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Alterations in grocery shopping pattern due to implementation of the great Indian lockdown: Analysis of populace perception; practice by descriptive, inferential analysis by SPSS and gis choropleth mapping

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**Dr.(Er) Parimita1, Prof. (Dr.) Karunakar singh2: Alterations in grocery shopping pattern due to implementation of the great Indian lockdown: Analysis of populace perception; practice by descriptive, inferential analysis by SPSS and gis choropleth mapping-- Palarch's Journal Of Archaeology Of Egypt/Egyptology 17(9). ISSN 1567-214x**

**Index Terms:** choropleth mapping, covid-19, grocery shopping, lockdown, public opinion survey

## ABSTRACT

The outbreak of COVID-19 in different parts of the world is a major concern for all the administrative units of respective countries. India is also facing this very tough task for controlling the virus outbreak and has managed its growth rate through some strict measures. This study presents the current situation of coronavirus spread in India along with the impact on change in grocery shopping pattern before and during lockdown. This resulted in major disruptions to one of the most common market processes in retail: food retailing. The research adopts the theory of planned behaviour to provide early empirical insights into changes in consumer behaviour related to food purchases during the initial stages of the COVID-19 outbreak in India. Data from the online survey carried out suggest that the outbreak triggered considerable levels of switching behaviours among customers, with retailers, local street vendors and online grocery shopping platforms' markets losing most of their customers, whilst local small independent retailers experienced the highest levels of resilience in terms of customer retention. This study suggests avenues for further scholarly research and policy making related to the impact this behaviour

## 1. Introduction

COVID-19 is disrupting India in Associate in never before manner. So as to contend with the Corona-Virus, with a population of over one point three billion folks going into lock-down for a amount of twenty one days beginning March twenty fifth, 2020. This creates issues for retailers additionally as shoppers though essential classes, like grocery and pharmacy were available throughout the implementation of lockdown, [1]

Since the threat of the dread virus isn't aiming to disappear before long, we cannot bring down our defenses &ought to exercise and should take utmost caution when we shop. Of course, as so much as doable, it might be wise to order merchandise on-line and have them delivered at our doorsteps.

Today, even a wayside vegetable or fruit merchandiser includes a mobile phone and you'll be able to well order what you would like on call. Shoppers sometimes like better to choose the fruits and vegetables themselves so as to make sure quality, however that's a habit that has got to modification. [4]

Corona viruses possess a particular morphology, the name being derived from the outer fringe, or “corona” of embedded envelope macromolecule. Until 2003, coronaviruses attracted very little interest on the far side inflicting mild respiratory tract infections. This modified dramatically in 2003 with the animal disease SARS-CoV and also the more modern emergence of MERS-CoV has confirmed the corona viruses as vital causes of severe disease. [1]

India had according eighteen thousand nine hundred and eighty five confirmed cases and 603 deaths from COVID-19 in thirty one states and union territories since its 1st case on Jan thirty. India was fast to shut its international borders and enforce an on the spot internment, that WHO praised as “tough and timely”. The Implementation of lockdown has additionally given the govt. time to arrange for a doable surge in cases once the pandemic is forecasted to peak within the coming weeks. Still, India's population of 1•3 billion across numerous states, health inequalities, widening economic and social disparities, and distinct cultural values put distinctive challenges.

Empty grocery shelves, each physical and digital, became a logo of however COVID-19 has had sweeping impacts on communities & supply chains round the globe. Merchandise that always appeared voluminous – tissue paper, cleansing utilities, water, cheese, milk, cream, meat – quickly became tough to search out. To seek these necessities with adhering to stay-at-home directives, folks have turned to on-line shopping, this fasten the adoption rate of grocery delivery services. Over forty percent of Indians ordered grocery online in the week ending March thirteen tried it for the first time. [2]

“Grocery delivery are going to be the long time beneficiary because it was expected to grow before COVID-19, however this can be fasten the speed of modification and also the adoption curve is going on quicker than it ever might have organically,” “But the pandemic has additionally underscored the requirement for physical grocery stores. We have a rising tendency to expect durable conversions to online delivery of grocery however not full conversions. Folks can order on-line and use click-and-collect and visit physical stores, rather like they're doing currently.” Rise in delivery adoption doesn't mean that

in-store purchasing has fallen. Actually, it's the other way round; with a spike in demand for groceries in-store, partly because of restricted convenience online, like date and time of delivery etc. This has motivated grocers and e-commerce corporations sport to adapt and keep end-users safe. As purchasers continue to hoard essentials — as well as there is increase in panic-buying — grocers, doorstep delivery services, and e-commerce businesses are adapting at a fast speed to meet end-user demand & deal with the never before exercise of how to keep employees & shoppers safe from the corona-virus while doing so. In addition stores are making physical modifications to their physical layouts to ensure physical distancing. Some have set up one-way traffic systems, with "understandable marking of six-foot area to keep individual shoppers distanced both inside & outside of the store," They've also installed cart & basket cleaning stations, & acrylic screens, made of Plexiglas or Perspex, to protect cashiers. A lot of stores are only allowing in a certain number of buyers at a time.[2]

According to a study about the impact of the corona-virus on Indian populace in May 2020, retail stores appeared more consistent in terms of providing essential grocery. For those ordering online, only ten percent got everything they needed readily, compared to forty percent among retail store buyers.[3]

India implemented a lockdown for twenty one days, announced on twenty fourth March, 2020. This was after the "Janata Curfew" on March 22, 2020 - a so-called practice lockdown. Panic-buying instigated amongst populace, days before the lockdown was declared, much like in across the globe. This lockdown was the biggest across the globe, restricting 1.3 billion population, extended until third May, 2020.[3]

Day after day the COVID-19 pandemic brought a novel veracity, and population was expecting speedy reactions in this fast-changing crises. To restrict the spread of the virus, retailers have to shut down their doors — or at least lessen hours & foot traffic — to support physical distancing. With physical retail connections disappearing, online is where consumers are making most, if not all of their purchases. This is compelling a well-built connection between the brand & the digital experience as well as doorstep delivery. A brand's repute is at the present depends on the online experience. All the usual online aspects — website speed, shipping time, online customer support, user experience, — will now have a much huger impact on brand perception as it's the only point of attraction for the time being.(5)

## **2. Objectives:-**

- To process uncomplicated to get on-line question form that deals in "Change in grocery shopping pattern before and during the implementation of the great Indian lockdown"
- To distribute ready question form to get the experience, practice and point of view of populace through different social media platforms like WhatsApp, Instagram, and e-mail etc.

- To examine facts assorted from filled question forms by descriptive & inferential statistical analysis from starting to finish with the help of GIS multivariate mapping.

### **3. Methodology**

#### **3.1 Framework Abstract**

Relevant studies were identified where online surveys conducted through a set of survey questions were sent out to a target sample and the members of this sample responded to the questions. The main aim of the present research was to assess the changes in grocery purchasing patterns in the present COVID-19 scenario. The aim of the present research was describing the data which were collected and analyzed to have a better understanding changes in grocery purchasing patterns in the COVID-19 pandemic which in turn can be used for improving the studies about alcohol consumption.

#### **3.3 Development Of Question-Naire**

Questions made through the Google forms app and question was simple which help respondents to understand the question well. We asked 20 questions in this survey related to socio-demography, alcohol consumption and changes due to covid-19 pandemic.

The questionnaire is provided as Appendix.

#### **3.2 Selection Of Area For Study**

The study has been conducted online in different cities of India. The Pandemic situation of COVID-19, did not allow the researcher to visit a particular area and survey. So we developed Google forms and sent to the people residing in different parts of India.

#### **3.4 Data Compilation & Sample Size**

The questionnaire was sent through different social media platforms like WhatsApp, Instagram, e-mail etc. The form was sent to 412 people. Out of 412, only 400 people responded and participated in the survey. Hence the sample size has been taken as 400.

Most of the respondents filled the structured questionnaire on the same day while some of them took few days to complete the questionnaire due to their busy work schedule, and then submitted their responses.

#### **3.5 Data Analyzation**

The collected data was analyzed by using SPSS software to obtain descriptive as well as inferential statistics of frequencies and percentage of responses and to prepare the statistical tables and graphs presented in the chapter.

The collected data was also utilized to prepare thematic Choropleth map with histogram to represent statistical data through various shading patterns or symbols on predetermined geographic areas (i.e. India) with the help of Q-gis software as it is good at utilizing data to easily represent variability of the desired measurement, across a region.

#### 4. Results & discussion:-

##### 4.1 Socio-demographic profile of respondents:-

Out of 400 respondents 71 % were male, 96% were from age group between 15 to 30 years. As can be seen from table 1 home state of maximum respondents' i.e. 59 % was U.P., 96 % were unmarried and 83 % were seeking opportunities for employment, 45 % were from < 2 lakh monthly income group and 86 % respondents belong to nuclear family i.e. 2-6 members in the family.

It is a stated fact that, one needs a substantially unanimous sample to draw any **meaningful conclusions statistically**. If a sample has many socio-demographic sub-groups might trim sample downward to a collection of less relevant sample(s). These samples could then not be effective to draw any meaningful conclusions from.<sup>[8]</sup>

In the luminosity of this central fact socio-demographic profile of the respondents of this research is pertinent as most of the respondents belong to same socio-demographic profile i.e. college going, non/part time working, unmarried middle class north Indian males from nuclear families. Data taken from this sample is suitable to illustrate momentous conclusions.

**Table 4.1:** Distribution of Socio-demographic features of the study subjects

		Perc ent
Gender	A. Male	71
	B. Female	29
Age Group	B. 15-30 years old	96
	C. 30-45 years old	4
Home location	A. Bihar	16
	B. U.P	59
	C. M.P	4
	Chhattisgarh	1
	D. Rajas	2
	Delhi	6
	Dubai	1

	I. South State ie- Karnataka , Tamilnad uetc	1
	Jharkhand	4
	Madhya Pradesh	1
	Nepal	2
	Punjab	1
	Uttarakha nd	2
<b>Education</b>	A. High school	10
	B. Intermedia te	47
	C. Bachelors degree	35
	D. Master Degree	8
<b>Marriag e</b>	No	96
	Yes	4
<b>Househo ld income</b>	A. 25000	18
	B. More than25000	6
	C. Less than 50000	8
	D. less than 100000	23
	E. More than 200000	45
<b>Occupat ion</b>	A. Employed full-time	9
	B. Employed part -time	8

	C. Seeking opportunit ies	83
Number of Family Members	A. 1	1
	B. 2-3	13
	C. 4	44
	D. More than 4	29
	E. More than 6	8
	F. 7-8	5

**4.2 Overcharging during lockdown:** During India's strict lockdown, shoppers of essential items said they witnessed instances of being overcharged in purchasing essential goods, according to survey, 41% consumers said they were overcharged by grocery sellers during the lockdown; while 30% consumers said they were overcharged sometimes not always in the same period, Over 25% said they were not overcharged by a grocery sellers, as can be seen in Q.1.of table 2.

**4.2.1 Status of availability of your desired grocery:** As we know COVID-19 has had far-reaching impacts on communities and supply chains around the globe, like empty grocery shelves, both physical and digital. Of those surveyed, 41% consumers said grocery essentials were less available, 15% consumers said grocery essentials were available at distant places, 1% consumers said grocery essentials were not available at all, and 43% consumers said grocery essentials were easily available, as can be seen in Q.2.of table 2.

As the buyers have only restricted access to the grocery shops with inadequate articles available at the close by FMCG outlet, the outlet owner minted cash by selling the FMCG goods on elevated prices. At that point of time, customer cannot check the quality or price of the items while purchasing it, as they have to maintain distance from the shopkeeper as well as the fellow customers. People claimed that the outlet owners, however, charged the Max Retail Price for the packed goods, for which, they use to bestow some discount previously and on the loose goods they charged as per their own willingness. [6]

**Table 4.2: Distribution of answers**

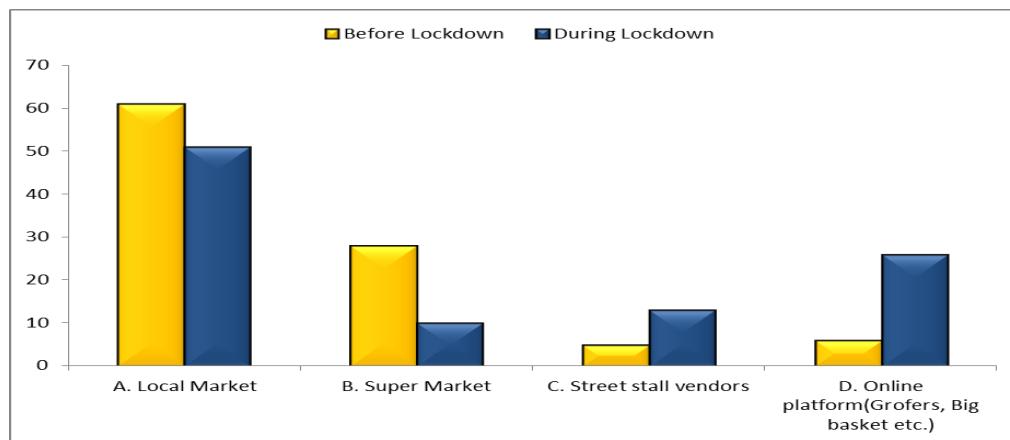
S.N.	Question	Answers	Percent
1.	<b>Do you feel you being overcharged for the same grocery during the lockdown</b>	A. Yes	41
		B. No	29
		C. Sometimes	30
2.	<b>What is the status of availability of your desired grocery :</b>	A. Less available	41
		B. Easily available	43
		C. Available at distant places	15
		D. Not available at all	1

**4.3 Most preferred way of shopping groceries during lockdown:** Chi square analysis reviled there is a statistically significant difference ( $P<0.05$ ) between During COVID19 and Before COVID19 among availability of desired grocery. It is observed that people use to prefer Local market (61%) and supermarket (28%) as their first choice of shopping groceries before lockdown and Street stall vendors (13%) and (26%) Online platform(Grofers, Big basket etc.) as their first choice of shopping groceries during lockdown. The difference is statistically significant ( $P=0.001$ )

**Table 4.3: Most preferred way of shopping groceries during lockdown.**

		What is your most preferred way of shopping groceries during lockdown				Total	P Value <b>0.001*</b>
		A. Local Market	B. Super Market	C. Street stall vendors	D. Online platform (Grofers, Big basket etc.)		
A.	<b>Local Market</b>	44.00%	1.00%	5.00%	11.00%	61.00%	
B.	<b>Super Market</b>	7.00%	7.00%	3.00%	11.00%	28.00%	
C.	<b>Street stall vendors</b>	0.00%	0.00%	5.00%	0.00%	5.00%	
D.	<b>Online platform (Grofers, Big basket etc.)</b>	0.00%	2.00%	0.00%	4.00%	6.00%	
<b>Total</b>		51.00%	10.00%	13.00%	26.00%	100.00%	

\*Statistical significance set at 0.05



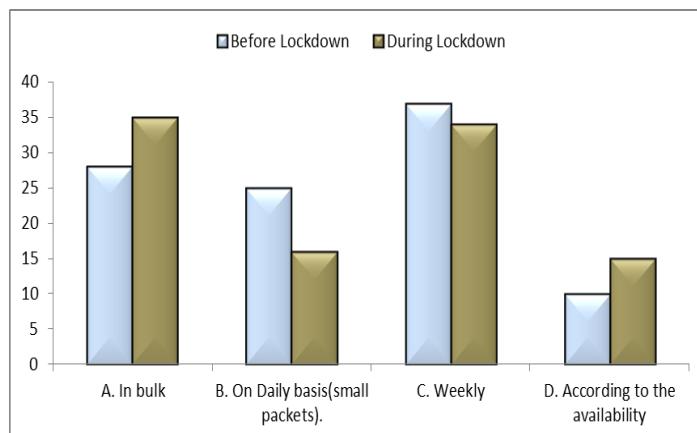
**Graph 4.1:** Most preferred way of shopping groceries during lockdown.

**4.5 Comparison of the preference of buying groceries before and during COVID19:** Chi square analysis reviled there is a statistically significant difference ( $P<0.05$ ) between During COVID19 and Before COVID19 among the preference of buying groceries. It is observed that people preferred buying groceries on daily basis (small packets) (25%) and weekly (37%) basis before the lockdown and prefer buying in bulk (35%) and According to the availability (15%) during the lockdown.

**Table 4.5:** Comparison of the preference of buying groceries before and during COVID19

		How do you prefer buying grocery during lockdown				<b>Total</b>	<b>P Value</b>
		A. In bulk	B. On Daily basis(small packets).	C. Weekly	D. According to the availability		
<b>How do you prefer buying grocery before lockdown</b>	A. In bulk						<b>0.001*</b>
	%	23.00%	0.00%	4.00%	1.00%	28.00%	
	B. On Daily basis (small packets).						
	%	5.00%	11.00%	8.00%	1.00%	25.00%	
	C. Weekly						
	%	5.00%	5.00%	20.00%	7.00%	37.00%	
<b>D. According to the availability</b>							
	%	2.00%	0.00%	2.00%	6.00%	10.00%	
<b>Total</b>		<b>%</b>	<b>35.00%</b>	<b>16.00%</b>	<b>34.00%</b>	<b>15.00%</b>	<b>100.00%</b>

\*Statistical significance set at 0.05



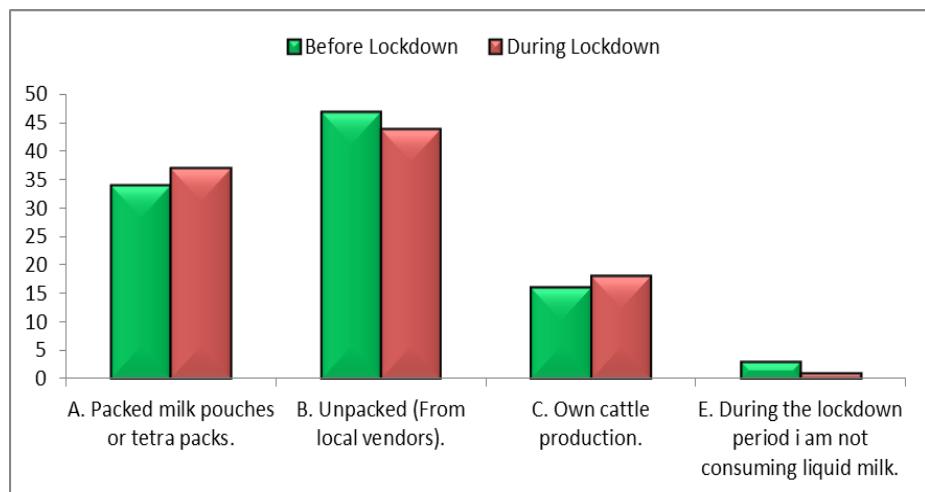
**Graph 4.2:** Distribution of the preference of buying groceries before and during COVID19

**4.6 Comparison of the availability liquid milk before and during COVID19:** Chi square analysis reviled there is a statistically significant difference ( $P<0.05$ ) between During COVID19 and Before COVID19 among availability and usage of liquid milk. It is observed that people use to prefer Unpacked milk (From local vendors) (47%) and most of them did not consume liquid milk(3%) before lockdown whereas most of the population chose Packed milk pouches or tetra packs(37%) and Own cattle production (18%) as their first choice during lockdown. The difference is statistically significant ( $P=0.001$ )

**Table 4.6:** Comparison of the availability liquid milk before and during COVID19

		From where do you get liquid milk during lockdown?						<b>Total</b>	<b>P Value</b>
		A. Packed milk pouches or tetra packs.	B. Unpacked (From local vendors).	C. Own cattle production.	E. During the lockdown period i am not consuming liquid milk.				
From where do you get liquid milk on a regular basis?	A. Packed milk pouches or tetra packs.								0.001*
		%	32.00%	1.00%	1.00%	0.00%	34.00%		
	B. Unpacked (From local vendors).								
		%	3.00%	43.00%	1.00%	0.00%	47.00%		
	C. Own cattle production.								
		%	0.00%	0.00%	16.00%	0.00%	16.00%		
Total	D. I don't consume liquid milk.								
		%	2.00%	0.00%	0.00%	1.00%	3.00%		
		%	37.00%	44.00%	18.00%	1.00%	100.00%		

\*Statistical significance set at 0.05



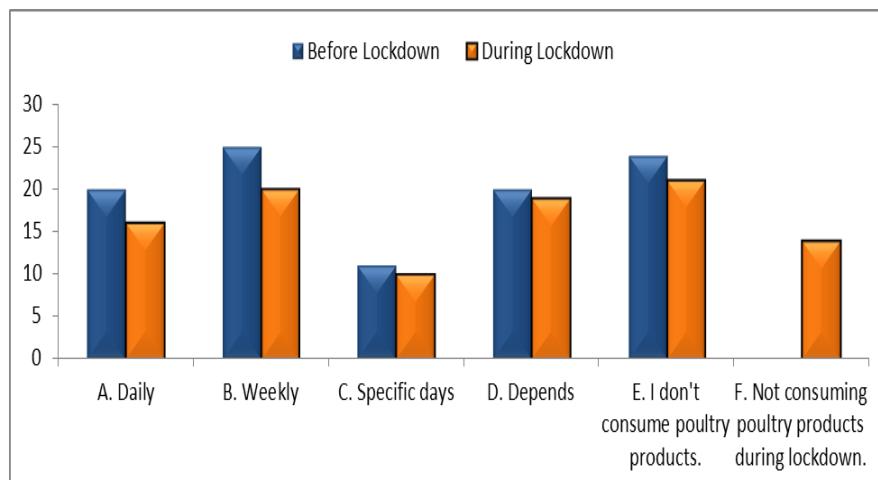
**Graph 4.3:** Distribution of the availability liquid milk before and during COVID19

**4.7: Comparison of eating poultry grocery product before and during COVID19:** Chi square analysis reviled there is a statistically significant difference ( $P<0.05$ ) between During COVID19 and Before COVID19 among eating poultry grocery products. It is observed that eating poultry product is comparatively higher before lockdown and reduced significantly after lockdown ( $P=0.001$ )

**Table 4.7:** Comparison of eating poultry grocery product before and during COVID19

			How often do you eat poultry grocery product during lockdown.							<b>Total</b>	<b>P Value</b>
			A. Daily	B. Weekly	C. Specific days	D. Depends	E. I don't consume poultry products.	F. Not consuming poultry products during lockdown.			
How often do you eat poultry grocery product on a regular basis :	A. Daily										0.001*
		%	15.00%	3.00%	0.00%	1.00%	1.00%	0.00%	20.00%		
	B. Weekly										
		%	1.00%	15.00%	4.00%	4.00%	0.00%	1.00%	25.00%		
	C. Specific days										
		%	0.00%	2.00%	6.00%	1.00%	0.00%	2.00%	11.00%		
	D. Depends										
		%	0.00%	0.00%	0.00%	13.00%	1.00%	6.00%	20.00%		
E. I don't consume poultry products.											
		%	0.00%	0.00%	0.00%	0.00%	19.00%	5.00%	24.00%		
Total										100.00%	
		%	16.00%	20.00%	10.00%	19.00%	21.00%	14.00%			

\*Statistical significance set at 0.05



**Graph 4.4:** Distribution of eating poultry grocery product before and during COVID19

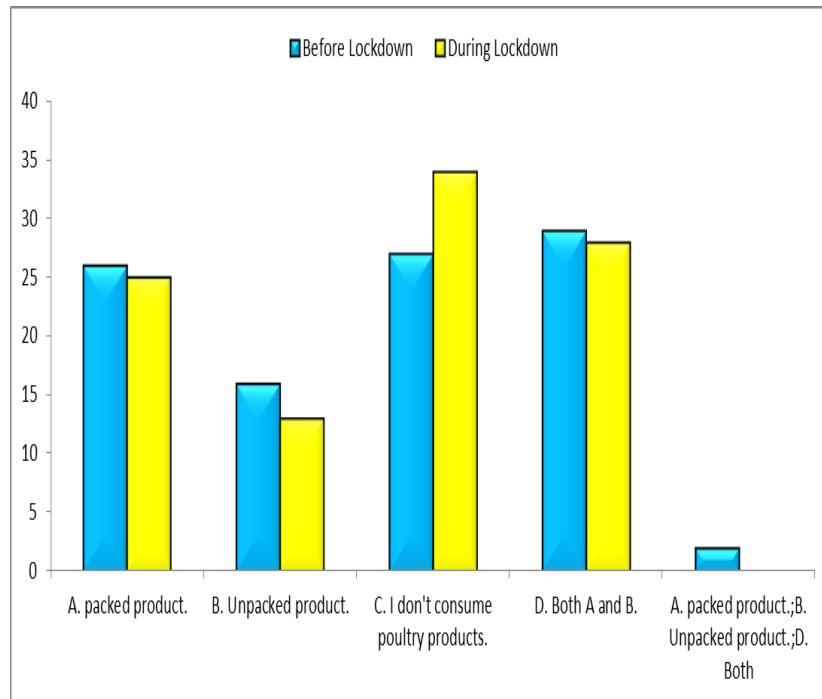
**4.8: Comparison of consumption of poultry product before and during COVID19:** Chi square analysis reviled that there is a statistically significant difference ( $P<0.05$ ) between During COVID19 and Before COVID19 among consumption of poultry products. It is observed that consumption of packed (26%), unpacked (16%) and combination of both packed and unpacked poultry product (29%) is comparatively higher before lockdown and many people didn't consume (34%) poultry products after lockdown ( $P =0.001$ ).

**Table 4.8:** Comparison of consumption of poultry product before and during COVID19

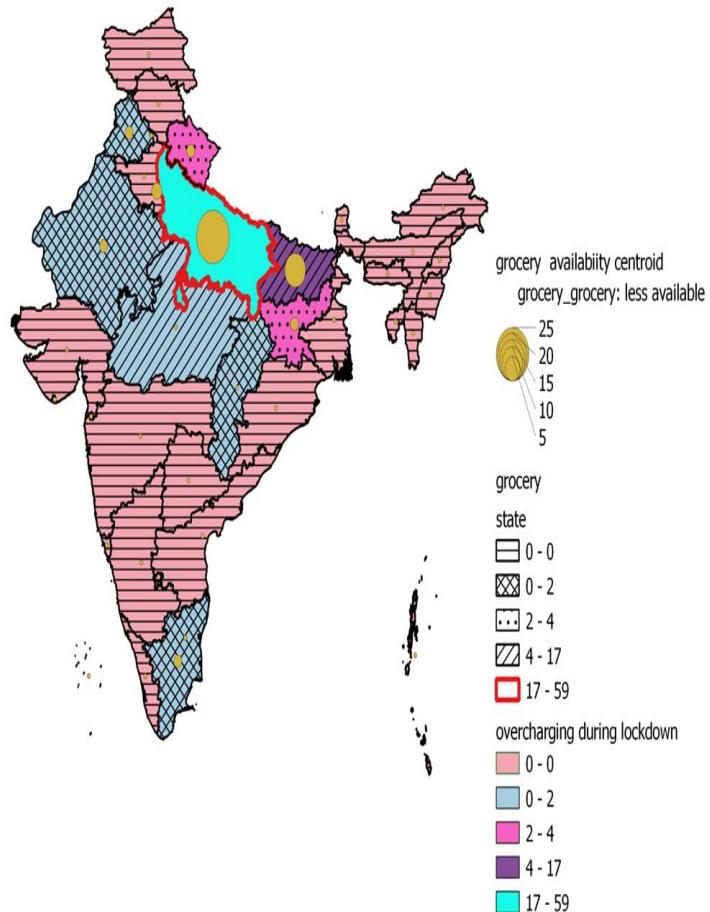
		Which kind of poultry products are you consuming during lockdown?					<b>Total</b>	<b>P Value</b>
		A. packed product.	B. Unpacked product.	C. I don't consume poultry products.	D. Both A and B.			
<b>Which kind of poultry products do you consume on a regular basis?</b>	A. packed product.							
	%	19.00%	2.00%	1.00%	4.00%	26.00%		
	A. packed product.;B. Unpacked product.;D. Both A and B.							
	%	0.00%	0.00%	0.00%	2.00%	2.00%		
	B. Unpacked product.							
	%	3.00%	10.00%	2.00%	1.00%	16.00%		
	C. I don't consume							
	%	1.00%	1.00%	25.00%	0.00%	27.00%		
								<b>0.001*</b>

	poultry products.							
D. Both A and B.								
Total	%	2.00%	0.00%	6.00%	21.00%	29.00%		
	%	25.00%	13.00%	34.00%	28.00%	100.00%		

\*Statistical significance set at 0.05



**Graph 4.5:** Distribution of consumption of poultry product before and during COVID19



**Figure: 5. 1:** Choropleth Map: showing home states of respondents and frequency histogram legand for answers to the questions regarding “availability and overcharging”

**GIS multivariate Choropleth mapping:** - As we can clearly state from choropleth map that majority of respondents belong to U.P. & Bihar. Less availability of FMCG goods with overcharging during the implementation of lockdown is quite evident from above multivariate map

## 5. Conclusion

According to a survey about the impact of the coronavirus (COVID-19) on Indians in May 2020, retail stores seemed more reliable in terms of sourcing essential grocery.

Online grocery stores like Big Basket even had to delay a few deliveries due to the sudden influx of orders. However, not everyone's requirements are the

same, and some may need to buy a little more than others. Mothers for example should also stock up on baby formula, and baby food. Individuals with pets would probably want to invest in some canned goods and dry pet food.

From the Survey we can reach onto the Conclusion that;

- Maximum people opt for packed food items rather than non-packed
- Maximum people consume less processed food.
- Most of them are still interested in consuming all kinds of fresh vegetables available.
- Most of them consume hot drinks compared to softdrinks .
- We could definitely see that there is a drastic change in the purchasing pattern of people as they were not getting their favourite brands, and most of the items were not available in grocery stores.
- People are aware about covid-19 as they are following the sanitization methods and also using only packed food items and are preparing snacks in their house.

#### Future scope

The current level of empirical research done on: Change in grocery shopping pattern during the pandemic. This study was concentrated on perceptions and evaluations of food & grocery stores and seeks to build on the very little research done in understanding the change in the pattern of buyers. In the future, researchers can seek other relevant research problems from the industry and from existing literature. This survey give an idea of consumer needs. It will be helpful for sellers. This survey will help people be more aware about the the drastic effects of novel covid-19 pandemic make in the the food purchase pattern for grocery purchase pattern. Consumers will get back to normal very quickly, but some changes will stick. Shoppers are questioning what the essentials are and therefore buying more basics or classic items rather than trend-led pieces, which may continue after coronavirus.” People will want to make sure that they have savings behind them.

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Note- Only Fig 5.1 Needs To Be Coloured Because This Is Multivariate Mapping Done By Qgis Software

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