Vaccines & Autism: A Parental Perspective

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Background

- Highly publicized controversy has arisen regarding the possible links between childhood vaccines and autism.
- Several research studies have been conducted in the United Kingdom regarding the effect of controversy on vaccine acceptance, but few have explored the issue in the United States.
- As fears of links between vaccination and autism begin to take root, the decision to vaccinate may become increasingly difficult for many parents and in preparation for parents' pending concern, healthcare providers need to thoroughly understand the factors influencing parents' intention to vaccinate.

Methods

- Convenience sample of parents of children with autism (n=20) (Table 1)
- Two self-administered cross-sectional surveys representing (a) *attitudes toward childhood vaccines* and (b) *perception of medical care* were developed based on modifications of previously developed surveys (Casiday, Cresswell, Wilson, and Panter-Brick, 2006) and (Marshall and Hays, 1994; Street, 1991), respectively. Both surveys were comprised of 4-point Likert scale items ranging from *strongly agree* to *strongly disagree* (Table 2).
- Responses to the following three outcome questions were dichotomized (1=strongly agree/agree; 0=strongly disagree/disagree)
  - "Vaccines contributed to the cause of my child's autism."
  - "I would recommend to others not to vaccinate their children."
  - "If there were no penalties for doing so, I would refuse to vaccinate my children."
- The relationship between parent ratings and child and parent demographic characteristics were assessed. Subscales within the Parent Satisfaction with Care Scale and the Vaccine Acceptance Scale were also assessed as correlates (Table 3). Exposure to anti-vaccine media was assessed through consecutive affirmative responses to two questions: "Have you encountered information on [MEDIA TYPE] about links between vaccines and autism? Did the information increase your fears regarding vaccines and autism?" These questions were asked for six different media types (i.e. internet, magazines, newspapers, etc) and the sum of affirmative responses to the latter question was used as a covariate in analyses.
- Subscale scores were calculated as a summation of item scores. The mean subscale score was imputed for missing item values when necessary. Bivariate associations between the dichotomous outcome variables and continuous correlates (i.e. subscales and child age) were assessed through a series of independent samples t-tests. The demographic covariates of community size, education level, and race were dichotomized and assessed for bivariate associations with the three outcome variables through 2x2 Chi-square tests. Bivariate associations between income (three-level categorical variable) and outcomes were assessed using Chi-square tests.

Results

- A majority (72%) of parents believed that vaccines contributed to the cause of their child's autism. The perception of vaccine safety/efficacy and trust in health institutions was significantly lower among parents who believed that vaccines had attributed to their child's autism (Table 3).
- About one-third of the sample (35%) reported that they would refuse to vaccinate their children if there were no penalties for doing so. Parents who would refuse vaccination reported more exposure to anti-vaccine media and rated their physicians significantly lower in informativeness and competence (Table 3).
- Few parents (20%) would encourage others not to vaccinate their children. Those who would encourage others not to vaccinate reported significantly lower physician informativeness, physician sensitivity, and physician-parent partnership building. They also reported less access to services. Parents who would discourage vaccination also reported less perceived risk of acquiring and having serious consequences from the diseases that vaccines prevent (Table 3).

Table 1. Descriptive Characteristics of the Sample

Respondent Characteristics	N (percent)
Gender of Child	
Male	16 (80.0)
Female	4 (20.0)
Respondent's Education	
Graduate/professionals	1 (5.9)
College graduate	3 (17.6)
Some college	5 (29.4)
High school graduate	7(41.2)
Some high school	1 (5.9)
Community size	
Rural (< 5000 people)	5 (25.0)
Small Town (5000 – 24,999 people)	2 (10.0)
Large Town (25,000 – 74999 people)	2 (10.0)
Small City (75000 – 299999 people)	2 (10.0)
Large City (>300,000 people)	9 (45.0)
Income	
$10,000-24,999	5 (27.8)
$25,000-49,999	6 (9.7)
$50,000-100,000	7(11.3)
Race of Child	
Caucasian	15 (75.0)
African American	4 (20.0)
Other	1 (5.0)
Age of Child	*M*=7.06 (*SD*= 1.49)

Means, Standard Deviations, and Zero-order Correlations for Variables in the Study

	N	*M*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
1. Physician Informativeness	20	14.45	3.32												
2. Physician sensitivity	20	12.85	1.79	.86**											
3. Partnership Building	20	11.65	2.30	.80**	.68**										
4. Perceived Physician Competence	20	7.98	2.12	.83**	.78**	.67**									
5. Affordability of care	20	8.10	2.17	-.03	.03	-.07	.10								
6. Accessibility of care	20	11.28	2.11	.55*	.73**	.51*	.50*	.33							
7. Satisfaction with care	19	2.95	0.85	.64**	.64**	.71**	.76**	.08	.43						
8. Perceived Vaccine Safety/Efficacy	20	13.40	2.95	.12	.13	-.03	.06	.60**	.28	.26					
9. Trust in Health Institutions	20	13.75	2.22	.02	.08	.04	.21	-.27	-.23	-.04	-.61**				
10. Perceived risk of diseases vaccines prevent	20	9.15	1.79	.49*	.37	.40	.22	.36	.59**	.01	.21	-.20			
11. Communication with physician about vaccines	20	5.65	1.50	.62**	.53*	.68**	.51*	.29	.62**	.59**	.26	-.29	.38		
12. Sense of responsibility to vaccinate	20	8.90	1.97	.33	.18	.36	.28	.17	.34	-.03	.10	-.01	.69**	.18	
13. Exposure to ant-vaccine media	20	3.10	1.80	.28	.17	.24	.32	-.51*	-.30	.07	-.63**	.57**	-.19	-.14	.02

* $p < .05$, ** $p < .01$

Results (continued)

Table 2. Description of Subscales and α Coefficients

Subscale	Number of items	Example Item	Coefficient α
Parent Satisfaction with Care Scale			
Physician Informativeness	5	*The doctor thoroughly explains everything to me.*	.843
Physician's Interpersonal Sensitivity	4	*The doctor shows a genuine interest in my child's well-being.*	.665
Physician/Parent Partnership building	4	*The doctor asks for my thoughts about autism.*	.701
Perceived Physician Competence	3	*The doctor's office has everything needed to provide complete medical care to a child with autism.*	.856
Accessibility of care	3	*I can make doctors' appointments at a time that is convenient for my schedule.*	.594
Affordability of care	4	*I have to pay for more of my child's medical care than I can afford.*	.783
Satisfaction with care	1	*Overall, how satisfied are you with your child's medical care?*	----
Vaccine Acceptance Scale			
Perception of Vaccine Safety/Efficacy	7	*Childhood vaccines are very safe.*	.785
Trust in Health Institutions	5	*I trust the opinion of my child's healthcare provider regarding safety of vaccines.*	.766
Perception of Risk of diseases vaccines prevent	3	*Without vaccines, my child would be at risk of getting the diseases they prevent.*	.783
Communication with provider	2	*I discuss my concerns about vaccination openly with my child's healthcare provider.*	.775
Sense of Responsibility to vaccinate	3	*I have a responsibility to vaccinate my children for the protection of all children.*	.896

Table 3. Between group differences in care, attitudinal, and demographic characteristics

Correlate	"Vaccines contributed to the cause of my child's autism." Agree *M (SD)*	"Vaccines contributed to the cause of my child's autism." Disagree *M (SD)*	"If there were no penalties for doing so, I would refuse to vaccinate my children" Agree *M (SD)*	"If there were no penalties for doing so, I would refuse to vaccinate my children" Disagree *M (SD)*	"*I would recommend to others not to vaccinate their children.*" Agree *M (SD)*	"*I would recommend to others not to vaccinate their children.*" Disagree *M (SD)*
Parent Satisfaction with Care						
Physician Informativeness	14.92 (3.82)	14.20 (2.17)	12.71 (1.38)*	15.38 (3.71)*	11.25 (1.71)*	15.25 (3.15)*
Physician Sensitivity	13.08 (1.98)	12.40 (1.67)	12.14 (1.07)	13.23 (2.01)	11.00 (1.83)*	13.31 (1.49)*
Partnership building	12.23 (2.49)	11.00 (1.58)	10.43 (1.72)	12.31 (2.36)	9.50 (0.58)**	12.19 (2.26)**
Perceived physician competence	8.35 (2.36)	7.00 (1.58)	6.57 (1.27)*	8.73 (2.13)*	7.00 (1.41)	8.23 (2.23)
Affordability of care	7.69 (2.21)	8.80 (2.49)	7.29 (2.36)	8.54 (2.03)	7.00 (2.45)	8.38 (2.09)
Accessibility of care	11.44 (2.58)	10.80 (0.84)	10.57 (2.15)	11.27 (2.07)	9.25 (2.22)*	11.79 (1.81)*
Attitudes Toward Vaccines						
Perceived Vaccine Safety/Efficacy	12.46 (2.58)**	16.4 (1.52)**	11.86 (2.19)	14.23 (3.03)	11.25 (1.50)	13.94 (3.00)
Trust in health institutions	14.42 (2.22)*	12.00 (1.58)*	14.29 (2.29)	13.46 (2.21)	15.38 (1.11)	13.34 (2.26)
Perceived risk of diseases vaccines prevent	8.92 (1.85)	9.80 (1.48)	8.29 (2.29)	9.62 (1.33)	7.25 (0.50)*	9.63 (1.67)*
Communication with physician about vaccination	5.77 (1.69)	5.60 (1.14)	5.29 (1.38)	5.85 (1.57)	4.50 (1.29)	5.94 (1.44)
Sense of responsibility to vaccinate	8.62 (2.02)	9.40 (2.30)	8.00 (2.08)	9.38 (1.80)	8.25 (1.50)	9.06 (2.08)
Exposure to anti-vaccine media	4.00 (0.82)	2.88 (1.93)	3.69 (1.65)*	1.40 (1.52)*	4.00 (0.82)	2.88 (1.93)
Demographics						
Child Age	7.56 (1.36)	6.41 (1.46)	6.56 (1.35)	7.33 (1.54)	6.74 (1.82)	7.14 (1.46)
Community Size						
Rural (pop<75,000)	7 (87.5%)	1 (12.5%)	4 (44.4%)	5 (55.6%)	3 (33.3%)	6 (66.7%)
Non-rural (pop>75,000)	6 (60.0%)	4 (40.0%)	3 (27.3%)	8 (72.7%)	1 (9.1%)	10 (90.9%)
Race						
White	10 (71.4%)	4 (28.6%)	6 (40.0%)	9 (60.0%)	4 (26.7%)	11 (73.3%)
Non-white	3 (75.0%)	1 (25.0%)	1 (20.0%)	4 (80.0%)	0 (0%)	5 (100.0%)
Education						
≤ High school	3 (42.9%)*	4 (57.1%)*	2 (25.0%)	6 (75.0%)	1 (12.5%)	7 (87.5%)
> High school	8 (88.9%)*	1 (11.1%)*	4 (44.4%)	5 (55.6%)	2 (22.2%)	7 (77.8%)
Income						
$10,000 - $24,999	2 (50.0%)	2 (50.0%)	2 (40.0%)	3 (60.0%)	1 (20.0%)	4 (80.0%)
$25,000 - $49,999	5 (83.3%)	1 (16.7%)	3 (50.0%)	3 (50.0%)	2 (33.3%)	4 (66.7%)
$50,000 - $100,000	5 (83.3%)	1 (16.7%)	2 (28.6%)	5 (71.4%)	1 (14.3%)	6 (85.7%)

* $p < .05$, ** $p < .01$

Discussion

The vast majority (72%) of parents in this study believed that vaccines attributed to the cause of their child's autism. Still, a great deal fewer parents agreed that they would refuse to vaccinate their children or that they would discourage others from vaccinating their children. The findings demonstrate that ecological and attitudinal factors influence attitudes toward childhood vaccines among parents of children with ASD. The small sample size and exploratory nature of this study limit its generalizability, yet the findings do suggest directions for future research. Future explorations of vaccine beliefs among parents of children with ASD must transcend the cognitive/attitudinal realm and investigate the contribution of ecological factors and care-related factors.

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