



COVID-19 Vaccination Behaviors, Sources of Information, and Beliefs among Nursing Home Administrators and Other Staff

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ABSTRACT

Vaccine hesitancy among healthcare workers is a major health issue. The study objective was to examine the vaccination behaviors, sources of information, and beliefs among a sample of nursing home administrators and other staff. The National Association of Long-Term Care Administrator Boards (NAB) provided their contact list of all 1,159 currently licensed nursing home administrators and assisted living administrators in the United States (US) for this study. A cross-sectional analysis of survey responses was collected in the spring of 2021, and data was analyzed from 1,004 completed surveys of US nursing home administrators and other staff. A subpopulation of long-term care staff

who refuse to be vaccinated based on the perceived speed of vaccine development and rollout, among other health concerns. Respondents selected a variety of sources from where they retrieved information about the COVID-19 vaccine. Most respondents trust the COVID-19 vaccine (80.6%), believe that the vaccine is important (82.7%), and are confident in its effectiveness in decreasing the spread of COVID-19 (74.9%). There was a high percentage of respondents who reported getting vaccinated against COVID-19. Of the sample, 85.0% responded "yes" to receiving the vaccine (scheduled but not received, in progress, or completed). Healthcare workers need to use reputable sources to retrieve information about vaccines.

KEYWORDS: COVID-19; Vaccine Hesitancy; Nursing Home Administrator; Vaccination; Sources of Information.

KEY PRACTITIONER MESSAGE

1. Healthcare administrators will have a better understanding of the sources of information used by their long-term care colleagues and staff and potential strategies to increase vaccination rates among their workforce.
2. Healthcare practitioners in this study demonstrated a pro-vaccine attitude rather than vaccine hesitancy.
3. The previous and current literature suggests that trust can be rebuilt by utilizing research-oriented healthcare organizations to minimize the spreading of misinformation surrounding the COVID-19 vaccine.

INTRODUCTION

The COVID-19 pandemic has been the major focus of public health, long-term care (LTC) administration, older adults, and healthcare policy since 2020 (Berry et al., 2021; Lee et al., 2022). The political, ethical, and emotional perspectives have been partly highlighted due to the vaccination debate.

Vaccine hesitancy research has some historical background (Berry et al., 2021; Canning et al., 2005; Taylor et al., 2020). Some reasons people hesitate to receive vaccines, either initially or longer term, are directly related to concerns about rapid vaccine developments and their side effects, including infertility or pregnancy-related concerns (Berry et al., 2021). Vaccine research must be intensely tested and not perceived as rushed to help with confidence and increased vaccination rates (Taylor et al., 2020).

Past vaccine hesitancy research involving influenza identified a lack of vaccine awareness, concerns about side effects, and a lack of perceived need to get vaccinated (Taylor et al., 2020). Other issues involve confidence and acceptance levels of vaccines, which influence individuals' own opinions (Karlsson et al., 2019; La Torre et al., 2017). Trust in healthcare systems, research behind vaccines, vaccination behaviors, trust in institutions, lack of resources and support, and lack of communication and transparency have been identified as current gaps in the system (Larson et al., 2018; Tan & Lim, 2009;

Holahan et al., 2022). Overall, distrust in healthcare systems, research, and media existed pre-COVID-19 but has become more prevalent today.

Evidence of vaccine hesitancy exists among skilled nursing facility (SNF) staff (Harrison et al., 2021). Some reasons people hesitate to receive vaccines, either initially or in the longer term, are directly related to government mistrust, concerns about rapid vaccine developments, and the misconception that the vaccine might negatively impact fertility and pregnancy (Harrison et al., 2021). Since the general public does not sufficiently understand the vaccine development and testing process, the rapid launch of the first COVID-19 vaccines challenged perceptions of vaccine safety, impacting vaccine confidence (Siani & Tranter, 2022; Taylor et al., 2020; Unroe et al., 2021). Unvaccinated healthcare workers can transmit disease to residents in the facilities where they work, and staff members themselves are still susceptible to falling ill to the same diseases spread across their workplaces (Unroe et al., 2021). Vaccine hesitancy among LTC and SNF staff is concerning for older adults who live in these facilities due to the rapid spread and transmission of COVID-19 (Niznik et al., 2022). During the pandemic, the nursing home facilities who had moderate to high vaccination rates of their workers tended to be better at identifying barriers to becoming vaccinated that were important to their staff (Berry et al., 2022; McGarry et al., 2022;

Sinha & Konetzka, 2022).

When this study was conducted in the spring of 2021, the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA) had an approved list of COVID-19 vaccinations made available to the public. The Pfizer-BioNTech vaccine was approved on December 11, 2020, and the Moderna vaccine followed with approval one week later on December 18, 2020 (FDA, 2021; Moderna Receives Full U.S. FDA Approval for COVID-19 Vaccine Spikevax, 2022). The Johnson & Johnson (J&J) vaccine was approved two months later on February 26, 2021, and this was the last of three major COVID-19 vaccines made available before or within the period of this study (J&J, 2021). COVID-19 tests were made available in at-home kits and the mask mandate was still in effect in most public places (Office of the Commissioner, 2021).

This study examined whether vaccine hesitancy existed among United States licensed nursing home administrators and other staff. This analysis examines sources of information, reasons behind vaccination decisions, and vaccination patterns among nursing home administrators, state-tested nursing assistants (STNAs), and other staff in the United States. Sources of information, leadership, and ethical principles are all potential influences on information people use to determine whether to get the COVID-19 vaccine, specifically among nursing

home administrators and other staff in the United States. Sources of information on COVID-19 vaccines are important to understand how people learn about this historic health-related topic.

METHODS

A quantitative survey was sent to all 1,159 licensed nursing home administrators and Assisted Living Administrators with a valid e-mail address registered with the National Association of Long-Term Care Administrator Boards (NAB) between February and April 2021. NAB gave the investigators access to their mailing list. A QR code and a survey link were created and distributed through Alchemer's survey services. Informed consent was collected at the beginning of each electronic survey. Incentives for participating in this survey were not offered. The instructions asked those working as Licensed Nursing Home Administrators (LNHA) to complete the survey and share it with their employees via email or a flyer with a QR code that could be posted in the facilities. Results are based on 1,004 completed surveys.

The measures were developed as part of a larger research study examining the attitudes, knowledge, beliefs, sources of vaccine information, and COVID-19 vaccination rates among LTC administrators and staff (see Authors under review). This manuscript focuses on the sample's beliefs, sources of information, and vaccination behaviors.

Self-reported responses to questions were asked about both respondents and their residents. Additional questions were asked about vaccination status, intentions, and sources of information on the vaccine. The sources of information choices included large newspapers (e.g., The New York Times), social media (e.g., Facebook, MeWe), and other media (e.g., Fox News, CNN), being inclusive across the ideological spectrum.

The analyses were done using the IBM SPSS Version 29.0.0.0 (241) program. First, analyses of frequency distribution were used to examine answers to the survey questions. Next, cross-tabulations were performed to examine sources of information, beliefs, and vaccination behaviors by gender and position. When analyzing the data, it was observed that many responses contained “CDC” as a written-in source of information under the “Other” category. Due to the high count of “CDC” responses, a new variable was created for “CDC” if it only contained “CDC” in the response, and if the response contained “CDC and [other],” it was counted in both categories. Due to a greater-than-expected pro-vaccination response among the sample, additional analyses were unnecessary.

RESULTS

Demographics and Personal Beliefs

Almost half of the respondents were LNHA’s (49.5%) and were college graduates or had higher education

levels (81.0%) (Table-1). They were asked questions about their opinions regarding the COVID-19 vaccine, including whether they trust the vaccine, resources used, and influences on receiving it. “Other” social media responses included, *“I have read excessive literature on the Covid vax. I also follow Zdogg,”* *“None. So far nobody can tell me what ‘sin the actual vaccine!,”* and *“TikTok.”* Respondents supplied *“ALL OF THE NEWS,”* *“don’t believe a thing from the news,”* and *“TV news is an oxymoron”* as other TV news sources. Responses similar to these were also provided for Newspaper Source and Other for sources of information (Table-2).

The next set of questions asked about the benefits of the vaccine (Figure-1). Respondents were generally in agreement (81.1% strongly agree/agree) with the statement, *“benefits of the vaccine are greater than the risk for me.”* The next question, *“the benefits of the vaccine are greater than the risk for residents/consumers,”* also showed strong agreement (86.8% strongly agree/agree). The question, *“The vaccine will prevent me from getting COVID-19,”* had greater variance in responses, with 25.5% strongly agreeing and 34.8% agreeing, while 10.6% disagreed and 7.8% strongly disagreed with the statement. A similar distribution was found for the statement, *“The vaccine will prevent residents/consumers from COVID-19”* (26.5% strongly agree, 37% agree, 11.1% disagree, and 5.5% strongly disagree)."

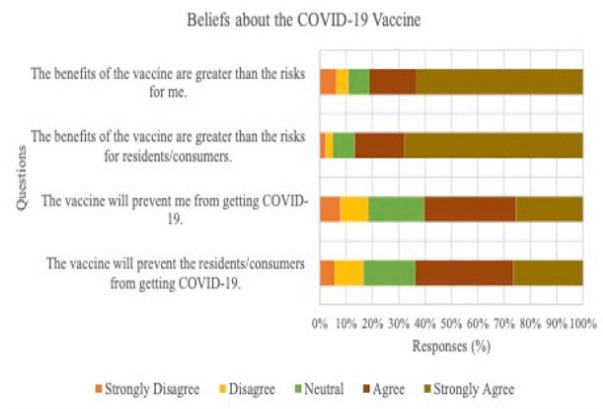


Figure-1. Literature search screening and selection flow-chart

Behaviors

Of the sample, 85.0% responded “yes” to receiving the vaccine (scheduled but not received, in progress, or completed). The statement, “I trust the COVID-19 vaccine,” showed 19.4% selecting “no.” Fewer than 2% had not been offered the vaccine and 15% had not received the COVID-19 vaccine. Of those who received the vaccine, the most common reasons were to protect residents (83.4%), to protect family and friends (83.3%), and to protect co-workers (73.8%). Respondents were able to select all that applied and had a text box to enter other reasons (Table-2).

Most respondents were given educational information from their employers about the COVID-19 vaccine (91.6%). A small percentage of respondents reported that they would hardly ever or never get the COVID-19 vaccine after their co-workers (14.3%) or after members of management (14.4%). A similar percentage of respondents hardly ever or never receive their annual flu shot (16.1%) (Table-2).

Most respondents believe the COVID-19 vaccine is important (Figure-2). A large percentage of respondents reported having confidence in the COVID-19 vaccine to decrease its spread (82.6%) and prevent others from getting COVID-19 (76.4%). There were still 14.7% of respondents who did not plan to be vaccinated. Barriers to getting vaccinated include potential side effects (54.6%), “don’t know enough about it to make a decision” (38.5%), potential

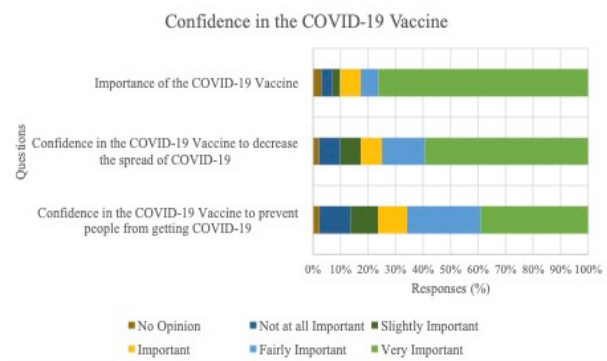


Figure-2. Literature search screening and selection flow-chart

allergic reaction (35.4%), and other (44.6%). Examples of answers in the “Other” category included mistrust, fear of microchipping, religious reasons, fertility concerns, and personal choice.

Sources of Information

The next set of questions sought to learn more about the sources people used to gather information (Table-3). Questions were included about news sources (e.g., Fox News, CNN), social media (e.g., MeWe, Facebook), CDC, and other sources of information. The most common social media sources were Twitter (44), CDC (99), and Facebook (256). Traditional

Table-1. Vaccination status and demographic information about respondents

Categories	Have you received the COVID-19 vaccine?	
	Yes (scheduled but not received, in progress, or completed) (%)	No (%)
Highest completed education level		
Elementary schools and some High schools	2 (0.2%)	0 (0.0%)
High school graduate, GED, or post-high school certification	47 (4.7%)	19 (1.9%)
Some college	92 (9.2%)	30 (3.0%)
College graduate	388 (38.9%)	68 (6.8%)
Master's degree	281 (28.2%)	31 (3.1%)
Graduate college degree (MD, PhD, EdD, PharmD, etc)	39 (3.9%)	1 (0.1%)
What is your current job position?		
Licensed nursing home Administrator (LNHA)	453 (45.1%)	44 (4.4%)
State tested nurse aide / certified Nurse aide / nurse aide (STNA/CNA/NA)	23 (2.3%)	11 (1.1%)
Non-medical home health aide (HHA)	1 (0.1%)	0 (0.0%)
Licensed practical nurse (LPN)	19 (1.9%)	8 (0.8%)
Registered nurse (RN)	46 (4.6%)	13 (1.3%)
Dietary	13 (1.3%)	2 (0.2%)
Housekeeping	5 (0.5%)	4 (0.4%)
Maintenance	7 (0.7%)	2 (0.2%)
Administration	117 (11.7%)	23 (2.3%)
Activities / life enrichment	21 (2.1%)	3 (0.3%)
Rehabilitation staff	8 (0.8%)	2 (0.2%)
Other – write in	101 (10.1%)	19 (1.9%)
Social services	19 (1.9%)	6 (0.6%)
Clerical	12 (1.2%)	10 (1.0%)

news networks included ABC (282), CNN (318), Fox News (274), and OAN (27). Newspaper sources included local newspapers (226), New York Times (169), USA Today (103), Washington Post (111), Wall Street Journal (97), and the New York Post (47). The CDC appeared in each section in large numbers as “other.” Each section allowed respondents to select all that applied, including “other,” and then had an opportunity to enter other sources of information.

Vaccination Behaviors

To help understand the context of vaccine behavior, we asked about annual flu vaccination behaviors, with 70.7% reporting getting the shot each year and 10.1% reporting never receiving the annual shot (Table-3). This compares to 85% of the sample who reported receiving the COVID-19 shot. Respondents were more likely to get the COVID-19 shot if their co-workers (66.5% very likely) and members of

management (66.7% very likely) received the vaccine first (Table-3). However, a consistent group would still be very unlikely to receive the COVID-19 shot even if their co-workers (10% very unlikely; 4.3% unlikely) and members of management (10.1% very unlikely; 4.3% unlikely) received the vaccine first.

Of those who selected being a college graduate or higher, 71.0% of respondents had either received, scheduled, or had the COVID-19 vaccine series in progress. LNHA's are among the most highly vaccinated job positions (45.7%), followed by administrators/clerical jobs (13.0%) and others (14.7%) (Table-3). When asked about confidence regarding whether the COVID-19 vaccine decreases the spread of the disease, most respondents

agreed (58.3% very confident; 14.5% fairly confident) (Table-3). A similar distribution is reflected when asked the same question: LNHA's are more confident (33.5% very confident, 7.6% fairly confident) that the COVID-19 vaccine decreases the spread of the disease in comparison to administrators/clerical jobs (11.6% very/fairly confident) and other (12.9% very/fairly confident). Less respondents believed that the COVID-19 vaccine prevents people from getting the disease (38.5% very confident; 25.9% fairly confident). LNHA's were again the most confident (22.8% very confident; 14.3% fairly confident) that the COVID-19 vaccine prevents people from getting the disease, compared to administrators/clerical jobs (10.2% very/fairly confident) and other (11.9% very/fairly confident).

Table-2. Vaccine behaviors

Categories	Count (%)	Categories	Count (%)
Reported Vaccination Rate		Do you trust the COVID-19 vaccine?	
Yes	850 (85.0%)	Yes	803 (80.6%)
No	150 (15.0%)	No	193 (19.4%)
Missing	4 (0.0%)	Receive an annual flu shot	
Given educational information about the COVID-19 vaccine from employer		Every year	708 (70.7%)
Yes	916 (91.6%)	Almost every year	86 (8.6%)
No	94 (8.4%)	Some years	46 (4.6%)
Likelihood to get COVID-19 vaccine after co-workers		Hardly ever	56 (5.6%)
Every year	638 (66.5%)	Never	105 (10.5%)
Almost every year	112 (11.7%)	Likelihood to get COVID-19 vaccine after members of management	
Some years	73 (7.6%)	Every year	643 (66.7%)
Hardly ever	41 (4.3%)	Almost every year	112 (11.6%)
Never	96 (10.0%)	Some years	71 (7.4%)
		Hardly ever	41 (4.3%)
		Never	97 (10.1%)

DISCUSSION

The current study indicates a high level of vaccination among the sample of nursing home administrators and other staff. However, approximately 15% of respondents did not intend to receive the COVID-19 vaccination or were hesitant. At the beginning of the COVID-19 pandemic, there were disproportionate numbers of older adults and minority individuals who were affected; most of these individuals resided in LTC facilities (Gorges & Konetzka, 2021; Temkin-Greener et al., 2020). LTC facilities were challenged by the COVID-19 pandemic, primarily by staffing shortages and mistrust surrounding the development of the COVID-19 vaccine by residents and staff, among other challenges (Vipperman et al., 2021). In this study, a provaccine attitude was observed among the respondents; for example, 85.0% of the respondents received the vaccine (scheduled but not received, in progress, or completed). However, despite using non-scientific sources of information, our population exhibited a high level of vaccination behavior. This study shows how nursing home administrators and other staff take risk-benefit, personal beliefs, best interests of older adult residents, and influences of their co-workers into consideration when making decisions about whether or not to receive the COVID-19 vaccine. There are important lessons from the respondents highlighting underlying trust issues and potential for educational programs on

the methodology and research processes involved in the COVID-19 vaccines and other health initiatives. Understanding and overcoming barriers to staff vaccine acceptance is vital for understanding how to invoke better outcomes for staff and residents living in these facilities. Vaccine hesitancy can be attributed to a variety of factors, many of which were seen in this study and support the findings of similar research studies on the subject. The results from this study show that sources of information and vaccine behaviors are two major factors that influence whether a person will become vaccinated. The focus of this study was on the healthcare population sub-groups of nursing home administrators and other staff, and while a majority of the respondents reported that they were in the process of becoming or already vaccinated against COVID-19, it is of utmost importance that healthcare workers get vaccinated to protect not only themselves but their co-workers and patients who are more susceptible to acquiring the disease. Providing accurate, informative, and unbiased sources of information about COVID-19 and vaccine development may help encourage higher vaccination rates and shift belief systems surrounding the vaccine stigma.

Limitations and Directions for Future Research

This is a limited self-selected sample of nursing home administrators, STNAs, and other staff, with

a large representation of LNHAs. There are roughly 15,000 certified nursing homes in the United States; the survey went to around 10%, and of that 10%, we had close to a 6.6% response rate. In addition, since the LNHA was given the responsibility of soliciting participation from other staff in the building, there may have been significant bias among the group of front-line staff that opted to submit responses based on the level of trust and engagement with the LNHAs of their centers, or which LNHAs actually made an effort to share the survey.

Randomization was not used and patterns of bias with snowball sampling were possible. Because the

survey could be shared with staff, it was impossible to compute a response rate. The CDC should have been listed within the survey as a source for information choice. This was addressed by reviewing other category entries and including them in the analysis. All answers were anonymous; however, potential respondents may not have completed the survey and may have been more likely to have not been vaccinated due to a social desirability effect.

Future research should examine ways of building trust between the CDC, Healthcare advocacy and membership organizations, the National Institutes of Health, and other research-oriented organizations.

Table-3. Sources of information

Categories	Count (%)	Categories	Count (%)
Social Media		TV News Source	
Facebook	256 (36.7%)	ABC	282 (25.7%)
Gab	6 (0.9%)	CNN	318 (29.0%)
MeWe	9 (1.3%)	FOX	274 (25.0%)
Twitter	44 (6.3%)	OAN	27 (2.5%)
CDC	99 (14.2%)	CDC	4 (0.4%)
Other	284 (40.7%)	Other	193 (17.6%)
New Source		Others	
LA Times	16 (1.8%)	Co-workers	398 (19.3%)
Local Newspaper	226 (25.5%)	Family	317 (15.4%)
New York Post	47 (5.3%)	Friends	263 (12.7%)
New York Times	169 (19.1%)	YouTube	56 (2.7%)
Wall Street Journal	97 (11.0%)	Public Service Announcements / Advertisements	325 (15.7%)
USA Today	103 (11.6%)	Websites	302 (14.6%)
Washington Post	111 (12.5%)	Self-research	306 (14.8%)
CDC	12 (1.4%)	CDC	21 (1.0%)
Other	104 (11.8%)	Other	76 (3.7%)

Establishing or rebuilding trust via educational interventions should be the next set of research studies, specifically focusing on interpersonal, organizational, institutional, and public trust (Holahan et al., 2022). Information sources are permeated by mis- and disinformation, impacting vaccine beliefs and behaviors among this sample group. To combat mis- and disinformation, administrators of LTC facilities could provide an array of scientifically sound information when training staff members to improve vaccine behaviors and vaccine confidence. These efforts should also be built into the curricula of LTC administration, nursing, and other collegiate programs educating our healthcare professionals and direct care workers. Comparing LNHA's and assisted living facility directors and their roles in providing vaccine resources to their staff is an area of study that should also be addressed. Continuing education programs should also be designed to help educate current professionals on the scientific method, research, and the role of the CDC.

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