

University of Missouri, St. Louis

IRL @ UMSL

Dissertations

UMSL Graduate Works

7-7-2021

Attitudes Toward SARS-CoV-2 in Frontline Healthcare Workers and First Responders

Michelle Tiffany Arrington

University of Missouri-St. Louis, mafh7@umsystem.edu

Follow this and additional works at: <https://irl.umsl.edu/dissertation>



Part of the [Family Practice Nursing Commons](#)

Recommended Citation

Arrington, Michelle Tiffany, "Attitudes Toward SARS-CoV-2 in Frontline Healthcare Workers and First Responders" (2021). *Dissertations*. 1055.

<https://irl.umsl.edu/dissertation/1055>

This Dissertation is brought to you for free and open access by the UMSL Graduate Works at IRL @ UMSL. It has been accepted for inclusion in Dissertations by an authorized administrator of IRL @ UMSL. For more information, please contact marvinh@umsl.edu.

ATTITUDES TOWARD SARS-COV-2 IN FRONTLINE WORKERS

**Attitudes Toward SARS-CoV-2 in Frontline Healthcare Workers
and First Responders**

Michelle T. Arrington

B.S. Nursing, University of Missouri - St. Louis, 2016

A Dissertation Submitted to The Graduate School at the University of Missouri - St.

Louis in partial fulfillment of the requirements for the degree

Doctor of Nursing Practice with an emphasis in Family Nurse Practitioner

August 2021

Advisory Committee

Louise Miller, Ph.D., Co-Chair

Laura Kuensting, DNP, APRN, PCNS-BC, CPNP, CPEN, Co-Chair

Keri Jupka, MPH, Committee Member

Copyright, Michelle T. Arrington, 2021

Abstract

Problem: To date, little evidence exists to understand attitudes of SARS-CoV-2 in frontline healthcare workers (HCW) and first responders (FR), related to best practices in mitigating virus spread. The purpose of this project was to assess attitudes toward COVID-19 in young adults, ages 18-44 years old, who are frontline workers related to their adherence to PPE guidelines, social distancing, hand hygiene, community exposures, and vaccinations.

Methods: A descriptive survey design using five-point Likert scale questions and 26 open-ended questions and was implemented one-year after onset of the pandemic. A purposive sample working in a large, urban, Midwest metropolitan area was recruited to participate.

Results: A total of 176 survey responses were completed by frontline healthcare workers ($n = 158$) and first responders ($n = 18$). A significant positive correlation was observed amongst agreements to mask mandates and social distancing ($r_s = 0.35, p < .001$), agreements to social distance and receive vaccinations ($r_s = 0.16, p = .042$), and experiencing an emotional impact from COVID-19 and agreeing to vaccinate ($r_s = 0.24, p = .002$). Over one year into the pandemic, 86% of frontline workers agree with the need to receive a COVID-19 prevention vaccine.

Implications for Practice: While COVID-19 vaccines were first presented to essential workers, their influence and encouragement spreads to their fellow friends and family which in turn, can impact vaccination willingness and ultimately rates.

Early data published in March 2020 documenting SARS-CoV-2 (Coronavirus disease 2019; COVID-19) identified the elderly population, especially those with comorbidities, as most likely to be affected by COVID-19. Only a few months later, newer occurrences of COVID-19 cases demonstrated that younger, healthy adults ages 18-44 years were testing positive, some requiring hospitalization, including intensive care (Cunningham et al., 2020). A younger infected population placed healthcare workers (HCW) and first responders (FR) at an even greater risk, since the majority of these workers fall within this age range. Furthermore, frontline workers risked being exposed both within and outside of their workplaces, potentially doubling opportunities to be infected with the virus.

Frequent mask usage can mitigate droplet spread, the mode of transmission for COVID-19 transfer person-to-person (Centers for Disease Control and Prevention [CDC], 2020). Evidence clearly demonstrated use of a personal protective equipment (PPE) bundle including a mask or facial covering serves two critical purposes, namely self-protection against inhalation of harmful and infectious pathogens, and source control to prevent exposure of others in close proximity (Brooks et al., 2020). These precautions were shown to be effective over the past year as evidence continually favors usage of widespread masks to reduce community transmission (Howard et al., 2021).

In summer 2020, local Missouri health departments in the Metropolitan area issued a public health order requiring individuals to always wear a cloth face mask while in indoor facilities and outside when social distancing of six feet or more was not possible (Long, 2020). Nationwide, however, there was resistance among the young adult population during spring and summer breaks, dismissing ordinances and blatantly

ignoring the need to use PPE bundles, maintain social distancing, and limit community exposures (Brooks et al., 2020). Like behavior was shown through the slow uptake of COVID-19 prevention vaccines as it became available to the public early 2021 (Troiano & Nardi, 2021).

To date, some evidence now exists to understand attitudes of younger adults toward best practices in mitigating virus spread and vaccination prevention (Maragakis, 2020). One year later, high vaccine hesitancy among the younger population supports the ongoing need to disseminate correct facts about the vaccine (Troiano & Nardi, 2021). Therefore, the purpose of this project was to complement the pool of evidence describing attitudes toward use of PPE bundle guidelines in the younger working adult populations, specifically frontline HCW and FR, ages 18-44 years. The aim of this assessment was to evaluate the perspectives, stated behaviors, and intent to follow recommended guidelines for PPE use by younger (18-44 years old) frontline healthcare workers and first responders, and to serve as a recommendation for targeted actions to be taken by public health experts and officials. Focused areas of interest, i.e., concepts (outcomes of this project) of self-reported attitudes to include: (1) inpatient PPE usage in HCW, (2) outpatient PPE usage in HCW and FR, (3) adherence to social distancing standards, (4) hand hygiene, (5) experiences with community-related exposures, (6) stated intent to comply with CDC recommendations, and (7) vaccine uptake. The outcome of this project was to provide a catalog of topics, i.e., concepts, to be used as a guide by public health agencies for support services needed for providers/FR, continued need for local mask mandates, and input for sustained evaluation of public health orders for businesses, restaurants, and schools. This project was designed to answer the following study

question: In the young working adult population ages 18-44 years who serve as frontline healthcare workers and first responders, how do attitudes toward SARS-CoV-2 and best practices for PPE usage reflect adherence preferences to CDC COVID-19 guidelines?

Review of Literature

A comprehensive review of current literature was conducted to ascertain attitudes of SARS-CoV-2 in frontline healthcare workers and first responders. The following databases were accessed: Cochrane Library, Medline, and CINAHL. Key search terms included: *COVID-19, healthcare workers, OR first responders, AND PPE, OR masks*. Variations of these terms, including *SARS-CoV-2, coronavirus, OR frontline workers* were used to guarantee thorough search results. Boolean operators used were AND and OR. The initial search yielded 186 publications from Cochrane Library, 3,102 from Medline, and 3,710 from CINAHL. To further refine the search, inclusion criteria were research studies (1) published between 2010 and 2020, (2) focused on COVID-19, healthcare workers, first responders, PPE, and mask usage in the community, (3) written in the English language, and (4) included all countries. Exclusion criterion were research studies and other non-research articles published prior to 2010, focused on elderly populations, children and infants, and studies unrelated to COVID-19 or frontline workers. After applying both inclusion and exclusion criteria, the number of articles was narrowed to 15 from Cochrane Library, 525 from Medline, and 301 from CINAHL, respectively. Publications were included in this review if they reported research studies and discussed COVID-19 in relation to HCW and FR, PPE bundles, and young working-age adults. An initial review of literature utilized eight research article that met these criteria. One year later, additional targeted search of research publications was done to

incorporate COVID-19 prevention vaccines, eliciting seven research articles selected for inclusion in this review.

COVID-19 publications, including early research and population data from government websites, demonstrated dramatic rise of asymptomatic carriers, suspected to play a significant role in the rapid worldwide progression of the coronavirus (Johns Hopkins, 2020). Two systematic reviews published early to mid- 2020 during the pandemic reported rise of asymptomatic carriers of SARS-CoV-2 spreading the virus silently to human contacts. Oran and Topol (2020) in their review of three samples about asymptomatic transmission suggest that 40-45% of persons who were positive for COVID-19 remained asymptomatic. Findings were consistent with results in a population study of less than 10,000 persons with 43% of positive cases who showed no symptoms at the time of testing (Gudbjartsson et al., 2020). However, Oran and Topol (2020) challenged that percentage, claiming the number of asymptomatic individuals in society was likely higher due to lack of a gold standard to seek testing of COVID-19. Thus, leading to the best available practical approach to implement universal masking and PPE usage.

A consistent commonality in COVID-19 studies was the evaluation of the independent variable, i.e., wearing a mask or not. However, a mask or facial covering was only one aspect of PPE. The PPE bundle consisted of, but not limited to, gloves, cloth face masks, medical face masks, goggles, face shield, gowns, respirators such as N95 masks, and aprons (World Health Organization [WHO], 2020). Despite PPE recommendations, use of medical grade protection was not recommended for the general public.

Aside from universal masking, pandemic evidence recognized additional useful measures to mitigate transmission of COVID-19 through use of frequent hand hygiene and social distancing. A systematic review of 19 RCTs on respiratory protection in the community, determined masks appeared to be effective both with and without hand hygiene but emphasized combination of masking with hygiene provided heightened protection (MacIntyre and Chughtai, 2020). A systematic review and meta-analysis of 172 observational studies from 16 countries supports physical distancing of up to two meters (6.6 feet) to be significantly associated with increased protection against transmission ($p = .041$) (Chu et al., 2020). Persistent use of these protections further assists depreciation of COVID-19 cases in the community, creating a rippling effect into the hospital settings.

To aid in combating the virus, a public health priority was to secure the target population of young working adults to engage in virus reduction activities. The United States Census classified the younger working-age population, ages 18 to 44, which was represented by 36.5% or 112.8 million persons of the American population in the 2010 Census (Howden & Meyer, 2011). The young adult population became increasingly at-risk due to their lack of PPE bundle usage, neglecting social distancing, and participation in high-risk behaviors and community exposures (Brooks et al., 2020). As majority of frontline healthcare workers and first responders fell under these age limits, immediate education was needed to stunt transmission of COVID-19.

A main source of strength in the literature was the high level of evidence published. In addition to the strength of the evidence, similarities in SARS-CoV-2 were compared to like viruses such as influenza, SARS-CoV, and Middle East Respiratory

Syndrome (MERS) and their related data. Gaps in available literature were found regarding limited knowledge known on the COVID-19 virus, low evidence level, and limited sample sizes.

The Iowa Model of Evidence-Based Practice provided a systematic framework to incorporate evidence into best clinical practice changes (Iowa Model Collaborative, 2017). This study utilized the model's first step to identify *Knowledge Focused Triggers* to initiate the need for change. As COVID-19 was considered a new area of research, demanding changes in philosophies of care, and asking questions from Institutional Standards Committee, *knowledge* about best practices was inadequate (Iowa Model Collaborative, 2017). To gather data and practice pilot changes using the Iowa Model, appraisal of evidence was achieved through development of a COVID-19 specific survey, i.e., answering 17 Likert scale and nine open-ended questions to understand attitudes toward COVID-19 and usage of PPE bundle. Lastly, to sustain practice change, data were analyzed regarding attitudes perceived by the participants to add to the pool of new evidence needed for best practice decisions.

Currently, little evidence of attitudes exhibited by frontline workers toward COVID-19 virus reduction techniques exist. In defiance of present evidence, these virus reduction activities are being underutilized, in particular by the young adult population. This clinical scholarship project intended to incorporate data to assess frontline healthcare workers and first responders related to their attitudes when working in SARS-CoV-2 environments.

Methods

Design

This project used a descriptive study design with survey methodology, implemented with a purposive sample of healthcare workers and first responders. Characteristics of COVID-19 virus reduction activity engagement and attitudes toward SARS-CoV-2 were explored with frontline healthcare workers and first responders in the young adult population. To set the context for this project, a mandated mask order was in force to mitigate spread of COVID-19 in the location where participants worked (Long, 2020).

Setting

The setting was in a large, urban, Midwest metropolitan area that employs 16,000 healthcare workers, 2,451 firemen and first responders, and 2,315 police officers (City of St. Louis, 2020; Federal Reserve Bank of St. Louis, 2020; St. Louis County Police, 2020; St. Louis Metropolitan Police Department, 2020). The metropolitan area is made up of 79 neighborhoods in the City, 173 neighborhoods in the County, including 34 medical centers, 29 fire districts, and 14 police districts in the combined areas (City of St. Louis, 2020; Missouri Department of Health & Senior Services [DHSS], 2020; St. Louis County Police, 2020; St. Louis Metropolitan Police Department, 2020). The urban St. Louis City comprised majority of the sample location ($n = 107$, 61%), however the survey expanded to other rural areas of Missouri and Illinois of counties not listed ($n = 31$, 18%).

Sample

A purposive sample of healthcare workers (HCW) and first responders (FR) working on the frontlines in healthcare facilities and emergency community response

were recruited via Snowball sampling to participate. HCW included registered nurses, nurse practitioners, physician assistants, and nurse managers. FR included firemen, policemen, paramedics, and emergency medical technicians. Inclusion criteria were men and women, frontline workers defined above, ages 18-44 years, English-speaking, and all races/ethnicities. Exclusion criteria were participants less than 18-years or older than 44-years of age, not considered frontline workers, and non-English speaking.

Procedures

In November of 2020, the data collection survey was constructed. A survey developed on Qualtrics was formatted to solicit 17 responses on a five-point Likert scale (quantitative) and nine open-ended (qualitative) responses. The survey was pre-tested on peer frontline workers and distributed throughout a local trauma hospital, fire district, and police district to obtain recruits across all career specialties. Snowball sampling techniques were used to recruit additional frontline workers who meet the eligibility criteria. At the start of the survey, consent language was provided, and participants acknowledged passive consent by showing agreement to participate by selecting to “continue the survey”. At the conclusion of the survey, a Missouri Department of Public Health informational poster was attached describing COVID-19 transmission reduction techniques.

After project approvals, the survey was distributed between January to the end of March 2021. A link or quick response (QR) code was sent containing the survey to a local fire district, police district, and trauma department. In April 2021, data were reviewed and analyzed. In May 2021 the project findings were compiled, and in July

2021, findings were presented to the doctoral committee, University, and local Department of Public Health.

All data from Qualtrics were downloaded directly into Microsoft Excel spreadsheets. Data are stored on a password-protected USB flash drive. These project data will be retained for a period of seven years by the student; after seven years, all data will be destroyed.

Data Collection/Analysis

A total of 92% (162/176) survey responses were completed to entirety and 8% (14/176) responses were partially completed by frontline healthcare workers and first responders. A response rate could not be calculated due to the sampling (Snowball) technique. Data collected included attitudes toward hand hygiene, PPE usage, social distancing, community exposures from the pandemic, and demographic data. Demographic data were analyzed using descriptive statistics. Repeated measures Spearman correlation examined agreements amongst mask mandates, social distancing, vaccinations, and emotional impact experienced by frontline healthcare workers throughout the COVID-19 pandemic. Fisher's Exact tests were completed to assess relationships of frontline workers and their associated Likert scale opinions regarding local mask mandates and social distancing. A bar graph displays mask mandate agreements of healthcare workers and first responders (Figure 1) and COVID-19 vaccine agreements (Figure 2).

Approval Processes

Three levels of approval were obtained, including the student's committee, exempt approval from the University Institutional Review Board (IRB), and the

University Graduate School. Data were de-identified to ensure anonymity. No ethical concerns were identified.

Results

A total of 176 surveys were completed between January 20, 2021 – March 30, 2021. The sample was predominately female ($n = 145$, 82%), young adults of 22-29 years old ($n = 144$, 82%), and Caucasian ($n = 162$, 92%). Registered nurses made up the majority of healthcare workers ($n = 146$, 83%) with those in Emergency Departments representing one-fourth of the sample ($n = 41/176$; 23%). The majority of participants worked in the St. Louis City region ($n = 107/176$, 61%).

A Spearman correlation analysis examined agreements to mask mandates, social distancing, COVID-19 vaccinations, and emotional impacts, based on an alpha value of 0.05. Three significant positive correlations were found amongst agreements to mask mandates and social distancing ($r_s = 0.35$, $p < .001$), agreements to social distance and vaccinate ($r_s = 0.16$, $p = .042$), and experiencing an emotional impact from COVID-19 and agreeing to vaccinate ($r_s = 0.24$, $p = .002$). No other significant correlations were found.

Due to limited sample size, Fisher's Exact test was conducted to examine the relationship between frontline workers and their agreement to local mask mandate restrictions. The result was significant based on an alpha level of 0.05, $p = .003$, suggesting these variables of frontline workers with agreements to public health mandates are related. Self-reported attitudes of frontline workers related to mask mandates to mitigate COVID-19 spread show combined results of "strongly agree" and "agree" totaling 83% of the opinion toward CDC guidelines ($n = 97$ and 39, respectively),

see Figure 1. Self-reported attitudes of frontline workers related to their willingness to receive a COVID-19 prevention vaccine reveals 86% agreed to obtain the vaccine ($n = 138$), refer to Figure 2. Alarming, 14% of the sample declined to receive the vaccine during the early months in 2021 ($n = 23$).

A Fisher's Exact test was conducted to examine the relationship between frontline workers compared to agreement to participate in social distancing. The result was significant based on an alpha level of 0.05, $p = .009$. suggesting these two variables too are related. Fisher's Exact test was used to supplement the results, appropriate for small sample size.

Discussion

This clinical scholarship project utilized the Iowa Model to incorporate young adults who are frontline healthcare workers and first responders to assess their attitudes toward SARS-CoV-2 and implementation of CDC guidelines throughout the pandemic. The Spearman correlation analysis demonstrated a moderate effect size for mask mandates and social distancing, meaning as more workers agreed to implement PPE usage, the more they participated in social distancing. Therefore, based on this sample young adult frontline healthcare workers had a positive agreement toward implementing best practices with adherence to CDC guidelines in the Metropolitan Midwest area during the early months of 2021. The key area for improvement in this target population is increasing vaccination agreements by combating hesitations with evidence-based practices and accurate COVID-19 facts.

The main limitation to the study was timing to implement the survey. As the survey was being developed in the late months of 2020, first doses of COVID-19

vaccinations were simultaneously being disseminated to frontline healthcare workers and first responders in the local area, potentially altering opinions toward best practices for COVID-19 prevention guidelines. Ideally, the study should be replicated at additional time intervals, e.g., 18-24 months and later, to assess changing attitudes as vaccination courses are completed in frontline workers. Another potential limitation could have been influenced from varying political campaigns and parties' views on the coronavirus.

Additional implementation of Iowa Model framework to identify triggers should be conducted as new knowledge can complement the ongoing evidence-based practices of COVID-19 and vaccination prevention. As the purpose of the Iowa Model framework is to use knowledge to incorporate into evidence-based practice (Iowa Model Collaborative, 2017). Once evidence is sufficient, the Iowa Model can further be utilized to deliver and sustain practice change in conjunction with CDC guidelines.

Conclusion

Evidence demonstrates that implementation of PPE bundle, hand hygiene, social distancing, limiting community exposures, and obtaining vaccinations will reduce the spread of the coronavirus (Howard et al., 2021). Yet, in the midst of the pandemic, opinions and motivation of frontline healthcare workers and first responders to comply and enforce these guidelines are not well documented. While COVID-19 vaccines were first presented to essential workers, their influence and encouragement cascades onto their fellow friends and family which in turn, should increase vaccination rates. Frontline workers continue to set the standards for the remainder of society with implementation and support of PPE guidelines and role modeling safe behaviors. As the coronavirus exceeds one year into the United States, healthcare workers and first responders have a

pivotal role in disseminating SARS-CoV-2 facts and evidence-based practices to provide progressive care to patients, families, and themselves.

Advanced practice nurses have an opportunity to focus on the science of infectious diseases and best clinical practices. The Doctor of Nursing Practice (DNP) can lead interprofessional clinical efforts to improve healthcare following the pandemic, specifically by evaluating disaster preparedness, advocating, and identifying policy barriers to preventative care, and educating the next generation of doctoral-prepared advanced practice nurses.

References

- Brooks, J. T., Butler, J. C., & Redfield, R. R. (2020). Universal masking to prevent SARS-CoV-2 transmission—The time is now. *JAMA*, *324*(7), 635.
doi:10.1001/jama.2020.13107
- Centers for Disease Control and Prevention (CDC). (2020, September 21). *How coronavirus spreads*. Retrieved October 01, 2020, from <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html>
- City of St. Louis. (2020). *Neighborhoods of the city of St. Louis*. Retrieved November 02, 2020, from <https://www.stlouis-mo.gov/live-work/community/neighborhoods/index.cfm>
- Chu, D. K., Akl, E. A., Duda, S., Solo, K., Yaacoub, S., Schünemann, H. J., . . . Schünemann, H. J. (2020). Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: A systematic review and meta-analysis. *The Lancet*, *395*(10242), 1973-1987.
doi:10.1016/s0140-6736(20)31142-9
- Cunningham, J. W., Vaduganathan, M., Claggett, B. L., Jering, K. S., Bhatt, A. S., Rosenthal, N., & Solomon, S. D. (2020). Clinical outcomes in young US adults hospitalized with COVID-19. *JAMA Internal Medicine*.
doi:10.1001/jamainternmed.2020.5313
- Federal Reserve Bank of St. Louis. (2020, November 06). *All employees, health care*. Retrieved November 12, 2020, from <https://fred.stlouisfed.org/series/CES6562000101>

- Gudbjartsson, D. F., Helgason, A., Jonsson, H., Magnusson, O. T., Melsted, P., Norddahl, G. L., . . . Stefansson, K. (2020). Spread of SARS-CoV-2 in the Icelandic population. *New England Journal of Medicine*, *382*(24), 2302-2315.
doi:10.1056/nejmoa2006100
- Howard, J., Huang, A., Li, Z., Tufekci, Z., Zdimal, V., Van der Westhuizen, H., . . . Rimoim, A. W. (2021). An evidence review of face masks against COVID-19. *Proceedings of the National Academy of Sciences*, *118*(4).
doi:10.1073/pnas.2014564118
- Howden, L., & Meyer, J. (2011). Age and sex composition: 2010. *United States Census Bureau*, 1-15. doi:C2010BR-03
- Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing*, *14*(3), 175-182.
doi:10.1111/wvn.12223
- Johns Hopkins. (2020). *Module 4: Epidemiology: Understanding the spread of COVID-19 - Johns Hopkins*. Retrieved October 04, 2020, from <https://coronavirus.jhu.edu/covid-19-basics/understanding-covid-19/module-4-epidemiology-understanding-the-spread-of-covid-19>
- Long, J. (2020, July 1). *St. Louis City, St. Louis County issuing mandatory mask requirement to slow COVID-19*. Retrieved October 01, 2020, from <https://www.stlouis-mo.gov/government/departments/mayor/news/city-and-county-require-mandatory-masks.cfm>
- MacIntyre, C. R., & Chughtai, A. A. (2020). A rapid systematic review of the efficacy of face masks and respirators against coronaviruses and other respiratory

transmissible viruses for the community, healthcare workers and sick patients.

International Journal of Nursing Studies, 108, 103629.

doi:10.1016/j.ijnurstu.2020.103629

Maragakis, L. (2020, April 9). *Coronavirus and COVID-19: Younger adults are at risk, too*. Retrieved November 12, 2020, from

[https://www.hopkinsmedicine.org/health/conditions-and-](https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/coronavirus-and-covid-19-younger-adults-are-at-risk-too)

[diseases/coronavirus/coronavirus-and-covid-19-younger-adults-are-at-risk-too](https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/coronavirus-and-covid-19-younger-adults-are-at-risk-too)

Missouri Department of Health & Senior Services. (2020, October 20). *MO hospital profiles by county*. Retrieved October 17, 2020, from

<https://health.mo.gov/safety/healthservregs/pdf/MOospbyCounty.pdf>

Oran, D. P., & Topol, E. J. (2020). Prevalence of asymptomatic SARS-CoV-2 infection.

Annals of Internal Medicine, 173(5), 362-367. doi:10.7326/m20-3012

St. Louis County Police. (2020). *Precincts*. Retrieved November 22, 2020, from

<https://www.stlouiscountypolice.com/Precincts>

St. Louis Metropolitan Police Department. (2020). *Your neighborhood*. Retrieved

November 02, 2020, from https://www.slmpd.org/your_info.shtml

Troiano, G., & Nardi, A. (2021). Vaccine hesitancy in the era of covid-19. *Public Health*.

doi:10.1016/j.puhe.2021.02.025

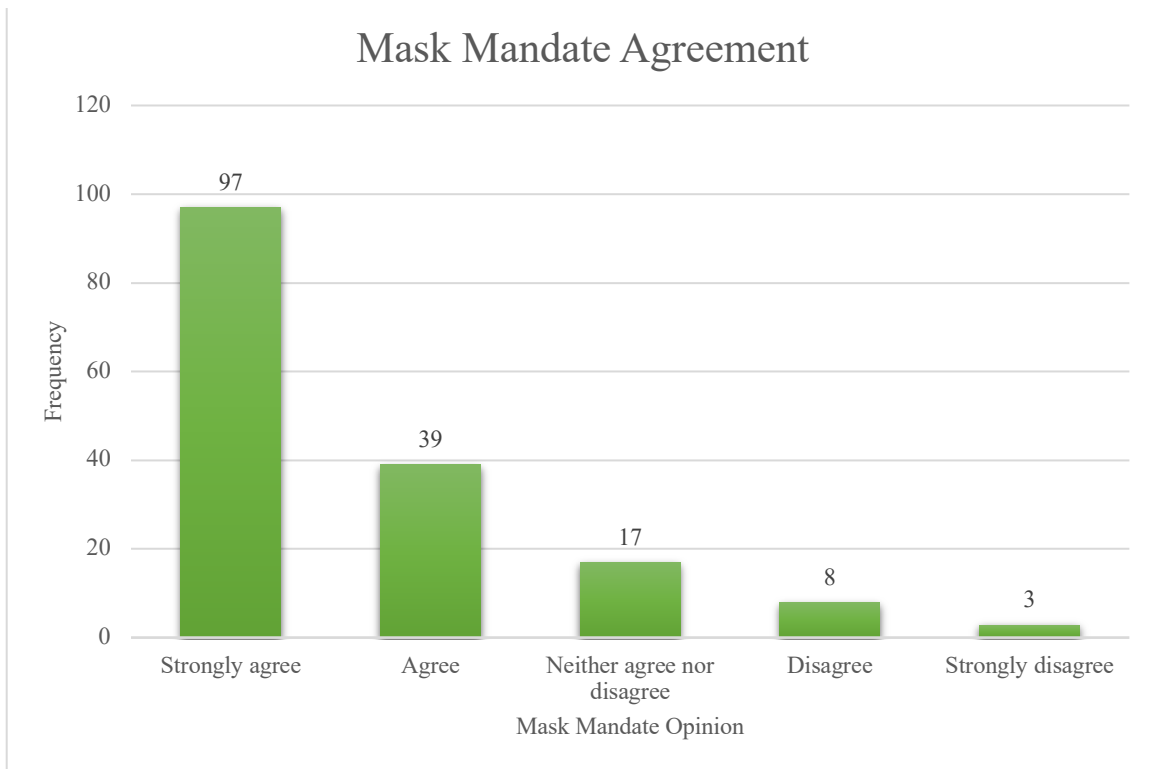
World Health Organization. (2020). Rational use of personal protective equipment for coronavirus disease (COVID-19) and considerations during severe shortages:

Interim guidance, 6 April 2020. *World Health*

Organization. <https://apps.who.int/iris/handle/10665/331695>. License: CC BY-

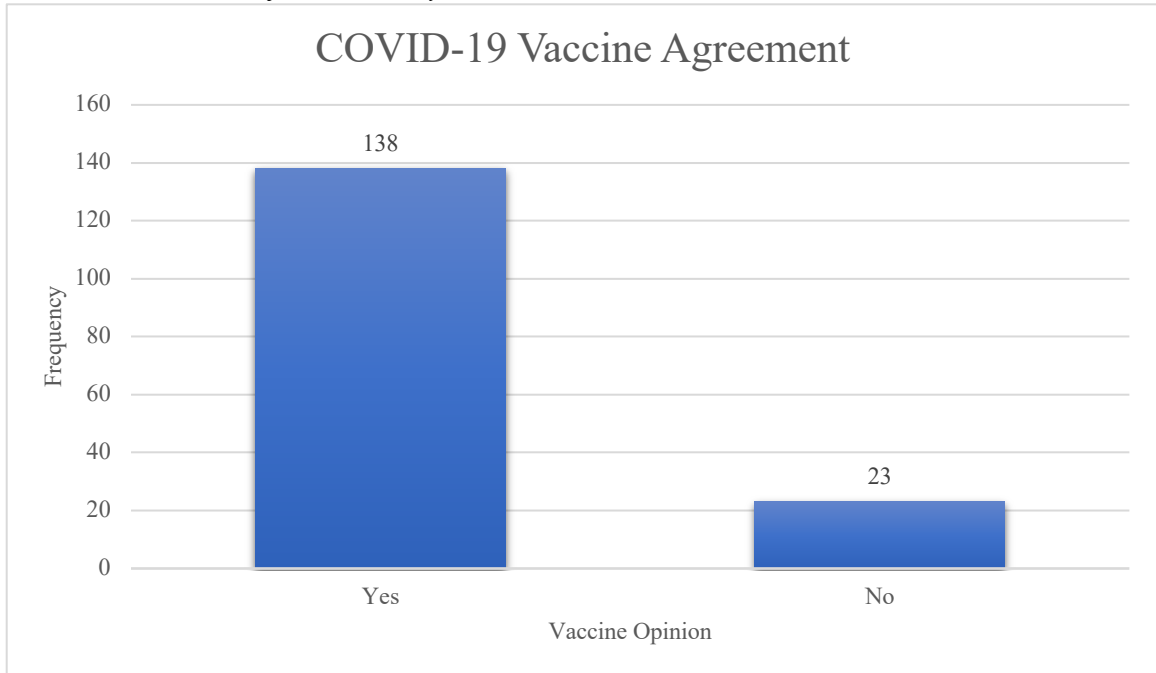
NC-SA 3.0 IGO

Figure 1. *Bar Graph of Mask Mandate Agreement by Frontline Healthcare Workers from January – March 2021*



Note. Bar graph depicts frequency of agreements to local public health order to wear masks in a public setting or in public by frontline healthcare workers and first responders. $N = 164$.

Figure 2. Bar Graph of COVID-19 Prevention Vaccine Agreement by Frontline Healthcare Workers from January – March 2021



Note. Bar graph depicts frequency of agreements to receiving a COVID-19 prevention vaccine by frontline healthcare workers and first responders. $N = 161$.