

Food attitudes and consumer behavior towards food in conflict-affected zones during the COVID-19 pandemic: case of the Palestinian territories

Food attitudes
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Abstract

Purpose – Global lockdowns and restrictions linked to the coronavirus disease 2019 (COVID-19) pandemic have affected food environments and consumption patterns. Conflict-affected countries are disproportionately affected from economic and food security perspectives. In this regard, the Palestinian territories (namely West Bank and Gaza Strip), which face a number of issues such as Israeli military and economic control, overcrowded cities and refugee camps (especially in Gaza Strip), rising poverty and food insecurity, are an especially interesting case study. Accordingly, the purpose of this paper is to analyze the effects of the ongoing COVID-19 pandemic on the selection and intake of foods and drinks, as well as consumer behavior and attitude toward food in the Palestinian territories.

Design/methodology/approach – The paper draws upon an online survey in the Palestinian territories administered in Arabic through the Survey Monkey platform from September 15 to October 10, 2020, with 322 adults. The survey findings were analyzed using descriptive statistics and several nonparametric tests.

Ethical statement: The survey “was carried out following the Helsinki Declaration principles, and all procedures involving research study participants were authorized by the Western Michigan University Human Subjects Institutional Review Board (HSIRB). Participation in the survey was voluntary. At the beginning of the survey, all participants were informed about the research’s objective and context and gave their digital informed consent regarding privacy and information management policies.”

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Particularly, the U-Mann Whitney test was used in dichotomous, categorical independent variables (e.g. gender), while the Kruskal–Wallis test was run to analyze multi-choice responses (e.g. occupation).

Findings – The results reveal that food attitudes and consumer behavior towards food have been widely affected. First, they reveal that Palestinians try to have healthier diets but ate more between meals (e.g. snacks). Second, the pandemic transformed respondents' shopping behavior and induced panic buying, negatively affecting food affordability due to increased prices of some foods (e.g. fruits and vegetables). Some food behaviors were shaped by negative psychological determinants (e.g. depression and anxiety). The pandemic effects are moderated by different sociodemographics (age, education and income). COVID-19 negatively affected food security but also opened a “window of opportunity” to trigger the transition towards more sustainable diets.

Originality/value – The paper results show that the eventual effects of COVID-19 will most likely vary from country to country, based not only on the epidemiological circumstances but also, among other factors, on the baseline socioeconomic situation and shock resilience. The findings contribute to the clarification and critical analysis of the impacts of COVID-19 on food behaviors in the Palestinian territories, which would have several policy implications.

Keywords COVID-19, SARS-CoV-2, Food behavior, Food attitude, Food shopping, Food waste, Gaza strip, West Bank, Near East and North Africa

Paper type Research paper

1. Introduction

Global lockdowns and work and commercial movement restrictions linked to the pandemic have affected agro-food systems at different levels, from farm to fork (Cranfield, 2020; HLPE, 2020; IPES-Food, 2020; OECD, 2020; United Nations, 2020). These containment measures have complicated the interactions among the different parts of the food system, although generally exempt from restrictions, and have exposed its vulnerabilities (Galanakis, 2020; WHO, 2020). The pandemic has undoubtedly influenced the lifestyles and behaviors of the population. Some of these changes in behaviors and attitudes apply, among others, to food shopping (Sheth, 2020; Kumar and Dwivedi, 2020), consumption (Ben Hassen *et al.*, 2021a; Husain and Ashkanani, 2020; Mumena, 2020), food safety attitudes (Osaili *et al.*, 2021) as well as food waste (Ben Hassen *et al.*, 2020; Berjan *et al.*, 2021; Güney and Sangün, 2021; Roe *et al.*, 2020). As observed globally, the coronavirus disease 2019 (COVID-19) pandemic-related measures resulted in several lifestyle changes and psychological problems among adults in the Near East and North Africa (NENA) region (Cheikh Ismail *et al.*, 2020).

During unstable situations, consumers are exposed to systemic tension and stress, manifesting as a loss of control over their environment (Botti and McGill, 2011). Lockdowns, working from home, reduced salaries and more time resulted in broad consumer attitudes and behaviors transformations. Risk attitude, risk perception and uncertainty are the most critical factors driving consumer behavior during a pandemic (Hesham *et al.*, 2021). Consumers in the region embraced innovative practices and behaviors to deal with this situation, and some trends have emerged.

First, at the beginning of the pandemic, as the awareness of the virus and its possible severity was minimal, many countries in the region have seen a surge in stockpiling by a large number of consumers (CIHEAM, 2020). All over the region, consumers focused on stockpiling nonperishable food products (e.g. flour, pasta, canned goods, rice, etc.) to mitigate the risk of future shortages (FAO, 2020a). This compulsive buying behavior may have increased food prices, stock shortages and exacerbated overconsumption (cf. Obesity) and unequal food access (Omar *et al.*, 2021). For instance, temporary shortages and consumer price hikes were reported in several countries. Generally, these did not last long as some governments intervened quickly to stabilize prices through different actions (CIHEAM, 2020). As the COVID-19 pandemic spread, the region's strong reliance on food imports raised early concerns. Indeed, since NENA countries are among the world's largest food importers and depend on imports for more than half of their food needs, the region remains one of the most vulnerable areas to food shortages (FAO, 2020a). If a prolonged pandemic disrupts global

food supplies, food shortages and price increases can occur in the region (ESCWA, 2020). In fact, despite calls from several international organizations and nongovernmental organizations (NGOs) to avoid applying trade-distorting measures, more than 20 governments have enforced export bans on agri-food items since the outset of the COVID-19 crisis (Koppenberg *et al.*, 2021).

Second, COVID-19 changed food purchasing and acquisition behaviors. Prior to the pandemic, in 2019, 58% of the consumers in the region still preferred to buy their groceries in person at large supermarkets (Wamda, 2019). With COVID-19, consumers shifted to online shopping, thus accelerating digital adoption, requiring significant changes to retail and commerce. Hence, online shopping has been experiencing significant growth in the region since the beginning of the pandemic (Alhaimer, 2021), and local delivery apps follow the same path (e.g. Talabat, Uber Eats and Instashop) (Altios, 2020). A study published by IPSOS, a market research company, on the impact of COVID-19 on consumers habits in six markets in the NENA region (namely, Morocco, Tunisia, Algeria, Egypt, Saudi Arabia and the United Arab Emirates [UAE]) highlighted that online grocery shopping has increased across the region, 33% are shopping online more often (IPSOS, 2020). In particular, online retail grocery items have seen exponential growth, with delivery delays, while minimum order amounts have been raised (KPMG, 2020). For example, as of March 2020, InstaShop, a grocery delivery platform in the UAE, saw a 70% growth in app installs, a 50% increase in regular orders and a 60% improvement in basket size (Khaleej Times, 2020).

Further, far from being just a health problem, COVID-19 is expected to lead to a significant global economic recession, rising unemployment and poverty rates, especially in developing countries, thus affecting billions of people's food security (HLPE, 2020), which is predicted to have a significant effect on food access, nutrition quality and diversity (Fitzpatrick *et al.*, 2020; Laborde *et al.*, 2020).

However, these behaviors are context-specific and vary among countries/territories depending, among others, on the epidemiological situation, the level of socioeconomic development and the effectiveness of the domestic healthcare systems (HLPE, 2020). Indeed, the NENA region is politically diverse, comprising countries at varying stages of economic development and endowed with widely disparate natural resources (ESCWA, 2017). There are significant inequalities within the food systems in the region as well, which could affect consumers' choices and decisions differently. The gap between the higher-income, natural resource-rich and middle-income groups is significant (ESCWA, 2017). In particular, conflict-affected countries are more vulnerable than others from economic and food security perspectives (de Carvalho *et al.*, 2020; World Food Programme, 2020a). In this regard, the Palestinian territories, which face a number of issues such as Israeli military and economic control, overcrowded cities and refugee camps (especially in Gaza Strip), rising poverty and food insecurity, are an especially interesting case study.

Located in the Middle East, the Palestinian territories have, in 2019, a total population of 5,038,918, divided between the West Bank (3,019,948) and the Gaza Strip (2,018,970) (Palestinian Central Bureau of Statistics, 2020a). The Palestinian territories have a lower middle-income economy, with an average gross domestic product (GDP) per capita of \$ 4,484. They are under Israeli occupation and have a precarious security situation; there are significant limitations on the movement of persons and commodities, as well as access to natural resources and marketplaces (FAO, 2020b). Additionally, the recent conflict between Hamas and Israel during May 2021 further disrupted the Palestinian economy and exacerbated the Gaza Strip's already poor living conditions (The Borgen Project, 2021).

The global COVID-19 pandemic hit the Palestinian territories on March 5, 2020, when the first cases were confirmed in Bethlehem (West Bank). The first two cases in Gaza Strip were diagnosed on March 21, 2020. This prompted the Palestinian Prime Minister to declare the state of emergency and impose some restrictions in order to stem the spread of the virus:

movement restrictions between cities and governorates, social distancing, lockdown, closing of schools, universities, restaurants, markets and businesses, etc (Hejaz, 2020; The United Nations Office for the Coordination of Humanitarian Affairs, 2020). Even though the situation was somewhat under control in the Palestinian territories from March to August 2020, a deterioration is apparent from September 2020 onwards (World Food Programme, 2020b). As of April 8, 2021, confirmed cases reached 290,719, with 259,063 recoveries and 3,043 total deaths (WHO, 2021). The containment measures were imperative to curb the outbreak. However, they might have led to a disruption of daily life and affected food consumption behaviors and food security (Radwan *et al.*, 2021).

The status of food security and nutrition in the Palestinian territories was already problematic prior to the pandemic. The humanitarian situation in the Palestinian territories is strongly related to the effects of the Israeli occupation. Restrictions on trade and access to resources and basic social facilities, linked to occasional armed hostilities, especially in the Gaza Strip, under blockade since 2007, have resulted in economic stagnation, rising unemployment, poverty and food insecurity (WFP, 2020). The 2017 household survey found that 29.2% of the population live in poverty (14% in the West Bank and 53% in the Gaza Strip), and 16.8% live in extreme poverty (5.8% in the West Bank and 33.8% in the Gaza Strip) (Palestinian Central Bureau of Statistics, 2018). In 2018, 1.7 million persons became seriously and mildly food insecure (33% of all households in the Palestinian territories). Food insecurity is greater among refugee households (45%) compared to nonrefugees (25%) (The United Nations Office for the Coordination of Humanitarian Affairs, 2020).

The COVID-19 pandemic crisis seems to have aggravated Palestinians' deteriorating health and socioeconomic situations, especially among the most vulnerable population groups, such as the elderly, people with disabilities, women-headed families and children (WFP, 2020). Indeed, after three successive years of economic growth below 2%, 2020 is proving to be an extremely challenging year as the Palestinian economy confronts a triple crisis: (1) the COVID-19 Pandemic, (2) a severe economic recession and (3) another diplomatic standoff between the Palestinian Authority and the Government of Israel, undermining clearing tax revenue (World Bank, 2020).

In this context, the purpose of this paper is to examine the effects of the COVID-19 pandemic on the intake of foods and drinks as well as consumer behavior and attitude toward food in the Palestinian territories. In particular, the paper addresses the following research questions: what are the immediate effects of the COVID-19 pandemic on food behaviors relating to sourcing, preparation, consumption and wastage in the Palestinian territories? What are the factors that moderate behaviors and attitudes toward food? To the best of our knowledge, this is the first paper that analyses the direct consequences of the pandemic on food-related behavior and attitude of the Palestinian population. We describe the methodology before presenting and discussing the results of the research.

2. Data and methods

The paper drew upon an online survey in the Palestinian territories. The questionnaire was administered in Arabic, the official language in the Palestinian territories, through the Survey Monkey platform from September 15 until October 10, 2020. The survey link was circulated through social media, especially Facebook, the most used social media in the Palestinian territories. The analysis used the snowball-sampling method, and participants were asked to distribute the survey to their acquaintances and relatives. Based on the nonprobability sampling method, the study targets the general adult population (age >18 years) in the Palestinian territories.

The questionnaire consisted of 25 questions of different types (multiple-choice and one option), divided into three sections: (1) 10 questions on sociodemographics of the respondents

(e.g. education level, gender, income, etc.); (2) 13 questions on food purchase and consumption behavior (e.g. food shopping behavior, food-related activities, food waste, etc.) and (3) 2 questions on positive and negative emotions during the pandemic.

The questionnaire was tested in two stages prior to its administration through the Survey Monkey platform. First, an expert panel conducted a qualitative substance validity analysis to improve the study's validity and reliability. Irrelevant items were omitted based on professional views, and the remaining items were modified to make them more factual and straightforward. Second, a pretest of 18 participants was conducted to ensure data accuracy, and input was used to refine the questionnaire before it was administered. There were 322 valid responses received. Finally, the same questionnaire was used in previous surveys in Qatar (Ben Hassen *et al.*, 2020) and Lebanon (Ben Hassen *et al.*, 2021b).

The survey findings were downloaded for analysis into SPSS (Statistical Package for Social Sciences), version 25.0. Descriptive statistics (means, percentages and frequencies) were calculated. The analysis of multiple responses was performed to draw the percentages of responses and cases. Since variables were categorical and ordinal, nonparametric tests were used. The Mann–Whitney U test was used in dichotomous, categorical independent variables (e.g. gender), while the Kruskal–Wallis test was run to analyze multi-choice responses (e.g. occupation). Statistical significance for all tests was set at a p -value of 0.05.

3. Results

3.1 Sociodemographic characteristics of the cohort

The findings reveal that 64.6% of respondents are males, 70.19% are married with children, 76.71% are economically engaged and 52.8% receive the same income as any other household in the Palestinian territories. In comparison, 74.22% live in urban areas or villages, 66.46% live in the West Bank and 33.54% in the Gaza Strip. Much of the respondents were middle-aged (70.81% were between 25 and 45 years of age), and 97.83% were highly educated. Also, 39.13% of the cohort lost their jobs or had a pay drop due to COVID-19 (Table 1).

3.2 Eating and food consumption behavior during the COVID-19 pandemic

The results suggest evident changes in consumers' eating behaviors and diets during the COVID-19 pandemic in the Palestinian territories. First, 25.47% of the respondents consumed more healthy foods, 31.4% consumed more fruits and vegetables, while 33.54% of the respondents drank more water (all figures include both "much more" and "moderately more" answers options). However, 23% of the cohort consumed less fruits and vegetables and 20% less healthy foods (all figures include "much less" and "slightly less" answer options).

Meanwhile, 45% of the cohort stated that they consumed less unhealthy foods (e.g. fast-food), 29.3% consumed less meat, 36.95% consumed less unhealthy snacks, 36.65% less sweets, cookies, cakes and candies and 24% less packaged frozen foods (all figures include "much less" and "slightly less" answer options). However, some respondents (28.26%) increased their consumption of sweets, cakes and cookies (including both "much more" and "moderately more" answer options) (Table 2).

Further, the findings also reveal some psychological consequences of COVID-19, such as increased levels of depression, anxiety and stress. Indeed, 33.33% of the participants felt much and very much depressed, 37.7% indicated that they felt much and very much worried, 30.52% indicated that they felt much and very much sad and 44.1% felt much and very much bored. Additionally, the Kruskal–Wallis test indicated that some eating behaviors are affected by negative emotions. For example, there is a significant impact of negative emotions, such as feeling depressed, scared and bored on eating unhealthy snacks (Table 3).

Variable	Frequency	Valid percent	Distribution of palestinian population in 2020 (percentage)*	
Living place	Urban	239	74.22	70
	Rural	75	23.29	10
	Refugee camp	8	2.48	20
Region	West Bank	214	66.46	59.8
	Gaza Strip	108	33.54	40.2
Gender	Female	114	35.4	49.61
	Male	208	64.6	50.38
Age	18–24	19	5.9	9.34
	25–34	129	40.06	16.35
	35–44	99	30.75	10.32
	45–54	50	15.53	7.51
	55 and over	25	7.76	5.3
Level of education	Secondary school	7	2.17	–
	University degree	157	48.76	–
	Higher degree (MSc or PhD)	158	49.07	–
Income compared	Lower than most other households in the Palestinian territories	37	11.5	–
	About the same as most other households	170	52.8	–
	Higher than most other households	115	35.71	–
Occupation	In paid work (full time or part-time)	247	76.71	19
	Student	10	3.11	10.17
	Unemployed	26	8.07	25.9
	Home duties	22	6.83	16
	Retired/age pensioner	17	5.28	5.21
	Household composition	Single person household	3	0.93
Job loss/pay reduction	Living with parents	53	16.46	–
	Married with children	226	70.19	–
	Married without children	15	4.66	–
	Extended family	23	7.14	–
	Shared household, nonrelated	2	0.62	–
Job loss/pay reduction	Yes	126	39.13	49.8
	No	196	60.87	50.2

Table 1. Sample sociodemographic characteristics of the study participants ($n = 322$)

Note(s): *Authors' elaboration based on information from [Palestinian Central Bureau of Statistics \(2020a, b\)](#)

3.3 Food sourcing behavior during the COVID-19 pandemic

As shown in [Figure 1](#), food sourcing changed in the Palestinian territories during the pandemic. First, 52.49% of the participants ate out less (e.g. restaurants/cafes/fast-food), and 32.92% ordered less take-away or fast-food meals with deliveries (all by counting “slightly less” and “much less” answer possibilities). Second, only 17.08% of the participants indicated ordering more groceries online, and 53.11% never did. Third, 27.64% indicated that they buy less food in person from a large supermarket. Also, 19.57% indicated that they buy less local food (by counting “slightly less” and “much less”).

Fourth, as for shopping behavior, 59.32% of the respondents stocked up food. The results also showed that nonperishable products, such as cereal products (57.45%), legumes (e.g. peas and chickpeas) (46.89%), oils (38.51%) and sugar (38.20%), are the most stored items in the COVID-19 pandemic. The findings revealed that several food products, such as fruit and

Table 2. Consumers' behavior trends during the COVID-19 pandemic ($n = 322$)

Item	Never	First time	Much less	Percentage*				Much more
				Slightly less	About the same	Moderately more	Much more	
Water	3.42	0.62	1.86	3.42	57.14	19.25	14.29	
Fruits/vegetables	0	0	6.80	16.10	45.70	25.20	6.20	
Healthy foods	1.24	0.31	6.21	13.66	53.11	17.08	8.39	
Meat	0	0	9.30	22	55.60	10.60	2.50	
Candy, cookies, cakes and pastries	3.11	0.31	15.53	21.12	31.68	21.43	6.83	
Healthy snacks	8.39	0	8.07	12.11	52.17	15.22	4.04	
Canned food	17.70	1.55	11.80	13.35	39.75	13.66	2.17	
Unhealthy snacks	20.19	0	19.25	17.70	31.68	9.32	1.86	
Packaged frozen foods	27.33	1.24	12.11	12.11	36.34	9.32	1.55	
Unhealthy foods (fast-food)	22.67	0	28.26	16.77	19.88	10.56	1.86	

Note(s): *Scale: never = 0; first time = 1; much less = 2; slightly less = 3; about the same = 4; moderately more = 5; much more = 6

Table 3. Kruskal–Wallis test: negative emotions effects on eating unhealthy snacks

Emotion item	Mean rank Eating unhealthy snacks						Value
	First time	Much less	Slightly less	About the same	Moderately more	Much more	
Nervous	138.67	178.74	157.92	154.41	201.55	184.92	13.35*
Worried	130.85	172.42	167.06	157.95	198.08	173.50	13.53*
Depressed	123.08	175.94	162.81	166.07	184.42	190.67	15.826**
Sad	137.15	178.31	154.09	158.96	182.10	231.33	12.29*
Scared	128.11	172.26	164.87	159.16	202.47	182.67	16.24**
Bored	121.60	168.49	164.17	171.24	182.10	227.67	18.77**

Note(s): ** p -value < 0.01, * p -value < 0.05

vegetables and fish and seafood, were less available during the pandemic; hence, respondents stressed the rise in prices for such products (Table 4).

Further, the results reveal some effects of food-related concerns on stocking-up behavior. Indeed, respondents who were more concerned about obtaining enough and varied food, access to healthy and safe food or rising food prices stocked up food more than others (Table 5).

The results of the study also demonstrate that the participants' sociodemographics moderate several food-related habits and attitudes during the pandemic (Table 6). For instance, purchasing local food is closely linked to age and is significantly impacted by education and revenue. Likewise, ordering food delivery is related to revenue, which is often quite pricey and cost-effective for high-income families.

4. Discussion and conclusion

This article investigates the immediate impacts of COVID-19 on behavior and attitude toward food in the Palestinian territories based on respondents' perspectives. We have witnessed a significant change in respondents' attitudes and behavior towards food and health due to the COVID-19 pandemic. There are undeniable changes in the way people source, consume and

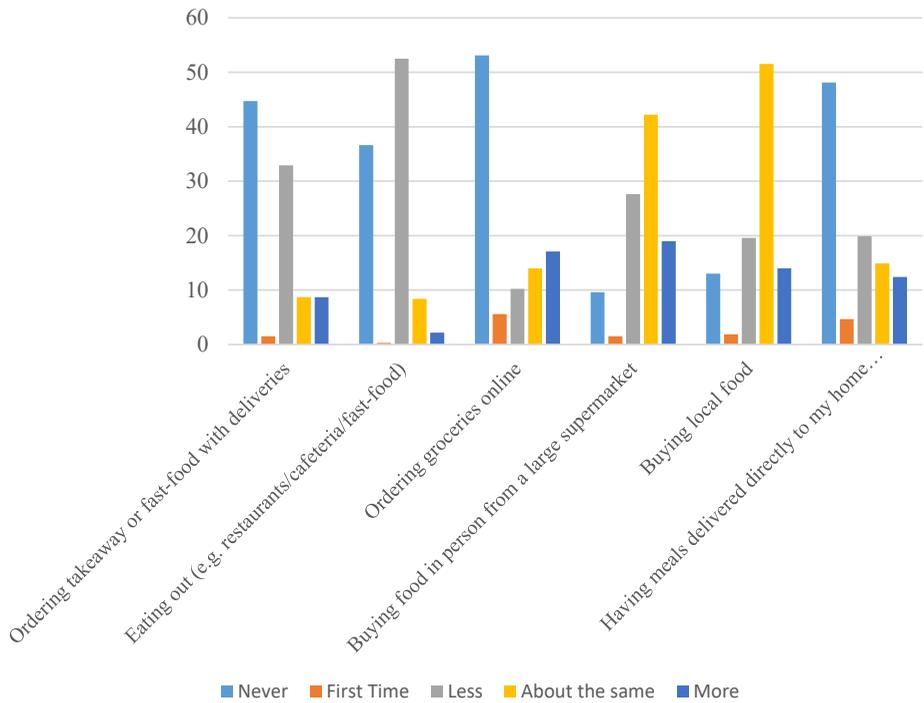


Figure 1.
Change of food-related activities during COVID-19 (n = 322)

Items	Type of food stocked up			Notice of less available food			Notice of any food price increase		
	n	Percent	Percent of cases	n	Percent	Percent of cases	n	Percent	Percent of cases
Cereals products	185	16.37	57.45	23	4.95	7.14	53	7.75	16.46
Roots and tubers (potatoes, etc.)	74	6.55	22.98	10	2.15	3.11	60	8.77	18.63
Legumes (e.g. peas and chickpeas)	151	13.36	46.89	14	3.01	4.35	28	4.09	8.70
Sugar	123	10.88	38.20	13	2.80	4.04	26	3.80	8.07
Oil	124	10.97	38.51	11	2.37	3.42	34	4.97	10.56
Fruits and vegetables	65	5.75	20.19	64	13.76	19.88	184	26.90	57.14
Meat and meat products	97	8.58	30.12	44	9.46	13.66	75	10.96	23.29
Fish and seafood	15	1.33	4.66	57	12.26	17.70	61	8.92	18.94
Milk and dairy products	82	7.26	25.47	25	5.38	7.76	32	4.68	9.94
Canned food	107	9.47	33.23	12	2.58	3.73	24	3.51	7.45
None	107	9.47	33.23	192	41.29	59.63	107	15.64	33.23

Table 4.
Types of food stocked up, change in food availability and food price increase during the COVID-19 pandemic (n = 322)

interact with food. The findings revealed several major consumer tendencies in the Palestinian territories that presently influence dietary and eating behavior.

First, regarding dietary behavior, the results suggest a paradoxical situation. On the one hand, some participants adopted a healthy diet since they decreased their intake of unhealthy foods, such as sweets and fast food. Meanwhile, they increased the consumption of fruits and vegetables. This move was likely caused by pro-healthy dietary concerns; as seen in various countries, consumers have focused increasingly on health and nutrition since the onset of the pandemic. Since people with a dysfunctional immune system are more vulnerable to COVID-19 attacks, many participants indicate paying more attention to protect their health during the outbreak by increasing their intake of healthy food items, such as fruits and vegetables, to boost their immune system. Further, this finding could be explained by the biases associated with a computer assisted web interviewing (CAWI), like the one used in this research. This bias restricts the possibility of generalizing the survey findings to the whole Palestinian population. Indeed, online surveys tend to omit web-illiterate and the elderly. More specifically, in the NENA region, as highlighted by [Atamanov et al. \(2020\)](#), poor households and informal workers are the least likely to be heard through online surveys. Although Internet penetration is high in the Palestinian territories, where in 2019, 80% of the households have Internet access at home (84% in the West Bank and 73% in Gaza Strip) ([Palestinian Central Bureau of Statistics, 2020b](#)); some vulnerable population, such as those living in refugee camps, may have less access.

Table 5. Effects of some food-related concerns on stocking-up behavior during the pandemic

Food-related concerns	Mean rank		Mann–Whitney <i>U</i> -test value
	Yes: stockpiling respondents	No: nonstockpiling respondents	
Obtaining enough food	186.67	124.81	7703.5 ^{**}
Obtaining a variety of food	185.02	127.20	8017.5 ^{**}
Access to healthy and safe food	179.27	135.60	9,117 ^{**}
Food prices rising	176.45	139.71	9,656 ^{**}
Food spreading COVID-19	170.37	148.57	10816

Note(s): ^{**}*p*-value < 0.01, ^{*}*p*-value < 0.05

Table 6. Sociodemographic effects on food behaviors during the COVID-19 pandemic (*n* = 322)

Variables	Gender	Age	Education	Income	Occupation
	χ^2	χ^2	χ^2	χ^2	χ^2
Buying local food	11,751	12.06 [*]	16.64 ^{**}	14.99 ^{**}	12.76 [*]
Ordering groceries online	11704.5	14.53 ^{**}	9.04 [*]	19.76 ^{**}	14.36 ^{**}
Buying food in person from a large supermarket	11720.5	19.94 ^{**}	17.26 ^{**}	27.60 ^{**}	4.18
Buying food in person from a small supermarket or grocery store	11,057	16.06 ^{**}	2.84	2.87	3.34
Having meals delivered directly to my home from a full-service or fast food restaurant	11,852	16.75 ^{**}	1.12	18.61 ^{**}	12.71 [*]
Shopping frequency change	11,561	11.45 [*]	1.06	5.29	2.11
Change of purchase quantity	10241.5 [*]	2.17	5.3	4.1	4.92
Eating with family members	11,660	4.54	2.43	21.36 ^{**}	0.51
Ordering take-away or fast food meals with deliveries	10758.5	31.55 ^{**}	4.82	21.73 ^{**}	6.65
Eating between meals (e.g. snacks)	11604.5	13.31 [*]	6.43 [*]	13.18 [*]	5.8 [*]

Note(s): ^{**}*p*-value < 0.01, ^{*}*p*-value < 0.05

The Palestinian socioeconomic development is undergoing a significant negative shock, worsening poverty, food insecurity and financial and fiscal instability. The full effects of COVID-19 on Palestine's food security are yet unknown. Nevertheless, as the crisis spreads, it is apparent that the pandemic and the actions taken to stop the spread of the virus would continue to have disastrous consequences on vulnerable individuals. In fact, the International Labor Organization (ILO, 2020) suggests that "The pandemic transformed from a health crisis into a profound economic and labor market shock." (p. 6). Up to 50% of the population might be projected to endure severe food insecurity. Indeed, it is estimated that 110,000 new families across the Palestinian territories have fallen into poverty as a result of income loss due to COVID-19-related constraints. For many poor Palestinian households, food has become unaffordable (FAO, 2020c). As a result, these low-income families are likely to alter their eating and dietary habits, resulting in degradation of nutritional and health status. Several Palestinians are experiencing levels of poor/borderline food consumption and pursuing negative coping strategies. When supermarkets no longer sell on credit, many families skip meals, consume cheaper foods or borrow food from relatives (Hinn and Hanieh, 2020). Indeed, as families suffer from severely restricted access to food, they eventually develop harmful coping mechanisms to survive such a change from more expensive and healthier foods (e.g. fruits, vegetables, meats and dairy products) to cheaper items. As highlighted by Radwan *et al.* (2021), in the Gaza Strip, during the COVID-19 pandemic, when compared to other counterparts, students from high-income families received the highest scores in terms of food quality and quantity compared to their counterparts. Our results revealed that almost 40% of the respondents have lost their jobs or suffered a loss of income. Indeed, the pandemic struck at a time when the Palestinian territories were already going through a severe economic and financial crisis, and the situation has continued to deteriorate since. As highlighted by the Standing Committee for Economic and Commercial Cooperation of the Organization of the Islamic Cooperation (COMCEC, 2020), "Rising unemployment and under-employment, and decreasing purchasing power, due to the mentioned movement restrictions and economic slowdown associated with the COVID-19, are already showing severe consequences for poor and vulnerable populations in Palestine facing a protracted condition conflict/insecurity, coupled with an economic downturn" (p. 5). Indeed, the pandemic has had a terrible impact on the socioeconomic situations of Palestinians, many of whom were already vulnerable (The Borgen Project, 2020).

On the other hand, the results revealed a significant impact of negative emotions, such as feeling depressed, scared and bored on adopting an unhealthy diet. Indeed, the psychological reactions to the stress of isolation coupled with a struggling economy disrupted diets and led to unhealthy eating patterns and frequent snacking. Undeniably, negative emotions, such as stress and anxiety, lead to overeating, "emotional eating," especially "comfort foods" (e.g. chocolate and ice cream), and frequent snacking. Also, the results revealed that some consumers reduced their intake of fruit and vegetables. This could be motivated by the increase in the prices of these items. Indeed the COVID-19 and the related measures affected fruit and vegetable availability in the Palestinian territories, although food production and processing were spared from the lockdown. Throughout the crisis, agri-food employees' mobility and activity have been permitted. Since the COVID-19 outbreak, respondents have noticed that fruits and vegetables are less available. In fact, due to movement restrictions imposed to stop the spread of the virus, most farmers could only sell their produce in nearby villages (FAO, 2020d). Overall, the unavailability of employees, fear of disease, mobility limitations and/or a lack of transportation affected agricultural productivity. Accordingly, the prices of fruits and vegetables increased. Also, agricultural markets in the West Bank and Gaza Strip were closed. As a result, a ban on vegetable exports was introduced in Gaza Strip for few days to prevent price increases (FAO, 2020d). Also, in April 2020, the Palestinian Agriculture Ministry, in association with several NGOs, launched a campaign to encourage

residents to grow vegetables. The campaign distributed 1.2 million vegetable seedlings to 30,000 households and encouraged them to plant them in spaces available around their homes, e.g. roofs and balconies (Anadolu Agency, 2020).

Second, as observed in several countries worldwide (Accenture, 2020; EY, 2020), more and more consumers buy their groceries online to avoid crowded supermarkets. Simultaneously, some consumers continue to buy food in person because they prefer checking the quality and freshness of food, which cannot be done online. However, we did not notice the same surge in online grocery shopping observed in other countries of the NENA region. A study performed by IPSOS (2020) on consumers' habits during the pandemic in six NENA countries (namely, Morocco, Tunisia, Algeria, Egypt, Saudi Arabia and the United Arab Emirates), highlighted that online grocery shopping has increased across the region, with 33% shopping online more often. Indeed, for a variety of reasons, online shopping is still not generally embraced among Palestinian consumers. First, for many consumers, buying is a physical transaction that necessitates physically inspecting marketplaces and items. In Palestine, shopping is still a traditional procedure where people go to marketplaces and spend time looking at and scrutinizing the products, whether they be clothing, shoes or food. Second, in Palestine, there is no home postal system that ensures the online ordered products reach the buyer's house. Third, Palestinians are used to bargain during purchasing, and online shopping dispossesses them with this option (The Palestinian Center for Education and Cultural Exchange, 2017).

Third, the survey outcomes indicate a rush of stockpiling nonperishable foods, mainly cereal products (bread, rice, pasta, flour, etc.). This behavior was affected by several concerns: obtaining enough and diverse food, access to healthy and safe food and rising food prices. Indeed, food became more central to the customers' lives during a crisis, and panic purchasing is a normal human response to this stressful situation. Panic buying and stockpiling are not triggered by a supply shortage but rather by consumers' fears and anxieties of a potential shortage increased and fear (Tsao *et al.*, 2019). In many countries, this behavior was fueled by misleading information and instruction on social media for individuals to stock up on supplies and food (Naeem, 2021). At the outset of the outbreak, consumers all over the world, concerned for their families and the long-term outlook, focused on impulse shopping and stockpiling nonperishable food products (e.g. flour, pasta, canned goods, rice, etc.) to mitigate the risk of future shortages (Beard-Knowland, 2020; EY, 2020).

The scholarly literature on the effects of the COVID-19 pandemic on food systems and consumption patterns has been so far primarily geographically biased; it focuses on western and southern Europe, North America and China (Colafemmina *et al.*, 2020) while developing countries in general and those of the NENA region in particular, such as the Palestinian territories, have been overlooked. To the best of our knowledge, this is the first research on perceptions of the effects of COVID-19 on food-related habits in the Palestinian territories, and it establishes a baseline for potential studies on the pandemic's influence. The article results show that the eventual effects of COVID-19 will most likely vary from country to country, based not only on the epidemiological circumstances but also, among other factors, on the baseline socioeconomic situation and shock resilience (HLPE, 2020). As highlighted by El Bilali (2020, p. 59) "The pandemic immediate impacts vary from a country to another depending, *inter alia*, on the epidemiological situation, lockdown and confinement measures, pre-COVID socioeconomic development level". Furthermore, since there is no widely available literature on modern pandemics other than SARS, COVID-19 studies will aid understanding and potentially foresee the potential of shock and crisis research (Loxton *et al.*, 2020). This and other future research will serve as a foundation for organizational and government readiness for future shocks and pandemic occurrences.

Some limitations associated with the survey method and tool impact the sample representativeness. Consequently, the sample bias is the main limitation of this research.

The cohort was selected at random and hired voluntarily. As a self-administered questionnaire, it was run on volunteers, who were not paid, but only people inspired by a pure interest in the subject participated in the study (cf. self-selection of the sample). For example, high-educated individuals were overrepresented in our sample. Low-education individuals are commonly overlooked in surveys (Spitzer, 2020). Further, as explained above, individuals who are not web-literate, as well as the elderly, poor households and informal workers, especially in the NENA region, are also excluded from online surveys. The limitations mentioned above are common in CAWI, which is regularly used in surveys (Couper, 2000; Evans and Mathur, 2018). Because of this bias, it is difficult to generalize the survey findings to the whole population in the Palestinian territories. However, due to the COVID-19 pandemic, online surveys can collect data remotely, a significant benefit where social distancing is needed because face-to-face interviews are challenging and dangerous.

References

- Accenture (2020), "COVID-19 increasing consumers' focus on 'ethical consumption'", available at: <https://newsroom.accenture.com/news/covid-19-increasing-consumers-focus-on-ethical-consumption-accenture-survey-finds.htm> (accessed 10 November 2020).
- Alhaimer, R. (2021), "Fluctuating attitudes and behaviors of customers toward online shopping in times of emergency: the case of Kuwait during the COVID-19 pandemic", *Journal of Internet Commerce*, pp. 1-26.
- Altios (2020), "Understanding the impact of covid-19 in the UAE and GCC region", available at: www.altios.com (accessed 3 September 2020).
- Anadolu Agency (2020), "Palestine encourages residents to grow vegetables in lockdown", available at: <https://www.aa.com.tr/en/middle-east/palestine-encourages-residents-to-grow-vegetables-in-lockdown/1823978> (accessed 15 November 2020).
- Atamanov, A., Hoogeveen, J. and Rodriguez, L. (2020), "Using internet surveys in the MENA region during COVID-19: will all voices be heard?", available at: <https://blogs.worldbank.org/arabvoices/using-internet-surveys-mena-region-during-covid-19-will-all-voices-be-heard> (accessed 31 July 2020).
- Beard-Knowland, T. (2020), "The impact of COVID-19 on how we eat", available at: https://www.ipsos.com/sites/default/files/ct/publication/documents/2020-05/impact_of_covid-19_on_how_we_eat_ipsos_sia.pdf (accessed 5 June 2020).
- Ben Hassen, T., El Bilali, H. and Allahyari, M.S. (2020), "Impact of COVID-19 on food behavior and consumption in Qatar", *Sustainability*, Vol. 12 No. 17, p. 6973.
- Ben Hassen, T., El Bilali, H., Allahyari, M.S., Berjan, S. and Fotina, O. (2021a), "Food purchase and eating behavior during the COVID-19 pandemic: a cross-sectional survey of Russian adults", *Appetite*, Vol. 165, doi: [10.1016/j.appet.2021.105309](https://doi.org/10.1016/j.appet.2021.105309).
- Ben Hassen, T., El Bilali, H., Allahyari, M.S. and Charbel, L. (2021b), "Food shopping, preparation and consumption practices in times of COVID-19: case of Lebanon", *Journal of Agribusiness in Developing and Emerging Economies*. doi: [10.1108/JADEE-01-2021-0022](https://doi.org/10.1108/JADEE-01-2021-0022).
- Berjan, S., Vaško, Ž., Ben Hassen, T., El Bilali, H., Allahyari, M.S., Tomić, V. and Radosavac, A. (2021), "Assessment of household food waste management during the COVID-19 pandemic in Serbia: a cross-sectional online survey", *Environmental Science and Pollution Research*. doi: [10.1007/s11356-021-16485-8](https://doi.org/10.1007/s11356-021-16485-8).
- Botti, S. and McGill, A.L. (2011), "The locus of choice: personal causality and satisfaction with hedonic and utilitarian decisions", *Journal of Consumer Research*, Vol. 37 No. 6, pp. 1065-1078.
- Cheikh Ismail, L., Osaili, T.M., Mohamad, M.N., Al Marzouqi, A., Jarrar, A.H., Zampelas, A., Habib-Mourad, C., Omar Abu Jamous, D., Ali, H.L., Al Sabbah, H., Hasan, H., Mohammed Rashid AlMarzooqi, L., Stojanovska, L., Hashim, M., Shaker Obaid, R.R., ElFeky, S., Saleh, S.T.,

- Shawar, Z.A.M. and Al Dhaheri, A.S. (2020), "Assessment of eating habits and lifestyle during the coronavirus 2019 pandemic in the Middle East and North Africa region: a cross-sectional study", *British Journal of Nutrition*, Vol. 126 No. 5, pp. 1-10, doi: [10.1017/S0007114520004547](https://doi.org/10.1017/S0007114520004547).
- CIHEAM (2020), "The COVID-19 pandemic: threats on food security in the Mediterranean region", available at: <https://www.ciheam.org/wp-content/uploads/2020/07/COVID-rapport-FINAL-1.pdf> (accessed 15 August 2020).
- Colafemmina, D., El Bilali, H. and Capone, R. (2020), "Impacts of COVID-19 on food security and food system sustainability", *Book of Proceedings of the XI International Scientific Agriculture Symposium "Agrosym 2020"*, Virtual Conference, 8-9 October 2020, pp. 925-933.
- COMCEC (2020), "The impacts of COVID-19 on food security and agriculture in Palestine", available at: <http://www.comcec.org/en/wp-content/uploads/2020/07/3-D-Palestine.pdf> (accessed 19 May 2021).
- Couper, M.P. (2000), "Web surveys", *Public Opinion Quarterly*, Vol. 64 No. 4, pp. 464-494, doi: [10.1086/318641](https://doi.org/10.1086/318641).
- Cranfield, J.A.L. (2020), "Framing consumer food demand responses in a viral pandemic", *Canadian Journal of Agricultural Economics/Revue Canadienne d'agroeconomie*, Vol. 68 No. 2, pp. 151-156.
- de Carvalho, C.A., de Almeida Fonseca Viola, P.C. and Sperandio, N. (2020), "How is Brazil facing the crisis of food and nutrition security during the COVID-19 pandemic", *Public Health Nutrition*, Vol. 24 No. 3, pp. 1-11, doi: [10.1017/S1368980020003973](https://doi.org/10.1017/S1368980020003973).
- El Bilali, H. (2020), "COVID-19 pandemic: exploring impacts on agriculture, food systems and food security", *Book of Abstracts of the XI International Scientific Agriculture Symposium "Agrosym 2020"*, Virtual Conference, 8-9 October 2020, p. 59.
- ESCWA (2017), "The innovation landscape in Arab countries: a critical analysis", available at: <https://www.unescwa.org/publications/innovation-landscape-arab-countries-critical-analysis> (accessed 2 November 2020).
- ESCWA (2020), *Mitigating the Impact of COVID-19. Poverty and Food Insecurity in the Arab Region*, Beirut, available at: <https://reliefweb.int/report/bahrain/mitigating-impact-covid-19-poverty-and-food-insecurity-arab-region> (accessed 31 July 2020).
- Evans, J.R. and Mathur, A. (2018), "The value of online surveys: a look back and a look ahead", *Internet Research*, Vol. 28 No. 4, pp. 854-887, doi: [10.1108/IntR-03-2018-0089](https://doi.org/10.1108/IntR-03-2018-0089).
- EY (2020), "Four consumer behavior trends emerge during the COVID-19 pandemic, the first EY Future Consumer Index finds", available at: https://www.ey.com/en_gl/news/2020/04/four-consumer-behavior-trends-emerge-during-the-covid-19-pandemic-the-first-ey-future-consumer-index-finds (accessed 10 November 2020).
- FAO (2020a), "COVID-19 and its impact on food security in the Near East and North Africa: how to respond?", available at: <http://www.fao.org/3/ca8778en/CA8778EN.pdf> (accessed 6 September 2020).
- FAO (2020b), "National agrifood systems and COVID-19 in Palestine", available at: <http://www.fao.org/family-farming/detail/en/c/1321270/> (accessed 19 May 2021).
- FAO (2020c), "Palestine: revised humanitarian response coronavirus disease 2019 (COVID-19)", available at: http://www.fao.org/fileadmin/user_upload/foodcoalition/docs/PAL_CB0203EN.pdf (accessed 15 November 2020).
- FAO (2020d), *COVID-19 Impacts on the Palestinian Food System*, FAO, Rome, doi: [10.4060/ca8714en](https://doi.org/10.4060/ca8714en).
- Fitzpatrick, K.M., Harris, C., Drawve, G. and Willis, D.E. (2020), "Assessing food insecurity among US adults during the COVID-19 pandemic", *Journal of Hunger and Environmental Nutrition*, Vol. 16 No. 1, pp. 1-18, doi: [10.1080/19320248.2020.1830221](https://doi.org/10.1080/19320248.2020.1830221).
- Galanakis, C.M. (2020), "The food systems in the era of the coronavirus (COVID-19) pandemic crisis", *Foods*, Vol. 9 No. 4, p. 523.

- Güney, O.I. and Sangün, L. (2021), "How COVID-19 affects individuals' food consumption behaviour: a consumer survey on attitudes and habits in Turkey", *British Food Journal*, Vol. 123 No. 7, doi: [10.1108/BFJ-10-2020-0949](https://doi.org/10.1108/BFJ-10-2020-0949).
- Hejaz, H. (2020), "Palestinian strategies, guidelines, and challenges in the treatment and management of coronavirus disease-2019 (COVID-19)", *Avicenna Journal of Medicine*, Vol. 10 No. 4, p. 135.
- Hesham, F., Riadh, H. and Sihem, N.K. (2021), "What have we learned about the effects of the COVID-19 pandemic on consumer behavior?", *Sustainability*, Vol. 13 No. 8, p. 4304.
- Hinn, H. and Hanieh, S. (2020), "COVID-19 in Palestine: economic slump, rising vulnerability and limited policy response", EuroMeSCo, available at: <https://www.euromesco.net/publication/covid-19-in-palestine-economic-slump-rising-vulnerability-and-limited-policy-response/> (accessed 30 November 2020).
- HLPE (2020), *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)*, Rome, available at: www.fao.org/cfs/cfs-hlpe (accessed 4 June 2020).
- Husain, W. and Ashkanani, F. (2020), "Does COVID-19 change dietary habits and lifestyle behaviours in Kuwait?", Preprints, 2020060154, June, doi: [10.20944/preprints202006.0154.v1](https://doi.org/10.20944/preprints202006.0154.v1).
- ILO (2020), "Impact of the COVID-19 pandemic on the labour market in the occupied Palestinian territory a forecasting model assessment", available at: www.ilo.org/publns (accessed 19 May 2021).
- IPES-Food (2020), "COVID-19 and the crisis in food systems: symptoms, causes, and potential solutions", available at: http://www.ipes-food.org/_img/upload/files/COVID-19_CommuniqueEN.pdf (accessed 6 June 2020).
- IPSOS (2020), "5 ways COVID-19 has impacted MENA's food habits", available at: https://www.ipsos.com/sites/default/files/ct/news/documents/2020-06/5_ways_covid-19_impacted_menas_food_habits_-_ipsos_mena_0.pdf (accessed 7 September 2020).
- Khaleej Times (2020), "How COVID-19 impacts consumer behavior, leading to a +53% growth of InstaShop", available at: <https://www.khaleejtimes.com/uae/how-COVID-19-impacts-consumer-behavior-leading-to-a-53-percentage-growth-of-InstaShop> (accessed 8 September 2020).
- Koppenberg, M., Bozzola, M., Dalhaus, T. and Hirsch, S. (2021), "Mapping potential implications of temporary COVID-19 export bans for the food supply in importing countries using precrisis trade flows", *Agribusiness*, Vol. 37 No. 1, pp. 25-43.
- KPMG (2020), "UAE consumer and retail segments' performance", available at: <https://assets.kpmg/content/dam/kpmg/ae/pdf/uae-consumer-and-retail-segments-performance.pdf> (accessed 8 September 2020).
- Kumar, M. and Dwivedi, S. (2020), "Impact of coronavirus imposed lockdown on Indian population and their habits", *International Journal of Science and Healthcare Research*, Vol. 5 No. 2, pp. 88-97.
- Laborde, D., Martin, W., Swinnen, J. and Vos, R. (2020), "COVID-19 risks to global food security", *Science*, Vol. 369 No. 6503, pp. 500-502.
- Loxton, M., Trusket, R., Scarf, B., Sindone, L., Baldry, G. and Zhao, Y. (2020), "Consumer behaviour during crises: preliminary research on how coronavirus has manifested consumer panic buying, herd mentality, changing discretionary spending and the role of the media in influencing behaviour", *Journal of Risk and Financial Management*, Vol. 13 No. 8, p. 166.
- Mumena, W.A. (2020), "Impact of COVID-19 curfew on eating habits, food intake, and weight according to food security status in Saudi Arabia: a retrospective study", *Progress in Nutrition*, Vol. 22 No. 3, available at: <https://mattioli1885journals.com/index.php/progressinnutrition/article/view/9883/9020> (accessed 28 September 2020).
- Naeem, M. (2021), "Do social media platforms develop consumer panic buying during the fear of Covid-19 pandemic", *Journal of Retailing and Consumer Services*. Elsevier, Vol. 58, 102226.

- OECD (2020), "COVID-19 and the food and agriculture sector: issues and policy responses", Paris, available at: <https://www.oecd.org/coronavirus/policy-responses/covid-19-and-the-food-and-agriculture-sector-issues-and-policy-responses-a23f764b/> (accessed 7 June 2020).
- Omar, N.A., Nazri, M.A., Ali, M.H. and Alam, S.S. (2021), "The panic buying behavior of consumers during the COVID-19 pandemic: examining the influences of uncertainty, perceptions of severity, perceptions of scarcity, and anxiety", *Journal of Retailing and Consumer Services*, Vol. 62, 102600.
- Osaili, T.M., Al-Nabulsi, A.A. and Taybeh, A.O. (2021), "Food safety knowledge, attitudes, and practices among Jordan universities students during the COVID-19 pandemic", *Frontiers in Public Health*, Vol. 9, pp. 1-13, doi: [10.3389/fpubh.2021.729816](https://doi.org/10.3389/fpubh.2021.729816).
- Palestinian Central Bureau of Statistics (2018), "Palestine in figures 2017", available at: <http://www.pcbs.gov.ps> (accessed 29 October 2020).
- Palestinian Central Bureau of Statistics (2020a), "Palestine in figures 2019", available at: <http://www.pcbs.gov.ps/Downloads/book2513.pdf> (accessed 29 October 2020).
- Palestinian Central Bureau of Statistics (2020b), "PCBS | PCBS and MTIT: issue a joint press release about of the world telecommunication and information society day 05/2020", available at: <https://www.pcbs.gov.ps/post.aspx?lang=en&ItemID=3738> (accessed 3 August 2021).
- Radwan, A., Radwan, E. and Radwan, W. (2021), "Eating habits among primary and secondary school students in the Gaza Strip, Palestine: a cross-sectional study during the COVID-19 pandemic", *Appetite*, Elsevier BV, Vol. 163, 105222.
- Roe, B.E., Bender, K. and Qi, D. (2020), "The impact of COVID-19 on consumer food waste", *Applied Economic Perspectives and Policy*, Vol. 43 No. 1, pp. 401-411, doi: [10.1002/aep.13079](https://doi.org/10.1002/aep.13079).
- Sheth, J. (2020), "Impact of Covid-19 on consumer behavior: will the old habits return or die?", *Journal of Business Research*, Vol. 117, pp. 280-283.
- Spitzer, S. (2020), "Biases in health expectancies due to educational differences in survey participation of older Europeans: it's worth weighting for", *The European Journal of Health Economics*, Vol. 21 No. 4, pp. 573-605.
- The Borgen Project (2020), "Impact of COVID-19 on food security in Palestine", available at: <https://borgenproject.org/impact-of-covid-19-on-food-security-in-palestine/> (accessed 16 November 2020).
- The Borgen Project (2021), "The impact of COVID-19 on poverty in the Palestinian territories", available at: <https://borgenproject.org/the-impact-of-covid-19-on-poverty-in-the-palestinian-territories/> (accessed 3 August 2021).
- The Palestinian Center for Education and Cultural Exchange (2017), "Online shopping in Palestine", available at: <https://gopalestine.org/can-shop-online-palestine/> (accessed 17 November 2020).
- The United Nations Office for the Coordination of Humanitarian Affairs (2020), "COVID-19 crisis. Occupied Palestinian territory", available at: <https://www.ochaopt.org/covid-19> (accessed 15 November 2020).
- Tsao, Y.C., Raj, P.V.R.P. and Yu, V. (2019), "Product substitution in different weights and brands considering customer segmentation and panic buying behavior", *Industrial Marketing Management*, Elsevier, Vol. 77, pp. 209-220.
- United Nations (2020), "Policy brief: the impact of COVID-19 on food security and nutrition", available at: <https://data.unicef.org/resources/jme-report-2020/> (accessed 11 June 2020).
- Wamda (2019), "Online grocery retail in Mena 2019", available at: <https://www.wamda.com/research/Online-grocery-retail-in-Mena-2019> (accessed 22 April 2021).
- WFP (2020), "Palestine country brief", available at: https://docs.wfp.org/api/documents/WFP-0000120062/download/?_ga=2.257767816.2072654714.1603951903-1560571844.1598435845 (accessed 29 October 2020).
- WHO (2020), "Impact of COVID-19 on people's livelihoods, their health and our food systems", available at: <https://www.who.int/news/item/13-10-2020-impact-of-covid-19-on-people-s-livelihoods-their-health-and-our-food-systems> (accessed 26 November 2020).

- WHO (2021), "Live: oPt COVID-19 dashboard", available at: <http://www.emro.who.int/pse/publications-who/> (accessed 27 June 2021).
- World Bank (2020), "Palestinian territories' economic update — April 2020", available at: <https://www.worldbank.org/en/country/westbankandgaza/publication/economic-update-april-2020> (accessed 15 November 2020).
- World Food Programme (2020a), "Economic and food security implications of the COVID-19 outbreak 1 an update with insights from different regions", available at: <https://reliefweb.int/report/world/economic-and-food-security-implications-covid-19-outbreak-update-insights-different> (accessed 25 June 2020).
- World Food Programme (2020b), "Impact of COVID-19 in the Middle East, North Africa, Central Asia, and Eastern Europe", Update 6, available at: <https://reliefweb.int/sites/reliefweb.int/files/resources/WFP-0000120508.pdf> (accessed 17 November 2020).

Further reading

- Pereira, M. and Oliveira, A.M. (2020), "Poverty and food insecurity may increase as the threat of COVID-19 spreads", *Public Health Nutrition*, Vol. 23 No. 17, pp. 3236-3240.
- Zurayk, R. (2020), "Pandemic and food security: a view from the global south", *Journal of Agriculture, Food Systems, and Community Development*, Vol. 9 No. 3, pp. 17-21.

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