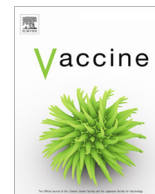




Contents lists available at ScienceDirect

Vaccine

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

## Parents' concerns about vaccine scheduling in Shanghai, China

Abram L. Wagner<sup>a,\*</sup>, Matthew L. Boulton<sup>a,b</sup>, Xiaodong Sun<sup>c</sup>, Zhuoying Huang<sup>c</sup>, Irene A. Harmsen<sup>d</sup>, Jia Ren<sup>c</sup>, Brian J. Zikmund-Fisher<sup>e</sup>

<sup>a</sup> Department of Epidemiology, School of Public Health, University of Michigan, 1415 Washington Heights, Ann Arbor, MI 48109, USA

<sup>b</sup> Department of Internal Medicine, Division of Infectious Diseases, University of Michigan Medical School, 1500 East Medical Center Drive, Ann Arbor, MI 48109, USA

<sup>c</sup> Department of Immunization Program, Shanghai Municipal Centers for Disease Control & Prevention, NO. 1380, West Zhongshan Road, 200336 Shanghai, China

<sup>d</sup> Department of Epidemiology and Health Promotion, Public Health Service of Amsterdam, Amsterdam, The Netherlands

<sup>e</sup> Department of Health Behavior & Health Education, School of Public Health, University of Michigan, 1415 Washington Heights, Ann Arbor, MI 48109, USA

### ARTICLE INFO

#### Article history:

Received 1 February 2017

Received in revised form 21 June 2017

Accepted 23 June 2017

Available online xxxx

#### Keywords:

Anti-vaccination movement

Vaccine hesitancy

China

Immunization schedule

Vaccine refusal

### ABSTRACT

**Background:** Several new vaccines have been introduced into China in recent years, but some parents in China have shown concerns about the scheduling of vaccinations for young infants. This study explores caregiver concerns about children receiving multiple vaccines during a single visit and about vaccine administration in infants <6 months, and assesses the degree to which these concerns are associated with ratings of the importance of different sources of vaccine information in Shanghai.

**Methods:** Caregivers of children 8 months to 7 years presenting at immunization clinics in Shanghai completed a survey about vaccine co-administration and vaccine administration <6 months of age. Respondents provided ratings of information from different sources (Internet, family/friends, other parents) and trust in doctors. We analyzed vaccine concerns using linear regression analyses that included these information sources after adjusting for socioeconomic variables.

**Results:** Among 618 caregivers, 64% were concerned about vaccine co-administration and 31% were concerned about vaccine administration to infants <6 months of age. Higher ratings of Internet as an important source of information were associated with greater concern about co-administration ( $\beta = 0.11$ , 95% CI: 0.00, 0.22) and concern about administration at <6 months of age ( $\beta = 0.17$ , 95% CI: 0.05, 0.28). Higher ratings given to information from other parents corresponded to 0.24 points greater concern about vaccine co-administration (95% CI: 0.04, 0.44). More trust in doctors and ratings of information from friends and family were not associated with vaccine concerns.

**Conclusions:** Caregiver concerns about vaccine scheduling may limit China's flexibility to add vaccines to its official immunization schedule. Reporting information about vaccine safety on the Internet and bringing groups of parents together to discuss vaccines might help to ameliorate concerns about vaccine scheduling.

© 2017 Elsevier Ltd. All rights reserved.

### 1. Introduction

Sustained investments in vaccine research have led to a steady increase in the number of vaccines introduced into national immunization programs. Currently, the World Health Organization (WHO) recommends that countries immunize infants under 12 months of age with 9 vaccines as part of its Expanded Program on Immunization (EPI) [1]. Many of these vaccines involve multiple doses for series completion and the schedule necessitates vaccine

co-administration—the administration of multiple vaccines on the same day—to ensure timely administration and to minimize risk of disease. Co-administration of vaccines limits the number of clinic visits while also inducing immunity against vaccine-preventable diseases at an early age [2]. Decades of research have shown that vaccines are highly safe [3], and concurrent administration has a minimal impact on safety [4] or effectiveness of the separate vaccine components [5].

Many parents, politicians, and others have expressed concerns and hesitancy surrounding vaccination, especially towards the perceived “crowding” of the vaccination schedule [6,7]. Vaccine hesitancy in its full range of expression—from refusal of all vaccines to preferences for alternative vaccination schedules—has mostly been studied in developed countries [8,9]. The prevailing paradigm is that the poor in developing countries cannot access healthcare

\* Corresponding author.

E-mail addresses: [awag@umich.edu](mailto:awag@umich.edu) (A.L. Wagner), [mboulton@umich.edu](mailto:mboulton@umich.edu) (M.L. Boulton), [sunxiaodong@scdc.sh.cn](mailto:sunxiaodong@scdc.sh.cn) (X. Sun), [huangzhuoying@scdc.sh.cn](mailto:huangzhuoying@scdc.sh.cn) (Z. Huang), [iharmsen@ggd.amsterdam.nl](mailto:iharmsen@ggd.amsterdam.nl) (I.A. Harmsen), [renjia@scdc.sh.cn](mailto:renjia@scdc.sh.cn) (J. Ren), [bzikmund@umich.edu](mailto:bzikmund@umich.edu) (B.J. Zikmund-Fisher).

services and therefore have lower immunization coverage [10,11]. By contrast, individuals of higher socioeconomic status (SES) in developed countries reject or delay vaccination [12,13]. Thus, there remains a need to understand the patterns and correlates of vaccine hesitancy in newly industrialized countries like China.

Within developed countries, altering parents' beliefs about vaccination has proven difficult [14,15], and about half of parents seek out information about vaccination beyond what is provided by the doctor or national public health agencies [16]. How these information sources affect concerns about vaccination are little known in developing countries such as China, which has a rapidly expanding middle class, but which also has a large, and socio-economically disadvantaged, non-local population, i.e. migrants often from rural regions of the country who move into cities [17], and who are more likely to have a delayed administration of vaccines [18].

We have previously identified through qualitative research that Chinese parents worry about vaccine co-administration and administration of “too many” vaccines for children <6 months [19]. In this study, we estimate the degree to which parents in Shanghai, China, expressed concerns about vaccine co-administration and vaccine administration among children <6 months of age. Subsequently, we assess the association between parents' stated importance of different information sources (Internet, family and friends, and other parents) and these vaccine concerns.

## 2. Methods

### 2.1. Study population

Caregivers of children aged 8 months to 7 years were invited to participate in this cross-sectional study during May and June of 2014. Details about this sample are available elsewhere [20]. Briefly, we selected caregivers (mothers, fathers, or others – typically grandmothers) into the study through a two-stage, stratified, cluster sampling. The clusters were township immunization clinics. The sample size was based on the aims of another study, and necessitated choosing 31 township immunization clinics and interviewing 20 caregivers at each clinic. Townships were selected by a probability proportionate to size (PPS) systematic selection procedure based on the population of children 0–14 years of age listed in the China 2010 Census. Within each clinic, we selected a convenience sample of at least 20 caregivers who accompanied their child for a vaccination visit and whose sole eligibility criterion was that the child was between 8 months and 7 years of age.

Potential participants gave informed consent prior to completing the survey at the immunization clinic. The written survey was in Chinese language and took approximately 20 min to complete; participants were given an incentive of 30 renminbi (\$5 USD). The study protocol was approved by the Institutional Review Board at the University of Michigan and an ethical review committee at the Shanghai Centers for Disease Control and Prevention.

### 2.2. Study measures

The questionnaire collected information on caregiver perceptions of pediatric vaccines which were largely derived from questions utilized in previous literature on vaccine hesitancy [16,21–25], and augmented with additional information drawn from a qualitative, pilot research project on vaccine perceptions (technical report available online [19]).

#### 2.2.1. Vaccine concerns

Vaccine concerns were assessed with two separate questions measuring parents' worries about vaccines. First, parents were

asked about how worried they were with giving their child two or more vaccines at the same time and then, about giving their child vaccines when the child is under 6 months. Participants responded to all these questions using a 5-point Likert scale from 1 to 5, with 1 being “not at all worried” and 5 being “extremely worried.” To describe the prevalence of worry within the population, we created a dichotomous variable, where caregivers with a 4 or 5 on the Likert scale were considered to be “concerned.” For all other analyses, these questions were analyzed as continuous variables. These variables were never combined and were analyzed separately, but are referred to together as “concerns about vaccine scheduling.”

#### 2.2.2. Numbers of vaccines

Additionally, participants were asked what was the largest number of shots they would be willing to give their child during the same clinic visit, how often were they willing to come to the immunization clinic, and how would they describe their willingness to pay for vaccines. The answer choices for these questions were categorical. Because very few parents mentioned that they would be willing to give their child “3” or “4” shots, we combined this with the category “as many as recommended by the doctor.” And because few parents responded that they were willing to come to the clinic “once a week,” we combined this category with “a couple of times each month.”

#### 2.2.3. Source of information

Each question about the source of information on vaccines was prefaced with the phrase “When deciding on whether to get a vaccine you must pay for,” and subsequently, participants were asked: “how trustworthy are recommendations from your doctors at the immunization clinic,” “how important is it for you to look online for information about vaccines yourself,” “how important is it for you to consult family and friends,” and “how important is it for you to consult parents in your social group?”

### 2.3. Statistical analysis

First, we described the demographic distribution of participants across demographic groups. Next, we presented mean scores and standard errors (SE) for the stated importance of different informational sources and vaccine concerns. These variables were also stratified by residency status, and the scores between locals and non-locals were compared through a non-parametric Wilcoxon rank-sum test.

Finally, we assessed the association between the stated importance of informational sources and concerns about vaccine co-administration and vaccine administration <6 months using two separate multivariable linear regression models adjusted for SES. The  $\beta$  estimates represent the absolute change in the outcome (vaccine concern) on the Likert scale, for a one-unit increase in the predictor variable. Significance was assessed at an  $\alpha$  level of 0.05, and precision of results evaluated through 95% confidence intervals (CI). We used survey procedures in the analysis, specifying clusters at the township level and using sampling weights derived from the township selection probability and the proportion of non-locals and locals in the township so that our study population resembled the population distribution by residency status in Shanghai. All analyses were conducted in SAS version 9.4 (SAS Institute, Cary, NC, USA).

## 3. Results

Out of 734 caregivers of children between 8 months and 7 years of age who were approached about the study, 618 (84%) agreed to

Download English Version:

<https://daneshyari.com/en/article/5536382>

Download Persian Version:

<https://daneshyari.com/article/5536382>

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