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Personal Factors Related with Vaccination Acceptance Behaviour among Parents

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Abstract

Introduction: In Malaysia, the childhood vaccination program is an important preventative strategy for infectious diseases provided for free for all children under the age of 17 years old. Parental vaccine acceptance is known to be influenced by personal factors such as knowledge, attitude, beliefs, and trust toward healthcare providers (HCPs). This study aimed to examine the influence of personal factors on vaccination acceptance behaviour among parents. **Methods:** This cross-sectional study involved the distribution of a self-administered questionnaire among parents in a healthcare education institution. **Results:** A total of 251 completed questionnaires were received. Less than half (n=114, 46%) of the respondents had a high level of knowledge about children's vaccination. Furthermore, over one-third of the parents showed negative attitudes about vaccination (n=93, 37.5%). A moderately significant positive relationship ($p < 0.001$) was observed between personal factors (M = 3.82, SD = .40) and vaccination acceptance (M = 4.50, SD = .53). **Conclusion:** Overall, respondents showed relatively positive personal factors toward vaccination in children. However, negative attitudes towards vaccination among parents must be tackled by implementing effective strategies to instil correct perception and increase vaccine acceptance in parents.

Keywords: Vaccination Acceptance, Knowledge, Attitudes, Parents, Beliefs

Introduction

Parental support for childhood vaccination is essential to ensure high vaccination coverage and a low incidence of vaccine-preventable diseases (VPDs). Childhood vaccination programmes have been acknowledged as one of the most effective interventions in reducing morbidity and mortality associated with VPDs and their complications. Despite the efforts by international and national agencies to improve awareness of the importance of vaccination, many parents remain sceptical of the advantages and needs of vaccination for their children. These concerns have increased in recent years according to a recent study (Huber et al., 2020). The historical success of childhood vaccination in eliminating and eradicating certain

VPDs has become a double-edged sword. Many adults lack personal experience with VPDs and they are unaware of the risk and complications associated with VPDs due to the low incidence rates of many VPDs. Thus, it can aggravate parental doubts about the value of vaccines. Delaying or refusing vaccination predispose children at a high risk for VPDs, besides compromising herd immunity in the community and endangering the health of certain individuals who are contraindicated to receive vaccination, such as young infants and immunocompromised patients (Makarić et al., 2018).

In Malaysia, children aged 12 months and below are advised to receive eight primary immunizations, namely BCG, Hepatitis Dose 1, 2, and 3, Diphtheria-Tetanus-Pertussis-Haemophilus Influenza Dose 1, 2, and 3, as well as Measles-Mumps-Rubella (MMR) according to the Ministry of Health's vaccine schedule (Ministry of Health, 2015; Ministry of Health, 2016). The National Immunization Program (NIP) was launched by the federal government to provide free vaccination to children under the age of 15, including tuberculosis, hepatitis B, diphtheria, tetanus, pertussis, poliomyelitis, measles, mumps, and rubella, Haemophilus influenza type b, and human papillomavirus. The vaccines are freely available to all children in public primary health centres.

Despite persistently high vaccination coverage of over 90% in Malaysia, outbreaks of VPDs such as measles and diphtheria still occur occasionally (Abdullah, Nor Afiah & Rosliza, 2016). The outbreaks could have been caused by a lack of herd immunity due to low vaccination coverage. There has been an increase in the number of parents who are concerned about the side effects of vaccinations on their children, with some even refusing to have their children vaccinated (Lim et al., 2017).

A strong parental acceptance of childhood vaccination depends on parental knowledge concerning the protective role of vaccines against potentially fatal child infectious illnesses (MacDougall et al., 2016). Parental involvement plays a significant part in enabling their children to be vaccinated and thus, protected from VPDs and safeguarding their health (Gowda et al., 2013). Therefore, parents should have access to information and education about vaccines from a variety of sources, including HCPs and the media (Wallace et al., 2014). Regular parental access to counselling and information on the health advantages of vaccinations plays a vital role in promoting vaccine confidence and ensuring a high percentage of vaccination acceptance.

To make informed decisions, parents need more in-depth information from HCPs. However, poor physician-patient communication may prevent parents from fully understanding the advantages of vaccinations (Berry et al., 2018). In addition to a negative vaccination experience, the influence of the social environment was also a potential contributing factor (Mergler et al., 2014). There have been many research studies on the factors that contribute to parental vaccination acceptance, including studies on parental vaccine refusal. Parents who were in support of vaccinating their children were more likely to refer to their doctor as a source of vaccine knowledge (Fu et al., 2017). Additionally, parents believe that their decision to get vaccinated is most influenced by healthcare professionals (Glanz et al., 2014). Parents with positive perceptions were more likely to report that their child had only minor or no side effects following vaccination (Harmsen et al., 2012). Similarly, parents who said that they vaccinated their children to lower the risk of infection were more likely to have positive attitudes toward vaccination (Alshammari et al., 2018).

To date, data on significant factors affecting parents' acceptance of and decision to receive childhood vaccination are limited. There is a paucity of research on how parents decide to vaccinate their children. Therefore, the objective of this study was to examine the influence

of personal factors (knowledge, attitude, belief, and trust in HCPs) on vaccination acceptance behaviour among parents. The research questions are:

i. What are the levels of knowledge, attitude, belief, and HCPs' trust among parents?
ii. What is the level of vaccination acceptance among parents?
iii. Is there any relationship between personal factors and vaccination acceptance behaviours among parents?

Materials and Methods

This quantitative cross-sectional applied an online questionnaire to collect data among parents working in a healthcare education institution in Nilai, Malaysia. The inclusion criteria were consented parents with one or more children (0–17 years old) at home. The survey was conducted among academicians (lecturer and tutor) and administrative staff (management and support staff). Universal sampling was used to include all 251 employees in the institution. The self-administered questionnaire included sections to capture the knowledge, attitudes, beliefs, trust in HCPs, vaccination intention, and vaccination acceptance among the participants. The questionnaire included 62 items adapted from the available literature. It was reviewed by three experts and Cronbach's alpha values for the scales were: knowledge = 0.949, attitudes = 0.741, beliefs = 0.869, trust in HCPs = 0.958, and vaccination acceptance = 0.981. The items on knowledge, beliefs, trust in HCPs, vaccination intention, and vaccination acceptance were scored on a five-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = somewhat agree, 4 = agree, and 5 = strongly agree). The online self-administered questionnaire was distributed via email. It took 15 to 20 minutes to complete. Table 1 shows the categories of levels based on percentile.

Table 1
Division of level based on percentile

Variables	**Low**	**Intermediate**	**High**
Level of knowledge	< 4	4.1 – 4.6	> 4.7
Level of negative attitude	< 2	2.1 – 2.3	> 2.4
Level of belief	< 4	4.1 – 4.5	> 4.6
Level of HCP trust	< 3.89	3.9 – 4.0	> 5

The data were analysed using the statistical software SPSS Version 26. Frequency tables were used to describe categorical data and continuous variables were summarised using means and standard deviations. The levels of vaccination acceptance were categorised into 'low' and 'high' based on the percentiles (Table 2). The relationship between parental factors and vaccination acceptance behaviour was assessed using Spearman's rho test.

Table 2
Division of level, based on percentile

Variable	**Low acceptance**	**High acceptance**
Vaccination acceptance	< 4.00	> 4.10

Ethical approval was obtained from Research Management Centre of KPJ Healthcare University College. The participants provided informed consent and were reminded that all their participation was voluntary. Data confidentiality was assured as only the researchers had access to the data and all the identities of the participants remained anonymous.

Results

A total of 248 completed questionnaires were submitted. Table 3 shows the sociodemographic characteristics of parents. A total of 114 (46.0%) of them had a high level of knowledge while 26.6% and 27.4% reported intermediate and low levels of knowledge about children's vaccination (Table 4).

Table 3
Sociodemographic characteristics of parents (n = 250)

Respondent's Profile	n	%
Gender		
Male	60	24.2
Female	168	75.8
Range of Age		
20 – 29 years	42	16.9
30 – 39 years	93	37.5
40 – 49 years	60	24.2
50 – 59 years	47	19
60 years and above	6	2.4
Race		
Malay	219	88.3
Chinese	5	2
Indian	18	7.3
Others	6	2.4
Level of Education		
Primary	5	2
Secondary	23	9.3
Tertiary	220	88.7
Marital Status		
Married	218	87.9
Single parent	30	12.1
Religion		
Islam	223	89.9
Buddha	5	2
Hindu	16	6.5
Christian	4	1.6
Range of Salary		
<RM1500	24	9.7
RM1501 – RM5000	169	68.1
RM5001 – RM 10,000	55	22.2
Number of Children		
No children	26	10.5
One to three	151	60.9
Four to five	56	22.6
Six to seven	7	2.8
More than eight	8	3.2
Department		
Academic	180	72.6

Administration	68	27.4

Table 4
The level of knowledge among parents

Level of knowledge	Frequency	Percentage (%)
High	114	46.0
Intermediate	66	26.6
Low	68	27.4

There were significantly low negative attitudes towards vaccination in children 105 (42.3%) of the participating parents while another 20.2% showed an intermediate level of negative attitudes about vaccination. Worse still, 93 (37.5%) of them had a high level of negative attitude toward vaccination in children (Table 5). Table 6 shows the level of parental beliefs. Most parents reported a high level of belief (n=122, 49.2%) while 39 (15.7%) had an intermediate level of belief and 87 (35.1%) showed a low level of belief toward vaccination.
Table 7 shows the level of HCP trust among parents. The strongest factor influencing vaccination acceptance was the HCP's recommendation. Parents with a higher level of trust toward HCPs showed a higher rate of vaccination acceptance (n=112, 45.2%).

Table 5
The level of attitudes among parents

Level of attitudes	Frequency	Percentage (%)
Low	105	42.3
Intermediate	50	20.2
High	93	37.5

Table 6
The level of beliefs among parents

Level of beliefs	Frequency	Percentage (%)
High	122	49.2
Intermediate	39	15.7
Low	87	35.1

Table 7
The level of HCP trust among parents

Level of HCP trust	Frequency	Percentage (%)
High	112	45.2
Intermediate	49	19.8
Low	87	35.1

Table 8 shows the level of vaccination acceptance among parents. Among the participating parents, 171 (69%) reported a high level of vaccination acceptance as compared to 77 (31%) with a low vaccination acceptance. Table 9 shows the significant relationship between certain parental factors with vaccination acceptance. There is a significant positive moderate relationship between personal factors (M = 3.82, SD = .40) and vaccination acceptance (M = 4.50, SD = .53) (p = .000). The higher the personal factor, the higher the acceptance level.

Table 8
The level of vaccination acceptance among parents

Level of attitudes	Frequency	Percentage (%)
High acceptance	171	69
Low acceptance	77	31

Table 9
The significant relationship between personal factors with vaccination acceptance

Correlations				
			personal_factors	**mean_acceptance**
Spearman's rho	**personal_factors**	Correlation coefficient	1.000	.741**
		Sig. (2-tailed)	.	.000
		N	248	248
	mean_acceptance	Correlation coefficient	.741**	1.000
		Sig. (2-tailed)	.000	.
		N	248	248
** Correlation is significant at the 0.01 level (2-tailed).				

Discussion

This study provided essential information on personal factors (knowledge, attitudes, beliefs, and trust in HCPs) and their influence on vaccination acceptance among parents. The findings show that even parents who agreed to have their children have a low degree of vaccination knowledge. This research also showed that knowledge plays a significant role in vaccination acceptance. Therefore, it is vital to improve knowledge and awareness among parents to enhance childhood vaccination uptake (You et al., 2020).

According to our study, many parents have strong negative attitudes toward childhood vaccinations, either due to a lack of knowledge about vaccination risks or a misinterpretation of the statement in the questionnaire, thus making it impossible for them to confirm their agreement or disagreement. Therefore, information communication is one of the cornerstones in the field of public health. The foundation of the vaccination decision-making process is to understand which vaccines are required, for whom, and when. Parents commonly misunderstand about the side effects of vaccination. Some are even doubtful of the benefits of vaccination in preventing VPD (Dubé et al., 2019; Mohd Azizi, Kew & Moy, 2017).

In addition, the study discovered that the most important positive predictor for vaccination acceptance is the HCP's recommendation. High-quality vaccine-related information from HCPs has been found to increase vaccination uptake (Shibli et al., 2019). In view of the major influence of HCPs on vaccination decisions for their children, it is essential to understand parental beliefs and attitudes toward vaccination so that HCPs can address vaccine hesitancy with the right strategies. Recognising and acknowledging parental worries is an important step in boosting vaccine confidence (Fu et al., 2017).

According to a recent study from Canada, parental willingness to take a vaccination was the most important factor associated with accepting childhood vaccination for their children (Dubé et al., 2019). In view of that, efforts to reduce vaccine fear must be emphasised to increase vaccine uptake among children. Furthermore, when confronted with knowledge that

goes against their values, some people can feel threatened and respond defensively, indirectly resulting in resistance and further strengthening their initial beliefs. As a result, it negates the possibility of engaging them in the desired vaccination acceptance behaviour (Jaramillo-Monge et al., 2021). As a result, it is imperative for stakeholders to determine the best strategy for information communication to improve vaccination acceptance and reduce undesirable negative consequences of vaccination.

Conclusion and Recommendation

In summary, personal factors (knowledge, attitudes, beliefs, and trust in HCPs) were important in influencing vaccination acceptance behaviour among parents. Overall, the parents in this study had relatively positive personal factors toward vaccination in children. However, negative attitudes towards vaccination were also observed among parents. Therefore, effective educational and promotive strategies should be developed to increase parental acceptance of childhood vaccination. Future research should focus on a comparative study between national vaccination programmes, such as NIP in Malaysia and other countries to establish more evidence surrounding children's vaccination acceptance.

Limitation

There are certain limitations to this research. The use of self-reported data might be vulnerable to self-reporting bias. The nature of the cross-sectional study meant that this study could not offer inferential causation. Despite these limitations, the sample of this study was representative of parents working in this healthcare education institution in Nilai, Malaysia.

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