

## **BRIEF19**

*A daily review of covid-19 research and policy.*

### **RESEARCH BRIEFING**

#### **New survey study highlights alarming rates of vaccine refusal among US parents.**

A new preprint recently [published](#) on *OSF Preprints* explores vaccine hesitancy among and resistance among United States parents. This paper is part of a series of papers by [The Covid States Project](#), a 50-state ongoing survey on attitudes and behaviors regarding covid-19.

Between February 5 and March 1, 2021, the researchers surveyed 19,789 individuals across all 50 states plus the District of Columbia. Individuals were surveyed via an online platform regarding perspectives related to covid-19 vaccines. The main findings are:

#### *Covid-19 vaccine hesitancy and resistance by age, gender, and parental status:*

- 39 percent of mothers were unlikely to vaccinate their children.
- 23 percent of fathers were unlikely to vaccinate their children.
- 43 percent of younger mothers (ages 18 to 35) were unlikely to vaccinate their children compared to 35 percent of older mothers (ages 36 to 60); the difference in hesitancy/ resistance among younger fathers (21 percent) and older fathers (23 percent) was similar.
- 37 percent of young mothers would not get the covid-19 vaccine for themselves compared to only 26 percent of young women who were not parents. Differences in covid-19 vaccine refusal was similar for older women, younger males, and older males regardless of parental status, and was lower than the 37 percent reported among young mothers.

#### *Covid-19 vaccine hesitancy and resistance by education:*

- Among parents without a college degree, 34 percent of parents would not get the covid-19 vaccine compared to 23 percent of similarly educated non-parents.
- There was no substantial difference in vaccine refusal among parents (10 percent) and nonparents (11 percent) with a college degree.

*Covid-19 vaccine hesitancy and resistance by parental status and income:* Income was broken down into quartiles: < \$25k per year, \$25k to < \$75k per year, \$75k to < \$150k per year, and > \$150k per year.

- The greatest proportion of individuals refusing the covid-19 vaccine was found among those reporting less than \$25,000 of income per year. In this group, parents (37 percent) were more likely to refuse vaccination compared to nonparents (27 percent).
- A similar trend was noted for those making between \$25,000 and less than \$75,000 per year with parents (28 percent) again more likely to refuse vaccination compared to nonparents (18 percent).
- The differences between parent and nonparent vaccine refusal were similar between groups and remained low (9 to 13 percent) for individuals reporting annual incomes of greater than \$75,000 per year.

#### *Covid-19 vaccine hesitancy and resistance by parental status and race:*

- The within-race differences between parents and nonparents regarding vaccination refusal did not vary substantially, often between 1 percent to 8 percent.
- Between-race differences in vaccination refusal were noticeable with Asian Americans least likely to refuse vaccination (9 to 10 percent refusal rate) and Black parents most likely to refuse vaccination (30 percent refusal rate). The refusal rate between Black nonparents, Hispanic parents/nonparents, and White parents/nonparents was similar (18 to 25 percent refusal rate).

#### *Covid-19 vaccine hesitancy and resistance by political affiliation:*

- Similar to [our previous study](#), Republicans were significantly more likely to refuse vaccination (28 to 34 percent) compared to Democrats (10 to 12 percent).

- Independents had high rates of vaccine refusal (21 to 29 percent).
- The differences between parents/nonparents within each political party did not diverge by more than 8 percent.

Numerous limitations to survey studies like this exist, including the fact that surveys like these mostly reach technologically savvy individuals. In addition, the survey data are limited in their ability to explore or explain the *reasons* for vaccine refusal in depth. Nevertheless, the Covid States Project provides important information regarding which populations in the US need to be targeted for educational purposes regarding the safety, efficacy, and importance of covid-19 vaccination. [26 March 2021](#).

### **Non-fatal opioid overdoses on the rise during the pandemic.**

In a new paper [published](#) in the *Annals of Emergency Medicine*, researchers investigated the rate of non-fatal opioid overdoses arriving at emergency departments (EDs) during 2020. In a collaborative effort, researchers from 6 different institutions came together to study this question, using data from their respective hospital systems.

In total, data on opioid overdoses from January 2018 to December 2020 was collected from 25 different hospitals across 6 states. Data from 2018-2019 were used to model and predict non-fatal opioid overdose rates for 2020, and this model was then compared to actual data reported from 2020.

Emergency department treatment of opioid overdoses increased substantially in 2020 compared to 2018-2019 in four of the six health systems. The overall non-fatal overdose visit rate increased by 28.5 percent in 2020 compared to 2018-2019. Meanwhile, across these health systems, there was a 14 percent decline in ED visits for all reasons in 2020.

Massachusetts and Rhode Island saw an overall *decrease* in non-fatal opioid overdoses in 2020 by 6.8 percent and 11.6 percent, respectively. However, substantial increases in non-fatal opioid overdoses were observed in 2020 in EDs located in North Carolina (+51.1 percent), Alabama (+47.3 percent), Colorado (+34.6 percent), and Connecticut (+25.3 percent).

Although this study is limited by being a non-nationally representative sample, the data are impressive given the number of hospitals included in several states. Although the way physicians document opioid overdoses may have changed over the time period, the researchers leveraged a longstanding collaboration focused on substance use research. This likely helped to minimize variability in documentation.

Overall, the results of this study strongly support the need for expanded emergency department and community-based interventions to support individuals with opioid use disorder during the covid-19 pandemic, and likely even after it ends. [25 March 2021](#).

—Joshua Niforatos, MD, MTS

**Vaccines decrease coronavirus disease *and* infection among healthcare workers, several new studies find.** As vaccine distribution continues, marked with the passing of 100 million in the United States vaccinated [last week](#), four important research communications released yesterday in the *New England Journal of Medicine* describe various successes of vaccination programs among healthcare workers. Three of the letters focus on infection rates among the vaccinated workers and another reported on antibody levels in the blood of vaccinated participants.

One letter ([Nir-Paz and colleagues](#)) comes from researchers in Israel, a country which has had one of the fastest mass vaccination programs of any nation. Researchers studied the effectiveness of the Pfizer/BioNtech mRNA vaccine among healthcare workers. At baseline, 10 percent of the 6,680 healthcare workers across a two medical center campus in Jerusalem were found to be afflicted with covid-19, most of which was believed to be from community (as opposed to hospital) spread. Over an 8-week period beginning in December, nearly 85 percent of the non-infected workers were vaccinated. A notable decline in SARS-CoV-2 cases was seen among healthcare workers starting two weeks after the first dose and remained low one month after vaccination. Importantly, the researchers found that in addition to the vaccine-associated reductions in the number of new cases (including both symptomatic

and asymptomatic infections), the number of new infections remained low even when a variant of concern (the United Kingdom B.1.1.7) surged among the general population.

Two other letters published simultaneously demonstrated similar success among healthcare workers. One, from the United States ([Podolsky and colleagues](#)) found that vaccinations decreased new confirmed infections by a *factor of 50*. Researchers studied the over 23,000 hospital employees who work at University of Texas-Southwestern Medical Center in Dallas. During the first month of vaccinations, 59 percent of employees received the first dose and 30 percent received the second dose of either the Pfizer or Moderna vaccines. When assessing new infections, a marked difference was seen among those unvaccinated compared to those partially or fully vaccinated (2.6 percent versus 1.8 percent versus 0.05 percent). A 90 percent decrease in the number of employees requiring isolation or quarantine was seen, showing that the vaccines effects on workforce preservation was massive.

Similar findings were also seen at Southern California medical centers ([Torriani and colleagues](#)). Over 36,650 health care workers at two campuses received a first dose over a two-month period starting in December with 77 percent receiving the second dose in this time frame. Among those receiving just the first dose of the vaccine only 379 of the over 36,650 workers tested positive for SARS-CoV-2; 71 percent of those infections occurred within two weeks of vaccination. After both vaccinations, only 37 out of the over 28,180 workers who received a second dose became infected, corresponding to a positivity rate similar to the UT-Southwestern population of rates (see above). The absolute risk of infection was higher in both the San Diego (1.2 percent) and Los Angeles (0.97 percent) populations compared to earlier vaccine research but many reasons for this are possible, including expanded testing, higher prevalence of the virus, and the appearance of variants of concern.

Finally, new research assessing vaccine responses to people who were previously been infected was published. Given that the initial research led to the US Food and Drug Administration's granting of emergency use authorization for the Pfizer/BioNtech, Moderna, and Johnson & Johnson vaccines focused on persons who had never been infected with SARS-CoV-2, there remains much to be learned about what kinds of responses we can expect from the previously infected population. Researchers at Children's Mercy in Kansas City ([Bradley and colleagues](#)) assessed antibody responses in previously infected healthcare workers after a single dose of the Pfizer/BioNtech vaccine. Baseline antibody levels were checked among 36 health care workers, followed by repeat testing three weeks post-vaccination, among those who had confirmed covid-19 somewhere between 30 and 60 days prior to receiving the vaccine. The results were compared to 152 healthcare workers who did *not* have a prior known covid-19 illness. Not surprisingly given how common asymptomatic infection appears to be, six of the *control* subjects were found to have positive antibodies, consistent with unknown previous infections. When assessed at the three-week point, those who had been previously infected were found to have a higher quantity of antibodies. What is unknown is how long those increased levels will persist.

As the authors of the Dallas study ([Podolsky and colleagues](#)) state, these data are important to share with employees who may be hesitant to receive vaccination, despite access to vaccination not being a hinderance. While over 90 percent of healthcare workers in a [recent study](#) reported the intention of vaccinating, the real rates have been lower in many areas. We need to continue vaccination the front-line workers, not only for health and safety but for continued workforce preservation. [24 March 2021](#).

— Christopher Sampson, MD, FACEP

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*Brief19* is a daily executive summary of covid-19-related medical research, news, and public policy. It was founded and created by frontline emergency medicine physicians with expertise in medical research critique, health policy, and public policy.