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What is 'confidence' and what could affect it?: A qualitative study of mothers who are hesitant about vaccines

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ABSTRACT

Background: Public confidence in immunization is critical to maintaining high vaccine-coverage rates needed to protect individuals and communities from vaccine-preventable diseases. Recent attention has been placed on factors influencing confidence in vaccination in the US and globally, but comprehensive understanding of what drives or hinders confidence in childhood vaccination is yet to be reached. As such, assessing parents' confidence in childhood vaccination and the ways in which educational materials affect confidence is needed.
Objective: We sought to (1) learn how mothers who are hesitant about vaccination characterize confidence in health-related products for young children, including the recommended vaccines; (2) gain insights on what influences vaccine confidence beliefs; and (3) assess whether short, education materials affect parental confidence in childhood vaccinations.
Methods: Eight moderator-lead focus groups (n = 61), stratified by socioeconomic status, were undertaken with mothers of children 5 years of age of less who are hesitant about vaccines. Four of the groups were held in the Philadelphia, PA area and four were held in the San Francisco/Oakland, CA area. Three educational material pairs, each consisting of a 2–3 min video and an infographic poster about an immunization-related topic, were reviewed and assessed for influence on confidence.
Results: Qualitative data analysis was used to identify overarching themes across the focus groups. Themes, insights, and illustrative quotes were identified and provided for each of the major discussion areas: primary health concerns for young children; confidence beliefs and perceptions, including for recommended vaccines; facilitators and barriers to confidence; and reactions to the educational materials.
Conclusions: Results provide helpful insights into how mothers who are hesitant about vaccines perceive confidence in childhood vaccines and health-related products, suggestions for how to improve confidence, and support for the value and use of short videos as part of vaccination education efforts. Findings can aid those developing vaccination education materials and resources designed to foster vaccine confidence.

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1. Introduction

Childhood immunization rates in the United States remain high and stable, with the Centers for Disease Control and Prevention's (CDC) 2015 National Immunization Survey indicating more than 90% of 19–35 month-old children were up to date on vaccination against polio; hepatitis B; measles, mumps, and rubella; and varicella [1]. Parent acceptance of vaccination recommendations is critical to maintaining the high coverage rates needed to protect individuals and communities from vaccine-preventable diseases, but hesitancy may be a threat to continued success. The percentage of U.S. pediatricians encountering parents seeking to refuse a recommended childhood vaccination increased from 75% in 2006 to 87% in 2013 [2,3], while 13% of parents in a 2010 national survey reported following an alternative schedule [4]. Recently published studies suggest 5.5–27% of U.S. parents have delayed recommended vaccinations and 3.6%–15% have declined recommended vaccinations [5]. Parent vaccine hesitancy has also been documented outside the U.S. [6–10].

Parents delaying and declining recommended childhood vaccinations, or using alternative schedules, has generated efforts to identify the factors associated with parents' reluctance or unwillingness to adhere to recommended childhood immunization

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schedules, despite the readily available vaccination services (i.e., vaccine hesitancy) [6,9,11,12]. One factor of great interest is vaccine-related confidence [7], which has been defined as the trust that parents or healthcare providers have in recommended vaccines, in the provider(s) who administer them, and in the process that leads to vaccine licensure and recommendations [8,13]. In its recent assessment of parent vaccine confidence in the U.S., the National Vaccine Advisory Committee (NVAC) noted that, to be successful, immunization programs need to instill, build, and maintain high confidence in vaccines and recommended vaccinations [13]. According to NVAC, when parents have high confidence, they have little or no hesitation about children receiving recommended vaccinations.

The report highlighted that efforts have been made to identify relationships between parents' vaccine confidence and their adherence to immunization recommendations, as well as measures to assess parents' vaccine-related confidence. A World Health Organization (WHO) Strategic Advisory Group of Experts (SAGE) 2015 report identified confidence as one of three domains related to vaccine hesitancy [8], and recent studies have supported that association. For example, studies have found U.S. parents who comply with vaccination recommendations have higher confidence ratings than parents who have not followed the schedule [14–17]. More recent efforts have focused on developing vaccination confidence measures or scales, either to gauge public or parents' faith and trust in recommended vaccines [14,18] or to help identify parents at risk for delaying or declining recommended vaccinations [19,20]. In general, studies have found most parents have moderately high vaccine confidence. Weiner et al.'s survey of 200 first-time expectant mothers who were in their second or third trimester of pregnancy found 81.4% were confident in the effectiveness of routine childhood vaccines, 78.4% were confident in the value of routine childhood vaccines, and 73.5% were confident in the safety of routine childhood vaccines [17]. In Cacciatore et al.'s 2016 study, which used six vaccination confidence-related measures in a survey of parents of young children, found average ratings of around 7.0 on a 1–10 scales (where '1' represented no confidence and '10' represented complete confidence) [14].

However, as the NVAC report noted, vaccine confidence is a relatively new concept in understanding vaccine acceptance or its relationship to vaccine hesitancy. To date, studies have conceptualized confidence primarily in terms of trust, and studies that have operationalized confidence have primarily used single items that ask respondents how confident they are in safety, effectiveness, and/or benefits [15–17], or used multi-item scales that primarily rely on attitudinal and belief measures as proxies for confidence [5,19–21]. Importantly, there does not appear to be published research that has examined the concept of confidence relative to parents who are hesitant about vaccines, explored how they define confidence or what considerations shape their confidence, and whether vaccine-related information can positively influence confidence. The objectives of this study were thus three-fold: (1) learn how mothers who are hesitant about vaccines characterize confidence when it comes to health-related products for their young children, including recommended childhood vaccines; (2) gain insights into the factors and considerations that influence or affect their vaccine confidence beliefs; and (3) assess whether short, vaccine education materials, each focusing on a different topic, could affect their confidence in childhood vaccinations. A number of studies have used qualitative research, particularly focus groups and in-depth interviews, to gain insights into parents' beliefs and perceptions regarding childhood vaccines, but to date, none have primarily focused on the concept of confidence or assessed whether efforts to increase parents' knowledge of how vaccines foster immunity, how vaccines support herd immunity, or how perceptions of vaccine safety affect confidence-related beliefs.

2. Methods

2.1. Participants and data collection

This qualitative study used eight, two-hour, moderator-led focus groups with mothers of children 5-years old or younger who are hesitant about childhood vaccination. The focus groups took place in two metropolitan areas - Philadelphia, Pennsylvania, and San Francisco/Oakland, California in April and May 2016. This bi-coastal approach was used since within short distances (10–20 miles) there was access to diverse populations of varying socioeconomic backgrounds in urban and suburban settings. The San Francisco area also includes Marin County, an area affected by the 2014–2015 Disneyland-related measles outbreak and recognized for sub-optimal MMR vaccination rates. Mothers and female guardians, often the primary health-care decision makers for their children, were recruited through the focus group facilities where the discussions took place. The facilities used contact and household databases to recruit participants in line with the overall recruitment strategy. The recruitment strategy was (1) all participants had either delayed or declined a recommended vaccination for their child or provided responses to a short screening survey that indicated they were hesitant about vaccines; (2) four of the focus groups [two in San Francisco, two in Philadelphia] involved participants who had household incomes of $75,000 a year or more [i.e., higher socioeconomic status (HSES)] and four of the groups [two in Oakland, two in Philadelphia] involved participants who had household incomes under $75,000 a year [i.e., lower SES (LSES)]; (3) all participants reported being the primary healthcare decision-maker in their family; and (4) there was diversity with respect to race/ethnicity and years of formal education. The number of focus groups was based on having two higher and two lower SES groups in each city and available budget. A professional moderator led the groups, which were also recorded, using a discussion guide. All participants consented and received an honorarium of $85–$125 depending on location (e.g., higher in San Francisco). The study protocol received IRB exempt designation on March 18, 2016 (protocol #6851).

2.2. Focus group topics and structure

The focus group moderator's guide had four major discussion sections: (1) health issues and concerns pertaining to children 5 years old and younger, including questions related to parents' definitions and perceptions of confidence in health products and vaccines; (2) confidence considerations, including questions around factors that fostered or inhibited parent confidence, how one's vaccine confidence related to vaccination behaviors, and what could build or instill confidence; (3) vaccination-related confidence, including a series of questions related to childhood vaccine safety and efficacy; and (4) exposure to three paired sets of education materials, with each set consisting of a two to three-minute long video and an infographic poster. The video and infographic dyads were not created in tandem; rather, they were executions of the same broader concept (e.g., herd immunity). Materials used positively-framed messages (e.g., vaccines keep you healthy not vaccine-preventable diseases kill you). The videos were selected from ones available on YouTube, while the infographics came from sources that provided vaccine-related education and information materials. The education materials used were: **Set A** - "Vaccine Safety in Context," a "white board" animated video that provided information on the likelihood of a variety of risks, from minor vaccine adverse reactions to infectious diseases (https://www.youtube.com/watch?v=NaGndICPT8I&t=3s) [22], and a CDC infographic called "The Journey of Your Child's Vaccine," which described the

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