

**The effects of the COVID-19 pandemic on the mental health and stress of Navajo
Nation members.**

Antoinette J. Vreeke

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India J. Ornelas

Shirley A.A. Beresford

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Antoinette J. Vreeke

University of Washington

Abstract

The effects of the COVID-19 pandemic on the mental health and stress of Navajo Nation members.

Antoinette J. Vreeke

Chair of the Supervisory Committee:

Indian J. Ornelas

Health Systems and Population Health

Objective: The COVID-19 pandemic has had a significant impact on the Navajo Nation and has resulted in worse rates of infection, hospitalization, and deaths. Historical traumas have resulted in worse mental health rates prior to the pandemic. The psychological toll of the pandemic is large. It is important to understand the factors that have impacted mental health and stress in Navajo communities. There has been very little previous research on the mental health impacts of COVID-19 on American Indian/Alaska Native communities. There has been no previous research describing the specific impacts for the Navajo Nation. There is a need for disaggregated data focusing on specific tribes, in order to address these problems with appropriate interventions and solutions. *Method:* This is a descriptive analysis utilizing data collected by the Yéego! Healthy Eating and Gardening Study. The parent study was a school-based intervention focused on healthy eating and gardening. Adults of students participating in the parent study were asked to complete a self-report survey. Along with questions about the

Yéego! intervention, survey included questions on demographic characteristics and the COVID-19 pandemic in order to better understand its impacts on those enrolled in the study.

Descriptive statistics were calculated for all variables. We estimated a one-way ANOVAs to assess whether resilience and perceived stress were associated with COVID-19 specific stressor and support variables. *Results:* About 97.3% of respondents had Navajo Tribal Affiliation. Most respondents indicated that their self-reported health was excellent, very good, or good (71%), and 14.8% stated that their mental health had gotten worse. Resilience scores were higher (>5) compared to stress scores which were lower (<5) for the factors examined. For resilience, differences in mean scores were in the expected direction, although none were significant. For stress, differences in mean stress score were also in the expected direction, however some were significant. Mean stress scores were higher among those with worse mental health and among those concerned about being able to work during the pandemic. *Conclusion:* This study provides new knowledge of how the COVID-19 pandemic impacted the Diné people. Knowing the underlying factors that lead to higher stress levels and worse mental health are necessary. Solutions need to be developed that address the broader social inequities and results of historical trauma.

Introduction:

In early March of 2020, the World Health Organization declared COVID-19 a global pandemic after the disease continued to spread quickly across multiple countries (World Health Organization, 2020). Since this declaration, the SARS-CoV-2 virus has continued to spread throughout the United States and Tribal nations, including the Navajo Nation. In June of 2020 the Navajo Nation was experiencing the highest per capita COVID rate in the country, with 7088 cases among the 173,000 people that lived on the reservation (Urbatsch, 2020). As of August 2021, the Navajo Nation Department of Health (NDOH) had reported 31,754 total confirmed cases and 1,386 total confirmed deaths (Navajo Nation Department of Health, 2021). The COVID-19 pandemic has had a significant impact on the Navajo Nation, only adding to previous harms resulting from colonization.

The Diné people (Navajo) are estimated to have begun inhabiting the Southwest some 800 to 1000 years ago (Indian Health Service). Forced removal from their homelands, known by the Diné as “The Long Walk”, some 8,000 people were apprehended by Colonel Kit Carson, imprisoned, and forced to journey 300 miles to Fort Sumner, New Mexico in 1864 (Indian Health Service). Reservation land was established in 1868 after signing a treaty, in which the Diné were allowed to return to their original lands which had been diminished in size (Indian Health Service). Diné Bikéyah, Navajoland, is now the largest land-based Native American Tribe in the US reservation system, spanning 27,000 square miles, extending into Utah, Arizona, and New Mexico, and bordering Colorado in the Four Corners region with over 300,000 members (Indian Health Service; McPaul, 2021; Navajo Nation Department of Information Technology, 2011). In accordance with the Diné Bahane, the story of creation, Changing Women, who

created the original clans, also bore the Monster Slayer Twins who saved the Diné from the Naayéé (monsters) (McPaul, 2021). The Hatalii (Chanters/Healers) have advised that the Naayéé in the SARs-CoV-2 virus and resulting COVID-19 disease will invade and kill many (McPaul, 2021). The Nation has named the disease Dikos Nitsaaígíí Náhást'éíts'áadah, which translates to "Big Cough 19" (McPaul, 2021).

This pandemic has been one of notable disproportionate impact. American Indian and Alaska Native communities have had a cumulative incidence of COVID-19 3.5 times greater than non-Hispanic whites (Essienyi, 2021). As an example, American Indians make up about 10% of New Mexico's population, yet they represent 60% of all COVID-19 cases (Essienyi, 2021). Rates of hospitalizations and deaths from COVID-19 have also been higher for American Indians than other ethnic groups (Essienyi, 2021). The severe impact of the pandemic is a direct result of the harms associated with a history of colonization, including increased exposure to adverse childhood experiences, racism, marginalization, and trauma (Sandoiu, 2020).

Historical trauma refers to a series of events sustained on a group of with a specific identity, over the life span and across generations (John-Henderson & Ginty, 2020; Walters, et al., 2011). It can be emotional, psychological, physical, and environmental. In Indigenous communities, historical trauma is associated with worse physical and mental health (Power, et al., 2020; John-Henderson & Ginty, 2020; Walters, et al., 2011). In the U.S., more than 20% of American Indians are affected by mental illness, mental dysfunction, or self-destructive behaviors (Mays, et al., 2009). Rates of depression and posttraumatic stress disorder (PTSD) in American Indian communities are also very high (Mays, et al., 2009). In 2018, the percentage of the adult population with serious psychological distress was 4.5 for American Indians and

Alaska Natives and 3.8 for non-Hispanic white (US Department of Health and Human Services Office of Minority Health, 2021). As an indicator of mental health, the overall death rate from suicide was 20% higher compared to the non-Hispanic white population (US Department of Health and Human Services Office of Minority Health, 2021). Age-adjusted death rates from suicides in 2018 were also higher for American Indian and Alaska Natives, at 22.3% compared to 18.1% for non-Hispanic white (US Department of Health and Human Services Office of Minority Health, 2021). While most epidemiological data at the national level, Diné people may have similar patterns of mental health given their experience with the historical traumas of loss of their lands, culture, and broken treaties.

Since the first case of COVID-19, there has been widespread infections, hospitalizations, and deaths on the Navajo Nation. As the pandemic progressed, researchers have begun to understand its effects on mental health. In a sample of 6,854 American and Canadian self-report survey respondents, Taylor et al (2020) found that the “psychological footprint of COVID-19 is likely more substantial than the medical footprint,” in which 38% of respondents experienced some degree of distress with an additional 16% being highly distressed. Similarly, a national survey in Canada found that 60% of indigenous respondents had worse mental health since the start of the pandemic (Sandoiu, 2020). The same survey also found that 41% of Indigenous respondents reported symptoms of severe anxiety compared to 25-27% for non-Indigenous respondents (Sandoiu, 2020).

To recover from the COVID-19 pandemic, it is important to understand the factors that have impacted mental health and stress in Navajo communities. There has been very little previous research on the mental health impacts of COVID-19 on American Indian/Alaska Native

communities. There has been no previous research describing the specific impacts for the Navajo Nation. There is a need for disaggregated data focusing on specific tribes, in order to address these problems with appropriate interventions and solutions (McPaul, 2021; Power, et al., 2020; Taylor, et al., 2020).

This study uses data collected by the Yéego! Healthy Eating and Gardening Study to further understand the factors associated with stress and the mental health among Navajo Nation members, during the COVID-19 pandemic.

Methods:

Study Sample:

The Yéego! project was conducted in six elementary schools on the Navajo Nation. Yéego! included a school-based intervention focused on healthy eating and gardening. Schools were selected in the Shiprock and Tsaille areas. Criteria for being included were that the school had to have been established least 3 years, school size (40 to 100 students in grades 3 and 4 combined), have more than two-thirds Navajo students, and satisfy a garden site checklist (have access to water, fencing and/or security, garden site near main building, staff and volunteer interest, and supportive leadership). When these conditions were met, school interest was assessed, after which 6 schools (3 in each area) were identified for participation in the study. Schools were randomized to two groups, one to receive the intervention in the first year and one to receive a delayed intervention in the second year. The initial study population included students in third and fourth grade and one adult caregiver for each student (referred to in this paper as “adults”). Adults were recruited through a study information and recruitment

packet provided to students through their teachers in autumn 2017. Students were to give the packet to the adult in the household (presumably the main caregiver). Prior to participation, adults provided informed consent. Adults completed a total of three surveys, baseline (T1) at the beginning, follow-up (T2) at the end of the school year (June), and final follow-up (T3) which was completed in spring 2021. At T3, Yéego! attempted to reach all adults who consented regardless of if they completed a baseline survey, resulting in a response of 178 adults. In most cases, the adult surveys at different timepoints were completed by the same person. Data was collected through a web-based questionnaire, phone interview (conducted by Interviewers who were provided training prior), or a self-completed mail-in survey. The parent study was previously approved by the Fred Hutchinson Cancer Research Center IRB and the Navajo Nation Human Research Review Board.

Surveys:

Surveys included questions on demographic characteristics and the COVID-19 pandemic in order to better understand its impacts on those enrolled in the study. Since the Yéego! intervention was intended to assess healthy eating and gardening, the T3 survey included more than demographics and COVID-19 questions. Other variables included fruit and vegetable intake, fast food, soft drink, eating meals together, gardening interest, participation, frequency, and social norms, level of physical activity, food insecurity, and picture sort asking how often certain foods are eaten.

Perceived Stress was measured by the Perceived Stress Scale-4 (PSS-4). This is a shorter version of the PSS-10, which is one of the most widely used instruments to measure subjective

psychological stress (John-Henderson & Ginty, 2020). The measure consists of four responses to the question “During the last month, how often have you felt the following emotions?”; including, unable to control the important things in your life; confident about your ability to handle your personal problems; things were going your way; difficulties were piling up so high that you could not overcome them. Response options assess frequency (0=Almost Never, 1=Sometimes, and 3=Often) and are summed to create a score ranging from 0-8. Higher scores reflect higher frequency of stress.

Resilience was measured with scale of four items, including response options ranging from 1-does not describe me well to 3-describes me well (National Institute of Environmental Health Sciences, 2020). Items included: I look for creative ways to alter difficult situations; regardless of what happens to me, I believe I can control my reaction; I believe I can grow in positive ways by dealing with difficult situations; I actively look for ways to replace the losses I encounter in life (National Institute of Environmental Health Sciences, 2020). Scores were totaled on a range from 4-12, then subtracted by 4, and resulted in 0-8. A higher score reflected higher resilience.

Changes in Mental Health were assessed with one item asking participants to say whether their mental health changes since March 2020. Response options included: yes, it has gotten worse; yes, it has gotten better; no, it has stayed the same; and don't know.

Concerns about COVID-19: In order to assess the concerns due to COVID-19 respondents were asked to indicate whether the following were concerns (yes/no): becoming sick with COVID-19; someone I know becoming sick with COVID-19; not being able to see family and

friends; a family member that became socially isolated; not being able to work; or being treated unfairly because I am Navajo (Ornelas, et al., 2021).

COVID related assistance: Respondents were asked about the temporary benefits or assistance they had sought out or received since March 2020. The options included: unemployment; food stamps/EBT; Temporary Assistance for Needy Families (TANF); Navajo National Hardship Assistance; money from a community organization of relief fund; other (please specify). Each of the different assistance options were its own variable and a binary yes-no outcome used. We created an additional variable for those who indicated they had received or sought out any form of assistance.

Job insecurity: Respondents were asked about their change in work status since 2020. Response options included: Yes, started a new job; Yes, hours have decreased; Yes, hours have increased; Yes, working from home some or all of the time; Yes, I am no longer working; and No. We created an additional indicator variable for those who said their hours decreased or no longer working.

Self-reported health: To assess general health adults were asked to select one option best fitting their assessment of their health: excellent, very good, good, fair, or poor (National Institute of Environmental Health Services, 2020). For analysis, those who selected excellent, very good, or good were grouped together. Similarly, for those who selected fair or poor.

Demographic characteristics: Adults provided demographic information including age, gender, race, highest level of education completed (8th grade or less, some high school, high school graduate or GED, some technical or business school, and technical or business school

graduate), marital status, current employment status, and household size. Respondents were asked if they have tribal affiliation and if so which tribes (Navajo, Hopi, Apache, or other). Language spoken at home were broken into Navajo, English, Navajo and English. Two categories containing Navajo were combined to report households speaking some Navajo at home.

Data Analysis:

We calculated descriptive statistics for all variables. We estimated a one-way ANOVAs to assess whether resilience and perceived stress were associated with COVID-19 specific stressor and support variables. We used R and Microsoft Excel for the analysis conducted in this study (Microsoft Corporation, 2018; R Core Team). Data used in this analysis has been de-identified and coded.

A data use agreement with the Fred Hutchinson Cancer Center was approved by the Navajo Nation Human Research Review Board to utilize the data collected by Yéego!.

Results:

Table 1: Descriptive Characteristics of Adult Participants (N=178)

Characteristic (N)		N/Mean	%/SD
Gender (168)			
	Male	6	3.60%
	Female	162	96.4%
Navajo Tribal Affiliation (146)			
	No	4	2.70%
	Yes	142	97.3%
Marital Status (144)			
	Single, Divorced, Widowed	79	54.9%
	Married	65	45.1%
Education (144)			
	Less than High School	18	12.5%

	High School Graduate	34	23.6%
	More than High School	50	34.7%
	College grad or more	42	29.2%
Race (144)			
	American Indian or Alaska Native	134	93.1%
	Asian	5	3.50%
	Hawaiian or Pacific Islander	1	0.70%
	White or Caucasian	3	2.10%
	Other	1	0.70%
Speaks Navajo (168)			
	Yes	97	57.7%
	No	77	45.8%
Employment (157)			
	Not employed	81	51.6%
	Employed (full or part-time)	76	48.4%
Age (167)		39.5	8.70
	18-34	49	29.3%
	35-50	103	61.7%
	51-76	15	9.00%
Household Size (157)		5.3	1.80
General Health (157)			
	Excellent, very good, good	112	71.3%
	Fair, poor	45	28.7%
Mental Health Change (155)			
	Yes, gotten worse	23	14.8%
	Yes, gotten better	22	14.2%
	No, stayed same	73	47.1%
	Don't know	37	23.9%
Change in Work Status (156)			
	Yes, started new job	9	5.80%
	Yes, hours have decreased	13	8.30%
	Yes, hours have increased	9	5.80%
	Yes, working from home some or all of the time	8	5.10%
	Yes, I am no longer working	27	17.3%
	No	90	57.7%
Concern: Being able to work (178)			
	Yes	55	30.9%
	No	123	69.1%
Concern: Being treated differently for being Navajo (178)			
	Yes	12	6.70%

	No	166	93.3%
Concern: Being sick (Ind. Or Others) (178)			
	Yes	93	52.2%
	No	85	47.8%
Concern: Social Isolation (178)			
	Yes	86	48.3%
	No	92	51.7%
Any form of Assistance (178)			
	Yes	139	78.1%
	No	39	21.9%
Assistance: Unemployment (178)			
	Yes	18	10.1%
	No	160	89.9%
Assistance: Food Stamps/EBT (178)			
	Yes	105	59.0%
	No	73	41.0%
Assistance: Temporary Assistance for Needy Families (TANF) (178)			
	Yes	24	13.5%
	No	154	86.5%
Assistance: Navajo National Hardship Assistance (178)			
	Yes	88	49.4%
	No	90	50.6%
Assistance: Community or relief fund (178)			
	Yes	5	2.80%
	No	173	97.2%

Table 2: Comparison of Stress and Resilience Score Between COVID-19 Stressors and Support

COVID-19 Factors (N)	Stress			Resilience		
	Mean	SD	<i>p</i>	Mean (SD)	SD	<i>p</i>
Mental health changes						
Mental health has gotten worse since March 2020	4.39	1.41	0.0001*	4.96	2.16	0.17
Mental health stayed the same or better	3.09	1.46		5.6	2.02	
Employment changes						
Hours decreased or no longer working	3.68	1.51	0.06	5.45	2.18	0.84
Employment has stayed the same	3.15	1.50		5.53	2.01	
Concern about working during COVID						

Yes	3.71	1.55	0.005*	5.71	2.12	0.36
No	2.94	1.68		5.40	2.01	
Concerned about being treated differently for being Navajo						
Yes	3.67	1.23	0.30	6.08	1.93	0.31
No	3.15	1.70		5.46	2.06	
Concerned about self or others getting sick						
Yes	3.27	1.61	0.46	5.57	1.96	0.64
No	3.08	1.75		5.41	2.18	
Concerned about being socially isolated						
Yes	3.42	1.31	0.06	5.64	1.91	0.39
No	2.96	1.93		5.35	2.21	
Received or sought financial assistance during COVID pandemic						
Yes	3.30	1.52	0.06	5.49	2.08	0.73
No	2.77	2.11		5.67	1.88	

* p-value <0.05

Results:

Demographic characteristics and descriptive statistics of the COVID-19 stressors and supports for the 178 adult respondents are shown in Table 1. With 178 total respondents some questions were skipped in the T3 follow up survey resulting in varying N values. About 97.3% of respondents had Navajo Tribal Affiliation and 57.7% spoke some Navajo at home. Most respondents were not employed (51.6%) with 48.4% being employed (full or part-time). Participants had a mean age of 39.5, and their average household size was about 5 people. About 71% of respondents indicated that their self-reported health was excellent, very good, or good, and 14.8% stated their mental health had gotten worse since March 2020. Of the different concerns, the most commonly reported concern was becoming sick or others becoming sick (52.2%). Of the COVID-19 supports, 78.1% of respondents had sought out or received some form of assistance, the highest being Food Stamps/EBT (59%).

Table 2 details the mean stress and resilience scores for the COVID-19 stress and support factors. Resilience scores were higher (>5) compared to stress scores which were lower (<5) for the factors examined. For resilience, differences in mean scores were in the expected direction, although none were significant. For stress, differences in mean stress score were also in the expected direction, however some were significant. Mean stress scores were higher among those with worse mental health and among those concerned about being able to work during the pandemic.

Discussion:

In this study, we evaluated mental health, stress, and resilience in Navajo Nation adults that participated in the Yéego! parent study. Overall, higher stress levels were associated with worse mental health and concerns of being able to work. Our study provides new knowledge of how the COVID-19 pandemic impacted the Diné people. As stated previously, increasing knowledge on the psychological impacts on the pandemic from tribe specific data can help provide specific interventions. Community members have stated the importance of identifying solutions specifically for the Navajo Nation (McPaul, 2021).

In our study, 14.8% of participants responded that their mental health had gotten worse. Previous national studies have found that 21% of American Indians are affected by mental illness (Mays, et al., 2009). While we found a lower percentage, about 24% stated they didn't know and 47.1% stated that their mental health had stayed the same. There is a possibility that those who selected didn't know or no stayed the same, were already at levels of poor mental health. However, since this study focused specifically on the change in mental

health, further research is necessary to determine mental health status. We also found moderately high resilience scores among participants in our study. These higher resilience levels could have buffered the lower stress levels.

Mental health changes and higher stress levels were significantly associated with higher levels of stress. However, knowing if the change in mental health resulted in higher stress levels, or higher stress levels resulted in a worsened mental health cannot be determined. Further research is needed to determine causality and direction of this relationship. Respondents' concern with being able to work was also strongly associated with higher stress levels. Even prior to the pandemic, the Navajo Nation had one of the highest poverty rates in the US (Hathaway, 2021). This could have led to increased stress level surrounding being able to work during the pandemic. Having adequate work protections from COVID-19, internet to facilitate working from home, and financial funds could help ease these stress levels. Employment changes, concern about social isolation, and seeking/receiving any form of assistance were associated with higher stress levels, however these were not significant. As for resilience, the associations were in the expected direction, but none were significant. This could likely be a result of the overwhelming traumatic experience of the pandemic. More research needs to be conducted to determine if resilience acted as protective factor.

This study is not without its limitations. Given this is a cross-sectional descriptive analysis this limits the ability to make causal conclusions. The study population is not representative of adults throughout the Navajo Nation which make the findings less generalizable. The data was gathered through a survey by self-report, potentially influencing

participants to select choices to appear more desirable, resulting in self-reporting bias (Bauhoff, 2014).

While limitations are present, the increase in tribal specific data and knowledge of the effects of the COVID-19 pandemic are integral for the Diné people. This study provides public health workers on the Navajo Nation with key areas to target. Interventions that seek to address changes in mental health status during the COVID-19 pandemic and reducing stress levels. One area of need is improving the concern of being able to still work. This can be done by ensuring COVID-19 work practices to limit the spread, internet access to allow the ability to work from home, and easy access to financial funds during time of isolation/quarantine. Building these practices in place can help prepare for any possible future pandemics. Further research is needed to bolster and improve pandemic preparedness in order to address both the psychological impacts and physical. For behavioral and mental health providers having improved background knowledge on the effects of COVID-19 allows them to work with patients to determine stressors and respond according more quickly. The results of this study can also provide the Navajo Nation with data for grants to be used to support a shortage of mental health services. To address the devastating impacts of the COVID-19 pandemic, knowing the underlying factors that lead to higher stress levels and worse mental health are necessary. Solutions need to be developed that address the broader social inequities and results of historical trauma.

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