is an economic indicator which is used to measure inflation or deflation. Measuring the CPI is important because it helps in understanding the price changes and the purchasing power of a consumer. Using CPI, the real value of wages, salaries, and pensions can be indexed to regulate prices, and to deflate monetary magnitudes to show changes in real values. CPI was calculated by different organisations in different countries such as bureau of labour statistics (USA) and reserve bank of India (India) in order to understand the purchasing power of people in the country and gives an idea on cost of living of people. Such an observation done by statistical agencies of different countries provided CPI before and during pandemic which indicated that CPI of United states was 255.8 in 2019 and 258.6 in 2020, 115.1 in 2019 and 116.1 in 2020 was registered in Australia, whereas, India recorded a CPI of 143 in 2019 and 153 in 2020. The historical data of New Zealand showed a CPI of 1035.3 in 2019 and 1053 in 2020 as we can see the CPI of New Zealand differs from other countries as it is measured quarterly (base=1000), while other countries mentioned above calculate them monthly(base=100).

It is important to study the effect of pandemic on Indian households and their livelihood during the lockdown period. The world observed rise in prices during the pandemic which led to rise in the index values when compared to pre-Covid period. This study aims to know the change in prices of essential food items caused over lockdown period in order to have better understanding about inflation, change in expenditure patterns and consumption behaviour.

Rationale of the study:

People faced an unprecedented challenge during the lockdown, as they were forced to stay indoors for an extended period of time due to restrictions such as curfew and quarantine. Due to the lack of transportation, these difficulties resulted in a food shortage. Because of the disruption in the supply chain, food prices in the country have risen. As a result, people have lost their jobs or had their pay reduced. With all of these

issues, people were struggling financially to meet rising expenses during the lockdown, causing them to reduce their food consumption. To cover the expenses incurred during that period, people turned to various alternate sources of income such as borrowing from others, mortgaging gold and plots, taking loans, and so on. These price changes are important to calculate the consumer price index of the particular state or country which in turn will help us to study the inflation. There are only few studies conducted on price changes after the pandemic.

The present topic "Measuring the Price Change in Essential Food Items Used by Rural and Urban Households During the Pandemic in Telangana State" has been proposed to study the price differences that occurred in rural and urban areas before and after the onset of pandemic and to understand its impact of on people's expenditure and their consumption behaviour. This study will further help the policy makers to frame the policies in accordance with people needs so that they will not face any challenge if they face any crisis in future.

Objectives:

1. To assess the quantity of essential food items consumed by the selected families.
2. To compare the consumer price index for essential food items during pre Covid and post Covid.
3. To study the percentage changes in essential food items due to Covid 19 and its impact on consumption behaviour.

Hypothesis framed for the study

1. There exists a relationship between (independent variables) location, income, stages of family life cycle, family size, occupation and expenditure pattern.
2. There exists a relationship between change in consumer price index of essential food items and expenditure pattern.

Limitations of the study

1. This study was only limited to the essential food items and other foods were not studied
2. The study was limited only to two rural and two urban areas of Telangana state
3. The price change of essential food items was studied only for the month of April, so further price changes in the following months were not observed.

Chapter II

REVIEW OF LITERATURE

The onset of Covid-19 and the counter measures taken in response to avoid it has caused huge crisis leading to the rise in prices of various products including essential food items (EFI) causing economic disruptions world-wide leading to inflation. Thus, it is important to determine the consumer price index to know the inflation before and after the price change.

A thorough and concise review of the literature is essential for any research study. The main purpose of collecting reviews is to get the insight into different researches that were carried out in the past in relation to the present research study and to identify appropriate research design, analysis techniques and also to discuss the data collected. A comprehensive study of reviews was made and presented under different headings.

2.1 Introduction to the consumer price index

2.2 Expenditure pattern of households on food

2.3 Impact of price change on food consumption pattern of households due to the pandemic

2.4 Change in expenditure pattern of households during the pandemic

2.5 Impact of Covid-19 on consumption behaviour

2.1 Introduction to the consumer price index

The Consumer Price Index (CPI) is commonly stated to measure price changes for a fixed standard of living based on a fixed market basket of goods and services. The Consumer Price Index (CPI) monitors an economy's overall price level. The CPI is made up of a wide range of commonly purchased products and services. The CPI measures changes in the purchasing power of a country's currency as well as the price level of a basket of goods and services (CFI team). The Consumer Price Index compares current prices of a market basket of items to previous period prices. The CPI is typically calculated monthly or quarterly. It is based on the spending habits of the representative sample that consists of all categories of people. It is helpful in measuring inflation or deflation.

Inflation:

When prices of product increase over a period in an economy, it is referred to as inflation. Its name comes from the fact that prices rise annually.

Even though growing prices may appear to be a bad thing, they are a sign of an e xpanding economy. A low and stable inflation rate, according to the majority of econom ists today, can help mitigate the severity of economic downturns by acting as a buffer ag ainst decreasing prices, which can be challenging to control if they get deep-rooted.

Deflation:

Deflation occurs when prices decrease, resulting in inflation of less than 0%. Deflation may appear positive to the typical person on the street. Because a common man feels happy when there is a price reduction but for the producers and manufacturers it is not the same as they see the financial crisis. Deflation would reduce their sales margin, which would affect their bottom line and possibly result in layoffs. Demand declines as unemployment increase, harming businesses even more. There will be job losses which are known as deflation spirals.

The US Bureau of Labour Statistics (BLS) set the index level at 100 between 1982 and 1984. The 100 mentioned above is the weightage of all goods in the basket. For example an index of 110 indicates that the market basket's price is up by 10% since the base year. Similarly, an index of 90 indicates a 10% reduction in market basket price over the base year. The base reference year will be changed for every 5 years and the current base year was 2012.

Types of CPI

Bureau of labour statistics

CPI is calculated for different segment of population. The BLS publishes two indexes each month CPI-U (Consumer price index-urban), it covers 93% of U.S population who are not living in rural remote areas and CPI-W (Consumer price index for urban wage earners and clerical workers), this covers 29% of population whose income is from clerical employment and jobs with hourly wage.

Central statistics office

In India, segment specific CPIs, namely CPI (IW)- Consumer Price Index for Industrial Workers, CPI (AL)- Consumer Price Index for Agricultural Labourers, CPI

(RL)- Consumer Price Index for Rural Labourers are being compiled regularly, catering to the need of specific population group. CPI (UNME)- Consumer Price Index for Urban Non-Manual Employees which has been discontinued w.e.f. December, 2010, was meant for urban non-manual. All these above-mentioned indices depict change in the level of average retail prices of goods and services consumed by specific segment of population.

2.2 Expenditure incurred by households on food

The term "household expenses" refers to the breakdown of general living expenses per person. They include accommodation costs, food consumed at home, utilities paid, and other costs. To determine each member's share of the total cost, the total cost is divided by the number of family members living in the house.

According to Eustaquio (2014), family size and composition, family income, educational expenses, highest educational attainment, age, occupation, gender of household head, and number of employed family members influence household food expenditure.

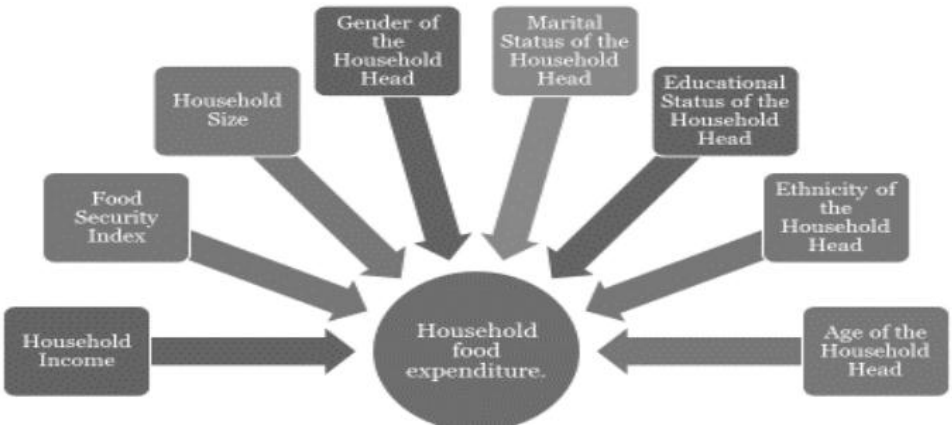


Figure 2.1 Factors influencing household expenditure

The market prices paid by households for all goods and services purchased to meet their requirements and desires are referred to as household consumption expenditures. Automobiles, washing machines, televisions, and other durable and non-durable goods are included. Household consumption expenditures do not include home purchases but do include imputed rent for owner-occupied dwellings.

Expenditure of a family can be understood by Engels law.

Engels law

Ernst Engel's economic theory outlines how a family's spending on food and other items changes as their income changes (increases/decreases). According to this hypothesis, when a family's income increases, the percentage spent on food decreases while the percentage spent on other things increases, because the amount and quality of food that a family can consume is pretty limited. As household expenditure on food falls relative to income, households spend a higher amount of their money on other items.

Expenditure incurred by households in different countries

The amount of money spent on food varies by country. It is primarily due to the cost of living and other influencing variables. When we look at food expenditure, we can see that just eight countries in the world spend less than 10% of their household income on food. The remaining four are in Europe: The United Kingdom comes third (8.2%), followed by Switzerland (8.7%), Ireland (9.6%), and Austria (9.9%). Countries are dispersed all across the world. The United States spends the least (6.4%), and Singapore spends the second-least, (6.7%).

Whereas Nigeria spends more than half of its household income on food, nine other nations spend more than 40%. Four of them are located in Africa: Nigeria (56.4%), Kenya (46.7%), Cameroon (45.6%), and Algeria (42.5%). Four of them are in Asia: Kazakhstan spends 43.0%, the Philippines spends 41.9%, Pakistan spends 40.9%, and Azerbaijan spends 40.1%. Guatemala a South American country on the list, which spends 40.6% of household income on food. According to a United Nations World Food Programme research, India invests an average of 3.5% of their daily revenue on food (Rs543 per plate) (WFP).

2.3 Impact of price change on food consumption pattern of a household due to the pandemic

Food prices are a major determinant of consumption patterns, and high food prices can have a significant negative impact on nutritional status and health, particularly among the poor (Green et al., 2013). Food consumption is a periodic behaviour that may be triggered by various converging factors which may include time, income, expenditure, price change etc. change in price of food commodities will have probable impact on overall household which will lead to increase or decrease in the

consumption of food. According to UN Food and Agriculture Organization estimates, the global rise in cereal prices pushed an additional 40 million people into hunger in 2008, and evidence is mounting that food price increases have harmed dietary diversity and quality.

Bairagi et al., (2022) examined the effect of Covid-19 on food prices which is based on storable and perishable commodities that are used in India. They analysed how the contagion has impacted the economies by using the phone survey of world bank. The key findings indicated that the price of basic commodities such as atta and rice has increased when compared to pre pandemic and on the other hand price of onions decreased. The increase in prices of atta and rice is due to shortage of supply whereas, price of onion was decreased due to oversupplied to the retailers as the crop is getting spoiled during storage as it is a semi-perishable crop. So, the author suggested the government to make policies to overcome price hike through PDS.

Barman *et al*. (2021) conducted a study on impact caused by Covid-19 on food supply chain and the disruptions and recovery strategy to know how the food chain got disturbed due to pandemic. The findings suggested that the reason for crisis is due to restrictions imposed upon people and closure of food stores. The logistical challenges led farmers to destroy their own products which in turn led to disruption of food chain as there is no movement from producers to buyers. Whereas we have also seen scarcity of employees due to Covid-19 infection which led decrease in production. These all reasons led to the disruption of food chain. This paper suggested that in order to adapt to this kind of crisis, a PDS (public distribution system) should be utilized.

Goeb (2021) enquired about prices of foods in urban under lockdown. This paper examined the changes in Myanmar's urban food during lockdown by the collected data regarding prices. The analysis of the given data revealed that supply side of Myanmar's food retail sector was largely resilient to the shocks and lockdowns throughout the first six months of the COVID-19 pandemic and it is discovered that prices are 3% higher in townships. Lockdowns had smaller effects on prices for highly processed food items sourced directly from companies, but larger effects on prices for raw or lightly processed commodities sourced through wholesale markets, which comprise a larger share of urban consumer's diets.

Janssen *et al*. (2021) analysed the change in consumption that occurred during the outbreak through their study on "change in food consumption during the Covid-19 pandemic". A cross-sectional online survey was conducted to collect the data among 2680 respondents. The results shown that at least 40 % of respondents changed their consumption frequency when compared to pre-pandemic mainly the highest rate of change was seen in frozen food, canned foods and cookies. It was seen that there was a major reduction in consumption of fresh foods and increase in consumption of foods with longer shelf-life period. The author described the main reason for this change was due to factors that include restrictions, income loss and also some socio-demographic factors.

Moshin *et al*. (2021) carried out a research study to know the impact of Covid-19 on economy of consumer. The article compared the economic environment of two different pandemics such as SARS (severe acute respiratory syndrome) and Covid-19 (Corona virus disease) and found that there will be a potential impact on economy because of slower growth of consumption, fluctuation of prices and contraction of exports and imports.

Ruan *et al*. (2021) studied the effect of lockdown on vegetable prices in the wholesale markets of China. They found that lockdown policy caused a large surge in price and price dispersion of cabbage, it is revealed that fluctuation of price is smooth during normal years but during the period of lockdown the fluctuation is not normal which kept on increasing and falling over the period of lockdown. They concluded that the supply chain disruption was the main driving factor for the price hike and the price hike was more in vegetable importing province.

Alam and Khatun. (2020) investigated the "impact of Covid-19 on supply chain and food security of vegetables: empirical evidence from Bangladesh. They have conducted survey through telephone. The results revealed that the lockdown has disrupted the food supply chain and thus increasing the food insecurity.

Cavallo (2020) carried out work on Covid baskets for inflation. This study evaluated the effect of Covid-19 on inflation of different goods. The results revealed that there was a bias in the covid baskets which has mostly affected the low-income groups and made disruptions in supply chains putting pressure on prices in many sectors.

Cariappa *et al.* (2020) have conducted studies on food price anomalies led by pandemic and supply chain disruption caused Covid-19 incidence in India in which the results shown that a significant increase in the wholesale food prices immediately post-lockdown was noticed. Signs of prices converging to pre-lockdown levels as the post lockdown trends of commodities which saw a hike in prices had a negative sign.

Mead *et al.* (2020) has studied on the impact of the Covid-19 pandemic on food price indexes. The results revealed that there was a shift towards food at home which created short-term disruptions and shocks in the economy which in turn impacted the prices of perishable foods with a short shelf life along with disruptions in dairy and egg production and distribution causing the most price volatility.

Prashant *et al*. (2020) studied on influence of Covid-19 on consumer price index of goods, which revealed that there was a significant difference between prices of subgroups for pre and post COVID 19 period. The study even mentioned that implementation of lockdown has mainly affected informal workers without proper income which indirectly disrupted the supply chain.

Reindorf (2020) conducted a detailed study on Covid-19 and CPI to study weather Inflation is Underestimated. It was found that the basket purchased during the pandemic differs significantly from the one purchased before the pandemic. Though the underestimation of inflation may have been a short-run problem caused by the unusual conditions of the early months of the pandemic, the potential for the differences between current spending patterns and the CPI weights affect the accuracy of the CPI.

Singh *et al.* (2020) examined the effects of Covid-19 on food commodity prices during lockdown. This study provides a comparative intra-country observational study design based on events before and after pandemic. The analysis of this research was based on school meal food baskets and household food baskets. The results found that there was a substantial increase in the prices of the foods in the selected districts. The inter-district comparison showed that there was a price inflation mainly due to agriculture markets being more vulnerable to disruption in transport. The findings of the present study also indicated the importance of resilient localised food systems.

Vijaya Lakshmi et al. (2020) conducted a cross-sectional study to assess the impact of Covid-19 on life style of individuals and explored the adjustments and changes made by the sample due to Covid-19 situation. The results of the study revealed

that there were some positive and negative changes in the lifestyles of the respondents like spending more time with family members, doing exercise and time spent on mobiles/laptops increased. Majority of the respondents purchased essentials online (90%) and 34 per cent-maintained food stock. On the other hand, expenditure on clothing, outside food, travel and other recreational activities decreased. More than half of the respondents felt that there was no change in mental health and positive physical health. Though the pandemic has created crisis people still tried to cope with the situation by making changes in their lifestyles.

Yaseen and Anwar (2017) explored the effect of rising food prices on consumer well-being in the most populous countries of south Asia. This paper tried to evaluate the welfare cost that resulted from an increase in food prices by using compensating variation technique. The results revealed that cereals were price inelastic but protein-rich food like chicken and mutton were relatively income elastic.

From the above review of literature, it is evident that the pandemic had created a crisis on both economy and people. As a result of lockdown, there was lack of transportation and shortage of labour which led to the spoilage of the food items as the movements of goods was stopped, this caused disruption in food supply where there is a reduction in supply and rise in demand, which caused food prices to rise. So, in order to cope with these situations, people had adopted to new consumption practices based on the availability of foods and based on prices as they have also faced income loss during lockdown. Some researchers suggested to utilize public distribution systems to cope with the crisis.

2.4 Change in expenditure pattern of households during the pandemic

The pandemic has created panic among the public, surviving the pandemic was the biggest challenge amidst the layoffs and salary reduction. In order to cope the changes in income people has to adjust their expenditure patterns during lockdown. In order to do this people sticked to buying basic essentials and medicines by declining the expenditure on luxury goods. They choose to stay healthy rather than staying wealthy.

Bishop *et al.* (2022) examined household expenditure during the pandemic using a variety of sources. Covid-19 pandemic was an unprecedented shock to the economy which has resulted in large and unexpected changes. Restrictions on household activity limited the opportunities to consume services and people switched to procuring more

goods. The recovery in consumption was much stronger than expected earlier in the pandemic because households quickly adapted to the pandemic shock with the support of significant fiscal and monetary policy measures.

Choudhuri *et al*. (2022) conducted a study on family consumption expenditure during the pandemic using the granular data from two rounds of the household survey to examine the changes in per-capita consumption expenditure between 2019 and 2021. The findings also indicated that households were able to smooth their food consumption expenditures, particularly for cereals such as rice and wheat, as well as cereal complements such as vegetables, pulses, and other items consumed in conjunction with cereals. The additional food grain subsidy aided in the anchoring of such food items. During the pandemic, the government distributed food through the public distribution system (PDS).

In an attempt to study change in household spending patterns, Roll *et al*. (2022) examined how and to what extent did households shifted their expenditures and a consumer spending behaviours. This paper adopted an empirical model to explore the association between household characteristics, expenditure patterns, and hardship experiences during early months of pandemic. It was found that, racial/ethnic/religious minorities in both countries were more likely to experience spending volatility, while Black and Hispanic (in the US) and Arab (in Israel) households were more likely to experience hardships. Employment and financial characteristics also appeared much more predictive of hardship in the US than in Israel.

Bandara *et al*. (2021) discussed the change in food consumption patterns in Sri Lanka. This study used an in-depth non-systematic literature review to emphasize the Sri Lankan context. The results revealed that income growth, urbanization, structural changes in population and several socio-economic factors influenced transformation in food consumption patterns. It was also found that there was a shift from traditional cereal consumption to meat, fish and dairy products.

Covid-19 pandemic has a significant impact on consumer outlay which led to an increase or decrease of expenditure. A research study conducted by Huang *et al.* (2021) estimated the impact of Covid-19 on family spending using regression analysis. The analysis of data revealed that during the pandemic, middle-class households were less likely to increase their grocery spending. Households with children or elderlies, who

typically required higher food quality and nutrition intakes, were more likely to increase their spending during Covid-19 than previously.

Baker *et al.* (2020) has explored how a household spending will respond to an pandemic like Covid-19. The main objective of this research was to study impact of Covid-19 consumption of a household. The paper showed that users spending was radically altered by these events across a wide range of categories, and that the strength of the response partly depended on how severe the outbreak was in user's state.

Paramo and Narayan (2020) made a detailed report on how households across world affected by lockdown based on data collected from different countries which was combined, grouped and analysed to make comparisons and find patterns across different types of countries and examine the policy impacts on households. The analysis of data revealed that on an average 36% of those working in country prior to Covid-19 stopped working during April-July, and 62% of population reported decline in total income. The burden of impacts was higher in poor countries and certain groups within the countries.

Srivastava and Sivaramane (2020) examined the revenue induced effects of Covid-19 on the food consumption pattern of Indian households through the surveys of consumer expenditure. The results stated that in the situation of decline in income, a household would tend towards consuming staple foods and making only necessary expenses. Another important observation was that consumer behaviour has been simulated by estimating the expenditure elasticities of food items and non-food expenses.

A study was conducted by Waterlander *et al.* (2019) to estimate how change in food prices affect consumer purchase and expenditure. This study looked at the effects of five different policy options on total household food purchases as well as specific nutrient or product purchases (sweetened beverage tax, saturated fat tax, sugar tax, salt tax, and fruit and vegetable subsidy). The sugar tax, salt tax, and saturated fat tax all had significant positive effects on total healthy purchases, but all policies had significant substitution effects on other foods and nutrients.

Green *et al*. (2013) in their research study tried to quantify the relationship between food prices and demand for food with a reference to household income levels. They established a model to understand the results. These models predicted that increase in the prices of food results in greater reductions in food consumption in poor

countries and mainly poorer households were adversely affected by the price change. So, this paper suggested that certain policies may be helpful to reduce the global burden of undernutrition.

Brinkman *et al*. (2009) assessed the impact of global economic and fiscal crisis on food consumption and nutrition. It was observed that the cost of the food basket increased in several countries, forcing households to reduce quality and quantity of food consumed. As a result of the crisis, many vulnerable households have reduced the quality and quantity of foods they consume, putting them at risk of malnutrition. The population groups most affected were those with the highest requirements, such as young children, pregnant and lactating women; and the elderly.

From the reviews it could be observed that people around the globe had faced the problem of income loss and lay-offs which led to change in expenditure pattern of their respective households. It is evident that people reduced expenditure on non-basic items so that they can survive during lockdown. The impact was more on poor countries as people felt the burden even to buy basic food items, so people in those countries either reduced consumption or borrowed money from others to continue spending on essentials.

2.5 Impact of Covid-19 on the consumption behaviour

The biggest change observed during pandemic was change in consumption behaviour. Lockdown urged people to stay at home for longer period of time. Man as a social being initially found it difficult to adopt the new changes, but slowly he altered his habits such as shifting to online shopping, buying healthy food, buying only necessities, changing frequency of market visits and adjusting their income to survive during pandemic. The challenge of Covid has completely altered the lifestyle of a person. Thus, making him to adopt to the new normal.

Bai *et al*. (2022) enquired about how retail prices of nutritious food rose in countries with higher Covid-19 cases through their research study. This paper tried to compare monthly prices of nutritious food groups from January 2019 to June 2021 to measure the degree of resilience in global food supply chains. The findings revealed that prices rose significantly, especially there was a higher average food CPI relative to overall CPI after March 2020 especially in countries with higher Covid-19 case counts.

Cariappa *et al*. (2022) investigated the effects of lockdown on agricultural commodity prices and buyer behaviour through his research study. This study surveyed both farmers and consumers. It is found that prices of perishable products such as chick pea, mung bean and tomato shot up. Consumers experienced shortage of food due to lack of mobility which resulted in shortage of food supply. The author recommended for promoting the capacity and collective resilience of small-scale production systems through institutions, policies and reforms. Contract farming, farmer producer organizations, creation and functioning of social safety nets to overcome income, production and price shocks, access to digital national markets and capacity building on food waste management practices will insulate vulnerable section as well as reduce the loss of food across supply chain.

Emediegwu and Nnadozie (2022) explored the effects of Covid-19 on food prices in India. The assessment was made especially among seven food categories. The findings suggested that pandemic doesn't have significant impact on prices of tomatoes, onions and ground nut oil but there was an instability in the prices of rice, wheat, milk and sugar. Through this study, it is evident that prices of perishable products don't experience structural instability when compared to non-perishable products which are mainly driven by human factors.

Lamy *et al.* (2022) carried out a research study on changes in food behaviour during the initial lockdown of pandemic. This study was carried at multi-country level to know the changes in consumption habits, motivation and food related behaviours. The results suggested that vegetables, fresh fruits, dairy products, olive oil and tea/coffee were among the foods with higher consumption, and a low level of consumption of pre-cooked meals. Among the changes that participants perceived to occur, the concern with purchases and cooking planning, the acquisition of larger amounts of foods, and an increase in the time and effort dedicated to cooking were the most noticeable. As a result of the pandemic, there has been a significant increase in home cooking.

Rajkhowa and Kornher (2022) made an attempt to study the effects of the spread of Covid-19 on retail and wholesale prices of urban markets in India in addition to price distortion between markets and the mark up between retail and wholesale prices. Through this study it is evident that, with the spread of COVID-19, prices increased for commodities with longer shelf-life such as pulses and processed items, while prices of

vegetables such as onions and tomatoes declined substantially at the onset of the pandemic. Further, market distortions increased significantly for most commodities. Pulses experienced large price distortions between markets as well as mark-ups between retail and wholesale prices, but did not see any major price distortions in the market for rice and wheat, as they were controlled by Government's minimum support prices.

Celik *et al.* (2021) investigated the effects of Covid-19 pandemic outbreak on the household economy to know the extent of change in income and expenditure. This study was conducted during the lockdown period through online survey. The output indicates that there was a significant decrease in family income and an increase in family expenditures during pandemic in which the income was spent more on nutrition, cleaning, communication, water-gas expenses and income is less spent on cultural activities and transportation.

Profeta *et al*. (2021) conducted a research study on impact of pandemic on consumers food consumption, expenditure patterns and eating habits in Germany. The findings proved that more food was consumed, more convenience products that has longer shelf-life period and consumption of fresh fruits and vegetables were reduced.

Yue *et al*. (2021) investigated that the change in consumer's food consumption due to Covid-19 through their research study. The results showed that during the pandemic, consumers have a higher WTP for these food products, and that their WTP was positively affected by their awaited duration of the COVID-19, their online shopping shares, their direct exposure to infected patients, their gender, and their income. These findings suggested that the food industry should try to develop online market channels because consumers are willing to share costs, whereas lower-income consumers may be unable to meet their food needs if prices rise above their WTP.

Yang *et al*. (2021) carried out a research study on consumer behaviour and food prices during the Covid-19 pandemic. This research was carried out in Chinese cities to explore how food prices changed due to regulations. The results revealed that there was a large deviation in the food prices before and after the declaration of lockdown, and the effect was much larger on non-perishable vegetable prices. The demand for non-perishable food such as Chinese cabbage and potato was increased due to panic buying. This consumer behaviour caused sizable losses in consumer welfare.

Aparna and Kata (2020) conducted a research study on impact of Covid-19 on food purchasing, eating behaviours, and perception of food safety in consumers of Telangana and Andhra Pradesh. This paper concluded that purchasing and eating habits have changed. People were shopping less in-person and consuming more home-cooked healthy meals while managing with existing stocks. Food consumption, and eating habits have been significantly impacted due to concerns about hygiene, personal safety, food purchases, and consumption.

Kumar and Abdin (2020) conducted a study on impact of epidemics and pandemics on consumption pattern: evidence from Covid-19 pandemic in rural-urban India, which proved that epidemics and pandemics have a profound impact on the pattern of consumption in India. It was found that consumption habits of consumers went a sea change and they were spending largely on essentials only.

Mittra *et al*. (2020) made an attempt to study the price shocks and their implications for nutrition security in India during Covid-19 pandemic. this report produced the comparative study of the price changes that occurred in cereals and non-cereals food items during pre and post pandemic. The findings revealed that there was a rise in food prices post pandemic and the prices were high among non-cereal food groups whereas the price of nutritionally rich crops such as pulses have remained high even after the ease of lockdown.

Seth (2020) explored the effect of pandemic on consumer behaviour through his study “Impact of Covid-19 on consumer behaviour. Through this paper the author revealed that there were significant disruptions on consumer behaviour, people were adapting to new technologies which facilitate consumption in a more convenient manner. It also shows that most habits will return to normal, however some habits die because, in the process of lockdown, consumer will find more alternative ways which may help them to cope with the future crisis.

Kuna and Kata (2020) analysed the impact of Covid-19 on food purchasing, eating behaviours and perceptions of food safety in consumers through online survey during the months of April and May. The results suggested that During the Covid-19 pandemic, there was a significant change in consumer purchasing behaviour. People preferred to shop less frequently, and 62% of respondents managed with what they already had. While shopping for food, 69% of people maintained social distance and

wore masks. About 74.3% shopped at stores less frequently for groceries. The consumption of packaged foods was increased by 28%. Consumers became more health-conscious and altered their eating habits. About 60% of the respondents agreed that their eating habits had changed, and 52% reported eating healthier foods compared to pre-covid days. Nearly 90% consumed home-cooked meals. 96% of them were aware of the Covid-19 threat and were taking precautions. While 86% of the respondents sanitised, food purchased from outside.

Chenarides *et al.* (2020) investigated the food shopping behaviours and consumption during the pandemic lockdown by conducting online consumer survey. The findings of this study revealed that about three-quarters of respondents were simply buying whatever they can due to out-of-stock situation and half of the participants bought more than usual. During the early stages of the pandemic, when there were no clear rules in place, consumers attempted to avoid shopping in stores, relying heavily on grocery delivery and pick-up services. The number of households using grocery pickup as a shopping method was increased by 255%, while the number of households using grocery delivery services has increased by 158%. Majority of the participants' food consumption patterns for major food groups appeared to remain consistent, but a sizable proportion indicated that they had been snacking more since the beginning of the pandemic, which was offset by a sharp decline in fast food consumption.

Schmidt *et al*. (2020) assessed the impact of Covid-19 induced income and rice price shocks on household welfare. Model simulations indicated that a 25% rise in the world price of rice would reduce total rice consumption in PNG by 14% and reduce rice consumption of the poor (bottom 40% of total household expenditure distribution) by 15%. Due to COVID-19 related economics lowdown household income was decreased by 12 per cent. Which had impacted rice consumption of the urban and rural poor, fell by 20% and 17%, respectively.

Gupta and Kishore (2020) through their research examined how Covid-19 affected household expenditure in India. India experienced increase in unemployment due to Covid-19 shock which led to disruption in expenditure pattern of household. This paper estimated the immediate impact of job losses on consumption patterns by comparing different expenses. The findings revealed that consumption in urban households is more sensitive to employment and income shocks than rural, wealthy urban households shown decline in consumption.

These review studies revealed that during lock-down period consumers had faced increase in expenditure as results of price hike. Some people only preferred fresh foods and home cooked foods by avoiding outside food whereas people who don't have access to market brought foods with longer shelf-life period. They also experienced income reduction, layoffs which resulted in spending only on essentials. People changed their consumption practices in order to manage the problems created by lockdown.

From the above reviews, it is evident that Covid-19 had unprecedented impact on global economy. It has triggered massive disruptions in economies, jobs, and livelihoods. Due to restrictions, it caused severe food insecurity which led to increase in food prices due to the increase in demand. This led to change in food consumption patterns of people and change in the expenditure pattern. The difference in price dated to pre and post pandemic led to the difference in CPI causing inflation.

Chapter III

MATERIAL AND METHODS

This chapter provides a detailed information about the process in which the data was collected, analysed and discussed for research on "measuring the change in price of essential food items used rural and urban households of Telangana state during the pandemic". The Covid-19 pandemic has significant impact on the prices of essential food items (EFI). The adopted methodology to conduct the study was presented under the following heads.

3.1 Research design

3.2 Sampling procedure

3.3 Variables and their measurement

3.4 Research tool

3.5 Data collection

3.6 Statistical analysis and interpretation

3.7 Operational definitions

3.1 Research design

The research design refers to the overall strategy you choose to integrate the various components of the study in a coherent and logical manner, ensuring that you will effectively address the research problem; it serves as the blueprint for data collection, measurement, and analysis.

An exploratory research method was adopted to conduct this study. This type of research design was adopted when the researcher has no past data or only few studies as reference. The focus is on gaining insights and familiarity for later investigation or undertaken when problems are in a preliminary stage of investigation. Exploratory research can add valuable and insightful information to a study and is essential to its success. Exploratory research allows the researcher to be as creative as possible in order to gain more insight into a subject. This kind of research design was adopted to find out the changes that occurred in EFI and also its impact on consumption behaviour.

3.2 Sampling procedure

The sampling methods generally involve taking the representative sample of the population and using the data collected as research information. Multi-stage sampling technique was adopted for the study as it enables the researcher to conduct survey at different regions.

3.2.1 Location of the study

The study was purposively carried out in two regions i.e., rural and urban. Jogulamba Gadwal and Wanaparthy districts under urban area and Undavelly and Kadukuntla villages under rural were selected to draw the sample for conducting the research study.

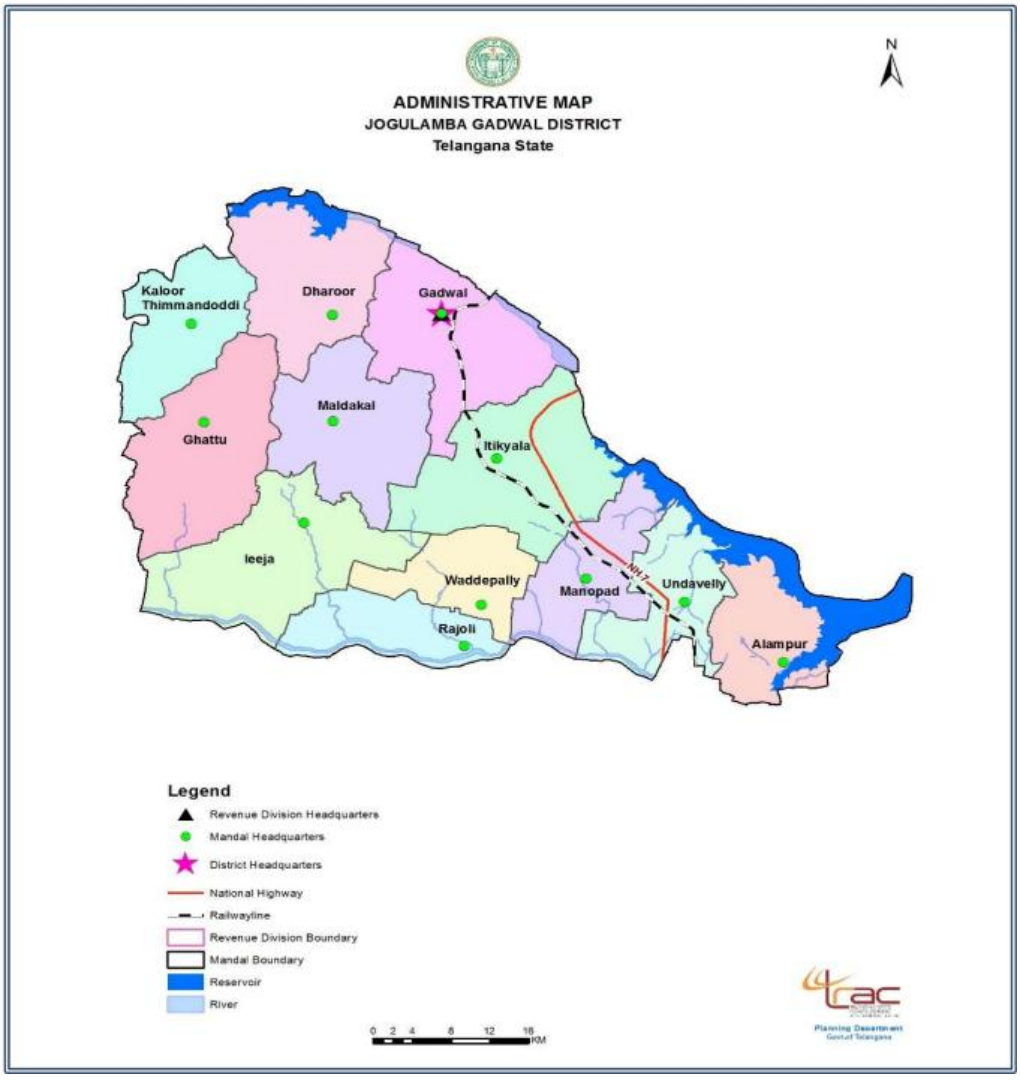


Figure 3.1 Jogulamba Gadwal (Gadwal and Undavelly)

Figure 3.2 Wanaparthy (Wanaparthy and Kadukuntla)

3.2.2 Selection of the sample

Sampling is the process of selecting units (e.g., people, organisations) from a population of interest in order to generalise the findings back to the population from which they were drawn. The criteria for selecting the households were that, one of the family members was infected with Covid-19. The list of the Covid-19 infected people was taken from the DMHO of the respected districts. The total number of covid cases registered in Jogulamba Gadwal district were 2930 and Wanaparthy were 1591. Among the two regions, 100 respondents were selected from urban area i.e., 50 each from Gadwal and Wanaparthy while 100 respondents were selected from rural area i.e., 50 each from Undavelly and Kadukuntla villages, thus making the total sample 200.

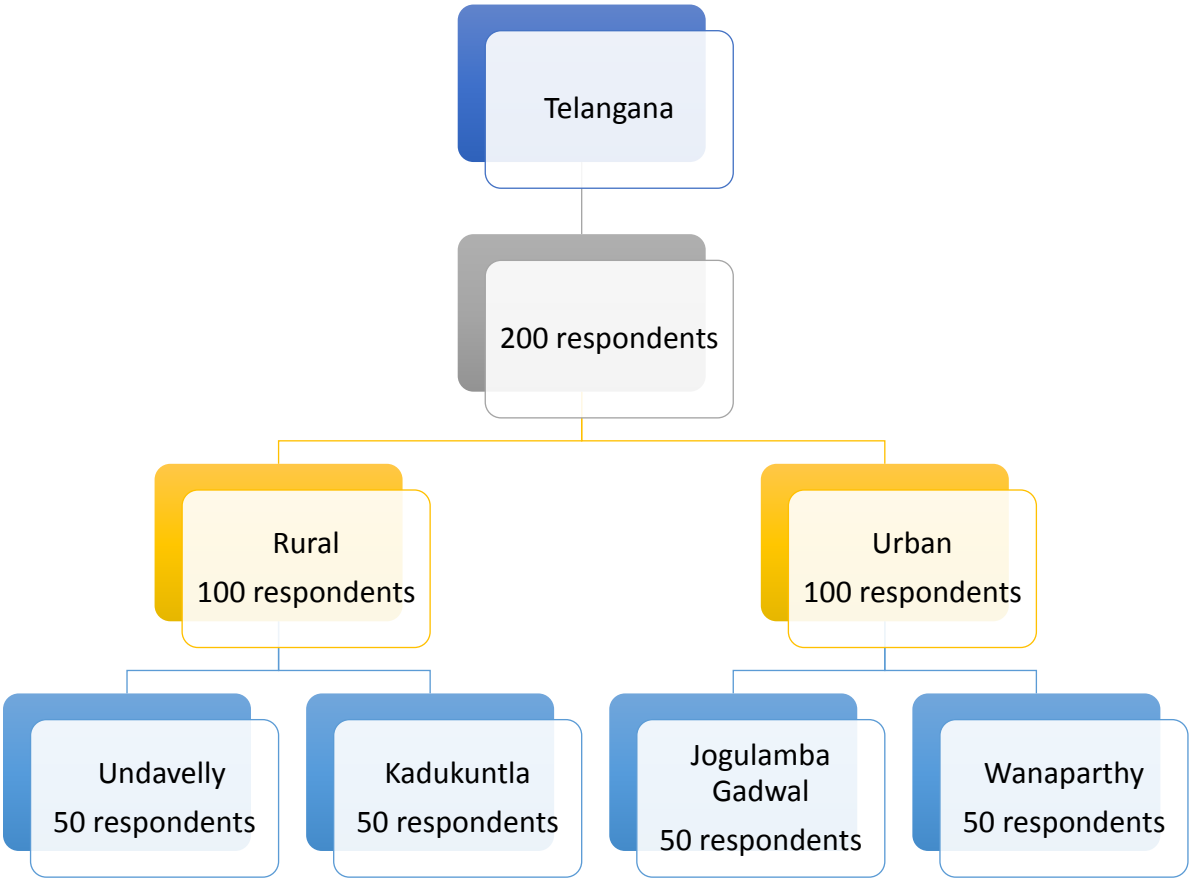


Figure 3.3 Selection of the sample

3.3 Variables and their Measurement

Variable is something that varies for each sample. Variable is a symbol to which numerals or values are assigned (Kerlinger, 1995). Keeping the focus of research, variables for this study were selected based on the review of literature and objectives of the study which are categorized into Dependent and Independent variables.

Table 3.1 Table variables and their empirical measurement

S.no	Variables	Empirical measurement
A.	**Independent variables**	**Independent variables are the variable which the researcher has control over them**
1.	Location	A schedule was developed for the study
2.	Family income	A schedule was developed for the study
3.	Stages of family life cycle	A schedule was developed for the study
4.	Family size	A schedule was developed for the study
5.	Occupation	A schedule was developed for the study
B.	**Dependent variables**	**The variable whose variable depends on another variable**
1.	Expenditure pattern	A schedule was developed for the study
2.	Consumer price index	A schedule was developed for the study

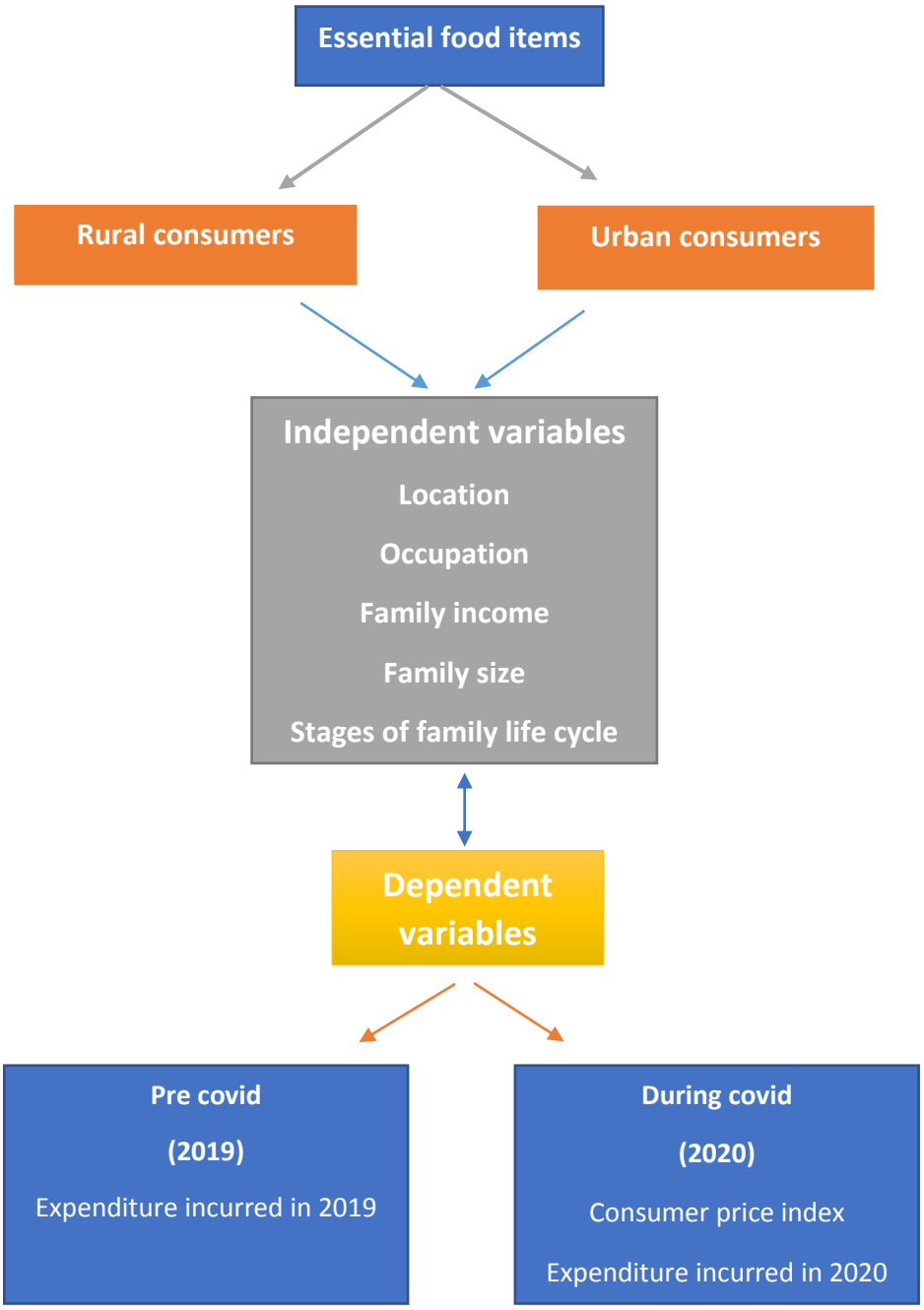


Figure 3.4 Conceptual framework for the study

3.3.1 Independent variables

3.3.1.1 Location

Location is one of the independent variables used in the present study as it is assumed that it may have an influence on the dependent variables. This was furnished in the demographic information. This variable is categorized into two namely Rural and Urban.

s.no	Location	Code
1	Rural	1
2	Urban	2

3.3.1.2 Income

Income of the respondent was considered as an independent variable. Kuppuswamy scale was induced to collect the information from the respondents. This scale is classified into 8 categories. Income variable generally consists of three income groups which are low, medium and high-level income groups. Income is selected as independent variable as it is presumed that different income groups have different sort of relation with Dependent variables.

S.no	Income	Code
1	Below 6000	1
2	6000-18000	2
3	18000-31000	3
4	31000-47000	4
5	47000-63000	5
6	63000-120000	6
7	Above 120000	7

3.3.1.3 Stages of family life cycle

The developmental stages that family goes through over time and masters their tasks is called as stages of family lifecycle (Duvall's 1988). There are different theories on family life cycle. Duvall's theories of family life cycle was adopted to conduct this survey. This family life cycle is divided into 8 stages i.e., 1. Married couple without children 2. Childbearing families 3. Families with preschool children 4. Families with school-age children 5. Families with adolescents 6. Launching families 7. Middle-age families 8. Aging families.

S.no	Stages of family life cycle	Code
1	Married couple without children	1
2	Childbearing families	2
3	Families with preschool children	3

4	Family with school-age children	4
5	Family with adolescents	5
6	Launching families	6
7	Middle-age families	7
8	Aging families	8

3.3.1.4 Family size

There are several ways to define family size. It can be defined such that all members of a household are included. This may include parents and children, but it may also include extended family members (e.g., aunts, uncles, grandparents) (Blake J 1980). The size of family is one of the important aspects to quantify the change in consumption of essential food items required for the family as quantities varies based on the size of family. Family size is divided into 3 categories namely nuclear family, joint family and extended family.

S.no	Family size	Code
1	1-4	1
2	4-7	2
3	7 and above	3

3.3.1.5 Occupation

A person's usual or principal work or business, especially as a means of earning a living. Occupation in both traditional and western societies is a status indicator and also fundamental index (Gross 1959). Occupation as independent variable is classified into 5 groups which includes daily wage earners, Profession, Agriculture, Business and unemployed and is included in demographic information.

S.no	Occupation	Code
1	Daily wage earners	1
2	Profession	2
3	Agriculture	3
4	Business	4
5	Unemployed	5

3.3.2 Dependent variables

3.3.2.1 Consumer Price Index

The Consumer Price Index (CPI) tracks the overall change in consumer prices over time by using a representative basket of goods and services. The CPI is the most widely used measure of inflation, with policymakers, financial markets, businesses, and consumers closely following it. CPI is taken as dependent variable based on the review of literature and especially CPI is used to calculate the prices of essential food items. For this a schedule was prepared in which quantity and prices of EFI are noted. The schedule deals with quantity and prices of 2 years namely 2019 which is considered as base year as well as 2020 which is measured for the post-pandemic change in the quantity of consumption and change in prices.

The collected data was used to calculate the consumer price index by using the formula given below:

Consumer price index in current period= [cost of basket in present year / cost of basket in base year] x 100

3.3.2.2 Expenditure incurred

Another dependent variable is the expenditure incurred. The expenses that occurred to the consumer in order to consume a particular product is dealt as expenditure incurred. A Likert scale was administered to know the impact of pandemic on the expenditure incurred for a household. The total scale comprised of 10 statements and they are rated as 1 as strongly agree 2 as agree 3 as neutral 4 as disagree 5 as strongly disagree. The schedule prepared to measure CPI also gives the insights of expenditure incurred to purchase the EFI. Based on the responses recorded, we have analysed the impact of pandemic on expenditure incurred to the household.

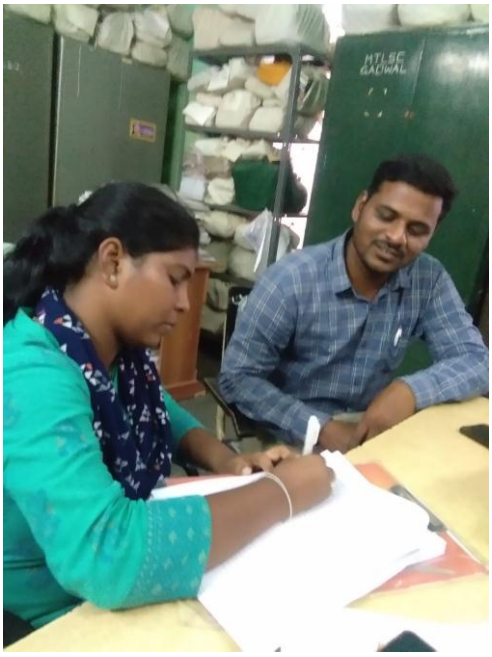
3.4 Research tool

This survey was carried out using structured questionnaire cum Interview schedule which is administered for urban households and rural households, where the questions were divided into three sections. In the first and second section, food consumption and expenditure patterns are recorded and in the third section impact on

consumption behaviour is recorded which includes questions such as a change in shopping behaviour, change in consumption and impact of lockdown on consumers.

3.5 Data collection

The data required for the study was collected by administering developed questionnaire and interview schedule to the respondents as some respondents were unable to understand and answer the questions by themselves. The respondents were personally interviewed by the investigator which enabled her to get first-hand information and provided an opportunity to observe the opinion of respondents. It was made sure that the respondents had clearly understood the questions by repeating and clarifying them whenever necessary. The questions were asked in both English and Telugu languages based on preference of respondents. There was a healthy and friendly atmosphere between the researcher and the respondents throughout the survey as it enables the respondents to answer the questions with ease and honesty.



3.6 Statistical analysis and interpretation

Statistical analysis is important to find out the relation and association between the determined variables. The data thus obtained from the survey was analysed using the following statistical methods.

3.6.1 Frequency distribution

The dataset that has values and numbers was used to understand the distribution pattern.

3.6.2 Central tendency

Central tendency was the statistical tool used to measure the mean, median and mode of the data obtained from the respondents.

3.6.3 Correlation

Correlation is statistical tool that measures the to what extent two variables vary in relation to each other. It may be either positive or negative correlation. A positive correlation indicates the extent to which two variables increase or decrease in parallel. A negative correlation indicates the extent to which one variable increase as other decrease.

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

Where n = Quantity of Information

Σx = Total of the First Variable Value

Σy = Total of the Second Variable Value

Σxy = Sum of the Product of first & Second Value

Σx^2 = Sum of the Squares of the First Value

Σy^2 = Sum of the Squares of the Second Value

3.6.4 Chi-square test

The chi-square statistic is one method for demonstrating an association between two categorical variables. In statistics, variables are classified into two types: numerical (countable) variables and non-numerical (categorical) variables. The chi-squared statistic is a single number that tells you how much difference there is between your observed counts and the counts you would expect if there was no association in the population at all.

Formula

$$\chi^2 = \sum(O_i - E_i)^2/E_i,$$

X^2= chi-square

O_i = observed value

E_i = Expected value

3.6.5 ANOVA

An ANOVA test is a statistical test that is used to determine if there is a statistical significant difference between two or more categorical groups by testing for mean differences using variance. The collected data is tested here to determine the difference between variables. The test statistic for an ANOVA is denoted by the letter F.

The formula for ANOVA

F = variance caused by treatment/variance due to random chance/error

The ANOVA F value can tell you if there is a significant difference between the levels of the independent variable, When $p<.05$. So, a higher F value indicates that the treatment variables are significant.

3.7 Operational definitions

Essential food items: Essential food items (EFI) are the basic required food items that concern the life of many people and are used regularly in their diet such as rice, sugar, oil, meat products, milk etc. the essential food items include Rice, Wheat, Atta, Gram dal, Arhar dal, Urad dal, Moon dal, Masoor dal, Milk, Meat, eggs, Sun flower oil, Palm oil, Ground nut oil, Mustard oil, Vanaspati, Dry fruits, Sugar, Jaggery, Tea loose, Salt, chilli powder, mustard, pepper.

Consumer price index: The index which measures the change in prices of goods and services that are used by consumers, by calculating the prices of the current year with the prices of the base year is called consumer price index.

Expenditure incurred: The amount of income/savings spent by a household to purchase the required goods and services is called expenditure incurred.

Consumption behaviour: The response or attitude of a consumer to a particular change in a market that enables a buyer to alter his/her decision to buy a product is called consumption behaviour.

Stages of family life cycle: The progression of family through a cycle which begins with marriage of two individuals followed by child bearing child rearing and ends with retirement and empty nest stage where they are again left with only two individuals is called stages of family life cycle.

Chapter IV

RESULTS AND DISCUSSION

This chapter includes the findings of the investigation and their interpretation of the present research aimed at evaluating the change in prices of essential food items caused due to the onset of pandemic, behavioural changes of consumption among the individuals and the changes in expenditure pattern. The data obtained through the survey was analysed, tabulated and discussed under the following headings.

4.1 Demographic profile of the respondents

4.2 Assessment of quantity consumed by selected families and analysing the percentage changes in essential food items due to Covid-19

4.3 Consumer price index of essential food items

4.4 Impact of Covid-19 on consumer expenditure on essential food items

4.5 Testing the hypothesis framed for the study

4.1 Demographic profile of the respondents

This section includes the information about demographic profile of the selected household respondents. This includes the background information of the respondents like age, education, occupation, family type, family size, income and the stages of family life cycle which is given in Table 4.1.

Table :4.1 Distribution of the respondents by their demographic characteristics

S.no	Parameter	Rural n=100		Urban n=100		Total n=200	
		F	%	F	%	F	%
4.1.1	**Age in years**						
a.	Under 25	11	11.00	23	23.00	34	17.00
b.	26-40	27	27.00	33	33.00	60	30.00
c.	41-60	44	44.00	41	41.00	85	42.00
d.	61 and above	17	17.00	3	3.00	20	10.00
4.1.2	**Education level**						
a.	Illiterate	5	5.00	1	1.00	6	3.00
b.	Can read and write	9	9.00	4	4.00	13	6.50

	Primary school	17	17.00	4	4.00	21	10.50
	Secondary school	14	14.00	2	2.00	16	8.00
	High school	22	22.00	13	13.00	35	17.50
	Intermediate	13	13.00	29	29.00	42	21.00
	Graduation	15	15.00	38	38.00	53	26.50
	Post-graduation	5	5.00	9	9.00	14	7.00
4.1.3	**Occupation**						
a.	Daily wage earners	20	20.00	6	6.00	26	13.00
b.	Profession	24	24.00	47	47.00	71	35.50
c.	Agriculture	22	22.00	-	-	22	11.00
d.	Business	3	3.00	3	3.00	6	3.00
e.	Unemployed	27	27.00	38	38.00	65	32.50
4.1.4	**Family income in rupees per month**						
a.	Below 6000	15	15.00	7	7.00	22	11.00
b.	6000-18000	45	45.00	28	28.00	73	36.50
c.	18000-31000	29	29.00	30	30.00	59	29.50
d.	31000-47000	5	5.00	14	14.00	19	9.50
e.	47000-63000	1	1.00	2	2.00	3	1.50
f.	63000-120000	1	1.00	10	10.00	11	5.50
g.	Above 120000	3	3.00	5	5.00	8	4.00
4.1.5	**Stages of family lifecycle**						
a.	Married couple without children	5	5.00	-	-	5	2.50
b.	Children bearing families	18	18.00	14	14.00	32	16.00
c.	Preschool children	16	16.00	17	17.00	33	16.50
d.	School going children	11	11.00	25	25.00	36	18.00
e.	Adolescents	15	15.00	22	22.00	37	18.50
f.	Launching families	17	17.00	9	9.00	26	13.00
g.	Middle-aged families	9	9.00	7	7.00	16	8.00
h.	Aging families	5	5.00	-	-	5	2.50
4.1.6	**Family size**						
a.	Small (1-4)	63	63.00	71	71.00	134	67.00

b.	Medium (5-7)	34	34.00	29	29.00	63	32.00
c.	Large (8 and above)	3	3.00	-	-	3	2.00
4.1.7	**Family type**						
a.	Nuclear	65	65.00	86	86.00	151	76.00
b.	Joint	33	33.00	14	14.00	47	47.00
c.	Extended	2	2.00	-	-	2	2.00

4.1.1 Age of the respondents

The respondents selected for the study were categorised into four groups which can be identified as young age from 18-24 years, early adulthood from the age of 26-40 years, late adulthood from 41-60 years and elderly above with the age of 61 years. Minimum and maximum age of the sample is 21 years and 75 years respectively.

The results indicated that in rural area 44 per cent belonged to the late adulthood followed by 27 per cent belonged to early adulthood while 17 per cent belonged to elderly age group and a negligible portion (11%) of the respondents belonged to young age. In urban area 41 per cent belonged to the late adulthood followed by 33 per cent belonged to early adulthood while 22 per cent belonged to young age and negligible portion (11%) of the respondents belonged to elderly age group.

On the whole, 42 per cent belonged to the age group of 41-60 years, followed by one-third belonged to 26-40 years,17 per cent belonged to below 25 years and 10 per cent belonged to 61 years and above.

4.1.2 Education level of the respondents

It refers to the educational level of the respondents, who were classified into nine categories namely illiterate, can read and write, primary school, secondary school, high school, intermediate, graduation and post-graduation included. (Udai and Pareek 2021)

Table 4.1 shows that in rural area 22 per cent of the respondents studied up to high school level followed by primary school (17%), graduation (15%), secondary high school (14%), a negligible portion (9%) can read and write, (5%) postgraduates and illiterates. In urban area more than one-third (38%) of the respondents were graduates, followed by intermediate (29%), high school (13%), while 9 per cent of the respondents were post graduates, an equal percentage of respondents i.e., 4 per cent can read and write and studied up to primary school.

Out of the total sample, more than one-fourth of the respondents (26.5%) were graduates followed by one-fifth (21%) of the respondents studied up to intermediate and 17.5 per cent studied up to high school, whereas negligible portion of the sample (3%) were illiterates.

4.1.3 Occupation of the respondent

From Table 4.1, it is clear that 27 per cent were unemployed followed by 24 per cent were professionals. More or less an equal percentage of the respondents were (22%) agriculture workers and daily wage earners (20%), while a negligible percentage (3%) were doing business in the rural area. Whereas, in urban households, 47 per cent were professionals followed by 38 per cent were unemployed, 6 per cent were daily wage earners and 3 per cent were into business.

Out of the total respondents, 35.5 per cent of the respondents were professionals followed by unemployed (32.5%) and daily wage earners (13%), whereas 11 per cent were into agriculture and 3 per cent were doing business.

4.1.4 Monthly income of the family

Regarding the monthly income of the respondents in rural area, 45 per cent of the families belonged to the income group earning between Rs. 6000-18000 followed by 29 per cent of respondents were earning Rs.18000-30000, 15 per cent were earning below Rs. 6000 and a negligible percentage (5%) were earning Rs. 31000-47000, (3%) above Rs. 120000 and (1%) between Rs. 47000-63000 and Rs. 63000-120000 respectively. Where as in urban area, 30 per cent of the families belonged to the income group of between Rs. 18000-31000 followed by 28 per cent of respondents were earning Rs.6000-18000, 14 per cent were earning between Rs.31000-47000, more or less an equal percentage were earning between Rs. 63000-120000(10%) and below Rs.6000(7%), 5 per cent were earning above Rs.120000 and 2 percent were earning between Rs. 47000-63000.

Of the total sample the highest portion (36.5%) were earning between Rs. 6000-18000 followed by 29.5 per cent were earning between Rs. 18000-31000. More or less an equal percent of respondents was earning below Rs. 6000(11%) and between Rs.31000-47000 respectively. A negligible portion of the respondents were earning between Rs. 63000-120000(5.5%), above 120000(4%) and Rs.47000-63000(1.5%).

4.1.5 Family size of the respondents

From table 4.1, data regarding the family size showed that 63 per cent of the respondents had family members between 1-4, followed by 5-7(34%) and 3 per cent of families have above 8 in rural area. Where as in urban area, a maximum of 71 per cent respondents had family members between 1-4, 29 per cent had between 5-7 and negligible percentage (3%) had more than 8 members in the family. It clearly shows that small family is predominant in both urban and rural areas.

Out of the total sample, majority of sample (67%) had small families while 32 per cent belonged to medium sized family (5-7) and a negligible portion (2%) belonged to large family.

4.1.6 Stages of family life cycle

Family life cycle starts with young couple and grows into a larger group with children and eventually returns to a small group of old couple.

Table no. 4.1 revealed that in rural area, 18 per cent of the families were in child bearing stage of family life cycle, followed by 17 per cent of the families belonged to launching families, 16 percent of the respondents belonged to the family cycle consisting of pre-school children, 15 per cent of the families comes under the life cycle of family with adolescents however 11 per cent of the families found to come under families with school going children, middle-aged families(9%) and an equal percentage(5%) of respondents belonged to life cycle of married couple without children and aging families. In urban area, 25 per cent of the families belonged to the life cycle of family with school going children, followed by 22 per cent were from families with adolescents, 17 per cent were from families with preschool children, 14 per cent were from children bearing families, and a negligible portion of the respondent families were from launching (9%) and middle-aged families (7%).

The results of total sample revealed that an equal percent of respondents i.e., 18.5 percent each belonged to families with school going children and families with adolescents (18%). An equal per cent of the respondents belonged to children bearing families (16.5%) and families with pre-school children (16%). About 13 per cent were from launching families, whereas 8 per cent were of middle-aged families and an equal percent (2.5%) were of aged families and married couple without children.

It is evident from the results that major per cent of the respondents from rural area belonged to the family cycle of child bearing stage followed by families from launching stage, this indicates that major Covid-19 affected people belonged to child bearing stage. Whereas in urban area, major per cent belonged to family life cycle of school going children and adolescents.

4.1.7 Family type

Based on type of family, the respondents were classified into 3 categories namely nuclear family, joint family and extended family. It is evident from Table 4.1 that 65 per cent population belonged to nuclear families followed by 33 per cent were living in joint families and 2 per cent belonged to extended families in rural area. Where as in urban area, 86 per cent of the respondents belonged to nuclear family followed by 18 per cent belonged to joint families.

The results revealed that a maximum number of respondents were from nuclear families, this may be because people usually prefer small families over joint families owing to the expenditure and income problems.

4.2 Assessment of quantity consumed by selected families and analysing the percentage changes in essential food consumption due to Covid-19

Table: 4.2 Distribution of the quantities of essential food items consumed by selected families during the month of April 2019 and 2020

		Rural							Urban						
S. No	**Food items**	**2019 (Kg/Gm/Lt)**			**2020 (Kg/Gm/Lt)**			**% Change from 2019-2020**	**2019 (Kg/Gm/Lt)**			**2020 (Kg/Gm/Lt)**			**% Change from 2019-2020**
		Min	Max	Mean	Min	Max	Mean		Min	Max	Mean	Min	Max	Mean	
1	Cereals and pulses	14.5	82.5	33.71	14.5	68	34.50	2.3	12	104	34.26	12.5	73	33.14	-3.3
2	Milk	7	90	20.48	7	90	25.49	24.5	5	90	20.13	5	60	23.93	18.9
3	Chicken	1	10	2.995	1	16	4.07	35.9	1	16	2.71	1	12	3.72	37.3
4	Eggs	0.5	15	2.45	1	20	3.23	31.8	0.5	20	2.43	1	20	3.205	31.9
5	Banana	0.5	5	1.095	0.5	10	1.46	33.3	0.5	10	1.125	0.5	10	1.58	40.4
6	Guava	0.5	3	0.47	0.5	4	0.62	31.9	0.5	4	0.48	0.5	3	0.72	50.0
7	Apple	0.5	3	0.75	0.5	5	1.08	44.0	0.5	5	0.765	0.5	3	0.88	15.0
8	Grape	0.5	1	0.285	0.5	2	0.49	71.9	0.5	2	0.565	0.5	3	0.61	8.0
9	Dry fruits	0.25	1	0.336	0.5	5	0.575	71.1	0.1	5	0.357	0.1	4	0.627	75.6
10	Papaya	1	4	0.12	1	6	0.15	25.0	1	6	0.14	1	2	0.2	42.9
11	Orange	0.5	3	0.575	0.5	6	0.72	25.2	0.5	6	0.635	0.5	5	0.87	37.0
12	Vegetables	2	52	16.74	5	104	17.89	6.9	4	39	14.99	4.5	82	15.89	6.0
13	Fats and oils	1	15	5.87	1	15	6.60	12.4	2	15	4.7	2	15	4.8	2.1
14	Non-alcoholic beverages	0.25	1	0.46	0.25	1.5	0.47	2.2	0.25	1.5	1.145	0.25	3	1.155	0.9
15	Spices and condiments	0.5	6.5	2.54	0.5	7.5	2.65	4.3	1	6.5	2.50	1.1	7.5	2.39	-4.00

Quantities of essential food items (EFI) consumed by the respondent families during pre-Covid and during lock-down period were discussed in Table 4.2.

In rural area, the average consumption of cereals and pulses was 33.71 kg in 2019 and 34.5 kg in 2020. Fruit consumption was more or less same in 2019 and 2020 i.e., in pre Covid and during Covid, with average consumption of banana 1.095 dozen in 2019 and 1.46 dozen in 2020, followed by apples with mean consumption of 0.75 dozen and 1.08 dozen in pre and during Covid. The average consumption of 16.74 and 17.8 kgs was recorded for vegetables. More or less an equal per centage of consumption was found in relation to chicken, eggs, banana and guava during pre covid and Covid period.

However, Consumption of grapes was increased very high (71.9%) during Covid time followed by dry fruits (71.1%), apple (44%), and orange (25.2%). More or less same percent of increase in consumption was found with respect to milk and papaya (24%). Below 10 per cent increase in consumption was found in relation to vegetables, spices and condiments, fats and oils, cereals and pulses and non-alcoholic beverages.

Though overall consumption of food items like vegetables and papaya showed an increase during pandemic, when seen individually, the consumption of papaya (-33%) was decreased in Undavelli village (Annexure-1). The consumption of products like cereals and pulses (-1.5%), non-alcoholic beverages (-4.3%) and vegetables (-5.8%) showed a decrease in Kadukuntla village. The reason for decrease in vegetable consumption in Kadukuntla village as reported by the respondents was that during lock-down there was less availability of vegetables and people couldn’t travel to other places due to restrictions. Similarly, respondents also reduced the consumption of non-alcoholic beverages owing to health issues and cereals and pulses were consumed less as their physical mobility was reduced.

The data in urban area revealed that the highest percentage increase was observed in dry fruits (75.6%) with mean consumption of 0.35 kgs in 2019 and 0.62 kgs in 2020, followed by 50 per cent increase in guava with 0.48 kg and 0.72 kg noticed during pre and during Covid respectively. More or less an equal percentage increase in consumption was observed with respect to bananas (40%), papaya (42.9%), chicken (37.3%), oranges (37%), chicken (38%) and eggs (31.9%). However, a decrease in consumption was seen in spices and condiments (-4%) and cereals and pulses (-3.3%).

The reduction in consumption of cereal and pulses was observed in Gadwal district, where people especially reduced consumption of rice when compared to pre-Covid due to fear of diabetes and obesity as there is less physical activity; and lost appetite with the infection of Covid. Spices also showed a slight decrease in consumption as the prices of spices especially pepper has increased.

From the above results it is understood that food items like fruits, milk and meat products have shown large increase in consumption when compared to 2019, because respondents have felt that consumption of these foods might boost their immunity and cures and prevents the infection. Whereas as other products have shown only slight increase which indicates that respondents were consuming them on a regular basis.

Table: 4.3 Distribution of the quantities of citrus and non-citrus fruits consumed by selected families during the month of April 2019 and 2020

	2019 (Kg/Gm/ Lt)	**2020 (Kg/Gm/Lt)**	**% Change 2019-2020**	**2019 (Kg/Gm/ Lt)**	**2020 (Kg/Gm/Lt)**	**% Change 2019-2020**
	Mean	**Mean**		**Mean**	**Mean**	
Citrus fruits	0.38	0.49	28.32	1.49	0.59	43.02
Non-citrus fruits	1.03	1.53	47.02	1.13	1.49	32.02

Table 4.1 reveals the results regarding the average consumption of citrus and non-citrus fruits during 2019 and 2020. The average consumption of citrus fruits was found to be 0.38 kgs and 0.49 kgs in 2019 and 2020 with an increase in percentage of 28.32% in rural area and 47.02 per cent increase was observed in non-citrus fruits with average consumption 1.03 kg in 2019 and 1.53 kg in 2020 respectively. The data regarding the urban area revealed that 43.02 per cent increase was observed in citrus fruit consumption and 32.02 per cent increase in non-citrus fruits.

From the data we can conclude that consumption of citrus fruits has increased largely in urban area during lock-down period when compared to rural area.

Table: 4.4 Distribution of the quantities of vegetables consumed by selected families during the month of April 2019 and 2020

	Rural			Urban		
	2019 (Kg/Gm/ Lt)	**2020 (Kg/Gm/ Lt)**	**% Change 2019-2020**	**2019 (Kg/Gm/Lt)**	**2020 (Kg/Gm/ Lt)**	**% Change 2019-2020**
	Mean	Mean		Mean	Mean	
Roots and tubers	2.10	2.16	3.01	1.84	2.12	15.67
Green leafy vegetables	2.49	2.68	7.6	1.83	1.62	-11.48
Others	1.9875	2	0.62	1.7525	1.755	0.14

Table regarding the vegetables revealed that the highest percentage change in consumption was observed in green leafy vegetables (7.6%) with an average consumption of 2.49 kgs in 2019 and 2.68 kgs in 2020 followed by roots and tubers (3.01%) whose average consumption was observed to be 2.10kg and 2.16 kgs in 2019 and 2020(pre Covid and during Covid period) respectively. However, other vegetables like brinjal, ladies' finger etc have shown only 0.62 per cent increase in consumption in pre Covid and during Covid period.

In urban area the results revealed that the consumption of roots and tubers and other vegetables has increased by 15.67 per cent and 0.14 per cent respectively in 2019 and 2020. Whereas the consumption of green leafy vegetables had showed a decrease (-11.48%) with average consumption of 1.83 kg in 2019 and 1.62 kgs in 2020, may be due to the less supply of green leafy vegetables as they are perishable.

4.3 Consumer price index of essential food items in rural and urban area

Table 4.5 Distribution of expenditure incurred for rural and urban area and consumer price index for 2020

Food groups	Expenditure change in Rupees						Consumer price index for the year 2020		The total Consumer price index for the year 0f 2020
	Rural			Urban			Rural (CPI)	Urban (CPI)	
	Amount (Rs)		% change	Amount (Rs)		% Change			
	2019	2020		2019	2020				
Cereals and pulses	1232.13	1520.51	23.45	1184.5	1483.2	22.07	123.40	122.0	146.479
Milk and meat	1625.3	2829.4	74.09	1538.1	2738.9	72.17	174.09	172.17	
Vegetables and fruits	1063.05	1590.04	49.57	1102.2	1633.2	52.10	149.57	152.10	
Fats and oils	457.77	563.85	23.17	420.6	521.4	13.91	123.17	113.91	
Non-alcoholic beverages	88.55	110.6	24.90	99.24	113.39	17.06	124.90	117.0	
Spices and condiments	288.8	345.29	19.56	333.05	367.91	17.25	119.56	117.2	
Total							146.35	144.4	

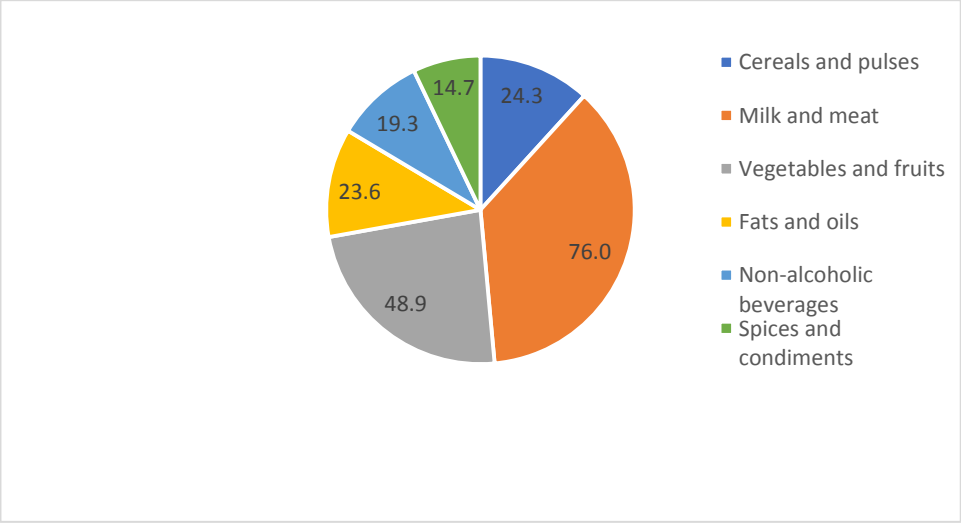


Figure-4.1 Distribution of expenditure increase incurred for Telangana state

Expenditure across different food groups vary based on their requirement. This necessity depends on various situations such as drought, pandemic and any other such crisis where the supply decreases and demand increases which leads to an increase in the price of the products. In this situation automatically the expenditure on that products increases because people feel that the item is mandatory for their day-to-day life, such a situation is the Covid-19 pandemic, where people had purchased the essential items even though the prices of those items increased.

Table-4.5 showed that in rural areas, major percentage of increase in expenditure was seen in milk and meat (74.09%) with an average expenditure in 2019 was Rs.1625.3 and Rs. 2829.4 for 2020. Secondly the major percentage change was observed in vegetables and fruits (49.57%) with an average expenditure of 1063.05 in 2019 and 1590.04 in 2020, however non-alcoholic beverages has shown 24.9 per cent change in expenditure with the average expenditure of Rs. 88.55 in 2019 and 110.6 in 2020. Cereals and pulses had shown 23.4 percent of increase in expenditure with average expenditure of Rs. 1232.13 in 2019 and 1520.5 in 2020, followed by 23.17 percent change in the expenditure of fats and oils with an average expenditure of Rs. 457.77 in 2019 and 563.85 in 2020 and minimal change in expenditure was seen in spices and condiments (19.56%) with an average expenditure of Rs. 288.8 in 2019 and 345.29 in 2020.

Expenditure pattern in urban areas revealed that a major expenditure increase was observed in milk and meat products (72.17%) with Rs. 1538.1 as the average expenditure in 2019 and Rs.2738.9 in 2020 followed by fresh vegetables and fruits with 52.10 per cent increase in expenditure, 22.07 per cent of expenditure was observed in cereals and pulses with mean expenditure of Rs.1184.5 (2019) and Rs. 1483.2 (2020). More or less an equal increase in percentage of expenditure was seen in spices and condiments (17.25%) with the expenditure of Rs. 333.05 in 2019 and Rs. 367.91 in 2020 and non-alcoholic beverages (17.06%) with Rs. 99.24 as mean expenditure in 2019 and Rs. 113.39 in 2020. A least expenditure change was observed in fats and oils (13.91%).

From the results of both rural and urban area, it is evident that essential food items like milk, meat products, fresh vegetables and fruits had shown major expenditure change because people have opined that consumption of these products will enhance their immunity and increased their quantity of consumption during lock-down.

However, in urban area, contrary to rural area, fats and oils have seen least increase in expenditure.

On the whole, it was observed that expenditure on milk has increased by 76 per cent when compared to previous year (2019) followed by 48.9 per cent of expenditure increase was observed in vegetables and fruits, cereals and pulses (24.3%) and 23.6 per cent in fats and oils. More or less an equal percent of expenditure change was observed in non-alcoholic beverages (19.3%) and spices and condiments (14.7%). This shows that expenditure incurred was more in milk followed by fruits and vegetables, which indicates that respondents were ready to spend income on foods which promote health in pandemic times.

Narayanan and Saha (2021) reported that the average price during four weeks post-lockdown compared to prices during the four weeks preceding the lockdown showed that there was 6% increase for several pulses, over 3.5% for edible oils, 15% for potato and 28% for tomato. Prices of meat and fish too have registered increases.

A similar kind of research was conducted by Najeeb and George (2022) to observe the food expenditure shares in India. The results of this research suggested that the expenditure share of food (cereals and non-cereals) in rural area ranged between 45-50% during lock-down, whereas the expenditure share in urban area ranged between 41-45% in 14 months preceding march 2020. However, the expenditure share for the month of April rose to 61 per cent in rural and 59 per cent in urban. This research also suggests that the expenses on instant food was more during lock-down due to work from home.

Price change of different food items is measured by a tool called consumer price index. In the above table, CPI of different food groups were shown in both rural and urban area. In rural area, CPI of Cereal and pulses was 123.4, Milk and meat products was 174.09, followed by Vegetables and fruits (149.5), Fats and oils (123.17), Non-alcoholic beverages (124.9) and Spices and condiments (119.5). The overall CPI of rural area was 146.3. In urban area, the CPI of cereals and pulses was 122, Milk and meat products was 172.17, vegetables and fruits have 152.1 whereas the CPI of Alcoholic beverages was 124.9 and Spices condiments has 117.25. The overall CPI of essential food items in Urban area was 144.4.

The CPI of milk and meat products is higher in both rural and urban areas as the prices increased for these food groups during the lock-down period followed by vegetables and fruits as people preferred fresh vegetables and fruits and the lowest CPI was recorded by spices and condiments in both rural and urban areas.

The total CPI for the year of 2020 in the state of Telangana was found to be 146.479 for the essential food items. According to the survey of Statista research department (2022), the CPI of essential food items in Telangana state for the year of 2019 was found to be 143.5 and CPI for rural and urban areas was found to be 143.2 and 143.8 respectively for the year 2019. So, the comparison between the consumer price index of 2019 and 2020 i.e., before and after onset of pandemic had shown a slight increase which means that the prices of essential food items has increased after outbreak. There was only the slightest increase in CPI unlike other surveys because those indexes were calculated by taking the base year as the year which was 5-7 years before the current year, whereas the present study has taken base year as 2019 which is one year prior to the year 2020. However, the results proved the trend in increase of inflation.

4.4 Impact of Covid-19 on consumer behaviour

Table 4.6. Distribution of the respondents for Concerns during lockdown

Concerns	Rural										Urban									
	Rank-1		Rank-2		Rank-3		Rank-4		Rank-5		Rank-1		Rank-2		Rank-3		Rank-4		Rank-5	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Restricted movement	54	54.00	31	31.00	4	4.00	1	1.00	-	-	69	69.00	26	26.00	1	1.00	-	-	-	-
Access to market	31	31.00	33	33.00	24	24.00	-	-	2	2.00	28	28.00	41	41.00	26	26.00	-	-	1	1.00
Fear of self-infection	74	74.00	4	4.00	5	5.00	7	7.00	-	-	65	65.00	18	18.00	9	9.00	4	4.00	-	-
Lack of transport	62	62.00	28	28.00	-	-	-	-	-	-	70	70.00	26	26.00	-	-	-	-	-	-
Vulnerability of family	56	56.00	18	18.00	10	10.00	6	6.00	-	-	58	58.00	31	31.00	5	5	2	2.00	-	-

Table 4.6 represents the concerns during the lockdown due to which people had faced problems surviving during a pandemic. Respondents were asked to rank their concerns faced during lock-down. There are 6 main concerns which had major impact on people, so people were asked to rank the concerns from 1-5. Here Rank-1 represents major concern and Rank-5 represents least concern and other ranks fall in between.

The results revealed that in rural area, the statement 'fear of self-infection' was marked as major concern and given rank-1 by 84 per cent of the respondents, only 4 per cent of respondents have given rank-2. A negligible portion of 5 per cent have given rank-3 and (7%) rank-4. Whereas the statement 'lack of transport' was marked as major concern by 72 per cent (rank-1) followed by 28 percent (rank-2), 'vulnerability of family' was marked as rank-1 by 66 per cent of respondents, marked 2nd rank by 18 per cent, more or less an equal per cent of respondents given rank-3 (10%) and rank-4 (6%). 'Restricted movement' (64 %) was given rank-2, 31 percent (rank-2) and 4 per cent marked it as rank-3.

The results in the urban area depicts that respondent felt that 'lack of transport' was the major concern during lock down and it was given rank-1(74%), rank-2 (26%), whereas 'restricted movement' was the second most major concern and given rank-1 by 73 per cent, followed by 'fear of self-infection' was marked rank-1 (69%) rank-2 by only 18 per cent, 'vulnerability of family members' was ranked 1st by 62 per cent of respondents and rank-2 by 32 per cent. However, respondents in urban area marked 'access to market' was the least concern and given rank-1 by only 32 per cent.

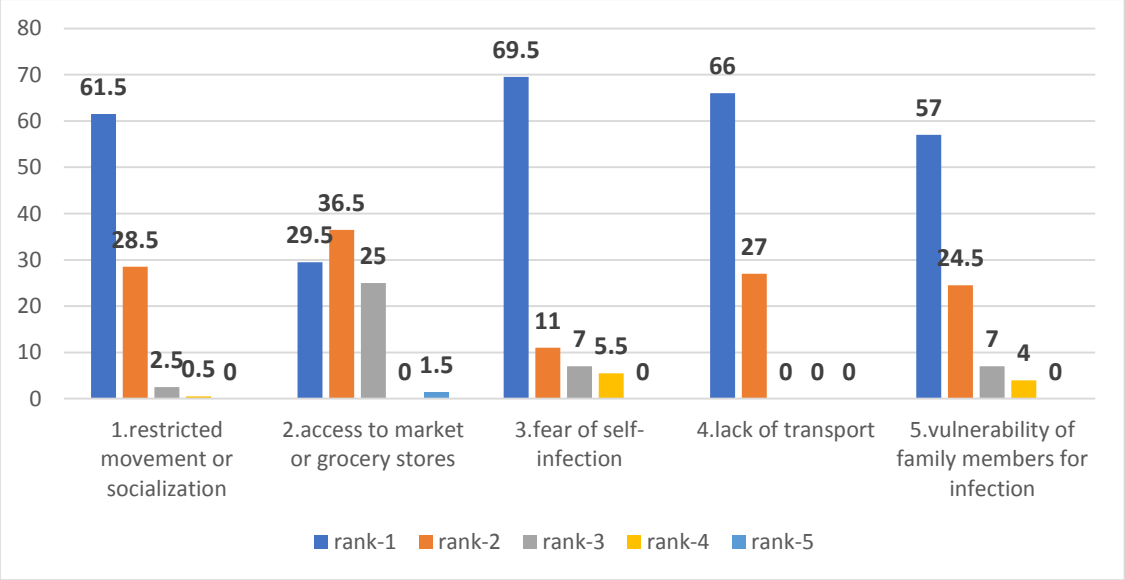


Figure4.2 -Distribution of total sample respondents for Concerns during lockdown

The combined results of rural and urban area revealed that less than two-third of respondents (69.5%) marked ‘fear of self-infection’ as major concern(rank-1) followed by ‘lack of transport’ (66%). About 61.5 per cent of the respondents marked ‘restricted movement’ as rank-1, ‘vulnerability of family members’ (57%) and ‘access to market ‘(29.5%) as rank-1.

More than one-third of the respondents (36.5%) marked ‘access to market’ as rank-2 followed by ‘restricted movement’ as rank-2(28.5%), ‘lack of transport’ (27%), ‘vulnerability of the family’ (24.5%) and a negligible per cent of respondents (11%) given ‘fear of self-infection’ rank-2.

The overall data indicated that ‘fear of self-infection’ and ‘lack of transport’ were the major concerns of the respondents as they caused issues for people during the lockdown. However, concerns like ‘vulnerability of family’, ‘restricted movement’ and ‘access to market’ have also equally created problems for people in times of pandemic.

Table 4.7 Distribution of the respondents regarding consumption practices followed during lockdown

	Rural									Urban								
Consumption practices	**Always**		**sometimes**		**never**		**Score**	**Mean**	**Rank**	**always**		**sometimes**		**Never**		**Score**	**Mean**	**Rank**
	F	**%**	**F**	**%**	**F**	**%**				**F**	**%**	**F**	**%**	**F**	**%**			
Bought larger quantities	49	49.00	15	15.00	36	36.00	213	2.13	3	49	49.00	27	27.00	24	24.00	225	2.25	3
Bought cheaper foods	21	21.00	25	25.00	54	54.00	167	1.67	5	14	14.00	26	26.00	60	60.00	154	1.54	6
Online shopping	16	16.00	20	20.00	64	64.00	152	1.52	7	12	12.00	44	44.00	44	44.00	168	1.68	5
Nearby markets	89	89.00	7	7.00	4	4.00	285	2.85	1	82	82.00	11	11.00	7	7.00	275	2.75	1
Preferred semi-perishable foods	33	33.00	38	38.00	27	27.00	202	2.02	4	26	26.00	44	44.00	28	28.00	194	1.94	4
Avoid dairy products	28	28.00	5	5.00	67	67.00	161	1.61	6	16	16.00	5	5.00	79	79.00	137	1.37	7
Multi-item grocery store	45	45.00	28	28.00	24	24.00	215	2.15	2	53	53.00	27	27.00	20	20.00	233	2.33	2

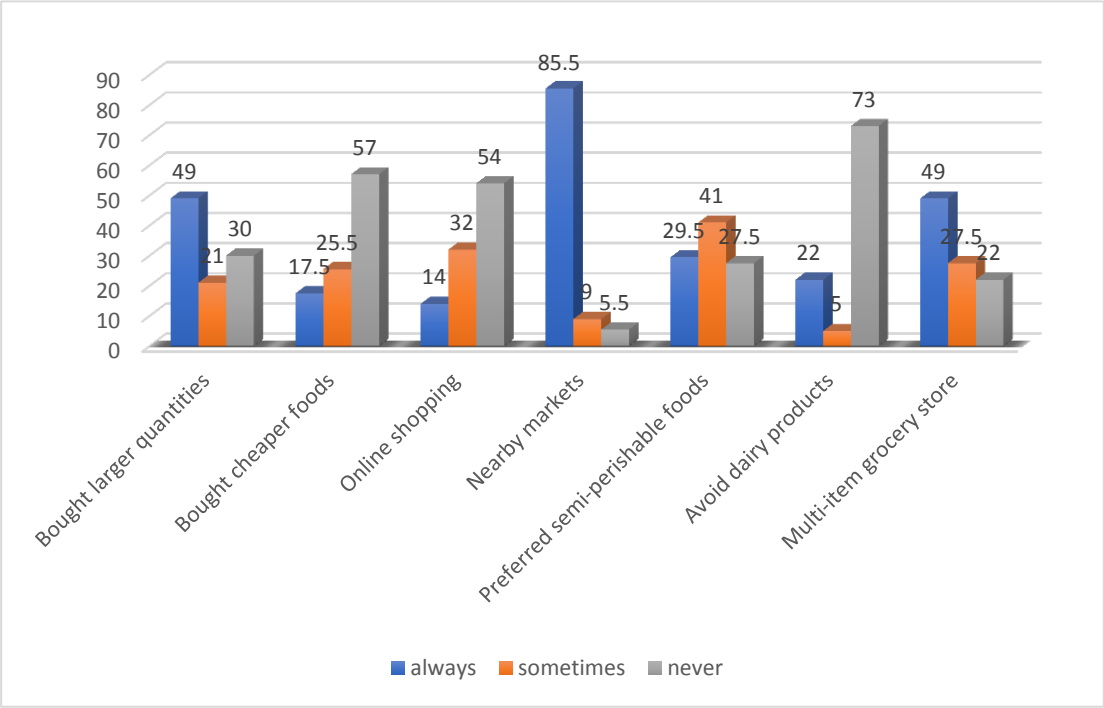


Figure 4.3-Distribution of the respondents regarding consumption practices followed during lockdown of total sample

The onset of pandemic and implementation caused many difficulties and made people to alter their consumption practices. Owing to the crisis created by the lockdown many people either adopted a new practice or changed their consumption practices to cope up with the hurdle named as Covid-19.

Table 4.7 depicts the consumption practices of people that were practiced during lockdown. Respondents were asked to report on a 3-point scale. Each statement was scored by 200 respondents of which 100 were from rural and 100 were from urban. The maximum score obtained on each statement was 100x3=300 and the minimum score obtained was 100x1= 100.

Here score on each statement would fall between 100 and 300. The total score for each statement was obtained by multiplying type of response under each category with number of responses. Mean score was calculated for each statement by considering total score. Finally Ranking was given for each statement based on the mean scores obtained.

The results revealed that, in rural area buying only from nearby market ranked first (1st rank) followed by preferred Kirana stores ranked second (2nd rank), bought larger quantities and stocked (3rd rank), preferred semi perishable goods (4th rank),

bought cheaper foods owing to financial crunch (5th rank), avoided dairy products (6th rank) and bought mostly online ranked least (7th rank).

Survey regarding the consumption practices of urban area showed that buying only from nearby market ranked first (1st rank) followed by preferred departmental stores ranked second (2nd rank), bought larger quantities and stocked (3rd rank), preferred semi perishable goods (4th rank), bought mostly online ranked least (5th rank), bought cheaper foods owing to financial crunch (6th rank) and avoided dairy products (7th rank).

The data regarding the total sample represents that respondent marked nearby markets as rank-1 followed by multi-item grocery store was ranked-2, bought larger quantities and stored(rank-3), preferred semi perishable goods (4th rank), bought mostly online ranked (5th rank), bought cheaper foods owing to financial crunch (6th rank) and avoided dairy products (7th rank).

Chenarides et al, (2020) conducted a similar research study, proved that people ought to prefer buying the foods whatever available in market, half of the respondents bought more food than usual to stock at home but in contrary to present research, the respondents preferred online buying more.

4.8. Impact of Covid-19 on consumer expenditure

Table 4.8 Distribution of the respondents regarding the factors influencing during Covid-19

	Rural								Urban							
	(n=100)								(n=100)							
Factors	**Strongly agree**	**Agree**	**Neutral**	**disagree**	**Strongly disagree**	**Score**	**Mean**	**Rank**	**Strongly agree**	**Agree**	**Neutral**	**disagree**	**Strongly disagree**	**Score**	**Mean**	**Rank**
	F	**F**	**F**	**F**	**F**				**F**	**F**	**F**	**F**	**F**			
Reduced family income	58	1	25	1	10	381	3.81	3	47	0	7	2	41	301	3.01	3
Faced food shortage	29	12	9	15	29	279	2.79	5	6	3	17	12	56	173	1.73	7
More expenditure before pandemic	2	4	3	4	81	124	1.24	8	5	3	6	2	82	141	1.41	8
More expenditure after pandemic	89	0	2	3	6	463	4.63	1	91	1	5	1	2	478	4.78	1
Decrease in consumption of junk food after outbreak	12	9	64	5	3	301	3.01	4	14	2	57	10	0	269	2.69	5

Consumption of healthy products increased after pandemic	77	0	4	1	5	404	4.04	2	59	3	17	1	10	370	3.7	2
Expenditure on outside food decreased	6	7	45	23	1	240	2.4	6	16	13	41	6	2	269	2.69	4
Expenditure on EFI increased	16	6	23	15	24	227	2.27	7	27	11	24	3	9	266	2.66	6

The current section deals with the findings and discussions regarding impact of pandemic on consumer expenditure of rural and urban respondents which includes statements regarding expenditure before and after pandemic, consumption of immunity boosters before and after pandemic, impact on the income etc.

Table 4.8 refers to what extent pandemic affected the expenditure patterns of rural respondents. The respondents were asked to report on a point scale as strongly agree (5), Agree (4), Neutral (3), disagree (2), Strongly Disagree (1). Each point on the scale carried a score. Each item was scored by 200 respondents of which 100 are from rural area and 100 are from urban area on 5-point Likert scale. The maximum score earned on that statement was 500 i.e., strongly agree and minimum score earned on each statement was 100 i.e., strongly disagree.

Hence the score for each statement would fall between 100 and 500. The total score for each statement was obtained by multiplying type of response under each category with number of responses. Mean score was calculated for each statement by considering total score. Finally Ranking was given for each statement based on the mean scores obtained.

Results revealed that in rural area, the most influencing factor on consumer expenditure was ‘more spending after pandemic’(1 rank), followed by ‘consumption of healthy products increased after pandemic’ (2nd rank), ‘reduced family income’(3rd rank), ‘junk food consumption decreased’(4th rank), ‘food shortage’(5th rank), ‘expenditure on outside food decreased’(6th rank), ‘EFI expenditure increased’(7th rank) and ‘more expenditure before pandemic was ranked least’(8th rank) that means people felt that expenditure has increased after the pandemic with income decreased during pandemic and prices increased.

In urban area, the most influencing factor on consumer expenditure was ‘outlay was increased after pandemic’ (1 rank), ‘followed by consumption of healthy products increased after pandemic’ (2nd rank), ‘reduced family income’ (3rd rank), ‘expenditure on outside food decreased’ (4th rank), ‘junk food consumption decreased’ (5th rank), ‘EFI expenditure increased’ (6th rank), ‘food shortage’ (7th rank) and ‘expenditure was more before pandemic’ was ranked least (8th rank) respectively.

Table 4.9 : Distribution of the total respondents regarding the factors influencing during Covid-19

N=200

Factors	Strongly agree	Agree	Neutral	disagree	Strongly disagree	Score	Mean	Rank
	F	F	F	F	F			
Reduced family income	105	1	32	3	51	682	3.41	3
Faced food shortage	35	15	26	27	85	452	2.26	7
More expenditure before pandemic	7	7	9	6	163	265	1.33	8
More expenditure after pandemic	180	1	7	4	8	941	4.71	1
Decrease in Consumption of junk food after outbreak	26	11	121	15	3	570	2.85	4
Consumption of healthy products increased after pandemic	136	3	21	2	15	774	3.87	2
Expenditure on outside food decreased	22	20	86	29	3	509	2.55	5
Expenditure on EFI increased	43	17	47	18	33	493	2.47	6

Table 4.9 refers to the results of total sample where the respondents were asked to report on a point scale as strongly agree (5), Agree (4), Neutral (3), disagree (2), Strongly Disagree (1). Each point on the scale carried a score. Each item was scored by 200 respondents on 5-point Likert scale. The maximum score earned on that statement was 1000 i.e., strongly agree and minimum score earned on each statement was 200 i.e., strongly disagree.

Hence the score for each statement would fall between 1000 and 200. For each statement ranking was provided based on the total score of the given statement. The total score was obtained on each statement separately by multiplying the score with the number of responses on all five categories and added up. Mean score was also calculated for each statement by dividing the total score with 200 respondents. All 10 statements were given ranks based on the mean obtained for each statement.

The calculated results indicated that the most influencing factor on consumer expenditure was outlay was more after pandemic (1st rank), followed by, consumption of healthy products increased after pandemic (2nd rank), reduced family income (3rd rank), junk food consumption decreased (4th rank), expenditure on outside food decreased (5th rank), EFI expenditure increased (6th rank), food shortage (7th rank) and expenditure was more before pandemic was ranked least (8th rank) respectively.

The results of total sample population showed that the most impact on consumer expenditure during pandemic were increase in expenditure post pandemic, decrease in income, effect of price change on expenditure and factors like expenditure before pandemic was more and food shortage has less impact on expenditure, because people purchased mostly in large quantities than usual assuming that there might be scarcity / unavailability of food.

Table-4.10. Distribution of the respondents by lifestyle and consumption pattern during post Covid

		Rural		Urban		Total	
	Statement	**F (N=100)**	**%**	**F (N=100)**	**%**	**F (N=200)**	**%**
1	Revert to usual	76	76.00	76	76.00	152	76.00
2	Restricted to basic needs	4	4.00	8	8.00	12	6.00
3	Neutral	20	20.00	13	13.00	33	16.50
4	Other	-	-	-	-	-	-

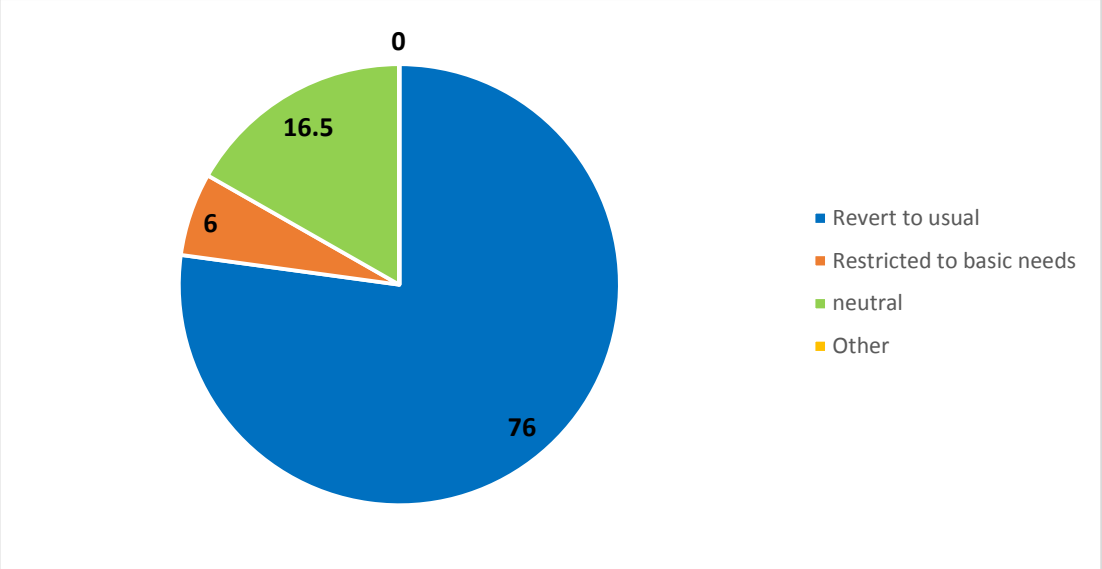


Figure-4.4 -Distribution of the respondents according to the responses on lifestyle and consumption pattern during post Covid

Data about lifestyle and consumption pattern during post-pandemic reveals that both in rural and urban areas, an equal percentage (76%) of the households reverted to usual lifestyle. However, one-fifth (20%) of the respondents from rural area and 13 per cent of urban households stayed neutral as they neither completely reverted to usual nor restricted to basic needs. A negligible percent in rural (4%) and urban (8%) had restricted to basic needs in post-Covid period. On the whole, majority (76%) of the respondents had reverted to their usual life style i.e., no speciality foods were included in the diet and consumption pattern during post-Covid and 16.5 per cent of the respondents had stayed neutral and 6 per cent stated that restricted to basic needs during post-Covid.

4.11. Distribution of the respondents by change in household income due to COVID 19

		Rural		**Urban**		**Total**	
	Statement	**F (N=100)**	**%**	**F (N=100)**	**%**	**F (N=200)**	**%**
1	Layoff or salary reduction	23	23.00	41	41.00	64	32.00
2	Resorted to alternative income	25	25.00	20	20.00	45	22.50
3	No change	52	52.00	39	39.00	91	45.50

People have faced a reduction of income during lockdown due to layoffs and unemployment. Data regarding change in household income of respondents was shown in table-4.11. In rural area, majority (52%) of the respondents had reported no change in income, followed by one-fourth (25%) of the respondents had restored to alternate income like earning from selling vegetables and fruits and daily wage earners making living from doing chore at others house and 23 per cent had faced lay-off or salary reduction. However, in urban area, 41 per cent of the respondents stated that they have faced lay-off or salary reduction, followed by 39 per cent reported no change in income. Whereas one-fifth of the respondents have resorted to alternative income when there is no income.

Out of total sample, less than half (45%) of the respondents had shown no change in income followed by 32 per cent of the respondents experienced salary reduction or layoffs and less than one-fourth (22.5%) restored to alternative income during lock-down period.

4.10. Distribution of the respondents according to response on how they managed expenditure during lockdown

The onset of pandemic has affected the livelihood of many people where they had to stop working due to restriction of movement, eventually people lost their jobs, faced layoff and received less income. This made people to shift to an alternate source of income to survive during pandemic.

Table 4.12 Distribution of the respondents by management of expenditure during lockdown

		Rural		Urban		Total	
	Statement	**F(N=100)**	**%**	**F(N=100)**	**%**	**F(N=200)**	**%**
1	Salary or income	29	29.00	39	39.00	68	34
2	Reliance or savings	43	43.00	43	43.00	86	43
3	Borrowed from others	47	47.00	38	38.00	85	42.5
4	Government support	25	25.00	9	9.00	34	17
5	Dependence on parents	2	2.00	1	1.00	3	1.5
6	Mortgaged gold	6	6.00	1	1.00	7	3.5
7	mortgage of plot or house	3	3.00	-	-	3	1.5

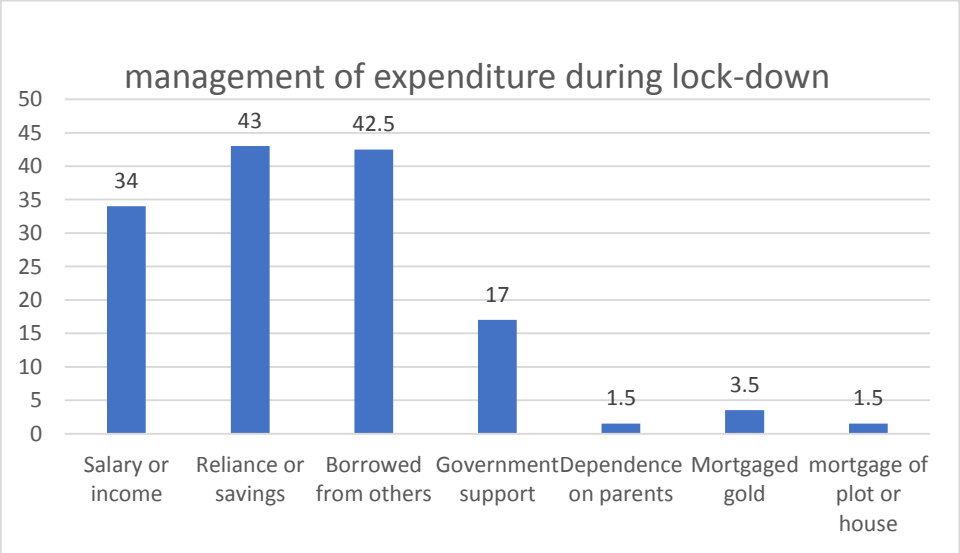


Figure-4.5 -Distribution of the respondents according to response on how they managed expenditure during lockdown

From Table 4.12. it is evident that, 47 per cent of the respondents from rural and 38 per cent from urban area managed expenses by borrowing money from others i.e., hand loans without any interest to be paid. An equal percentage of the respondents (43%) from both rural and urban areas were dependent on savings followed by 29 per cent in rural and 39 per cent in urban were dependent on their salary. However, 25 per

cent in rural and only a 9 per cent from urban had received government support. A negligible percent of the respondents had managed expenditure during lockdown with mortgaging gold (6%) / plot or house (3%) and depending on parents (1%) in rural area and equal portion of the respondents in urban area were dependent on mortgaging of plot/house (1%) and gold (1%).

The results of total sample indicated that less than half of the respondents were dependent on savings which they have kept aside for some emergencies (43%) and borrowing from others (42.5%), 34 per cent were dependent on salary/income and 17 per cent received monetary benefit from government. A negligible portion of the sample were, mortgaging of gold and plot/house.

Compared to urbanites, the number of respondents' dependency on government support, mortgage gold, depending on parents, mortgage of plot/ house was high in rural because of irregular income, many number of respondents borrowed hand loans from others i.e., friends/ family members/ neighbours in rural area.

Table :4.13. Distribution of the respondents based on change in consumption behaviour due to COVID-19

	Rural				Urban				Total			
Statement	**Yes**		**No**		**Yes**		**No**		**Yes**		**No**	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Free food supply from the government	48	48.00	43	43.00	11	11.00	87	87.00	59	29.50	130	65.00
Regular and easy access to market	73	73.00	18	18.00	89	89.00	9	9.00	162	81.00	27	13.50
Changes in shopping behaviour	54	54.00	26	26.00	55	55.00	38	38.00	109	54.50	64	32.00
No. of meals taken per day changed	17	17.00	66	66.00	17	17.00	81	81.00	34	17.00	147	73.50
Frequency of market visit	58	58.00	18	18.00	47	47.00	49	49.00	105	52.50	69	34.50
Maintained food stock at home	35	35.00	58	58.00	46	46.00	52	52.00	81	40.50	110	55.00

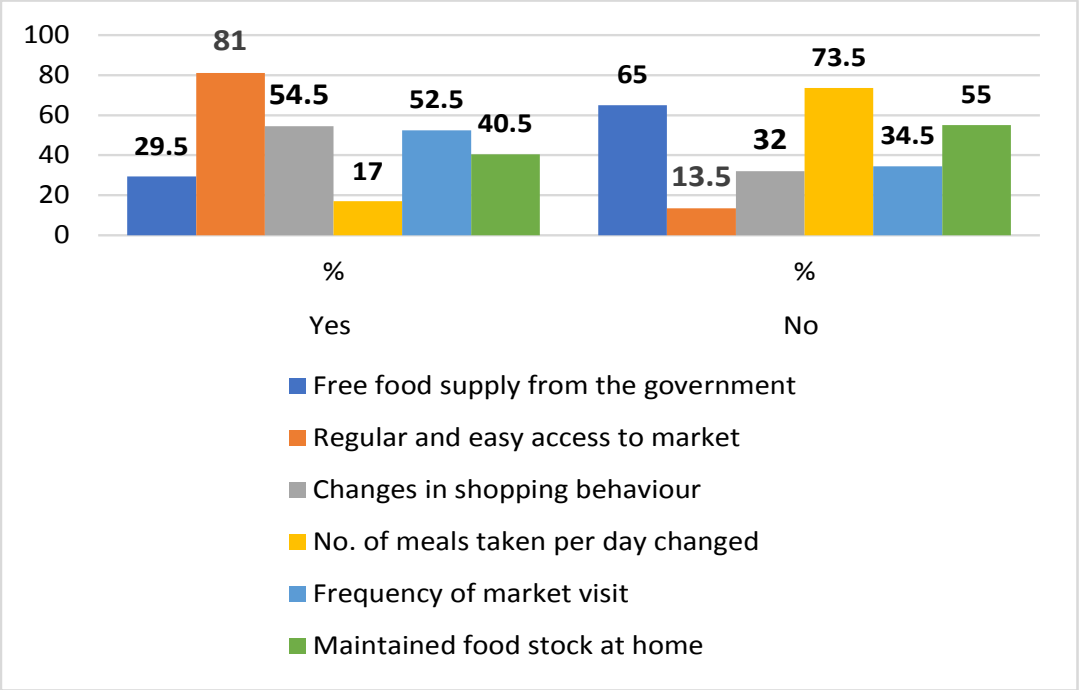


Figure-4.6 -Distribution of the respondents based on change in consumption behaviour of total sample

This section deals with different aspects as how people coped with lockdown situation and what are the changes they made to adopt to those situations. People were asked questions like have they received any monetary benefits or food from government, change in shopping behaviour or change in number of meals taken per day etc.

Regarding change in consumption behaviour, it was observed that in rural area, 48 per cent had received free food, 73 per cent had easy access to the market and change in behaviour of shopping (54%) i.e., restricted to the purchase of only essential items, change in number of meals taken (17%) i.e., people had increased their meals counts to 4 times a day, change in frequency of market visits (58%) where, people had reduced their market visit frequency to 1-2 times in a week and maintenance of food stock during lockdown (35%).

However, in urban area 11 per cent had received free food, 89 per cent had easy access to the market and change in behaviour of shopping (54%), change in number of meals taken (17%), change in frequency of market visits (55%) and maintenance of food stock during lockdown (46%).

Of the total sample 81 per cent of the respondents said that they have easy access to market, an equal portion of the respondents observed change in shopping behaviour (54.5%) and change in frequency of market visit (52.5%). Whereas, 40 per cent maintained food stock at home.

Table :4.14. Distribution of the respondents based on food stock maintenance in rural area

n=35

Food items stocked	One week		Two weeks		Three weeks		One month		More than one month	
	F	%	F	%	F	%	F	%	F	%
Non-perishable foods										
Cereals and cereal products	-	-	2	5.71 (2.00)	-	-	8	22.85 (8.00)	18	51.4 (18.00)
Pulses	-	-	2	5.71 (2.00)	-		14	40.00 (14.00)	12	34.2 (12.00)
Fats and oils	3	8.57 (3.00)	3	8.57 (3.00)	-	-	13	37.14 (13.00)	3	8.57 (3.00)
Beverages	15	42.85 (15.00)	-	-	-	-	1	2.85 (1.00)	2	5.71 (2.00)
Confectionary	6	17.14 (6.00)	1	2.85 (1.00)	-	-	8	22.85 (8.00)	2	5.71 (2.00)
Chocolate products	1	2.85 (1.00)	-	-	-	-	6	17.14 (6.00)	2	5.71 (2.00)
Bakery products	1	2.85 (1.00)	-	-	-	-	7	20.00 (7.00)	6	17.14 (6.00)
Ready-to-eat	3	8.57 (3.00)	1	2.85 (1.00)	-	-	7	20.00 (7.00)	2	5.71 (2.00)
Perishable foods										
Dairy products	17	48.57 (17.00)	-	-	-		-	-	-	-
Vegetables	23	65.71 (23.00)	5	14.28 (5.00)	-		-	-	-	-
Fruits	21	60.00 (21.00)	5	14.28 (5.00)	-	-	-	-	-	-
Meat products	19	54.28 (19.00)	-	-	-		-	-		
Spices and condiments	3	8.57 (3.00)	8	22.85 (8.00)	3	8.57 (3.00)	12	34.28 (12.00)	2	5.71 (2.00)

(Figures in parentheses indicate the percentage out of 100 rural sample)

Implementation of lock-down urged people to pile up eatables as there is no way going out during the restriction period. People were asked to state for how long they have stocked food items. The data reported by respondents were represented under 2 categories i.e., perishable and non-perishable foods. Around 35 per cent in rural area, were found to be stocking food items during pandemic.

From table 4.14, the data regarding the storage of non- perishable foods revealed that cereals and cereal products were stored for more than one month by 51.4 per cent of the respondents followed by 5.7 per cent stored for two weeks.

About 40 per cent of the respondents stored pulses for a period of one month followed by 34.2 per cent for more than one month. A negligible portion (5.71%) stored for two weeks. Dairy products were stored for one week by 48.57 per cent of the respondents. Products like fats and oils were stocked majorly by 37.14 per cent of the respondents for one month and an equal portion of the respondents (8.57%) for more than one month, one week and two weeks. Chocolate products were stored for maximum of one month by 17.14 per cent followed by 5.71 per cent for more than one month.

In rural area bakery products were stored for one month (20%) and for more than one month (17.14%). Ready-to-eat products were stored for one month by 20 per cent and one week by 8.57 per cent of the respondents. A negligible portion of the respondents (5.71%) stored for more than one month and 2.85 per cent for two weeks.

The results regarding the storage of perishable foods depicted that vegetables were stored for one week by 65.71 per cent of the respondents. Fruits which have similar shelf-life period as vegetables were stored for one week by 60 per cent of the respondents followed by 14.2 per cent for two weeks.

Meat products were stored for less than one week (54.2%). About 34.28 per cent of the respondents stored spices and condiments for one month, whereas 22.8 per cent stocked for two weeks. About 8.57 per cent of the respondents stored for one week and three weeks respectively.

Thus, from results of both rural and urban we can conclude that people who had fear of self-infection and might risk the lives of their family members-maintained food stock at home for a maximum possible period of time. Products with longer shelf-life period were stored for a long period, whereas perishable products like milk, meat, vegetables and fruits with shorter shelf-life period were stored for one week and less than one week.

Table 4.15. Distribution of the respondents based on food stock maintenance in urban area

n=46

	Urban									
Food items stocked	**One week**		**Two weeks**		**Three weeks**		**One month**		**More than one month**	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Non-perishable										
Cereals and cereal products	2	4.34 (2.00)	2	4.34 (2.00)	3	6.52 (3.00)	12	26.08 (12.00)	21	60.00 (21.00)
Pulses	2	4.34 (2.00)	2	4.34 (2.00)	3	6.52 (3.00)	20	43.47 (20.00)	13	28.26 (13.00)
Beverages	15	32.00 (15.00)	6	13.04 (6.00)	1	2.17 (1.00)	5	14.28 (5.00)	6	13.04 (6.00)
Confectionary	7	15.21 (7.00)	3	6.52 (3.00)	3	6.52 (3.00)	12	26.08 (12.00)	7	15.21 (7.00)
Fats and oils	2	4.34 (2.00)	3	6.52 (3.00)	3	6.52 (3.00)	17	36.95 (17.00)	7	15.21 (7.00)
Chocolate products	2	4.34 (2.00)	3	6.52 (3.00)	3	6.52 (3.00)	11	23.91 (11.00)	7	15.21 (7.00)
Bakery products	2	4.34 (2.00)	3	6.52 (3.00)	3	6.52 (3.00)	12	26.08 (12.00)	12	26.08 (12.00)
Ready-to-eat	2	4.34 (2.00)	3	6.52 (3.00)	3	6.52 (3.00)	12	26.08 (12.00)	7	15.21 (7.00)
Perishable products										
Dairy products	26	56.52 (26.00)	-	-	-	-	-	-	3	6.52 (3.00)
Vegetables	32	69.56 (32.00)	5	10.28 (5.00)	-	-	-	-	3	6.52 (3.00)
Fruits	28	60.86 (28.00)	6	13.04 (6.00)	-	-	2	4.34 (2.00)	3	6.52 (3.00)
Meat products	26	56.52 (26.00)	2	4.34 (2.00)	-	-	2	4.34 (2.00)	3	6.52 (3.00)
Spices and condiments	2	4.34 (2.00)	13	28.26 (13.00)	2	4.34 (2.00)	16	34.78 (16.00)	7	15.21 (7.00)

(Note: figures in the parentheses indicate the percentage of total 100 urban sample)

The data represented in Table-4.15 gives the results regarding the storage of perishable and non-perishable foods in urban area. The storage of non-perishable foods indicated that stocking of cereals was done for more than one month by 60 per cent of the respondents followed by 26 per cent stocked for one month. A very few (6.53%) stocked for three weeks and an equal percentage of the respondents (4.34%) stocked for one week.

About 43.4 per cent of the respondents had stored pulses for a period of one month followed by 28.2 per cent for more than one month. A negligible portion (6.52%) stored for three weeks. An equal percent (4.34%) stored for one to two weeks. Food products like fats and oils were stocked by 36.95 per cent of the respondents for one month and 15.2 per cent for more than one month. Chocolate products were stored for maximum of one month by 23.9 per cent. Lesser proportion of the respondents stored for one -three weeks.

An equal portion of the respondents stocked bakery items for one month and more than one month (26.08%), followed by three weeks (6.52%). Two weeks (6.52%) and one week (4.34%). 26.08 per cent stored ready-to eat foods for one month followed by more than one month (15.2%).

However, Dairy products were stored for maximum of one week (56.2%), vegetables were stored for one week by 69.5 per cent the respondents. Fruits were stored for one week by 60.86 per cent of respondents followed by 10.2 per cent for two weeks.

Meat products were stored for less than one week (56.2%) followed by storing for more than one month (6.52%). About 34.78 per cent of respondents stored spices and condiments for one month, whereas nearly equal per cent (28.26%) stocked for two weeks.

Thus, from results of both rural and urban we can conclude that people who had fear of self-infection and might risk the lives of their family members-maintained food stock at home for a maximum possible period of time. products with longer shelf-life period were stored for a long period, whereas products like milk, meat, vegetables and fruits with shorter shelf-life period were stored for one week and less than one wee

4.6 Testing the hypothesis framed for the study

In the present study, location, family size, occupation, family income and stages of family life cycle were studied as independent variables, while expenditure incurred and consumer price index were studied as dependent variables. The interrelationships of each dependent and independent variables were studied.

To find the association between independent and dependent variables chi-square was used. To find out significant difference of consumer price index and expenditure incurred, ANOVA was used.

The main hypotheses framed for this study were:

$H_1$1: There exists a relationship between (independent variables) location, income, stages of family life cycle, family size, occupation and expenditure incurred.

$H_1$2: There exists a relationship between change in consumer price index of essential food items and expenditure pattern.

Relationship between selected independent variables and expenditure incurred

H_1: There is a relationship between selected independent variables and expenditure incurred.

To test the relationship between the selected independent variables i.e., location, occupation, family size, family income and stages of family life cycle and expenditure incurred correlation test was used.

Table 4.16. Testing the relation between the independent variables and expenditure incurred in 2019

Relationship between selected independent variables and expenditure incurred in 2019

Independent variable	Expenditure incurred
Location	-0.027 NS
Occupation	0.049 NS
Family size	0.044 NS
Total family income	0.021 NS
Stages of family life cycle	-0.098 NS

NS = Non-significant

It is evident from the table that the coefficient of correlation between family size, occupation, income and expenditure incurred for the year 2019 was found to be non- significant at 5% level of significance. Hence the proposed hypothesis was rejected. Therefore, from the present results, we can infer that there was a positive and no significant relationship between the location, income, occupation and expenditure incurred in the year 2019.

However, from the table 4.16, it could be observed that independent variables like location and stages of family life cycle were negatively related and have no significant relation with expenditure incurred for 2019. It implies that people in retirement stage had less expenditure though it is not significant. that hence the proposed alternate hypothesis was rejected. Here we can conclude that the selected independent variables have no significant relation with expenditure incurred in 2019.

Table 4.17. Testing the relation between the independent variables and expenditure incurred in 2020

Relationship between selected independent variables and expenditure incurred in 2020

Independent variable	**Expenditure incurred in 2020**
Location	-0.047 NS
Occupation	0.096 NS
Family size	0.162 S*
Family income	0.055 NS
Stages of family life cycle	-0.175 S*

S* = Significant at 0.05 level of probability

NS = Non-significant

It is evident from table 4.17 that the coefficient correlation of independent variables like location, occupation and family income and expenditure incurred for the year 2020 was found to be non-significant**.** Hence the proposed hypothesis was rejected. Therefore, from the present results, we can infer that expenditure incurred for 2020 has a negative and non-significant relationship with location and a positively non-significant relation with family income and occupation.

From table 4.17 it was observed that the coefficient of correlation between family size and expenditure incurred in 2020 was found to be r=0.162 S*, which was less than the table value of ‘r’ (0.172). Hence the alternate hypothesis was accepted. Therefore, it could be inferred that there was a positive and significant relationship

between the family size and expenditure incurred for 2020. So, from the results, we can understand that the expenditure that incurred for a family will depend on the size of the family. The greater the family size more the expenditure. Expenditure varies depending on the size of the family.

The correlation coefficient between the stages of family life cycle and the expenditure incurred on essential food items was found to be **r = -0.175 S*** which was less than the table value of 'r' (0.172). Hence the proposed alternate hypothesis was accepted. Thus, it is proved that there was negative and a significant relationship between the stages of family life cycle and the expenditure incurred. From this, it is evident that as a family cycle progresses into old age automatically the consumption of food items decreases due to old aged people not preferring many foods to eat which might result in decrease of expenditure.

A similar kind of study was done by Hone and Marisennayya (2019) to find out the determinants of household consumption expenditure in Debremarkos Town with household expenditure as dependent variable and income, family size, age, education level and saving status of a family as independent variable. The results of this study revealed that family size and disposable income (income after tax) were positively significant with the household consumption expenditure.

Table 4.18. Testing the association between the independent variables and expenditure incurred in 2019

s.no	Independent variables	Chi sq.	Prob<chi sq.
1	Location	0.00	1.00NS
2	Occupation	7.254	0.298NS
3	Family income	5.88	0.436NS
4	Family size	52.012	0.01**
5	Stages of family lifecycle	20.0	0.01**

NS=non-significant, **= significant at 0.01% level of probability

Location

To study the association between the location and expenditure incurred; chi-square was carried out and presented in the table and it shows that there was no significant relation between the location and expenditure of the respondents during the month of April. This indicates that expenditure of a household was not influenced by the change of location. Hence alternate hypothesis was rejected.

Occupation

From the Table 4.18. it could be observed that the chi-square value of the expenditure incurred with regard to the occupation of the respondent was found to be 7.254 and the significance value was 0.2989 (non-significant). This indicates that there exists no association between expenditure incurred in 2019 and occupation which means that the expenditure incurred for the household will not be affected by the occupation.

Family income

It was analysed from the above data that chi-square value of the expenditure incurred with regard to total family income was 5.88 and the significance value was 0.43 which is found to be non-significant. From this we can conclude that there exists no association between the expenditure incurred for the family in the given year and the total income of the family. Income change will not directly impact the expenditure incurred for the family. Hence the proposed alternate hypothesis was rejected.

Family size

From the data given in the table 4.18. the chi-square value of the expenditure incurred in relation to the family size was 52.02 and the significance value was 0.01(significant). So, from the above values we can infer that there exists association between the expenditure incurred and family size. So, the given results indicate that expenditure of the family varies based on the size of the family which may increase or decrease depending on the number of family members. Hence the alternate hypothesis was accepted. The more the number of family members in a family, they eventually have purchased more quantities of food which resulted in more expenditure of the family so they are related to each other.

Stages of family life cycle

From the data given in the table 4.18, the chi-square value of the expenditure incurred in relation to the stages of family lifecycle was 20.00 and the significance value was 0.01 (significant). So, from the above values, we can infer that there exists significant association between the expenditure incurred and stages of family life cycle. From the results we can conclude that expenditure of the family varies based on different life cycles that exists in the family. Hence the alternate hypothesis was accepted. As the family passes through each stage, the members of family increase in

the middle stages. With increase in number of people, consumption too increases which results in more expenditure.

Sekhampu and Niyimbanira (2013) conducted a study to analyse the factors influencing household expenditure in South African township. The results proved that there exists a significant relationship between variables like income, education of the head, employment, family size is having a positive and significant relation with the expenditure incurred for a family. This study partially supports the present study where family size is significant to expenditure incurred.

Table 4.19. Testing the relation between the independent variables and the expenditure incurred in 2020

s.no	Independent variables	Chisq	Prob<Chisq
1	Location	4.16	0.245NS
2	Occupation	9.76	0.135NS
3	Family income	3.7	0.706NS
4	Family size	36.58	0.0001S
5	Stages of family lifecycle	3.359	0.948NS

NS=non-significant, **= significant at 0.01% level of probability

Location

To study the association between the location and expenditure incurred; chi-square was carried out and presented in the table and it shows that there was no significant association between the location and expenditure of the respondents during the month of April. This indicates that expenditure of a household was not influenced by the change of location. Hence alternate hypothesis was rejected.

Occupation

From the table 4.19. it could be observed that the chi-square value of the expenditure incurred with regard to occupation of the respondent was found to be 9.76 and the significance value was 0.13 (non-significant). This indicates that there exists no significant association between expenditure incurred in 2020 and occupation, which means that the expenditure incurred for the household will not be affected by the occupation.

Family income

It was analysed from the above data that chi-square value of the expenditure incurred with regard to total family income was 3.7 and found to be non-significant with the significance value of 0.706. From this we can conclude that there exists no significant association between the expenditure incurred for the family in the given year and the total income of the family. Income change will not directly impact the expenditure incurred for the family. Hence the proposed alternate hypothesis was rejected.

Family size

From the data given in the Table 4.19, the chi-square value of the expenditure incurred in relation to the family size was 36.58 and the significance value was 0.001 found to be significant. So, from the above values, we can infer that there exists significant association between the expenditure incurred and family size. So, the given results indicate that expenditure of the family varies based on the size of the family which may increase or decrease depending on the number of family members. Hence the alternate hypothesis was accepted. With the increase in number of persons in a family, the consumption of food items will increase which in turn cause the expenditure to increase. This may be the reason behind the significant relation between family size and expenditure incurred.

Stages of family life cycle

From the data given in the Table 4.19. the chi-square value of the expenditure incurred in relation to the stages of family lifecycle was 3.35 and the significance value was 0.948 found to be non-significant. So, from the above values we can infer that there exists no significant association between the expenditure incurred and stages of family life cycle. Hence the proposed hypothesis will be rejected.

Though the expenditure incurred in 2019 and stages of family life cycle was found to be significant, on contrary to that after the onset of pandemic, the expenditure incurred in 2020 and stages of family life cycle was non-significant, which may be because after the onset of pandemic there is a panic buying of the food products in concern with the non-availability of foods. People bought food items without concern to any particular family life cyle.

4.6.2 Relationship between the selected independent variables and consumer price index

H_1: There is a significant relation between selected independent variable and the dependent variable.

Relationship between the dependent variable i.e., consumer price index and independent variables such as family size, location, total family income, occupation and stages of family life cycle was tested by using ANOVA.

Table 4.20. Testing the relation between the independent variable and the dependent variable i.e., Consumer price index

	Mean	**Std. deviation**	**df**	**F-value**	**Prob F**
Family size					
1-2	150.0	41.3	2	3.719	0.02*
3-5	145.8	37.2			
5-7	213.0	124.2			
Location					
Rural	150.3	41.5	1	0.51	0.82
Urban	148.9	43.3			
Occupation					
Daily wage earners	137.0	31.46421	4	1.930	0.107
Profession	149.6	46.43731			
Agriculture	167.5	62.91439			
Business	171.0	42.16436			
Unemployed	148.4	32.29576			
Family Income					
Below 6000	149.4769	32.68461	7	1.046	0.401
6000-18000	150.4928	47.93551			
18000-31000	142.9787	28.09896			
31000-47000	148.8618	34.47127			
47000-63000	177.0843	54.57585			
63000-120000	175.0929	86.77268			
Above 120000	156.7881	30.18288			
Below 6000	136.2940	21.63277			
Stages of family life cycle					
Married couple without children	158.9393	17.66467	7	2.18	0.03*
Children bearing families	141.1829	22.80489			
Preschool children	143.5079	33.38591			

School going children	165.4676	61.90789			
Adolescents	139.9903	30.37859			
Launching families	167.9407	54.09449			
Middle-aged families	139.8860	40.60949			
Aging families	147.5403	19.68625			

NS=non-significant, **= significant at 0.01% level of probability

From the Table 4.20 it was inferred that the analysis of variance between the family size of household and consumer price index has significant. Hence the proposed alternate hypothesis was accepted. The Analysis of variance between family size and CPI revealed that the mean difference between small family and large family is large i.e., the mean for small size family is 150 whereas mean value of large size family is 213, while the significant mean between small and medium families is less.

The compound F value revealed that there was a significant mean difference between the stages of family life cycle and the consumer price index of the essential food items. The mean difference between different stages of life cycle is high. This indicated that consumer price index will vary across the different family life cycles. Hence the H1 was accepted. It implies that CPI of essential food items is significantly different for different stages of family life cycle as the needs and consumption of family varies.

From the Table 4.20. it could be observed that there was no significant mean difference between occupation, family income, location and consumer price index of the respondent was found to be non-significant. Hence the proposed alternate hypothesis was rejected.

4.6.4 Testing the relationship between consumer price index and the expenditure incurred for a household in 2019

$H_1$2: There exists a relationship between change in consumer price index of essential food items and expenditure pattern.

Table 4.21. Relationship between the consumer price index of essential food items and expenditure incurred for 2019

	Mean	Std. deviation	Df	F value	Prob F
Expenditure incurred in 2019	161.2826	64.99855	3	1.772	0.15 NS
	146.1205	27.96652			
	143.5627	27.39862			
	147.6508	36.67786			

NS=non-significant, **= significant at 0.01% level of probability

The compound F value of ANOVA between the consumer price index and expenditure incurred was 1.772 and the significance level of these variables was found to be 0.15.

From the calculated results it was observed that the difference between the consumer price index of the essential food items and the expenditure incurred for the households for the year of 2019 is non-significant. Hence the proposed hypothesis was be rejected.

Table 4.22. Relationship between the consumer price index of essential food items and expenditure incurred for 2020

	Mean	Std. deviation	df	F value	Prob F
Expenditure incurred in 2020	158.8751	53.31377	3	2.17	0.092 NS
	153.5361	46.42773			
	138.3973	29.50637			
	147.8081	34.52723			

NS=non-significant, **= significant at 0.01% level of probability

The compound F values of ANOVA between the consumer price index and expenditure incurred was observed to be 2.17 and the significance between two variables was 0.092.

So from the analysed results we can observe that the difference between dependent variables i.e., the consumer price index of the essential food items and the expenditure incurred for the households for the year of 2020 was non-significant.

Through these results, we can depict that change in CPI of food items was affected by the external factors such as disasters, pandemics, any accidents that occur in society. These factors will directly impact the supply chain causing changes in prices of food items. So based on this change in CPI, the expenditure of consumer changes. Which was found to be non-significant, Hence, the proposed hypothesis was be rejected.

Chapter V

SUMMARY AND CONCLUSION

The Covid-19 outbreak has created many economic disruptions worldwide. The closing of borders and restrictions imposed on trade and other containment measures resulted in the disruption of the supply chains. The nationwide lockdown forced majority of Indian retailers to shut their shops or curb operations which resulted in the reduction of food supply. These circumstances led to an increase in demand for food items thus, increasing the prices of commodities. These price changes majorly influence the expenditure pattern of the households and also alter the consumption behaviour of the consumer. Hence it is important to study the price change that occurred in commodities, which will help us in understanding inflation and purchasing power of the consumer. The present study "Measuring the Price Change in Essential Food Items used by Rural and Urban Households During the Pandemic in Telangana State" is planned with the following objectives:

1. To assess the quantity of essential food items consumed by the selected families.
4. To compare the consumer price index for essential food items during pre-Covid and post-Covid.
5. To study the percentage changes in essential food items due to Covid 19 and its impact on consumption behaviour.

Methodology: An exploratory research design was adopted to explore the change in prices of essential food items that occurred after the onset of the pandemic. The study was conducted in selected rural and urban areas from the Telangana state. The selected rural areas were Undavelli village from Jogulamba Gadwal district and Kadukuntla village from Wanaparthy district. Whereas under urban area Jogulamba Gadwal town and Wanaparthy town were selected. A total of 200 respondents were interviewed under this study i.e., 100 respondents from the rural area and 100 respondents from urban area. Multi-stage sampling technique was used to select the sample. The required data was collected with the help of a structured questionnaire. The relevant data collected from the selected sample was tabulated and analysed through simple frequencies and percentages. The collected data has been analysed by the software statistical package for social sciences for interpretation and obtain results and conclusion of the study. Chi-square, ANOVA and Correlation test were used to analyse the data statistically.

Summary of the results obtained from the study: following results were obtained from the study

1. **Demographic profile of the respondents**

- **Age:** The age of the respondents ranged from 21 years and above. In rural area, 44 per cent belonged to late adulthood followed by 27 per cent belonged to early adulthood. Whereas in urban area, 41 per cent belonged to late adulthood followed by early adulthood (33%).
- **Education level:** Out of the total sample, 26.5 per cent were graduates and 21 per cent studied up to intermediate. Among the rural respondents, 22 percent have completed up to high school followed by primary school (17%). In urban area 38 per cent were graduates and 29 per cent of the respondents completed up to intermediate studies.
- **Occupation:** In rural area, 27 per cent were unemployed followed by professionals (24%) and a negligible percentage (3%) were doing business. While in urban area, 47 per cent of the respondents were professionals followed by 38 per cent unemployed. Of the total sample, 35.5 per cent were professionals, whereas 32.5 per cent were unemployed and a negligible percentage were doing business.
- **Family income:** Among the rural sample, 45 per cent of the respondents were earning between Rs. 6000-18000, more than one-fourth of the families were earning between Rs. 18000-31000 and a negligible percent of families were earning between Rs. 47000-63000 and Rs. 63000-120000. In urban area, 30 per cent were earning between Rs. 18000-30000 and only 2 per cent were earning between Rs. 47000-63000. Out of the total sample, 36.5 per cent were earning between 6000-18000 followed by 29.5 per cent earning between Rs.18000-31000.
- **Stages of family life cycle:** In rural area 18 per cent belonged to the child bearing families and equal per cent (5%) belonged to families with married couple without children and aging families. In urban area, 25 per cent of the respondents belonged to the families with school going children and a negligible portion (7%) belonged to middle aged families. Out of the total sample 18 per cent belonged to familied with school going children.

- **Family size**

  The data regarding rural and urban area revealed that majority (67%) of the population belonged small families.

- **Family type:** Most of the families (76%) in both rural and urban areas were of nuclear families.

2. Assessment of quantity consumed by selected families

Regarding the quantity of essential food items consumed during Covid-19 period in rural area, it was found that grapes had highest percentage of increase (71.9%) followed by dry fruits (71.1%), chicken (35%), banana (33.3%) and an equal percent was found in eggs and guava (31%). Similarly in urban area, there was a percentage increase due to Covid-19 in terms of consuming dry fruits (75.6%), guava (50%), papaya (42.9%), banana (40.4%), and oranges (37%). However, decrease in consumption was observed in cereal and pulses/spices and condiments with respect to urban area.

3. Expenditure incurred for households and Consumer price index for 2020

In terms of expenditure incurred, in rural area 74.09 per cent increase was found in milk and meat followed by vegetables and fruits (49.57%), non-alcoholic beverages (24.9.%) and cereals and pulses (23.45%). A similar trend was observed in urban area where expenditure incurred was high in milk and meat products (72.17%) followed by vegetables and fruits (52.10%) and cereals and pulses (23.45%).

- **Consumer price index:** By using consumer price index as measuring tool, it was found that the total CPI of rural area was 146.3 with highest CPI noticed in milk and meat products (174.09) and vegetables and fruits (149.5) and the lowest CPI was observed in spices and condiments (119.5). Whereas in urban area, overall CPI was 144.4 with highest CPI observed in milk and meat products (172.17.) and vegetables and fruits (152.1). It showed an increase when compared with the CPI of 2019, which indicates that prices had increased over the period of time.

4. Impact of Covid-19 on consumer behaviour

- **Concerns during lockdown**

  Results revealed that in rural area, fear of self-infection (74%) followed by lack of transport (62%), restricted movements (54%) were the major concerns felt by

the respondents during lockdown period. While in urban area, lack of transport (70%), restricted movement (69%) and fear of self-infection (65%) were the major concerns expressed by respondents. The overall data indicated that fear of self-infection and lack of transport were the major concerns reported by respondents.

- **Consumption practices followed during lockdown:**

  In rural area, 89 per cent were shopping in nearby stores followed by less than half (49%) bought larger quantities and 33 per cent preferred semi-perishable foods. A similar kind of practices were observed in urban area, where 82 per cent were shopping in nearby stores followed by 53 per cent preferred multi-item grocery store. While 49 per cent of the respondents bought larger quantities of commodities. It indicates that due to spread of infection, respondents preferred nearby markets, multi-item grocery stores and also bought larger quantities with respect to total sample.

- **Impact of Covid-19 on consumer expenditure:** Results revealed that the factors that impacted both rural and urban respondents were more expenditure after pandemic (1^{st} rank), increased consuming healthy products **(**2^{nd} rank), reduction in family income (3^{rd} rank), junk food consumption decreased after outbreak (4^{th} rank).
- **Life style and consumption pattern:** The data about life style and consumption pattern indicates that out of total sample, 76 per cent had reverted to usual life style and consumption patterns during Covid-19 and 16.5 per cent had stayed neutral. About 76 per cent of respondents had reported that they have reverted usual lifestyle and consumption pattern after pandemic.
- **Change in household income due to Covid**: Around 52 per cent of rural respondents showed no change in income followed by 25 per cent reverted to alternate income during pandemic. While 41 per cent of urban respondents faced salary reduction and 39 per cent of respondents showed no change in income. Out of the total sample, 45.5 per cent of respondents reported no change in income.
- **Management of expenditure during lockdown**

  About 43 per cent of the total sample relied on savings followed by 42.5 per cent managed their expenditure by borrowing money from others, salary or income

(34%). Around 47 per cent of rural respondents borrowed money from others, relied on savings (43%) and 29 per cent of respondents depended on their own salary. In urban area, respondents were dependent on savings (43%), salary (39%) and money borrowed from others (38%). Whereas negligible per cent were dependent on parents, land and gold mortgaging. During the period of crisis, when there is no income, people choose to manage their expenditure using the money they had saved and the loan that is borrowed from others. In addition to this, government has also provided financial support to the low-income people.

- **Change in consumption behaviour due to Covid-19:**

  Around 73 per cent of the respondents in rural and 89 per cent in urban had easy access to the market, which proves that though the lockdown was stricter, people have still access to market in the prescribed times. About 58 per cent in rural area and 47 per cent in urban had changed their frequency of market visit. Whereas change in shopping behaviour was observed in 54 per cent (rural) and 55 per cent (urban). Up to 48 per cent in rural area has received free food during pandemic. However, only 11 per cent in urban received free food like vegetables during lockdown.

- **Maintenance of food stock during lockdown**

  The data regarding the food stock maintenance revealed that in rural area among the non-perishable foods, cereals and pulses were stored for more than one month (51.4%) followed by pulses for one month (40%) and more than one month (34.2%), confectionary, chocolate products, bakery products and instant foods were stored for a maximum of three weeks to one month, whereas perishable products like dairy products were stored for less than a week followed by vegetables and fruits which were stored for maximum of one to two weeks.

  A similar pattern was observed in urban area, where 60 per cent of the respondents stored cereals and cereal products for more than a month followed by pulses stored for one month (43.47%) and other non-perishable products like confectionery, chocolate products, bakery products, instant foods were stored for a maximum of one month by majority of the respondents. Whereas perishable products like dairy products were stored for less than one week (56.52%), fruits and vegetables for one week (60-69%) and meat products for less than a week (56%).

Relation between the variables:

In present investigation the dependent variables studies were expenditure incurred and consumer price index. The independent variables included in the investigation were location, occupation, family income, family size and stages of family life cycle.

- There was a negative and no significant relationship between location, stages of family life cycle and expenditure incurred in 2019 and a positive and no significant relationship between occupation, family size, family income and expenditure incurred in 2019.
- There was a negative and no significant relationship between location and expenditure incurred in 2020 and a positive and no significant relationship between occupation, family income and expenditure incurred in 2020.
- There was a positive and significant relationship between family size and expenditure incurred in 2020 and a negative and significant relationship between stages of family life cycle and expenditure incurred in 2020.

Association between the variables:

- Significant association was found between family size, stages of family life cycle and expenditure incurred in 2019 and no association with location, occupation and family income.
- Significant association was found between family size and expenditure incurred in 2020 and no association was found with location, occupation, family income, and stages of family life cycle.
- Significant difference was found when ANOVA was conducted between family size, stages of family life cycle and consumer price index and no significant difference between location, occupation, family income and consumer price index.
- There was a no significant difference between consumer price index and expenditure incurred in 2019 and expenditure incurred in 2020.

The study concluded that the consumption, as well as expenditure of essential food items like milk, meat, fresh vegetables and fruits has increased during the lockdown period when compared to the pre-pandemic period in both rural and urban areas. The CPI for 2020 of essential food items in rural area was found to be greater than in urban

area. This study also focused on consumption behaviour which revealed that having fear of self-infection, lack of transport and restricted movement during lockdown were the major concerns in rural as well as urban area. During the crisis of lockdown, people majorly preferred multi-item grocery stores like Kirana stores in rural area and departmental stores in urban area with the idea of keeping themselves safe and preventing long shopping hours.

This study also found that maximum number of respondents experienced no change in income while few respondents had relied on their salary, income and hand loans which were borrowed from others to survive the financial crisis created by Covid-19. Though the expenditure has increased during the pandemic, it was understood that people are ready to spend their income in order to overcome the hurdle and survive during difficult period. They had overcome the fear of pandemic and adjusted themselves to live in tough conditions with limited resources.

Implications of the study

- The findings of this study will help the policymakers and government to know the concerns and difficulties experienced by consumers during times of lockdown. So, that they will be able to formulate alternate measures if such situations arise in future.
- This study will give estimates on the consumer price index for essential food items in Telangana state, which will help to know the inflation in the country's economy.
- The outcomes will help in building simple and effective price indices that can be adjusted for sudden changes in consumption baskets during disasters.

Recommendation for future studies

- Consumer price index (CPI) can be calculated non-essential goods as present study concentrated only on Essential food items.
- Comparative studies can be conducted on quantities consumed and expenditure incurred during post pandemic period along with measuring CPI.
- CPI can be calculated for speciality goods by taking 2020 as base year.

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APPENDICES

APPENDIX A- INTERVIEW SCHEDULE

1. Personal and demographic information of the households

Date of the interview :

1.Name of the Respondent: House hold no :

2.Age of the Respondent:

3.Gender of the respondent : Male /Female/other

4. Is the respondent household head? 1) Yes 2) No

5.Geographical location of the respondent's house:

6.Family type (tick one of the following)

Family type	Code	Response
Nuclear family	1	
Joint family	2	
Extended family	3	

7.No. of people in the family :_____

8.Details of family background information:

s.no	Name	Age	sex	Relationship with the respondent	Educational level (Give code)	Occupation (Give code)	Income

Education code

Illiterate - 1
Can read and write - 2
Primary - 3
Secondary - 4
High school - 5
Intermediate - 6
Graduation - 7
Post-graduation - 8

Occupation code

Daily wage earners 1
Profession 2
Agriculture 3
Business 4
Unemployed 5

9. No of dependents (old age) and risk bearing (Pregnant and Lactating) women in the family :_____

10. Total earning hands in the household :_____

11. Have any of your family members been infected by Covid-19 : Yes / No

12. Any fatality happened in the family due to Covid-19 : Yes / No

13. Covid Zone (kindly choose (tick) the zone based on the highest level it has reached during the lockdown period. For example, if your region from Green changed to Red and then to Orange or vice-versa, then choose the highest designated i.e., Red in this case)

Red	
Orange	
Green	

SECTION I and II

14. Details on Food consumption and expenditure pattern by families

Food consumption Chart for a household for a month					
S.no	**Name of food item**	**Quantity consumed in 2019 (April) (kgs/gms/lts)**	**Price of the food item in rupees (Rs)**	**Quantity consumed in 2020(April) (kgs/gms/lts)**	**Price of the food item in rupees (Rs)**
1.	**Grains**				
A	Rice				
B	Wheat				
C	Atta				
D	Gram dhal				
E	Arhar dal				
F	Urad dal				
G	Moong dal				
H	Masoor dal				
2. Milk and Meat products					
A	Milk				
B	Chicken				
C	Eggs				
3. Fruits					
A	Banana				

B	Guava				
C	Apples				
D	Grapes				
E	Dry fruits				
F	Papaya				
G	Oranges				
4. Vegetables					
A	Potato				
B	Onion				
C	Tomato				
D	Carrots				
E	Brinjal				
F	Ladies finger				
G	Beans				
H	Green leafy vegetables				
5. Fats and sugars					
A	Sun flower oil				
B	Palm oil				
C	Ground nut oil				
D	Mustard oil				
E	Vanaspati				
F	Sugar				
G	Jaggery				
6. Beverages					
A	Tea				
B	Coffee				
7.Salt, Spices and Condiments					
A	Salt				
B	Pepper				
C	Mustard				
D	Chilli powder				
E	Turmeric				

15. Respond on impact of Covid 19 on your Household Expenditure

	Statement	Strongly agree	agree	neutral	disagree	Strongly disagree
1	Covid 19 had reduced our family income					
2	Change in food prices affected family during Covid-19					
3	During pandemic we faced shortage of food supply					
4	The expenditure pattern of house hold maintenance was more before pandemic					
5	The expenditure pattern of house hold maintenance was more after outbreak					
6	After outbreak of Covid- 19, our consumption of junk food/fast food and fried food decreased					
7	Before onset of pandemic, immunity-boosting foods (lemon, turmeric, garlic, citrus fruits and green leafy vegetables) were not consumed					
8	After onset of pandemic, consumption of healthy products and Immunity boosters increased					
9	Expenditure on outside food decreased after Covid 19 out break					
10	After outbreak, our expenditure on essential food items increased					

Change in the food consumption pattern by the families

16.How does change in prices had affected the consumptions of grains during Covid-19

		Change in consumption pattern		
s.no	**Name of the food item**	**Increased**	**Decreased**	**No change**
1	Rice			
2	Wheat			
3	Atta			
4	Gram dhal			
5	Arhar dal			
6	Urad dal			
7	Moong dal			

17.How does change in prices had affected the consumptions of meat during Covid-19

		Change in consumption pattern		
s.no	**Name of the food item**	**Increased**	**Decreased**	**No change**
1	Milk			
2	Chicken			
3	Eggs			

18.How does change in prices had affected the consumptions of vegetable oils during Covid-19

		Change in consumption pattern		
s.no	**Name of the food item**	**Increased**	**Decreased**	**No change**
1	Sun flower oil			
2	Palm oil			
3	Ground nut oil			
4	Mustard oil			

19.How does change in prices had affected the consumptions of vegetables during Covid-19

		Change in consumption pattern		
s.no	**Name of the food item**	**Increased**	**Decreased**	**No change**
1	Potato			
2	Onion			
3	Tomato			
4	Carrots			
5	Brinjal			
6	Ladies finger			
7	Beans			
8	Green leafy vegetables			

20.How does change in prices had affected the consumptions of fruits during Covid-19

		Change in consumption pattern		
s.no	**Name of the food item**	**Increased**	**Decreased**	**No change**
1	Banana			
2	Guava			
3	Apples			
4	Grapes			
5	Dry fruits			
6	Papaya			

21.What is your lifestyle and consumption pattern during post Covid-19? (Tick in the appropriate box)

S.no	Statement	Response
1	Revert to usual (like pre-Covid-19)	
2	Restricted to basic needs as practiced during lockdown	
3	Can't say	
4	Other:	

22.Has your household income changed over lockdown period?

S.no	Statement	Response
1	Layoff or salary reduction	
2	Resorted to secondary/alternative source of income to maintain income levels	
3	No change in income	

23. How was your household expenditure changed over lockdown period?

S.no	Category	Response
1	Increased	
2	Decreased	
3	No change	

24.How did you manage your expenditure during lockdown?

S.no	Category	Response
1	Salary or income	
2	Reliance on savings	
3	Borrowed from others	
4	Government support	
5	Dependence on parents	
6	Mortgaged gold	
7	Sale of plot or house	
8	Other	

25. How did Covid 19 shown impact on your livelihood

S.no	Category	Response
1	Little or nil	
2	Some	
3	Moderate	
4	Moderate to severe	
5	Severe	

26.Have you maintained any food stock during the lockdown?

1) Yes 2) No

If yes which food items you stocked?

S. No	**Food items**	**one week-1**	**two weeks-2**	**three weeks-3**	**one month-4**	**more than one month-5**
1	Cereals and cereal products					
2	Pulses					
3	Dairy products					
4	Vegetables					
5	Fruits					
6	Meat products					
7	Beverages					
8	Spices and condiments					
9	Confectionary					
10	Fats and oils					
11	Chocolate products					
12	Bakery products					
13	Ready-to-eat					

SECTION-III

Impact on consumption behaviour

27.Have you got any food items freely supplied by government?

1) Yes 2) No

If yes how frequently and what are the food items that were supplied:

_____

28.Have you got any monetary benefit from the government during lockdown?

1)Yes 2) No

29. Did you have regular and easy access to grocery or market stores during lockdown?

1)Yes 2) No

If yes what are the different markets that you have visited during lockdown?

s.no	**Markets**	**Yes**	**No**
1.	General stores		
2.	Super markets		
3.	Whole sale stores		
4.	Departmental stores		
5.	Weekly markets		
6.	Local market		

30.What were your concerns during Covid-19? (Please assign different ranks to different statements)

S.no	Category	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
1	Restricted movement or socialization					
2	Access to market or grocery stores					
3	Fear of self-infection					
4	Lack of transport					
5	Vulnerability of family members for infection					

31.Were the following commodities available in the nearby market or stores during the lockdown? Choose any one among 4 options for the given statements.

S.no	Category	Always 1	Sometime 2	Never 3	Can't say 4
1	Fresh food (e.g., milk, vegetables, fruits, eggs)				
2	Basic food (e.g., rice, wheat, pulses, oil)				
3	Hygiene items (e.g., soap, sanitizers, detergent etc)				
4	Essential medicines				
5	Non-vegetarian food				
6	Beverages				

32.Have you changed your shopping behaviour during lockdown?

1)Yes 2) No

If yes select the changes from the following

s.no	Category	Response
1	Shifted towards online shopping	
2	Pre planned shopping	
3	Buying only necessities	
4	Buying immunity boosters	
5	Buying abundantly	
6	Buying unfamiliar brands (due to low availability of products)	

33.Choose any one among 3 options for the given statements regarding consumption practices during the lockdown. (Tick in the appropriate box)

S.no	Category	Always (1)	Sometimes (2)	Never (3)
1	Bought larger quantities and stocked			
2	Bought cheaper foods owing to financial crunch			
3	Bought mostly online			
4	Bought only from nearby market/stores			
5	Preferred semi-perishable food items (with the intention of stocking)			
6	Avoided dairy products and/or meat			
7	Preferred multi-item grocery stores			

34.Does no. of meals taken per day changed during pandemic?

1) Yes 2) No

If yes what meals you have taken. Tick in the appropriate box

s.no	Type of meal	Yes	No
1	Break fast		
2	Mid-morning breakfast		
3	Lunch		
4	Snack		
5	Dinner		
6	Mid night snack		

35.Choose any one among 4 options for the given statements regarding change in commodity consumption. (Tick in the appropriate box)

s. no	Category	Increased (1)	Decreased (2)	No change (3)	Can't say (4)
1	Rice, wheat etc				
2	Edible oil				
3	Dairy products (milk, ghee, butter, curd etc)				
4	Cookies				
5	Fresh fruits				
6	Fresh vegetables				
7	Beverages				
8	Processed or packed foods				
9	Meat				

36.Please quantify the change in overall consumption during lockdown (Tick in the appropriate box)

S.no	Category	< 5 % (1)	5-25% (2)	25-50% (3)	> 50% (4)	Can't say (5)
1	Rice, wheat etc					
2	Edible oil					
3	Dairy products (milk, ghee, butter, curd etc)					
4	Cookies					
5	Fresh fruits					
6	Fresh vegetables					
7	Beverages					
8	Processed or packed foods					
9	Meat					

37.Do you feel there is a decrease in frequency of weekly visit to market?

1) Yes 2) No

38.How frequently you visited market before Covid-19? (Tick in the appropriate box)

S.no	Category	Response
1	Everyday	
2	Once in two days	
3	Once in three days	
4	Once in four days	
5	Once in five days	
6	Once in six days	
7	Once in a week	
8	Other:	

39.How frequently you visited market during lockdown period? (Tick in the appropriate box)

S.no	Category	Response
1	Everyday	
2	Once in two days	
3	Once in three days	
4	Once in four days	
5	Once in five days	
6	Once in six days	
7	Once in a week	
8	Other:	

40.Is there any change in non-vegetarian preference due to Covid 19?

1) Yes 2) No 3) Not applicable

41.If yes what type of change in meat consumption you experienced in the shift? (Tick in the appropriate box)

S.no	**Category**	**Response**
1	Not applicable (vegetarians)	
2	Avoided totally	
3	Reduced consumption	
4	Increased consumption	
5	No change	
6	Other:	

42.How much time you have spent in procuring the food items in offline mode

s.no	Time	Response
1	Less than 1 hour	
2	1 hour	
3	2 hours	
4	3 hours	
5	More than 3 hours	

43.How does your consumption towards baking items, sauces and preservatives changed

S. No		**Response**
1	Increased	
2	Decreased	
3	No change	

44.Has your brand preference shifted towards others during lockdown period?

1.) Yes 2.) No

if yes what is the reason

S.no	Reason	Response
1	Non availability of preferred brands	
2	Reducing expenditure	
3	Preferred to try new brands	

45. What are your suggestions to government /policy makers regarding the supply or provision of essential food items to households?

Annexure-B

Distribution of quantities of essential food items consumed by selected families in selected location during the month of April 2019 and 2020

		Undavelli			Kadukuntla			Gadwal			Wanaparthy		
S. No	**Food items**	**2019 (Kg/Gm/ Lt)**	**2020 (Kg/Gm/ Lt)**	**%**	**2019 (Kg/Gm/ Lt)**	**2020 (Kg/Gm/ Lt)**	**%**	**2019 (Kg/Gm/ Lt)**	**2020 (Kg/Gm/ Lt)**	**%**	**2019 (Kg/Gm/ Lt)**	**2020 (Kg/Gm/ Lt)**	%
1	Cereals and pulses	33.38	35.60	6.7	36.84	36.28	-1.5	35.06	32.67	-6.8	33.47	33.61	0.4
2	Milk	20.98	28.8	37.3	21.71	23.59	8.7	21.54	26.33	22.2	20.39	23.52	15.4
3	Chicken	4.68	6.52	39.3	3.27	4.3	31.5	3.25	4.7	44.6	3.69	5.1	38.2
4	Eggs	3.81	4.63	21.5	3.21	4.1	27.7	3.355	4.4	31.1	3.22	4.1	27.3
5	Banana	1.8	2.11	17.2	1.26	2	58.7	1.59	2.05	28.9	1.20	2.09	74.2
6	Guava	1.2	1.41	17.5	1	1.18	18.0	0.95	1.3	36.8	0.88	1.03	17.0
7	Apple	1.46	2.01	37.7	0.88	1.12	27.3	1.02	1.102	8.0	0.98	1.07	9.2
8	Grape	0.73	1.21	65.8	0.76	1.80	136.8	0.81	1.11	37.0	1.41	1.86	31.9
9	Dry fruits	0.67	1.288	92.2	0.61	0.8	31.1	0.75	1.05	40.0	0.68	0.70	2.9
10	Papaya	4	2.66	-33.5	1	1.75	75.0	1	1.83	83.0	1	1.8	80.0
11	Orange	1.04	2.05	97.1	0.61	1.92	214.8	1.08	2.07	91.7	0.86	1.94	125.6
12	Vegetables	21.5	24.822	15.5	13.94	13.13	-5.8	18.06	20.81	15.2	17.82	17.54	-1.6
13	Fats and oils	4.7	5.21	10.9	4.13	4.2	1.7	4.31	4.42	2.6	4.86	5.3	9.1
14	Non-alcoholic beverages	0.46	0.5	8.7	0.46	0.44	-4.3	0.49	0.50	2.0	0.59	0.62	5.1
15	Spices and condiments	3.48	3.80	9.2	3.13	3.2	2.2	3.144	3.26	3.7	3.13	3.12	-0.3

APPENDIX -C

Table -1 Distribution of the expenditure incurred for total sample

Expenditure change in Rupees			
Food groups			
	Amount (Rs)		**%**
	2019	**2020**	**change**
Cereals and pulses	2416.63	3003.71	24.3
Milk and meat	3163.4	5568.3	76.0
Vegetables and fruits	2165.25	3223.24	48.9
Fats and oils	878.37	1085.25	23.6
Non-alcoholic beverages	187.79	223.99	19.3
Spices and condiments	621.85	713.2	14.7

Table -2 Distribution of the respondents for concerns during lockdown

	Total									
Concerns	**Rank-1**		**Rank-2**		**Rank-3**		**Rank-4**		**Rank-5**	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Restricted movement	123	61.5	57	28.5	5	2.5	1	0.5	0	0
Access to market	59	29.5	74	37	50	25	0	0	3	1.5
Fear of self-infection	139	69.5	22	11	14	7	11	5.5	0	0
Lack of transport	132	66	54	27	0	0	0	0	0	0
Vulnerability of family	114	57	49	24.5	15	7.5	8	4	0	0

Table- 3 Distribution of the respondents regarding consumption practices

	Rural								
Consumption practices	**Always**		**sometimes**		**never**		**Score**	**Mean**	**Rank**
	F	**%**	**F**	**%**	**F**	**%**			
Bought larger quantities	98	49	42	21	60	30	438	2.19	3
Bought cheaper foods	35	17.5	51	25.5	114	57	321	1.61	5
Online shopping	28	14	64	32	108	54	320	1.60	6
Nearby markets	171	85.5	18	9	11	5.5	560	2.80	1
Preferred semi-perishable foods	59	29.5	82	41	55	27.5	396	1.98	4
Avoid dairy products	44	22	10	5	146	73	298	1.49	7
Multi-item grocery store	98	49	55	27.5	44	22	448	2.24	2