

Knowledge and Attitudes of Parents on Childhood Immunization in Riyadh, Saudi Arabia

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ABSTRACT

Background: this study aimed to assess parental knowledge and attitudes on childhood immunization among Saudi parents.

Methods: this was a cross sectional prospective study. Pretested well designed questionnaires were distributed during March 2017. Parents with children of 0-12 years old were invited to answer the questionnaires. Association between dependent variables (knowledge, and attitudes) and independent ones (parent's demographics) were tested using Chi-square test. P values of < 0.05 were considered statistically significant.

Results: a total of 731 parents were recruited. Parents had good knowledge on aspects related to the general role of vaccination in prevention of some infectious diseases were 672(91.9%), timing of the first dose in vaccination schedule included 635(86.9%). However, poor knowledge was documented among parents in other aspects like the importance of administration of multiple doses of the same vaccine to child immunity were 304(41.6%), administration of multiple vaccines at the same time have no negative impacts on child immunity were 271(37.1%), vaccination of children against seasonal influenza were 334(45.7%) and contraindication to vaccination were 287(39.3%). Parents attitudes towards immunization was positive expect in some aspects related to vaccination side effects showed 316 (34.2%) and the probability of occurrence of diseases against which the child was vaccinated was 288(39.4%). Gender, residence and educational level were found to be significantly associated with both parent's knowledge and attitudes towards immunization.

Conclusion: although parents had good knowledge and positive attitudes on some aspects related childhood immunization, gaps in both studied domains were identified. Educational interventions are needed to upgrade parent's knowledge with special emphasis on less educated and residents of rural areas.

Keywords: parents, knowledge, attitude, childhood immunization

INTRODUCTION

Immunization has greatly reduced the burden of infectious diseases ⁽¹⁾. Immunization prevents illness, disability and death from vaccine-preventable diseases including diphtheria, measles, pertussis, pneumonia, polio, rotavirus diarrhoea, rubella and tetanus ⁽²⁾. Parent's knowledge about immunization and their attitudes towards them are likely influence uptake ⁽³⁾. Previous studies revealed misconceptions on parent's knowledge and negative attitudes towards childhood immunization. Mother's knowledge about vaccination was found to be quite low and their educational status was significantly associated with child's coverage ⁽⁴⁾.

Negative attitude, for example mothers fear from vaccination was found to be significantly affected the immunization status of their children ⁽⁵⁾. **Zagminas et al.** ⁽⁶⁾ assessed parent's knowledge on immunization and noted that most of the respondents had a positive opinion about vaccination, although 20-40% of respondents indicated insufficient knowledge on this issue.

Greater concern about the safety of vaccines was expressed by older parents, residents of towns and highly educated individuals ⁽⁷⁾. On the other hand, researchers in developed world found parent's attitudes and beliefs had little effect on their children's immunization levels ⁽⁸⁾. Despite the fact that local and systemic reactions to vaccines are identified ⁽⁹⁾, but they were found to be one of the barriers to childhood immunization among other factors ⁽¹⁰⁾.

Increased number of parents are questioning the safety and necessity of routine childhood immunizations. The belief that vaccines cause autism was the most prevalent parental concern in a survey conducted in USA ⁽¹¹⁾. Although researches have been published on parent's knowledge, attitudes and practices regarding childhood vaccination no such studies have been reported in Saudi Arabia. Therefore, this study was undertaken to assess parental knowledge and attitudes on childhood immunization among Saudi parents.

METHODS

A cross sectional survey was conducted during the period of one month (March 2017) in Riyadh, Saudi Arabia. Convenient method of sampling was adopted. Parents with children of 0-12 years old were invited to participate. Verbal informed consent was obtained and participation was optional. Trained intern students collected data from parents in public places in the town. Some students also recruited some of their eligible relatives. Face- to -face interview method was used and responses were recorded in a pretested structured questionnaire.

The questions were formulated based on questions and answers published by the Ministry of Health Saudi Arabia ⁽¹²⁾. The questionnaire was thoroughly revised by the research team for validity, comprehensiveness and appropriateness to collect the required information from the targeted population. The questionnaire composed of three main sections to collect data on parent's demographics, parent's knowledge and attitudes on childhood immunization. Responses to knowledge questions were recorded as "Yes", "No" and "Don't know". A five point-likert scale ("Strongly agree", "Agree", "Not sure", "Disagree", and "Strongly disagree") was used to assess parent's attitudes toward childhood immunization.

The questionnaire was tested with a group of 20 parents. Minor modifications were suggested and adopted in the final questionnaire. Data were processed using the software Statistical Package for Social Science (SPSS) (Version 21). Descriptive statistics were used to describe all variables. Association between dependent variables (knowledge and attitudes) and independent ones (parent's demographics) were tested using Chi-square test. P values of < 0.05 were considered statistically significant. Ethical approval for the study was obtained from Almaarefa Colleges, College of Medicine and Surgery, Riyadh, Saudi Arabia.

RESULTS

Parent's demographics

Overall 731 parents were recruited; of them 465 (63.6%) were females. More than two third of the respondents their ages were < 40 years {502(68.7%)} and 634 (86.7%) were residing in the town. University graduates were 410(56.1%). **Table 1** showed parent's demographics.

Parental knowledge on childhood immunization

The majority of parents 672 (91.9%) knew the role of routine vaccination in protecting children from some infectious diseases and its complications. A considerable number of 635 (86.9%) parents knew the timing of the first dose in vaccination schedule. Five hundred and sixty eight parents knew that the incidence of most diseases against which children are vaccinated occur during the first years of life. Less than half of the interviewees reached 304 (41.6%) knew that administration of multiple doses of the same vaccine is important for child immunity. More than one third of the parents knew that concomitant administration of multiple vaccines have no negative impacts on child immunity. Nearly three quarters of the parents agreed with the importance of vaccinating children during immunization campaigns. Out of the total parents 334 (45.7%) agreed that it is recommended to vaccinate children against seasonal influenza and 512 (70%) denied that there is association between immunization and autism. Common colds, ear infection and diarrhea were considered as contraindications for vaccination by 280(38.3%) of the parents. **Table 2** showed parent's knowledge on childhood immunization correlated to their demographics.

Parent's attitude towards childhood immunization

Parental attitudes towards childhood immunization were shown in **Table 3**. The majority 719 (98.4%) of the parents either strongly agreed or agreed that child immunization is important. Most 669 (91.5%) of them considered immunization is more beneficial than harmful and 534 (73%) strongly agreed or agreed that vaccines are safe. Out of parents 606 (82.9%) and 415 (56.8%) parents strongly agreed or agreed that child immunization is not prohibited in religion and the administration of vaccines is associated with side effects respectively. Nearly forty percent of parents were not sure if the child becomes infected after immunization with the disease/s against which he/she was vaccinated or not. The majority 660 (90.3%) and 680(93%) of the parents strongly agreed or agreed that compliance to immunization schedule is important and immunization keeps the child healthy respectively. Cross tabulation showed significant associations between parent's educational level and different statements designed to assess their attitudes towards immunization as shown on **table 4**.

Table 1: parent's demographics.

	Background characteristic	Frequency	Percentage
Gender	Male	266	36.4
	Female	465	63.6
Age groups (in year)	18-29	206	28.2
	30-39	296	40.5
	40 -49	172	23.5
	50 & above	57	7.8
Residence	Town	634	86.7
	Outside town	97	13.3
Educational level	University	410	56.1
	Secondary	219	30.0
	Primary	69	9.4
	Illiterate	33	4.5
Number of children	One	115	15.7
	2-3	285	39.0
	>3	331	45.3
	Total	731	100

Table 2: knowledge on childhood immunization correlated to parent's demographics

Item	Yes	No	Don't know	Significance and <i>P</i> value
Routine vaccination prevents children from some infectious diseases and its complications	672	16	43(5.9%)	
	-91.90%	-2.20%		
First dose in vaccination given at birth	635	35	61(8.3%)	Gender($P=0.017$),age($P=0.000$), residence($P=0.000$), educational level ($P=0.000$),
	-86.90%	-4.80%		
Most diseases against which children are vaccinated occur during the first years of life	568	71	92(12.6%)	Residence($P=0.048$), educational level ($P=0.017$),
	-77.70%	-9.70%		
Multi-doses of the same vaccine given at intervals are important for child immunity	304	254	173(23.7%)	Gender ($P=0.019$), educational level ($P=0.004$),
	-41.60%	-34.70%		
More than one vaccine at the same time have no negative impacts on child immunity	271	269	191(26.1%)	Gender ($P=0.024$),
	-37.10%	-36.80%		
Is it important to vaccinate children during immunization campaigns	540 (73.9%)	128 (17.5%)	63(8.6%)	
It is recommended to vaccinate children against seasonal influenza	334 (45.7%)	183 (25%)	214 (29.3%)	Age ($P=0.016$),residence($P=0.005$) educational level ($P=0.011$),
Immunization can cause autism	61 (8.3%)	512 (70%)	158(21.6%)	Age ($P=0.009$), residence ($P=0.001$), educational level ($P=0.013$)
Common colds, ear infection, and diarrhea are not contraindications for vaccination	280 (38.3%)	287 (39.3%)	164(22.4%)	Gender ($P=0.000$),

Table 3: Parent’s attitudes towards childhood immunization

	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
Child immunization is important	619(84.7%)	100(13.7%)	9(1.2%)	1(0.1%)	2(0.3%)
Immunization is more beneficial than harmful	427(58.4%)	242(33.1%)	47(6.4%)	14(1.9%)	1(0.1%)
Vaccines for child immunization are safe	280(38.3%)	254(34.7%)	158(21.6%)	31(4.2%)	8(1.1%)
Child immunization is prohibited in religion	18(2.5%)	20(2.7%)	87(11.9%)	225(30.8%)	381(52.1%)
Immunization associated with side effects	117(16%)	298(40.8%)	213(29.1%)	73(10%)	30(4.1%)
Child can become infected after immunization with the disease/s against which he/she was vaccinated	63(8.6%)	144(19.7%)	288(39.4%)	170(23.3%)	66(9.0%)
Compliance to immunization schedule is important	473(64.7%)	187(25.6%)	48(6.6%)	18(2.5%)	5(0.7%)
Immunization keep your child healthy	462(63.2%)	218(29.8%)	38(5.2%)	6(0.8%)	7(1.0%)

Table 4: association between attitudes on childhood immunization and parent’s educational level.

Child immunization is important							
Education level	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	Total	P value
University	86.3%	12.7%	0.7%	0.0%	0.2%	410	
Secondary	84.5%	14.2%	1.4%	0.0%	0.0%	219	0.002
Primary	79.7%	15.9%	2.9%	0.0%	1.4%	69	
Illiterate	75.8%	18.2%	3%	3%	0.0%	33	
Immunization is more beneficial than harmful							
University	65.4%	29.3%	4.1%	1.2%	0.0%	410	
Secondary	50.7%	38.4%	7.8%	2.7%	0.5%	219	0.007
Primary	47.8%	36.2%	13.0%	2.9%	0.0%	69	
Illiterate	45.5%	39.4%	12.1%	3.0%	0.0%	33	
Child immunization is prohibited in religion							
University	1.7%	2.9%	9.5%	28.8%	57.1%	410	
Secondary	2.7%	3.2%	14.6%	31.5%	47.9%	219	0.044
Primary	2.9%	0.0%	14.5%	37.7%	44.9%	69	
Illiterate	9.1%	3.0%	18.2%	36.4%	33.3%	33	
Child can become infected after immunization with the disease/s against which he/she was vaccinated							
University	7.3%	23.2%	35.4%	23.4%	10.7%	410	
Secondary	7.8%	17.4%	42.9%	24.2%	7.8%	219	0.015
Primary	13.0%	10.1%	49.3%	23.2%	4.3%	69	
Illiterate	21.2%	12.1%	45.5%	15.2%	6.1%	33	
Compliance to immunization schedule is important							
University	67.8%	24.4%	5.4%	2.0%	0.5%	410	
Secondary	63.0%	28.3%	5.9%	2.7%	0.0%	219	0.003
Primary	58.0%	24.6%	10.1%	2.9%	4.3%	69	
Illiterate	51.5%	24.2%	18.2%	6.1%	0.0%	33	
Immunization keep your child healthy							
University	66.3%	27.8%	4.4%	0.7%	0.7%	410	
Secondary	62.6%	31.5%	5.0%	0.5%	0.5%	219	0.011
Primary	52.2%	37.7%	5.8%	2.9%	1.4%	69	
Illiterate	51.5%	27.3%	15.2%	0.0%	6.1%	33	

DISCUSSION

Analysis of the demographic characteristics of the parents participated in the present study showed that the mothers constituted the majority of the sample. Understanding mother's knowledge and attitudes towards immunization is important, although the father's involvement was shown to be associated with the child's vaccination status⁽¹³⁾. More than half of the parents had higher education. This may be explained by the fact that the majority of the participants were living in the town where they were originally born and had better chances to complete their higher education. Assessment of the parent's knowledge in the current study showed variations in responses to questions designed to assess their knowledge on childhood immunization. The majority of them knew that routine vaccination prevent children from some serious infectious diseases and its complication. In contrast, in study conducted in UAE more than 85% of the participants knew the role of childhood vaccination in prevention of life-threatening diseases⁽¹⁴⁾. Most vaccines in the childhood immunization schedule require two or more doses for development of an adequate and persisting antibody response⁽¹⁵⁾. Only 41.6% of the interviewees correctly knew the importance of administration of multi-doses of the same vaccine given at intervals for child immunity. The consequence of this finding is that parents may think that only the first shot of the vaccine is sufficient to develop immunity and protect their children. To date there is no scientific evidence that supports parent's fears about combined vaccines causing immune overload⁽¹⁶⁾. Only 37.1% of the participants knew that the administration of more than one vaccine at the same time have no negative impacts on child immunity. In contrast, in another study quarter of the parents believed that their child's immune system may become weakened as a result of too many immunizations⁽¹⁷⁾. In the current study, 73.9% of the parents agreed with the importance vaccinating children during immunization campaigns. In Uganda parent's care takers perceived vaccines used during mass immunization not to be safe either because they are expired or are deliberately contaminated with harmful agents intended to harm their children⁽¹⁸⁾. Current recommendation in USA is to vaccinate all children from 6 months up to 19 years – with particular emphasis on children under the age of 5 year or with chronic illnesses with Influenza vaccines⁽¹⁹⁾. Nearly 45% of the parents knew that vaccination of children against seasonal influenza is important.

Parents might be motivated to vaccinate their children if educated about the central role of children in transmitting the infection in households and communities, beside the health and economic burden of contracting influenza⁽²⁰⁾. Parents need reliable and accurate information on true contraindications to vaccination. Out of the participated parents 61.7% considered or did not know that common colds, ear infection and diarrhea are not contraindications for vaccination. Delay of immunization based on misconceptions about contra- indications puts an infant or child at risk⁽²¹⁾. Generally the results of present survey revealed that parents had positive attitudes on childhood immunization with regard the majority of investigated items. Similar findings were reported in other studies in different parts of the world^(14,22,23,24). Generally administration of vaccines may be associated with common local reactions like pain, swelling, and redness at the injection site⁽⁹⁾. Systemic reactions, including fever, irritability, drowsiness and rash may also occur. More than half of the recruited parents strongly agreed or agreed that immunization associated with side effects. In another survey nearly 20% of the interviewed parents considered administration of vaccines is associated with undesirable effect like allergies and asthma. Parents should be educated about these side effects. **Nnenna *et al.***⁽²⁵⁾ found that one-fifth of the recruited mothers would not continue immunization should their own child suffer any adverse reaction. The results of the present survey revealed significant association between parent's educational level and knowledge and attitudes on childhood immunization. Higher educational level, of no doubt, helps the parents to understand the educational messages. Moreover, such parents have better chances to come across considerable knowledge about immunization in the media, this finding coincide with the results of other studies^(24,26).

Significant variations between mothers and fathers in knowledge had been observed in the current study. Mothers almost in all cases used to accompany their children to immunization visits. Communication with healthcare providers may be responsible for the observed difference in mothers' knowledge compared to fathers' awareness. Significant differences were documented in knowledge and attitudes of parents who were living in the city compared to those who were residing outside the town. This may be explained by the difference in educational level or may be due to variation in the provided health services.

CONCLUSION and RECOMMENDATIONS

In conclusion the results of the present survey showed that parents had good knowledge and positive attitudes on some aspects related childhood immunization. However, gaps in both studied domains were identified. Educational interventions are needed to upgrade parents' knowledge with special emphasis on less educated and residents of rural areas.

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