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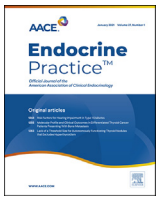

Original Article

Patient Perspectives on the COVID-19 Vaccine: A Pilot Survey Study of Patients in Endocrinology Clinics

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ABSTRACT

Objective: Vaccine hesitancy is an impediment to fighting the COVID-19 pandemic. Endocrinology clinics routinely see patients who are at high risk of a more aggressive form of COVID-19, including patients with diabetes, obesity, and hypertension. As patients with endocrine-related conditions often require multiple visits each year, endocrinology clinics provide a significant opportunity for vaccine education. The aim of our study was to evaluate patient perspectives about COVID-19 vaccination in outpatient endocrinology clinics.

Methods: A pilot survey study of patients who visited 3 endocrinology clinics between May 31, 2021, and June 18, 2021. A 7-item questionnaire explored the patients' perspectives and behaviors regarding COVID-19 vaccination. Data were analyzed with descriptive statistics.

Results: A total of 446 patients from 3 clinic locations (1 urban and 2 suburbans) completed our survey. There were 361 (81%) patients who indicated that they were planning to or had already received the COVID-19 vaccination, 56 (13%) reported no intent for vaccination, and 29 (7%) were unsure. Of the 85 patients who were unsure or did not intend to be vaccinated, 43 (51%) were Black, 30 (35%) were White, and 4 (5%) had other racial/ethnic identities. When asked about vaccine hesitancy, 25 (29%) wanted to wait and see how the others responded to the vaccine, 20 (24%) had concerns about the side effects, 12 (14%) did not believe in vaccines, and 11 (13%) felt that COVID-19 was not as bad as the media had portrayed it. Significantly more Black patients had vaccine hesitancy than White patients ($P = .035$).

Conclusion: Although most endocrinology patients were amenable to COVID-19 vaccination, a subpopulation still expressed vaccine hesitancy, indicating that endocrinology clinics may be an ideal place for targeted vaccine education.

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Introduction

COVID-19 caused by SARS-CoV-2 was initially detected in Wuhan, China, in December 2019. It spread rapidly throughout the world within a month of its onset, and on March 11, 2020, the World Health Organization (WHO) declared it a worldwide pandemic.[1] The WHO began organizing a global campaign for prevention, early diagnosis, and medical treatment of the disease.[2] More than 400 million confirmed cases have been reported so far, including more than 5 million deaths reported to the WHO as of February 23, 2022.[3] A vaccine was urgently needed to prevent COVID-19 spread and stem complications and deaths resulting from the transmission of the disease. The speed with which a vaccine was developed was remarkable—from the publication of the first SARS-CoV-2 genome sequences through a phase 1 trial in just 6 months, as compared with a typical timeline of 3 to 9 years for the vaccine development.[4] The U.S. Food and Drug Administration approved the COVID-19 vaccination under emergency use authorization in December 2020 for individuals ≥16 years.[5,6] The percentage of the United States population who are now fully vaccinated ranges from 57% to 82%.[7] Considering that recent strains of the virus causing COVID-19 are highly infectious, the proportion of the population that must be vaccinated to reach herd immunity could be as high as 82.5%.[8]

Emerging evidence in the past decade has suggested that vaccine hesitancy has been increasing across many populations, even among health care workers.[9] The WHO defines vaccine hesitancy as a behavior influenced by several factors, including lack of

Abbreviation: WHO, World Health Organization.

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confidence in the health care system and policymakers, lack of complacency, convenience, and risk calculation.[10] Vaccine hesitancy has been recognized as a barrier to discussing disease prevention with patients since the 2009 H1N1 influenza pandemic.[11,12] In the context of COVID-19, the historic speed of developing a vaccine may have also contributed to vaccine hesitancy. Importantly, even low rates of vaccine hesitancy can have a negative effect on public health.

Mortality from COVID-19 is higher in older adults aged >65 years, obese people, and patients with various comorbidities such as hypertension and diabetes,[13-15] and many patients with these COVID-19 risk factors routinely visit our endocrinology clinics. Our goal was to gain an understanding of how patients who visit our endocrinology clinics view the COVID-19 vaccination and to elucidate the factors underlying vaccine hesitancy. We also aimed to determine whether patient characteristics such as race and ethnicity were associated with specific perspectives on the COVID-19 vaccination, including vaccine hesitancy. Knowing patients' perceptions about vaccines and defining barriers that patients may have to cross while receiving vaccination will be crucial for developing effective patient education initiatives to increase the vaccination rates.

Highlights

- Two in 10 patients have COVID-19 vaccine hesitancy
- Vaccine hesitancy is significantly higher in Black American patients
- Endocrinology clinics may be an ideal place for targeted vaccine education

Clinical relevance

Several factors contribute to vaccine hesitancy. It is important to identify and address these factors to increase the vaccination rates. This will lead to lower health care costs and rates of COVID-19 mortality in the United States.

Methods

The study was conducted in 3 endocrinology clinics in southeast Michigan that saw patients falling within 3 high-risk groups (eg, obesity, hypertension, and diabetes). The study was approved by the Henry Ford Hospital Institutional Review Board. Our hospital has a level I trauma center and also provides acute, specialty, and preventive care services to the entire population of southeast Michigan. Our endocrinology group examines a wide variety of patients at the main downtown location and in 2 other locations in surrounding suburbs. We surveyed patients in all 3 locations to obtain patients' perspectives from different health system locations, which may reflect differences in their socioeconomic status. Based on geographic zip code data, suburban clinics had higher income as compared with urban clinics.

We developed a 7-item questionnaire that was offered to all patients attending our endocrinology clinics from May 31, 2021, to June 18, 2021 (Supplementary Appendix 1). The survey had an introduction explaining the purpose of our study and noted that participation was voluntary and that no personal identifying information would be collected. Medical assistants distributed paper questionnaires and collected responses within 5 minutes while patients were waiting to be examined by the health care provider. Patients were considered vaccine-hesitant if they answered no or were unsure of the question about receiving a vaccine. We used descriptive statistics to analyze and present data. The data were collected in a Microsoft Excel file and then imported into Sigma Plot (version 14.5; Systat Software, Inc.) for further analyses. Since all the data are expressed in proportions, we used χ^2 analysis with Fisher exact text as necessary. $P < .05$ denoted statistical significance.

Results

A total of 446 patients participated in the survey. Of these patients, 108 (24%) were seen in the 2 suburban clinics and 338 (76%) were seen in the urban clinic (Table 1). Of all the patients, 361 (81%) reported that they were planning to or had already received the COVID-19 vaccination. There were 29 (7%) patients who reported that they were unsure of vaccination whereas 56 (13%) of patients reported that they did not plan on getting the vaccine. (Fig. 1)

A total of 85 (19%) patients indicated that they were unsure or not planning to get a COVID-19 vaccine, and we questioned the reasoning behind this decision. Of these 85 patients, 25 patients (29%) wanted to see how everyone else does before taking it; 20 (24%) reported fear of side effects; 11 (13%) felt that COVID-19 was not as bad as its portrayal in the media, and 12 patients (14%) did not generally believe in vaccines (Fig. 2). We included an option for patients to write in their reasons for getting vaccinated. The varied responses included concerns about fertility, already taking too many medications, feeling they were not healthy enough to receive the vaccine, waiting for FDA approval, presence of allergies, and having had COVID-19 in the past.

Of the 85 patients who reported vaccine hesitancy, 43 (51%) identified as Black, 30 (35%) as White, 5 (6%) as Middle Eastern, 2 (2%) as Asian, 1 (1%) as Hispanic, and 4 (5%) as others. Moreover, more Black patients (23%) than White patients (14%) reported that they were hesitant to receive a COVID-19 vaccine ($P = .035$). While 16 of the 85 patients with vaccine hesitancy (19%) had visited a suburban clinic, 69 (81%) had visited the downtown location. However, more patients who visited the downtown location participated in the survey. Assessment by the clinic location showed that 16 of the 108 (15%) patients who visited a suburban clinic and 69 of the 338 (20%) who visited the urban location had vaccine hesitancy; however, these rates were not significantly different ($P = .197$; Table 2).

Discussion

In this pilot survey study, we surveyed patients at 3 endocrinology clinics about their attitudes toward the COVID-19 vaccination. Our results showed that while >80% of the patients had

Table 1
Characteristics of Endocrinology Clinic Patients

Characteristics (N = 446)	Number (%)
Clinic Location	
Urban	338 (76)
Suburban	108 (24)
Race/Ethnicity	
Asian	13 (13)
Black	190 (43)
Hispanic	10 (2)
Middle Eastern	13 (3)
Others	7 (1)
White	208 (47)
Did not answer	5 (1)

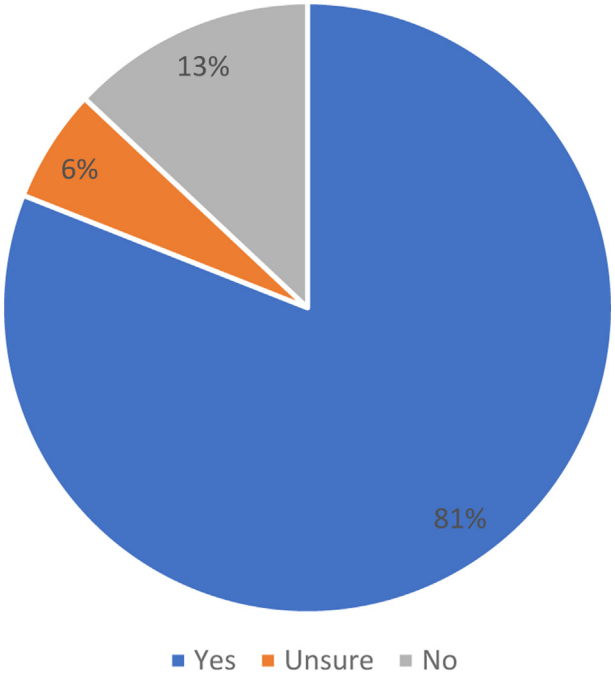

Fig. 1. Endocrinology clinic patient responses regarding intent to receive COVID-19 vaccination. The figure shows responses (yes, no, unsure) to the question, "Do you plan on getting a COVID-19 vaccine once available to you / Have you already gotten the vaccine?" Percentages were calculated from a total of N = 446 responses.

received or planned to receive a COVID-19 vaccine, almost 20% of them developed vaccine hesitancy. We also found that in our endocrinology patient population, Black patients were more likely to express COVID-19 vaccination hesitancy than White patients. Outbreaks of vaccine-preventable diseases are occurring at an alarming rate in the United States, especially in geographic pockets with poor immunization rates.[16] Vaccine skepticism is a complex issue that has led to the rise of vaccine-preventable diseases, such as the measles outbreak in 2019. The historic speed with which the COVID-19 vaccination was developed is one factor that has led to vaccine hesitancy. In the United States, COVID-19 vaccination acceptance was found to range from 60% to 79% in all 5 surveys among the general population,[17] and the rate of vaccination acceptance that we observed was higher than that rate. We suspect that this may be related to our at-risk patients having better vaccine counseling through practice-wide systematic effort since most

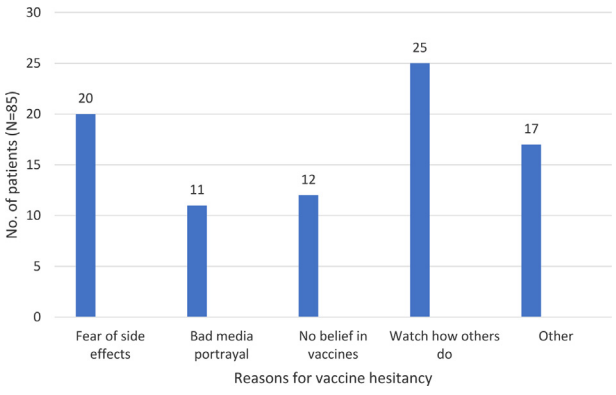

Fig. 2. Endocrinology patient responses regarding reasons for not receiving the COVID-19 vaccination. The figure shows responses to the question, "If you are not planning to take the COVID-19 vaccination, what is your reasoning?" Responses are shown in the figure. A total of 85 patients responded to this question, which was interpreted as "vaccine hesitancy."

Table 2
Characteristics of Endocrinology Patients Indicating Vaccine Hesitancy

Characteristics (N = 85)	Number (%)
Clinic Location	
Urban	69 (81)
Suburban	16 (19)
Race/Ethnicity	
Asian	2 (2)
Black	43 (51)
Hispanic	1 (1)
Middle Eastern	5 (6)
Others	4 (5)
White	30 (35)

patients observed in our clinics had multiple comorbidities that increased the risk of severe COVID-19.

Our study showed that more than half of the patients who were hesitant to take the COVID-19 vaccination were Black, which was significantly higher than that of White patients. Although Black individuals comprise only 13.4% of the U.S. population, they account for >20% of COVID-19-related deaths.[18,19] Inequities affecting Black Americans are believed to stem from systemic racism, which has led to higher levels of social risk factors such as unstable housing conditions, homelessness, poverty, lower wages, and higher risk employment as most of them are forced to put themselves and their families at risk for COVID-19 infection. These patients are also associated with a greater prevalence of underlying health conditions, such as hypertension, diabetes, and obesity.[20] Medical mistrust is also high among Black patients leading to high rates of vaccine hesitancy.[21]

We also observed that while more patients visiting an urban clinic had vaccine hesitancy than those who visited suburban clinics, the difference was not statistically significant. This observation might indicate an underlying trend of urban in comparison with suburban rates of vaccine hesitancy, but more studies are needed to further validate it. We did not collect data on socioeconomic factors, so we cannot determine if there is a role of these factors in vaccine hesitancy.

There were several limitations as can be expected in a pilot study. As the COVID-19 vaccination availability was limited at the time we submitted our institutional review board application, some patients did not sign up for the vaccine at the time of our study. However, by the time our study was approved, the vaccine had become readily available to all adult populations; we do not believe that the study timing affected our results. We did not assess patients from the general population, patients attending primary care clinics, or patients who did not seek consultation in our endocrinology clinics, which might explain the high vaccine acceptance rate in our pilot study. Despite this possible selection bias, our findings are useful for physicians, since knowing the perspectives of different patient groups will help lead discussions for further clinical improvement. Another limitation is that we did not collect other demographic and physical characteristics such as weight, sex, and age, as these variables may also play a role in patient perspectives on vaccines. Of all the 446 patients, 76% were from the urban location and 24% from the suburban location. Data were not collected including the number and type of patients approached for participation. Also, one of our suburban clinics was a recent addition that explains the participation of only a few patients in our study from the suburban clinics. Finally, the catchment area of the urban and the suburban clinics are of diverse socioeconomic status, which could affect the individual perception, we, unfortunately, did not collect this important information.

Overall, our pilot study showed a positive patient perspective on COVID-19 vaccination at our endocrinology clinics. Although

multiple factors contribute to vaccine hesitancy, clarity is required regarding the drivers of this phenomenon and to develop interventions to combat this. There is still much room for future research on this topic, especially patient-driven approaches for helping our patients overcome vaccine hesitancy. The higher rate of vaccine hesitancy observed in our Black patients suggests a need for better health education initiatives for this population.

Disclosure

The authors have no multiplicity of interest to disclose.

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