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# Repeated Cross-Sectional Surveys of Registered Dietitian Nutritionists Demonstrate Rapid Practice Changes to Address Food Insecurity During the Coronavirus Disease 2019 Pandemic

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## ABSTRACT

**Background** The coronavirus disease 2019 pandemic had worldwide economic impact, exacerbating food insecurity risk for vulnerable populations.

**Objective** To describe changes in practice and challenges and areas of need related to addressing food insecurity during the coronavirus disease 2019 pandemic for registered dietitian nutritionist survey respondents.

**Design** A cross-sectional, anonymous, online survey distributed via the Academy of Nutrition and Dietetics e-mail communication platform and social media accounts from April through May 2020 (Wave 1 [W1]) and December 2020-February 2021 (Wave 2 [W2]).

**Participants and setting** Participants were US-based registered dietitian nutritionists practicing in community-based settings to address food insecurity (W1: n = 454; W2: n = 331).

**Statistical analyses** Responses were descriptively summarized using means ± SD, medians and interquartile ranges, or number of observations and percentages. Open-ended responses were manually reviewed and organized into major themes.

**Results** Respondents had about 10 years of experience in addressing food insecurity and were most commonly involved with the Special Supplemental Nutrition Program for Women, Infants and Children, federal school nutrition programs, or food banks. Participants described increased demand for food security assistance (W1: 68%; W2: 60%). Among respondents involved in food preparation and handling (W1: n = 183; W2: n = 110), supply chain (W1: 61%; W2: 56%) and staffing (W1: 37%; W2: 50%) challenges were commonly reported. Child nutrition program professionals (W1: n = 143; W2: n = 84) reported widespread implementation of optional program waivers, with the most commonly implemented waivers allowing noncongregate meal service (W1: 83%; W2: 81%), caregivers to pick up meals (W1: 69%; W2: 85%), and flexibility in mealservice times (W1: 75%; W2: 87%).

**Conclusions** Respondents quickly adapted programs to ensure staff and client safety while continuing to provide essential food security services. They identified the need for ongoing nutrition program policy advocacy and timely access to best practice resources during public health emergencies.

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**B**EFORE THE CORONAVIRUS DISEASE 2019 (COVID-19) pandemic, more than 35 million people in the United States lived in food-insecure households, meaning that they were “uncertain of having, or unable to acquire, enough food to meet the needs of all their members” due to insufficient financial or other resources.<sup>1,2</sup> The COVID-19 pandemic, along with public health emergency (PHE) control efforts and the resulting economic impacts, have threatened food security globally and in the United States.<sup>3-12</sup>

There were substantial efforts to mitigate the influence of the pandemic on food insecurity in the United States.<sup>4,11,13,14</sup>

For example, there were emergency increases in funds for the Supplemental Nutrition Assistance Program (SNAP), the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and The Emergency Food Assistance Program.<sup>15</sup> Eligible individuals and families were provided with economic supports, such as extended unemployment compensation, expanded child tax credits, emergency rent and utility assistance, and direct economic impact payments.<sup>16,17</sup> Food banks expanded operations to respond to unprecedented demand for services throughout 2020.<sup>18,19</sup> In addition, to facilitate continued access to school meals amidst

major disruptions to in-person school, the US Department of Agriculture (USDA) issued nationwide waivers, including meal service time, meal pattern requirements, and congregate feeding waivers throughout the 2020-2021 and 2021-2022 school year.<sup>4,20</sup> Families of children eligible for free- or reduced-price school meals or who participate in SNAP were also provided with Pandemic Electronic Benefit Transfer cards to purchase food to mitigate meals missed as a result of school and child care closures or restricted in-person schedules.<sup>21</sup> Although these efforts seemed to stabilize the overall prevalence of household food insecurity in the United States (10.5% of households in both 2019 and 2020), for the first time in a decade, there was a significant increase in the prevalence of food insecurity among households with children, from 13.6% in 2019 to 14.8% in 2020, making it particularly important to understand implementation of efforts to address child food insecurity during the pandemic.<sup>1,22</sup>

About 12% of registered dietitian nutritionists (RDNs) are employed in social services, public health, or school nutrition settings, and others volunteer for nutrition safety net programs in their communities, placing them at the forefront of ongoing food security efforts and crisis operations during the COVID-19 PHE.<sup>23,24</sup> Two cross-sectional surveys of RDNs involved in food security efforts during the COVID-19 PHE were conducted with the aims of better understanding participant roles in responding to the crisis over time and identifying challenges they experienced and areas of ongoing and future need.

## METHODS

### Study Design

A cross-sectional, anonymous online survey was administered to RDNs shortly after the onset of the COVID-19 pandemic (Wave 1: April 16-May 15, 2020) and during the second major surge in COVID-19 cases in the United States (Wave 2: December 18, 2020-February 16, 2021). This report was prepared using the Checklist for Reporting of Survey Studies.<sup>25</sup> The study protocol was reviewed and determined to be exempt under federal regulation 45 CFR 46.101 by the University of New Mexico Human Research Protections Office (no. 20-187). Participants had the opportunity to review information about the study purpose, duration, and foreseeable risks or discomforts and received contact information for the study team. Participation was voluntary, with respondents required to actively select that they wanted to start the survey.

### Survey Development

Survey questions were developed by the Academy of Nutrition and Dietetics (Academy) Research, International, and Scientific Affairs team, then were jointly reviewed and revised for face and content validity with Academy experts in nutrition services coverage, quality management, continuing professional education, and US policy. The second survey was revised based on the first wave survey results. Specifically, additional questions were included, and additional response options were added to certain questions where justified, either based on free-text responses to the first wave or based on new developments in public health recommendations or guidance.

## RESEARCH SNAPSHOT

**Research Question:** How did registered dietitian nutritionists working in public health and community nutrition who responded to the survey change their practice at different stages of the coronavirus disease 2019 pandemic, and what were their challenges and areas of need?

**Key Findings:** Registered dietitian nutritionists responded to cross-sectional, anonymous, online surveys distributed at two points during the coronavirus disease 2019 public health emergency. Many respondents reported increased demand for food assistance and food supply and staffing challenges. About half of respondents involved in school nutrition services reported financial losses for their programs and most reported widespread implementation of optional US Department of Agriculture program waivers.

### Survey Design

The food security surveys included 50 questions (Wave 1) and 56 questions (Wave 2) (see [Figures 1 and 2](#), available at [www.jandonline.org](http://www.jandonline.org)). When asking respondents about changes over time, the Wave 1 survey referred to changes since the onset of the pandemic (March 2020), whereas the second wave survey referred to changes since April-May 2020. A respondent-generated identification number was used to track whether or not participants participated in both waves of the survey.<sup>26</sup> Both waves of the survey included questions about professional experience (ie, education level and hours per week involved in community-based efforts to address food insecurity). Other demographic data (eg, age, sex, race, and ethnicity) were not collected. Operational questions were asked to assess demand for services, level of face-to-face contact, and food preparation and handling responsibilities. Respondents whose work involved face-to-face contact were asked about COVID-19 safety and compliance measures. Participants whose work typically involved food preparation or handling were asked about disruptions in food product availability, new or augmented food safety measures, employee sick leave, and program staffing issues. Respondents that worked with federal child nutrition programs (School Breakfast Program, the National School Lunch Program, the Summer Food Service Program, or the Child and Adult Care Food Program<sup>27</sup>) were asked about USDA waiver implementation, the current learning model being used in their school district (Wave 2 only), and financial impact (Wave 2 only). Participants that worked with postpartum or breastfeeding individuals were asked about pandemic-related changes in their program's breastfeeding recommendations. Because the COVID-19 pandemic situation was rapidly evolving while the survey was being initially developed during March 2020, the survey also included six open-ended questions to allow participants to provide more detail and insight into COVID-19-specific sources of food safety guidance, alterations to nutrition education services, experience implementing child nutrition waivers, additional flexibilities or waivers that would help better serve participants' communities, resource needs, and any other comments they had related to their experience in addressing food insecurity during the pandemic.

## Participant Recruitment

The survey recruitment text and link were shared via e-mail and social media. Informz,<sup>28</sup> a cloud-based e-mail marketing platform, was used to facilitate survey recruitment via e-mail to all individuals registered with the Commission on Dietetic Registration.<sup>29</sup> Tailored recruitment messages were also sent to members of the Public Health/Community Nutrition, Hunger and Environmental Nutrition, School Nutrition Services, Nutrition Education for the Public, Pediatric Nutrition Practice Group, Healthy Aging, and Women's Health Dietetic Practice Groups, which require Academy membership. Reminder e-mail messages were sent approximately 2 weeks after each initial e-mail message. In addition, the survey recruitment text and link were posted to the Academy's social media channels (Facebook, Twitter, and LinkedIn). These recruitment methods produced a convenience sample of RDNs.

Eligible respondents were RDNs located in the United States or US territories who were involved in community-based efforts to address food insecurity either in an employment or volunteer capacity. Nutrition and dietetics technicians, registered, were not eligible to participate. Eligibility was assessed in the first three questions of the survey, and the survey ended for participants that were not eligible (see Figures 1 and 2, available at [www.jandonline.org](http://www.jandonline.org)). For the first and second waves of the survey, there were 556 and 354 respondents who completed the eligibility screening questions, respectively; 454 and 331 individuals met the three eligibility criteria and then continued on to complete some questions in the survey and were included in this analysis. About 11% of Wave 1 respondents also responded to Wave 2 of the survey. The response rate was approximately 4% in Wave 1 and 3% in Wave 2, assuming that ~12% (~4,331 RDNs) of 108,264 credentialed RDNs may be involved in addressing food security based on employment setting (ie, social services/public health organizations or school nutrition).<sup>23</sup> Assuming a population size of about 4,331 RDNs, the minimum sample size of RDNs required was 353 (confidence level = 95%, margin of error = 5%). Using the respondent-generated identification number, if an individual completed the survey twice within the same wave, their second set of responses was omitted from the analysis.

## Data Management and Analysis

Survey data were collected and managed using REDCap electronic data capture tools, with CAPTCHA enabled to prevent bot respondents.<sup>30</sup> Data were analyzed using Stata/SE version 16.0.<sup>31</sup> Data are presented descriptively as means  $\pm$  SD, medians and interquartile ranges, or number of observations and respective percentages; when applicable, exact sample size is reported by question to reflect the number of missing responses. Percentages were calculated using the number of participants that responded to each question individually as the denominator. Open-ended responses were manually, independently reviewed and organized into major themes in Excel<sup>32</sup> by two coauthors with expertise in public health nutrition. Themes were derived from the data. Survey participants did not provide feedback on the findings.

## RESULTS

### Survey Participant Characteristics

There were 454 and 331 respondents to Wave 1 and Wave 2, respectively. Respondents had a median 10 years of experience working in community-based settings to address food insecurity (Table 1). Participants were from all US regions and were most commonly involved with WIC, federal school nutrition programs, or food banks. Overall, participant characteristics were similar between waves.

### Site Operational Changes

During spring 2020, 69% of participants reported that the number of individuals/families seeking assistance from their program or organization increased since the COVID-19 pandemic began. Seven months later, during winter 2020-2021, 60% of participants indicated that demand had increased since spring 2020.

Most participants (Wave 1: 91%; Wave 2: 83%) reported that their program typically involved face-to-face contact with program participants, staff members, or volunteers. Among those whose programs usually involve face-to-face contact, nearly all participants (99%) in both waves reported that their site's operations changed in some way to comply with COVID-19 public health guidance and mandates (Table 2).

### Food Preparation and Handling Changes

About 41% of participants in both waves (Wave 1:  $n = 183$ ; Wave 2:  $n = 110$ ) of the survey reported that delivery of their program typically involved food preparation or handling. More than half of those individuals (Wave 1: 61%; Wave 2: 56%) reported disruptions in availability of fresh (eg, milk, bread, and certain produce) and prepackaged (eg, individually wrapped items) foods. In Wave 2, participants who experienced disruptions ( $n = 59$ ) indicated the most difficulty with obtaining individually wrapped items. In both waves, about two-thirds of participants whose programs involved food preparation or handling (Wave 1: 61%; Wave 2: 66%) reported that they made changes to food safety procedures, which participants commented included increased frequency of disinfecting high-touch surfaces and following state or Centers for Disease Control and Prevention food safety guidance. About one-third (Wave 1: 34%; Wave 2: 33%) of participants whose programs involved food preparation or handling reported that their site implemented more frequent required handwashing and/or more signage related to handwashing. A higher proportion of respondents reported implementing new measures related to handling food packaging in Wave 2 (55%) vs Wave 1 (32%). New food packaging measures (specifics assessed in Wave 2 only) included wrapping food items individually (77% of participants whose sites were implementing new measures), placing all food items for a recipient in one bag or carry-away container (73%), and staff/volunteers wearing gloves (52%).

Among those whose programs involved food preparation or handling, most (84%) reported that their employers offer paid sick leave during the first wave, which increased slightly to 92% in Wave 2. There was an increase in reported implementation of new measures (eg, temperature screening and required quarantine) to ensure that staff/volunteers do not report to work if sick or if they have been exposed to COVID-

**Table 1.** Characteristics of registered dietitian nutritionists involved in community-based efforts to address food insecurity in the United States, who participated in the first (W1: April 16, 2020-May 15, 2020) and/or second wave (W2: December 18, 2020-February 16, 2021)<sup>a</sup> of the food security survey

Characteristic	Wave 1 (W1)	Wave 2 (W2)
<b>Highest degree earned, n (%)</b>	454	307
Bachelor's	179 (39.4)	137 (44.6)
Master's	255 (56.2)	162 (52.8)
Doctorate	20 (4.4)	8 (2.6)
<b>Region of the United States<sup>20</sup>, n (%)</b>	429	286
Northeast	67 (15.6)	45 (15.7)
Midwest	129 (30.1)	86 (30.1)
South	134 (31.2)	91 (31.8)
West	96 (22.4)	62 (21.7)
Other (i.e., US territories) <sup>b</sup>	3 (0.7)	2 (0.7)
<b>Member of the Academy of Nutrition and Dietetics, n (%)</b>	414	287
Yes	269 (65.0)	158 (55.2)
<b>Years of experience as an RDN, median (IQR) [W1 n = 449; W2 n = 308]</b>	16 (6, 30)	13.0 (5, 27)
<b>Years of experience in community-based efforts to address food insecurity, median (IQR) [W1 n = 450; W2 n = 307]</b>	10 (4, 21)	9 (4, 20)
<b>Hours per week involved in community-based efforts to address food insecurity, median (IQR) [W1 n = 444; W2 n = 305]</b>	40 (20, 40)	40 (20, 40)
<b>Life stages of populations served, n (%)<sup>c</sup></b>	452	331
Pregnant/postpartum individuals	255 (56.4)	176 (50.0)
Infants	243 (53.7)	172 (48.9)
Young children (ages 1-5 years)	334 (73.9)	249 (70.7)
Teenagers and young adults (ages 13-21 years)	217 (48.0)	162 (46.0)
Children (ages 6-12 years)	189 (41.8)	148 (42.1)
Adults (ages 22-64 years)	172 (38.1)	128 (36.4)
Older adults (age 65+ years)	150 (33.2)	103 (29.3)
<b>Programs involved with, either as a part of their job or in a volunteer capacity, n (%)<sup>c</sup></b>	<b>452</b>	<b>331</b>
Special Supplemental Nutrition Program for Women, Infants and Children (WIC)	209 (47.0)	142 (42.9)
School Lunch Program	128 (28.8)	79 (23.9)
School Breakfast Program	118 (25.8)	77 (23.3)
Summer Food Service Program	102 (22.9)	78 (23.5)
Food bank or food pantry (including food pharmacies)	96 (21.6)	61 (18.4)
Seamless Summer Option	59 (12.9)	46 (13.9)
Child and Adult Care Food Program - Child Care Centers	55 (12.4)	59 (16.8)
Child and Adult Care Food Program - At-Risk Meal Program	55 (12.4)	43 (13.0)
Supplemental Nutrition Assistance Program Education (SNAP-Ed)	51 (11.5)	36 (10.9)
Meals on Wheels or other private meal delivery program	44 (9.9)	19 (5.7)
Older Americans Act Congregate Nutrition Services Program	34 (7.6)	23 (7.0)
Supplemental Nutrition Assistance Program (SNAP)	33 (7.4)	16 (4.8)
Other federal nutrition program	33 (7.4)	22 (6.7)

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**Table 1.** Characteristics of registered dietitian nutritionists involved in community-based efforts to address food insecurity in the United States, who participated in the first (W1: April 16, 2020-May 15, 2020) and/or second wave (W2: December 18, 2020-February 16, 2021)<sup>a</sup> of the food security survey (*continued*)

Characteristic	Wave 1 (W1)	Wave 2 (W2)
Older Americans Act Home-Delivered Nutrition Services Program	31 (7.0)	22 (6.7)
Child and Adult Care Food Program - Adult Care	21 (4.7)	18 (5.4)
Food Distribution Program on Indian Reservations	11 (2.5)	3 (0.9)
Other <sup>d</sup>	42 (9.4)	42 (12.7)

<sup>a</sup>About 11% of first wave respondents also responded to the second wave of the survey.

<sup>b</sup>In the first wave of the survey, two individuals from Puerto Rico and one individual from Guam participated. In wave two of the survey, two individuals from Puerto Rico participated.

<sup>c</sup>Participants were asked to select all populations that they served and all the programs with which they were involved.

<sup>d</sup>Other programs included, but were not limited to, community/local level programs and Expanded Food and Nutrition Education Program (EFNEP).

19, from 80% in Wave 1 to 94% in Wave 2. Many respondents (37%) reported issues keeping programs fully staffed in the first wave, which increased to half in Wave 2.

### Child Nutrition Nationwide Waivers

About one-third of participants in both waves (Wave 1:  $n = 143$ ; Wave 2:  $n = 84$ ) reported that they work with a federal child nutrition program. The respondents who worked with a federal child nutrition program reported a variety of learning models (assessed in Wave 2 only): 52% hybrid (some children in-person, some virtual), 19% entirely virtual, 1% entirely in-person, and 28% other model/mix of models across districts/programs.

Among participants who worked with a federal child nutrition program, the most common nationwide waiver being implemented during spring 2020 was the non-congregate waiver (83%), which allowed for meals to be picked up or delivered and consumed at home. By winter 2020-2021, the most commonly implemented nationwide waivers provided flexibility to meal service time requirements (87%), allowed caregivers to pick up meals (85%), and allowed noncongregate meal service (81%) (Table 3).

Of those who wrote free text comments on their waiver implementation experiences (Wave 1:  $n = 87$ ; Wave 2:  $n = 51$ ), positive experiences were a common theme. In both waves, there were also major themes related to barriers. Commonly reported challenges in Wave 1 included a tedious application process and food supply issues. In Wave 2, a commonly reported challenge was lag time in waiver availability, or confusion about waiver extensions. Several RDNs mentioned that they used the meal pattern requirements waiver judiciously (ie, only when food availability was an issue), to maintain the nutrition-related integrity of program standards. In both waves, a major theme was that continuation of waivers should be prioritized.

### Financial Impact on Child Nutrition Programs

In the second wave of the survey, participants who reported being in management roles for child nutrition programs ( $n = 79$ ) were asked about the financial impact of COVID-19 on their programs. Nearly half (49%) reported that their program experienced a negative financial impact due to the pandemic. More than half (62%) of those who had experienced a negative financial impact reported that before the pandemic, they

were financially solvent and were now operating at a loss. In an open-ended question related to financial impact of COVID-19, a major theme was that individually packaged meals increased the costs of food (ie, individually packaged items are more expensive) and/or staffing (ie, more staff time to individually package all foods prepared in bulk).

### Breastfeeding Recommendations

Survey participants whose programs typically involved interacting with postpartum or breastfeeding individuals (Wave 1:  $n = 218$ ; Wave 2:  $n = 127$ ; in both waves, 89% indicated involvement with the WIC program) were asked about breastfeeding recommendations provided to individuals with confirmed or suspected COVID-19. In the first wave, about half (51%) of those whose programs involved interacting with postpartum or breastfeeding individuals reported telling individuals with confirmed or suspected COVID-19 to wash their hands before breastfeeding and wear a face mask while feeding (asked as one question in Wave 1). In the second wave, about 80% reported that their programs recommend washing hands before breastfeeding and about half recommended that individuals wear a mask while breastfeeding. Very few participants (<1%) reported that their program was recommending against breastfeeding altogether in Wave 1, and none reported recommending this in Wave 2.

When asked about sources being used to guide their program's COVID-19-related breastfeeding recommendations, most participants reported using guidance from the Centers for Disease Control and Prevention (Wave 1: 82%; Wave 2: 90%), American Academy of Pediatrics (Wave 1: 52%; Wave 2: 58%), World Health Organization (Wave 1: 50%; Wave 2: 42%), or the International Lactation Consultant Association (Wave 1: 41%; Wave 2: 46%).

### Professional Resources Needed

In open-ended questions asking about needs (Wave 1:  $n = 216$ ; Wave 2:  $n = 131$ ) and other comments (Wave 1  $n = 143$  respondents; Wave 2:  $n = 83$  respondents) related to their experiences, common themes emerged. RDNs indicated that they wanted timely access to crowdsourced and evidence-based best practices. For example, one RDN said: "[I would like to know] how to adjust foodservice operations to maintain safety. We are well versed in food safety and

**Table 2.** Changes to survey participants' program and/or site operations to comply with public health guidance and mandates related to COVID-19, among survey participants whose programs typically involve face-to-face contact with program participants or other staff members or volunteers, during the first wave (April 16, 2020-May 15, 2020) and second wave (December 18, 2020-February 16, 2021) of the food security survey

Type of Change to Program and/or Site Operations	Wave 1 <sup>a</sup> (n = 410) n (%) yes	Wave 2 <sup>a</sup> (n = 231) n (%) yes
Measures are in place for staff and/or volunteers to stay six feet apart from each other	237 (57.8)	165 (71.4)
Measures are in place for participants/recipients to stay six feet apart from staff/volunteers	192 (46.8)	127 (55.0)
Measures are in place for participants/recipients to stay six feet apart from each other	188 (45.9)	127 (55.0)
We have shifted to having staff or volunteer meetings via phone or videoconferencing	238 (58.0)	163 (70.6)
We have shifted to delivering some services via telehealth (phone or videoconferencing)	203 (49.5)	129 (55.8)
We have shifted to making food available via drive through, "grab and go," carry out, pick-up or take-away mechanisms	169 (41.2)	110 (47.6)
We have shifted to delivering food directly to participant's homes	91 (22.2)	56 (24.2)
We require all staff and/or volunteers to wear masks/face coverings <sup>b</sup>	N/A	199 (86.1)
We require all participants/recipients to wear masks/face coverings <sup>b</sup>	N/A	145 (62.8)
We have shifted to allowing participants to use benefits to have food delivered directly to their homes <sup>c</sup>	N/A	18 (7.8)
Other type of change not listed above <sup>d</sup>	40 (9.8)	14 (6.1)
We have not changed our operations	4 (1.0)	1 (0.4)
We did change our operations, but we have now returned to normal operations	4 (1.0)	3 (1.3)

<sup>a</sup>Participants were asked to select all changes that apply to them.

<sup>b</sup>These questions were not asked in the first wave of the survey, as face coverings were not being recommended for most individuals at the time that the survey was developed.

<sup>c</sup>This question was added to the second wave of the survey after receiving comments in the first wave of the survey from registered dietitian nutritionists involved with the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and/or the Supplemental Nutrition Assistance Program (SNAP).

<sup>d</sup>Other responses commonly included having all staff working from home, issuing benefits (i.e., WIC cards/vouchers) by mail, and requiring masks (wave one).

accident prevention (employee safety) but not employee safety from a pandemic." Another mentioned: "[I would like to see] information on what other states and communities are doing to ensure that kids get meals while school is out. There are a lot of innovative strategies being used and it would be helpful to get ideas from others."

A second major theme was RDN requests for advocacy for continued policy flexibility. RDNs mentioned, for example: "We will continue to need federal level support from organizations like the Academy and [the School Nutrition Association] to allow the USDA to maintain flexibility in our operations" and "[t]he waivers have been a lifesaver for our children and...should be allowed at all times regardless of a pandemic or not."

## DISCUSSION

RDNs involved in community-based efforts to address food insecurity that participated in this survey reported many ways in which their programs quickly adapted to ensure staff and client safety, using the best evidence available at the

time, while continuing to provide essential food security services during the COVID-19 PHE. Respondents faced challenges, with reported staffing issues increasing between the first and second waves of the survey and negative financial impact reported by about half of individuals involved with federal child nutrition programs. Waiver uptake for federal child nutrition programs was high, and participants generally reported positive experiences with implementing them and hoped that flexibilities could continue beyond the COVID-19 PHE.

The results of this survey are supported by other reports, in that many programs involved with addressing food insecurity have reported increased demand while grappling with food inventory disruptions and/or staffing issues during the pandemic. For example, a Feeding America survey found that more than 90% of food banks in their network reported increased demand for food assistance and higher operational costs since the pandemic began, and nearly 60% reported having less inventory.<sup>33</sup> Surveys conducted by School Nutrition Association, USDA Food and Nutrition Service, and the Food Research and Action Center during fall 2021 noted a

**Table 3.** Child nutrition nationwide waiver implementation among survey participants who work with any federal child nutrition program during the first wave (April through May 2020) and second wave (December 2020 through February 2021) of the food security survey

Child nutrition nationwide waiver	Wave 1 (W1) n (%)				Wave 2 (W2) n (%)			
	Yes	Not yet (in process)	Previously implemented <sup>a</sup>	No	Yes	Not yet (in process)	Previously implemented <sup>a</sup>	No
To allow meals to be served in non-congregate ways <sup>b</sup> (W1 n = 137, W2 n = 79)	113 (82.5)	6 (4.4)	0	18 (13.1)	64 (81.0)	0	4 (5.1)	11 (13.9)
To allow parents/guardians to pick up and take meals home to children (W1 n = 136, W2 n = 79)	94 (69.1)	7 (5.2)	1 (0.7)	34 (25.0)	67 (84.8)	0	2 (2.5)	10 (12.7)
To provide flexibility to meal service time requirements (W1 n = 137, W2 n = 79)	103 (75.2)	6 (4.4)	1 (0.7)	27 (19.7)	69 (87.3)	0	2 (2.5)	8 (10.1)
To extend the community eligibility deadline (W1 n = 135, W2 n = 78)	62 (45.9)	10 (7.4)	0	63 (46.7)	48 (61.5)	0	1 (1.3)	29 (37.2)
Summer Food Service Program/Seamless Summer Option <sup>c</sup> (W1 n = 133, W2 n = 77)	76 (57.1)	17 (12.8)	0	40 (30.1)	60 (77.9)	0	0	17 (22.1)
To relax the requirement to serve meals that meet meal pattern requirements (W1 n = 134, W2 n = 80)	54 (40.3)	12 (9.0)	2 (1.5)	66 (49.3)	36 (45.0)	3 (3.8)	5 (6.3)	36 (45.0)

<sup>a</sup>Meaning that they had implemented in the past, at the point that they completed the survey, but had now returned to normal operations.

<sup>b</sup>Among those who reported that they are implementing the waiver to allow meals to be served in non-congregate ways, 74.3% (n = 84) in wave one and 70.9% (n = 56) in wave two reported that food distribution is at a central site; 25.7% (n = 29) in wave one and 10.1% (n = 8) in wave two reported that meals are delivered to homes.

<sup>c</sup>In wave two, participants responded to whether they applied for the waiver, if issued by their state.



## RESEARCH

similar or higher prevalence of reported issues with net losses, supply chain disruptions for food items and supplies/packaging, and staffing shortages in school nutrition programs.<sup>34-36</sup>

In addition, aligned with survey respondents' positive impressions of the child nutrition waivers, others have demonstrated that child nutrition waivers and flexibilities, when implemented, allowed many programs to effectively feed children. In Maryland, researchers estimated that rapid implementation and innovation using child nutrition waivers helped to decrease a "missed meal gap" of 1.5 million meals per week by nearly 1 million meals per week just 6 to 7 weeks after statewide closure of schools.<sup>37</sup> This survey did not ask specific questions about waivers granting flexibility in WIC operations (eg, to allow remote WIC services). However, similar to themes that emerged from responses to open-ended questions in this survey, interviews or focus groups with California WIC agency directors and Washington State WIC staff found that most directors and staff wanted the flexibility introduced by the WIC operations waivers to continue postpandemic.<sup>38,39</sup>

Other studies have also noted the need to bolster the capacity of programs to respond to future pandemics and other emergencies. For example, a qualitative study conducted with school nutrition employees during April and May 2020 noted that keeping coworkers and the community safe were high priorities, and that more resources and training and proactive policy actions should be in place to better prepare programs for future emergency feeding situations.<sup>40</sup> A qualitative comparison of waiver implementation experiences across five urban areas noted widely varying approaches across cities and the strong need for federal guidance on best practices.<sup>4</sup>

## IMPLICATIONS FOR PRACTICE

### Advocacy Opportunities

Several issues emerged from these results that may necessitate policy and advocacy efforts. For example, RDNs emphasized the importance of continuation of child nutrition waivers and flexibilities, and nearly half of child nutrition program managers indicated that their program was operating at a financial loss due to the pandemic. Advocacy efforts can occur at organizational and individual levels. For example, numerous food and nutrition-related organizations, including the Academy, successfully collaborated to advocate for extension of child nutrition waivers through the 2020-21 and 2021-22 school years,<sup>20,41</sup> and have identified the need to continue the waivers through the 2022-23 school year.<sup>36,42,43</sup> The Academy regularly offers opportunities for RDNs and nutrition and dietetics technicians, registered, to be involved in the advocacy process via Action Alerts<sup>44</sup> (accessible to members and nonmembers) and visits to Capitol Hill with members of Congress and their staff.

### Best Practice Resources

Survey respondents indicated that they wanted timely access to crowdsourced and evidence-based best practices. A list of Academy-developed and external COVID-19 resources, most of which are open-access, is available in the Coronavirus (COVID-19) Professional Resource Hub.<sup>45</sup> Example food security resources on the list include Feeding America's local

food bank directory, the Food Research & Action Center's advocacy tool for maximizing WIC's role during the pandemic, the USDA National Hunger Clearinghouse, and the Academy Foundation's Food Security Solutions Toolkit.<sup>46-50</sup>

### Preparing for Future Pandemics

Throughout the COVID-19 PHE, there has been a need for timely evidence related to virus transmission to inform policies designed to reduce risk during in-person interactions and fomite transfer risk. For example, many respondents' programs implemented costly new measures related to food safety and handling to minimize risk of fomite transmission of COVID-19 based on available guidance from professional organizations, but fomite transmission was later determined to be rare.<sup>51-53</sup> Early research and interim guidance from professional organizations related to breastfeeding best practices is also crucial to prevent unnecessary breastfeeding disruption due to safety concerns.<sup>54,55</sup> Prioritization of gathering, disseminating, and updating evidence and guidance on pathogen transmission in future pandemics could minimize disruptions to essential public health services and reduce unnecessary staff and financial burdens.

To build RDN competency and increase food supply chain preparedness for future pandemics, additional public health preparedness education and training is needed for RDNs and other health professionals in the United States and globally.<sup>56-58</sup> For example, training on resources like the Sendai Framework for Disaster Risk Reduction and the Academy Emergency Preparedness Playbook may be useful as programs prepare for new COVID-19 virus variants and for future PHEs.<sup>40,59</sup> In addition, strengthening crowdsourcing infrastructures and mechanisms to identify reliable information through social media sources would facilitate sharing best practices quickly among RDNs and other health professionals during future pandemics and other widespread emergencies.<sup>60,61</sup>

### Strengths and Limitations

Strengths of the study were the timeliness of development and implementation following the onset of the COVID-19 pandemic in the United States, the use of cross-team collaboration within the Academy to develop survey content, and participant recruitment efforts that encompassed all individuals registered with the Commission on Dietetic Registration. This study had several important limitations. Because the surveys were widely distributed, accurate response rates are difficult to determine. It is likely that a very low percentage of RDNs working on food security efforts responded, limiting the generalizability of the findings. Therefore, only descriptive statistics are reported without any statistical testing that would allow for generalizations to the population or examination of changes over time. The way the survey was implemented limited participation by nutrition and dietetic technicians, registered; consequently, their perspectives and experiences are not represented in the results. In addition, lack of information on participants' age, sex, gender, race, and ethnicity prevented examination of respondent sociodemographic diversity and objective comparisons to the population of US RDNs; without this information, it is not possible to assess whether the findings reflect insights from diverse perspectives and experiences, and especially from individuals

from groups that have been historically excluded or under-represented in dietetics. Few individuals participated in both waves of the survey, which limited the ability to interpret longitudinal changes in practice. There is potential for self-selection bias because RDNs with a strong interest in food security, or particularly positive or challenging experiences during the pandemic, might have been more likely to respond. In addition, social desirability bias may have influenced RDNs' responses. Finally, comprehensive psychometric assessments of the surveys were not conducted, potentially limiting interpretation of the survey findings.

## CONCLUSIONS

RDN survey respondents were involved in addressing the influence of the COVID-19 PHE on food insecurity in the United States, Continued guidance from the Academy and other health organizations, along with continued advocacy for the extension of federal child nutrition waivers and other food security related policy solutions is important, particularly as new COVID-19 variants or other crises occur and nutrition programs continue to endure financial losses.

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**STATEMENT OF POTENTIAL CONFLICT OF INTEREST**

No potential conflict of interest was reported by the authors.

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**AUTHOR CONTRIBUTIONS**

E. Y. Jimenez and K. Kelley led the design and implementation of the survey, with contributions from E. Campbell and A. Steiber. K. Kelley and E. Y. Jimenez conducted data analysis and drafted the initial manuscript. All authors thoroughly reviewed, edited, and approved of the final manuscript.

Impact of COVID-19: Food Insecurity Survey		
<b>Instructions:</b>		
<p>The Academy of Nutrition and Dietetics is gathering information about community-based efforts to mitigate food insecurity related to school and other congregate meal site closures, stay at home and shelter in place guidance or mandates, and economic disruptions resulting from COVID-19 pandemic control efforts. This survey should take ~20 minutes to complete. The questions will ask about your background and your involvement in community-based efforts to address food insecurity during and after the COVID-19 pandemic. Please do your best to provide the most accurate information for each question.</p> <p>The first few questions of the survey will be used to create a respondent-generated identification code. This code will provide an anonymous means to track your responses, as this survey will be sent out multiple times to track how community-based efforts to address food insecurity evolve during and after the immediate COVID-19 crisis. You will be asked the same five respondent-generated identification questions for each survey and your answers for those five questions should remain the same each time you complete this survey.</p> <p>Thank you for your time.</p>		
Screening questions		
	Are you a registered dietitian nutritionist?	<input type="checkbox"/> Yes <input type="checkbox"/> No → <i>Exit survey</i>
	Are you involved in community-based efforts to address food insecurity, as part of your job or in a volunteer capacity?  <i>Examples of community-based efforts to address food insecurity include, but are not limited to, school nutrition services, other federal nutrition programs (e.g., WIC, SNAP, CACFP), food banks/food pantries, Meals on Wheels, and senior feeding sites, and coordinating efforts for these programs at local or state public health or education departments.</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No → <i>Exit survey</i>
	Where are you located?	<input type="checkbox"/> U.S. state or territory <input type="checkbox"/> Another part of the world → <i>Exit survey</i>
Respondent-generated identification code		
1.	What is the first letter of your mother's first name? <i>If this question does not apply to you, please answer "X." Please remember to use the first letter of her full name, and not a nickname (for example, if your mother's first name is "Elizabeth," please write "E" for Elizabeth and not "L" for Liz.)</i>	_
2.	How many siblings (brothers and sisters) do you have? <i>If you do not have any brothers or sisters, please answer "0." You can include anyone you define as a sibling in this total, as long as you include him or her consistently (for example, you could include a stepbrother).</i>	_
3.	What number represents the month in which you were born? (for example, May = 05)	_ _
4.	What is the first letter of the city where you were born? (for example, Denver = D)	_
<i>(continued on next page)</i>		

**Figure 1.** Cross-sectional, anonymous online survey administered from April 16, 2020 to May 15, 2020, to registered dietitian nutritionists involved in community-based efforts to address food insecurity in the United States.

5.	What is the first letter of your middle name? (for example, Maria = M) If you do not have a middle name, please answer "X."	_
6.	Have you filled out this food security survey before?	<input type="checkbox"/> Yes → Skip to question 15 <input type="checkbox"/> No → Continue to question 7 <input type="checkbox"/> Not sure → Continue to question 7
<b>Information about you</b>		
7.	Where do you live?	<input type="checkbox"/> Drop down list of U.S. states and territories
8.	Are you a current member of the Academy of Nutrition and Dietetics?	<input type="checkbox"/> Yes <input type="checkbox"/> No
9.	What is the highest degree that you have earned?	<input type="checkbox"/> Bachelors <input type="checkbox"/> Masters <input type="checkbox"/> Doctorate
10.	How many years have you worked as a registered dietitian nutritionist?	_ _  years
11.	How many years have you been involved in community-based efforts to address food insecurity, as part of your job or in a volunteer capacity?	_ _  years
12.	About how many hours per week do you typically spend involved in community-based efforts to address food insecurity, as part of your job or in a volunteer capacity?	_ _  hours
13.	Please indicate the programs that you are involved with as part of your job or in a volunteer capacity. Please select all that apply.	<input type="checkbox"/> School Lunch Program <input type="checkbox"/> School Breakfast Program <input type="checkbox"/> Summer Food Service Program <input type="checkbox"/> Seamless Summer Option <input type="checkbox"/> Child and Adult Care Food Program – Child Care Centers <input type="checkbox"/> Child and Adult Care Food Program – At-Risk Meal Program <input type="checkbox"/> Child and Adult Care Food Program – Adult Care <input type="checkbox"/> Special Supplemental Nutrition Program for Women, Infants and Children (WIC) <input type="checkbox"/> Supplemental Nutrition Assistance Program (SNAP) <input type="checkbox"/> SNAP-Ed <input type="checkbox"/> Food Distribution Program on Indian Reservations <input type="checkbox"/> Older Americans Act Congregate Nutrition Services Program <input type="checkbox"/> Older Americans Act Home-Delivered Nutrition Services Program <input type="checkbox"/> Other federal nutrition program
<i>(continued on next page)</i>		

**Figure 1.** (continued) Cross-sectional, anonymous online survey administered from April 16, 2020 to May 15, 2020, to registered dietitian nutritionists involved in community-based efforts to address food insecurity in the United States.

		<input type="checkbox"/> Food bank or food pantry (including food pharmacies) <input type="checkbox"/> Meals on Wheels or other private meal delivery program <input type="checkbox"/> Other (specify): _____
14.	<p>What populations do you work with across the lifespan?  <i>Please select all that apply.</i></p>	<input type="checkbox"/> Pregnant/postpartum women <input type="checkbox"/> Infants <input type="checkbox"/> Young children (ages 1-5) <input type="checkbox"/> Children (ages 6-12) <input type="checkbox"/> Teenagers and young adults (ages 13-21) <input type="checkbox"/> Adults (ages 22-64) <input type="checkbox"/> Older adults (age 65+)
<p><b>Efforts to address food insecurity in community-based settings</b>  <i>This first set of questions refers to general changes in operations. Specific questions for certain types of programs will be asked later in the survey.</i></p>		
15.	<p>Has the number of individuals or families seeking assistance from your program or organization changed since the start of the COVID-19 pandemic?</p>	<input type="checkbox"/> Yes, numbers have increased <input type="checkbox"/> Yes, numbers have decreased <input type="checkbox"/> No, numbers are about the same
16.	<p>Does delivery of the program you are involved with typically involve face-to-face contact with participants or with other staff members or volunteers?</p>	<input type="checkbox"/> Yes → <i>Continue to question 17</i> <input type="checkbox"/> No → <i>Skip to question 20</i>
17.	<p>How are you adjusting your operations to comply with public health guidance and mandates related to COVID-19? <i>Please select all that apply.</i></p>	<input type="checkbox"/> We have not changed our operations <input type="checkbox"/> We did change our operations, but we have now returned to normal operations <input type="checkbox"/> Measures are in place for staff and/or volunteers to stay six feet apart from each other <input type="checkbox"/> Measures are in place for participants/recipients to stay six feet apart from each other <input type="checkbox"/> Measures are in place for participants/recipients to stay six feet apart from staff/volunteers <input type="checkbox"/> We have shifted to making food available via drive through, "grab and go," carry out, pick-up or take-away mechanisms <input type="checkbox"/> We have shifted to delivering food directly to participant's homes <input type="checkbox"/> We have shifted to delivering some services via telehealth (phone or videoconferencing) <input type="checkbox"/> We have shifted to having staff or volunteer meetings via phone or videoconferencing <input type="checkbox"/> Other (specify): _____
18.	<p>Is your program providing individuals having any face-to-face contact with participants or with other staff or</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No
<p><i>(continued on next page)</i></p>		

**Figure 1.** *(continued)* Cross-sectional, anonymous online survey administered from April 16, 2020 to May 15, 2020, to registered dietitian nutritionists involved in community-based efforts to address food insecurity in the United States.

	volunteers with personal protective equipment (PPE) [e.g., facemask, face shield or goggles]?	<input type="checkbox"/> Sometimes <input type="checkbox"/> Previously yes, but not anymore <input type="checkbox"/> Not applicable (no face-to-face contact at this time)
19.	Is your program providing individuals having any face-to-face contact with participants with other protection [e.g., plexiglass shields]?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Sometimes <input type="checkbox"/> Previously yes, but not anymore <input type="checkbox"/> Not applicable (no face-to-face contact with participants at this time)
20.	Does delivery of the program you are involved with typically involve food preparation or handling?	<input type="checkbox"/> Yes → <i>Continue to question 21</i> <input type="checkbox"/> No → <i>Skip to question 35</i>
21.	Have you had disruptions in the availability of any food products?	<input type="checkbox"/> Yes → <i>Continue to question 22</i> <input type="checkbox"/> No → <i>Skip to question 23</i>
22.	Briefly describe which types of food products have been difficult to obtain.	(free text)
23.	Is your facility using food safety guidance that is specific to COVID-19 during this time?	<input type="checkbox"/> Yes → <i>Continue to question 24</i> <input type="checkbox"/> No → <i>Skip to question 26</i>
24.	Please indicate the source of COVID-19 specific food safety guidance that you are using. Please provide a link or title of the document, if possible.	(free text)
25.	Please rate the ability of your facility to comply with the COVID-19 specific food safety guidance at this time, on a scale of 0 (not at all) to 10 (full compliance).	_ _ _
26.	If your site has employees, do they have paid sick leave?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Volunteer only site
27.	Has your site implemented any new measures related to ensuring that staff and/or volunteers do not report to work if they are sick or if they have been exposed to an individual with suspected or confirmed COVID-19?	<input type="checkbox"/> Yes → <i>Continue to question 28</i> <input type="checkbox"/> No → <i>Skip to question 29</i>
28.	Please briefly describe any new measures your site has implemented to ensure that staff and/or volunteers do not report to work if they are sick or if they have been exposed to an individual with suspected or confirmed COVID-19.	(free text)
29.	Are you having any issues with fully staffing your program?	<input type="checkbox"/> Yes → <i>Continue to question 30</i> <input type="checkbox"/> No → <i>Skip to question 31</i>
30.	Please briefly describe any issues that you are having with fully staffing your program.	(free text)
31.	Has your site implemented any new measures related to handwashing due to COVID-19?	<input type="checkbox"/> Yes → <i>Continue to question 32</i> <input type="checkbox"/> No → <i>Skip to question 33</i>

(continued on next page)

**Figure 1.** (continued) Cross-sectional, anonymous online survey administered from April 16, 2020 to May 15, 2020, to registered dietitian nutritionists involved in community-based efforts to address food insecurity in the United States.



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32.	Please briefly describe any new measures you have implemented related to handwashing.	(free text)
33.	Has your site implemented any new measures related to handling food packaging due to COVID-19?	<input type="checkbox"/> Yes → <i>Continue to question 34</i> <input type="checkbox"/> No → <i>Skip to question 35</i>
34.	Please briefly describe any new measures you have implemented related to handling food packaging.	(free text)
35.	Do you work with any federal child nutrition program (e.g., the School Breakfast Program, the National School Lunch Program, the Summer Food Service Program or the Child and Adult Care Food Program)?	<input type="checkbox"/> Yes → <i>Continue to question 36</i> <input type="checkbox"/> No → <i>Skip to question 44</i>
36.	Are you implementing the child nutrition nationwide waiver to <i>allow meals to be served in non-congregate ways</i> ?	<input type="checkbox"/> Yes, food distribution is at a central site <input type="checkbox"/> Yes, meals are delivered to the family home <input type="checkbox"/> Not yet, but we are working on being able to do this <input type="checkbox"/> We did, but we have now returned to normal operations <input type="checkbox"/> No
37.	Are you implementing the child nutrition nationwide waiver to <i>allow parents or guardians to pick up and take home meals to children</i> (in other words, children do not need to be present for the meal to be distributed to the family at a central site)?	<input type="checkbox"/> Yes <input type="checkbox"/> Not yet, but we are working on being able to do this <input type="checkbox"/> We did, but we have now returned to normal operations <input type="checkbox"/> No
38.	Are you implementing the child nutrition nationwide waiver to <i>provide flexibility to meal service time requirements</i> ?	<input type="checkbox"/> Yes <input type="checkbox"/> Not yet, but we are working on being able to do this <input type="checkbox"/> We did, but we have now returned to normal operations <input type="checkbox"/> No
39.	Are you implementing the child nutrition nationwide waiver to <i>extend the community eligibility deadline</i> ?	<input type="checkbox"/> Yes <input type="checkbox"/> Not yet, but we are working on being able to do this <input type="checkbox"/> No
40.	If your state has been issued the <i>area eligibility Summer Food Service Program/Seamless Summer Option waiver</i> , have you applied for it?	<input type="checkbox"/> Yes <input type="checkbox"/> Not yet, but we are working on being able to do this <input type="checkbox"/> No
41.	Are you implementing the child nutrition nationwide waiver to <i>relax the requirement to serve meals that meet meal pattern requirements</i> ?	<input type="checkbox"/> Yes → <i>Continue to question 42</i> <input type="checkbox"/> Not yet, but we are working on being able to do this → <i>Continue to question 42</i> <input type="checkbox"/> We did, but now we have returned to normal operations → <i>Skip to question 43</i> <input type="checkbox"/> No → <i>Skip to question 43</i>
42.	Please briefly describe the disruptions in the availability of food products that led to use of this waiver.	(free text)
<i>(continued on next page)</i>		

**Figure 1.** (continued) Cross-sectional, anonymous online survey administered from April 16, 2020 to May 15, 2020, to registered dietitian nutritionists involved in community-based efforts to address food insecurity in the United States.

43.	Please briefly describe your experience, positive or negative, with implementing any of these child nutrition nationwide waivers (indicate N/A if not applicable).	(free text)
44.	Please briefly describe any additional child nutrition waivers that could help you serve your community better.	(free text)
45.	If you work in school nutrition services or the Child and Adult Care Food Program, have you had to maintain salaries and benefits for employees even though your participation in the federal nutrition programs have decreased?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure <input type="checkbox"/> Not applicable
46.	Does the program you are involved with typically involve interacting with postpartum or breastfeeding women?	<input type="checkbox"/> Yes → <i>Continue to question 47</i> <input type="checkbox"/> No → <i>Skip to question 49</i>
47.	Since the COVID-19 pandemic started, have the breastfeeding recommendations your program gives to postpartum or breastfeeding women changed?	<input type="checkbox"/> No, we continue to recommend breastfeeding to all mothers <input type="checkbox"/> Yes, we are now telling mothers who have confirmed or suspected COVID-19 to wash hands prior to feeding and to wear a facemask while feeding <input type="checkbox"/> Yes, we are now telling mothers who have confirmed or suspected COVID-19 to not breastfeed <input type="checkbox"/> Other (specify): _____
48.	What organization(s) is/are the source of the resources or information are you using to guide your program's current breastfeeding recommendations? <i>Select all that apply.</i>	<input type="checkbox"/> Centers for Disease Control and Prevention <input type="checkbox"/> American Academy of Pediatrics <input type="checkbox"/> Academy of Nutrition and Dietetics <input type="checkbox"/> International Lactation Consultant Association <input type="checkbox"/> World Health Organization <input type="checkbox"/> Other (specify): _____
49.	What kind of resources from the Academy of Nutrition and Dietetics would you find most helpful in your community-based efforts to address food insecurity during and after the COVID-19 pandemic?	(free text)
50.	Is there anything else you would like us to know about your experience with community-based efforts to address food insecurity during and after the COVID-19 pandemic?	(free text)

**Figure 1.** (continued) Cross-sectional, anonymous online survey administered from April 16, 2020 to May 15, 2020, to registered dietitian nutritionists involved in community-based efforts to address food insecurity in the United States.

Impact of COVID-19: Food Insecurity Survey		
<b>Instructions:</b>		
<p>The Academy of Nutrition and Dietetics is gathering information about community-based efforts to mitigate food insecurity related to school and other congregate meal site closures, stay at home and shelter in place guidance or mandates, and economic disruptions resulting from COVID-19 pandemic control efforts. This survey should take ~20 minutes to complete. The questions will ask about your background and your involvement in community-based efforts to address food insecurity during and after the COVID-19 pandemic. Please do your best to provide the most accurate information for each question.</p> <p>The first few questions of the survey will be used to create a respondent-generated identification code. This code will provide an anonymous means to track your responses, as this survey will be sent out multiple times to track how community-based efforts to address food insecurity evolve during and after the immediate COVID-19 crisis. You will be asked the same five respondent-generated identification questions for each survey and your answers for those five questions should remain the same each time you complete this survey.</p> <p>Thank you for your time.</p>		
Screening questions		
	Are you a registered dietitian nutritionist?	<input type="checkbox"/> Yes <input type="checkbox"/> No → <i>Exit survey</i>
	Are you involved in community-based efforts to address food insecurity, as part of your job or in a volunteer capacity?  <i>Examples of community-based efforts to address food insecurity include, but are not limited to, school nutrition services, other federal nutrition programs (e.g., WIC, SNAP, CACFP), food banks/food pantries, Meals on Wheels, and senior feeding sites, and coordinating efforts for these programs at local or state public health or education departments.</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No → <i>Exit survey</i>
	Where are you located?	<input type="checkbox"/> U.S. state or territory <input type="checkbox"/> Another part of the world → <i>Exit survey</i>
Respondent-generated identification code		
1.	What is the first letter of your mother's first name? <i>If this question does not apply to you, please answer "X." Please remember to use the first letter of her full name, and not a nickname (for example, if your mother's first name is "Elizabeth," please write "E" for Elizabeth and not "L" for Liz.)</i>	_
2.	How many siblings (brothers and sisters) do you have? <i>If you do not have any brothers or sisters, please answer "0." You can include anyone you define as a sibling in this total, as long as you include him or her consistently (for example, you could include a stepbrother).</i>	_
3.	What number represents the month in which you were born? (for example, May = 05)	_ _
4.	What is the first letter of the city where you were born? (for example, Denver = D)	_
<i>(continued on next page)</i>		

**Figure 2.** Cross-sectional, anonymous online survey administered from December 18, 2020 to February 16, 2021 to registered dietitian nutritionists involved in community-based efforts to address food insecurity in the United States.

5.	What is the first letter of your middle name? (for example, Maria = M) If you do not have a middle name, please answer "X."	_
6.	Have you filled out this food security survey before? Note: this survey was first sent out in April/May 2020. You can complete it multiple times.	<input type="checkbox"/> Yes → Skip to question 15 <input type="checkbox"/> No → Continue to question 7 <input type="checkbox"/> Not sure → Continue to question 7
<b>Information about you</b>		
7.	Where do you live?	<input type="checkbox"/> Drop down list of U.S. states and territories
8.	Are you a current member of the Academy of Nutrition and Dietetics?	<input type="checkbox"/> Yes <input type="checkbox"/> No
9.	What is the highest degree that you have earned?	<input type="checkbox"/> Bachelors <input type="checkbox"/> Masters <input type="checkbox"/> Doctorate
10.	How many years have you worked as a registered dietitian nutritionist?	_ _  years
11.	How many years have you been involved in community-based efforts to address food insecurity, as part of your job or in a volunteer capacity?	_ _  years
12.	About how many hours per week do you typically spend involved in community-based efforts to address food insecurity, as part of your job or in a volunteer capacity?	_ _  hours
13.	Please indicate the programs that you are involved with as part of your job or in a volunteer capacity. Please select all that apply.	<input type="checkbox"/> School Lunch Program <input type="checkbox"/> School Breakfast Program <input type="checkbox"/> Summer Food Service Program <input type="checkbox"/> Seamless Summer Option <input type="checkbox"/> Child and Adult Care Food Program – Child Care Centers <input type="checkbox"/> Child and Adult Care Food Program – At-Risk Meal Program <input type="checkbox"/> Child and Adult Care Food Program – Adult Care <input type="checkbox"/> Special Supplemental Nutrition Program for Women, Infants and Children (WIC) <input type="checkbox"/> Supplemental Nutrition Assistance Program (SNAP) <input type="checkbox"/> SNAP-Ed <input type="checkbox"/> Food Distribution Program on Indian Reservations <input type="checkbox"/> Older Americans Act Congregate Nutrition Services Program <input type="checkbox"/> Older Americans Act Home-Delivered Nutrition Services Program <input type="checkbox"/> Other federal nutrition program <input type="checkbox"/> Food bank or food pantry (including food pharmacies)
<i>(continued on next page)</i>		

**Figure 2.** (continued) Cross-sectional, anonymous online survey administered from December 18, 2020 to February 16, 2021 to registered dietitian nutritionists involved in community-based efforts to address food insecurity in the United States.

		<input type="checkbox"/> Meals on Wheels or other private meal delivery program <input type="checkbox"/> Other (specify): _____
14.	<p>What populations do you work with across the lifespan?  <i>Please select all that apply.</i></p>	<input type="checkbox"/> Pregnant/postpartum women <input type="checkbox"/> Infants <input type="checkbox"/> Young children (ages 1-5) <input type="checkbox"/> Children (ages 6-12) <input type="checkbox"/> Teenagers and young adults (ages 13-21) <input type="checkbox"/> Adults (ages 22-64) <input type="checkbox"/> Older adults (age 65+)
<p><b>Efforts to address food insecurity in community-based settings</b>  <i>This first set of questions refers to general changes in operations. Specific questions for certain types of programs will be asked later in the survey.</i></p>		
15.	<p>Has the number of individuals or families seeking assistance from your program or organization changed since April/May 2020?</p>	<input type="checkbox"/> Yes, numbers have increased <input type="checkbox"/> Yes, numbers have decreased <input type="checkbox"/> No, numbers are about the same
16.	<p>Does delivery of the program you are involved with typically involve face-to-face contact with participants or with other staff members or volunteers?</p>	<input type="checkbox"/> Yes → <i>Continue to question 17</i> <input type="checkbox"/> No → <i>Skip to question 20</i>
17.	<p>What measures is your organization currently implementing to comply with public health guidance and mandates related to the COVID-19 pandemic?  <i>Please select all that apply.</i><sup>a</sup></p>	<input type="checkbox"/> We have not changed our operations <input type="checkbox"/> We did change our operations, but we have now returned to normal operations <input type="checkbox"/> Measures are in place for staff and/or volunteers to stay six feet apart from each other <input type="checkbox"/> Measures are in place for participants/recipients to stay six feet apart from each other <input type="checkbox"/> Measures are in place for participants/recipients to stay six feet apart from staff/volunteers <input type="checkbox"/> We require all staff and/or volunteers to wear masks/face coverings <input type="checkbox"/> We require all participants/recipients to wear masks/face coverings <input type="checkbox"/> We have shifted to making food available via drive through, "grab and go," carry out, pick-up or take-away mechanisms <input type="checkbox"/> We have shifted to delivering food directly to participant's homes <input type="checkbox"/> We have shifted to allowing participants to use benefits to have food delivered directly to their homes <input type="checkbox"/> We have shifted to delivering some services via telehealth (phone or videoconferencing) <input type="checkbox"/> We have shifted to having staff or volunteer meetings via phone or videoconferencing <input type="checkbox"/> Other (specify): _____
<p><i>(continued on next page)</i></p>		

**Figure 2.** (continued) Cross-sectional, anonymous online survey administered from December 18, 2020 to February 16, 2021 to registered dietitian nutritionists involved in community-based efforts to address food insecurity in the United States.

18.	Is your program currently providing individuals having any face-to-face contact with participants or with other staff or volunteers with adequate personal protective equipment (PPE) [e.g., mask, face shield or goggles]?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Sometimes <input type="checkbox"/> Individuals are required to supply their own mask or face covering <input type="checkbox"/> Not applicable (no face-to-face contact at this time)
19.	Is your program currently providing individuals having any face-to-face contact with participants with other protection [e.g., plexiglass shields]?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Sometimes <input type="checkbox"/> Not applicable (no face-to-face contact with participants at this time)
20.	Does delivery of the program you are involved with typically involve food preparation or handling?	<input type="checkbox"/> Yes → Continue to question 21 <input type="checkbox"/> No → Skip to question 35
21.	Have you had recent disruptions (i.e., disruptions in the last 30 days) in the availability of any food products?	<input type="checkbox"/> Yes → Continue to question 22 <input type="checkbox"/> No → Skip to question 23
22.	Which types of food products have been difficult to obtain? <sup>a</sup>	<input type="checkbox"/> Milk <input type="checkbox"/> Bread <input type="checkbox"/> Fruits and vegetables <input type="checkbox"/> Individually wrapped items <input type="checkbox"/> Other (specify): _____
23.	Is your facility currently using food safety guidance that is specific to COVID-19?	<input type="checkbox"/> Yes → Continue to question 24 <input type="checkbox"/> No → Skip to question 26
24.	Please indicate the source of COVID-19 specific food safety guidance that you are using. Please provide a link or title of the document, if possible.	(free text)
25.	Please rate the ability of your facility to comply with the COVID-19 specific food safety guidance at this time, on a scale of 0 (not at all) to 10 (full compliance).	_ _ _
26.	If your site has employees, do they have paid sick leave?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Volunteer only site
27.	Is your site currently implementing measures related to ensuring that staff and/or volunteers do not report to work if they are sick or if they have been exposed to an individual with suspected or confirmed COVID-19?	<input type="checkbox"/> Yes → Continue to question 28 <input type="checkbox"/> No → Skip to question 29
28.	What measures is your site currently implementing related to ensuring that staff and/or volunteers do not report to work if they are sick or if they have been exposed to an individual with suspected or confirmed COVID-19? <sup>a</sup> Please select all that apply.	<input type="checkbox"/> Screening questions about exposure to an individual with suspected or confirmed COVID-19 <input type="checkbox"/> Screening questions about recent travel <input type="checkbox"/> Screening questions related to COVID-19 symptoms (e.g., fever, cough) <input type="checkbox"/> Temperature screening <input type="checkbox"/> Mandatory period to remain off-site after a positive COVID-19 test or exposure to an individual with confirmed COVID-19 <input type="checkbox"/> Other (specify): _____

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**Figure 2.** (continued) Cross-sectional, anonymous online survey administered from December 18, 2020 to February 16, 2021 to registered dietitian nutritionists involved in community-based efforts to address food insecurity in the United States.

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29.	Are you currently having any issues with fully staffing your program?	<input type="checkbox"/> Yes → Continue to question 30 <input type="checkbox"/> No → Skip to question 31
30.	What are the primary issues that you are currently having with fully staffing your program? <sup>a</sup> Please select all that apply.	<input type="checkbox"/> Staff or volunteers not having childcare/having children in remote learning <input type="checkbox"/> Staff or volunteers that are sick or caring for individuals that are sick <input type="checkbox"/> Staff or volunteers that are high risk or caring for individuals that are high risk for COVID-19 <input type="checkbox"/> Staff or volunteers that are afraid to come to work <input type="checkbox"/> Other (specify): _____
31.	Is your site currently implementing any new measures related to handwashing due to COVID-19?	<input type="checkbox"/> Yes → Continue to question 32 <input type="checkbox"/> No → Skip to question 33
32.	What new measures is your site currently implementing related to handwashing due to COVID-19? <sup>a</sup>	<input type="checkbox"/> Increased frequency of required handwashing <input type="checkbox"/> Increased signage related to handwashing <input type="checkbox"/> Increased availability of hand sanitizer <input type="checkbox"/> Other (specify): _____
33.	Is your site currently implementing any new measures related to packaging food or handling food packaging due to COVID-19?	<input type="checkbox"/> Yes → Continue to question 34 <input type="checkbox"/> No → Skip to question 35
34.	What new measures is your site currently implementing related to packaging food or handling food packaging due to COVID-19? <sup>a</sup>	<input type="checkbox"/> Staff/volunteers are wearing gloves <input type="checkbox"/> All food items for a recipient are placed in one bag or carry-away container <input type="checkbox"/> Food items for recipients are individually wrapped <input type="checkbox"/> Other (specify): _____
35.	Do you work with any federal child nutrition program (e.g., the School Breakfast Program, the National School Lunch Program, the Summer Food Service Program or the Child and Adult Care Food Program)?	<input type="checkbox"/> Yes → Continue to question 36 <input type="checkbox"/> No → Skip to question 49
36.	What is the current learning model at your school district or child care center? <sup>b</sup>	<input type="checkbox"/> All children are in in-person classes or care, every weekday (including children coming to child care every day to do virtual learning) <input type="checkbox"/> Hybrid model – some children are in in-person classes or care, while others are learning virtually <input type="checkbox"/> All children are learning virtually (potentially with some rare exceptions) <input type="checkbox"/> Mixture of situations (work with multiple school districts that have different learning models) <input type="checkbox"/> I'm not sure <input type="checkbox"/> Other (specify): _____
37.	Are you currently implementing the child nutrition nationwide waiver to allow meals to be served in non-congregate ways?	<input type="checkbox"/> Yes, food distribution is at a central site <input type="checkbox"/> Yes, meals are delivered to the family home <input type="checkbox"/> Not yet, but we are working on being able to do this

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**Figure 2.** (continued) Cross-sectional, anonymous online survey administered from December 18, 2020 to February 16, 2021 to registered dietitian nutritionists involved in community-based efforts to address food insecurity in the United States.

		<input type="checkbox"/> We did, but we have now returned to normal operations <input type="checkbox"/> No
38.	Are you currently implementing the child nutrition nationwide waiver to <i>allow parents or guardians to pick up and take home meals to children</i> (in other words, children do not need to be present for the meal to be distributed to the family at a central site)?	<input type="checkbox"/> Yes <input type="checkbox"/> Not yet, but we are working on being able to do this <input type="checkbox"/> We did, but we have now returned to normal operations <input type="checkbox"/> No
39.	Are you currently implementing the child nutrition nationwide waiver to <i>provide flexibility to meal service time requirements</i> ?	<input type="checkbox"/> Yes <input type="checkbox"/> Not yet, but we are working on being able to do this <input type="checkbox"/> We did, but we have now returned to normal operations <input type="checkbox"/> No
40.	Are you currently implementing the child nutrition nationwide waiver to <i>extend the community eligibility deadline</i> ?	<input type="checkbox"/> Yes <input type="checkbox"/> Not yet, but we are working on being able to do this <input type="checkbox"/> No
41.	If your state issued the <i>area eligibility Summer Food Service Program/Seamless Summer Option waiver</i> , did you apply for it?	<input type="checkbox"/> Yes <input type="checkbox"/> No
42.	Are you currently implementing the child nutrition nationwide waiver to <i>relax the requirement to serve meals that meet meal pattern requirements</i> ?	<input type="checkbox"/> Yes → <i>Continue to question 43</i> <input type="checkbox"/> Not yet, but we are working on being able to do this → <i>Continue to question 43</i> <input type="checkbox"/> We did, but now we have returned to normal operations → <i>Skip to question 44</i> <input type="checkbox"/> No → <i>Skip to question 44</i>
43.	Disruptions in the availability of which food products led to current or intended use of this waiver? <sup>a</sup>	<input type="checkbox"/> Milk <input type="checkbox"/> Bread <input type="checkbox"/> Fruits and vegetables <input type="checkbox"/> Individually wrapped items <input type="checkbox"/> Other (specify): _____
44.	Please briefly describe your experience, positive or negative, with implementing any of these child nutrition nationwide waivers (indicate N/A if not applicable).	(free text)
45.	Please briefly describe any additional child nutrition waivers that could help you serve your community better.	(free text)
46.	Do you run a child nutrition program (i.e., are you in a management role for a child nutrition program)? <sup>a</sup>	<input type="checkbox"/> Yes → <i>Continue to question 47</i> <input type="checkbox"/> No → <i>Skip to question 49</i>
47.	Has your program experienced a negative financial impact due to COVID-19? <sup>b</sup>	<input type="checkbox"/> Yes → <i>Continue to question 48</i> <input type="checkbox"/> No → <i>Skip to question 49</i> <input type="checkbox"/> I'm not sure → <i>Skip to question 49</i>
(continued on next page)		

**Figure 2.** (continued) Cross-sectional, anonymous online survey administered from December 18, 2020 to February 16, 2021 to registered dietitian nutritionists involved in community-based efforts to address food insecurity in the United States.



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48.	How would you describe the current impact of COVID-19 on your program's finances? <sup>b</sup>	<input type="checkbox"/> Prior to COVID-19, we were operating at a loss, and we continue to operate at a loss. <input type="checkbox"/> Prior to COVID-19, we were operating in the black, and now we are operating at a loss. <input type="checkbox"/> Other (specify): _____
49.	Do you provide nutrition education to clients or recipients as part of your services? <sup>b</sup>	<input type="checkbox"/> Yes → Continue to question 50 <input type="checkbox"/> No → Skip to question 51
50.	Please describe how you have altered your programming to meet client needs, focusing on describing any best practices. <sup>b</sup>	(free text)
51.	Does the program you are involved with typically involve interacting with postpartum or breastfeeding women?	<input type="checkbox"/> Yes → Continue to question 52 <input type="checkbox"/> No → Skip to question 54
52.	Which of the following breastfeeding recommendations is your program currently giving to postpartum or breastfeeding women, if they have confirmed or suspected COVID-19? Please select all that apply. <sup>a</sup>	<input type="checkbox"/> No special recommendations <input type="checkbox"/> Wash hands prior to feeding/touching baby <input type="checkbox"/> Wash hands prior to touching pump or bottle parts <input type="checkbox"/> Wear a mask while breastfeeding <input type="checkbox"/> Do not breastfeed <input type="checkbox"/> Other (specify): _____
53.	What organization(s) is/are the source of the resources or information are you using to guide your program's current breastfeeding recommendations? Select all that apply.	<input type="checkbox"/> Centers for Disease Control and Prevention <input type="checkbox"/> American Academy of Pediatrics <input type="checkbox"/> Academy of Nutrition and Dietetics <input type="checkbox"/> International Lactation Consultant Association <input type="checkbox"/> World Health Organization <input type="checkbox"/> Other (specify): _____
54.	How would you describe the current COVID-19 situation in your location (i.e. in the community where you work)? <sup>b</sup>	<input type="checkbox"/> No community spread <input type="checkbox"/> Trending better than it has been <input type="checkbox"/> Stable <input type="checkbox"/> Trending worse than it has been <input type="checkbox"/> Uncontrolled spread <input type="checkbox"/> Other (specify): _____ <input type="checkbox"/> I'm not sure
55.	What kind of resources from the Academy of Nutrition and Dietetics would you find most helpful in your community-based efforts to address food insecurity during and after the COVID-19 pandemic?	(free text)
56.	Is there anything else you would like us to know about your experience with community-based efforts to address food insecurity during and after the COVID-19 pandemic?	(free text)

<sup>a</sup>Response options substantially edited or added for wave two of the survey.

<sup>b</sup>New question added for wave two of the survey.

**Figure 2.** (continued) Cross-sectional, anonymous online survey administered from December 18, 2020 to February 16, 2021 to registered dietitian nutritionists involved in community-based efforts to address food insecurity in the United States.