



Parental and provider preferences and concerns regarding text message reminder/recall for early childhood vaccinations

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ABSTRACT

Objective: To assess parental, provider, and medical staff opinions about text message reminder/recall for early childhood vaccination.

Methods: A cross-sectional survey was conducted between January and March 2011 among 200 parents of 6–59 month-old children, 26 providers, and 20 medical staff at four academically-affiliated pediatric practices in New York City with text messaging experience. Survey questions addressed interest in, preferences for, and concerns/barriers related to vaccine-related text message reminder/recall.

Results: Parents were primarily Latino, Spanish-speaking, and had a high school education or less. Most parents owned a text message-enabled cell phone (89%) and used text messaging services (97%). While 84% had never received health-related text messages, 88% were comfortable receiving them. Nearly all parents reported interest in receiving reminder/recall text messages, many endorsing them over phone calls and/or letters. Preferences included personalization, interactivity, and multiple messages. While 25% of parents had no concerns, 38% were concerned about incorrect numbers; only 6% worried about cost. Providers and staff were also supportive of vaccine-related text messages. Their biggest concerns were correct cell phone numbers, appointment availability, and increased call volume.

Conclusion: Text message reminder/recall for early childhood vaccination was widely supported. Important barriers were identified that should be addressed to maximize their effectiveness.

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Introduction

While vaccines are one of the most important public health achievements (Centers for Disease Control and Prevention, 2011c), coverage levels for certain recommended pediatric vaccines fall well below 90% target levels or have declined in recent years (Centers for Disease Control and Prevention, 2011a, 2011b; U.S. Department of Health and Human Services, 2010). Strategies for increasing pediatric vaccination, especially among high-risk low-income minorities, are needed. Reminder/recall has been shown to improve vaccination outcomes, yet is under-utilized (Briss et al., 2000; Clark et al., 2011; Hart et al., 2011; Jacobson and Szilagyi, 2005; Tierney et al., 2003). Moreover, traditional mail and telephone reminder/recall may be less effective for low-income minority families (Daley et al., 2002; Irigoyen et al., 2006; LeBaron et al., 2004); thus, alternative approaches should be considered.

Text message reminder/recall has been identified as a novel, effective strategy for increasing appointment attendance (Downer et al., 2006; Geraghty et al., 2008; Koshy et al., 2008; Leong et al., 2006) and vaccination coverage (Kharbanda et al., 2011; Stockwell et al., 2012a, 2012b). Text messaging has the potential to rapidly identify and reach a large target population since the vast majority of U.S. residents have cell phones, and many use text messaging (CTIA, 2011; Zichuhr and Smith, 2012). Cell phone numbers may also be more stable than landline numbers or home addresses (Clark et al., 2011). Text message reminder/recall could be particularly useful for low-income minorities who are more likely to be cell-only users and use text messaging more than high-income, non-minority individuals (Blumberg et al., 2006; Lee et al., 2012; Smith, 2010a; Zichuhr and Smith, 2012). Conversely, certain low-income minorities (e.g., foreign-born, Spanish-speakers) may be less likely to email or use the Internet (Zichuhr and Smith, 2012). These findings may explain in part why low-income minority families are interested in vaccine reminder/recall via text message (Ahlers-Schmidt et al., 2010, 2011, 2012b; Kharbanda et al., 2009), yet less receptive to reminder/recall via email (Clark et al., 2011).

While understanding parental opinions about text-message vaccine reminder/recall could potentially improve the effectiveness of

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text message interventions, survey studies exploring them have been limited to one community (Ahlers-Schmidt et al., 2010, 2011, 2012b) and not focused on Latino or Spanish-speaking parents. Provider and medical staff support is also crucial, yet data suggest they have concerns about text message reminder/recall (Dombkowski et al., 2012; Hart et al., 2011). Since this could reflect their inexperience using this approach, it may be valuable to elicit input from providers and staff in a setting with text messaging experience.

The present study examines preferences for and potential barriers to adopting text message reminder/recall for early childhood vaccinations among parents, providers, and medical staff in an urban low-income, minority community.

Methods

Study setting

This study was conducted in four academically-affiliated pediatric clinics in New York City. Sites are centrally administered and staffed by one pediatric group practice. During the study period, all sites used automated telephone reminders for existing appointments; vaccine reminder/recall was not routinely used. However, text message reminder/recall interventions were conducted at all sites using a customized text-messaging platform integrated with the registration system and immunization registry for demographic and vaccine information. They targeted *Haemophilus influenzae* B vaccination of young children (January–June 2009) (Stockwell et al., 2012a); human papillomavirus, meningococcal, and tetanus–diphtheria–acellular pertussis vaccination of adolescents (January–June 2009) (Kharbanda et al., 2011; Stockwell et al., 2012a); and influenza vaccination of all children/adolescents (2010–11 season) (Stockwell et al., 2012b).

Study population and recruitment

Parents were eligible for participation if their child was 6–59 months-old and received care at a study site and they were fluent in English or Spanish. Providers and medical staff at these clinics were also eligible for participation. This study was approved by the Columbia University Medical Center Institutional Review Board.

Between January and March 2011, a convenience sample of parents from clinic waiting rooms was approached by a trained research assistant. Of eligible parents approached ($n = 213$), 200 agreed to participate (94%). A convenience sample of providers and staff was also recruited from those sites during this time. Of all providers ($n = 52$), 35 were approached (67%) and 26 agreed to participate (16/34 physicians [47%]; 1/2 nurse practitioners [50%]; 9/16 nurses [56%]). Of all staff ($n = 43$), 25 were approached ($n = 58\%$) and 20 agreed to participate (10/17 medical assistants [59%]; 7/19 receptionists [37%]; 3/7 practice administrators [43%]). After obtaining consent, surveys were administered verbally by the research assistant in English or Spanish.

Survey instruments

Surveys were designed based upon existing literature and expert opinion (Ahlers-Schmidt et al., 2010, 2011; Kharbanda et al., 2009, 2011; Stockwell et al., 2012a, 2012b). Most items were closed-ended with pre-coded responses. Parental survey questions addressed use of (“often”, “sometimes”, “rarely”, “never”) and comfort with (“very comfortable”, “somewhat comfortable”, “somewhat uncomfortable”, “very uncomfortable”) text messaging, emailing, and Internet browsing in general and about health-related information specifically. The survey also focused on vaccine reminder/recall, including prior experiences, preferences (e.g., modality, content, functionality, timing) and perceived barriers (e.g., cost, cell phone accuracy, privacy). Parents were shown example text messages within the 160-character limit (Fig. 1) (Kharbanda et al., 2011; Stockwell et al., 2012a, 2012b) and asked about intention to act on such messages (“very likely”, “somewhat likely”, “somewhat unlikely”, “very unlikely”).

Provider and staff surveys assessed interest in text message reminder/recall: “Do you support or oppose (“very supportive”, “somewhat supportive”, “somewhat opposed”, “very opposed”) the idea of using a text messaging system to remind parents to (a) schedule a vaccine appointment; (b) keep a vaccine appointment; and (c) return for missed vaccines in your clinic?”. They also addressed potential barriers to implementation (e.g., cost, cell phone accuracy,

A. Chris needs important shots after his 1st birthday. Call 212-345-5758 today for an appointment for his 12-month visit at the Rangel Clinic.

B. Ana is 1 year old! She has an appointment on December 13 at 10am at the Rangel Clinic 212-754-6754. Don't forget to bring her immunization card with you.

C. Jose is due for shots. Come to the Rangel Clinic Mon-Thu 9-11am, Fri 1-3:30pm. Vaccines will help keep Jose healthy.

Fig. 1. Vaccine-related text message examples. This text message, adapted from prior vaccine text-messaging studies (Kharbanda et al., 2011; Stockwell et al., 2012a, 2012b), was displayed to parents during survey administration. Parents were then asked how likely they would be to act on this message to a) schedule an appointment for vaccines; b) keep an existing appointment for vaccines, or c) bring in their child for a missed vaccine.

appointment availability), asking respondents to rate each on a 5-point Likert scale (1 = “no barrier”; 5 = “extremely large barrier”). They then focused on clinic-based changes needed to “facilitate the response to a text messaging reminder/recall system”. The provider survey also addressed online health-related communication with families. The staff survey assessed clinic-based practices (e.g., appointment reminders, vaccine walk-in visits). It also asked, “How easy or difficult (“very easy”, “somewhat easy”, “somewhat difficult”, “very difficult”) do you think it would be to implement a text messaging reminder/recall system in your clinic?”

Statistical analysis

Survey responses were described using frequency distributions. Chi-square and Fisher's Exact tests examined the association between parental demographic characteristics and frequency of and comfort with texting, emailing, or Internet browsing in general and about health-related information specifically. Multivariable logistic regression assessed predictors of parental general technology use. Analyses were performed using SAS Version 9.2 (Cary, NC).

Results

Parents were predominantly Latino, foreign-born, and unemployed (Table 1). Parental age ranged between 16 and 56 years (median: 29 years). The vast majority (96%) reported a good or excellent ability to read in their preferred language (52% English, 48% Spanish). Almost all parents (97%) stated that their children were publicly insured.

Most providers and staff were female ($n = 43$, 93%) aged 25–44 years ($n = 25$, 56%). Providers included attending physicians ($n = 16$, 62%), nurse practitioners ($n = 1$, 4%), and nurses ($n = 9$, 35%). Staff included medical assistants ($n = 10$, 50%), receptionists ($n = 7$, 35%), and practice administrators ($n = 3$, 15%).

Parental experiences and comfort with text messaging and other technology

Most parents (89%) owned a cell phone with text messaging capabilities. Of these, the vast majority (85%) had unlimited messaging plans. In total, 91% had sent and 97% had received at least one text message. Of these, 96% texted at least once/month (median 100 messages/month). Most parents also reported frequent emailing or Internet browsing. On multivariable analysis, younger age was associated with text-messaging, higher education was associated with emailing, and English preference was associated with text-messaging, emailing, and Internet browsing (Table 1).

The majority of parents had neither sent (96%) nor received (84%) health-related text messages. Most had also never emailed with a provider (90%) or browsed the Internet (75%) about health-related issues. Nonetheless, most reported feeling somewhat or very comfortable receiving text messages (88%), emailing with a provider (84%), or Internet browsing (87%) about health-related issues. Parents who preferred English were more comfortable than those who preferred Spanish with health-related text messaging (99% vs. 91%, $p < 0.05$), emailing (98% vs. 91%, $p < 0.05$), and Internet browsing

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