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Short Communication

Factors associated with unvaccinated caregivers who plan to vaccinate their children



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ARTICLE INFO

Keywords:

COVID-19
Vaccination
Sars-cov-2
Vaccine hesitancy
Unvaccinated

ABSTRACT

Vaccine hesitancy is complex and a threat to global public health during the ongoing COVID-19 pandemic. Our objective was to determine factors associated with caregivers' willingness to vaccinate children despite not being immunized themselves against COVID-19. The International COVID-19 Parental Attitude Study (COVIPAS), a multinational cohort study, recruited caregivers of children 0–18 years old in 21 Emergency Departments (EDs) in USA, Canada, Israel, and Switzerland during November–December 2021. Of a total of 4536 caregivers who completed the survey, 882 (19.4%) were unvaccinated, and 62 (7.0%) of the unvaccinated planned to vaccinate their children. Unvaccinated caregivers with children that had their childhood vaccines up-to-date (OR 3.03 (1.36, 8.09), $p = 0.01$), and those very worried their child has COVID-19 in the ED (OR 3.11 (1.44, 6.34), $p < 0.01$) were much more likely to plan to immunize their children. Primary care providers and public health agencies should not assume that unvaccinated parents will not vaccinate their children. Determining child's vaccination status and parental level of concern about COVID-19 may help identify caregivers who are open to give their children the vaccine.

1. Introduction

Vaccine hesitancy is complex and a threat to global health during the ongoing COVID-19 pandemic [Rosenbaum, 2021]. Caregivers' willingness to vaccinate their children against COVID-19 has dropped over the course of the pandemic [Goldman et al., 2021b]. Current evidence suggests that older caregivers, and those with children with up-to-date immunization status, are predicted to plan to vaccinate against COVID-19 [Goldman et al., 2021b]. Furthermore, caregivers who are concerned about receiving the vaccine themselves are very unlikely to vaccinate their children, and raise concerns about vaccine-related long-term adverse effects in children [Rane et al., 2022]. Caregiver's

acceptance of COVID-19 vaccine for themselves is the best predictor of childhood vaccination, but targeting only vaccinated parents may miss an important opportunity to immunized children. We determined factors associated with caregivers' willingness to vaccinate children despite not being immunized themselves against COVID-19. This information may help public health agencies in directing information to specific groups of caregivers.

2. Methods

The International COVID-19 Parental Attitude Study (COVIPAS), a multinational cohort study, recruited caregivers of children 0–18 years

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<https://doi.org/10.1016/j.ypmed.2022.107121>

Received 31 March 2022; Received in revised form 24 May 2022; Accepted 15 June 2022

Available online 18 July 2022

0091-7435/© 2022 Published by Elsevier Inc.

old in 19 Emergency Departments (EDs) in USA, Canada, Israel, and Switzerland during November–December 2021. The survey was available in English, French, German, Spanish, Italian, and Hebrew. The online study was approved by each site Institutional Review Board, or received a waiver of consent.

The online anonymous survey was available on a designated website (through the REDCAP platform) and caregivers were given a QR Code to obtain access. The survey was prepared and tested for face validity by caregivers and healthcare professionals before it was finalized. All caregivers presenting with children to the participating EDs were offered to participate through posters in the ED and by healthcare team members. The sample size reflected all those answering the survey during the two months period. Only one caregiver was asked to complete the survey while being with their child in the ED.

We inquired about demographic characteristics, chronic illness, immunization status, caregivers' perception of the likelihood their child or themselves had COVID-19 during the ED presentation (0–10 Likert scale) and information on exposure and COVID-19 illness at home. The independent variables were vaccination of the caregivers and their plans to vaccinate their child.

For this analysis we included all caregivers who noted they did not receive COVID-19 vaccination, while offered in their country, and compared those that planned to vaccinate their children to those that will not. A multivariable logistic regression model was developed to assess association between pre-specified factors and willingness to vaccinate. Results are presented as odds ratios (OR) and 95% confidence intervals.

3. Results

Of a total of 4536 caregivers who completed the survey, 882 (19.4%) were unvaccinated, and 62 (7.0%) of the unvaccinated planned to vaccinate their children (Table 1). Unvaccinated caregivers with children that had their childhood vaccines up-to-date (OR 3.03 (1.36, 8.09), $p = 0.01$), and those very worried their child has COVID-19 in the ED (8–10 on a 0–10 Likert Scale) (OR 3.11 (1.44, 6.34), $p < 0.01$) were much more likely to plan to immunize their children (Table 2).

4. Discussion

Parental hesitancy to vaccinate children against COVID-19 increased over the course of the pandemic, despite initial enthusiasm and willingness to forego regulatory procedures for vaccine approval [Goldman et al., 2021a]. Yet, a small group of caregivers, who are hesitant to be vaccinated themselves, is willing to vaccinate their children. Those are caregivers familiar with vaccinations, as their children have already received vaccines according to the standard schedule in their country and are actively concerned about COVID-19 illness in their child at the time of seeking medical care.

Providers should not assume that unvaccinated caregivers will refuse vaccinating their children. Child's age, caregivers' age, gender and level of education, and prior exposure to someone with COVID-19 are important factors for vaccinating children in the general population. However, in the group of caregivers not yet vaccinated these factors do not help to differentiate caregivers that are willing to vaccinate their children.

Our study has several limitations. First, the population of caregivers responding to the survey does not represent all caregivers in the sites where the study was conducted, as only a subset of families filled out the survey. There may also have been a survey completion bias, based on level of belief in vaccinations. Thirdly, the survey did not explore other pandemic-related concerns contributing to vaccination decision making (such as media-reported rare adverse events).

Table 1
Demographic characteristics of unvaccinated caregivers if they were planning to vaccinate their children against COVID-19 or not during the study. SD = Standard Deviation, ED = Emergency Department.

	Unvaccinated caregivers (N = 882)	
	Will vaccinate their child (N = 62)	Will not vaccinate their child (N = 820)
CHILD		
Patient age, years (mean, SD)	6.94 (5.34)	6.49 (5.19)
Patient gender		
Female	33 (53.2%)	388 (47.7%)
Male	29 (46.8%)	423 (52.0%)
Non-binary	0 (0.00%)	3 (0.37%)
Child has chronic illness (%)	14 (22.6%)	138 (16.9%)
Child's immunizations are up-to-date (%)	56 (90.3%)	578 (71.5%)
Child has a primary provider		
No	6 (9.68%)	88 (10.8%)
Yes, and I usually look for his/her advice	47 (75.8%)	546 (67.2%)
Yes, but he/she does not influence my medical decisions	9 (14.5%)	178 (21.9%)
CAREGIVER		
Caregiver in ED - father	15 (24.2%)	169 (20.7%)
Caregiver in ED - mother	46 (74.2%)	621 (76.1%)
Caregiver in ED - other	1 (1.61%)	26 (3.19%)
Caregiver's age, years (mean, SD)	34.3 (8.72)	35.1 (8.09)
Caregiver education		
Higher than high school (%)	35 (57.4%)	525 (64.0%)
Caregiver experienced lost income during the pandemic	25 (43.1%)	296 (38.8%)
HOME		
Someone at home with respiratory illness	8 (12.9%)	105 (12.8%)
Someone at home had COVID-19 in the past	13 (21.0%)	145 (17.7%)
Someone at home was exposed to a COVID-19 patient in the past	11 (17.7%)	223 (27.2%)
The caregiver is very worried the child has COVID-19 in the ED (≥8 on a 0–10 scale)	13 (23.2%)	66 (8.8%)

Table 2
Predictors of willingness to vaccinate children by their unvaccinated caregivers. ED = Emergency Department CI = Confidence Interval.

Factor analysed	Odds ratio (95% CI)	P value
Child's age (per year increase)	0.98 (0.94, 1.02)	0.30
Childhood vaccination is up-to-date	3.03 (1.36, 8.09)	0.01
Mother completed the survey	0.65 (0.35, 1.26)	0.18
Caregiver's age (per year increase)	0.98 (0.94, 1.02)	0.30
Caregiver with higher than high school education	0.97 (0.53, 1.82)	0.93
Someone in the family had COVID-19 illness	1.25 (0.61, 2.41)	0.52
Caregiver very worried the child has COVID-19 in the ED (8–10 on a 0–10 Likert scale)	3.11 (1.44, 6.34)	< 0.001

5. Conclusions

In conclusion, for families that are yet to be vaccinated against COVID-19, primary care providers and ED physicians can ask about the child's vaccination status and parental level of concern about COVID-19 at time of presentation. These two questions may help identify caregivers who are open to give their children the vaccine. Public health agencies should offer primary providers tools to identify those families in unvaccinated communities and try to recognise an opportunity to

vaccinate the child during the encounter.

Credit author statement

Prof. Ran D Goldman - conceptualization, methodology, data collection, data curation, writing- Original draft. writing - review & editing

Rebecca J Hart, MD; Shannon H Baumer-Mouradian, MD – methodology data collection, review, suggest changes to paper drafts, writing - review & editing

Michelle Seiler, MD; Prasra G Olson, MD – data collection, review, suggest changes to paper drafts, writing - review & editing

Jeffrey N Bone, MSc – statistical analysis of data, writing - review & editing

Human participant protection

The study was approved by the Institutional Review Board (IRB) of each of the 21 sites. Several intuitional review boards (in Switzerland) provided a waiver of consent such that responding to the survey was considered consent to participate.

Declaration of Competing Interest

The authors have no funding or conflicts of interest to disclose.

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