


COVID-19 Vaccine Willingness and Hesitancy Among Marshallese Pacific Islanders

Journal of Patient Experience
Volume 8: 1-7
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DOI: 10.1177/23743735211056428
journals.sagepub.com/home/jpx


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Abstract

COVID-19 has disproportionately burdened racial and ethnic minorities. Minority populations report greater COVID-19 vaccine hesitancy; however, no studies document COVID-19 vaccine willingness among Marshallese or any Pacific Islander group, who are often underrepresented in research. This study documents United States (US) Marshallese Pacific Islanders': willingness to get the COVID-19 vaccine, willingness to participate in vaccine trials, and sociodemographic factors associated with willingness. From July 27, 2020–November 22, 2020, a convenience sample of US Marshallese adults were recruited through e-mail, phone calls, and a Marshallese community Facebook page to participate in an online survey. Of those surveyed (n = 120), 32.5% were extremely likely to get the COVID-19 vaccine; 20.8% were somewhat likely; 14.2% were unlikely or very unlikely; and 26.7% stated they did not know or were not sure. Only 16.7% stated they were willing to participate in a COVID-19 vaccine trial. Vaccine willingness was positively associated with older age, higher income, and longer US residence. Health insurance status and having a primary care provider were positively associated with vaccine willingness. Findings demonstrate within-group variation in COVID-19 vaccine willingness.

Keywords

SARS-CoV-2 vaccine, pandemic, health disparities, hesitancy, Marshallese, Native Hawaiian and Pacific Islanders

Introduction

COVID-19 has disproportionately burdened racial and ethnic minorities in the United States (US) (1–7). Marshallese Pacific Islanders bear a disparate burden of COVID-19 infection, hospitalization, and death, with rates 4 to 25 times higher than those of other racial and ethnic groups in the US (1,2). Benton and Washington Counties in Arkansas have the largest Marshallese population in the continental US with approximately 12,000–15,000 Marshallese residents. Marshallese Pacific Islanders represent approximately 2.5% of the total population in Washington and Benton Counties and 19% of COVID-19 cases (1). Equally alarming, between March 15 and June 15, 2020, 9% of COVID-19 positive Marshallese in Benton and Washington Counties were hospitalized for COVID-related complications compared to just 1% of cases nationally, and Marshallese community members accounted for 38% of COVID-19 deaths (1).

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Table 1. Sociodemographic Characteristics (N = 120).

	N (%) or Mean ± SD
Age	35.5 ± 8.8
Sex	
Female	77 (64.2)
Male	43 (35.8)
Education	
Never attended school or only attended kindergarten	0 (0)
Grades 1 through 8 (Elementary)	1 (0.8)
Grades 9 through 11 (Some high school)	8 (6.7)
Grade 12 or GED (High school graduate)	37 (30.8)
College 1 year to 3 years (Some college or technical school)	47 (39.2)
College 4 years or more (College graduate)	26 (21.7)
Prefer not to answer	1 (0.8)
Income	
\$0 to \$999 per month (\$0 to \$11,999 per year)	18 (15)
\$1,000 to \$1,499 per month (\$12,000 to \$17,999 per year)	13 (10.8)
\$1,500 to \$1,999 per month (\$18,000 to \$23,999 per year)	18 (15)
\$2,000 to \$2,499 per month (\$24,000 to \$29,999 per year)	19 (15.8)
\$2,500 to \$2,999 per month (\$30,000 to \$35,999 per year)	12 (10)
\$3,000 to \$3,499 per month (\$36,000 to \$41,999 per year)	13 (10.8)
\$3,500 and over per month (\$42,000 and over per year)	17 (14.2)
Don't know/Not sure	6 (5)
Prefer not to answer	3 (2.5)
Missing	1 (0.8)
How well do you speak English?	
Very well	50 (41.7)
Well	56 (46.7)
Not well	14 (11.7)
Not at all	0 (0)
Birthplace	
US or Other	17 (14.2)
Marshall Islands	101 (84.2)
Other	2 (1.7)
About how long have you been in the United States?	
Since birth	12 (10)
15 years or more	49 (40.8)
10 years to less than 15 years	17 (14.2)
5 years to less than 10 years	27 (22.5)
1 year to less than 5 years	10 (8.3)
Less than 1 year	3 (2.5)
Don't know	2 (1.7)
Do you currently have health insurance?	
Yes	70 (58.3)
No	41 (34.2)
Don't know/Not sure	4 (3.3)
Prefer not to answer	2 (1.7)
Missing	3 (2.5)
Do you have a primary care provider?	
Yes	60 (50)

(continued)

Table 1. (continued)

	N (%) or Mean ± SD
No	51 (42.5)
Don't know/Not sure	6 (5)
Missing	3 (2.5)

Note: Percentages may not total to 100 due to rounding.

Similarly, Marshallese represent just 1% of the population in Spokane County, Washington but accounted for nearly 30% of COVID-19 cases between March and May, 2020 (8). Eight percent of Marshallese COVID-19 cases in Spokane County were hospitalized, and the Marshallese accounted for 5% of reported COVID-19 deaths in the county. Marshallese experienced widespread health care disparities before the COVID-19 pandemic, including higher prevalence of chronic diseases that are risk factors for COVID-19 morbidity and mortality (9–15). In particular, the prevalence of type 2 diabetes (38%) and tuberculosis (19%) is 4 and 8 times higher, respectively, in Marshallese people than in other groups in the US (16–21).

Willingness or hesitancy to get the COVID-19 vaccine will be critical in narrowing the long-term COVID-19 disparities between Marshallese and the general population. Minority populations have reported greater hesitancy to get the COVID-19 vaccine, with some communities of color half as likely to get the COVID-19 vaccine compared to Whites (7,22–26). However, no studies have documented the willingness of Marshallese or any Pacific Islander group to get the COVID-19 vaccine. Documenting the Marshallese community members' willingness to get the COVID-19 vaccine is critical to efforts aimed at increasing vaccine uptake in this population.

This study aims to document US Marshallese community members': (1) willingness to get the COVID-19 vaccine, (2) willingness to participate in COVID-19 vaccine trials, (3) sociodemographic factors associated with willingness to get the COVID-19 vaccine, and (4) sociodemographic factors associated with willingness to participate in COVID-19 vaccine trials.

Methods

The study was approved by the institutional review board (IRB) at the University of Arkansas for Medical Sciences (UAMS) (IRB#261131). This study used our long-standing community-based participatory research (CBPR) partnership to gain stakeholder input on the best methods to employ for rapid recruitment. The CBPR partnership with the Marshallese community is described elsewhere (27,28). Stakeholders recommended recruiting participants through e-mail and phone calls from Marshallese community health workers and posting the survey on a US Marshallese

community Facebook page. Facebook recruitment used a ‘Completely Automated Public Turing test to tell Computers and Humans Apart’ (CAPTCHA) feature to prevent fraudulent responses. Recruitment took place from July 27, 2020 to November 22, 2020. Inclusion criteria specified participants be self-reported Marshallese living in the US and at least 18 years of age. Screening questions (first and last name, date of birth, email address) were used to eliminate duplicates, and identifiers were removed prior to analysis. Consent and survey questions were provided in both English and Marshallese language, with both languages side by side in the survey. Consent and survey data were documented in Research Electronic Data Capture (REDCap), which is a web-based software designed for research and data management (29,30). Participants received a \$20 gift card if they completed the survey.

Questions from the Behavioral Risk Factor Surveillance System captured sociodemographic information (31). Age was calculated as a continuous variable; all other sociodemographic information was provided from fixed choice response options. Questions from the PhenX toolkit were used to ask COVID-19 vaccine questions (32). Participants were asked: ‘If a vaccine for COVID-19 were available today, what is the likelihood that you would get vaccinated?’ Response options included: extremely likely, somewhat likely, unlikely, very unlikely, don’t know/not sure, and prefer not to answer. Participants were asked: ‘Where would you prefer to receive a vaccine for COVID-19,’ with an open-ended response option. Participants were also asked: ‘Would you be willing to participate in a COVID-19 vaccine clinical study or trial?’ Response options included: yes, maybe, no, don’t know/not sure, and prefer not to answer.

Descriptive statistics, including means with standard deviation, frequencies, and percentages, were calculated for willingness to get a COVID-19 vaccination, willingness to participate in a COVID-19 vaccination clinical trial, and sociodemographic and health-related variables. The relationships between these sociodemographic and health-related variables and willingness to get a COVID-19 vaccination and willingness to participate in a COVID-19 vaccination clinical trial were examined using Spearman’s correlations or Wilcoxon-Mann-Whitney U tests in the R environment (33) with an *a priori* alpha set at 0.05. Missing data were handled with pairwise deletion.

Results

A total of 120 individuals living in 12 states responded to the survey. Table 1 presents their sociodemographic characteristics. The majority of the participants had one or more years of college education, spoke English well or very well, were born in the Republic of the Marshall Islands, and reported currently having insurance.

Table 2 provides a summary of participants’ willingness to receive the COVID-19 vaccine and their willingness to participant in a COVID-19 vaccine clinical trial. For

vaccine willingness, 32.5% percent of participants reported being extremely likely to get the COVID-19 vaccine; 20.8% reported being somewhat likely to get the COVID-19 vaccine; and 26.7% stated they did not know or were not sure if they would get the COVID-19 vaccine. Only 16.7% stated they would be willing to participate in a COVID-19 vaccine trial, and 5.8% preferred not to answer or did not provide a response.

Results of correlational analyses and Wilcoxon-Mann-Whitney U tests are shown in Table 3. ‘Don’t know/not sure’ and ‘prefer not to answer’ responses were excluded from analyses. Willingness to get the COVID-19 vaccine was positively associated with age ($\rho = .33$, $P < .01$), income level ($\rho = .26$, $P < .05$), and duration lived in the US ($\rho = .32$, $P < .01$). Additionally, current health insurance status ($U = 482$, $P < .01$) and primary care provider status ($U = 555$, $P < .05$) were positively associated with willingness to get the COVID-19 vaccine.

No associations were observed between participants’ willingness to be vaccinated and education level, English proficiency, sex, or birthplace. There was a positive association between participants’ willingness to get the COVID-19 vaccine and willingness to participate in a COVID-19 vaccine clinical trial ($\rho = .34$, $P < .01$). No associations were observed between participants’ willingness to participate in a COVID-19 clinical trial and age, education level, income, English proficiency, duration lived in the US, sex, birthplace, current health insurance status, or having a primary care provider.

Discussion

This is the first study to document willingness to get the COVID-19 vaccine among Marshallese Pacific Islanders.

Table 2. Self-Reported Willingness to Receive the COVID-19 Vaccine and to Participate in a COVID-19 Vaccine Clinical Trial (N = 120).

	N (%)
If a vaccine for COVID-19 were available today, what is the likelihood that you would get vaccinated?	
Extremely likely	39 (32.5)
Somewhat likely	25 (20.8)
Unlikely	8 (6.7)
Very unlikely	9 (7.5)
Don’t know/Not sure	32 (26.7)
Prefer not to answer	4 (3.3)
Missing	3 (2.5)
Would you be willing to participate in a COVID-19 vaccine clinical study or trial?	
Yes	20 (16.7)
Maybe	29 (24.2)
No	50 (41.7)
Don’t know/Not sure	14 (11.7)
Prefer not to answer	4 (3.3)
Missing	3 (2.5)

Note: Percentages may not total to 100 due to rounding.

Table 3. Variables Associated With Willingness to Receive a COVID-19 Vaccine and Willingness to Participate in a COVID-19 Vaccine Clinical Trial.

Measures	Predictor	Willingness to receive a COVID-19 vaccine				Willingness to participate in a COVID-19 vaccine clinical trial			
		N	ρ	U	P-value	N	ρ	U	P-value
Age (in years)		81	0.33		.003	99	0.09		.382
Education		80	-0.11		.346	98	0.14		.165
Income		76	0.26		.024	93	0.08		.466
English proficiency		81	-0.05		.678	99	0.04		.681
Duration lived in US		80	0.32		.004	98	0.1		.318
Sex		81		724	.596	99		1238	.411
Birthplace		81		277	.804	99		527.5	.726
Current health insurance status		77		482	.009	95		1015.5	.952
Have a primary care provider		79		555	.017	96		998	.273

Note: p values below the a priori threshold of .05 are found in bold.

Approximately one third (32.5%) of Marshallese report they are extremely likely to get the COVID-19 vaccine. This is a lower proportion than in the general population and lower than other minority groups which has ranged from approximately 35–60% (25,34). However, only 14.2% are unlikely or very unlikely to get the COVID-19 vaccine (25,34). Half of the sample are either somewhat likely (20.8%) or not sure (26.7%); the proportions of participants reporting somewhat likely or not sure is much higher than other populations (25,34). The results show older age and higher income were positively associated with willingness to get the COVID-19 vaccine. These results are consistent with findings in other populations (25,34). In contrast with prior studies, education and English proficiency were not associated with willingness to vaccinate against COVID-19 (25,34).

The results demonstrate a positive association between living in the US for longer periods of time and willingness to get the COVID-19 vaccine, as well as a positive association between health insurance status, having a primary care provider, and willingness to get the COVID-19 vaccine for Marshallese participants. This is the first study to document the relationship between length of time in the US, insurance status, or having a primary care provider, and willingness to get a COVID-19 vaccination in any population. These findings may contribute to a better understanding of willingness to receive a COVID-19 vaccine among other immigrant and migrant groups and those who have barriers to health care access.

Less than one in five responded they would participate in a COVID-19 vaccine trial. This is lower than many other minority groups (35). The hesitancy to participate in a vaccine trial may be due to the historical trauma experienced by Marshallese when the US conducted extensive nuclear tests in the Marshall Islands. As the primary location for the US military's nuclear testing program, the Marshall Islands were exposed to the equivalent of 7,200 Hiroshima-sized bombs from 1946 to 1958 (36,37). In the decades following, Project 4.1 was conducted by the US to study the health effects of nuclear radiation exposure.

Marshallese were studied as part of Project 4.1 without their informed consent and without study information being provided in the native Marshallese language (36,38–40). The nuclear testing and subsequent research has created significant distrust between the Marshallese community and the US health care system and US researchers (41,42). In addition to historical trauma, several studies have documented ongoing distrust, exclusion, and discrimination within the US healthcare system (39,43).

Reporting racial disparities in health outcomes can inappropriately reinforce biological views of race and racial essentialism (44). Reporting COVID-19 predictors without historical context may exacerbate inappropriate biological and essentialist views of minority populations. In the context of historical trauma, however, racial differences in COVID-19 vaccine attitudes highlight the need for 'trustworthiness before trust' (45,46). Marshallese have experienced overwhelming disparities related to COVID-19 infection, hospitalization, and death (1,8), and, without an increased willingness among Marshallese to get the COVID-19 vaccination, the disparities in infections, hospitalizations, and deaths may continue to be devastating. Dedicated effort is needed to encourage those who report they are somewhat likely to receive a vaccination or not sure of their willingness to receive the vaccine. Prior research suggests partnerships between healthcare systems and Marshallese leaders, pastors, and community health workers could be effective in communicating health messages and vaccine uptake (27,47–50). The current crisis is urgent and requires immediate actions; however, it is also necessary to consider the need for sustained efforts among government and medical institutions to *earn* the trust of communities who have faced historical and/or contemporary harms (45).

Limitations

This article should be interpreted with consideration for its limitations. The study used a convenience sample of 120

Marshallese living in the US, and the education and income levels of the sample are higher than other published demographics for Marshallese (19,51). Given the associations between education and likelihood to accept the COVID-19 vaccine found in other studies, the results may show an overestimation of those likely to accept the COVID-19 vaccine, which may in fact be even lower than reported. Therefore, the data distribution may have led to the lack of association with outcomes. Additionally, the data is cross-sectional; therefore, no causal conclusions are possible, and there may be possible confounders. Furthermore, attitudes regarding COVID-19 vaccines appear to be changing over time (52). This study did not examine information about reasons for low vaccination willingness beyond sociodemographic variables, and additional research is needed to better understand vaccine hesitancy among Pacific Islander communities.

Conclusion

Despite these limitations, the study makes several significant contributions to the literature. This article is the first to document willingness to get the COVID-19 vaccine among Marshallese or any other Pacific Islander group, who are often underrepresented in research or obscured through aggregation with other populations (53–57). This documentation is particularly important given the extreme COVID-19 health disparities experienced by Marshallese and other Pacific Islander groups (1,4,8). Moreover, the findings demonstrate some within-group variation in willingness to receive a COVID-19 vaccine. For example, this study is the first in any population to document an association between the length of time in the US, insurance status, and having a primary care provider as important factors in the likelihood of getting the COVID-19 vaccination.

This article documents Marshallese likelihood to get the COVID-19 vaccine and willingness to participate in clinical trials. This information will be essential in efforts to increase COVID-19 vaccine uptake and reduce disparities among Marshallese and other Pacific Islanders.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was supported by the Patient Centered Outcomes Research Institute (PCORI) [grant number AD-1603-34602] and the Translational Research Institute (TRI) [grant number UL1 TR003107] through the National Center for Advancing Translational Sciences of the National Institutes of Health (NIH). The content is solely the responsibility of the authors and does not necessarily represent the official views of the PCORI or NIH. In addition, the research was supported by the Arkansas Coalition of Marshallese, Marshallese Educational

Initiative, Marshallese Consulate office in Springdale, Arkansas, and West Hawaii Community Health Center.

Ethical Approval

Ethical approval to report this case was obtained from the institutional review board (IRB) at the University of Arkansas for Medical Sciences (UAMS) (IRB#261131).


Statement of Human and Animal Rights

All procedures in this study were conducted in accordance with the institutional review board (IRB) at the University of Arkansas for Medical Sciences (UAMS) (IRB#261131).

Statement of Informed Consent

Written informed consent was obtained from the patients for their anonymized information to be published in this article.

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