School-based mobile clinics to improve vaccine access: a cross-sectional study of COVID-19 vaccination

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Conflicts of Interest

The authors report no financial conflicts of interest.

Main Points

School-based COVID-19 vaccine clinics were more likely to vaccinate children who identified as a racial minority, who lacked a regular source of primary care, and who lacked private insurance compared to those vaccinated in non-school based community locations.

Keywords: COVID-19, vaccination, pediatric, children, school, equity

Data availability statement: Aggregate data used in this analysis is available upon reasonable request from the corresponding author.
Letter

Throughout the COVID-19 pandemic, communities with higher social vulnerability had lower access to COVID-19 vaccination than would be expected for their level of risk [1]. Vaccinating children, in concert with regular testing, is a necessary intervention to prevent the deleterious consequences of COVID-19 and to maximize in-school education for children [2,3]. We studied the impact of school-based COVID-19 vaccine clinics for children in vulnerable communities in the Greater Boston area.

We conducted a cross-sectional study of pediatric (age 5-12 years) COVID-19 vaccination using data from a mobile vaccination program in the Greater Boston area between November 6, 2021, and March 15, 2022 (Supplement Methods). We implemented mobile vaccine units and coordinated vaccination sessions with local schools during the study period by situating the mobile vaccine unit on school grounds (frequently, parking lots or driveways) on school days either during or after classes. Sessions that were not school-based were held at community centers, shopping malls, and other high-traffic areas. In all cases, children were required to have written parental consent and their assent prior to receipt of vaccination. We collected demographic and medical data for all individuals accessing the mobile vaccination program.

We categorized each vaccination session by its association with schools: co-located with school during or after school hours and not co-located with schools. We conducted a logistic regression analysis of factors associated with school-based (versus non-school-based) vaccination. We report adjusted odds ratio (aOR) for metrics controlling for race, recorded primary care provider, and insurance status.

The mobile health unit vaccinated 1303 children between the ages of 5 and 12 years during this study period, November 6, 2021 to March 15, 2022 (Supplement Table 1). Self-described racial identities of participants were: 19.4% White, 5.5% Asian, 5.1% Black, and 69.9% Other/Unavailable, which reflected the demographics of the general population in these communities (Supplement Table 2). Common self-described ethnicities included South American (595, 45.7%), Central American (258, 19.8%), Asian (68, 5.2%), and Caribbean (67, 5.1%). Only 17.7% of the participants had private health insurance, and 44.1% did not have a primary care provider.

During the study, 361 (27.7%) children participated in a school-based vaccine clinic during school hours, 755 (57.9%) participated in a school-based vaccine clinic after school hours, and 187 (14.4%) students were vaccinated in the mobile health unit outside of the school-based clinics. Children vaccinated in school-based clinics were more likely to be self-described non-white (Black or African American race, aOR 7.03, 95%CI: 2.47-29.63; Other/ Unavailable race, aOR 2.12, 95%CI: 1.45-3.08). Children vaccinated in school-based clinics were more likely to lack a primary care provider (aOR 1.59, 95%1.09-2.36) and to not have
private health insurance (public insurance, aOR 2.41, 95%CI: 1.64-3.52; no insurance, aOR 2.45, 95%CI: 1.36-4.55) when compared with children vaccinated at non-school-based mobile clinics (Table). We conducted a secondary analysis by restricting to mobile clinic encounters in Chelsea, Revere, and Other Boston (Supplement Table 3), which included a mix of school-based and non-school-based vaccination sites. In these sites, the findings regarding race and public insurance remained significant: vaccination in a school-based clinic was associated with self-described race Black/African American (aOR 5.89, 95%CI: 1.91-25.89) and lack of primary care provider (aOR 1.06, 95%CI: 0.68-1.65) in the secondary analysis.

In summary, we found that children who were vaccinated in school-based walk-in vaccination clinics were more likely to be self-described racial minorities (i.e., Black/African American or Other/Unavailable race), to have no primary care doctor, and to have public insurance or no health insurance compared with children vaccinated in other community sites. Study design limits generalizability to other cities and leaves room for residual confounding. We also cannot conclude whether children vaccinated through the mobile health clinic, and more specifically in school-based clinics, would not have accessed other vaccination sites during this period of time. These findings demonstrate the potential for community-based partnerships to provide access to crucial preventive health interventions [4]. Most importantly, this study suggests that schools can be a powerful venue for delivery of vaccines and other essential health services for children in high-risk communities.
References


Table 1: Characteristics associated with COVID-19 vaccination in school-based (versus non-school-based) mobile health clinics (n=1303) – Greater Boston Area, 2021-2022

<table>
<thead>
<tr>
<th>Variable</th>
<th>Adjusted OR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Race</strong></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>Reference</td>
</tr>
<tr>
<td>Asian</td>
<td>1.57 (0.84, 3.08)</td>
</tr>
<tr>
<td>Black / African American**</td>
<td>7.03 (2.47, 29.63)</td>
</tr>
<tr>
<td>Other / Unavailable***</td>
<td>2.12 (1.45, 3.08)</td>
</tr>
<tr>
<td><strong>Primary care provider</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>Reference</td>
</tr>
<tr>
<td>No*</td>
<td>1.59 (1.09, 2.36)</td>
</tr>
<tr>
<td><strong>Insurance status</strong></td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>Reference</td>
</tr>
<tr>
<td>Public***</td>
<td>2.41 (1.64, 3.52)</td>
</tr>
<tr>
<td>Uninsured**</td>
<td>2.45 (1.36, 4.55)</td>
</tr>
<tr>
<td>Unknown</td>
<td>1.56 (0.64, 4.39)</td>
</tr>
</tbody>
</table>

**Footnote to Table 1:**

Logistic regression analysis of factors associated with school-based (versus non-school-based) mobile health clinics in the full sample (n=1303).

* p < 0.05
** p < 0.01
*** p < 0.001