# ASSESSMENT OF RESTAURANTS' PRECAUTIONARY MEASURES DURING COVID-19 PANDEMIC

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## ABSTRACT

*Since its appearance, COVID-19 has created an unexpected, temporary, and sharp shortfall in revenue for restaurant industry worldwide. In order to limit the spread of the coronavirus into their operations, the leading international restaurant chains are increasingly emphasizing their commitment to food safety besides adopting precautionary measures. This study aims at assessing the food safety practices and precautionary measures during COVID-19 Pandemic in a sample of national and international restaurants in Egypt. To achieve this aim, a sample of 35 restaurants (15 international and 20 national) has been observed and investigated. The findings of the study reveal that there were statistically significant differences between national and international restaurants in most of the investigated practices, especially related to cleaning, sanitizing, and disinfecting, employees' health monitoring and personal hygiene as well as physical/social distancing measures. Incorrect food safety practices and precautionary measures have been observed especially in national restaurants. The main implication of this study is that restaurants' managers, especially in national ones, should properly incorporate food safety practices besides precautionary and preventive measures into their operational plans to mitigate the coronavirus outbreak.*

**Keywords:** COVID-19, Coronavirus, SARS-COV-2, Food Safety, Precautionary Measures, Food Supply Chain.

## INTRODUCTION

On 11th March 2020, the World Health Organization (WHO) declared the COVID-19 as a global pandemic because of its widespread transmission as well as a significant number of deaths and higher infections and mortality rate as compared to previous coronavirus outbreaks (Benzigar et al., 2020); Cucinotta & Vanelli, 2020). Currently, the number of COVID-19-infected people is increasing sharply, while effective vaccines for COVID-19 are limited (Viana et al., 2021). Globally, the WHO (2021) reports that the total number of confirmed cases is 193,798,265 including 4,158,041 deaths. The clinical manifestations of COVID-19 are inconstant among patients as well as countries. Generally, symptoms of COVID-19 appear between 2 and14 days after exposure to the virus. These symptoms may include shortness of breath, cough, fever or chills, loss of taste or smell, muscle and body pain, headache, sore throat, vomiting, and diarrhea (Kaul, 2020; Naserghandi et al., 2021; Petrosillo et al., 2020).

Since its appearance, COVID-19 has created an unexpected, temporary, and sharp shortfall in revenue for firms in many industries worldwide (De Vet et al., 2021). Tanveer et al. (2020) revealed that the epidemic is having negative impact on the business sustainability and development. Most of the businesses are experiencing low or almost no profit. The total amount



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of monthly expenditure is quite high than the output/profit. The customer base is continually declining since the outbreak was first revealed. Additionally, Diab (2021) illustrated that many governments worldwide faced difficulties in managing the crisis of COVID-19 in a way that ensures the health and safety of their people. The crisis has significantly uncovered the fragile healthcare system in many countries, especially in least developed countries (LDCs). The coronavirus outbreak has not only a major impact on global public health, but also has a major impact on all the stages of the supply and value chains of various industries, one of the most poignant of which has occurred in the restaurant industry (Manepalli & Nagvenkar, 2021). Newton (2021) mentioned that the COVID-19 pandemic has devastated the restaurant industry.

Consequent to the COVID-19 outbreak, response plans for food workers were developed to provide guidance for the continuity of operations as well as to manage coronavirus in the food service industry. These plans including precautionary measures have focused on the employees' health monitoring and personal hygiene, cleaning, sanitizing, and disinfection of food premise, food safety practices, physical/social distancing measures, and pick-up and delivery service practices. They aim to prevent cross contamination and mitigate coronavirus spreading (CDC, 2021a; FAO & WHO, 2020; FDA, 2020a; FDA, 2020b, NRA, 2021a & NRA, 2021b). Additionally, restaurants' operators look at several ways to retain traffic and generate revenues (NRA, 2021c). Operators, particularly in the full-service segment, are concentrating on expanding their off-premises operations. Adding curbside pickup, in-house and third-party delivery, drive-thru capacity (if possible), and improving takeout and delivery packaging were just a few of the methods they took to keep their business afloat. Service styles have also evolved. Contactless and mobile payment methods have become increasingly important. Adoption of technology has accelerated. Across all six segments—quick service, fast casual, casual, family, fine dining, and coffee and snack—some 40% of operators mentioned that they have added tech solutions to their businesses (NRA, 2021c). Newton (2021) states that during the epidemic, technology has proven to be an invaluable resource for restaurants. It has kept the food service industry afloat over the last year, from QR code-based menus to app-based reservation and ordering.

To meet shifting demands while maintaining physical/social distancing requirements, some restaurants have found it beneficial to adjust their operating schedules and employees' roles. Some restaurants have opted to use rotated shifts for employees or have limited operating hours, shifting from a 24-hour operation to the hours that catch the most business and allow more time for deep cleaning and sanitization of frequently touched surfaces and public areas (Canavan, 2020; Fortney, 2020). Others have turned to a 24-hour operating schedule in order to reduce the number of employees in the restaurant at any given time, allowing food preparation to take place overnight and service operations to take place during peak business hours (Sprayregen, 2020).

While different studies (Binsaleh et al., 2020; Davras & Durgun, 2021; ILO, 2020) have shown that adopting precautionary measures contributes to mitigating the spread of coronavirus and its serious effects in different sectors. There has been relatively less empirical investigation on the extent of adopting these measures in restaurants industry, especially in the developing countries. Upon that, the current study aims to investigate to what extent national and international restaurants in Egypt have committed to adopting precautionary measures, especially relating to employees' health monitoring and personal hygiene, cleaning, sanitizing, and disinfection of food premise, food safety practices, physical/social distancing measures, and pick-up and delivery service practices, into their operations.



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Many studies have been conducted to evaluate the hygienic practices and food safety knowledge for food handlers in restaurant industry before COVID–19 pandemic (Baş et al., 2006; Rebouças et al., 2017). The current study is an endeavor to shed light on precautionary measures, preventive practices and food safety practices adopted by national and international restaurants during COVID-19 pandemic, especially in the developing countries context. In addition, the study highlights the most common guidelines for restaurants' operation and re-opening during COVID-19 pandemic after their lockdown as its principal theoretical contribution (Salamzadeh, 2020).

The current study has been structured as follows: In addition to the current introduction, Section 2 presents the literature review regarding COVID-19 pandemic, its impact on restaurant industry, and precautionary measures to limit the spread of coronavirus in restaurants industry. Section 3 *"Materials and Methods"* deals with the methods adopted for the development of the statistical study. Furthermore, the findings of the on-site observation adopted in the investigated national and international restaurants have been discussed in the section 4 (Results and Discussion). Finally, section 5 deliberates on the conclusion, implications of the study, and suggested directions for future research.

## LITERATURE REVIEW

### COVID-19 Pandemic

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by the newly discovered coronavirus known as Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), which was firstly discovered in Wuhan, China (Borges do Nascimento et al., 2020; Olaimat et al., 2020). According to the CDC (2021a), it is uncertain how readily or sustainably this virus is spreading from person to person. Typically, respiratory viruses are often contagious when an individual is most symptomatic, but there have been reports of the virus spreading when the affected individual was asymptomatic (Li et al., 2020).

Regarding the transmission means of SARS-CoV-2, different scholars illustrated three main means of virus transmission: human-to-human contact transmission (Carducci et al., 2020; Leung et al., 2020), aerosol transmission (Van Doremalen et al., 2020), and droplet transmission (Han et al., 2021; WHO, 2020a). The virus predominantly spreads via respiratory droplets produced when an infected person sneezes or coughs. It spreads between the people who are in close contact (within about 6 feet) (CDC, 2021; FAO & WHO, 2020). Moreover, COVID-19 can also be spread by asymptomatic people who were infected by the virus during its early stages of incubation, before symptoms arise (Li et al., 2020; Ye et al., 2020; Zhang et al., 2020). Not only that, SARS-CoV-2 has also resurfaced in recovered individuals leading to a reoccurrence of illness. This was confirmed by the detection of viral nucleic acid using a real-time RT-PCR after the patient recovered and was discharged from the hospital (Chen et al., 2020; Lan et al., 2020; Qiao et al., 2020). Despite the significant health threat that coronavirus poses, European Food Safety Authority (EFSA) (2020) and CDC (2021a) stated that there is no evidence to suggest that handling or consuming food is associated with COVID-19. In the previous outbreak of Middle East Respiratory Syndrome (MERS) and SARS-CoV viruses, food was perceived to be a less likely route of transmission (EFSA, 2020).

Conversely, Carducci et al. (2020) mentioned that although the coronavirus is primarily spread through droplets and close contact among humans, the possibility of transmission through



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food should not be overlooked. For example, an infected person can sneeze or cough coronavirus directly onto the fresh food products or food packaging, which may be transmitted immediately to the customer. According to reports, coronavirus has caused nearly 60% of consumers being concerned about eating out, with one-in-five saying that they will *"definitely"* avoid doing so in future. Nearly 89% believed that food prepared at home is the safest option, especially if it is prepared by an uninfected person (Datassential, 2020; IFIC, 2020).

In terms of virus transmission via packaging, COVID-19 might survive on surfaces such as cardboard for up to 24 hours and plastic for up to 72 hours (WHO, 2020b). Both these materials are commonly used in restaurant food packaging. These results confirmed that because of the virus's propensity to survive on surfaces for several days, coronavirus can be transmitted via contact surfaces (Tong et al., 2020). A study conducted by Byrd et al. (2021) to explore consumers' COVID-19 risk perceptions about food itself, restaurant food specifically, and restaurant food packaging concludes that consumers were less concerned about catching COVID-19 from food in general than restaurant food and its packaging, with consumers concerned highest for food served in restaurants and lowest for hot/cooked restaurant food followed by restaurant food from take-out.

## Impact of COVID-19 Pandemic on Restaurant Industry

The coronavirus outbreak has become a global issue with significant effects on capital markets and the global economy; its impacts are estimated to be even more than the previous global recessions (Salamzadeh, & Dana, 2020). This pandemic has enormously changed the social, economic, healthcare, education, and business aspects of the life. Not only has it caused huge disruptions in the supply chain, but it has also led to an unprecedented disruption of commerce, forcing thousands of businesses to close down. Some industries, such as tourism and hospitality, were hit hard, while others continued to operate, although crucial areas such as cash flows, demand, supply chain, workforce, and sales were all severely affected (Asfahani, 2021; Kawamorita et al., 2020). Globally, the rapid spread of coronavirus (COVID-19) has had devastating impacts on financial markets (Dias & Pereira, 2020; Farzad et al., 2020).

As the pandemic continues, several professional reports have concluded that COVID-19 has had a substantial impact on the restaurant business. For example, the National Restaurant Association (2021d) addresses COVID-19's destructive impacts on the restaurant business, and illustrated that nationwide, restaurant industry's sales in 2020 went down by $240 billion from association's pre-pandemic forecast for the year, and nearly 110,000 restaurant locations have been temporarily or permanently closed. The food and beverage industry lost nearly 2.5 million jobs by 2020 as compared to pre-coronavirus levels. At the peak of initial closures, the association estimated that up to 8 million employees were laid off (NRA, 2021d).

According to the National Restaurant Association's survey (2021d) conducted in February 2021 involving 3000 restaurant operators, most restaurant owners do not expect a quick return to regular economic conditions. Six out of ten restaurateurs believe that it will take at least seven months for their business to return to normal. As illustrated in Figure 1, overall, 31% of restaurateurs believe that it will take 7-12 months for returning the business conditions to normal for their restaurant; however 30% think that it may be taking more than a year. Additionally, 29% think that it will take less than 6 months. On the other hand, 10% of the investigated operators are of the opinion that business conditions will never return to normal for their restaurant (NRA, 2021d).



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At the segment level, operators of the fine dining restaurants expect the longest timeline to return to normal operation. Almost 71% of fine dining operators believe that it will take at least seven months for returning the business conditions in their restaurants to normal. 8% do not believe that it will ever happen. However, limited-service operators have a shorter timeline; 3 out of 10 quick service and fast casual operators and 4 out of 10 coffee and snack concept owners believe that business will return to normal within 6 months (NRA, 2021d).

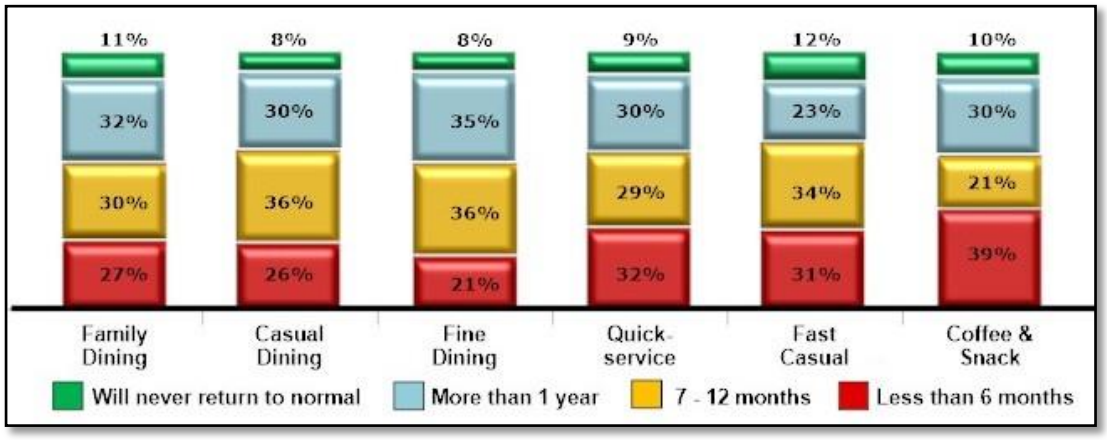


**FIGURE 1**
**RESTAURANT OPERATORS' PREDICTION OF WHEN BUSINESS CONDITION WILL RETURN TO NORMAL FOR THEIR RESTAURANTS**

The COVID-19 pandemic, which resulted in tight stay-at-home measures across the country to control the virus's spread, has significant impact on consumer spending in restaurants and cafes in the UK. Spending in restaurants and cafes in the UK declined dramatically in 2020 as compared to the previous year. Consumer spending plummeted to 61.79 billion British pounds at this time, down by 38.5 percent from the previous year (Statista, 2020).

In Egypt, the Egyptian Centre for Economic Studies (ECES) (2020) illustrated that in the initial period of the coronavirus outbreak (During Mid-February to end of May 2020), a state of anxiety and fear among citizens was created. Most of the Egyptian citizens started avoiding eating outside and preferred to dine in their homes (ECES, 2020). Restaurants with integrated services (classic and casual dining restaurants) have witnessed a revenue drop of up to 80%. Similarly, the number of employees has declined at a faster rate than fast food operations, reaching 60% in some cases. During the first three weeks of the crisis, the fast-food restaurants experienced 50% to 65% drop in their daily revenue (ECES, 2020). Moreover, there was a drop in the number of employees, particularly in the kitchen and dining room, with rates ranging from 20% to 40%. However, due of the increased demand for delivery services, the percentage of delivery employees has stayed relatively constant, even though the majority of them are irregular labor with temporary contracts (ECES, 2020). The largest decline was related to cafes, especially popular cafes (Kahwa), because of precautionary measures, where the loss rate reached 100% in some cases (ECES, 2020).

Independent foodservice operators were more strictly affected by the COVID-19 pandemic than the leading chained operators. Many independent foodservice operators lacked the resources and abilities to adapt to the new reality, and the majority was forced to simply close



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for three months during the lockdown period to save overhead costs and staff salaries by offering unpaid holidays or lying off several employees, resulting in loss of revenues (International Consumer foodservice in Egypt, 2021). Resmi et al. (2020) illustrated that micro, small, and medium enterprises (MSMEs) lack resilience and flexibility in facing this pandemic due to several factors, such as lack of financial resources, the low level of digitization, difficulties in accessing technology, and lack of understanding of survival strategies in business.

Precautionary Measures to limit the Spread of Coronavirus in Restaurants Industry. Dining out may involve close contact with people from different households as well as frequently touched surfaces and objects. The transmission of COVID-19 during these activities is dependent on several factors, such as the types of settings (e.g. out-doors, indoors, large, small, adequate, or inadequate ventilation), the number and characteristics of participants (e.g. age, physical ability, or knowledge of new measures), closeness, periods of staying, types of interactions between participants, and the precautionary measures adopted in place by employees and restaurant operators (CCOHS, 2021).

The leading international restaurant chains are increasingly emphasizing their commitment to food safety and adopting precautionary measures to limit the spread of coronavirus into their operations. For example, McDonald's restaurant chain (2021) publishes on its website following message: *"The health and safety of restaurant employees and customers is a top priority. In addition to our standard sanitation procedures, as part of McDonald's response to coronavirus, our restaurant teams have implemented contactless operations, undergo wellness and temperature checks before starting their shift, have put social distancing floor stickers in place to guide customers on maintaining a proper distance, are trained on social distancing best practices behind the counter, have installed protective barriers at order points, are wearing masks or face coverings and gloves, are making masks available for customers in municipalities where they are required, and have increased the frequency of cleaning, sanitizing, and disinfection of high touch point surfaces"*. Regarding in-restaurant dining, some precautionary measures have been added, which include closing some seating and tables to accommodate social distancing, more frequent cleaning of high touch surfaces, including tables, keeping kids' area closed, and modifying dine-in beverage procedures to minimize contact. Burger King Restaurant chain (2021) reports following message: *"Safety is Burger King's number one priority, and to enable restaurants to continue to re-open, several procedures have been put in place to safeguard the health of Burger King Employees as well as customers, following detailed operational testing"*. Updated procedures include additional PPE such as masks and gloves for staff, strict cleaning measures, contactless delivery options via Deliveroo and Just Eat, and all Burger King Staff is comprehensively trained on the Government's social distancing measures – including how to run kitchens hygienically. Subway restaurant chain announced that: *"Safety remains our top priority as more Subway restaurants reopen. Operations and food safety teams are continuously exploring innovative ways to enhance measures that make all Subway restaurants a safe, healthy environment and enjoyable experience for guests"* (Subway, 2021).

To ensure the food safety and control the spread of coronavirus at food service sector, different precautionary measures should be adopted. Table 1 represents the most common guidelines for restaurants' operation and re-opening during COVID-19 Pandemic.



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**Table 1**
**THE MOST COMMON GUIDELINES FOR RESTAURANTS' OPERATION AND RE-OPENING DURING COVID-19 PANDEMIC**

| Topic | Authority | Reference |
|---|---|---|
| Considerations for Restaurant and Bar Operators | Centers for Diseases Control and Prevention (CDC) | CDC (2021a) |
| COVID-19 and Food Safety: Guidance for Food Businesses | Food and Agriculture Organization (FAO) & World Health Organization (WHO) | FAO & WHO (2020) |
| Best Practices for Retail Food Stores, Restaurants, and Food Pick-Up/Delivery Services during the COVID-19 Pandemic | U.S. Food and Drugs Administration (FDA) | FDA (2020a) |
| Best Practices for Re-opening Retail Food Establishments during the COVID-19 Pandemic – Food Safety Checklist | U.S. Food and Drugs Administration (FDA) | FDA (2020b) |
| COVID-19 Operating Guidance: A Guide for the Restaurant Industry | National Restaurant Association (NRA) | NRA (2021a) |
| Guidance on Food Safety Protocols, Food handler Training Information, and FAQ | National Restaurant Association (NRA) | NRA (2021b) |
| COVID-19 Guidance for Restaurants & Beverage Vendors Offering Takeout or Curbside Pickup | Occupational Safety and Health Administration (OSHA) | OSHA (2021a) |
| COVID-19 Guidance for Restaurants Resuming Dine-In Service | Occupational Safety and Health Administration (OSHA) | OSHA (2021b) |
| COVID-19 Workplace Requirements: Summary of MIOSHA Emergency Rules and Specific Rules Defined in Section 4 for Restaurants and Bars | Michigan Occupational Safety and Health Administration (MIOSHA) | MIOSHA (2020) |
| BRCGS Guidance Document Managing Food Safety during COVID-19 | British Retail Consortium (BRCGS) | British Retail Consortium (2020) |
| Guidance for Food Businesses on Coronavirus (COVID-19) | Department for Environment, Food & Rural Affairs & Public Health England | Department for Environment, Food & Rural Affairs & Public Health England (2020) |
| Restaurant and Cafes Protocols | Public Health Authority (Kingdom of Saudi Arabia) | Public Health Authority (Kingdom of Saudi Arabia) (2020) |
| Working Safely during Coronavirus (COVID-19) (Restaurants, pubs, bars, and takeaway services) | Department for Business, Energy & Industrial Strategy and Department for Digital, Culture, Media & Sport (UK) | Department for Business, Energy & Industrial Strategy and Department for Digital, Culture, Media & Sport (UK) (2021) |
| COVID-19 Industry Guidance: Restaurants | California Department of Public Health | California Department of Public Health (2020) |

## RESEARCH METHODOLOGY

### Data Collection Method

As mentioned earlier, the main aim of this study is to assess the food safety practices and precautionary measures during COVID-19 Pandemic in a sample of national and international restaurants in Egypt. To achieve this aim, an on-site observation checklist was developed and adopted on a sample of 35 restaurants (15 international and 20 national), which had shown the willingness to participate in the field study, to identify to what extent the investigated restaurants have adopted the food safety practices and precautionary measures which contribute to coronavirus mitigation into their operations. The participated restaurants were selected by using



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a convenience sampling method, *"a type of non-probability sampling, wherein people are sampled simply because they are 'convenient' sources of data for researchers"* (Lavrakas, 2008). It is widely used when randomization is not possible due to a very large population or researchers' limited resources, time, and workforce (Etikan et al., 2016; Farrokhi & Mahmoudi-Hamidabad, 2012). The investigated restaurants participated in the field study on the condition that their names would not be revealed. Therefore, they were given anonymous names. The on-site observation for each restaurant has been conducted twice in different times to check the accuracy of precautionary measures adoption in the investigated restaurants. Data collection spanned almost three months (February–April 2021).

## On-site Observation Checklist Design

The structure of the observation checklist was developed based on the common guidelines for restaurants' operation and re-opening during COVID-19 pandemic prepared by CDC, WHO, FDA, NRA, and OSHA. The on-site observation checklist consists of 45 practices and measures covering five main factors; employees' health monitoring and personal hygiene (13 attributes), cleaning, sanitizing, and disinfection (8 attributes), food preparation and service (13 attributes), physical/social distancing (5 attributes), and pick-up and delivery service (6 attributes).

The survey instrument was originally prepared in English and then translated into Arabic. The face validity of the observation checklist was examined by five food quality experts to improve its clarity, format, and content. Upon the experts' suggestions, the wording of some statements was modified, some statements were reordered, and some were deleted. The final version of the on-site observation checklist was developed giving due consideration to the comments received. Based on the experts' suggestions, the validity was strengthened. In order to examine the internal consistency of each section, Cronbach's alpha coefficient was calculated. The calculated Cronbach's alpha coefficient was 0.787, which confirms the high reliability of the study instrument (Table 2). To identify to what extent the investigated restaurants have adopted the food safety practices and precautionary measures, each attribute was measured by utilizing a five-point Likert-type scale (always=5, often=4, sometime=3, rarely=2 and never=1). The range of each response was computed as follows; never (1.00-1.80), rarely (1.81-2.60), sometimes (2.61-3.40), often (3.41-4.20), and always (4.21-5.00).

**Table 2**
**RELIABILITY STATISTICS**

| Number of Items | Cronbach's alpha |
|---|---|
| 45 | 0.787 |

## Data Analysis

The data collected from the on-site observation was computed and analyzed by Statistical Package for the Social Sciences (SPSS) version 25.0 for Windows. Mean and standard deviation were calculated and analyzed. An independent sample t-test was used to permit a comparison between national and international restaurants as well as to determine whether there was a statistically significant difference between the means in the two groups.



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## RESULTS AND DISCUSSION

### On-site Observation Checklist Analysis

The findings of the on-site observation for the investigated national and international restaurants are presented in the following tabulated data. From Table 3, it is evident that with regards to employees' health and personal hygiene practices, overall statistically significant differences between the two categories of restaurants were observed in most of the investigated attributes, except four attributes (items no. 2, 5a, 5f, and 6). The international restaurants were more committed to adopting precautionary measures related to monitoring employees' health and personal hygiene than national ones, where the average mean ranged from 4.43 to 2.70 as compared to 3.88 to 2.05. In the international restaurants, the staff was always keen to wear personal protective equipment (e.g. face mask, gloves…etc.) all the time (M=4.43). The restaurants' operators often inform sick employees with COVID-19 symptoms to stay at home. They also ensure that staff use hand sanitizer that contains at least 60% alcohol when soap & water are not available. Most importantly, they screen staff for COVID-19 symptoms prior to each shift. These findings are consistent with the directions stated by California Department of Public Health (2020), which recommended that restaurants operators must ensure that workers use all required protective equipment, including face coverings and gloves where necessary, and must encourage workers who are sick or exhibiting symptoms of COVID-19 to stay home.

On the other hand, the investigated national restaurants were not considered precautionary measures related to monitoring employees' health and personal hygiene, especially the hygiene that related to proper hand washing practices. The restaurant staff rarely washes hands with soap and water for at least 20 seconds after handling money, after handling dirty or used items, and after removing gloves or mask. These findings aren't consistent with that concluded by Soares et al. (2021), who emphasize that hand washing for at least 20 seconds is a paramount practice in food preparation to prevent food contamination. Poor personal hygiene is a contributory factor to food-borne disease (Baş et al., 2006; Sarter, & Sarter, 2021).

Furthermore, the data presented in Table 3 reveal that the least adopted measure in both categories of the investigated restaurants was *"Staff washes hands with soap and water for at least 20 seconds after handling money"*. This result is not in consonance with CDC, WHO, FDA, and NRA directives. The study conducted by Riddell, Goldie, Hill, Eagles, & Drew (2020) concluded that the coronavirus can survive for at least 28 days on both paper and polymer banknotes at room temperature. This finding reinforces the importance of hand washing or using hand sanitizer after visiting an ATM or handling cash.

Another malpractice that is adopted by the investigated restaurants, especially national ones, is restaurants' operators rarely encourage their staff to be vaccinated against the COVID-19 virus (M=2.25). This finding is not in consonance with CDC directive (2021b) that essential workers such as food service employees be prioritized in phase 1c of the vaccine rollout and phase 1b's frontline essential workers — including food production and agriculture workers — along with adults aged 75 and above. Regarding training of the staff on how they can reduce the spread of COVID-19, the findings of the study revealed that national restaurants rarely train their staff unlike the international restaurants that are committed to training their staff frequently on how they can mitigate COVID-19 virus spreading. The CDC directives (2021a) recommend the restaurants' operators must educate and remind employees of prevention practices, provide



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updates, and increase workers' understanding of information and recommendations regarding the mitigation of COVID-19 spreading.

**Table 3**
**ON-SITE OBSERVATION CHECKLIST ANALYSIS**

| Attribute | National (N = 2x20= 40) | | International (N = 2x15= 30) | | t test | p-Value |
|---|---|---|---|---|---|---|
| | M | SD | M | SD | | |
| **Employees' Health Monitoring and Personal Hygiene** | | | | | | |
| Staff is screened for COVID-19 symptoms prior to each shift. | 2.48 | 0.847 | 3.93 | 0.907 | 6.915 | .000 * |
| Sick employees with COVID-19 symptoms are informed to stay at home. | 3.88 | 0.853 | 4.17 | 0.747 | 1.492 | 0.14 |
| Staff has a training on how they can reduce the spread of COVID-19. | 2.48 | 0.96 | 3.53 | 0.937 | 4.61 | .000 * |
| Restaurant operator encourages staff to be vaccinated against the COVID-19 virus. | 2.25 | 0.742 | 2.97 | 0.85 | 3.755 | .000 * |
| **Staff wash hands with soap and water for at least 20 seconds** | **2.73** | **0.94** | **3.39** | **1.022** | **3.334** | **.000 *** |
| After going to the bathroom | 3.63 | 0.897 | 3.73 | 0.74 | 0.538 | 0.592 |
| After handling dirty or used items | 2.43 | 0.844 | 3.57 | 1.04 | 5.069 | .000 * |
| After handling money | 2.05 | 0.677 | 2.7 | 0.837 | 3.484 | .001 * |
| After blowing nose, coughing, or sneezing | 2.45 | 0.714 | 3.77 | 0.935 | 6.682 | .000 * |
| After removing gloves or mask | 2.43 | 0.636 | 2.97 | 0.718 | 3.336 | .001 * |
| Before food preparation and service | 3.4 | 0.709 | 3.63 | 1.299 | 0.889 | 0.379 |
| Staff use hand sanitizer that contains at least 60% alcohol when soap & water are not available. | 3.67 | 1.184 | 4 | 0.816 | 1.324 | 0.192 |
| Staff avoid touching eyes, nose, and mouth with gloved or unwashed hands. | 2.98 | 0.862 | 3.9 | 1.125 | 3.897 | .000 * |
| Staff wear personal protective equipment (e.g. face mask, gloves…etc.) all the time. | 3.78 | 0.768 | 4.43 | 0.626 | 3.836 | .000 * |
| **Cleaning, sanitizing, and disinfecting** | | | | | | |
| Frequently touched surfaces (e.g. door handles, cash registers, workstations…etc.) are thoroughly cleaned and safely disinfected. | 2.9 | 0.955 | 3.83 | 0.95 | 4.055 | .000 * |
| Food-contact surfaces, food-preparation surfaces, and beverage equipment are washed and rinsed after each use. | 2.63 | 1.005 | 4 | 1.083 | 5.481 | .000 * |
| While cleaning and sanitizing, staff follows sanitizing material guidance to ensure that it is at effective sanitizing strength. | 2.38 | 0.952 | 3.37 | 1.066 | 4.096 | .000 * |
| Guest hand sanitizer that contains at least 60% alcohol is readily available. | 3.38 | 1.055 | 3.93 | 1.015 | 2.227 | .029 * |
| Staff avoids food contact surfaces while using disinfectants. | 2.93 | 1.112 | 3.28 | 0.96 | 1.348 | 0.173 |
| During disinfecting, staff wears the appropriate gloves for the disinfectant being used. | 2.63 | 1.079 | 3.43 | 1.135 | 3.034 | .003 * |
| The food preparation areas are clean, well-ventilated, and free from insects and rodents. | 3.13 | 1.09 | 4.07 | 0.785 | 4.2 | .000 * |
| Cutting boards, meat blocks and surfaces are cleaned, free from splits, and sanitized. | 2.7 | 0.966 | 3.97 | 0.718 | 6.291 | .000 * |
| **Food Preparation And Service** | | | | | | |
| Color code of cutting boards and knives for raw & cooked items is readily available and in good condition. | 2.95 | 1.037 | 3.5 | 1.106 | 2.134 | .036 * |
| Food is defrosted under temperature-controlled condition. | 2.68 | 0.917 | 3.8 | 1.095 | 4.673 | .000 * |
| Thawed products are used immediately and not refrozen. | 2.75 | 0.954 | 3.57 | 1.006 | 3.462 | .001 * |
| Prepared foods are always covered. | 3.63 | 0.979 | 3.83 | 0.874 | 0.922 | 0.36 |
| Frying oil/fat is changed immediately when there is color change or scum formation. | 3.3 | 1.091 | 3.53 | 1.042 | 0.903 | 0.37 |
| Food in hot/cold holding units is adequately protected against contamination risks. | 3.6 | 0.928 | 3.83 | 1.085 | 0.968 | 0.337 |
| Cooked and ready-to-eat foods are stored separately from raw foods. | 3.78 | 1.05 | 3.8 | 1.095 | 0.097 | 0.923 |
| Hot foods are served hot, and cold foods are served cold. | 3.73 | 0.944 | 4.13 | 0.757 | 1.952 | 0.058 |
| Sharing items such as multi-use menus and food condiments is | 2.38 | 0.979 | 4.13 | 0.819 | 7.963 | .000 * |



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|---|---|---|---|---|---|---|
| avoided. | | | | | | |
| Contactless payment options are used as much as possible. | 2.5 | 0.906 | 4.2 | 0.664 | 9.058 | .000 * |
| Disposable food service items (e.g. utensils, dishes, napkins, tablecloths) are readily available and properly discarded after use. | 4.15 | 0.7 | 4.17 | 0.747 | 0.096 | 0.924 |
| Technology solutions such as mobile ordering and barcode scanner menu are used. | 3.4 | 0.77 | 4.23 | 7.976 | 0.564 | 0.575 |
| Self-service food and drink options, such as buffet, salad bars, and drink stations are limited. | 3.43 | 0.984 | 3.63 | 1.159 | 0.812 | 0.42 |
| **Physical/Social Distancing** | | | | | | |
| Seating capacity is limited to allow for social distancing (at least six feet of separation between table setups). | 3.38 | 0.868 | 3.77 | 1.006 | 1.745 | 0.086 |
| Crowding at restaurant entrances and exits is prevented. | 2.58 | 1.059 | 3.6 | 1.003 | 4.097 | .000 * |
| Customers are asked to wait in their cars or away from the establishment while waiting to pick up food or when waiting to be seated. | 2.93 | 0.971 | 3.57 | 1.135 | 2.544 | .013* |
| Physical guides, including tape on floors or sidewalks, and signage are available. | 3.63 | 0.897 | 4.07 | 0.907 | 2.029 | .046 * |
| Physical barriers for social distancing such as sneeze guards and partitions are used. | 2.68 | 0.764 | 2.8 | 0.847 | 0.647 | 0.52 |
| **Food Pick-Up and Delivery** | | | | | | |
| Coolers and insulated bags used to deliver foods are cleaned and sanitized. | 3.38 | 1.079 | 3.7 | 0.877 | 1.349 | 0.182 |
| Designated pick-up areas for customers to maintain physical distancing are provided. | 2.63 | 0.925 | 4.13 | 0.73 | 7.571 | .000 * |
| Time and temperature controls of food deliveries are maintained. | 2.9 | 0.778 | 3.83 | 0.95 | 4.517 | .000 * |
| Cold foods are kept cold (41°F or below) during transport by using a cooler with gel packs/ice. | 2.2 | 0.687 | 2.47 | 0.819 | 1.48 | 0.144 |
| Delivery drivers wear gloves while putting and removing food items from delivery bag. | 2.67 | 0.959 | 2.68 | 0.694 | 0.042 | 0.966 |
| No touch/ contactless deliveries are provided. | 1.75 | 0.63 | 1.8 | 0.714 | 0.31 | 0.757 |

M=Mean, SD=Standard deviation, * p-value=Significant difference at level 0.05.

In the context of cleaning, sanitizing, and disinfection in the investigated restaurants, the data in Table 3 illustrate that improper cleaning, sanitizing, and disinfecting practices are followed – especially by national restaurants – which may be summarized as follows; staff rarely follow sanitizing material guidance to ensure that it is at effective sanitizing strength. In addition, food-contact surfaces, food-preparation surfaces, and beverage equipment are sometimes washed and rinsed after each use. Staff does not wear the appropriate gloves for the disinfectant being used. The cutting boards, meat blocks, and surfaces are sometimes cleaned and sanitized, and frequently touched surfaces (e.g. door handles, cash registers, workstations…etc.) are not thoroughly cleaned and safely disinfected. These malpractices are not in consonance with CDC, WHO, FDA, and NRA directives. CDC (2021a), FAO, and WHO (2020) recommended that frequently touched surfaces should be thoroughly cleaned and safely disinfected because the virus may stay on surfaces from hours to days. If a person touches a contaminated surface and then rubs his/her eyes or nose, it can have the same outcome—he/she has the risk of infection. In June 2020, more than 75 symptomatic new cases of the coronavirus have been discovered in Xinfandi market (The Beijing's largest wholesale food market). The officials illustrated that the coronavirus was detected on the boards used for cutting up salmon at market and the surfaces of equipment used for preparation of seafood. Moreover, the meat products contaminated by infected people were the source of coronavirus transmission (Feng & Cheng, 2021). These



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findings are in agreement with that concluded by Dang-Xuan et al. (2018) that cutting raw meat and chopping vegetables utilizing the same board and knife may result in cross-contamination.

On the contrary, in the investigated international restaurants, food preparation areas were usually clean, well-ventilated, and free from insects and rodents. In addition, food-contact surfaces, food-preparation surfaces, and beverage equipment are regularly washed and rinsed after each use, and cutting boards, meat blocks, and surfaces are cleaned, free from splits, and sanitized on a regular basis. Furthermore, guest hand sanitizer that contains at least 60% alcohol was readily available (M=3.93), and frequently touched surfaces were thoroughly cleaned and safely disinfected (M=3.83). Reviewing the results in the mentioned table, it could be noticed that there were statistically significant differences between the two categories of the investigated restaurants in all of the surveyed practices, except one item (Staff avoid food contact surfaces while using disinfectants, p-value=0.173).

Concerning the food safety practices during preparation and service process, it could be concluded from the data shown in Table 3 that there were no statistically significant differences between the two categories of restaurants in the most of investigated attributes except five items (Color code of cutting boards and knives for raw & cooked items is readily available and in good condition, food is defrosted under temperature-controlled condition, thawed products are used immediately and not refrozen, sharing items such as multi-use menus and food condiments are avoided, and contactless payment options are used as much as possible), which illustrate that the investigated international restaurants were committed to adopting these food safety practices than national ones.

The least food preparation and service score in the investigated national restaurants (M=2.38) refers to avoiding sharing items such as multi-use menus and food condiments, which is considered one of the most transmission methods of coronavirus in restaurants industry. This finding is not in consistent with NRA's directives. According to NRA directives (2021a), sharing items such as multi-use menus and food condiments must be avoided. Companies like Tim Hortons and Starbucks stopped accepting reusable cups in an endeavor to prevent the spread of COVID-19 (Pope, 2020). Queensland Government (2021) asked the restaurants' operators to ensure that menus are laminated and sanitized after each use, or they should use general non-contact signage to display their menu or have single use paper menus available. Contactless payment options were also rarely used (M=2.50). This finding doesn't match CDC directive (2021a) that recommends asking customers and employees to exchange cash or card payments by placing on a receipt tray or on the counter rather than by hand to avoid direct hand to hand contact. Consumers' payment behavior is changing as a result of the coronavirus outbreak. E-wallets and contactless cards are the top payment methods benefitting from this change (Lucas, 2020). Additionally, this finding isn't supporting the findings of Asfahani (2021), who revealed that the Middle East consumers modified their buying habits, where mobile money payments and shopping via mobile apps grew in popularity among customers in the Middle East during the pandemic, with 53 percent of residents reporting that they had increased their use of smart phones for shopping. According to the research and market report (2020), nearly 50% of global shoppers were using digital payments more than before the pandemic.

Similarly, the least adopted practice in the international restaurants was *"Color code of cutting boards and knives for raw & cooked items is readily available and in good condition"* with an average mean of M=3.50, which may be accepted. On the other hand, to reduce person-to-person interaction that may cause COIVID-19 infection, international restaurants always use technology solutions such as mobile ordering and barcode scanner menu (M=4.23). Additionally,



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a lot of correct food safety practices during food preparation and service process have been observed that could be summarized as follows; using contactless payment options, availability of disposable food service items, avoiding sharing items, and maintaining the appropriate temperature of food served (Hot food is served hot, and cold food is served cold). All previous good food safety practices match with the CDC (2021a) and FAO & WHO (2020) directives that limit the spread of coronavirus and prevent cross contamination and foodborne diseases.

Physical distancing or social distancing, the term that was used earlier of coronavirus pandemic, has been considered one of the most successful methods to limit the spread of coronavirus, which means to keep a distance of at least six feet (two meters) from each other (Fisher & Wilder-Smith, 2020; Goniewicz & Khorram-Manesh, 2021). Data presented have shown that both categories of the investigated restaurants try to apply physical/social distancing guidelines as much as possible, especially in international ones. Physical guides (including tape on floors or sidewalks and signage) were usually available, and seating capacity was limited to allow for social distancing. Prevention of crowding at restaurant entrances and exits and using the physical barriers for social distancing such as sneeze guards and partitions were sometimes practiced. To maintain the physical distancing and avoid crowding inside the restaurants, international restaurants operators were usually asking the customers to wait in their cars while waiting to pick up food or while waiting to be seated. These findings are in agreement with CDC (2021a) and FAO & WHO (2020) directives that illustrated that social distancing is crucial for preventing the spread of contagious illnesses such as COVID-19. By minimizing the amount of close contact, we have with others; we reduce the chances of catching the virus and spreading it within the community.

In the context of food pick-up and delivery, the tabulated data reveal that no statistically significant differences between the two categories of restaurants were observed in most of the investigated attributes, except two items (Designated pick-up areas for customers to maintain physical distancing are provided, and time and temperature controls of food deliveries are maintained). In this context, the international restaurants were more committed to follow and apply these practices regularly into their operations than national ones. Generally, the least adopted practices in two groups of the investigated restaurants (national and international) were providing no touch/contactless deliveries with an average mean of M=1.75 and M=1.80 respectively. For restaurateurs, contactless food delivery is one way of encouraging social distancing and preventing the transmission of coronavirus. No-contact or contactless delivery simply means that *"a food order is left at the customer's doorstep, lobby, or another safe place, rather than ringing the bell or knocking at the door and delivering the food directly. The customer is notified by phone, text, or email that the order is ready for collection, which he/she can collect at his/her convenience (usually, just by opening the door)"* (McCann, 2021).

The international restaurants' operators were keen to maintain physical/social distancing by providing a designated pick-up areas for customers (M=4.13), maintaining time and temperature of food deliveries (M=3.83), and keeping the coolers and insulated bags for food delivery clean and sanitized all the time (M=3.70). Keeping cold foods cold during transport by using a cooler with gel packs/ice and wearing gloves while putting and removing food items from delivery bag were sometimes practiced with an average mean of 2.47 and 2.68 respectively.

On the contrary, incorrect pick-up and delivery practices were observed in national restaurants, which could be summarized as follows; keeping cold food in an appropriate temperature during transport by using a cooler with gel packs/ice was rarely practiced, whereas providing a designated area for pick up to maintain physical distancing, wearing gloves while



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putting and removing food items from delivery bag, and keeping the coolers and insulated bags for food delivery clean and sanitized were sometimes practiced. These findings aren't consistent with those concluded by Wood (2021), who stated that cleaning and disinfecting the delivery bag must be a top priority, especially during this time of pandemic, where the COVID-19 disease could be contracted and/or transferred via contact with infected surfaces. As recommended by CDC (2021a), FDA (2020a) & NRA (2021a), a separate area designated for food pickup with sufficient space to allow workers to maintain physical distance of at least six (6) feet between one another should be provided. Furthermore, to maintain high level of personal hygiene during food delivery, delivery driver should wear gloves. Putting food items in and removing them from the delivery bags with bare hands is contrary to the Food Code requirements (2017). FDA (2020a) highlighted a combination of three interactions that can be effective in prevention of the transmission of foodborne viruses and bacteria in food establishments as follows; using proper hand washing procedures, excluding ill food employees from working with food, and eliminating bare hand contact with foods that are ready-to-eat (RTE). In order to prevent the growth of harmful bacteria, cold food should be transported and distributed at a temperature of 5°C or below (41°F or below) (Rebouças et al., 2017). Maintaining time and temperature controls of food deliveries in COVID 19 era is essential (Ceniti et al., 2021; Kamboj et al., 2020).

## CONCLUSION

This study is among the few that have assessed the restaurants' food safety practices and precautionary measures during COVID-19 pandemic, especially in developing countries such as Egypt. The study focuses on identifying to what extent national and international restaurants' operators adopt food safety practices and precautionary measures during COVID-19 Pandemic, especially those related to employees' health monitoring and personal hygiene, cleaning, sanitizing, and disinfection, food preparation and service, physical/social distancing, and pick-up and delivery service, which are considered the main factors to mitigate coronavirus spreading.

The study sample composed of 35 restaurants (15 international and 20 national) that showed their willingness to participate in the field study. To achieve aim of the study, an on-site observation checklist consisting of 45 practices and measures (covering the five main factors) was developed giving due consideration to CDC, FDA, WHO, NRA, and OSHA directives, and adopted on the investigated restaurants by using a five-point Likert-type scale. The findings of the present study indicate that overall, the investigated international restaurants were highly committed to adopting food safety practices and precautionary measures related to employees' health monitoring and personal hygiene, cleaning, sanitizing, and disinfection, food preparation and service, physical/social distancing, and pick-up and delivery service than the national ones. Moreover, the findings reveal that there were statistically significant differences between national and international restaurants in most of the investigated practices, especially related to cleaning, sanitizing, and disinfection, employees' health monitoring and personal hygiene, and physical/social distancing. Based on what has been mentioned previously, we can conclude that commitment to adopting food safety practices and precautionary measures for coronavirus mitigation could be affected by the type and management company (national or international).

With regards to employees' health monitoring and personal hygiene, the investigated international restaurants were more committed to adopting precautionary measures than national ones. The least adopted measure in both categories of the investigated restaurants was *"Staff wash hands with soap and water for at least 20 seconds after handling money"*. The motivation



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of restaurant staff to be vaccinated against COVID-19 virus was rarely practiced by both categories of the investigated restaurants. Concerning cleaning, sanitizing, and disinfection, nearly the same trend was observed; the investigated international restaurants were highly committed to adopting and practicing the proper cleaning and disinfecting measures than national ones. There were statistically significant differences between both categories of the investigated restaurants in all of the surveyed practices, except one item (Staff avoid food contact surfaces while using disinfectants). Relating to food preparation and service measures, the study's findings reveal that although the investigated international and national restaurants were keen to follow proper food safety practices during preparation and service process, the international ones were highly committed. The least adopted practices in national restaurants were avoiding sharing items such as multi-use menus and food condiments and using contactless payment options respectively. However, in the international ones, the availability of color code of cutting boards and knives for raw & cooked items followed by changing frying oil/fat when there is a color change or scum formation were the least adopted measures.

Similarly, physical/social distancing and food pick-up and delivery malpractices have been observed, especially in national restaurants, which may be summarized as follows; contactless deliveries were seldom provided, inappropriate temperature of cold food items during delivery, crowding at restaurant entrances and exits was not prevented, and designated pick-up areas for customers to maintain physical distancing were not provided.

## Implications of the Study

This study has several implications for restaurant managers and policymakers, especially in developing countries. Firstly, restaurant managers, especially the national ones, should be more committed to adopting precautionary measures and food safety practices. This will help in mitigating coronavirus outbreak and running their business properly in the pandemic environment. Secondly, to maintain healthy environment in the workplace, especially in national restaurants, the restaurants' managers should consider the following certain practices. All food contact surfaces must be cleaned and sanitized after each use and before food handlers begin working with a different type of food. Staff must follow sanitizing material guidance to ensure its effectiveness and wear the appropriate gloves for the disinfectant being used. Additionally, frequently touched surfaces should be thoroughly cleaned and safely disinfected. Restaurant managers should lay more emphasis on motivation of employees to be vaccinated whenever vaccine become available. Thirdly, restaurant managers must ensure food safety practices (maintaining proper food temperature, cleanness and ventilation of food preparation area, cleanliness of cutting boards and meat blocks …. etc.) during preparation and service process to eliminate food cross contamination and mitigate the coronavirus spreading. Additionally, physical/social distancing measures, as preventative measures, should be implemented by restaurants' operators, especially with the steady increase in the number of infected persons. Moreover, contactless deliveries should be encouraged to limit person to person interaction. Fourthly, sufficient attention needs to be given to staff development regarding precautionary measures and food safety practices. This includes conducting specific food safety training programs to all food handlers to increase their health knowledge and awareness about this vital issue. Training food handlers on the knowledge and skills that they would certainly need in their workplaces empowers them to become responsible in their practices while preparing and handling food and allows them to increase their efficiency and competencies in their workplaces.



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Fifthly, a periodical follow-up should be conducted by Ministry of Health and Ministry of Tourism to ensure the safety and quality of food provided by these restaurants. Health protocols and COVID-19 guidelines for restaurant's operations should be adopted under supervision of official authorities. Sharing the best food safety practices and precautionary measures between restaurants' operators should be encouraged to improve the restaurants' commitment to mitigating coronavirus spreading.

The study also has some implications for scholars, especially hospitality ones. Firstly, the study contributes to the general body of academic literature in relation to precautionary measures and food safety practices in hospitality industry, especially in restaurants. The study bridged a gap in knowledge in relation to the important research topic related to the COVID-19, especially in developing countries as most research about precautionary measures and food safety practices during COVI-19 pandemic was undertaken in developed countries (Davras & Durgun, 2021; Shahbaz et al., 2020). Secondly, the study, interestingly, showed that there were significant differences between national and international restaurants in most of the investigated practices and measures. International restaurants adopted more appropriate precautionary measures and food safety practices than national ones. Therefore, the study argues that restaurant industry is not homogenous and not all results can be generalized to all restaurants. This could be because international restaurants have the expertise and proper support from their headquarters, whereas national restaurants are suffering from limited infrastructure and resources (Sobaih, 2018). This confirms the heterodoxy of restaurant industry. It is, therefore, imperative for scholars to consider the heterogeneity in restaurants industry while conducting and/or generalizing their research results on restaurants.

## Limitation and Further Research

It is important to note that there were some limitations in this study which should be addressed in future research. Firstly, the study sample represents only national and international restaurants in Egypt. Consequently, the results could not be generalized to other restaurants worldwide. Secondly, this study focuses only on five main factors that included employees' health monitoring and personal hygiene, cleaning, sanitizing, and disinfection, food preparation and service, physical/social distancing, and pick-up and delivery service. Consequently, we suggest that future research might investigate the customers' perceptions towards precautionary and preventive COVID-19 measures and their impacts on customers' retention, satisfaction, and buying behavior. Additionally, barriers and challenges that the restaurants industry may face in adopting and practicing precautionary and preventive COVID-19 measures should be addressed.

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## REFERENCES

Asfahani, A. (2021). The impact of COVID-19 on the decision making for the customer relation management in the Middle East. *Journal of Management Information and Decision Sciences, 24*(3), 1-11.

Baş, M., Ersun, A.Ş., & Kıvanç, G. (2006). The evaluation of food hygiene knowledge, attitudes, and practices of food handlers in food businesses in Turkey. *Food control, 17*(4), 317-322.

Benzigar, M.R., Bhattacharjee, R., Baharfar, M., & Liu, G. (2020). Current methods for diagnosis of human coronaviruses: pros and cons. *Analytical and Bioanalytical Chemistry*, 1-20.

Binsaleh, N.K., Bazaid, A.S., Aldarhami, A., Sherwani, S., & Althomali, O.W. (2021). Awareness and practice of COVID-19 precautionary measures among healthcare professionals in Saudi Arabia. *Journal of Multidisciplinary Healthcare*, 14, 1553.

Borges do Nascimento, I.J., Cacic, N., Abdulazeem, H.M., von Groote, T.C., Jayarajah, U., Weerasekara, I., Esfahani, M.A., Civile, V.T., Marusic, A., & Jeroncic, A., (2020). Novel coronavirus infection (COVID-19) in humans: a scoping review and meta-analysis. *Journal of Clinical Medicine, 9*(4), 941.

*British Retail Consortium.* (2020). *BRCGS guidance document managing food safety during COVID-19*. Retrieved from https://www.brcgs.com/media/2082504/food-safety-COVID-19-guideline-unlocked.pdf

*Burger King.* (2021) *Staying safe in COVID-19*. Retrieved from https://www.burgerking.co.uk/covid19-faq

Byrd, K., Her, E., Fan, A., Almanza, B., Liu, Y., & Leitch, S. (2021). Restaurants and COVID-19: what are consumers' risk perceptions about restaurant food and its packaging during the pandemic?. *International Journal of Hospitality Management*, 94, 102821.

California Department of Public Health. (2020). *COVID-19 industry guidance: Restaurants*. Retrieved June 10, 2021, from https://files.covid19.ca.gov/pdf/guidance-dine-in-restaurants.pdf

Canavan, H.D. (2020). *Restaurants permanently pivot to fast-casual, to-go, and market formats because of COVID-19—eater*. Retrieved June 10, 2021, from https://www.eater.com/2020/5/8/21252278/restaurants-make-permanent-pivots-to-markets-takeout-fast-casual-because-of-COVID-19-pandemic

Carducci, A., Federigi, I., Liu, D., Thompson, J.R. & Verani, M. (2020). Making waves: coronavirus detection, presence, and persistence in the water environment: state of the art and knowledge needs for public health. *Water Research*, 179, 115907.

CCOHS-Canadian Center for Occupational Health and Safety). (2021). *Coronavirus (COVID-19) – tips*. Retrieved June 10, 2021, from https://www.ccohs.ca/covid19/restaurants/#introduction-hdr

CDC-Centers for Diseases Control and Prevention. (2021a). *Considerations for restaurant and bar operators*. Retrieved June 10, 2021, from https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/business-employers/bars-restaurants.html

CDC. (Centers for Diseases Control and Prevention). (2021b). *Interim list of categories of essential workers mapped to standardized industry codes and titles*. Retrieved June 10, 2021, from https://www.cdc.gov/vaccines/COVID-19/categories-essential-workers.html .

Ceniti, C., Tilocca, B., Britti, D., Santoro, A., & Costanzo, N. (2021). Food safety concerns in "COVID-19 era". *Microbiology Research, 12*(1), 53-68.

Chen, D., Xu, W., Lei, Z., Huang, Z., Liu, J., Gao, Z. & Peng, L. (2020). Recurrence of positive SARS-COV-2 RNA in COVID-19: a case report. *International Journal of Infectious Diseases, 93*, 297-299.

Cucinotta, D. & Vanelli, M. (2020). WHO declares COVID-19 a pandemic. *Acta Bio Medica: Atenei Parmensis*, 91(1), 157.

Dang-Xuan, S., Nguyen-Viet, H., Pham-Duc, P., Grace, D., Unger, F., Nguyen-Hai, N., & Makita, K. (2018). Simulating cross-contamination of cooked pork with salmonella enterica from raw pork through home kitchen preparation in Vietnam. *International Journal of Environmental Research and Public Health*, *15*(10), 2324.

*Datassential.* (2020). *COVID-19: Coronavirus and the impact on eating*. Retrieved June 10, 2021, from https://datassential.com/wp-content/uploads/2020/03/Datassential-Coronavirus-3-12-20.pdf

Davras, O., & Durgun, S. (2021). Evaluation of precautionary measures taken for COVID-19 in the hospitality industry during pandemic. *Journal of Quality Assurance in Hospitality & Tourism*, 1-23.

De Vet, J.M., Nigohosyan, D., Ferrer, J.N., Gross, A.K., Kuehl, S. & Flickenschild, M. (2021). *Impacts of the COVID-19 pandemic on EU industries.* Retrieved June 10, 2021, from https://www.europarl.europa.eu/RegData/etudes/STUD/2021/662903/IPOL_STU(2021)662903_EN.pdf

*Department for Business, Energy & Industrial Strategy & Department for Digital, Culture, Media & Sport (UK). Working safely during coronavirus (COVID-19) (restaurants, pubs, bars, and takeaway services).* (2021) Retrieved June 10, 2021, from https://www.gov.uk/guidance/working-safely-during-COVID-19/restaurants-pubs-bars-nightclubs-and-takeaway-services

*Department for Environment Food & Rural Affairs & Public Health England. Guidance for food businesses on coronavirus (COVID-19).* (2021*)* Retrieved June 10, 2021, from https://www.gov.uk/government/publications/COVID-19-guidance-for-food-businesses/guidance-for-food-businesses-on-coronavirus-COVID-19



**Citation Information:** Abdou, A.H. & Shehata, H.S. (2021). Assessment of restaurants' precautionary measures during covid-19 pandemic. *Academy of Strategic Management Journal, 20*(6), 1-21.

Diab, A. (2021). The accountability process during the time of COVID-19 pandemic and the emerging role of non-profit associations. *Academy of Strategic Management Journal*, *20*(1).

Dias, R., & Pereira, J. M. (2020). The Impact of the COVID-19 pandemic on stock markets: Evidence from a VAR model. *International Journal of Entrepreneurship and Governance in Cognitive Cities (IJEGCC), 1*(2), 57-70.

ECES. (Egyptian Center for Economic Studies). Views on the crisis restaurants and cafes. (2020). Retrieved June 10, 2021, from http://www.eces.org.eg/cms/NewsUploads/Pdf/2020_8_13-15_10_57Rest.%20and%20cafes_ENG.pdf

EFSA. (European Food Safety Authority). (2020). *Coronavirus: No evidence that food is a source or transmission route*. Retrieved June 10, 2021, from https://www.efsa.europa.eu/en/news/coronavirus-no-evidence-food-source-or-transmission-route

Etikan, I., Musa, S.A., & Alkassim, R.S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics, 5*(1), 1-4.

Euromontor International. Consumer foodservice in Egypt. (2021) Retrieved June 10, 2021, from https://www.euromonitor.com/consumer-foodservice-in-egypt/report

FAO. (Food and Agriculture Organization). & WHO. (World Health Organization). (2020). *COVID-19 and food safety: guidance for food businesses*. Retrieved June 10, 2021, from https://www.who.int/publications/i/item/COVID-19-and-food-safety-guidance-for-food-businesses

Farrokhi, F., & Mahmoudi-Hamidabad, A. (2012). Rethinking convenience sampling: defining quality criteria. *Theory & Practice in Language Studies, 2*(4).

Farzad, F.S., Salamzadeh, Y., Amran, A.B., & Hafezalkotob, A. (2020). Social innovation: Towards a better life after COVID-19 crisis: What to concentrate on. *Journal of Entrepreneurship, Business and Economics*, *8*(1), 89-120.

FDA. (U.S. Food and Drugs Administration). (2020b) *Best practices for re-opening retail food establishments during the COVID-19 pandemic – food safety checklist.* Retrieved June 10, 2021, from https://www.fda.gov/food/food-safety-during-emergencies/best-practices-re-opening-retail-food-establishments-during-COVID-19-pandemic

FDA. (U.S. Food and Drugs Administration). (2020a) *Best practices for retail food stores, restaurants, and food pick-up/delivery services during the COVID-19 pandemic*. Retrieved June 10, 2021, from https://www.fda.gov/food/food-safety-during-emergencies/best-practices-retail-food-stores-restaurants-and-food-pick-updelivery-services-during-COVID-19

FDA. (U.S. Food and Drugs Administration). (2017) *FDA food code*. Retrieved June 10, 2021, from https://www.fda.gov/media/110822/download

Feng, E. & Cheng, A. (2021). *Lockdown measures return to Beijing as testing reveals cluster at major food market.* Retrieved June 10, 2021, from https://www.npr.org/sections/coronavirus-live-updates/2020/06/14/876750764/lockdown-measures-return-to-beijing-as-testing-reveals-cluster-at-major-food-mar

Fisher, D., & Wilder-Smith, A. (2020). The global community needs to swiftly ramp up the response to contain COVID-19. *Lancet (London, England), 395*(10230), 1109.

*Fortney, L. East village favorite veselka returns for pierogi delivery and takeout on Friday, eater NY*. (2020) Retrieved June 10, 2021, from https://ny.eater.com/2020/4/29/21239669/nyc-coronavirus-veselka-reopening-friday

Goniewicz, K., & Khorram-Manesh, A. (2021). Maintaining social distancing during the COVID-19 outbreak. *Social Sciences, 10*(1), 14.

Han, J., Zhang, X., He, S., & Jia, P. (2021). Can the coronavirus disease be transmitted from food? A review of evidence, risks, policies and knowledge gaps. *Environmental Chemistry Letters, 19*(1), 5-16.

IFIC-International Food Information Council. (2020). *COVID-19: A second look at COVID-19's impact on food purchasing, eating behaviors, and perceptions of food safety*. Retrieved June 10, 2021, from https://foodinsight.org/wp-content/uploads/2020/05/IFIC-COVID-19-May-2020.pdf

ILO: International Labour Organization. (2020). *Prevention and mitigation of COVID-19 at work for small and medium-sized enterprises*. Retrieved June 10, 2021, from https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---lab_admin/documents/instructionalmaterial/wcms_753619.pdf

Kamboj, S., Gupta, N., Bandral, J.D., Gandotra, G., & Anjum, N. (2020). Food safety and hygiene: A review. *International Journal of Chemical Studies, 8*(2), 358-368.



**Citation Information:** Abdou, A.H. & Shehata, H.S. (2021). Assessment of restaurants' precautionary measures during covid-19 pandemic. *Academy of Strategic Management Journal, 20*(6), 1-21.

Kaul, D. (2020). An overview of coronaviruses including the SARS-2 coronavirus–molecular biology, epidemiology and clinical implications. *Current Medicine Research and Practice, 10*(2), 54-64.

Kawamorita, H., Salamzadeh, A., Demiryurek, K., & Ghajarzadeh, M. (2020). Entrepreneurial universities in times of crisis: case of COVID-19 pandemic. *Journal of Entrepreneurship, Business and Economics, 8*(1), 77-88.

Lan, L., Xu, D., Ye, G., Xia, C., Wang, S., Li, Y., & Xu, H. (2020). Positive RT-PCR test results in patients recovered from COVID-19. *Jama, 323*(15), 1502-1503.

Lavrakas, P.J. (2008). *Encyclopedia of survey research methods.* Thousand Oaks, California. SAGE Publications. USA.

Leung, N.H., Chu, D.K., Shiu, E.Y., Chan, K.H., McDevitt, J.J., Hau, B.J., Yen, H.L., Li, Y., Lp, D.K., Peiris, J.S., Seto, W., Leung, G.M., Milton, D.K. & Cowling, B.J. (2020). Respiratory virus shedding in exhaled breath and efficacy of face masks. *Nature Medicine, 26*(5), 676-680.

Li, Y., Shi, J., Xia, J., Duan, J., Chen, L., Yu, X., Lan, W., Ma, Q., Wu, X., Yuan, Y., Gong, L., Yang, X., Gao, H., Wu, C. (2020). Asymptomatic and symptomatic patients with non-severe coronavirus disease (COVID-19) have similar clinical features and virological courses: A retrospective single center study. *Frontiers in Microbiology, 11*, 1570.

Lucas, J. (2020). *Three ways COVID-19 is changing the payments industry*. Retrieved June 10, 2021, from https://www.ey.com/en_gl/banking-capital-markets/three-ways-COVID-19-is-changing-the-payments-industry

Manepalli, N. & Nagvenkar, S. (2021). *Food industry feeling the impact of COVID-19.* Retrieved June 10, 2021, from https://www.vitafoodsinsights.com/news/food-industry-feeling-impact-COVID-19

McCann, K. (2021). *How to facilitate no-contact delivery*. Retrieved June 10, 2021, from https://www.touchbistro.com/blog/no-contact-delivery/

McDonald's. (2021). *McDonald's COVID-19 frequently asked questions.* Retrieved June 10, 2021, from https://www.mcdonalds.com/us/en-us/coronavirus-covid19-faq.html

MIOSHA: Michigan Occupational Safety and Health Administration. (2020). *COVID-19 workplace requirements summary of miosha emergency rules and specific rules defined in section 4 for restaurants and bars*. Retrieved June 10, 2021, from https://www.michigan.gov/documents/leo/COVID-19_Workplace_Guidelines_for_Restaurants_and_Bars_691404_7.pdf

Naserghandi, A., Allameh, S.F., & Saffarpour, R. (2020). All about COVID-19 in brief. *New Microbes and New Infections, 35.*

Newton, E. (2021). *Coronavirus will have lasting impact on restaurant industry*. Retrieved June 10, 2021, from https://www.foodsafetynews.com/2021/02/coronavirus-will-have-lasting-impact-on-restaurant-industry/

Norris, C.L., Taylor Jr, S., & Taylor, D.C. (2021). Pivot! How the restaurant industry adapted during COVID-19 restrictions. *International Hospitality Review.*

NRA. (National Restaurant Association). (2021a) COVID-19 operating guidance: a guide for the restaurant industry. https://go.restaurant.org/covid19-reopening-guide .

NRA:National Restaurant Association. (2021b). *Guidance on food safety protocols, food handler training information, and faq.* Retrieved June 10, 2021, from https://foodsafetyfocus.com/FoodSafetyFocus/media/Library/pdfs/Coronavirus_2019-nCoV_Info_TipsforRestaurants.pdf

NRA: National Restaurant Association. (2021d). *Restaurant operators do not expect a rapid return to normal.* Retrieved June 10, 2021, from https://restaurant.org/articles/news/restaurant-operators-do-not-expect-a-rapid-return .

NRA: National Restaurant Association. (2021c). *State of the restaurant industry report measures virus' impact on business*. Retrieved June 10, 2021, from https://restaurant.org/articles/news/new-report-measures-pandemics-effect-on-business

Olaimat, A.N., Shahbaz, H.M., Fatima, N., Munir, S., & Holley, R.A. (2020). Food safety during and after the era of COVID-19 pandemic. *Frontiers in Microbiology*, 11, 1854.

OSHA: Occupational Safety and Health Administration. (2020a). *COVID-19 guidance for restaurants & beverage vendors offering takeout or curbside pickup*. Retrieved June 10, 2021, from https://www.osha.gov/sites/default/files/publications/OSHA4017.pdf .

OSHA: Occupational Safety and Health Administration. (2020b). *COVID-19 guidance for restaurants resuming dine-in service*. Retrieved June 10, 2021, from https://www.osha.gov/sites/default/files/publications/OSHA4099.pdf



**Citation Information:** Abdou, A.H. & Shehata, H.S. (2021). Assessment of restaurants' precautionary measures during covid-19 pandemic. *Academy of Strategic Management Journal, 20*(6), 1-21.

Petrosillo, N., Viceconte, G., Ergonul, O., Ippolito, G., & Petersen, E. (2020). COVID-19, sars and mers: are they closely related?. *Clinical Microbiology and Infection, 26*(6), 729-734.

Pope, A. (2020). *Should we stop sharing food at restaurants amid coronavirus outbreak? experts say be cautious*. Retrieved June 10, 2021, from https://globalnews.ca/news/6651161/is-sharing-food-safe-coronavirus/

*Public Health Authority (kingdom of Saudi Arabia)* (2020). *Restaurant and cafes protocols*. Retrieved June 10, 2021, from https://covid19.cdc.gov.sa/professionals-health-workers/preventive-protocols-from-29-10-1441/restaurant-and-cafes-protocols-en/

Qiao, X.M., Xu, X.F., Zi, H., Liu, G.X., Li, B. H., Du, X., Tian, Z.H., Liu, X.Y., Luo, L.S., & Wang, X. (2020). Re-Positive cases of nucleic acid tests in discharged patients with COVID-19: A follow-up study. *Frontiers in Medicine, 7*, 349.

Queensland Government. (2021). *COVID-19 safe checklist: dining and drinking*. Retrieved June 10, 2021, from https://www.covid19.qld.gov.au/__data/assets/pdf_file/0019/132292/covid-safe-checklist-dining-and-drinking.pdf

Rebouças, L.T., Santiago, L.B., Martins, L.S., Menezes, A.C.R., Araújo, M.D.P.N., & de Castro Almeida, R.C. (2017). Food safety knowledge and practices of food handlers, head chefs and managers in hotels' restaurants of Salvador, Brazil. *Food Control, 73*, 372-381.

Research and Market Report. (2020). *Global online payment methods 2020 and COVID-19's impact - digital payment method adoption grows during the pandemic*. Retrieved June 10, 2021, from https://www.businesswire.com/news/home/20200625005338/en/Global-Online-Payment-Methods-2020-and-COVID-19s-Impact---Digital-Payment-Method-Adoption-Grows-During-the-Pandemic---ResearchAndMarkets.com

Resmi, S., Pahlevi, R.W., & Sayekti, F. (2020). The growth of creative micro, small and medium enterprises (MSMES) business in special region of Yogyakarta before and after COVID-19 pandemic. *International Journal of Entrepreneurship, 24*(4), 1-8.

Riddell, S., Goldie, S., Hill, A., Eagles, D., & Drew, T. W. (2020). The effect of temperature on persistence of sars-cov-2 on common surfaces. *Virology Journal, 17*(1), 1-7.

Salamzadeh, A. (2020). What constitutes a theoretical contribution?, *Journal of Organizational Culture, Communications and Conflicts*, 24(1), 1-2.

Salamzadeh, A., & Dana, L.P. (2020). The coronavirus (COVID-19) pandemic: Challenges among Iranian startups. *Journal of Small Business & Entrepreneurship*, 1-24.

Sarter, G., & Sarter, S. (2012). Promoting a culture of food safety to improve hygiene in small restaurants in Madagascar. *Food Control, 25*(1), 165-171.

Shahbaz, M., Bilal, M., Moiz, A., Zubair, S., & Iqbal, H.M. (2020). Food safety and COVID-19: precautionary measures to limit the spread of coronavirus at food service and retail sector. *Journal of Pure and Applied Microbiology, 14*(suppl 1), 749-756.

Soares, L.S., Almeida, R.C., Cerqueira, E.S., Carvalho, J.S., & Nunes, I.L. (2012). Knowledge, attitudes and practices in food safety and the presence of coagulase-positive staphylococci on hands of food handlers in the schools of Camaçari, Brazil. *Food Control, 27*(1), 206-213.

Sobaih, A.E.E. (2018). Human resource management in hospitality firms in Egypt: Does size matter?. *Tourism and Hospitality Research, 18*(1), 38-48.

Sprayregen, M. (2020). *3 restaurant owners discuss how they're coping with the COVID-19 crisis*. Retrieved June 10, 2021, from https://www.forbes.com/sites/mollysprayregen/2020/04/09/three-restaurantowners-discuss-how-theyre-coping-through-the-COVID-19-crisis/#2333ba696856

*Statista.* (2020). *Consumer spending on restaurants and cafés in the United Kingdom (UK) from 2005 to 2020.* Retrieved June 10, 2021, from https://www.statista.com/statistics/476637/restaurants-and-cafes-consumer-spending-uk/

Subway. (2021). *Your safety remains our top priority as more subway restaurants reopen*. Retrieved June 10, 2021, from https://www.subway.com/en-us/SubCulture/coronavirus-and-your-safety

Tanveer, M., Hassan, S., & Bhaumik, A. (2020). COVID-19 quarantine and consumer behavior that change the trends of business sustainability & development. *Academy of Strategic Management Journal*, 19(4).

Tong, Z.D., Tang, A., Li, K.F., Li, P., Wang, H.L., Yi, J.P. & Yan, J.B. (2020). Potential presymptomatic transmission of sars-cov-2, Zhejiang Province, China, 2020. *Emerging infectious diseases*, 26(5), 1052.

Van Doremalen, N., Bushmaker, T., Morris, D.H., Holbrook, M.G., Gamble, A., Williamson, B.N. & Munster, V.J. (2020). Aerosol and surface stability of SARS-COV-2 as compared with sars-cov-1. *New England Journal of Medicine, 382*(16), 1564-1567.



**Citation Information:** Abdou, A.H. & Shehata, H.S. (2021). Assessment of restaurants' precautionary measures during covid-19 pandemic. *Academy of Strategic Management Journal, 20*(6), 1-21.

Viana, J., van Dorp, C.H., Nunes, A., Gomes, M.C., van Boven, M., Kretzschmar, M.E., Veldhoen, M. & Rozhnova, G. (2021). Controlling the pandemic during the sars-cov-2 vaccination rollout. *Nature Communications*, 12(1), 1-15.

WHO: World Health Organization. (2020b). *Cleaning and disinfection of environmental surfaces in the context of COVID-19: Interim guidance*. Retrieved June 10, 2021, from https://apps.who.int/iris/bitstream/handle/10665/332096/WHO-2019-nCoV-Disinfection-2020.1-eng.pdf?sequence=1&isAllowed=y

WHO: World Health Organization. (2020a). *Coronavirus disease (COVID-19): How is it transmitted?* Retrieved June 10, 2021, from https://www.who.int/news-room/q-a-detail/coronavirus-disease-COVID-19-how-is-it-transmitted

WHO: World Health Organization. (2021). *WHO coronavirus (COVID-19) dashboard*. Retrieved July 26, 2021, from https://covid19.who.int/

Wood, H. (2021). *Transportation disinfection: Why it's essential during the COVID-19 pandemic.* Retrieved June 10, 2021, from https://www.rentokil.com/blog/vehicle-disinfection/

Ye, F., Xu, S., Rong, Z., Xu, R., Liu, X., Deng, P. & Xu, X. (2020). Delivery of infection from asymptomatic carriers of COVID-19 in a familial cluster. *International Journal of Infectious Diseases*, 94, 133-138.

Zhang, H., Chen, R., Chen, J., & Chen, B. (2020). COVID-19 transmission within a family cluster in Yancheng, China. *Frontiers in Medicine*, 7, 387.

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