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Parent intentions to vaccinate children with autism spectrum disorder against COVID-19

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ABSTRACT

Purpose: The purpose of this study was to investigate associations between parent vaccine confidence and intention to have their child with autism vaccinated against COVID-19.

Design and methods: A cross-sectional, web-based survey was conducted from May to July 2021 with parents of children with autism spectrum disorder ($N = 322$) who were members of an integrated healthcare system in Southern California.

Results: Approximately 35% of parents intended to vaccinate their child against COVID-19. In adjusted models, positive vaccine beliefs—but not belief in vaccine harm, healthcare provider trust, or parent vaccination status—were associated with intention to vaccinate.

Conclusions: Though parents usually trust recommendations from pediatric healthcare providers to make decisions about their child's health, these findings suggest that relying on trusted relationships alone may not be sufficient when discussing COVID-19 vaccines and that additional education to bolster vaccine confidence may be needed.

Practice implications: Pediatric healthcare providers should reinforce the benefits of vaccines for parents who are undecided about COVID-19 vaccines for their children and provide education and evidence-based recommendations to parents who hold erroneous vaccine beliefs about risks, benefits, and current evidence, especially those related to autism.

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Introduction

Three COVID-19 vaccines are authorized for use in the United States among adults, with one vaccine authorized for children ages 12 or older (Kim et al., 2021). There are no vaccines currently approved by the US Food and Drug Administration (FDA) for children under 12 years of age (Centers for Disease Control and Prevention, 2021). However, there are ongoing clinical trials of the COVID-19 vaccines with younger children that are expected to be approved in the future, and in anticipation of such approval, it is important for pediatric clinicians to consider parent COVID-19 vaccine confidence and hesitancy. Approximately 29% of parents in the United States (US) have indicated that they intend to have their child under age 12 years vaccinated against COVID-19 if a vaccine is approved and recommended for this age group, a relatively low percentage of parents that may indicate a need for vaccine promotion interventions by pediatric healthcare providers (Hamel et al., 2021).

This need is especially critical for vaccine-hesitant parents of children with autism spectrum disorder (autism). There is a persistent, erroneous belief in the US that vaccines cause autism, a belief associated with higher levels of vaccine hesitancy (Goin-Kochel et al., 2020; Zerbo et al., 2018). Parents who have a child with autism are less likely to vaccinate subsequent children (Zerbo et al., 2018). Evidence suggests that children with intellectual and developmental disabilities are at higher risk for COVID-19 mortality than their neurotypical counterparts (Turk et al., 2020), and as such, it is important to monitor parent COVID-19 vaccine intentions among children with autism spectrum disorder and anticipate a need for interventions. The purpose of this study was to investigate associations between parent vaccine confidence and intention to have their child with autism vaccinated against COVID-19, if authorized and recommended for this group.

Method

Design

A web-based survey was administered to parents of children with autism from May to July 2021. To sample a representative population,

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we randomly selected 2000 parents who had a child with a diagnosis of autism from an integrated health system in Southern California. Parents were eligible to participate in the survey if they had at least one child with a current diagnosis of autism and at least one autism-related service referral in 2020. A total of 1624 parents were eligible and initially contacted with a letter and email; then followed up with phone, text, or email reminders twice following the baseline contact attempt. All parents provided informed consent to participate in the study, and parents who had more than one child with autism had the option to complete the survey for each child. Parents were offered a \$30 check as an incentive for the time required to complete the survey.

Variables

The primary outcome variable was parent intention to vaccinate their child with autism with a COVID-19 vaccine if authorized in the future (Yes versus maybe/no). The primary exposure variables were (1) three continuous items from the Vaccination Confidence Scale (0-strongly disagree to 10-strongly agree subscales): (1a) belief in vaccine benefits, (1b) belief in vaccine harms, (1c) trust in healthcare providers (Gilkey et al., 2014); and (2) whether the parent had received a COVID-19 vaccine.

Analysis

Descriptive statistics were used to characterize the sample on demographic characteristics. We used chi-square tests to compare survey responders versus non-responders on demographic characteristics (child age, gender, race/ethnicity, insurance type). Multiple logistic regression models were used to examine associations between exposures and the outcome, adjusted for the demographic and COVID-19-related covariates that might affect the relationship between the exposures and outcome. These covariates were child age (2–4 years, 5–7 years, 8–12 years, 13–17 years), gender (boy, girl, other), race/ethnicity (White, Black/African American, Hispanic/Latinx, Asian, Other), whether the child had siblings with autism (yes/no), parent marital status (married/partnered, unpartnered), parent employment (employed full/part-time, other), and parent and child history of testing positive for COVID-19 (yes/no).

Results

The sample was 322 parent-child dyads (20% response rate, Table 1). Parents who responded to the survey versus those who did not were comparable on demographic characteristics, except in regards to child gender. There were no significant differences between responders and non-responders on child age, child race/ethnicity, or insurance type. The only significant difference was child gender, where boys were slightly over-represented among survey responders (84.5% boys among responders versus 75.8% boys among non-responders, $P = 0.01$).

Fifteen percent of parents ($N = 49$) and 6% of children ($N = 20$) children with autism had tested positive for COVID-19 in the past. Forty-nine percent of parents ($N = 159$) reported having received a COVID-19 vaccine, and 35% ($N = 114$) indicated that they intended to have their child with autism vaccinated if a vaccine were approved and recommended for children under age 12 years. Overall vaccine confidence scores were comparable to national averages, except that parents in the study sample reported higher levels of belief in vaccine harm than national averages. In the sample, vaccine confidence scores were as follows: belief in vaccine benefits $M = 8.8/SD 1.7$; belief in vaccine harm $M = 5.6/SD = 2.8$; and trust in healthcare providers $M = 8.6/SD = 1.8$. For comparison, national average scores on the same vaccine confidence items were as follows: belief in vaccine benefits $M = 8.5$; belief in vaccine harm $M = 3.3$; and trust in healthcare providers $M = 9.0$ (Gilkey et al., 2014) [Table 1].

Table 1
Sample description.

Gender	N(%)
Boy	272(84.5%)
Girl	47(14.6%)
Other	3(0.9%)
Age	
2–4 years	87(27%)
5–7 years	109(33.9%)
8–12 years	79(24.5%)
13–17 years	46(14.3%)
Race/ethnicity	
White	73(22.7%)
Black/African American	25(7.8%)
Hispanic/Latinx	130(40.4%)
Asian	53(16.5%)
Other	44(13.7%)
Sibling with autism	78(24.2%)
Parent married or partnered	267(82.9%)
Parent employed full or part time	247(76.7%)
COVID-19 history	
Child tested positive for COVID-19	20 (6.2%)
Parent tested positive for COVID-19	49 (15.4%)
Parent received a COVID-19 vaccine	159(49.4%)
Parent intends child to receive a COVID-19 vaccine	114(35.4%)

$N = 322$ parents of children with autism from a Southern California integrated health system.

In adjusted models, stronger belief in vaccine benefits was associated with higher odds of COVID-19 vaccine intention for a child with autism (OR = 1.62, 95% CI = 1.21–2.15). Trust in healthcare providers, belief in vaccine harm, and parent vaccination status were not associated with vaccine intentions [Table 2].

Discussion

This survey conducted in summer 2021 found that approximately one-third of parents of children with autism intend to vaccinate their child against COVID-19 if a vaccine is approved and recommended for children under age 12. Parent positive vaccine beliefs were associated with parent intention to vaccinate their child with autism against COVID-19, while trust in healthcare providers, belief in vaccine harm, and parent vaccination status were not. Though parents usually trust recommendations from pediatric healthcare providers to make decisions about their child's health, these findings suggest that relying on trusted relationships alone may not be sufficient when discussing COVID-19 vaccines and that additional education to bolster vaccine confidence may be needed (Glanz et al., 2013).

In pediatric practice, providers should reinforce the benefits of vaccines for parents who are undecided and provide education and evidence-based recommendations to parents who hold erroneous vaccine beliefs about risks, benefits, and current evidence, especially those related to autism. Such strategies targeting vaccine beliefs may improve the likelihood of COVID-19 vaccination among children with

Table 2
Associations of parent vaccine factors to intentions to vaccinate child.

Exposure Variable	OR (95% CI)
Belief in vaccine harms	0.68 (0.38–1.22)
Belief in vaccine benefits	1.62 (1.21–2.15)
Trust in healthcare providers	1.03 (0.81–1.31)
Parent received COVID-19 vaccine	1.2 (0.59–2.33)

Logistic regression model estimating odds of parent intention to vaccinate their children with autism against COVID-19 ($N = 322$). Model adjusted for child age, gender, race/ethnicity, parent marital status, parent employment status, parent and child history of testing positive for COVID-19, and whether the family had multiple children with autism.

autism and prevent continued disparities in COVID-19 outcomes for this population. In research, future studies should explore vaccine-promoting interventions specific to parents of children with autism, where mistrust in vaccines and belief in vaccine harm may be elevated. Our study identified positive vaccine beliefs as the most important vaccine confidence factor associated with intention to vaccinate a child with autism against COVID-19, and as such, this domain of vaccine confidence may be a fruitful target for intervention research.

There are strengths and limitations to this study. We surveyed a diverse, representative sample of parents of children with autism in Southern California. Vaccination rates reported by parents in our sample are comparable to national averages, and our response rate was adequate for statistical tests. Our exploration of multiple domains of vaccine confidence provides potential targets for educational interventions. Limitations of the study were the self-report nature of parent vaccination and vaccine intentions, which may be subject to social desirability bias. There was limited representation of certain racial/ethnic groups (e.g., Native American Indian/Alaskan families) and under-representation of girls with autism, although this response pattern was expected given that autism is more prevalent among boys than girls (Maenner et al., 2020).

Pediatric healthcare providers have a responsibility to provide evidence-based COVID-19 vaccine education to parents; this includes educating parents on the elevated risk of COVID-19-related harm to children with developmental disabilities and the potential for approved vaccines to prevent such outcomes. By taking an active role in assessing parent vaccine beliefs, addressing their concerns, and making a recommendation for vaccination in light of available evidence, pediatric providers can promote child population health and reduce the harm of COVID-19 for children with autism spectrum disorder.

Author statement

Dr. Choi, Dr. Becerra-Culqui, Ms. Bhakta, and Dr. Coleman conceptualized this study. Dr. Choi drafted the initial manuscript. Dr. Bruxvoort and all other authors reviewed the manuscript for important intellectual

content; all authors reviewed and approved the final version of the manuscript.

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References

- Centers for Disease Control and Prevention (2021). *COVID-19 data tracker*.
- Gilkey, M. B., Magnus, B. E., Reiter, P. L., McRee, A. -L., Dempsey, A. F., & Brewer, N. T. (2014). The vaccination confidence scale: A brief measure of Parents' vaccination beliefs. *Vaccine*, 32(47), 6259. <https://doi.org/10.1016/j.vaccine.2014.09.007>.
- Glanz, J. M., Wagner, N. M., Narwaney, K. J., Shoup, J. A., McClure, D. L., McCormick, E. V., & Daley, M. F. (2013). A mixed methods study of parental vaccine decision making and parent-provider trust. *Academic Pediatrics*, 13(5), 481–488. <https://doi.org/10.1016/j.acap.2013.05.030>.
- Goin-Kochel, R. P., Fombonne, E., Mire, S. S., Minard, C. G., Sahni, L. C., Cunningham, R. M., & Boom, J. A. (2020). Beliefs about causes of autism and vaccine hesitancy among parents of children with autism spectrum disorder. *Vaccine*, 38(40), 6327–6333. <https://doi.org/10.1016/j.vaccine.2020.07.034>.
- Hamel, L., Lopes, L., Sparks, G., Stokes, M., & Brodie, M. (2021). *KFF COVID-19 vaccine monitor – April 2021*. Kaiser Family Foundation. <https://www.kff.org/coronavirus-covid-19/poll-finding/kff-covid-19-vaccine-monitor-april-2021/>.
- Kim, J. H., Marks, F., & Clemens, J. D. (2021). Looking beyond COVID-19 vaccine phase 3 trials. *Nature medicine*. Vol. 27 (2). (pp. 205–211). Nature Research. <https://doi.org/10.1038/s41591-021-01230-y>.
- Maenner, M. J., Shaw, K. A., Baio, J., Washington, A., Patrick, M., DiRienzo, M., ... Dietz, P. M. (2020). Prevalence of autism spectrum disorder among children aged 8 years—autism and developmental disabilities monitoring network, 11 sites, United States, 2016. *MMWR Surveillance Summaries*, 69(4), 1–12. <https://doi.org/10.15585/MMWR.SS6904A1>.
- Turk, M. A., Landes, S. D., Formica, M. K., & Goss, K. D. (2020). Intellectual and developmental disability and COVID-19 case-fatality trends: TriNetX analysis. *Disability and Health Journal*, 13(3), Article 100942. <https://doi.org/10.1016/j.dhjo.2020.100942>.
- Zerbo, O., Modarelli, S., Goddard, K., Lewis, E., Fireman, B. H., Daley, M. F., ... Klein, N. P. (2018). Vaccination patterns in children after autism Spectrum disorder diagnosis and in their younger siblings. *JAMA Pediatrics*, 172(5), 469–475. <https://doi.org/10.1001/JAMAPEDIATRICS.2018.0082>.