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COVID-19 AND ITS IMPACT ON FOOD CONSUMPTION AND BEHAVIOUR IN INDIA

Megha Mary Michael, Assistant Professor, St. Teresa's College, Ernakulam

Devanika Santhosh, Student, St. Teresa's College, Ernakulam

Abstract

The Covid-19 pandemic has disrupted the lives of individuals and businesses across the globe. The current study is poised at the second wave of the pandemic in Kerala, India. The study addresses the change in food consumption and behaviour owing to the pandemic and the resultant measures like lockdown introduced by the governments. The study uses a structured questionnaire to collect data from respondents regarding the change in food habits and food related behaviours during the second wave of the pandemic. The study analyses the change across demographics. The study also considers the emotional sentiments of the respondents. It was found that the people have moved to a more healthier lifestyle, cooking largely at home and spending more time with the family. This is mostly across different demographics.

Keywords: Covid-19, Food consumption, food behaviour, food shopping, online grocery

1. Introduction

The outbreak of coronavirus disease which began in Wuhan in the late 2019 and later spread on to more than 200 countries was declared a Public Health Emergency of International Concern on 30th January, 2020. In the preventive guidelines presented to the common people, something that was considered the most important was the SMS – Sanitizing, Masking and Social Distancing. Strong contingent measures were taken by countries around the world to slow the spread and combat the virus. 2020 was termed an "Year without precedent" by the WHO recognising the numerous healthcare efforts taken by the organization in the regard. The countries across the globe took strong containment measures in 2020 which went on for almost a year. Schools and universities were shut encouraging online teaching learning, businesses went on remote working and home confinement was encouraged. Not one industry was spared from the whip of the deadly virus. Services were largely hit. With people confined at homes, the food behaviour and consumption of people changed. Restrictions on travel and movement of goods, quarantine measures and the corresponding economic fallout as a result of the pandemic deepened the impact. Global supply chains suffered unprecedented consequences, leading to a slowdown, and in some cases shutdown, of supply chains worldwide.

India recorded its first case of Covid 19 on 27th January 2020 in Kerala. In September 2020, India witnessed a peak with more than 90,000 new cases being reported daily. However, the daily cases came down to less than 10,000 by February 2021 showing a downward trend. Restrictions were eased by then. Some states had schools and universities being opened up and life was returning to near normal. And then the second wave happened. India saw the 7 day average of new cases at around 40,000 by the end of March. By the first week of May, the 7 day average reached around 3,27,000 – a number that was unknown even in the peaks of the first wave of covid 19.

Scientists across the world had warned countries of the second wave that would ensue even as early as April 2020 (Xu & Li, 2020). However, there was a general public confidence after the decline of the first wave. This along with the confidence that vaccines brought in, made the second wave of Covid 19 more fatal and more intense in India.

Lisa Maragakis, Senior Director of Infection Prevention, The John Hopkins Health System attributes the second wave to the lack of SMS – Sanitize, Masks and Social Distancing norms, multigenerational households and the "reopening" of the strict measures imposed. With communities reopening bars, restaurants and stores, people were eager to resume their regular activities. And this made the second wave more worrisome.

The second wave looks even more precarious than the first one. Preventive measures have to be efficiently managed to curtail the spread. This will call for stringent measures like lockdown and restricted movement. Vaccination drives are getting enhanced. But, with the limited stock of vaccine, other preventive measures have to be enforced. The central government has decentralized the Covid crisis management to the state governments for better control. Some of the states like Maharashtra and Karnataka has imposed strict lockdowns in the states.

2. The Indian Food Industry in the lens of the covid pandemic

The Food and Grocery market in India is the sixth largest in the world. It constitutes 65% of the total retail market in India. The food processing industry in India is poised for growth with the Government of India introducing the Product Linked Investment Scheme which is aimed at boosting the food processing investment, agri exports and farmer incomes. The food consumption pattern in India is also witnessing major changes. Changing demographics, fast paced lifestyle, low work-life balance are often attributed to the changing consumption patterns and to the resultant growth in lifestyle diseases in the country (Deloitte). India is today known as the diabetic capital of the world. There is also an increase in the number of people suffering from other diseases like thyroid problems, obesity and hypertension. An increase in the awareness of the diseases have also led to people looking out for healthier alternatives in food. At the same time, long working hours, increasing travel time and the need to socialise often created the need for convenient foods. The out of home consumption is also growing. Increasing affordability and disposable income has led to more people consuming food from outside home. Technology has also changed the consumption pattern. The digitial innovation has changed the way consumers order, prepare and consume their food. Online grocery and delivery, online food delivery apps and online payment has made convenience a way of life. How all of these have changed during the Covid times and especially during the second wave is a matter of exploration.

As countries are taking stronger measures to contain the spread of COVID-19, self-quarantine and the temporary closing of businesses may affect normal food-related practices. (WHO). In some countries, restaurants and take-away offers are being limited and some fresh items are becoming less available. (WHO). Deloitte study on Food & Beverages industry – At home consumption has made a significant spike while out of home consumption has come to a standstill. With the spread of coronavirus and the increasing number of patients the restrictions on mobility are mounting and economic and economic and commercial supply chains are coming under serious strain. Lockdowns and impediments in the movement of commodities will have significant impact on the availability of food in different parts of the world. The second wave of the disease makes this even more intense. Food supply chains involve a complex web of actors and interactions. These chains are getting interrupted. With prolonged lockdowns the possibility of food supply chains being under serious strain cannot be ignored.

Food production systems were already at risk and the pandemic has added to the severity. Severe weather, natural calamities, pests and disease outbreaks have affected the food availability by reducing the yield and overall production. Supply of labur and inputs have reduced, the farmers are unable to access the markets – have limited access to food supplies.

In India, the food supply chain was more or less uninterrupted with the food supply chain exempted from the lockdown. The government is encouring home deliveries. Covid 19 offered options to modernize the food supply chains. E purchasing, promoting high tech processing units and super markets. (Salik & Suleri, 2020)

Consumer shopping behaviour has undergone significant changes since the pandemic. The panic shopping and stockpiling that was witnessed during the initial days of the lockdown showed the lack of trust in the global food supply chain. (Schneeweiss & Murtaugh, 2020). A shift from the brick and mortar stores to online delivery platforms can be seen during the lockdown period. Not only because of the risk that the in-store shopping had but also because of the mandate by the government in many cases. Local groceries and shops were able to better their logistics during the pandemic time.

The current study is poised against the background of the second wave of the covid 19 pandemic in India. While the first wave brought in numerous changes in the consumption pattern, are they here to stay? The study explores how the food consumption, delivery and preparation has changed during the second wave of the pandemic. The study involves 200 respondents from India who have voluntarily responded to the survey. This study was conducted in the initial week of May 2021, when the second wave of the pandemic hit the country and the next round of partial lockdowns were announced.

3. Data and Methodology

3.1 Study Design

To analyse the food related behaviour during the pandemic, a survey questionnaire was prepared to answer the following research questions:

RQ1: How has the purchase decision changed during the pandemic?

RQ2: Has the consumption pattern changed in terms of the eating and drinking habits?

RQ3: How has the food preparation and related activities changed during the pandemic?

RQ4: Is there a significant role being played by demographics in the change in activities?

The survey was conducted using online platforms. The focus was on Kerala, one of the majorly affected states during the second wave of the covid pandemic. Currently, with more than 40000 cases daily, Kerala is still battling with the Covid 19 disease. Respondents from different demographics are included in the study. The survey was conducted during a one week period starting from 1st May to 7th May, 2021. This was a period of lockdown in the state. However, the lockdown is not as stringent as during the first wave. The following activities were allowed during the lockdown, although movement was largely restricted.

3.2 Survey Instrument

The survey instrument included a series of 5 point scale likert questions that sought to investigate the customer food purchase, consumption and related activities decisions. Purhcase decisions included questions relating to preference for local food, buying from small vs large supermarkets, buying in person vs online and meals being delivered online. Change in consumption pattern was studied using questions related to the change with respect to fruits and vegetables, meat products, Unhealthy snacking, Cookies, cakes etc, frozen food, soft drinks and alcohol. Food related activities were studied using questions that measured the cooking at home habit, eating with family, time spent on cooking, eating between meals, ready to cook, easy meals, eating at home, ordering take aways, eating at someone else’s place, eating out in restaurants. The answer categories were Never, first time, Less, About the same and More. Besides, the customer emotions during the pandemic was also captured using a five point scale on Nervous, Worried, sad, scared, bored and happy.

4. Results

4.1 Demographic details

Table 1 -Demographic Profile

Variable		Frequency	Percent
Gender	Male	62	25.5
	Female	181	74.5
Age Group	Less than 25	125	51.4
	25 – 40	44	18.1
	41 – 55	28	11.5
	Above 55	46	18.9
Marital Status	Single	131	53.9
	Married	112	46.1
Occupation	In paid work	100	41.2
	Student	114	46.9
	Unemployed	9	3.7
	Home duties	10	4.1
	Retired/Pensioneer	10	4.1
Level of education	Secondary School	4	1.6
	Higher Secondary School	10	4.1
	Undergraduate	160	65.8
	Post Graduate and Above	69	28.4
Household Composition	Single Person Household	2	0.8
	Living with Parents	127	52.3
	Married, with Children	87	35.8
	Married, No children	11	4.5
	Extended family	12	4.9
	Shared household	4	1.6
Annual Income	Upto 50000	39	16.0
	50,000 - 1,50,000	40	16.5
	1,50,000 - 2,50,000	49	20.2
	Above 2,50,000	115	47.3

As indicated in table 1, 74% of the respondents were females, 51.4 % below 25 years of age, 41.2% were professionally active and 65.8% with an educational qualification of Under graduation. 52% of the respondents were living with their parents 35.8% married, with children. As the questionnaire was circulated on the online platform, those with access to the same could only have responded and hence there could be a bias in terms of age.

4.2 Change in consumption habits during the second wave of pandemic

The results displayed in Table 2 shows that a slight behavioural change can be seen in the consumers in the light of the Covid pandemic. A large behavioural change is anticipated but one cannot see such clear difference here. According to the table, 35% of the respondents bought less local food produce. While people continued to use the small super markets for purchase (40%), there is a clear difference in the purchase from big super markets. In person purchase from big supermarkets have declined (48.6%) but a significant rise cannot be seen in the online grocery purchase (25.9% more and 15.2% for the first time). However, 15.2% of the respondents have used online shopping for the first time during the second wave of the pandemic. However, 36.6% of the respondents have not tried using the online grocery shopping experience despite the push that was given by the government.

Table 2: Change in consumption habits during the pandemic

	Never	First Time	Less	About the same	More
Buying Local food	17.3	3.2	35	35	9.5
Buying in person from large supermarkets	18.5	2.1	48.6	25.1	5.8
Buying in person from small supermarkets	8.6	6.2	29.6	39.9	15.6
Ordering groceries online	36.6	15.2	11.1	11.1	25.9
Having meals delivered	28.8	4.9	24.3	21.0	21.0

4.3 Change in the eating habits during the second wave of the pandemic

A healthy diet was suggested as one of the best practices to keep Covid symptoms at bay. This can be seen in the increase in the consumption of fruits and vegetables. Around 44% of the respondents stated they consumed more fruits and vegetables during the pandemic. Similarly, around 42.8% consumers stated they consumed more food they perceive as healthy. A similar decrease in consumption can be seen in fast food category. There is a significant respondents (45.7%) who stated they consumed less fast food than before. Similar is the case with Cookies, Candies and Pastries. Around 40% of the respondents agreed that they consumed less of these during the pandemic. Soft drink consumption also sees a decline with 40% consuming less than what they used to consume.

Table 3: Change in eating habits

	Never	First Time	Less	About the same	More
Fruits and Vegetables	3.7	2.5	8.2	41.6	44.0
Meat Products	11.9	2.5	28.8	41.2	15.6
Healthy Food	4.1	2.9	10.7	39.5	42.8
Fast Food	23.0	2.5	45.7	18.1	10.7
Cookies Candies Pastries	14.0	.8	39.5	26.3	19.3
Frozen Food	30.5	1.6	37.0	21.0	9.9
Soft Drink	38.3	2.9	40.3	12.3	6.2
Alcohol	64.2	4.1	16.9	11.1	3.7

4.5 Change in food related activities during the pandemic

The pandemic saw people working from home, spending more time with family. How has this influenced the consumption related activities? Home cooking and preparing of food increased significantly with more than 50% of the respondents cooking more food. Eating with the family members also see an increase with around 55% eating with the families more than before. An increase can also be seen in the respondent perceived time spent on cooking. Around 42% of the respondents felt that they spent more time on cooking than before. Eating between the meals has seen a slight increase. Around 30% felt that they ate more between the meals than before. Making easy meals have reported a decline with 31.7% making easy meals lesser than before. The frequency of eating at home has seen a great increase with 60.9% eating more at home. The Work at home and the alternate working days might have contributed to this increase. Lesser ordering of fast foods (30.5%), eating at someone else's place (48.6%) and eating out at restaurants (48.1%) can also be seen.

Table 4 : Change in food related activities

	Never	First Time	Less	About the same	More
Cooking and preparing food	4.9	3.7	4.9	31.3	55.1
Eating with family members	2.1	2.1	5.3	35.8	54.7
Time spent on cooking	8.6	1.6	14.8	32.9	42.0
Eating between Meals	8.6	3.3	27.6	29.6	30.9
Making easy meals	24.3	3.7	31.7	23.0	17.3
Frequency of eating at home	2.1	.8	6.2	30.0	60.9
Ordering takeaways/ Fastfoods	24.3	4.9	30.5	21.8	18.5
Eating at someone else's place	26.3	7.8	48.6	14.0	3.3
Eating out at restaurants	29.2	8.6	48.1	10.7	3.3

4.6 Socio demographic influence on food consumption difference

The affects of socio demographic influence on food consumption and related activities were explored. The Mann Whitney U test reveals there is significant influence of demographic characteristics like gender and Marital status on food consumption behaviour. As shown in table 5, gender differently influences the consumption in terms of Online ordering of groceries, Meal delivery, consumption of cookies and candies. It is significant to note that women order less grocery online and depend less on online delivery of meals. The consumption of cookies, candies etc are also higher in women. Similarly, females feel that they spend more time on cooking and are cooking more at home. This could be attributed to more family members staying back at home. Marital status, a variable largely influential in food consumption behaviour is also found to influence the food consumption and behavioural patterns during the Covid 19 pandemic. Single individuals reported less of buying from large supermarkets in person and more of buying from small supermarkets. Online grocery or meal delivery was found to be less amongst single individuals. While the consumption of meat and cookies have increased among singles, there is less consumption of soft drinks and frozen food. Between meals snacking was found to be more in singles. It is interesting to note that eating at someone else’s place was significantly less than before among single individuals. Individuals less than 25, largely the student community behaves significantly different from the other age groups in terms of their change in consumption. While their consumption of soft drinks, frozen foods and cookies have reduced, their snacking between the meals remain more or less the same. They make less easy meals and less frequently visit the restaurants and someone else’s place. The household composition was also found to be influencing the change in consumption during the pandemic. Married couples with children were found to order less meals online and less consumption of fast food. Single individuals, living with parents were consumed frozen foods for the first time and increased their consumption of soft drinks. Shared households reported less takeways than before.

Table 5: Demographic variables and change in consumption

	Gender	Marital status	Age Group	Occupation	Household composition	Income
Behavioral change	Mann-Whitney U		Kruskal Wallis			
Buying Local food	5185.500	6373.000	5.767	8.850	4.716	3.089
Buying in person from large supermarkets	5439.000	5175.5**	15.492**	22.281**	19.861**	5.377
Buying in person from small supermarkets	5489.500	6117*	10.317**	9.148	13.216*	1.860
Ordering groceries online	4697 *	5933**	12.657**	14.412**	8.918	1.419
Having meals delivered	4664.5*	4156.5**	42.893**	45.423**	35.744*	3.781
Fruits and Vegetables	5487.500	6767.500	3.181	3.026	3.265	1.150
Meat Products	4864	5092**	24.239**	24.189**	22.658	2.722
Healthy Food	5408.000	6758.000	2.203	2.944	3.843	.395
Fast Food	4821	3665.5**	60.089**	56.929**	52.548**	6.305
Cookies Candies Pastries	4465.5 **	4189**	44.377**	43.656**	41.242**	9.0967*
Frozen Food	4785.000	3477.5**	61.6179**	59.808**	53.699**	4.552
Soft Drink	4736.500	4018.5**	46.52**	35.081	42.807**	7.452
Alcohol	5252.500	5079.5**	32.394**	28.371**	25.4089**	2.424
Cooking and preparing food	4346.5 **	6940.500	0.992	1.292	5.65	5.693
Eating with family members	5266.000	7072.000	0.097	4.348	7.763	3.420
Time spent on cooking	4395 **	6779.500	1.246	2.887	3.051	9.796*
Eating between Meals	5063.500	4644**	29.626**	22.649**	35.493**	3.988
Making easy meals	4099.5 **	3302.5**	56.878**	52.9844**	56.942**	4.418
Frequency of eating at home	4879.000	6721.500	1.977	6.423	4.377	.791
Ordering takeaways/ Fastfoods	4298**	4062**	41.258**	40.995**	40.324**	3.241

Eating at someone else's place	5523.000	4344**	34.878**	32.196**	44.785**	3.869
Eating out at restaurants	5241.500	4834**	24.619**	23.976**	28.712**	5.808

4. Discussion and conclusion

This paper explores the influence of the second wave of the Covid 19 Pandemic on the food consumption and related behaviours of Indian consumers. The study gains importance on various grounds. The study was conducted at a time when the second wave of the virus affected Indian states and the daily number of positive cases crossed the peak of the first wave. By the time of the second wave of the pandemic, the customers had already had a clear understanding of the virus and the lockdown measures that would come in place. This is a very recent study and no study has been done to understand the change in behaviour especially towards food consumption and related lifestyle changes in the context of the second wave.

The study can give very relevant information to different marketers. One of the major findings of the study is pertaining to the online food and grocery shopping. Lockdown measures were bound to increase the dependence of the customers on online shopping. However, there is a large percentage of the respondents who are yet to use the online shopping services. With even local shopping outlets initiating their own online shopping platforms and food delivery chains extending themselves into grocery shopping and pick and drop services, this is an important information. Even when all these happens around, there is still a large cross section of people who are yet to use this service. It could either be attributed to the lack of digital literacy or availability of service in their area. It could also be because of the need to touch and feel the shopping goods. Relevant industries should look at educating the customers and providing incentives to customers to try out their service. There is a need to build confidence in the customers to use the digital platforms including digital monetary transactions and apps.

Not surprisingly, it can be seen that there is an increased consumption of healthy food and decrease in the consumption of fast foods and other easy to make meals. The pandemic has forced many families to attempt on cooking all meals at home, which was on a decline in the general Indian scenario. The growth in fast food industry was poised at …… per annum which would largely have affected with the pandemic. There is an increased trend towards eating and drinking healthy. Any industry related to food need to highlight the immunity benefits and the healthy nature of the products. Any healthy alternative to the fast food will gain interest. Hence, this can be treated as an opportunity to create new products that can blend in health and ease.

Restaurants and meal delivery apps have also been affected with the pandemic. Less number of people are now going out for food. This could also be due to the restrictions that the government had imposed on the on site restaurant services. The restaurants had been directed to encourage home deliveries and limit the restaurant based services. However, despite the availability of getting meals delivered at homes, it was not widely been used. This could be because of the priority to health and safety issues. Restaurants and fast food services need to look at the need for communication regarding safety protocols in their organizations to encourage customers to use their service. Other marketing techniques need to be created to encourage customers to try out the services of such hotels.

Many countries had reported increasing number of junk food consumption, candies, cookies, chocolate consumption, attributing them to stress relieving behaviour. However, a similar trend seems to be missing in India. The customers have not gone to comfort foods but rather to healthy food and fruits and vegetables whose consumption was found to be more.

Buying in person from large supermarkets have reduced but more people are buying from small supermarkets. The retail sector in India has great learnings from this. During the pandemic, customers reached out to local convenience stores and small supermarkets. There is a huge opportunity for local supermarkets. This could be because of the customer relationships and personal relationships the local players had been able to create in the minds of the customers. The bigger players can also use the opportunity to remodel their chain of operations. Small supermarkets close by to apartments and housing areas worked better than the huge retail operations limited to a single location.

The time one spends with the family was found to be increasing. People have started cooking more meals at home and is eating together as a family. This is a very positive trend from the social perspective. This also provides creative opportunities for industries like media and entertainment.

This being the second wave of the pandemic, people were not caught off guard. When the government imposed lockdown measures, people had a fair view of what to expect. Hence, this study will be useful in giving a future direction as to how to approach and manage customers during and after the pandemic. Even after the pandemic is clinically over, the fear is bound to remain and the economy cannot expect to come back quickly. Hence adequate planning from the industry side is suggested to combat the issues.

Very limited demographic differences were found to be differently influencing the change in consumption patterns. Gender was found to be one major differentiating factor. This was found to be true in the case of online grocery shopping, consumption of products like cookies and candies. Women were found to order less grocery online in comparison to men. This information can be useful for major internet based service providers. In order to encourage the women to shop online, specific advertisements and promotions targeting them can be designed. This could also improve the total grocery shopping online. Similarly, women differ from men in terms of the consumption of certain food products like cookies and candies, which is more consumed by women. Availability and ease of navigation of sites that cater to this specific needs can be improved. That can encourage them to use and try online shopping sites.

The study comes at a time when there is a need for a clear understanding of how customers behave in times of a pandemic. Especially when there is a government imposed lockdown. The emotional status of the respondents is also interesting. While majority of them are not nervous, depressed, sad, scared or happy, the only emotion that was reported significant was being bored. This shows that the general sentiment of the respondents is not one of fear or nervousness.

REFERENCES

Ammar, A.A.; Brach, M.; Trabelsi, K.; Chtourou, H.; Boukhris, O.; Masmoudi, L.; Bouaziz, B.; Bentlage, E.; How, D.; Ahmed, M.; et al. Effects of COVID-19 Home Confinement on Eating Behaviour and Physical Activity: Results of the ECLB-COVID19 International Online Survey. Nutrients 2020, 12, 1583.

Ben Hassen, T., El Bilali, H., & S Allahyari, M. (2020). Impact of COVID-19 on Food Behavior and Consumption in Qatar. Sustainability, 12(17), 6973.

Benton, T.G. COVID-19 and disruptions to food systems. Agric Hum Values 37, 577–578 (2020).

Boons, F.; Browne, A.; Burgess, M.; Ehgartner, U.; Hirth, S.; Hodson, M.; Holmes, H.; Hoolohan, C.; MacGregor, S.; McMeekin, A.; et al. Covid-19, Changing Social Practices and the Transition to Sustainable Production and Consumption; Version 1.0 (May 2020); Sustainable Consumption Institute: Manchester, UK, 2020.

Caballero-Anthony, M., Teng, P., & Montesclaros, J. (2020). (Rep.). S. Rajaratnam School of International Studies. Retrieved May 11, 2021, from http://www.jstor.org/stable/resrep26876

Chenarides, L., Grebitus, C., Lusk, J. L., & Printezis, I. (2020). Food consumption behavior during the COVID-19 pandemic. *Agribusiness (New York, N.Y.)*, 10.1002/agr.21679. Advance online publication. https://doi.org/10.1002/agr.21679

COX, N. DEADMAN, E. (2020). Initial Impacts of the Pandemic on Consumer Behavior: Evidence from Linked Income, Spending, and Savings Data. Brookings Papers on Economic Activity, 35-69. Retrieved May 11, 2021, from https://www.jstor.org/stable/26996635

Cranfield, J.A.L. Framing consumer food demand responses in a viral pandemic. Can. J. Agric. Econ. Can. D'agroecon. 2020, 68, 151–156.

FAO. Coronavirus Disease 2019 (COVID-19)—Addressing the Impacts of COVID-19 in Food Crises (April–December 2020); FAO: Rome, Italy, 2020.

HLPE. Interim Issues Paper on the Impact of COVID-19 on Food Security and Nutrition (FSN) by the High-Level Panel of Experts on Food Security and nutrition (HLPE); FAO: Rome, Italy, 2020.

Maliszewska, M.; Mattoo, A.; Van Der Mensbrugghe, D. The Potential Impact of COVID-19 on GDP and Trade a Preliminary Assessment; Policy Research Working Paper, No. 9211; The World Bank: Washington, DC, USA, 2020.

OECD. COVID-19 and the Food and Agriculture Sector: Issues and Policy Responses; OECD: Paris, France, 2020.

Power, M.; Doherty, B.; Pybus, K.; Pickett, K. How COVID-19 has exposed inequalities in the UK food system: The case of UK food and poverty. Emerald Open Res. 2020, 2, 11.

Richards, T.J.; Rickard, B. COVID-19 impact on fruit and vegetable markets. Can. J. Agric. Econ. Can. D'agroecon. 2020, 68, 189–194.

Salik, K., & Suleri, A. (2020). Managing food supply chain amid COVID-19: Insights from global efforts (pp. 3-4, Rep.). Sustainable Development Policy Institute. Retrieved May 11, 2021, from http://www.jstor.org/stable/resrep25824.5

Suleri, A. (2020). (Rep.). Sustainable Development Policy Institute. Retrieved May 11, 2021, from http://www.jstor.org/stable/resrep25821

United Nations. Policy Brief: The Impact of COVID-19 on Food Security and Nutrition; United Nations: New York, NY, USA, 2020.