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Access to food and health care during the COVID-19 pandemic by disability status in the United States



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ABSTRACT

Background: The COVID-19 pandemic has impacted people's access to food and health care. People with disabilities may be disproportionately affected by these outcomes due to structural and social barriers. **Objective/Hypothesis:** To examine the relative prevalence of food insufficiency and unmet health care needs among the U.S. residents by vision, hearing, cognition, and mobility disability.

Methods: We used data from the Household Pulse Survey wave conducted from April 14 to April 26, 2021, when questions about functional disability were first included. Participants were asked about difficulty seeing, hearing, remembering or concentrating, and walking or climbing stairs. The outcomes of interest were food insufficiency, delaying needed medical care and not getting needed medical care. Poisson regression models with robust variance adjusted for potential confounders were used to examine the prevalence ratio of each of these outcomes by disability status in separate models for each type of disability.

Results: During April 14–26, 2021, 39.5% adults in the U.S. reported cognitive disability, 30.8% reported vision disability, 23.2% reported mobility disability, and 14.9% reported hearing disability. Adults with any type of disability were more likely than those without to experience food insufficiency (range of prevalence rate ratios [PRR]: 1.67–1.96), and delay (range of PRR: 1.48–1.87) or not get (range of PRR: 1.60–2.07) needed medical care.

Conclusions: These disparities suggest there is an urgent need to address the negative impact of the COVID-19 pandemic on people with disabilities. The prioritization of disability data collection is key in achieving that goal.

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During the coronavirus disease 2019 (COVID-19) pandemic, more Americans are reporting food insecurity,¹ and unmet health care needs² than before the pandemic, especially among people from ethnic, and racial minorities,^{1,2} and low socioeconomic backgrounds.² People with disabilities may also be disproportionately

affected by the COVID-19 pandemic's impact on health and socioeconomic outcomes,^{3–6} but data are scarce.⁷

Even before the COVID-19 pandemic, people with disabilities were more likely than those without to report decreased access to food and health care; around a third of food insecure households included a young adult with disability,⁸ and around 1 in 4 adults with a disability reported delaying or foregoing medical care.⁹ In addition to the increased risk of COVID-19 infection among people with disabilities,¹⁰ measures aimed to mitigate the spread of the virus such as closure of in-person shops, interruption of public

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transportation, and no-visitor policies in health care settings may lead to decreased access to resources and support among this group.¹¹

The Household Pulse Survey (HPS), which examines the experience of American households during the pandemic, began collecting data on vision, hearing, cognitive, and mobility disability during the April 14 to 26, 2021 wave. The association between these disability types with food insufficiency and unmet health care needs was examined.

Methods

The HPS is an ongoing national survey conducted by the U.S. Census Bureau to measure the experience of U.S. residents during the COVID-19 pandemic. These analyses used data from week 28 (April 14–26, 2021), when functional disability information was first collected.

The outcomes of interest were food insufficiency and unmet health care needs. Based on the U.S. Department of Agriculture (USDA), food insufficiency describes households that “did not have enough to eat, sometimes or often, in the last 7 days”.¹² This concept is closely related to food insecurity, which describes households that were “unable to acquire adequate food because they had insufficient money or other resources for food,” usually assessed over 30 days or 12 months.¹² This includes households that worry about or are unable to obtain foods of adequate quality and variety in “socially acceptable ways.”¹² Therefore, according to the USDA, food insufficiency is “closer in severity to very low food security than to overall food insecurity.”¹² To measure food insufficiency, participants were asked: “In the last 7 days, which of these statements best describes the food eaten in your household? Enough of the kinds of food (I/we) wanted to eat/Enough, but not always the kinds of food (I/we) wanted to eat/Sometimes not enough to eat/Often not enough to eat.” Those who answered sometimes or often not having enough food to eat were considered to have food insufficiency. Unmet health care needs outcomes included delaying needed medical care (“At any time in the last 4 weeks, did you delay getting medical care because of the coronavirus pandemic? Yes/No”), and not getting needed medical care in the past month (“At any time in the last 4 weeks, did you need medical care for something other than coronavirus, but did not get it because of the coronavirus pandemic? Yes/No”).

Participants were asked about four disability categories: vision (“Do you have difficulty seeing, even when wearing glasses?”), hearing (“Do you have difficulty hearing, even when using a hearing aid?”), cognition (“Do you have difficulty remembering or concentrating?”), and mobility (“Do you have difficulty walking or climbing stairs?”). In primary analyses, each disability category was considered independently. Having vision, hearing, cognitive or mobility disability was defined as answering “yes-some difficulty”, “yes-a lot of difficulty”, or “cannot do at all” to the respective question. Those with a specific disability were compared to those who did not report having that disability (“no difficulty”). To be inclusive of the diverse population of people with disabilities, this broad definition of disability was used for the primary analyses since limiting analyses to people with the most severe forms of disability may restrict the population to those with congenital or long-term impairments. In secondary analyses, first, a stricter definition was used to categorize severe disability. Having severe vision, hearing, cognitive, or mobility disability was defined as reporting “yes-a lot of difficulty” or “cannot do at all” (compared with “yes-some difficulty” or “no difficulty”). Second, a general disability variable combining disability types was constructed (no disability, vision disability only, hearing disability only,

cognitive disability only, mobility disability only, multiple disabilities).

Population characteristics stratified by each disability type were presented. Weighted percentages of outcomes by disability status were stratified by age due to differential probability of experiencing disability and accessing resources based on age. Poisson regression models with robust variance adjusted for self-reported age, gender, ethnicity, race, marital status, educational attainment, and income, in addition to employment status, household size and presence of children in the household for food insufficiency,^{13,14} and insurance status for unmet health care needs outcomes, were used to estimate the prevalence ratios of each of these outcomes by disability status in the overall population, and stratified by age. Prevalence ratios were used as they can be more easily interpreted than odds ratios from logistic regression models. In primary analyses, each disability type was evaluated in a separate model.

Participants with missing disability information (14,861 of 68,913 [21.6%]) were excluded from the analyses. Those with missing disability information were on average younger than those without, and a greater proportion of them were of Hispanic ethnicity, and non-white race. Participants with missing outcome information (food insufficiency: 8014 [11.6%]; delaying care: 13,753 [20.0%]; not getting medical care: 13,711 [20.0%]) or covariate information (marital status: 315 [0.5%]; employment information: 197 [0.3%]) were excluded from the respective models. Survey weights were incorporated to compute nationally representative estimates. Analyses were conducted using R Studio (Version 1.2.1335).

Results

Overall, 53,737 participants were included (Table 1). Of them, 48.6% reported no disability, 26.7% reported one type of disability, and 24.7% reported more than one disability. The most common disability reported was cognitive (39.5%), followed by vision (30.8%), mobility (23.2%), and hearing disability (14.9%). The majority of participants categorized as having a disability reported having “some difficulty (rather than “a lot of difficulty” or “cannot do at all”) (Table S1). Having any type of disability was associated with increased prevalence of food insufficiency and unmet healthcare needs, as compared to not having a disability, and the unadjusted prevalence of outcomes was highest among those in the younger age groups (Fig. 1).

In adjusted models (Table 2), the prevalence ratios of all outcomes were higher among those with any type of disability than those without. Relative to adults without vision disability, those with vision disability had 1.96 times the prevalence of food insufficiency (95% CI = 1.85–2.08), 1.70 times the prevalence of delaying care (95% CI = 1.64–1.77), and 1.77 times the prevalence of not getting needed care (95% CI = 1.70–1.84). The highest relative prevalence among those with vision disability was among those 65 years or older compared with younger age groups for all outcomes.

Those with hearing disability had 1.83 times the prevalence of food insufficiency (95% CI = 1.69–1.99), 1.48 times the prevalence of delaying care (95% CI = 1.41–1.54), and 1.60 times the prevalence of not getting needed care (95% CI = 1.53–1.68) relative to those without hearing disability. For hearing disability comparisons, the relative prevalence of food insufficiency was highest among those younger than 45 years, while the relative prevalence of delaying care was highest among those 65 years or older.

Having cognitive disability was associated with 1.67 times the prevalence of food insufficiency (95% CI = 1.57–1.78), 1.87 times prevalence of delaying care (95% CI = 1.81–1.93), and 1.93 times the prevalence of not getting needed care (95% CI = 1.87–2.00) compared with not having cognitive disability.

Table 1
Study population characteristics in weighted percentages, the Household Pulse Survey, Week 28.

	Disability categories								
	Overall	Vision disability		Hearing disability		Cognitive disability		Mobility disability	
		No	Yes	No	Yes	No	Yes	No	Yes
No., weighted %	53,737 (100.0)	33,859 (69.2)	19,878 (30.8)	45,294 (85.1)	8443 (14.9)	33,859 (60.5)	19,878 (39.5)	41,584 (76.8)	12,153 (23.2)
Age in years, weighted %									
18–29	13.6	14.6	11.4	14.6	7.7	10.4	18.4	16.1	5.4
30–39	18.1	20.8	12.0	19.8	8.0	18.4	17.4	21.1	7.9
40–49	17.1	17.3	16.7	18.3	10.3	17.8	16.2	18.4	13.0
50–59	17.6	15.5	22.3	17.7	16.8	18.1	16.7	17.2	18.7
60–69	19.1	17.9	21.8	18.0	25.6	20.4	17.2	16.8	26.9
70–79	11.6	11.1	12.7	9.7	22.9	12.1	10.9	8.8	21.0
80+	2.9	2.8	3.2	1.9	8.7	2.8	3.2	1.7	7.1
Men, weighted %	47.4	49.7	42.2	46.0	54.9	51.1	41.6	49.0	41.7
Hispanic, weighted %	15.4	14.8	16.8	15.8	13.4	15.0	16.2	15.8	14.2
Race, weighted %									
White	78.0	78.4	77.1	76.8	84.6	76.8	79.7	78.2	77.1
Black	11.1	10.5	12.4	12.0	6.2	11.9	10.0	10.5	13.3
Other race (including Asian) or multiple races reported	10.9	11.1	10.5	11.2	9.2	11.3	10.3	11.3	9.6
Married, weighted %	57.8	59.2	54.6	57.3	58.4	62.3	50.0	58.7	53.1
Educational attainment, weighted %									
Less than high school	7.0	6.3	8.6	6.9	8.4	6.8	7.5	6.2	10.1
High school	28.6	27.2	31.8	27.7	33.9	27.7	30.1	26.4	36.2
Some college	20.6	19.8	22.2	20.3	21.8	18.5	23.8	20.3	21.5
College degree or more	43.8	46.7	37.4	45.1	35.9	47.0	38.7	47.2	32.2
Income, weighted %									
Less than \$25,000	13.0	10.9	17.5	12.4	16.5	10.1	17.5	10.4	21.6
\$25,000–\$34,999	10.1	9.0	12.5	9.9	11.4	9.3	11.4	8.8	14.5
\$35,000–\$49,999	11.1	10.4	12.7	10.8	13.0	10.5	12.0	10.1	14.5
\$50,000–\$74,999	16.1	15.9	16.4	15.9	16.9	15.9	16.3	15.8	16.6
\$75,000–\$99,999	12.3	12.8	11.1	12.3	12.1	12.9	12.1	13.2	9.2
\$100,000–\$149,999	14.4	15.4	12.3	14.7	12.5	15.9	12.1	15.9	9.3
\$150,000–\$199,999	6.8	7.8	4.6	7.1	5.1	7.7	5.4	7.8	3.5
\$200,000 and above	7.5	8.6	4.9	7.9	4.4	8.8	5.3	8.8	2.8
Unknown	8.9	9.3	8.0	9.1	8.1	9.0	8.9	9.2	7.9
Household size, mean (SD)	3.25 (1.69)	3.25 (1.66)	3.25 (1.75)	3.28 (1.64)	3.11 (1.91)	3.22 (1.65)	3.30 (1.74)	3.29 (1.64)	3.11 (1.83)
Have children in the household, weighted %	36.9	37.3	36.0	38.3	28.7	37.3	36.3	38.7	30.8
Employed in the past week, weighted %	58.7	61.4	52.7	61.6	42.0	61.2	54.9	65.5	36.3
Insurance type, weighted %									
No insurance	9.0	8.9	9.0	9.5	6.2	8.6	9.5	9.5	7.1
Private and public	20.5	19.2	23.3	18.4	32.8	19.8	21.5	17.0	32.2
Private only	47.2	50.8	39.1	50.3	29.4	49.8	43.3	54.0	24.8
Public only	16.2	14.1	20.8	15.0	23.0	14.1	19.3	12.7	27.8
Unknown	7.1	6.9	7.8	6.9	8.7	7.6	6.4	6.9	8.1

People with mobility disability had 1.89 times the prevalence of food insufficiency (95% CI = 1.75–2.04), 1.73 times the prevalence of delaying care (95% CI = 1.68–1.79), and 2.07 times the prevalence of not getting care (95% CI = 2.00–2.14). In comparisons by mobility disability, the highest relative prevalence of reporting delaying care and not getting needed care was among those 65 years or older.

In secondary analyses using the severe disability definition, observed associations were similar to or larger in magnitude than results from the primary analyses that defined disability inclusively (Table S2). In analyses examining single and multiple disabilities, people with a one disability and people with more than one disabilities had significantly higher relative prevalence of food insufficiency, delaying care, and not receiving medical care compared with those with no disability (Table S3). Those with more than one disability had the highest relative prevalence of food insufficiency (PR = 2.66, 95% CI = 2.48–2.86), delaying care (PR = 2.41, 95% CI = 2.30–2.53), and not obtaining needed medical care (PR = 2.74, 95% CI = 2.61–2.87) relative to those without disability. In the age stratified analyses, older adults with vision disability only had the highest relative prevalence of food insufficiency (PR = 2.39, 95%

CI = 1.68–3.40), while those with hearing loss only had lower relative prevalence of food insufficiency (PR = 0.26, 95% CI = 0.11–0.60), and having cognitive (PR = 0.93, 95% CI = 0.51–1.68) or mobility disability (PR = 0.93, 95% CI = 0.58–1.49) only were not associated with food insufficiency.

Discussion

These data indicate that during the COVID-19 pandemic, adults with disabilities had a higher prevalence of food insufficiency and unmet health care needs than adults without disability. Notably, disability-based disparities were found for vision, hearing, cognitive, and mobility disability, and were greatest among those with more than one disability, suggesting that multi-component interventions are needed to address the disparities. Disability status was associated with higher rates of food insufficiency and food insecurity and delayed or forgone medical care even before the pandemic.^{8,15–17}

Disability may be linked to food insufficiency via several mechanisms, including work and functional limitations.⁸ A study conducted in Australia showed that having a disability during the



Fig. 1. The prevalence of food insufficiency, delaying care, and not getting needed care by disability status, the Household Pulse Survey, Week 28. Prevalence of food insufficiency (in the past week), delaying care (in the past month), and not getting needed care (in the past month) among U.S. residents between April 14 and 26, 2021, by vision, hearing, cognitive and mobility disability, stratified by age groups (18–44 years, 45–64 years, 65+ years), in weighted percentages.

Table 2
Multivariable-adjusted prevalence ratios of food insufficiency, and delaying or not getting needed care by disability status, the Household Pulse Survey, Week 28.

	Disability category ^a	Reference category	PR	95% CI	PR	95% CI	PR	95% CI	PR	95% CI
Food insufficiency in past week^b			Overall		18–44 years		45–64 years		≥ 65 years	
			(N = 53,608)		(N = 15,675)		(N = 21,714)		(N = 16,219)	
	Vision disability	No vision disability	1.96	1.85, 2.08	1.87	1.70, 2.06	2.06	1.86, 2.28	2.20	1.77, 2.74
	Hearing disability	No hearing disability	1.83	1.69, 1.99	2.15	1.91, 2.42	1.71	1.50, 1.94	1.37	1.10, 1.71
	Cognitive disability	No cognitive disability	1.67	1.57, 1.78	1.71	1.55, 1.90	1.73	1.59, 1.88	1.34	1.10, 1.63
	Mobility disability	No mobility disability	1.89	1.75, 2.04	2.13	1.91, 2.39	1.78	1.64, 1.94	1.48	1.13, 1.95
Delaying care in past month^c			Overall		18–44 years		45–64 years		≥ 65 years	
			(N = 53,586)		(N = 15,672)		(N = 21,711)		(N = 16,203)	
	Vision disability	No vision disability	1.70	1.64, 1.77	1.47	1.38, 1.56	1.70	1.64, 1.77	1.47	1.94, 2.26
	Hearing disability	No hearing disability	1.48	1.41, 1.54	1.52	1.41, 1.64	1.48	1.41, 1.54	1.52	1.48, 1.70
	Cognitive disability	No cognitive disability	1.87	1.81, 1.93	1.84	1.73, 1.96	1.87	1.81, 1.93	1.84	1.82, 2.14
	Mobility disability	No mobility disability	1.73	1.68, 1.79	1.73	1.61, 1.85	1.73	1.68, 1.79	1.73	1.76, 2.03
Not getting needed care in past month^c			Overall		18–44 years		45–64 years		≥ 65 years	
			(N = 53,638)		(N = 15,676)		(N = 21,734)		(N = 16,228)	
	Vision disability	No vision disability	1.77	1.70, 1.84	1.51	1.41, 1.62	1.77	1.70, 1.84	1.51	1.93, 2.32
	Hearing disability	No hearing disability	1.60	1.53, 1.68	1.75	1.59, 1.93	1.60	1.53, 1.68	1.75	1.55, 1.81
	Cognitive disability	No cognitive disability	1.93	1.87, 2.00	1.90	1.78, 2.04	1.93	1.87, 2.00	1.90	1.85, 2.19
	Mobility disability	No mobility disability	2.07	2.00, 2.14	2.04	1.88, 2.21	2.07	2.00, 2.14	2.04	2.09, 2.42

CI, confidence interval; PR, prevalence ratio.

^a Each disability variable was included in independent separate models.

^b Models adjusted for age, gender, ethnicity, race, marital status, educational attainment, income, employment status in the past 7 days, household size, and presence of children in household.

^c Models adjusted for age, gender, ethnicity, race, marital status, educational attainment, income, and insurance status.

pandemic was associated with food insecurity,³ and in the U.S., working-age adults with disabilities were more likely to experience food insufficiency than those without disability before the pandemic (in March 2020) and during the pandemic (in September 2020).¹³ In this study, we adjust for employment status to examine the impact of having functional disability on food insecurity independent of work limitations. Mobility disability has been previously linked to food insecurity via transportation barriers that may limit access to food stores.⁸ This may be even more significant during the pandemic with the limitations in public transportation options. Moreover, self-service check-out options which have become increasingly popular during the pandemic may not always be accessible to people using wheelchairs. Cognitive disability may be associated with food insufficiency by affecting people's ability to appropriately budget for food and prepare meals,⁸ which may be exacerbated by the pandemic's increased toll on mental health.¹⁸ Vision disability may also be having a greater impact on food insecurity during the pandemic with the increased dependence on potentially inaccessible technology for food delivery and self-service check-out. Similar to our results, in a national study conducted before the COVID-19 pandemic, when accounting for other functional limitations, hearing disability was associated with food insecurity only among younger adults.⁸ Having hearing loss has been shown to be associated with social isolation,¹⁹ and this may be contributing to food insufficiency among this group.⁸ This may be more significant among young adults as hearing loss is not as prevalent among this group, thus potentially making the experience more isolating.

Not working due to a disability and being unemployed for other reasons was associated with decreased access to care during the pandemic.² Here, we found similar patterns in a nationally representative sample of adults in the U.S., using functional disability definitions. Transportation and communication barriers have been linked to decreased access to care among people with disabilities even before the pandemic.⁹ These may be exacerbated by general measures taken during the pandemic to limit the spread of COVID-19, such as limited access to public transportation, and universal use of non-clear masks and strict no visitor policies in health care settings. The latter may especially affect those with sensory disability as they are more likely than those without to have difficulty communicating with providers and require accompaniment by family companions to physician visits.²⁰

This research also adds to the literature by highlighting disparities in delayed and foregone healthcare were most evident among older adults with disabilities whereas disparities for food insufficiency were most pronounced among younger adults, except for those with vision-related disabilities. These results suggest that the COVID-19 pandemic may be exacerbating existing disparities. We hypothesize that quarantining and physical distancing, commonly employed during the pandemic to limit the spread of COVID-19, may lead to a loss of social network and support for some, and this could prevent them from accessing food or health care services.^{11,21} Interruptions to public transportation and increased reliance on technology that may be inaccessible could also impact people's access to food and health care.^{21,22}

Addressing these disparities will require improvements to underlying structural factors like accessibility and provision of free or affordable social services for people with disabilities. Additionally, changes that aim to mitigate the spread of COVID-19 should be implemented with a focus on accessibility and inclusivity. For example, technology platforms for food delivery and self-check-out options in grocery stores should be accessible to people with disabilities. Moreover, alternative safe options for those who rely on public transportation should be provided. In health care settings, policies such as banning hospital visitors or support persons, as well as

universal use of non-clear masks should be evaluated for their potential negative impact on people with disabilities.

In our study, the prevalence of disability was higher than previous estimates using self-report data such as the American Community Survey²³ or the Behavioral Risk Factor Surveillance System.¹⁷ In both surveys, participants were asked about "serious difficulty" with vision, hearing, cognition, and mobility. In our study, having any degree of difficulty performing an activity was considered as having a disability. Using this broad definition of disability captures even mild disability. While this approach may include more people with disabilities, the associations were sometimes attenuated due to the inclusion of those with mild limitations, as was shown with the models using the stricter disability definition. Moreover, the high prevalence of cognitive disability may partly reflect the increased prevalence of depression symptoms during the pandemic.¹⁸

Study limitations should be considered when interpreting the results. Around a fifth of survey respondents had missing data on disability. Therefore, study findings may not be generalizable to everyone with disabilities in the U.S., especially younger adults of Hispanic ethnicity and non-white race. Questions about limitations in activities of daily living were also not included in the set of disability questions. Moreover, disability data was only collected one year into the pandemic, when many of the restrictions had been already lifted and people had time to adapt to these measures. Earlier during the pandemic, the disparities may have been more apparent.

Conclusion

This report highlights disparities in access to food and health care by vision, hearing, cognitive, and mobility disability status during the COVID-19 pandemic. These results provide evidence that further collection of disability data is urgently needed to identify and address the barriers leading to health inequities for the disability community. Disparities by disability status should be taken into consideration when addressing the health and social impacts of COVID-19 across society.

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Conflicts of interest

NSR reports sitting on the scientific advisory boards without financial compensation of Shoebox Inc and Good Machine Studio. All other authors have no conflicts of interest to report.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.dhjo.2022.101271>.

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