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ORIGINAL CONTRIBUTION

Perspectives of COVID-19 vaccine–hesitant emergency department patients to inform messaging platforms to promote vaccine uptake

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Abstract

Objectives: Efforts to promote COVID-19 vaccine acceptance must consider the critical role of the emergency department (ED) in providing health care to underserved patients. Focusing on patients who lacked primary care, we sought to elicit the perspectives of unvaccinated ED patients regarding COVID-19 vaccination concerns and potential approaches that might increase their vaccine acceptance.

Methods: We conducted this qualitative interview study from August to November 2021 at four urban EDs in San Francisco, California; Seattle, Washington; Durham, North Carolina; and Philadelphia, Pennsylvania. We included ED patients who were ≥18 years old, fluent in English or Spanish, had not received a COVID-19 vaccine, and did not have primary care physicians or clinics. We excluded patients who were unable to complete an interview, in police custody, under suspicion of active COVID-19 illness, or presented with a psychiatric chief complaint. We enrolled until we reached thematic saturation in relevant domains. We analyzed interview transcripts with a content analysis approach focused on identifying concerns about COVID-19 vaccines and ideas regarding the promotion of vaccine acceptance and potential trusted messengers.

Results: Of 65 patients enrolled, 28 (43%) identified as female, their median age was 36 years (interquartile range 29–49), and 12 (18%) interviews were conducted in Spanish. Primary concerns about COVID-19 vaccines included risk of complications, known and unknown side effects, and fear of contracting COVID-19 from vaccines. Trust played a major role for patients in deciding which sources to use for vaccine information and in engendering vaccine acceptance. Health care providers and family or friends were commonly cited as trusted messengers of information.

Conclusions: We characterized concerns about COVID-19 vaccines, uncovered themes that may promote vaccine acceptance, and identified trusted messengers—primarily

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health care professionals. These data may inform the development of nuanced COVID-19 vaccine messaging platforms to address COVID-19 vaccine hesitancy among underserved ED populations.

KEYWORDS
COVID-19, COVID-19 vaccine, emergency department, vaccine acceptance

INTRODUCTION

The public health crisis of the past century, the SARS-CoV-2 (COVID-19) pandemic, has led to over a million deaths in the United States as of May 16, 2022.[1] Vaccines provide the most powerful tool for limiting the risk of acute COVID-19 illness and associated complications at both the individual and the population level. However, COVID-19 vaccine hesitancy—defined as a delay in acceptance (or refusal) of vaccination when offered—remains a significant barrier to achieving herd immunity, with approximately 15% of national online survey respondents in spring of 2021 saying they would not get a COVID-19 vaccine.[2–4]

With over 140 million visits in the United States annually, emergency departments (EDs) serve as the main health care access point for many people facing barriers to primary and preventive care. Individuals who commonly access services in EDs include immigrants, minorities, persons experiencing homelessness, the impoverished, and the under- and uninsured, many of whom have comorbidities increasing their risk for poor outcomes from COVID-19.[4–9] In our prior work surveying medically underserved populations during ED encounters at 15 geographically diverse EDs across the United States, patients whose usual source of health care occurs in EDs had greater vaccine hesitancy and other barriers to receiving COVID-19 vaccines.[10]

The central premise behind this research (PROmotion of COvid-19 VA[X]ccination in the Emergency Department [PROCOVAXED]) is that efforts to promote COVID-19 vaccine acceptance must consider the ED's critical role in providing health care, especially those without other primary health care. Our core hypothesis is that implementation of COVID-19 messaging platforms in EDs will be associated with greater COVID-19 vaccine acceptance and uptake in unvaccinated ED patients. The first step toward the development of specific COVID-19 messaging platforms for unvaccinated ED patients is to gain insight regarding patients' concerns about COVID-19 vaccines as well as who and what might help promote vaccine acceptance. While the core quantitative survey methodology employed in our prior work provided important preliminary information about vaccine hesitancy among ED patients,[10] participants were limited in their survey response options. We were unable to elucidate nuanced reasons for vaccine hesitancy and explore in-depth ways to overcome hesitancy, including what would comprise useful COVID-19 information and who patients trust to deliver vaccine messaging. Qualitative research methodology offers a rigorous and complementary approach to overcome such limitations.[11–13] To that end, we conducted this qualitative study, consisting of semistructured interviews with vaccine-hesitant ED patients who use the ED as their primary health care access point, to gain deeper insights about the following: (1) experiences and concerns with COVID-19 vaccines; (2) perceptions regarding the role of trusted sources of information, i.e., "trusted messengers"; and (3) specific information and messaging that might address concerns and reasons for hesitancy.

METHODS

Study design

We conducted a qualitative interview study using a phenomenological approach and conventional content analysis. The University of California San Francisco (UCSF) Committee on Human Research served as a central institutional review board and approved all study procedures. This work informed a subsequent trial—registered in Clinicaltrials.gov—that uses messaging platforms derived from the findings of this qualitative analysis.[14] We followed the COnsolidated criteria for REporting Qualitative research (COREQ) guidelines.[15] Our study, PROmotion of Covid-19 VA(X)Ccination in the Emergency Department (PROCOVAXED; NCT05142332), can be found at https://clinicaltrials.gov/ct2/show/NCT05142332.

Interview guide development and staff training

For interview guide development, we implemented a predefined, four-step process. First, we reviewed existing literature as well as data from our Rapid Evaluation of COVID-19 Vaccination in Emergency Departments for Underserved Patients (REVVED UP) survey study of underserved populations at 15 EDs to develop a preliminary interview guide.[10] Second, our team discussed and revised the preliminary guide. For the third step, we reviewed the draft guide with the UCSF COVID-19 Research Patient and Community Advisory Board, which included several community members of the population of interest, and revised the guide according to their recommendations. Finally, the team reviewed and further revised the guide to generate the final interview guide.

Because of the ED acute care setting for patient interviews, we sought to limit the interviews to approximately 30 min. We therefore divided the final guide into two interview sessions: Session 1 explored participants' opinions of COVID-19 and COVID-19 vaccines

and Session 2 focused on messaging approaches to increase willingness to accept COVID-19 vaccines (eText 1 in the Supplement). Conducting multiple interactive sessions, qualitative research experts who were all coinvestigators on the team (JB, KR, AMC) trained the research team on best practice interview techniques and data collection. Interviewers included both males and females as well as both physicians (JB, HK, and RR) and research coordinators (AG, AP, RG, CLC, TP). All Spanish interviews were conducted by a certified Spanish-fluent research staff member (CLC; eTable 1 in the Supplement).

Setting

We conducted this study in four urban EDs that serve diverse populations: Zuckerberg San Francisco General Hospital (ZSFG; San Francisco, California), Harborview Medical Center (Seattle, Washington), Duke University Hospital (Durham, North Carolina), and Thomas Jefferson University Hospital (TJUH; Philadelphia, Pennsylvania; see Table 1[16] for ED and community population characteristics).

Participants, recruitment, and consent

We conducted interviews from August to November 2021, a time when individuals in the United States aged ≥12 years were eligible to receive a first dose of COVID-19 vaccine through an emergency use authorization from the U.S. Food and Drug Administration.[17] On weekdays, research personnel at each site screened ED dashboards for potentially eligible patients using the following inclusion criteria: (1) age ≥ 18 years, (2) had not received a COVID-19 vaccine, (3) fluent in English or Spanish (Spanish only applicable at ZSFG site), and (4) anticipated ability to complete a 30- to 40-min interview. Patients were excluded if they were: (1) unable to provide consent to or complete an interview because of major trauma, intoxication, altered mental status, or critical illness; (2) presenting with a psychiatric chief complaint; (3) in police custody; or (4) under suspicion of acute COVID-19 illness. Additionally, patients were excluded who had primary care physicians or clinics with visits within the past year. Research personnel approached potential participants to assess eligibility and interest in participation and to obtain written consent. Interviewers entered basic demographic information on a Research Electronic Data Capture (REDCap) database and conducted interviews using semistructured interview guides, recording them on handheld audio-recorders. While we planned to divide our interviews into two sessions, when interviews of participants in Session 1 were short (approximately 10 min or less), interviewers continued on to ask questions from Session Guide 2. Reviewing transcriptions at regular intervals, we enrolled until we achieved thematic saturation in the relevant domains of Session Guide 1. We then proceeded on to Session Guide 2, enrolling until we achieved thematic saturation. Participants received a $30 gift card as compensation.

Data analysis

We used a commercial vendor to transcribe English audio recordings and a certified, Spanish-fluent research staff member to transcribe and translate Spanish recordings. We reviewed transcriptions for accuracy and stored them on a HIPAA-compliant, password-protected, online platform.

We utilized a conventional qualitative content analysis approach, in which interviews served as the unit of analysis and were subsequently coded to explore content. We developed the codes using line-by-line reading of a subsample of interview transcripts.[18] This iterative approach allowed the research team to identify and organize thematic categories.[19] The study team developed a codebook to guide the data analysis (eText 2 in the Supplement), giving each code an explicit definition to ensure accuracy and improve intercoder reliability.[20] Four trained research team members (one from each study site) analyzed the transcripts using NVivo 12. A subset (28%) of transcripts were double-coded to ensure consistent interpretation of the codebook. The coders met throughout the coding process to resolve discrepancies, adjust code definitions, and assess for thematic saturation.[21]

Intercoder reliability was calculated throughout the coding process by reviewing a kappa coefficient from all double coded transcripts. Substantial agreement is considered within a mean kappa

TABLE 1 ED and community (city) characteristics

ED sites (2019 city population)	San Francisco ZSFG (881,549)	Philadelphia TJUH (1.579 million)	Seattle Harborview (753, 675)	Durham Duke (321,488)	Cumulative (3,535,712)
2019 ED census	119,000	115,464	118,000	80,000	432,464
ED % African American	24	46	7	44	29
ED % Asian	12	5	6	2	7
ED % Latino	37	6	16	8	18
ED % White (non-Latino)	27	41	67	42	44
% of city vaccinated as of Aug 1, 2021[16]	65	66	64	51	61.5

Abbreviations: ZSFG, Zuckerberg San Francisco General Hospital; TJUH, Thomas Jefferson University Hospital.

value of 0.61 to 0.80 and this range was used as a guide for assessing sufficient intercoder agreement.

RESULTS

We interviewed 65 patients, 40 during Session 1 and 25 during Session 2; the ZSFG site had 14 English-speaking and 12 Spanish-speaking participants, and the other three sites each had 13 English-speaking participants. Of those, 28 (43%) identified as female, their median age was 36 years (interquartile range 29–49), and 12 (18%) were interviewed in Spanish (see Table 2 for participant characteristics). Interviews lasted an average of 19 min (range 5–69 min) and the average kappa for all double-coded interviews was 0.80.

In Table 3 we present themes and quotes in the following four general categories, in alignment with the sections of the interview guides: knowledge, barriers and facilitators to vaccine uptake, trusted messengers, and future intentions. All data have been summarized from both the first and the second sessions of interviews.

TABLE 2 Participant characteristics ($N = 65$)

Age, years ($n = 64$)	
Median	36
Interquartile range	29–49
Gender ($n = 65$)	
Male	37 (57%)
Female	28 (43%)
Hispanic/Latino ($n = 64$)	
Hispanic/Latino	22 (34%)
Not Hispanic/Latino	42 (65%)
Race ($n = 62$)	
White	27 (43%)
Black	21 (34%)
Asian	1 (2%)
Mixed race	4 (6%)
Pacific Islander	1 (2%)
Native American	1 (2%)
Other	7 (10%)
Housing status ($n = 64$)	
Steady home	54 (84%)
Housing insecurity	3 (5%)
No steady home	7 (11%)
Insurance status ($n = 61$)	
Medicaid	19 (31%)
Medicare	9 (15%)
Medicaid and Medicare	1 (2%)
Military	1 (2%)
Private insurance	16 (26%)
Obamacare	1 (2%)
No insurance	14 (23%)

Knowledge and misinformation

Understanding of COVID-19 vaccines

Participants expressed an overall lack of knowledge about COVID-19 vaccines. One participant stated struggles to understand how the vaccine worked. Others noted not knowing anything about the side effects or effectiveness. Several participants expressed frustration with not knowing who to believe and whether vaccine information they had received was accurate.

Beliefs surrounding COVID-19 vaccine effectiveness varied. Some said the vaccines provided sufficient protection against the virus, noting that even though people could contract the virus after being vaccinated, the vaccines helped strengthen immune systems to fight off COVID-19 illness. Others, however, expressed that the vaccines would do little to nothing to protect them. Participants also referenced how the vaccine did not prevent people from contracting variants, such as the Delta variant.

Participants noted there were several COVID-19 vaccines they could receive, although most could not name them all. They also described some vaccines having higher efficacy and fewer side effects than others, but they did not always know which ones were more effective. Participants described many side effects they thought could be experienced from the COVID-19 vaccines, commonly including headaches, fever, cough, and fatigue but also sometimes mentioning contracting COVID, going blind, losing limbs, and death.

Fears and concerns about COVID-19 vaccines were mentioned in nearly half the interviews. Some were concerned about personal health conditions, such as diabetes or heart problems. Several expressed concerns over future health complications, long-term side effects from vaccination, or feeling a general lack of control. Other fears were negative effects in women during pregnancy (miscarriage) and decreased fertility in both sexes. A few participants expressed concerns about potentially dying from the vaccine.

Several participants shared reasons for believing the vaccines were a result of "shady" or deceptive actions by the government, federal authorities, and pharmaceutical companies. They believed they were not being told the complete truth about the vaccines. Others expressed that the vaccines might be giving the government the power to control people and population growth. One participant equated the vaccines to a science experiment being conducted by the CDC.

When asked to determine which would be worse–contracting COVID-19 or experiencing vaccine side effects–participants held varied perspectives. Some believed vaccination was riskier than getting COVID-19. One interviewee explained there was a higher risk of having permanent symptoms from the vaccine than the disease. Others believed the disease would be worse, with

TABLE 3 Themes

Theme	Subtheme	Example quote
Knowledge	Understanding of COVID-19 vaccines	I just—the NRNA—mRNA, that is a synthetic DNA, I mean, it has not been explained transparently to us how that works with us. Does that change our DNA? Does it—there are so many questions, there are just so many things that we should have full thorough knowledge on that we are not being given that I think is extremely important. [S006]
	Fears and concerns	Now more people are dying from getting a shot than people who got the COVID. [W005]
	Comparing effects of COVID-19 infection to vaccination	Because of my immune system, I know I do not eat healthily. If I were to catch it without the vaccine, I would probably be in critical [condition]. If I was to get the vaccine, I do not honestly know where I would be. [J003]
Barriers and facilitators to vaccine uptake	Accessing the vaccine	There are a lot of places that are poor, a lot of people are dying because they do not have that help to get vaccinated. I think that's where it would be more difficult. [SSPAN06]
	Influences	I done seen things on social media, like, people getting the vaccine then catching COVID. That's kind of like with anything. You can get vaccinated for it, but you can still catch it. [D002]
	Incentives	If anything, tell me what I need to know. Give me details, give me information and then let me take it. Do not try to offer me money just for a shot. [J003]
	Information that would encourage vaccine uptake	I trust a doctor. Because if something's going wrong with me, I trust them to tell me. Because they are medical professionals and they should not be misleading or steering anybody wrong because it's their job to heal and help. [J004]
	Mandates/social pressures	I just seen something recently saying that some jobs are requiring the vaccine, and if you do not get it that's $50 out of your paychecks. And I'm like, why should that matter? to me, it seems like some peer pressure type of stuff. [D002]
Trusted messengers and sources of information		Doctors. Like, I rather a doctor tell me about it, and give me the rundown about it, than somebody else. Because they gots to do the studies, they got to do the work … So I like to hear stuff from doctors, especially when it comes down to problems like this, because they got to do researches and studies on it. [D001]
Future intentions		I do want to accept the vaccine. The only issue is just that I just rather wait until it gets improved. [J008]

one person noting how her poor immune system would leave her in critical condition if she did not get vaccinated and caught COVID-19.

Vaccine access and barriers

Of the 32 participants who were asked, 24 responded "yes" to having been offered the vaccine at some point prior to this study interview and eight responded "no." Most participants (17/24) said that everyone they knew who wanted to get the vaccine was able to get it. Only one participant said he knew of individuals who wanted the vaccine but were unable to get it due to vaccination sites requiring identification, which this participant's friends and family did not have. The primary vaccination locations participants knew of were pharmacies (18 mentions), hospitals (10 mentions), primary care clinics (eight mentions), schools (two mentions), and health departments (two mentions).

Several participants described challenges they had encountered trying to access the vaccine, such as lack of time or transportation

to vaccination sites. Notably, one interviewee who had been previously incarcerated stated that his prison was not offering vaccines. Another participant highlighted more macro-level barriers preventing people from receiving the vaccine, saying

> … the way they had these things structured. It seemed like it was pretty well—they had a lot of chaotic … lines and appointments. The stuff that went bad, and then the guy that was spoiling it. One day he give here, and the next day he give it there.
>
> (ID: W001)

Trusted messengers and sources of information

Doctors

Of the 25 participants who were asked who they trust to provide information about the vaccines, the most common answer was doctors (16). Reasons for trust were that doctors are knowledgeable, have more experience, and may be more reliable sources than the news. Participants also endorsed the belief that doctors have had the training to help their patients and can be open and unbiased. Only one person stated they did not trust doctors because they felt doctors had their own agenda.

Friends or family members

Twelve people indicated that, to some extent, advice from friends or family members would affect how they viewed the vaccines. A few had received information from friends and family but did not elaborate on their degree of influence. Some preferred getting information from people they know, noting they had family members with medical backgrounds or that friends and family were the ones who would not take advantage of them. Five people said they would not necessarily trust friends or family, as their information was more likely to be opinions or hearsay rather than facts. Some people acknowledged that based on their recent experiences discussing COVID-19, they did not feel they could trust anybody and needed to rely on their instincts.

News sources

Of the 30 interviews in which participants discussed sources, most respondents acknowledged that they had heard information about vaccines on the news. Nine people said they trusted news sources to provide information about vaccines. Ten people indicated they did not fully trust the news, although some still reported using it as an information source. Some people believed the news could tell you anything, with one person citing their ability to photoshop what viewers saw on television. A few others expressed a general lack of trust in the media or felt tired of the news and the various ways news stories were covered to get better ratings.

Internet

When asked about other sources of information, five (of 30) participants said they would not trust information online, especially social media, so they stayed offline. Some people acknowledged they received information online through Google, YouTube, or social media ads. Seven people said that the internet was a great place to educate themselves, but one person questioned the validity of what they read online.

Community

One person said they preferred information from community leaders, as they could convey body language and trust by meeting face to face. Two other people noted learning about vaccines through community events or newsletters. Additionally, some people trusted religious leaders, with one noting that church leaders would be in a good position to share information. Three participants mentioned hearing information through their workplace or through school, as attendance of an information session was required.

Future intentions

Participants' future plans regarding COVID-19 vaccination varied, as did their reasons for those plans. Some participants said they were waiting for more information about side effects and the efficacy of the vaccine, and others wanted to see how the vaccine affected family members before taking it themselves. Several individuals said they would accept a vaccine as part of ED care with four participants stating that they intended to get it that day or the next day after the interview.

DISCUSSION

Although the themes in our study generally align with other research in non-ED settings that found issues of trust with government sources, safety and side effect concerns, lack of sufficient research (rapid development of the vaccine), and barriers to accessing the vaccine,[22–25] our qualitative findings significantly expand upon this previous work by providing more depth and specificity in ED populations as well as further insights on trust and trusted messengers. This deeper information is key to enriching and informing our (and others') development of three types of platforms for COVID-19 vaccine messaging to be delivered to vaccine-hesitant patients in the ED: videos, flyers, and scripted, face-to-face messages.

Our data indicated considerable lack of trust in media, television, and internet campaigns, especially those that were impersonal and delivered by government officials. Given that participants stated that they trust doctors and nurses who speak to them in a candid manner, optimal platforms would include videos with doctors speaking directly to them and real-time, ED face-to-face messaging—we are therefore including videos and creating short scripts for ED clinicians to provide this face-to-face messaging. Other specific examples of how this nuanced information has guided our ED population–specific messaging platforms include: (1) creation of five different versions of videos and flyers, each with a different pair of messengers to allow for race/ethnicity concordance, i.e., two Latinx doctors on the video to be delivered to a Latinx patient; (2) provision of great detail (rather than generalities in other messaging), including numbers, regarding how many people have received COVID-19 vaccines in trials and in the general population; (3) detailed mortality, morbidity, and safety comparisons between vaccinated and unvaccinated persons—participants wanted to hear specifics with explanations; (4) specific messages that the vaccines do not contain metal or microchips and do not change DNA; (5) more detail about how the vaccines work; and (6) ending platforms with personal messages about ED providers' tell their friends and family that engender trust.

The limited work that has occurred in ED settings has similarly found low trust in government sources and a need for public health messaging that emphasizes the severity of COVID-19 illness and the benefits of vaccination.[26,27] Others have recommended several strategies to increase vaccine confidence, including acknowledging the historical underpinnings of mistrust, providing honest and transparent messaging, and minimizing transportation barriers.[23,24,28–30]

While researchers have begun to explore what interventions may increase the uptake of vaccines outside the ED, ours is the first to elucidate factors most important to the unvaccinated ED population. Alignment of our findings with non-ED populations lends further support to current efforts, and ours adds to these efforts by emphasizing the importance of trustworthy, easy-to-understand language delivered by ED providers that specifically addresses misunderstanding of the safety and efficacy of COVID-19 vaccines by trusted messengers who are racially, culturally, and linguistically concordant with the patient. These messaging strategies may also be relevant to address COVID-19 booster vaccine and influenza vaccine hesitancy, which likely face similar barriers and themes.[31–33]

LIMITATIONS

The primary limitations of this study relate to the timing and location of our research. We conducted this study in the late summer and fall of 2021 when approximately 60% of our patient population had received a COVID-19 vaccine, although this varied substantially among the sites. Vaccination rates for at least one dose as of Spring 2022 are now over 90% in our cities. The remaining unvaccinated ED population is likely particularly resistant to accepting a vaccine, and their views may differ from those we interviewed. Similarly, the perspectives we obtained during the Delta variant wave (starting June 2021) may vary from those seen during the more highly transmissible but less lethal Omicron variant wave (starting December 2021). In terms of other spectrum bias we conducted this work in four urban EDs in the West, South, and Northeast; however, findings may not generalize to dissimilar ED populations, particularly rural populations and residents of other regions. Recognizing this limitation, we have provided our interview guides on the National Institutes of Health DR2 open-access platform (https://tools.niehs.nih.gov/dr2/index.cfm/resource/24262#relatedResources) to allow for refinement and adaptation of COVID-19 vaccine messaging in other populations. Finally, since all participants were in the ED for reasons unrelated to COVID-19, their responses may have been limited by their focus on other immediate health care needs.

CONCLUSIONS

Our findings complement prior research on COVID-19 vaccine perspectives and provide new essential data to inform the development of nuanced, ED population–specific COVID-19 vaccine messaging platforms. We have developed ED-specific COVID-19 messaging platforms based on this work and are currently conducting a cluster-randomized controlled trial to determine whether the implementation of these platforms is associated with greater COVID-19 vaccine acceptance and uptake in unvaccinated ED patients.

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CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

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REFERENCES

1. United States COVID-19 cases, deaths, and trends in the U.S | CDC COVID Data Tracker. Centers for Disease Control and Prevention. March 28, 2020. Accessed February 24, 2022. https://covid.cdc.gov/covid-data-tracker/#cases_casesper100klast7days

2. MacDonald NE. SAGE Working Group on Vaccine Hesitancy. Vaccine hesitancy: definition, scope and determinants. *Vaccine*. 2015;33(34):4161-4164. doi:10.1016/j.vaccine.2015.04.036
3. Szilagyi PG, Thomas K, Shah MD, et al. National trends in the US Public's likelihood of getting a COVID-19 vaccine-April 1 to December 8, 2020. *JAMA*. 2020;325(4):396-398.
4. Kellermann AL, Hsia RY, Yeh C, Morganti KG. Emergency care: then, now, and next. *Health Aff (Millwood)*. 2013;32(12):2069-2074.
5. HCUP fast stats - Trends in emergency department visits. Healthcare Cost and Utilization Project (HCUP). April 2021. Accessed February 24, 2022. https://www.hcup-us.ahrq.gov/faststats/NationalTrendsEDServlet
6. Walls CA, Rhodes KV, Kennedy JJ. The emergency department as usual source of medical care: estimates from the 1998 National Health Interview Survey. *Acad Emerg Med*. 2002;9(11):1140-1145.
7. Tang N, Stein J, Hsia RY, Maselli JH, Gonzales R. Trends and characteristics of US emergency department visits, 1997-2007. *JAMA*. 2010;304(6):664-670.
8. Arnett MJ, Thorpe RJ Jr, Gaskin DJ, Bowie JV, LaVeist TA. Race, medical mistrust, and segregation in primary care as usual source of care: findings from the exploring health disparities in integrated communities study. *J Urban Health*. 2016;93(3):456-467.
9. Wilson KM, Klein JD. Adolescents who use the emergency department as their usual source of care. *Arch Pediatr Adolesc Med*. 2000;154(4):361-365.
10. Rodriguez RM, Torres JR, Chang AM, et al. The rapid evaluation of COVID-19 vaccination in emergency departments for underserved patients study. *Ann Emerg Med*. 2021;78(4):502-510.
11. Mello MJ, Merchant RC, Clark MA. Surveying emergency medicine. *Acad Emerg Med*. 2013;20(4):409-412.
12. Choo EK, Garro AC, Ranney ML, Meisel ZF, Morrow GK. Qualitative research in emergency care part I: research principles and common applications. *Acad Emerg Med*. 2015;22(9):1096-1102.
13. Ranney ML, Meisel ZF, Choo EK, Garro AC, Sasson C, Morrow GK. Interview-based qualitative research in emergency care part II: data collection, analysis and results reporting. *Acad Emerg Med*. 2015;22(9):1103-1112.
14. Rodriguez RM, O'Laughlin K, Eucker SA, et al. PROmotion of COvid-19 VA(X)ccination in the emergency department-PROCOVAXED: study protocol for a cluster randomized controlled trial. *Trials*. 2022;23(1):332. doi:10.1186/s13063-022-06285-x
15. Tong A, Sainsbury P, Craig J. Consolidated Criteria for Reporting Qualitative Research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*. 2007;19(6):349-357. doi:10.1093/intqhc/mzm042
16. Mathieu E, Ritchie H, Rodés-Guirao L, et al. Coronavirus pandemic (COVID-19). Our World in Data. 2020. Accessed June 10, 2022. https://ourworldindata.org/coronavirus
17. FDA approves first COVID-19 vaccine. U.S. Food and Drug Administration. 2022. Accessed 23 June, 2022. https://www.fda.gov/news-events/press-announcements/fda-approves-first-covid-19-vaccine
18. Assarroudi A, Heshmati Nabavi F, Armat MR, Ebadi A, Vaismoradi M. Directed qualitative content analysis: the description and elaboration of its underpinning methods and data analysis process. *J Res Nurs*. 2018;23(1):42-55. doi:10.1177/1744987117741667
19. Nowell LS, Norris JM, White DE, Moules NJ. Thematic analysis: striving to meet the trustworthiness criteria. *Int J Qual Methods*. 2017;16:160940691773384. doi:10.1177/1609406917733847
20. Glaser BG & Strauss AL. The *Discovery of Grounded Theory: Strategies for Qualitative Research*. Aldine Publishing. 1967.
21. Saunders B, Sim J, Kingstone T, et al. Saturation in qualitative research: exploring its conceptualization and operationalization. *Qual Quant*. 2018;52(4):1893-1907. doi:10.1007/s11135-017-0574-8
22. Weng Y, Lu D, Bollyky J, et al. Race-ethnicity and COVID-19 vaccination beliefs and intentions: a cross-sectional study among the general population in the San Francisco Bay Area. *Vaccines (Basel)* 2021;9(12):1406. Published 2021 Nov 29. doi:10.3390/vaccines9121406
23. Butler JZ, Carson M, Rios-Fetchko F, et al. COVID-19 vaccination readiness among multiple racial and ethnic groups in the San Francisco Bay Area: a qualitative analysis. *PLoS One*. 2022;17(5):e0266397. doi:10.1371/journal.pone.0266397
24. Dong L, Bogart LM, Gandhi P, et al. A qualitative study of COVID-19 vaccine intentions and mistrust in black Americans: recommendations for vaccine dissemination and uptake. *PLoS One*. 2022;17(5):e0268020. doi:10.1371/journal.pone.0268020
25. Patterson NJ, Paz-Soldan VA, Oberhelman R, Moses L, Madkour A, Miles TT. Exploring perceived risk for COVID-19 and its role in protective behavior and COVID-19 vaccine hesitancy: a qualitative study after the first wave. *BMC Public Health*. 2022;22(1):503. doi:10.1186/s12889-022-12900-y
26. Mitchell L, Wilkosz M, Fuehrlein B. COVID-19 vaccine administration and hesitation among psychiatric emergency services patients [published correction appears in *Community Ment Health J*. 2022;58(7):2485]. *Community Ment Health J*. 2022;58(7):1381-1384. doi:10.1007/s10597-022-00949-3
27. Fernández-Penny FE, Jolkovsky EL, Shofer FS, et al. COVID-19 vaccine hesitancy among patients in two urban emergency departments. *Acad Emerg Med*. 2021;28(10):1100-1107.
28. Omar DI, Hani BM. Attitudes and intentions towards COVID-19 vaccines and associated factors among Egyptian adults. *J Infect Public Health*. 2021;14(10):1481-1488. doi:10.1016/j.jiph.2021.06.019
29. Majee W, Anakwe A, Onyeaka K, Harvey IS. The past is so present: understanding COVID-19 vaccine hesitancy among African American adults using qualitative data. *J Racial Ethn Health Disparities*. 2022;1-13. Epub ahead of print. doi:10.1007/s40615-022-01236-3
30. Odone A, Ferrari A, Spagnoli F, et al. Effectiveness of interventions that apply new media to improve vaccine uptake and vaccine coverage. *Hum Vaccin Immunother*. 2015;11(1):72-82. doi:10.4161/hv.34313
31. Paul E, Fancourt D. Predictors of uncertainty and unwillingness to receive the COVID-19 booster vaccine: an observational study of 22,139 fully vaccinated adults in the UK. *Lancet Reg Health Eur*. 2022;14:100317. doi:10.1016/j.lanepe.2022.100317
32. Neely SR, Scacco JM. Receptiveness of American adults to COVID-19 vaccine boosters: a survey analysis. *PEC Innov*. 2022;1:100019. doi:10.1016/j.pecinn.2022.100019
33. Schmid P, Rauber D, Betsch C, Lidolt G, Denker M-L. Barriers of influenza vaccination intention and behavior - a systematic review of influenza vaccine hesitancy, 2005–2016. *PLoS One*. 2017;12(1):e0170550. doi:10.1371/journal.pone.0170550

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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