



Contents lists available at ScienceDirect

Vaccine

journal homepage: [www.elsevier.com/locate/vaccine](http://www.elsevier.com/locate/vaccine)

## Impact of publicly available vaccination rates on parental school and child care choice

Jessica R. Cataldi<sup>a,\*</sup>, Amanda F. Dempsey<sup>b</sup>, Mandy A. Allison<sup>b</sup>, Sean T. O'Leary<sup>a,b</sup>

<sup>a</sup> Department of Pediatrics, Section of Infectious Diseases, University of Colorado Denver, 13123 East 16th Avenue, Aurora, CO 80045, USA

<sup>b</sup> Adult and Child Consortium for Outcomes Research and Delivery Science (ACCORDS), University of Colorado Denver, 13199 East Montview Blvd, Aurora, CO 80045, USA

### ARTICLE INFO

#### Article history:

Received 10 December 2017

Received in revised form 21 May 2018

Accepted 4 June 2018

Available online xxxxx

#### Keywords:

Vaccination

School health

Child care

Utility measure

### ABSTRACT

**Objective:** Several states require schools and child cares to report vaccination rates, yet little is known about the impact of these policies. Our objectives were to assess: (1) predicted impact of vaccination rates on school/child care choice, (2) differences between vaccine hesitant and non-hesitant parents, and (3) differences by child's age.

**Methods:** In 2016, a cross-sectional email survey of Colorado mothers with children  $\leq 12$  years old assessed value of vaccination rates in the context of school/child care choice. A willingness-to-pay framework measured preference for schools/child cares with different vaccination rates using tradeoff with commute time.

**Results:** Response rate was 42% (679/1630). Twelve percent of respondents were vaccine hesitant. On a scale where 1 is "not important at all" and 4 is "very important" parents rated the importance of vaccination rates at 3.08. Respondents (including vaccine-hesitant respondents) would accept longer commutes to avoid schools/child cares with lower vaccination rates. Parents of child-care-age children were more likely to consider vaccination rates important.

**Conclusions:** This study shows parents highly value vaccination rates in the context of school and child care choice. Both hesitant and non-hesitant parents are willing to accept longer commute times to protect their children from vaccine-preventable diseases.

© 2018 Published by Elsevier Ltd.

### 1. Introduction

Parental concerns about vaccines lead to delay and refusal of vaccinations and cause some parents to seek vaccination exemptions for their children. Strategies to improve childhood vaccination rates include legislative and policy interventions and efforts to improve communication with parents about vaccinations and to promote vaccination as a social norm [1,2]. One approach is increased public reporting of vaccination rates, which displays vaccination as the prevalent behavior in most settings. The desired effects of public reporting are to influence parental decisions about vaccination and encourage schools and child cares to ensure children are fully immunized, however it is unknown whether these goals are achieved.

**Abbreviations:** PACV, Parental Attitudes about Childhood Vaccination; VPD, vaccine preventable disease.

\* Corresponding author.

**E-mail addresses:** [Jessica.cataldi@ucdenver.edu](mailto:Jessica.cataldi@ucdenver.edu) (J.R. Cataldi), [Amanda.dempsey@ucdenver.edu](mailto:Amanda.dempsey@ucdenver.edu) (A.F. Dempsey), [mandy.allison@ucdenver.edu](mailto:mandy.allison@ucdenver.edu) (M.A. Allison), [sean.oleary@ucdenver.edu](mailto:sean.oleary@ucdenver.edu) (S.T. O'Leary).

Recent legislative approaches to strengthen vaccination have focused on eliminating non-medical exemptions or making exemptions more difficult to obtain [3,4], often sparking public debate [5]. In the United States, recommended childhood vaccinations are enforced through school and child care entry requirements [6]. Higher rates of non-medical exemptions show spatial patterns and have been associated with private schools and other socio-demographic factors [7–12]. Higher exemption rates are also associated with increased incidence of vaccine preventable diseases (VPDs) [13–15], echoing the increased risk of VPDs in unvaccinated individuals and communities in general [16,17]. Public reporting of vaccination and exemption rates at schools and child care centers makes vaccination behavior locally transparent and could promote understanding of vaccination in the context of community while framing vaccination as a social norm. All states report statewide kindergarten vaccination rates, often based on school surveys, to the Centers for Disease Control and Prevention (CDC) [18], however public reporting of vaccination rates on a local level does not occur in every state.

<https://doi.org/10.1016/j.vaccine.2018.06.013>  
0264-410X/© 2018 Published by Elsevier Ltd.

Several states have passed or are considering passing legislation to make school/child care vaccination rates publicly available [19–21]. Past educational policy research identifies several common factors in school choice including academic quality, safety, convenience, racial and ethnic composition, and school environment [22,23]. While health could be considered part of safety, the impact of vaccination rates on school or child care choice has not been studied specifically. Understanding how parents currently value and respond to reporting of vaccination rates may inform public health officials and policy-makers considering measures to increase transparency of vaccination information and could help schools and child cares determine how to best implement and communicate their vaccination policies.

The goal of this study was to test the hypothesis that parents value reporting of vaccination rates for schools and child cares in the context of school/child care choice. Our specific objectives were to assess: (1) predicted impact of vaccination rates on school/child care choice, (2) differences between vaccine hesitant and non-hesitant parents, and (3) differences between parents of child-care-age and school-age children. We hypothesized that non-hesitant parents would value reporting vaccination rates more strongly than vaccine hesitant parents and that parents of child-care-age children would value reporting vaccination rates more strongly than parents of school-age children.

## 2. Methods

### 2.1. Study setting

Colorado is in the process of implementing a law passed in 2014 requiring schools and licensed child care centers to report their vaccination rates publicly [19]. A cross-sectional email survey was conducted among mothers in Colorado from August–October 2016. Inclusion criteria were having a child under twelve years of age who would attend school or child care outside of the home and being able to answer the survey in English. Data were collected from a web-based survey and stored in Research Electronic Data Capture (REDCap) [24]. This study was approved by the Colorado Multi-Institutional Review Board.

### 2.2. Study population and survey administration

Participants were recruited from a group of patients at nine obstetrics and gynecology (OB/GYN) practices in Colorado who had participated in a prior study and agreed to contact for future surveys. The sample was selected randomly from past participants who had provided valid email addresses. Duplicate entries were eliminated and additional invalid addresses were removed after distribution of an introductory email. Introductory emails described the survey, included information identifying the OB/GYN practice from which the participant was recruited, and allowed recipients to opt out. Initial invitations were sent within one week of the introduction, followed by weekly, then biweekly reminder emails allowing for up to eight emails during twelve weeks of recruitment. Respondents received a \$5 electronic gift card after survey completion.

One thousand seven hundred twenty-eight women were invited to participate to target a sample of  $n = 600$  based on sample size calculations for an experimental randomized-controlled trial portion of the study that is not the focus of this manuscript.

### 2.3. Survey design

Outcomes assessed included predicted impact of vaccination rates on school/child care choice measured in two different ways.

The impact of vaccination rates on school/child care choice was measured using a willingness-to-pay framework and by assessing importance of vaccination rates in context of other factors related to school/child care choice. Willingness-to-pay is a utility measure used to assess preference for different health states. Respondents are asked what amount they would pay to be free of a certain undesired condition, and those 'prices' are compared across different health conditions to measure preference [25]. To avoid asking about monetary cost, which may influence school/child care choice outside a hypothetical situation, we developed a novel measure using a willingness-to-pay framework to assess willingness-to-drive (or commute). Participants were asked how much longer of a commute they would accept to avoid having their child attend a school/child care with different rates of unvaccinated children. This was repeated with three scenarios with different school/child care vaccination rates. Responses were recorded using a sliding scale for commute time ranging from no longer commute to commute time of 30 min or longer (Fig. 1). Participants were asked to rate the importance of six different factors related to school/child care choice (listed in Table 3) using a four-point Likert scale where 1 is "not at all important" and 4 is "very important."

Vaccine hesitancy was measured using a five-item, short-form of the Parental Attitudes about Childhood Vaccination (PACV) [26,27]. The short-form PACV measures agreement with four statements about vaccinations, for example "Children get more shots than are good for them," and includes the question "Overall, how hesitant about childhood shots would you consider yourself?". Demographic information collected to better characterize respondents included age in years, education (response choices less than high school, high school, vocational school, college, or advanced degree), household income (<\$50,000, \$50,000–74,999, \$75,000–99,999, \$100,000–149,999,  $\geq$ \$150,000), insurance type (Medicaid, Child Health Plan plus, private insurance, Colorado Indigent Care Program, no insurance), race/ethnicity (White, Black, Asian, American Indian or Alaskan Native, Hispanic or Latino, Native Hawaiian or other Pacific Islander, other), primary language (English, Spanish, other), and type of school (public, private, charter, other).

This survey was piloted among mothers of young children to assess for clarity. The full survey is available upon request.

### 2.4. Analysis

Descriptive statistics were generated for all survey items. Willingness-to-drive was measured as a continuous variable between zero and 30 min. Responses indicating willingness to accept a commute time of 30 min or longer were recorded as 30 min. Hesitancy was calculated as an average of Likert responses from the five PACV items, with a score  $\geq 3$  categorized as hesitant (scale 0–5). The validation study of the full PACV used a cut-off score of 50 (scale 0–100) to identify 15% of respondents as hesitant [28]. For the short-form PACV, we applied a cutoff of 3 to responses in prior work and identified 11% of participants as hesitant in a population similar to the one presented in this study [29]. Demographic response categories were collapsed based on distribution of the data.

Vaccine hesitancy and child's age (child-care-age vs school-age) were used as predictor variables for comparative analyses of the value of reporting vaccination rates in the context of school/child care choice. Vaccine hesitancy was chosen as a predictor because hesitant parents have different attitudes about vaccination and thus would likely value the reporting of vaccination rates differently from non-hesitant parents. Child's age was assessed as a predictor because younger children are more susceptible to exposure to and illness from VPDs, thus parental value for reporting vaccination rates might be different based on child age.

Download English Version:

<https://daneshyari.com/en/article/8485476>

Download Persian Version:

<https://daneshyari.com/article/8485476>

[Daneshyari.com](https://daneshyari.com)