Knowledge, Beliefs and Practices of Parents towards Childhood Vaccination in Najran City, Saudi Arabia

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ABSTRACT

Background: vaccinations play an important role in protecting children against life threatening infections. During the past years, parents expressed concerns about the safety of routine vaccinations; resulting in non-compliance.

Objective: this study aimed to assess the attitudes, beliefs and behaviors of parents towards vaccinations and the effects on vaccination practice in Najran region.

Methods: this is a cross sectional study was carried out by distributing questionnaire among the general public in Najran City, Saudi Arabia. The questionnaire consisted of the following sections: demographic profile, knowledge, beliefs, behaviors and open-ended questions regarding vaccination.

Results: 668 parents were participated in this study; out of them 61.8% reported compliance with the vaccination schedule. Factors that were significantly associated with compliance included older age ($p = 0.001$), high education ($p = 0.022$) and better knowledge of the benefits of immunization. The main concerns about vaccinations were fear of weakening the child's immunity and non-necessity of some vaccinations. Causes that prevented compliance with vaccinations were lack of knowledge about their benefits (48.1%), illness of the child at time of vaccination (13.5%), travel (9.6%) and fear of side effects (7.7%). Sources of information that effectively changed parent's attitude included flyers (31.4%), social media (26.8%) and TV (25.9%).

Conclusion: most parents had an acceptable and good knowledge of the importance of vaccinations. However, fears and misconceptions resulted in non-compliance of a substantial percentage of the responders. Educational programs should address these causes of non-compliance and stress the importance of routine child vaccinations to improve knowledge, beliefs and attitude of parents.

Keywords: vaccination, immunization, knowledge, attitude, questionnaire.

INTRODUCTION

Childhood vaccinations play a pivotal role in protecting against life threatening infections. However, in recent years, some parents began to express concerns about the safety and efficacy of routine vaccinations. These misconceptions can result in decreased rates of vaccination; with subsequent reappearance of vaccine-preventable diseases [(1)].

In Saudi Arabia, the vaccination rate approaches nearly 100%, but some parents postpone the vaccination past their appointed time in the schedule and do not appreciate the benefits of immunization. In fact, the high vaccination coverage in Saudi Arabia stems from the bylaws that mandate completion of the vaccination schedule before issuing birth certificates or admitting children into school [(2)].

Parent's knowledge and attitude affect to a great extent the immunization of their children. Previous studies have described the knowledge and attitude of parents in some regions of Saudi Arabia including Al-Riyadh [(2)], Al-Taif [(3)] and Al-Madina [(1)]. However, this subject was not studied in Najran region. Therefore, this study aimed to assess the attitudes, beliefs, and behaviors of parents towards vaccinations and the effects on vaccination practice in Najran region.

METHODS

Ethical considerations

This study design was approved by the institutional review board of the Faculty of Medicine, Najran University. An informed consent was obtained from each participant.

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Study design

This study was a cross-sectional design that was used to assess the attitudes, beliefs and behaviors of parents towards vaccinations and the effects on vaccination practice in Najran, Saudi Arabia. This study was carried out from June, 2017 to September, 2017, among parents who have children not older than seven years and are resident of Najran for the last two years prior to the start of this study. A total of 668 participants, who visited maternity and child hospital in Najran city and approved to participate in this study were included. Those not achieved inclusion criteria and those with incomplete data were excluded from this study.

A self-administered questionnaire was used for data collection. The first part was about socio-demographic information of the participants. The other parts were about knowledge, beliefs and behaviors, besides some open-ended questions regarding vaccination. The questionnaire was subjected to pilot testing to ensure content and construct validity. The questionnaire was distributed to the participants by direct contact with them. Data were confirmed then coded and entered to a personal computer. Thanks and appreciations were used to inspire the participants to be involved in the study.

Statistical Analysis

Data analysis was carried out using SPSS version 22. All numerical variables were checked for normality by Shapiro Wilk's test. Normally distributed variables were expressed as means ± standard deviation and differences between groups were tested by Student's unpaired T test. Abnormally distributed variables were expressed as median and interquartile range (25^{th} – 75^{th} %) and differences tested using Mann-Whitney test. Categorical variables were summarized as frequencies and percentages and association between variables was tested using Pearson's Chi square or Fisher-Freeman-Halton Exact Tests as appropriate. A p-value of < 0.05 was considered statistically significant.

RESULTS

In this study, 668 parents responded to the questionnaire. Parents who reported compliance with vaccination schedule of the ministry of health constituted 61.8% of all respondents and they had significantly higher mean age ($p = 0.001$) and university education ($p = 0.022$). There was neither significant association between compliance to vaccination schedule and sex ($p = 0.761$) nor the number of children in the family ($p = 0.082$); parents compliant with vaccinations had higher number of children than non-compliant parents (mean ranks 340.6 and 314.4 respectively) (**Table 1**).

Parents who reported compliance with the vaccination schedule demonstrated better knowledge, when compared to non-compliant parents, in the terms of significantly higher frequencies acknowledging that benefits of immunization were more than its harms ($p = 0.037$) and most diseases against which children were vaccinated occur during the first years of life ($p <0.001$) (**Table 2).**

Respondents compliant with vaccination showed beliefs and behaviors that supported the importance of vaccination, where significantly higher percentages agreed that children should be vaccinated against diseases in general ($p<0.001$) and that immune system would not be weakened ($p = 0.010$) and disagreed that children should be immunized against serious diseases only ($p = 0.004$) (**Table 3).**

Respondents reported that the most occurring fears on vaccinations were fear of weakening the child's immunity and those vaccinations were more than necessary. Causes that prevented parents from compliance with vaccinations were lack of knowledge about their benefits (48.1%), illness of the child at time of vaccination (13.5%), travel (9.6%), and fear of side effects (7.7%) **(Table 4).** Flyers were the most effective strategy that persuaded parents to vaccinate their children (31.4%), followed by social media (26.8%), TV (25.9%) and lastly SMS (11.7%) **(Figure 1).**

Table 1: socio-demographic data of the respondents.

		Compliance with vaccination		
		No	Yes	p
Age (years)	N	255	413	
	Min - Max	18 - 60	20 - 75	0.001[*a]
	Mean ± SD	31.8 ± 7.0	33.8 ± 7.8	
Sex N (%)	Female	200 (78.4)	328 (79.4)	0.761[b]
	Male	55 (21.6)	85 (20.6)	
Educational level N (%)	Illiterate	7 (2.7)	18 (4.4)	0.022[*b]
	Primary	61 (23.9)	65 (15.8)	
	Intermediate/ Secondary	123 (48.2)	186 (45.3)	
	University	61 (23.9)	136 (33.1)	
	Post-graduate	3 (1.2)	6 (1.5)	
Number of children				
	Min - Max	1 - 5	0 - 6	0.082[c]
	Median (IQR)	2 (1-3)	2 (1-3)	
	Mean ranks	314.4	340.6	

N: number; Min: minimum; Max: maximum; SD: standard deviation; IQR: interquartile range; [a]Student's T test; [b]Chi square test; [c]Mann-Whitney test; [*]Significant at p <0.05.

Table 2: knowledge of the parent's on vaccination (frequencies expressed as N (%)

		Compliance with vaccination		
		No	Yes	p
Vaccination can lead to immunization		(98.4)	99.8)	0.073[a]
Immunization is more beneficial than harmful.		(96.8)	99.3)	0.037[*a]
Vaccines for immunization are safe		(98.4)	99.8)	0.073 [a]
Compliance to immunization schedule is important		(98.8)	99.8)	0.314 [a]
Immunization is free		(98.8)	99.3)	0.856 [a]
First dose of vaccination is given at birth		(94.1)	(96.9)	0.083[a]
Most diseases against which children are vaccinated occur during the first years of life		(75.1)	(52.4)	<0.001[* a]
Side effects	Fever	208 (88.9)	350 (93.8)	0.018[*b]
	Rash	3 (1.3)	1 (0.3)	
	Pain	4 (1.7)	0 (0.0)	
	Seizures	1 (0.4)	1 (0.3)	
	Diarrhea	1 (0.4)	0 (0.0)	
	None	17 (7.3)	21 (5.6)	

N: number; [a]Chi square test; [b]Fisher-Freeman-Halton Exact Test; [*]Significant at p <0.05.

Table 3: beliefs and behaviors of the parent's concerning vaccination (N %)

	Compliance with vaccination		
	No	Yes	p
Children should be vaccinated against diseases in general	205 (81.0)	378 (92.0)	<0.001*
Children should only be immunized against serious disease	203 (79.6)	362 (87.9)	0.004*
Children receive more immunizations than necessary	220 (86.6)	373 (90.5)	0.116
Your child's immune system could be weakened by too many immunizations	207 (81.2)	365 (88.4)	0.010*
I follow Ministry of Health recommendation on vaccination	242 (96.4)	402 (97.8)	0.284
Ministry of Health should campaign more on vaccination to know more of its benefits and risks to our children	244 (96.4)	385 (93.7)	0.121
Advertisements on vaccination changed my perspective/ idea on vaccination	198 (78.6)	295 (71.8)	0.055

N: number; *Significant at p <0.05

Table 4: fears and causes that prevent vaccination

		N	%
What are your fears/apprehension on vaccinations?	N of respondents	19	
	Effect on child's immunity	9	47.4%
	None	5	26.3%
	More than necessary	2	10.5%
	Fear of autism	1	5.3%
	Child was ill	1	5.3%
	Child had the disease	1	5.3%
What are the causes that prevent vaccination?	N of respondents	52	
	Lack of knowledge	25	48.1%
	Child is ill	7	13.5%
	Travel	5	9.6%
	Fear of side effects	4	7.7%
	Others	11	20.9%

N: number

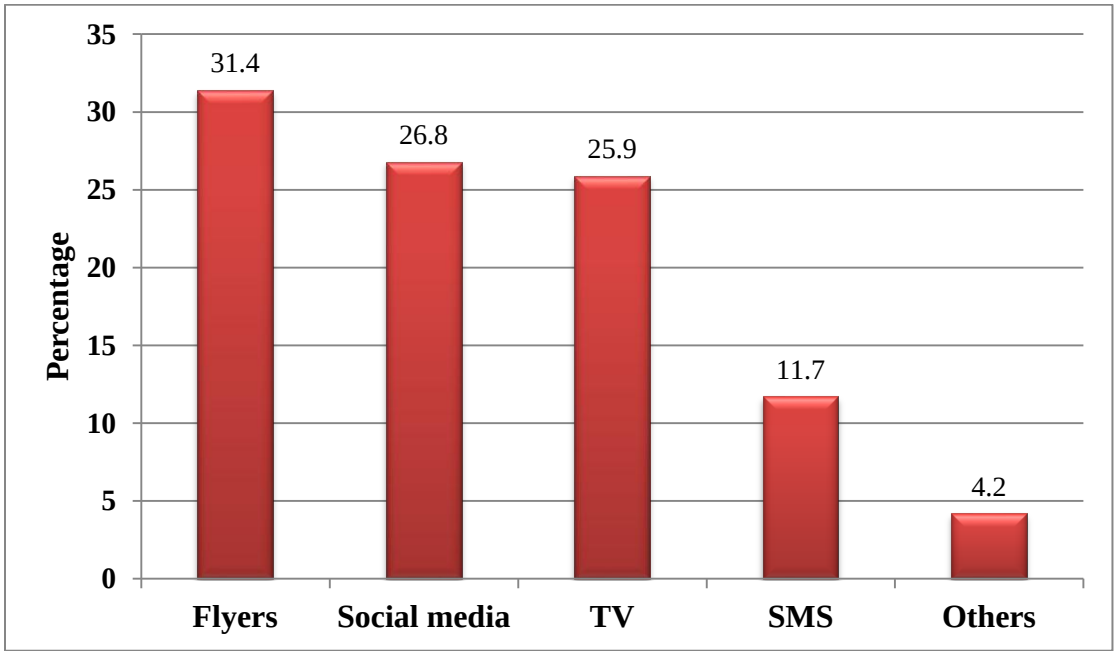

Figure 1: the most effective strategies that persuaded parents to vaccinate their children.

DISCUSSION

In this study, parents who reported compliance with vaccination schedule of the ministry of health constituted 61.8% of all respondents. The majority of respondents were mothers. This was expected as it is the custom in our community that mothers usually take the children to health care facilities. The same finding was reported by other researchers [1, 2, 4]. The socio-demographic factors that seemed to affect significantly the compliance of parents with vaccination schedule included older age and high education. Older parents tend to have more life experiences and better education. The association between older age and higher level of knowledge was reported by previous studies [1, 4, 5]. On the other hand, **Al-Zahrani** [2] reported that younger mothers were more knowledgeable. Other studies found also the association between higher education and knowledge about vaccinations [2, 3, 5-9]. However, some studies denied the presence of this association [1, 10]. A possible explanation for this contradiction could be the difference in sample size among the studies. Well educated parents are naturally able to understand the value of immunization to their children and the potential consequences of not sticking to the vaccination schedule.

Although compliant parents, when compared to the non-compliant in this study, tended to had more than one child, the difference was not statistically significant. **Alfahl and Alharbi** [1] found that parents who had more than three children expressed higher percentage of sufficient knowledge (61.7%) and attitude compared to those having less number of children.

Parents in the current study demonstrated good knowledge on many aspects including: role of vaccination in immunization, safety of vaccines, the importance of compliance to the immunization schedule, and availability of vaccines without cost. A significantly higher percentage of compliant parents believed that the benefits of vaccination outweigh its harms. Moreover, parents referred to side effects of vaccination as one of the important causes that prevent compliance with immunization schedule. The aspects of knowledge that showed defects or misconceptions were the time of first dose of vaccination and the occurrence of most vaccine- preventable diseases during the first years of life. In accordance, previous studies reported that vaccinations prevent some infectious diseases [2, 3], had more benefits than harms [1, 2] and following the immunization schedule regularly is very important [1].

In the present study, most respondents, whether compliant or not, agreed that vaccines had side effects. On the other hand, they were not well informed about the side effects of vaccines except for fever and pain; this finding was reported also by other studies in Saudi Arabia [1, 2]. Local reactions (such as pain, swelling, and redness) can take place at the injection site of vaccines. In addition, some children may had systemic reactions (such as fever, irritability, drowsiness, and rash) [11]. Side effects of vaccines seemed to be a major concern for parents. **Nnenna and colleagues** [12] found that one-fifth of mothers would stop administering vaccines to their children if they suffered from side effects. In this study, compliance with vaccination schedule was significantly associated with some beliefs: that children should be vaccinated against diseases in general, that immune system would not be weakened and that immunization is not restricted to serious diseases only. However, about one fifth of non-compliant parents believed that children received more immunization than necessary and that can lead to weakening the children's immunity. Same concerns were reported in other studies [10, 13]. These same false believes were mentioned again by the parents as the most occurring fears on vaccinations and they can lead parents to postpone vaccination or drop it entirely if they could.

It is noteworthy that many compliant parents had the same misconceptions about vaccination; posing a potential risk to the vaccine coverage rate in the future. **Yousif and colleagues** [3] reported a much higher percentage of parents who feared that multiple vaccine administration at the same time can decrease child's immunity.

In this study, parents admitted that the main factor interfering with compliance was the lack of knowledge about vaccination benefits and that it exceeds in frequency other causes such as illness of the child at time of vaccination, travel and fear of side effects. Notably, some other causes related by the parents were related directly to lack of knowledge. **Favin and colleagues** [14] showed also that the main obstacle of completing immunization was parent's lack of knowledge about the importance of vaccination. However, other studies exhibited differences in the main interfering factors with immunization such as child's sickness [7, 8] and missing school [2]. **Alfahl and Alharbi** [1] pointed out that most parents regarded that children sickness (such as having common cold, otitis media or diarrhea) is a contraindication to vaccination. Parents should receive assurance that it is safe to administer vaccinations in the presence of these diseases [15]. Non-availability of the vaccines was also one of the causes reported by few parents in several research work [2, 7] including the current study and it requires more attention from the ministries of health to eliminate this obstacle to ensure and maintain full vaccine coverage.

In the current study, the most effective strategy that persuaded parents to vaccinate their children was flyers, followed by social media, TV and SMS. A substantial percentage of parents derived their information from social media and TV that are unreliable sources for medical information. Similarly, **Al-Zahrani** [2] stated that the media was reported by the respondents as a strong source for information. This could be responsible for some of the misconceptions that many of the respondents held about vaccinations. On the other hand, the percentage of parents who were positively influenced by health professionals in this study was alarmingly small; rising questions about the quality of care provided by health personnel. Other studies have reported that health professionals constituted the main source of respondent's information, followed by TV and Internet [1, 2, 7]. Unfortunately, some physicians were found to possess defective knowledge about immunization [16] and respondents with poor knowledge about side effects had physicians as their main source of information [2]. Some parents may aggravate the risk of adverse effects from immunization as compared to the adverse effects of diseases [17]. As parental knowledge greatly affect their behavior and practice about immunization of their children [4, 18], health care personnel should bear the responsibility to deliver efficient health education to parents about the benefits of vaccinations and the consequences of vaccine preventable diseases.

CONCLUSIONS

Most parents had an acceptable and good knowledge of the importance of vaccinations. However, fears and misconceptions resulted in non-compliance of a substantial percentage of the responders. Educational programs should address these causes of non-compliance and stress the importance of routine child vaccinations to improve knowledge, beliefs, and attitude of parents. Socio-

demographic factors had a significant influence on the immunization status. Hence, efforts should be focused on improving these factors also.

Limitations:

This study was restricted only to the residents of Najran city so the inferences from this study could not be generalized to other regions in Saudi Arabia.

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