

Attitudes of Post-Graduate Dental Residents in Community Health Towards COVID-19 vaccination

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ABSTRACT

Purpose/Objectives: This quality initiative was conducted to assess COVID-19 vaccine acceptance in post graduate dental residents. This is especially important for oral health care professionals in community health, as they may provide role modeling and motivation for the general public to embrace vaccination. Through the NYU Langone Dental Medicine's Postdoctoral Residency Programs overarching quality program, this initiative ascertained resident attitudes about COVID-19 vaccines and vaccination prevalence rates.

Methods: All post-graduate trainees of NYU Langone Dental Medicine's Postdoctoral Residency Programs were invited to participate in the survey, including AEGD, Anesthesia, GPR, Orthodontics, Pediatric Dentistry, and Public Health (N=400). All participants were informed of, and informed of optional nature of survey. Participants self-selected by opting in to the survey, administered through Qualtrix.

Results: The overall response rate reached 292 out of 400 residents, or 73%. 93.49% of survey participants reported having obtained COVID-19 vaccination, were awaiting vaccination, or became vaccinated after initial hesitation. As of those vaccinated voluntarily, by May 2021, 27% (78 out of 292) received the vaccine after, or with, some hesitation. While the majority of the programs' trainees readily accepted COVID-19 vaccination, with or

without initial hesitancy, there were some that refused to become vaccinated at the time of this survey administration. It was an extremely rare occurrence with only 4 out of 292 survey respondents reporting outright vaccine refusal.

Conclusion: Despite COVID-19 vaccination being not mandatory as part of the residency program, high vaccination prevalence rates were reported by NYU Langone Dental Medicine's Postdoctoral Residency Programs trainees in Graduate Dental Education. This acceptance of non-mandatory vaccination, along with relatively low rates of hesitancy found in this survey of dental residents, is a positive development in the era of the pandemic and fast emerging variants of the Coronavirus. This survey outcome is relevant future planning and projections on trainees' acceptance of health guidance and recommendations.

INTRODUCTION

The vaccine, once considered to be a panacea to infectious diseases for humanity, has become the center of controversy in recent history. Many attribute the start of the anti-vaccine movement to Andrew Wakefield's publication in *The Lancet* where a connection between the measles, mumps, and rubella (MMR) vaccine and autism in young children was asserted ^[1].

Despite the publication being retracted, it opened Pandora's Box for anti-vaccination. Since its publication, the skepticism around safety of childhood vaccines gained momentum, along with various assertions on tenuous associations between vaccines and autism ^[2]. This unfortunate movement has stood the test of time and continues to grow in popularity, especially among Western Europe and North America. This initiative sprung from our concerns around vaccine hesitancy, an important phenomenon to be explored and further studied especially in health care professionals in community health settings as they may provide role modeling and motivation for the general public to embrace vaccination.

Vaccine hesitancy is an established health choice behavior that is of concern; it is an even more significant concern for public health and safety during the COVID-19 pandemic. A vaccination hesitancy survey administered in the US during the pandemic (N=1878) reported the following - "the likelihood of getting a COVID-19 immunization in the study population was: very likely (52%), somewhat likely (27%), not likely (15%), definitely not (7%)..." ^[3]. Not only is the general American public expressing hesitation about COVID-19 vaccines, but health care workers declined or expressed skepticism about, the vaccine. As of January 2021, media reports suggested "initial vaccination efforts have been slower than expected and that some health care workers who have been offered the vaccine have chosen not to get vaccinated, particularly among staff in long-term care facilities." ^[4]. A survey administered by the Kaiser Family Foundation during the pandemic indicated that 29% health care workers expressed hesitancy about getting the COVID-19 vaccine ^[5].

In 2020 surveys conducted in health care workers in Los Angeles previous to the FDA's emergency use authorization of vaccine found extremely low accept rates, at 33.5% ^[6]. Surveys completed later in December 2020 found higher acceptance rate trends for health care workers, 55.3%, when asked whether they would "decide to receive the COVID-19 vaccine when one is available to them." It was reported that 16.3% health care workers responded no and 28.4% undecided to the same question ^[7]. Kaiser Family Foundations conducted several surveys which found, "as of December 2020, roughly one in three adult health care workers (29%) said they probably or definitely would not get vaccinated, similar to the share among adults overall (27%)" ^[8].

This study was undertaken under the purview of the NYU Langone Dental Medicine’s Postdoctoral Residency Programs overarching quality initiatives to ascertain prevalence rates of vaccine hesitancy or refusal in the Post-Graduate (PG) resident group of trainees in academic or community health settings. As the largest post graduate dental education entity in the nation NYU Langone Dental Medicine’s Postdoctoral Residency Programs has a wide reach throughout the US, including Alaska and Hawaii, and Puerto Rico/USVI. The majority of trainees serve underserved populations in community health settings. Therefore, it is imperative to ascertain prevalence of vaccination rates and hesitation around the COVID-19 vaccine [9].

MATERIALS AND METHODS

All post-graduate trainees of NYU Langone Dental Medicine’s Postdoctoral Residency Programs were invited to participate in the survey, including residents of AEGD, Anesthesia, GPR, Orthodontics, Pediatric Dentistry, and Public Health programs (N=400). They were invited to participate in the survey. The invitation email informed trainees of the voluntary nature of the survey, with no negative consequences for lack of participation; and that all survey results would remain untraceable and anonymous [10]. All residents accessed the survey through a link included in email invitations from respective program directors. Regardless of participation, all residents were emailed an additional reminder after initial launch of survey, with a caveat that the survey should only be taken once. The survey was administered online through Qualtrix.

RESULTS

The survey elicited a high response rate of 292 out of 400 residents (73%). Table 1 below provides details on COVID-19 vaccination status for all survey participants. Most remarkable in these findings was the extremely high rate of vaccination acceptance, 66.78%. This included residents vaccinated or awaiting vaccination at the time of survey administration, without hesitation (N=195). With those who became vaccinated for COVID-19 after initial hesitation (26.71% of total respondents) included, the prevalence of vaccinated dental trainees was 93.49% (Table 1).

Table 1. COVID-19 vaccination status of survey respondents.

COVID-19 Vaccine Status	Number of Survey Respondents (Total N=292)	% of Survey Respondents
Got vaccinated, or awaiting vaccination, without hesitation	N=195	66.78%
Got vaccinated with hesitation	N=78	26.71%
Still under consideration	N=12	4.11%
Refused vaccination	N=4	1.37%
Unable to access vaccine	N=3	1.03%

Despite the low refusal rate and high prevalence of trainees that ultimately became vaccinated, it was imperative that we capture any articulated reasons for initial hesitancy. This was especially interesting due to the fact that the COVID-19 vaccine was not mandated by NYU Langone Dental Medicine’s Postdoctoral Residency Programs at this time. Of the total number of respondents (N=292), 78 survey participants (26.71%) reported vaccination with some level of hesitation [11]. Trainees selected from prepopulated reasons for vaccine hesitation; and were able to select more than one reason. Trainees’ comments under “other” reasons were captured and were as follows: “Concern with effects on mRNA concern-Difficult to trust without hesitation a vaccine hurried by an administration that does

not believe in science,” and “Pregnant-Reaction as a child to a vaccine.” Table 2 below provides additional information regarding reasons for initial hesitation (Table 2).

Table 2. Survey respondents’ reasons for vaccine hesitation.

Reasons for Vaccine Hesitation	Number of trainees vaccinated after initial hesitation (Total N=78)
Worried about possible side effects	N=54
Do not trust the vaccine is safe and effective	N=12
Vaccine is too new and want to wait and see how it works for other healthcare professionals	N=42
Critical feelings about the vaccine development process	N=9
The risks of COVID-19 are being exaggerated	N=6
Do not trust vaccines in general	N=0
Do not trust the health care system	N=0
Worried that you may get COVID-19 from the vaccine	N=0
Do not think you are at risk of getting sick from COVID-19	N=2
Already had COVID-19 infection	N=2
Other reasons	N=14

At the time of survey administration there were unvaccinated trainees undergoing a discernment phase. Table 3 provides additional information for considerations regarding COVID-19 vaccination by dental trainees of NYU Langone Dental Medicine’s Postdoctoral Residency Programs [12]. There were 12 survey participants (4.11%) that reported they were considering the COVID-19 vaccination, while 4 (1.37%) participants reported they refused altogether. In this particular section of the survey the respondents were able to select more than one reason and/or write in text under “other.” Comments included the following: “Concern with effects on mRNA” - I am currently a nursing resident; my child's pediatrician told me to wait until a proper protocol is approved.” (Table 3).

Table 3. Respondents’ considerations for COVID-19 vaccination.

Factors for Consideration of COVID-19 Vaccination	Number of Trainees Considering Vaccination (Total N=12)
Worried about possible side effects	N=5
Do not trust the vaccine is safe and effective	N=2
Vaccine is too new and want to wait and see how it works for other healthcare professionals	N=5
Critical feelings about the vaccine development process	N=2
The risks of COVID-19 are being exaggerated	N=2
Do not trust vaccines in general	N=0
Do not trust the health care system	N=0
Worried that you may get COVID-19 from the vaccine	N=0
Do not think you are at risk of getting sick from COVID-19	N=1
Already had COVID-19 infection	N=6
Other reasons	N=2

While the majority of NYU Langone Dental Medicine's Postdoctoral Residency Programs post graduate dental medicine trainees accepted COVID-19 vaccination, with or without initial hesitancy, there were some that refused to become vaccinated at the time of this survey administration. It was an extremely rare occurrence with only 4 out of 292 survey respondents reporting outright vaccine refusal [13]. Their reasons for doing so included the following: Worried about possible side effects; Do not trust the vaccine is safe and effective; Vaccine is too new and want to wait and see how it works; Critical feelings about the vaccine development process; The risks of COVID-19 are being exaggerated; Do not trust vaccines in general; Do not trust the health care system; Do not think you are at risk of getting sick from COVID-19; and Already had COVID-19 infection.

DISCUSSION

Our findings provide enlightening insights about the low prevalence of vaccine hesitancy and refusal in the cohort of dental residents training with NYU Langone's PG programs. At the time of the survey, 93 percent of the respondents had either received the vaccine, with or without hesitation or were awaiting vaccination. This is a significant improvement as compared to vaccine hesitancy in the US general public where "the likelihood of getting a COVID-19 immunization in the study population was: very likely (52%), somewhat likely (27%), not likely (15%), definitely not (7%)...". When compared with the KFF surveys finding 29 percent of health care workers and 27 percent of the adult population said they probably or definitely would forego vaccination.

Of those vaccinated, 27% (78 out of 292) received the vaccine after, or with, some hesitation. Of those that became vaccinated despite some hesitancy, the main reasons were due to concerns over possible side effects, 38 percent, followed by the vaccine being too new and respondents wanting to wait and see how it works for other healthcare professionals, 30 percent. These were also the main reasons noted for those that were undecided or refused vaccination at the time of these surveys.

CONCLUSION

The COVID-19 vaccine has had strong acceptance in dentistry overall. During this survey initiative there was one study that reported on acceptance of COVID-19 vaccinations among dental professionals in Feb 2021. This survey reported a total of 506 respondents, 267 of whom were general dentists, or 53%. Acceptance of COVID-19 vaccination was 85% for all, including specialties; and 95% acceptance rates for general practitioners. This is in alignment with our findings, where 93% of post-graduate trainees in dental education in the NYU Langone Health program became vaccinated.

One possible explanation for the exceptionally high prevalence of vaccination in dentistry may be the widely disseminated known risks of the dental profession. The practice of dentistry involves the use of rotary dental and surgical instruments, such as hand pieces or ultrasonic scalers and air-water syringes. This armamentarium creates a visible spray (aerosol) that may contain particle droplets of water, saliva, blood, microorganisms, and other debris. In May of 2020 the occupational risks for dentistry were included in the highest top four at-work hazards of contracting the COVID-19 virus. Due to the regular exposure of aerosols in the dental profession, trainees may have opted to become vaccinated despite feelings of hesitancy.

Other considerations for the high prevalence of vaccination amongst our trainee population may be environmental context and practice philosophy. The majorities of our residents obtain training in community-based settings in community or academic health centers; and therefore, provide direct patient care to many vulnerable populations.

It may be that our trainees opted to become vaccinated despite some hesitancy for the good of the whole community or for the welfare of their patients, many vulnerable and/or medically compromised.

While there have been many reasons reported for hesitancy regarding COVID-19 vaccinations, in our resident cohort, 39 % of respondents were hesitant because they were worried about side effects, and 27 % felt the vaccine was too new and wanted to see how it worked on other health care workers first. It is also of interest that when given the opportunity to write explanations for answers about hesitancy, pregnancy and breast feeding were the most common concerns. This was a limitation of our survey, that additional information was not gathered from residents that are hesitant or refused the COVID-10 vaccine. Another limitation was that in our efforts to protect anonymity of survey participants we were unable to parse the data to compare within specific participant cohorts due to the small number of residents in specialty groups.

The high rates of COVID-19 vaccine acceptance of NYU Langone Dental Medicine's Postdoctoral Residency Programs trainees is encouraging and is consistent with those reported among general dentists; and therefore, may be generalizable to the dental profession as a whole. Despite COVID-19 vaccination being not mandatory as part of residency programs, high vaccination prevalence rates were reported NYU Langone Dental Medicine's Postdoctoral Residency Programs trainees in Graduate Dental Education. This, along with relatively low rates of hesitancy found in this survey of dental residents, is a positive development in the era of the pandemic with fast emerging variants of the Coronavirus. This information is pertinent and relevant to dental education for future planning and projections on trainees' acceptance of health guidance and recommendations.

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