

Vaccine Hesitancy or Acceptance in High School Students

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Introduction

Background: Vaccine hesitancy has been an issue in the United States and around the world for several decades¹. While vaccines are a safe and trusted method of providing immunity against various infectious diseases, fraudulent claims about their potential side effects has left many concerned². It is important to understand where this hesitancy stems from in the younger generations of Americans so that the scientific and policy-making bodies can properly target it and educate those with doubts. In the wake of the coronavirus infectious disease 2019 (COVID-19) pandemic, it is imperative that much of the population should be vaccinated to generate herd immunity and vaccine hesitancy does not become a road towards a somewhat normal future. Yet, there are evidences of growing COVID-19 vaccine hesitancy in U.S³. We wanted to understand the cause of vaccine hesitancy and level of acceptance in high school students.

Objective: The objective of our research is to understand whether there is a correlation between vaccine hesitancy and ethnicity with a focus on gender and age. We also wanted to learn the leading cause of vaccine hesitancy and acceptance amongst teenaged students in the Las Vegas valley.

Hypothesis: We hypothesize that while the majority of the students will be pro-vaccine, many will be hesitant about the COVID-19 vaccine specifically. We also expect to see a greater hesitancy in students of color, particularly African American students because of the historical reasons⁴.

Methods

A 12-question survey was administered to the high school students to gain a deeper understanding regarding vaccine awareness, hesitancy or acceptance. Participants were invited via social media as well as through Clark County School District (CCSD) teachers and the survey was administered via Google survey. The survey participation was voluntary, confidential with informed consent and the response was collected anonymous without personally identifiable information. The research was conducted with IRB approval from University of Nevada Las Vegas (UNLV).

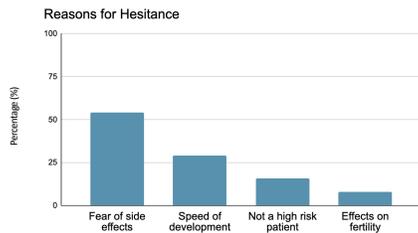


Figure 4. Reported reasons for hesitancy regarding COVID-19 Vaccine

Results

Over the course of two weeks, from February 1st, 2021 to February 11th, 2021, 123 responses were received. Of those surveyed, 61.7% were female, 31.7% were male, and 6.5% were Non-Binary or Gender Non-Conforming. Survey respondents (123) were 48.8% white, 30.1% Asian origin, and 7.2% multiracial background. 21.1% of the responders belonged to the age group 14-15, 54.5% were 16-17 years of age, and 24.4% were 18 or older. A vast majority (92.7%) agreed on 'vaccine protection to individual and to the community'. 91.1% reported that they understand the 'science behind vaccine' and 87.0% agreed that 'vaccines are safe'. 74.8% of those surveyed say they would receive both doses of the COVID-19 vaccine. Graphical representations of responses to some prompts are shown below.

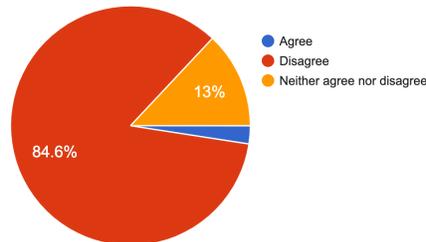


Figure 1. "There is a link between autism and vaccination"

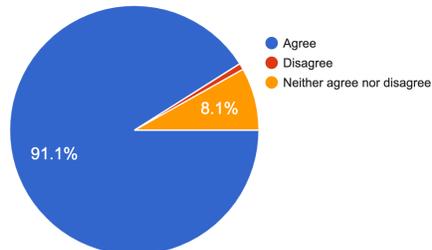


Figure 2. "I understand how vaccines work in the human body and the science behind it"

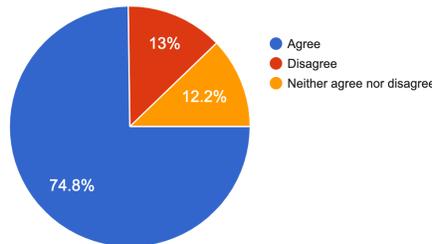


Figure 3. "If given the opportunity, I would receive both doses of the COVID-19 vaccine."

Discussion

Potential side effects of the vaccine was the most common reason cited for hesitation. This was either the main or supplementary reason for 54% of 24 free responses. With some overlap, 29% cited concerns over the speed of its development. They argued it was created too quickly to be completely trustworthy. Another 16% said that they would wait until higher risk individuals received the vaccine before they did. Two respondents noted that they had fears about the effects of the vaccine on female fertility specifically.

Of those who responded either "Agree" or "Neither agree nor disagree" to the prompt "There is a link between autism and vaccination" (19 respondents did so), 79% responded "Agree" to the prompt, "I understand how vaccines work in the human body and the science behind it".

When considering hesitancy as a response of "Neither agree nor disagree" or "Disagree" to the prompt "If given the opportunity, I would receive both doses of the COVID-19 vaccine", it was found that 54.8% of those who expressed vaccine hesitancy were White and 19.3% were of Asian origin. 61.3% of hesitant respondents were female and 38.7% male, which mostly aligns with the gender demographics of the entire population sampled, suggesting there is not a significant correlation between gender and hesitance.

Conclusions

While the majority of participants reported having an understanding of how vaccines function within the human body, many remained misinformed about the real effects of the vaccine and what it is actually capable of. It was also found that of the students that were surveyed, there did not seem to be a notable correlation regarding ethnicity or gender and vaccine hesitancy.

Despite the rapid development of the various COVID-19 vaccines, all three vaccines currently being administered have shown to be effective and safe. These vaccines are held to the same rigorous safety standards as all other vaccines. While there are minimal side effects associated with receiving a vaccine, these are often mild, and do not persist. It is important to note that no vaccine contains the whole virus that causes COVID-19. Rather, mRNA vaccines contain instructions for immune cells to make a harmless piece of a protein found on the surface of the actual virus. The body recognizes this as a foreign object, and mounts an immune response, which produces the antibodies required to prevent the virus that causes COVID-19.⁵

In the future, we plan on using a Bayesian approach to calculate the new probability of transmission assuming that 74.8% of Americans are vaccinated. Areas of improvement we identified include attempting to distribute the survey to a more diverse group of students and adjusting some of the questions asked. Adjustments will focus on accessibility of the vaccine and recent developments regarding FDA clearance for minors. We also would like to understand where students have learned about vaccines to address possible shortcomings of school science curriculums, so the question "Where did you learn about how vaccines function?" will be added.

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