

Considering Needle Phobia among Adult Patients During Mass COVID-19 Vaccinations

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Abstract

As mass vaccination is underway to combat the COVID-19 pandemic and achieve herd immunity, healthcare professionals need to recognize the fear and phobia of needles among their patients. Approximately 11.5 to 66 million U.S. adults may suffer from this condition. This population often avoids seeking medical care including vaccinations. The exact number of people suffering from this phobia is unknown, and the potential years of life lost in the American health care system cannot be estimated accurately. The resistance to vaccinations among this population may delay achieving herd immunity to end this current pandemic. An overview of needle phobia, vaccinations, and current treatments are explored. The use of telemedicine could prove critical for reaching this population as well as those who are hesitant about vaccinations. Providing education to healthcare providers to identify and manage these patients during the pandemic is necessary.

Keywords

COVID-19, pandemic, vaccinations, needle phobia, telemedicine, herd immunity, education, needle fear, blood-injection-injury

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Introduction

A global public health emergency was officially declared on January 30, 2020 due to the novel coronavirus disease 2019 (COVID-19) outbreak,¹ and the pandemic was confirmed on March 11, 2020.² In the United States, over 29 052 862 cases were diagnosed, and 527 726 people have died as of March 11, 2021.³ Strict public health methods were applied to prevent the transmission of this novel virus. Passengers on cruise ships were quarantined on military bases in February, and the first community acquired COVID-19 was confirmed in California by the end of February.^{4,5} The Centers for Disease Control and Prevention recommended implementation of physical distancing, masks, and handwashing.⁶ School and business closings as well as any indoor activities involving large gatherings were restricted.⁶ California was the first state to declare “stay-at-home” orders on March 19, 2020,⁷ and many other states followed.⁸

Vaccinations

The rush to produce a viable vaccine to combat this virus proved successful. The U.S. Food and Drug Administration (FDA) approved the emergency use of 2 vaccines that were

developed by Pfizer/BioNTech and Moderna in December 2020.⁹ As of March 11, 2021, 19.3% of the total population received at least one dose, and 10.2 % have been fully vaccinated since December 14, 2020.¹⁰ The FDA also approved emergency use of Johnson and Johnson (Janssen COVID-19) vaccine on February 27, 2021.⁹

Since there is no cure for COVID-19, the optimal intervention strategy to mitigate disease propagation is proactive vaccination to develop herd immunity. The percentage of people who have been vaccinated or had COVID-19 at this time is uncertain.¹¹ Approximately 24% of the United States population is under 19 years of age.¹² To achieve herd immunity quickly, a maximum number of adults must be vaccinated since there are no approved COVID-19 vaccines for children available. Among the remaining 76% of the population, a segment will refuse to be vaccinated for different reasons. A portion of those individuals may have

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various ideological objections to the COVID-19 vaccines (or vaccines in general) or vaccine hesitant; they may or may not be overcome with appropriate education that focuses on the safety, mechanism of action, and the importance of compliance for the good of public safety as opposed to individual benefits.¹³ Another group of adults is expected to decline vaccination based on needle phobia. For example, McLendon and Rogers found 1 out of 6 adult patients did not receive influenza vaccinations due to needle phobia.¹⁴ This group may be challenging to recruit into compliance with education about the relative importance of vaccination and alternative approaches to mitigate their phobic avoidance of injections of any kind. Due to the mutations of the SARS-CoV-2 strain, a majority of the population will most likely need to receive an annual COVID-19 vaccination once the herd immunity is achieved. The subject of needle phobia needs to be considered as mass vaccinations programs are increasingly implemented to achieve and sustain herd immunity.

Prevalence of Needle Phobia and Definition

Reported prevalence rates of needle phobia widely diverge in the literature ranging from 3.5% to 20%. Two research studies have found about 3.5% to 4% of population have needle phobia.^{15,16} Hamilton found that 10% of the population suffered from needle phobia.¹⁷ Taddio et al²⁵ and Target Harris International study showed over 20% of the population had a needle phobia.¹¹ These estimates suggest that between 11.5 and 66 million people in the U.S. population suffer from needle phobia.

Definitions of needle fear and needle phobia are not separately defined in previous epidemiological studies. Also, a few epidemiological studies on needle phobia exist.¹⁸ Needle fear is an induced anxiety when needles or injections are used.¹⁴ Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), groups needle phobia as part of specific phobias of blood-injection-injury type.¹⁹ Needle phobia is anxiety that is out of proportion to the threat in the environment and event.¹⁹ Estimating the number of patients who may avoid vaccination due to needle phobia is difficult because this group is known to avoid contact with the medical system.²⁰

Possible Causes of Needle Phobia

Needle phobia may be triggered due to our genetics, environment, and experiences. Needle objects for greater chance of survival.²¹ Four out of five adults with needle phobia stated they had a first-degree relative with this fear.²² Furthermore, patients with needle fear or phobia may experience vasovagal syncope when confronted with needles/needle injections. Syncope may be a defense mechanism to

protect the heart and the brain with vasovagal reflex and bradycardia.²³ Bucci et al²⁴ observed that negative experiences with vaccination may lead to future vaccine refusals. Other studies showed pain and fear with prior immunization contributed to future noncompliance.^{13,24} A long-lasting negative childhood immunization experience among ages 4 to 6 years old may be associated with fear and noncompliance of vaccination throughout adulthood.¹³ As many as 2 out of 3 people are afraid of needles.²⁵

Current Treatment Options for Needle Phobia

Historically the treatment of blood injection-injury phobia has received a relatively low priority, since treatment for this phobia only raises serious concern in relatively rare cases where a patient's phobic avoidance of necessary procedures (eg, surgery) and/or injectable/infusible treatments (eg, transfusion, intravenous antibiotics, insulin, etc.) becomes life-threatening.²⁶ During the COVID-19 pandemic, identification and treatment of needle phobia are expected to be priorities when vaccine supplies become sufficient to inoculate every eligible person because many Americans will not agree to vaccination due to phobic avoidance. Vaccination refusal by phobic avoiders could place other individuals at unnecessary risk of infection (eg, children under 16) and endanger the general public by undermining herd immunity.

Unlike other anxiety disorders, no psychotropic interventions have proven to be reliably efficacious for the treatment of specific phobia.²⁷ Administration of benzodiazepines was the most commonly used medication strategy, but it resulted in minimal benefit that was not sustained over time²⁸ and worsened phobic patients' symptoms over time.²⁹ In contrast to medications, exposure-based therapies have repeatedly demonstrated sustained benefits with advantages over other therapeutic alternatives including medications, systematic desensitization (relaxation therapy), and no treatment.^{29,30}

Delivery of exposure therapy to patients to mitigate risk of phobic avoidance is likely a practical option, based on the relatively uncomplicated nature of the techniques involved and low cost.³¹ Exposure therapy is considered the mainstay of treatment for specific phobia with demonstrated response rates as high as 90%.²⁷ Augmenting exposure therapy with the technique of applied tension has demonstrated superior efficacy to other treatments; applied tension is the practice of repeated contractions of large muscle groups to counteract the vasovagal response that often accompanies blood-injection-injury phobias while being exposed to phobia triggers.³² It is currently recommended as initial treatment.^{15,33} An additional practical benefit of exposure therapy in the setting of pandemic isolation, it should be possible to develop a vaccination targeted

interventions utilizing computer based training modules. Computer-led exposure versus face-to-face sessions with therapist-led exposure yielded similar results among anxiety patients.³⁴ An additional area for future development would likely involve the use of virtual reality (VR) technologies. The potential advantages of VR observed in various studies³⁵⁻³⁷ are equivalent to or possibly even superior to the results of real-life exposure.³⁸ VR exposure has also been associated with a lower refusal rate as compared to real-life exposure strategies.³⁹

Conclusion

Vaccinations are critical public health interventions to decrease mortality and morbidity among the population. There is an urgency to vaccinate everyone. Blood-injection-injury phobia, which includes needle phobia, can threaten life by causing avoidance of medical and surgical procedures including blood transfusions, dental procedures, insulin, and other injectable medication as well as refusal of vaccinations.²⁶ Screening efforts can help reach underserved members of the community who are vaccine hesitant. To identify these patients, administering online screening using DSM-5 “Cross Cutting Screener for Phobia” in primary care, community health clinics, university health clinics, and through insurance companies may help to identify those who do not show up for vaccinations.¹⁹

Once these individuals are identified through screening, healthcare providers can provide pre-clinical support as well as support for similarly affected family members. Targeting family members or family units might be important given evidence of heritability of needle phobia.²⁶ Telemedicine would be a good alternative for patients who have needle phobia during this pandemic. As stated previously, augmented exposure therapy can be provided effectively via telemedicine with benefits to both the patient and the society.³⁴

A significant way to increase vaccine acceptance is compassionate acknowledgment of this fear and phobia among millions of the U.S. adults. McMurtry et al¹⁸ described that vaccination experiences for some people were not “just a poke.” Validating that phobic responses have been associated with evolutions and genetics may decrease patients’ resistance to treatment by mitigate patient embarrassment.²¹ Healthcare professionals can benefit from education focused on identifying and managing various manifestations of needle phobia among adults. Until alternative ways to vaccinate for COVID-19 are available (ie, nasal spray), this phobia should be taken into consideration as the COVID-19 vaccinations continue.

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