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Confidence in vaccination: a parent model

Margaret T. Keane[a,*], Maureen V. Walter[b,1], Bindi I. Patel[a], Shiela Moorthy[c], Robin Bender Stevens[d,1], Kimberly M. Bradley[e], Joyce F. Buford[f,1], Evan L. Anderson[c], Larry P. Anderson[g], Karen Tibbals[h], Thomas M. Vernon[a,2]

[a] *Policy, Public Health and Medical Affairs Department, Merck Vaccine Division, Merck & Co. Inc., WP97-A343, P.O. Box 4, West Point, PA 19486, USA*
[b] *Worldwide Ophthalmology, Pfizer Global Pharmaceuticals, Pfizer Inc., USA*
[c] *Business Research, Merck Vaccine Division, Merk & Co. Inc., West Point, PA 19486, USA*
[d] *Medical Strategies & Physician Education, US Human Health, Merck & Co. Inc., West Point, PA 19486, USA*
[e] *International Marketing, Merck Vaccine Division, Merck & Co. Inc., West Point, PA 19486, USA*
[f] *Global Communications, Bayer Healthcare, USA*
[g] *Analytics Group, Ipsos-Insight, USA*
[h] *Consultant, Ipsos Health, USA*

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Abstract

Although vaccination has been heralded as one of the 10 greatest public health achievements, how parents differ in their views about vaccination is not well understood. A deeper understanding of these attitudes and beliefs may improve the effectiveness of vaccine communications. In this mailed survey of U.S. parents in January 2001 (return response rate 49%), parental confidence in vaccination was very high, although there was significant variation among parents. Using multivariate analyses to group and profile parents, 90% of parents ($n = 1820$) were classified into one of four distinct parent groups: (1) "Vaccine Believer" parents who were convinced of the benefit of vaccination; (2) "Cautious" parents noteworthy for a high emotional investment in their child; (3) "Relaxed" parents characterized by a less involved parenting style and some skepticism about vaccines; and (4) "Unconvinced" parents distinguished by their distrust of vaccinations and vaccination policy. These findings suggest that messages that are customized to parents' attitudes and beliefs may improve their understanding and acceptance of vaccination.

Keywords: Response Rate; Vaccination; Parents; Immunization; Communications

1. Introduction

Vaccination is often lauded as one of the ten greatest public health achievements in the last century [1]. In the U.S., vaccination rates have reached near all-time high levels [2], while the incidence of vaccine preventable disease has diminished to record lows [3]. Despite this remarkable legacy, controversies about vaccines and vaccination policy, while not new [4], still flourish. The genesis of concerns about vaccines has been broadly reviewed in the literature, and it appears that a confluence of events and perceptions are fueling the centuries old debate about the safety of vaccines [5–17].

First, to an increasing number of healthcare providers and parents, vaccine preventable diseases are but a distant memory, of which they have little to no first hand experience. This lack of experience combined with the proliferation of negative vaccine messages in the media, the Internet and Congress, raises doubt among some members of the public about the necessity or benefits of vaccines. Alternative medical beliefs, many of which possess negative views of vaccines, have also become more popular. Finally, some individuals and groups

* Corresponding author. Tel.: +1 215 652 9337; fax: +1 215 993 4490.
E-mail address: maggie_keane@merck.com (M.T. Keane).
[1] Formerly from the Merck Vaccine Division.
[2] Retired.

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have expressed distrust of governmental agencies or other experts that establish U.S. vaccination policy.

To help counter these concerns and improve risk communications about vaccines, many policy makers have suggested the need for additional research to better understand how parents make vaccine decisions for their children [13,18]. We conducted a national mail survey of parents to ascertain prevailing attitudes, beliefs and behaviors about vaccination and to determine whether differences in attitudes and beliefs exist that could be used to improve vaccine communications.

2. Material and method

A mail study was completed in January 2001 by Ipsos Health, a market research supplier, among parents of children under the age of 16, drawn from the Home Testing Institute (HTI) consumer panel. This panel is maintained by Ipsos Health and used for proprietary market research across a number of different industries. The panel was constructed to match the U.S. Census on demographic and geographic variables including household size, household income, age of head of household, socioeconomic status (gender and type of employment), education of head of household, and geographic region. Certain English speaking ethnic groups were over-sampled.

A total of 4115 surveys were sent to three separate subsamples; 2105 surveys were sent to parents whose youngest child was under seven years of age; 842 surveys were sent to parents whose youngest child was between 10 and 15 years of age; and 1168 surveys were sent to a third sub-sample of African American and Hispanic parents of children under the age of 7.

The survey was mailed to participants with a postage-paid return envelope. A cover letter solicited their participation and included the incentive of entry into a sweepstakes for electronic equipment. A single reminder post card was sent to all participants after three weeks.

The survey included questions about the importance and safety of vaccination, experience with and severity of infectious diseases, sources and credibility of vaccine information and vaccination status of their child. Parents were given an extensive battery of 56 attitude and belief statements and asked to rate their level of agreement or disagreement with the statements. Many of these statements reflected health beliefs from the Health Belief Model [19] such as perceived benefits and barriers of vaccination, perceived parental ability to control their children's health ("self efficacy"), perceived susceptibility of their children to disease and perceived severity of vaccine preventable diseases. To detect possible temporal changes, some questions from the 1999 National Network for Immunization Information study [29] were duplicated in this study.

Data analysis was conducted using SPSS Version 9.0 and Sawtooth Software. Categorical response variables were compared using chi-square analysis. Differences between strata among continuous variables and normally distributed variables were compared using analysis of variance.

We conducted several multivariate analyses including: principal components analysis (a type of factor analysis that reduces data variables), convergent cluster analysis (identifies homogeneous groups of parents) and discriminant analysis (classifies parents into the groups identified by the cluster analysis). Descriptive names were assigned to each parent group to help distinguish among them. These names are for descriptive purposes only and the data should be evaluated for a comprehensive view of each group. We also performed binary logistic regressions (one for each parent group) to predict membership in a group. The dependent variable was whether a parent was a member of the group and the predictor variables were the factors derived from the parents' responses to a series of attitude and belief questions.

3. Results

Overall, 2018 parents (of 4115) returned the survey, yielding a return rate of 49%. Parents from the sub-sample, youngest child under seven years of age returned 1079 surveys (2105 were sent), a 51% response rate. The second subsample consisting of parents with youngest child between 10 and 15 years of age returned 451 surveys (842 were sent), a response rate of 54%. The third sub-sample of parents who were African Americans and English-speaking Hispanics returned 488 surveys (1168 were sent), a response rate of 42%.

3.1. Characteristics of study participants

Respondents were in their mid-thirties (mean = 36 years, S.D. = 6.9 years), married (74% of parents) and had one or two children (74%). Over 60% of parents had some level of post-secondary education and the mean income was slightly under $45,000. Overall, 67% of the samples were White, 16% were Hispanic, 13% were African American and 2% were Asian. Respondents in the ethnic sub-sample were primarily Hispanic (53%) and African American (41%). This subsample had a significantly lower income (mean = $39,136) and was less likely to be married (64%), as compared to respondents in the other sub-samples.

3.2. Parent groups

No attitudinal or behavioral differences were observed by age of child or ethnicity. Because there were no differences, the three sub-samples were combined and the multivariate analyses were performed on the total combined sample ($n = 2018$). With cluster analysis, 90% of the parents ($n = 1820$) were successfully classified into one of four groups. About 10% of these parents were not classified due to