

THE IMPACT OF COVID-19 PANDEMIC ON FOOD SECURITY

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ABSTRACT

The Corona virus is spreading at a very rapid pace, inflicting tremendous damage to all sectors without any exception, but nevertheless the extent of the damage and losses resulting from the pandemic differ from one sector to another and from one country to another, but what certainly counts most to people during crises is to meet their food needs rather than any other, so the aim of the study is to analyze and discuss the impact of Covid-19 on food security. The scale of the analysis was of an international level, with special focus on countries suffering from food insecurity such as Algeria. Toward this end, data provided by the Food Agriculture Organization (FAO), and the World Health Organization (WHO) have been analyzed, as well as studies conducted and published on the subject. The findings indicate that Covid 19 has had a huge impact on perishable food and caused remarkable food shortages in poor countries, conflict zones and war-affected regions. Additionally, Covid 19 threatened food security even in some developed, whereas developing countries are the most affected due to their high dependency in securing their food supplies. Finally, based on the findings, we have suggested some recommendations that would help boosting sustainable food security.

KEY WORDS: Agriculture; Corona Virus; Food Security; Food System.

JEL CLASSIFICATION: L66; Q18

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تأثير وباء كوفيد 19 على الأمن الغذائي

ملخص

انتشر فيروس كورونا بسرعة خلفا خسائر فادحة في كل القطاعات بدون استثناء، ومع ذلك اختلف حجم الضرر من قطاع لآخر ومن بلد لآخر. إلا أن ما يهم الشعوب في وقت الأزمات هو تأمين احتياجاتهم الغذائية أكثر من باقي الاحتياجات الأخرى. لذلك، كان الغرض من هذه الورقة البحثية هو تحليل ومناقشة تأثير كوفيد 19 على الأمن الغذائي العالمي. وقد شمل نطاق التحليل المستوى الدولي مع التركيز بشكل خاص على البلدان التي تعاني من انعدام الأمن الغذائي مثل الجزائر. ولإجراء هذا التحليل، تم استخدام البيانات الصادرة عن منظمة الأغذية والزراعة (FAO)، ومنظمة الصحة العالمية (WHO) والأوراق البحثية المنشورة في هذا المجال. أشارت النتائج إلى تأثير كوفيد 19 بشكل كبير على السلع الغذائية سريعة التلف، كما أثر على نقص الغذاء في المناطق الفقيرة والمناطق التي تشهد الحروب. بالإضافة إلى ذلك، هدد كوفيد 19 الأمن الغذائي في بعض الدول المتقدمة وأغلب الدول النامية، وخاصة الدول التي تعاني من التبعية الغذائية. في الأخير، وبناء على النتائج المتوصل إليها قدمنا بعض التوصيات التي قد يؤدي العمل بها إلى تعزيز الأمن الغذائي المستدام.

كلمات المفتاحية: فلاحية؛ فيروس كورونا؛ أمن غذائي؛ نظام غذائي.

تصنيف جال: Q18؛ L66.

L'IMPACT DE LA PANDEMIE COVID-19 SUR LA SECURITE ALIMENTAIRE

RÉSUMÉ

Le Corona virus se propage à un rythme très rapide, provoquant des endommagements considérables et persistants sur tous les secteurs sans exception. Néanmoins l'ampleur de l'impact ainsi que les pertes résultant de la pandémie diffèrent d'un secteur à l'autre et d'un pays à l'autre, mais ce qui compte le plus pour les peuples pendant les crises c'est de faire face à leurs besoins alimentaires plus que tout autre besoin. De ce fait, le but de cette étude est d'analyser et discuter de l'impact de la Covid 19 sur la sécurité alimentaire. Le niveau d'analyse a une dimension internationale, notamment les pays qui souffrent d'une insécurité alimentaire tel que l'Algérie. Pour cet effet, des données fournies par l'Organisation des Nations Unies pour l'Alimentation et l'Agriculture (FAO), et de l'Organisation mondiale de la santé (OMS) ont été analysées, ainsi que des études menées et publiées sur le sujet. Les résultats indiquent que la Covid 19 a eu un impact énorme sur les produits périssables et a également provoqué des pénuries alimentaires dans les pays pauvres, les zones de conflit et les régions touchées par les guerres. En outre, la Covid 19 a menacé la sécurité alimentaire même dans certains pays développés, quant au pays en voie de développement, ce sont les plus touchés en raison de leur dépendance au pays développés. À la fin, sur la base des résultats, nous avons suggéré quelques recommandations qui peuvent contribuer à garantir une sécurité alimentaire durable.

MOTS CLÉS: Agriculture; Coronavirus; Sécurité Alimentaire; Système Alimentaire.

JEL CLASSIFICATION: L66; Q18.

INTRODUCTION

Corona virus pandemic is being propagating on accelerating pace since its appearance in December 2019. So far, according to World Health Organization by 4 July, 10 922 324 cases and over 523 011 deaths had occurred globally (WHO, 4 July 2020). In Algeria, according to the official website of the Algerian Ministry of Health, there were 15,500 confirmed cases and 946 deaths cases of Covid-19 of 4 July 2020 (Algerian Ministry of Health, 2020). Since its emergence in China in December 2019, the outbreak has spread to over 210 countries around the world in just 120 days (Willy et al., 2020). To curb the propagation of the pandemic, the whole world has been under lockdown, suspending most of economic activities, sport events, and international travels. The various pandemics that humanity has witnessed such as the Spanish Flu, Asian Flu, Hong Kong Flu, HIV/AIDS, SARS, Ebola, and Swine Flu, have had a huge impact on the economy, the environment and human activities, such as livestock, agriculture, tourism, transport, education, health, fishing, mining, industry, commerce, etc. Currently, humanity is encountering another pandemic outbreak, which engenders a disease known as Covid-19 (Siche, 2020). Covid-19 is having an unparalleled global impact on health and socioeconomic terms. Covid-19 will without any doubt yield negative economic growth, tenuously overstretched healthcare support and food system crisis (Willy et al., 2020).

The impact of the pandemic was not confined to health and economic sphere; it has also exposed some countries' egocentrism. Some European countries for instance urgently stopped all sorts of food commodities export without any warning, wiping in the process with cooperation principles and solidarity slogans off the floor; due to the tremendous panic of unknown future and uncertain repercussions. Any observer of what happened and what is still happening clearly notices that people around the world are terrified not only from the disease but from hunger that might ensue from the pandemic as well. Anecdotally, as soon as the Corona virus was declared as a dangerous and fatal disease and quarantine was announced to be in force, social media and media outlets reported that

people in many economically developed countries and even in underdeveloped countries were queuing in long lines hankering to buy and store as much as possible of food commodities, fearing food crisis or any sort of food shortages.

According to FAO (2020a), the Covid-19 pandemic is global crisis which is already hitting the food and agriculture sector. The disruptions caused by the Covid-19 pandemic are now putting food security of billions of people on the line (Zurayk, 2020). Food demand and thus food security are hugely affected due to movement constraints, low purchasing power, and with huge impact on the most vulnerable population groups, as cases of infection increase, governments take more effective and comprehensive measures and procedures to curb the propagation of the virus, and thus influenced the global food system (Siche, 2020, p.6). The Covid-19 pandemic is expected to have acute health and economic repercussions in Africa (Willy et al., 2020).

The issue of food insecurity was a major and urgent challenge for agriculture (Abdelhedi, & Zouari, 2020). In a very recent time, many studies have been conducted to verify and evaluate the impact of Covid-19 pandemic on agriculture (Kerr, 2020; Siche, 2020; Willy et al., 2020), food security (Deaton & Deaton, 2020; Zurayk, 2020), grains and oilseeds sector (Brewin, 2020), agricultural trade (Barichello, 2020), fruit and vegetable markets (Richards & Rickard, 2020), dairy and poultry sectors (Weersink, 2020), food security in the Near East and North Africa (FAO, 2020a), agriculture, food security and animal sectors (Seleiman et al., 2020), consumer food demand responses (Cranfield, 2020). However, there is still a considerable research gap of studies examining the impact of Covid-19 on food security. Accordingly, we try through our research paper to answer the following question: what is the impact of Covid19 on food security in the world?

From this issue we can extract the following questions: (1) What was the status of food security before Covid 19?; (2) What is the impact of Covid19 on agriculture sector?; (3) What is the impact of Covid19 on food prices?; and (4) What is the impact of Covid19 on hunger and malnutrition?. We seek through our study to reach the following

objectives: (1) To identify the status of food security before covid19; (2) To analyze the impact of Covid19 on agriculture sector; (3) To analyze the impact of Covid19 on food prices; (4) To identify the impact of Covid 19 on food demand; and (5) To suggest some recommendations that might help in boosting food security in countries suffering from food insecurity or food shortages during of diseases, toward this aim a data issued by the Food Agriculture Organization and World health organization were collected and analyzed, along with discussing and analyzing previous related studies.

The rest of the paper is divided as follows. Section 1 presents food security before the Covid-19. Section 2 describes the impact of covid-19 on agricultural sector. Section 3 analyses the impact of covid-19 on food demand. Section 4 presents the main impact of covid-19 on world food prices. Section 5 discusses the impact of covid-19 on hunger and malnutrition. Finally, the last part presents the conclusion.

1- FOOD SECURITY BEFORE THE CORONAVIRUS (COVID-19)

According to World Food Summit "Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 1996). This widely accepted definition points to the following dimensions of food security (FAO, 2006):

1- Food availability: the availability of appropriate food in terms of quantity and quality, covered by either domestic production or imports (including food aid).

2- Food access: the accessibility of people to appropriate food entitlements which are defined as commodities a person can command or manage given the legal, political, economic and social arrangements of the community in which they live (including traditional rights such as access to common resources).

3- Utilization: consuming food via appropriate diet, clean water, sanitation and health care to reach a state of nutritional welfare where all physiological needs are satisfied.

4- Stability: to be food secure, a population, household or individual must be able to get adequate food all times. They should not lack food as a result of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity). The concept of stability can therefore refer to both the availability and access aspects of food security.

Food security “hot spots” include (World Bank, May 28, 2020):

- Vulnerable and war-affected, where logistics and distribution face difficulties even in normal conditions and circumstances.
- Countries affected by various crises resulting from extreme weather condition and pests such as the current locusts plague – the worst in decades – affecting food manufacture in 23 countries.
- The poor and vulnerable, including the more than 821 million people who already suffer from food insecurity before the Covid-19 crisis impacted movement and incomes.
- Countries with major currency depreciation, (driving up the cost of food imports) and countries seeing other commodity prices collapse (reducing their capacity to import food).

Table 1 shows the state of food security and nutrition in the World 2019 (number of undernourished). We can see that the number of the undernourished around the world dwindled from 947,2 million people in 2005 to 785 million in 2015 . In 2018 the number edged up again to 821 million representing 10.8% of the world population, Asia ranks first by 514 million in 2018 among which 278 million living in south Asia, followed by Africa with 256 million 133 million among which are living in East Africa, while the number in South America and Caribbean accounted for 42.5 million among which 28 million in South America. According to the WHO (2019), the number of moderately or severely food insecure population number in the world in 2018 has reached 2 billion (26.4%). It is clear that a considerable category of world population (10.8%) suffers malnutrition and food insecurity especially in poor and war-affected zones, which undoubtedly makes this category of world population vulnerable to major risk of the increasing spread of the Covid19.

Table 1. The State of Food Security and Nutrition in the World 2019 - Number of undernourished (millions)

	2005	2010	2015	2016	2017	2018*
WORLD	947.2	822.3	785.4	796.5	811.7	821.6
AFRICA	196.0	199.8	217.9	234.6	248.6	256.1
Northern Africa	9.7	8.5	15.5	16.1	16.5	17.0
Sub-Saharan Africa	176.7	180.6	202.4	218.5	232.1	239.1
Eastern Africa	113.5	118.6	119.3	126.9	129.8	133.1
Middle Africa	36.2	36.5	37.9	41.1	43.2	44.6
Southern Africa	3.6	4.2	5.0	5.5	5.4	5.3
Western Africa	33.0	31.9	40.3	45.0	53.7	56.1
ASIA	688.6	572.1	518.7	512.3	512.4	513.9
Central Asia	6.5	4.6	3.8	3.8	4.0	4.1
Eastern Asia	219.1	178.4	138.1	137.8	138.1	137.0
South-eastern Asia	103.8	75.9	61.9	61.9	61.1	60.6
Southern Asia	339.8	293.1	286.1	278.3	276.4	278.5
Western Asia	19.4	20.1	28.8	30.5	32.7	33.7
Western Asia and Northern Africa	29.1	28.6	44.3	46.6	49.2	50.6
LATIN AMERICA AND THE CARIBBEAN	51.1	40.7	39.1	40.4	41.7	42.5
Caribbean	9.1	8.0	7.7	7.6	7.7	7.8
Latin America	42.1	32.6	31.5	32.9	34.0	34.7
Central America	12.4	11.6	10.9	10.6	10.7	11.0
South America	29.6	21.1	20.6	22.2	23.2	23.7
OCEANIA	1.8	1.9	2.3	2.4	2.5	2.6
NORTHERN AMERICA AND EUROPE	n.r.	n.r.	n.r.	n.r.	n.r.	n.r.

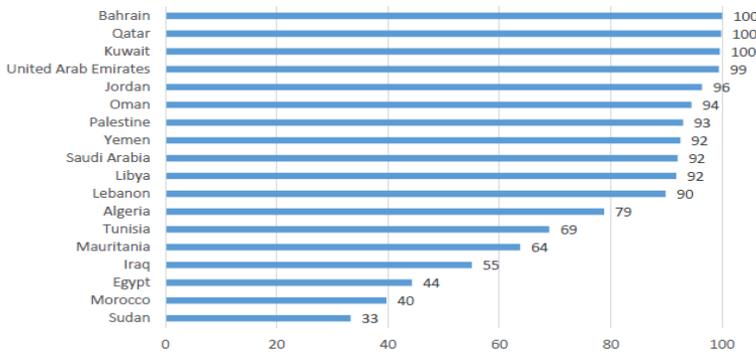
NOTES: n.r. = not reported, as the prevalence is less than 2.5 percent.

Source: FAO, IFAD, UNICEF, WFP and WHO. (2019). "The state of food security and nutrition in the World 2019", *Safeguarding against economic slowdowns and downturns*, FAO, Rome, p.9.

Covid-19 has generated disruptions to the global food supply chains and engendered doubts and concerns about food security, however, global cereal markets are expected to keep its sustainability and balance (FAO, 2020a). Figure (1) reveals that there are three Arab countries that imported cereals in 2017 at 100%, namely Bahrain, Qatar and Kuwait, as well as the UAE at 99%. Thus, these four countries are prone of any crises that may results from any events such as the Corona virus pandemic that appeared in December and prompted several countries to stop food exports. It is also evident that there are seven countries that depend of 90% or more on imports of grains (Jordan, Amman, Palestine, Yemen, Saudi Arabia, Libya and Lebanon), which is considered to be very high percentage, as their food security is highly threatened.

Consequently, almost half of the Arab countries (11 countries) produce less than 10% of their grains needs, this low percentage raises huge concerns about the fate of those countries during food crises, especially since five of these countries enjoy huge incomes, generated from petroleum and oil revenues. Hence it is preposterous that countries like Emirates, Saudi Arabia, Kuwait, Qatar and Bahrain with relatively low population feature food insecurity.

Figure 1. Cereal import dependency ratios of selected Arab countries in 2017



Note: cereal import dependency ratio is defined as the share of imported cereals in domestic consumption. It is calculated using the following formula: Imports/ (imports + domestic production – exports).

Source: FAO, (2020a). "COVID-19 and the impact on food security in the Near East and North Africa: How to respond?", Food and Agriculture Organization of the United Nations, Cairo, p.4.

Algeria also faces humongous threats with regard of food security, since it imports of grains represents 79%. Despite the huge agricultural capacities and enormous human potential, Algeria has not yet succeeded in reducing its grains import and secure food for Algerians. Algeria has witnessed during the past years an increase in the level of dependency on the world food market, for several reasons, including increased consumption and the inefficiency of agricultural policies and economic governance. So, all the blame must be casted on Agricultural policies to explain the high level of food dependency of Algeria (Bouzid & Bedrani, 2018). In addition, Tunisia, Mauritania, and Iraq import accounted for more than 55% of their grain needs, while Egypt, despite its high population, its imports of cereals

represents 44% which is considered to be relatively small ratio compared to countries mentioned earlier, nevertheless, its cereal needs remains high. And its food security is at risk. Morocco and Sudan import represents 40% and 33% respectively, which is deemed to be one of the best ratios recorded in the Arab countries.

In general, it appears that the food security of the Arab countries is threatened, as the risk score varies from one country to another. This requires dedicating and coordinating bilateral and regional efforts to alleviate Arab food insecurity risks.

2- THE IMPACT OF COVID-19 ON AGRICULTURAL SECTOR

Several protective measures were undertaken by countries around the world to curb the spread of the virus such as quarantine, closing shopping centers, schools, restaurant, hotels, and movements' restriction. This would certainly have a felt impact on perishable goods such as meat and vegetables. Furthermore, markets have taken additional measures by closing floor trading which has affected the ability to exchange commodities (Nicola, et al., 2020, p.185). The pandemic called Covid-19 disease has a huge impact on the actions and activities of humanity; agriculture is not free from this impact (Siche, 2020). The resilience of the agricultural sector has been challenged by the Covid-19. A global plummeting in demand from hotels and restaurants has seen prices of agricultural commodities fell by 20% (Bhosale, 2020).

Diminished income and money transfer is draining people's power to buy food and compensate farmers for their production. The United Nations World Food Program has warned that an estimated 265 million people could experience severe food insecurity by the end of 2020, up from 135 million people before the crisis, because of this. Food producers also face massive losses on perishable and nutritious food as buyers have become restricted and traders stop dealing with farmers (World Bank, May 28, 2020). Undoubtedly, the ambit of Covid 19 impact on agriculture differs between developed and developing countries, developed countries for instance rely massively on technology which in turn attenuate the impact of the pandemic on

agriculture in terms of production level and human labor shrinkage, while developing countries are more vulnerable to the negative impact of the pandemic due to massive human labor that features agriculture in these countries.

As a matter of fact , agriculture sector contribute enormously to several countries' GDP, particularly in African countries, in 2018 for instance agriculture sector contribution to GDP was as follow: Sierra Leone (58.93%), Chad (44.94%), Niger (39.20%), Mali (38.70%), and Liberia (37.28%), while the figure in Algeria was 11.98% (The Global Economy, 2020). Therefore, it is most likely that these countries will experience huge negative impact of covid19 compared to other countries due to the conventional agricultural means that characterise agriculture these countries. According to Willy et al. (2020) African agricultural sector will face a major risk since it engender nearly US\$ 100 billion or 15% of the continental GDP annually and provide 70% of the total work force making it the most vital sector for economic development on the continent, despite the low confirmed positive cases of Covid-19 of roughly 1.6% of the global cases to date, its economy and food security status quo is likely to be heavily and negatively affected.

The most affected category sector by Covid 19 in Algeria (alike the rest of the world), were manufacturers and traders of rapidly perishable food commodities such as tomato and eggs, farmers complained the low prices of some products (such as onions, carrots) due to the turmoil of vegetables and fruits wholesale and retail markets and movement restrictions. The sector also experienced a decrease in employment due to the fear of farm workers to get infected. Poultry farmers suffered significant losses as well during the months of March and April 2020, which led to a fall in production, leading to soaring prices during May 2020. Quarantine measures also contributed to the negative impact on the quantities of the seasonal agricultural crop in some areas. For example, due to quarantine measures, farmers were temporarily forced to leave their jobs fearing contracting the virus, working hours were shrunk for some, while some others lacked the necessary seeds and fertilizers due to their

scarcity in the market, which eventually led to a great impact on agricultural crops quantities.

Governments should work together to keep the international trade in terms of fertilizers, pesticides, grains and other agro-food exports and imports (Seleiman et al., 2020). To reduce the negative effects caused by the Covid-19 pandemic on African, Ozili (2020) suggests that: (1) enhancing African countries' health system capacity through providing public funds; (2) financial support should be allocated to individuals, entrepreneurs and corporations to help them cope with the negative impact of the corona virus crisis; (3) employers should receive incentives to maintain employment during the crisis to eschew mass job losses; and (4), the Central bank in African countries should provide funds, credit support, and asset acquisition programs to prevent the evaporation of credit and liquidity in domestic financial markets.

3- THE IMPACT OF COVID-19 ON FOOD DEMAND

Corona virus is having a significant impact on import and export of food commodities, businesses, labor mobility, production and productivity of major staples and prices of food items. Consumers are enormously changing their food purchasing patterns as a result of the evolving Covid19 pandemic, partly that is owing to the increasing public awareness that food supply chains, which normally operate largely unfelt and with great efficiency, are in fact frail. With supply chain interruptions and firm instructions in several states for social distancing and a reduced number of grocery shop trips, consumers are forced by the circumstances to think about storing food as well as different food sourcing choices (Schmidt et al., 2020a). People are eating at home, which means more food in homes. In USA, reports from around the country reveal that consumers are changing where they eat, and where they buy their food (Kolodinsky et al., 2020, p.6). There are enough evidence to affirm the Covid-19 disease has a significant impact on agriculture and the food supply chain, affecting mostly food demand and ultimately food security, with a huge impact on the most vulnerable population (Siche, 2020). Supply chain

responsiveness is key to the short-run price stability but longer-term effects are less clear (Cranfield, 2020).

Not surprisingly, the pandemic has had instantly affected food supplies chains. Grocery stores have experienced dearth of some staples and fresh items supply, and many farmers with direct sales saw their marketplace closed while others have increase in demand. As market channels were shut down, including farmers' markets, restaurants and institutions, farmers have urgently sought other alternative outlets to sell out their perishable goods (Schmidt et al., 2020b). The pandemic, which is jeopardizing human and businesses health alike, including small-and large-scale farms, has led, at least anecdotally, businesses, farmers, and consumers to change their model and behavior, in the light of closed restaurants and schools, grocery stores depleted promptly by consumers (Kolodinsky et al., 2020, p.6).

Cranfield (2020) found that income effects resulting from the Covid-19 economic slump will be an important factor affecting consumer food demand during and after the pandemic, and will subsequently prompt critical distributional issues that necessitate consideration when evaluating the impact of Covid-19.

In March 2020, Algeria knew a significant demand spiking for food commodities particularly semolina, flour, dry grains, and pasta, due to families' worries of food scarcity that had been fed by the media and social media , as a result these commodities became unavailable and their prices increased. The agriculture and trade ministries reacted to these events by intensifying control measures to prevent monopoly and speculation, and rebalancing the market.

The expected negative implications of COVID-19 on food security can be mitigated through improving local productions and limited food supply chains (Seleiman et al., 2020). According to Cranfield (2020) the expected demand for many commodities seems to get affected proportionally lesser than the rise in price. As well, given the variety of quality, selection and varying price points in most grocery stores, and that the between and intra group substitutability would determine how consumers economize in front of relative soaring prices.

4- THE IMPACT OF COVID-19 ON WORLD FOOD PRICES

Due to external dependence, food security is strictly linked to world food price volatility (Lacirignola, Adinolfi & Capitanio, 2015). Preferences, prices, and income plays pivotal role in understanding how demand for food get affected during the Covid-19 crisis (Cranfield, 2020). World food prices dwindled for a fourth consecutive month in May, struck by the economic slump of the corona virus pandemic which has hampered demand, the United Nations food agency stated (UNFA, 2020). The Food and Agriculture Organization (FAO, 2020) food price index, which measures monthly changes for a basket of cereals, oilseeds, dairy products, meat and sugar, averaged 162.5 points last month, down 1.9% on April, it was the lowest monthly reading since December 2018.

Table 2. The FAO Prices Index in May 2020

Index	Change	Notes
The FAO Food Price Index	Averaged 162.5 points, down 3.1 points (1.9 percent) from April and reaching the lowest monthly average since December 2018.	With the ongoing negative economic impact of COVID-19, the FAO Food Price Index (FFPI) has been falling for four consecutive months. The latest drop in May reflects falling values of all the sub-indices except sugar, which rise for the first time in three months.
The FAO Cereal Price Index	Averaged 162.2 points, down 1.6 points (1.0 percent) from April and very close to its level in the corresponding month last year.	Rice prices were the only major cereals that increased in May. Its International prices rose 1 percent, particularly Japonica and Basmati quotations, despite the currency movements and demand from Malaysia and the Philippines kept Indica quotations tight. In wheat markets, after an increase in April, export prices fell almost 2 percent, as expectations refers to plethora global supplies also in the new season while trade activities have slowed down with the current harvesting seasons, or approaching, in the northern hemisphere. In coarse grain markets, the US maize prices continue to fall for the last four months, and drop further in May, to almost 16 percent compared to the same period last year.

		Weak demand from feed and bio fuel sectors.
The FAO Vegetable Oil Price Index	Averaged 128.1 points, shedding another 3.7 points (or 2.8 percent) and marking a 10-month low.	The continued decline of the index primarily indicates lower palm oil prices, whereas quotations of rapeseed and sunflower oils increased. International palm oil values witnessed the fourth consecutive monthly fall in May, mainly reflecting the shrink of global import demand and higher than expected production and inventory levels in big exporting countries., international prices of rapeseed and sunflower oils however increased due to, respectively, expectation of continued low supply in the EU and contracted exportable surpluses in the Black Sea region.
The FAO Dairy Price Index	Averaged 181.8 points in May, down 14.4 points (7.3 percent) from April, registering the third consecutive month of decline and setting the index value 44.3 points (19.6 percent) below its level one year ago.	Quotations for all dairy products covered in the index declined in May, major decline in butter and cheese. Quotations for butter fell due to copious seasonal supplies, especially in Europe, while those of cheese fell due to lower import demand amid high late season export supplies from Oceania. Despite continued high exportable and inventories of milk powder (WMP) and skim milk powder quotations (SMP) fell slightly, as low prices and renewed economic activities in China prompted significant buying interests.
The FAO Meat Price Index	Averaged 168.0 points in May, down 1.3 points (0.8 percent) from April, registering the fifth consecutive monthly decline. At this level, the index is 6.3 points (3.6 percent) below its value in the corresponding month last year and 44 points (20.8 percent) below the peak it reached in August 2014.	In May, international quotations for poultry and pig meats continued to fall, despite rise in import demand in East Asia owing to the relaxation of COVID-19 social distancing measures. Ovine meat prices fell slightly due to shrinking import demand from the Middle East, caused by economic and logistical condition. Bovine meat quotations however increased following strong import demand along with short supplies from Brazil and Oceania

The FAO Sugar Price Index	Averaged 155.6 points in May, up 10.7 points (7.4% percent) from April.	Monthly increase of international sugar prices due to lower than expected harvests in some major countries, notably India, the world's second largest sugar producer and Thailand, the world's second largest sugar exporter. As well, higher international prices of crude oil also stimulated to the increase of sugar quotations.
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Source: Prepared by the researchers from publication: **FAO, (2020b)**. "World Food Situation", Food and Agriculture Organisation, Rome.

According to World Bank (April 23, 2020) Agriculture prices are not much correlated to economic growth, and witnessed only slight increase in the first quarter of 2020. Prices are most likely to maintain their stability in 2020 overall as production levels and stocks of most staple foods are at record highs. However, agricultural commodity production may experience disruptions with regard to the trade, distribution of inputs, and labor availability. Disruptions of supply chains have already took place in emerging market and developing country exports of perishable products such as flowers, fruits, and vegetables (World Bank, April 23, 2020).

In India for example, according to Bhosale (2020) prices of agricultural commodities such as perishable vegetables, grapes and sugar have declined 15-20%. Also, demand for perishables has fallen; however, demand for vegetables that stand longer to decay increased, such as onions, potatoes, and tomatoes. Canada also witnessed food commodities increase, but Cranfield (2020) affirmed that this increase could not be ascribed to the corona virus disease for several reasons, such as the ability of supply chain to respond to stock-out situation, legislation and price-regulating laws, effective prices controlling, the effective role of consumer protection associations, fines mandated on price manipulators, and the role of social media in exposing fraudulent companies. Cranfield (2020) further said "We may witness prices soaring in the future if there are systematic and sustained disruptions of distribution channels or agricultural production".

In Algeria, the Ministry of Trade dedicated enormous efforts to prevent the increase of food commodities prices and assure its

availability, several inspection and work visits were paid by the minister of trade to several markets and provinces around the country. On March 17, 2020 the Minister of Commerce for instance supervised the installation of a Vigilance Committee in order to follow-up Corona virus' implications on trade sector, this committee was charged of: Monitoring food supply conditions of widely consumed commodities in Algeria, anticipating any circumstances that may trigger market supply disturbances, laying down all the necessary mechanisms that guarantee regular supply of food, and suggesting urgent measures to assure market stability (Algerian Ministry of Commerce, 2020).

Nonetheless, despite all these efforts and prices stability of staple commodities (such as milk, flour and semolina, and cheese), markets for vegetables and fruits ,however, has known prices fluctuation, especially in the month of Ramadan as a result of the irregular flow of those commodities to the wholesale and retail markets and the decline in the volume of production of some other commodities. The major challenges facing food security in Algeria, requires agricultural sector to recommend approaches and methods that comply with the new visions of agricultural development, therefore, public support and advisory services must be dedicated to regional agriculture as being a driving force to development (Bouedja, Belaloui & Sahi, 2016, p.209).

5- THE IMPACT OF COVID-19 ON HUNGER AND MALNUTRITION

The United Nations mentioned in report about Food Security and Nutrition in 2017 that the world hunger rate has begun to rise again threatening 815 million people in 2016 that is 11% of the world's population, after a remarkable steady decline during the past decade. Meanwhile, the UN report revealed in its 2017 edition, multiple forms of malnutrition is threatening the health of millions around the world. The report showed that the increase in the number of people affected by hunger compared to the previous year has increased by 38 million people, as a result of rampant armed conflicts and climate change (WHO, 2018).

When there is an outbreak of infectious disease, there is also an increase in hunger and malnutrition. After initial reassurances that Covid 19 would not threaten global food security, the discourse has now changed drastically. The United Nations Economic Commission for Africa (ECA) expects that nearly 29 million Africans will be under extreme poverty line of US\$ 1.9 and 19 million jobs lost as a result of Covid 19 (UN-ECA, 2020).

According to Siche (2020, p.6) the gist of any undertaken measure should focus to save the health and food security of the population in the first place, rather than of the economic growth, although some countries have decided otherwise. Deaton & Deaton (2020) identifies the food insecurity caused by Covid-19's impact on income and health. They pointed out that food remains available in the near term, while in the long run food availability will be determined on the extent of impact of Covid-19 on health, trade, transportation, and financial farm stability. According to Cranfield (2020) further attention should be paid to sociodemographic characteristics which spot those in vulnerable groups. Nearly 820 million people suffering hunger, while others suffering malnutrition as they lack sufficient food that allows them to enjoy healthy life even before Covid 19, but with the appearance of this virus certainly the number will increase, as the conditions of life in conflict and war zones are terribly disastrous as what Yemen, Syria and Libya are going through for instance.

CONCLUSION

About 100 years ago, the famous Lebanese poet and writer "*Gibran Khalil Gibran*" eloquently warned his own home country and the rest of the world, saying, "Woe to a nation that wears of what it does not weave, eats of what it does not cultivate, and drinks from what it does not squash". He warned against inaction, and subordination. Sadly his words still resonate and hold true nowadays, Algeria is one of the countries that abstained to hear this warning along its successive officials to power inability of to achieve self-sufficiency despite the agricultural potentials it possesses.

Before the appearance of the Corona virus, more than 820 million people in different parts of the world suffer from hunger and malnutrition, regrettably this number is susceptible to increasingly spike due to economic crises, wars and rapid spread of infectious diseases. As a result of the widespread propagation of the Corona virus and nonexistence of a remedy or vaccines until now (4 July 2020), almost all developed and developing countries have adopted the same precautionary measures to alleviate the negative effects of the virus on people's health (such as quarantine, movement restrictions, closed airports, closed schools and universities, hotels), these measures however have also negatively affected many economic, tourism, and agriculture sectors, putting food security in many countries at stake.

The study concluded that the spread of the Covid 19 pandemic have ensued several negative effects, which have directly and indirectly threatened food security. First, the Covid 19 pandemic severely affected countries in which agriculture contributes significantly to GDP, such as some African countries (Sierra Leone, Chad, Niger and Mali), and Southeast Asian countries, due suspension of agricultural activities, restriction of trade in agricultural commodities and agricultural labor. Second, Covid 19 has primarily affected food imports dependent countries in general, and countries importing food from European countries in particular, due to the preemptive measures undertaken by of some European countries that suspended all sorts of food exports to prepare for any scenario that might threatens their food security if the pandemic lasts longer, which would ultimately put food security of importer countries under a serious threat.

Third, the Covid 19 pandemic has impacted agricultural commodities sales, as the shut down measures involved major buyers of these commodities such as restaurants, hotels, schools, and major shopping centers. Perishable agricultural products (such as some types of vegetables and fruits) have also been damaged, due to movement restriction, which inflicted significant losses to the producers of these commodities. Fourth, the Covid 19 have affected

food supply chains, as restricting the movement of people and transportation and closing some stores severely disrupted the supply chain (transportation, storage and distribution), resulting in food shortages in many remote areas. Fifth, the Covid19 pandemic has affected small and medium agricultural companies' incomes, as a result of suspending some agricultural activities, due to the quarantine measures and the imposed restrictions, and thus the purchasing power of millions of small farmers and farm workers shrunk. Sixth, the Covid 19 pandemic has affected international food aid capacities. Within a few weeks, the pandemic exposed the fragility of food system, even in developed countries. As most countries were committed to provide material and food aids exclusively to their citizens. Consequently, international food assistance was significantly insufficient to people around the world, particularly in Yemen, Syria and Palestine.

On the other hand, there was no significant impact of Covid 19 on agriculture and food security in most developed countries, especially developed countries in the area of agriculture (such as Canada and the United States), except for the negative repercussions that affected all countries of the world, such as the turmoil in the supply chain and some slight rise in prices of some food commodities.

Immediate measures are to be taken to ascertain the survival of supply chains both domestically and globally, and to reduce the risk of large crisis that would have a significant global impact, especially on the poor and the most vulnerable countries. Although disruptions in the food supply chain are low hitherto, difficulties have been already felt in terms of logistics. Food needs to circulate between countries freely and in compliance with existing food safety standards.

Based on findings, and to reduce the negative effects of the Covid 19 pandemic or any type of pandemic that may appear in the future, we recommend countries suffering from food insecurity in general and Algeria in particular the following: (1) Conducting whole set of studies to identify the organizational, administrative, and financing hurdles facing farmers, livestock and poultry farmers, and then seek

to find practical solutions, and eradicate all forms of corruption in agricultural sector, (2) Providing material and moral support, Accompaniment, and supervision to small farmers, especially with regard to marketing their products, (3) A gradual and calculated import reduction of food commodities, grains and meat, and dedicating the best possible efforts on bringing about effective strategies to reach self-sufficiency in those commodities to reduce dependency, (4) Encouraging local food industries (such as jam , tomatoes, juice, industries etc.), and taking effective steps to export to Arab and foreign countries, (5) The role of consumer protection associations should be actively effective, and free from any political practices, to provide consumers with the necessary guidance and protection with regard of high prices, availability and quality of food commodities , especially in times of pandemic outbreaks, (6) Establish an effective policy for desert agriculture, and provide the necessary facilities such as electricity, water, road network, transportation, and propose tax and material incentives, in addition to providing moral support to attract local and foreign investor, and (7) Officials in the agriculture sector should steer clear from random decisions that bear less to the real existing reality of agricultural challenges and leave the comfort of their offices to pay work visits to farms and fields, meet farmers, listen to their problems and complaints, and taking all the necessary measures to bring back funds, lands, and real estate that has been looted during the past twenty years and put them under the disposition to those who have desire and ability to invest in agricultural.

Finally, we could say that the level of impact of the Covid 19 pandemic on food security varies from country to another, as it depends on agricultural production volume for each country, and the estimated time frame to contain the Covid-19 pandemic. Given the fact that Algeria enjoys a comfortable food reserve, and 44,2 billion dollar as money reserves, covid19 implications may not emerge in the short run, however if the pandemic survive for a long period of time simultaneously with the collapse of oil prices, Algeria may experience a severe food crisis as a result. If this pandemic keep on

propagating up until the end of the year 2020, and if mankind fails to find an effective remedy, then logically the hunger ghost will strike more millions of people around the world. Nevertheless, the African continent seemingly will suffer far more than any other continent, since all African countries are unable to reach food security with excessive dependency on import, due to the rampant political corruption, abject poverty, high unemployment rates, spread of diseases, frequent wars, and poor agricultural productivity.

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