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The Risk Of Vaccine-Preventable Diseases To Children: What The Parents Perceive

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Abstract

This study investigated perceptions of children's risk of vaccine-preventable diseases among parents who refused vaccination for their children under two years of age at public health care clinics in Selangor. A purposive sampling strategy was employed to engage 27 parents willing to be interviewed. A semi-structured interview found that parents perceived unvaccinated children as having a lower risk of getting infections and equal vulnerability to vaccinated children. Besides, some parents perceived that there were other influencing factors contributing to children contracting a disease rather than not receiving the recommended vaccinations. Parents also perceived that their children have better health status compared to vaccinated children. Interestingly, a few claimed that their children had good traits, such as always respecting and obeying their orders and having higher intellectual thinking. Regular vaccination discussion, reviews of children's vaccination status, and formulation of recommendations should enhance parents' understanding of vaccination and evade any misperception.

Keywords: Vaccination, Immunisation, Vaccine Perception, Vaccine Hesitancy, Vaccine Refusal

Introduction

The World Health Organization (WHO) regards access to immunisation as a fundamental human right as it is one of the most effective and affordable measures to enhance health outcomes. The benefits of immunisation contribute to the reduction and, to some extent, eradication of many childhood diseases, which supports the growth of a healthy nation. However, for countries to reap the full benefits of immunisation, a high vaccination rate must be achieved. That is why many global and regional immunisation initiatives have introduced vaccine and immunisation programs that reach many children from various populations, including the most marginalised and vulnerable ones.

Nevertheless, there has been an upward trend globally in the number of people who believe vaccination is risky and unnecessary. Parental vaccine hesitancy is now becoming a global health issue of growing importance. Malaysia also faces the same dilemma, where many parents choose not to vaccinate their children for various reasons, including time restraints, missed clinic or hospital appointments, geographic barriers, worry that vaccines are not halal, prior exposure to negative effects (Ahmad et al., 2017), internet and social media, personal choice and individual right, conspiracy theory, religious reasons as well as alternative medicine (Abd Manaf et al., 2022; Zin et al., 2022).

Due to the trend, some studies estimate that approximately 1 in 8 children under the age of two in the United States are under-vaccinated due to parental choice, and most physicians report at least one vaccine refusal each month (Facciolà et al., 2019), while a national study in 2019 discovered that prevalence of vaccine hesitancy was 6.1% for routine childhood vaccinations (Kempe et al., 2020). Similarly, Europe had an alarming 41,000 measles cases in the first half of 2018 and 37 fatalities, compared to 24,000 cases in 2017, a rise in infections primarily brought on by inadequate vaccination uptake (Holt, 2018).

In Malaysia, National Health and Morbidity Survey statistics revealed that the number of unvaccinated children had increased ten times, notably among parents of children under two years old, from 0.1% in 2016 to 1% in 2022. At the same time, incomplete immunisation increased 2.5 times from 4.5% in 2016 to 12% in 2022. The study findings also showed that 5% of Malaysian parents are vaccine-hesitant (Institute for Public Health, 2023).

Communities may have different reasons for refusing vaccinations, and it is crucial to recognise and address their belief and perceptions. Findings from works of the literature revealed various themes for perception in relation to immunisation. A few studies quoted the perceived risk of diseases, which relates to the low risk of contracting the diseases and social environment influences (Harmsen, 2013).

Parents frequently focused heavily on the risk of immunising their children and often believed those risks were more extensive than they actually were. Many apprehensive parents attributed their worries to convictions that certain vaccine components make children sick. Possible adverse effects, such as impairments, deafness, mental damage, coma, or death, were related to this (Blaisdell et al., 2016; Burghouts et al., 2017; Mendel et al., 2018).

A study involving ten government health centres in Kinta's administrative region in Malaysia showed that the reasons for refusing immunisation were a preference for alternative treatments, the belief that vaccinations are useless, and uncertainty about the vaccine's composition (Lim et al., 2016). Similarly, according to a related study by Karimah and Abdullah (2017), post-vaccination experiences, vaccination schedules, the professional role of healthcare providers, vaccine dangers and benefits, affect respondents' willingness to receive vaccinations. In some studies, some Muslim parents have voiced their religious and personal beliefs that the source of the vaccine may not be halal and may contain some pork components (Ansari et al., 2021).

Although several studies have been conducted in Malaysia recently, only a few of them explore using qualitative research. Therefore, it is urgent to understand Malaysian parents' beliefs and perceptions thoroughly regarding the vaccination of their children, particularly in Selangor, which is one of the highest vaccine refusal states. The results will consequently offer evidence-based information to optimise the vaccine awareness programme and policies of the Ministry of Health.

Methodology

Study Design And Sampling

The study adopted a qualitative approach to discover the beliefs behind parental refusal to vaccinate their children. The study population was parents who refused vaccination for their children at age two years and below in public health care clinics in Selangor. The names were obtained from the monthly Vaccine Refusal Report in 2016. To accelerate the recruitment process, the clinic's staff assisted in contacting potential parents for the interview sessions. Parents who consented were given an appointment for an interview at their convenience. A total of 24 parents (mothers or fathers) who denied immunisation for their children, partial or total refusal, met the inclusion criteria. The study did not include parents whose kids have vaccination contraindications. Three more interviews were conducted after the twenty-fourth interview to confirm data saturation once it was reached.

Partial refusal refers to parents who accept some vaccinations but reject others. Meanwhile, total refusal relates to parents who refuse to give their children any vaccines recommended by healthcare facilities.

Interview Process

From August until November 2017, in-depth interviews were conducted using a semi-structured interview guide. Researchers scheduled appointments with informants after ensuring they were willing to engage. Informants were given an informed consent form to sign and a demographic profile form to fill out.

Analysis

Voice recorders were used to capture the interviews. The transcription and analysis of the audio were done concurrently with the data collection. The interviewers pre-analysed the notes with other researchers after each session. The team members coded three transcripts to provide the thematic analysis's coding frame and then discussed any coding disagreements until they reached an agreement. The remaining transcripts were coded using the coding framework. Thematic analysis was utilised to categorise the key phrases from the recorded interviews. The identified themes were then divided into two main themes and their sub-themes.

Validity and Reliability

To assure the validity and reliability of qualitative research, based on Creswell's (2003) suggested strategies, these three steps were applied: -

i. Triangulation - using multiple investigators, multiple sources of data, or various methods such as audio, field notes, and observation of informants to confirm the emerging findings;

using several researchers, different data sources, or various methods, such as audio, field notes, and observation of informants to confirm the emerging findings;

ii. Members check - rephrasing the informants' words to ensure that they were understood throughout the interview
iii. Peer debriefing – improving the accuracy of the qualitative findings through discussion with team members.

Ethical Considerations And Grant

The Ministry of Health's Medical Research Ethical Committee (MREC) provided ethical permission for this study and registered the study under the National Medical Research

Registry (NMRR-17-516-34985). Researchers also received formal consent from the Selangor State Health Department to carry out the study in the chosen public healthcare clinics. The study also received an allocation from the Ministry of Health Research Grant.

Results

Demographic Profile Of The Informants

Most of them were mothers between the ages of 20 and 40, with a diploma or higher, employed, and had an income of RM 4,000 or less per year. Majority of them only partially accepted vaccinations. Table 1 provides a synopsis of the background information for the informants.

Table 1:
Socio-demographic characteristics of the informants

Variables	Category		Frequency	Percentage (%)
Gender	Male	9		33.3
	Female		18	66.7
Age	<20	1		3.7
	20–40		25	92.6
	>40	1		3.7
Employment status	Working		21	77.8
	Not working	6		22.2
Education status	Local		24	88.9
	International	3		11.1
Income	<RM1,000	4		14.8
	RM1,001–RM4,000		18	66.7
	>RM4,000	5		18.5
Status of immunisation	Partial refusal		21	77.8%
	Total refusal	6		22.2%
Highest educational level	Primary school	3		11.1
	Secondary school	7		25.9
	Certificate/Diploma		10	37.1
	Degree/Master/PhD	7		25.9

Major Themes And Sub-Themes

The result showed two emerging themes of perception of child's risks to vaccine-preventable diseases, which can be divided into perceived risks of diseases and perceived severity. These are summarised below with relevant quotes from the informants, as shown in Table 2.

Table 2:
Major themes and sub-themes of child's risks to vaccine-preventable diseases

Theme	Sub-theme
Perceived Risks of Diseases	Low Risk Equal Vulnerability Contextual Factors of Risk
Perceived Health and Personality Status	Better Health Status Good Traits

A. ***Perceived Risk of Diseases***

Parents were shown newspaper cutting about recent fatal cases regarding unvaccinated children. Most parents were not worried about their children's health status and felt it was unnecessary to vaccinate their children. They perceived that their children's health is still protected without vaccination compared to those with vaccination.

i. Low Risk

Parents claimed that the risk of getting the disease is only about 20-40%; therefore, there is no urgency or priority to take the vaccine, and they accept their fate by surrendering themselves to God's hand. In addition, the findings also revealed that some of the parents believed there would be no severe harm if they skipped the vaccination.

> *"Maybe it depends on the urgency or priority for us to take the vaccine.. aaa, maybe for me, if the risk is not so high, we can skip it. No illness, don't have any severe illness, only once la, got the chicken pox" (Informant 8)*

> *"The possibility is there; definitely, it's there. Maybe around 20% to 40%, but we pray la for it not to happen, take care of our food intake all" (Informant 17)*

> *"I thought ooo.. actually, this vaccine can be avoided... and it does not cause severe harm if we skipped it" (Informant 13)*

ii. Equal Vulnerability

Parents responded that it does not make any difference for their children, either vaccinated or not vaccinated. They felt that both groups were susceptible to contracting diseases. They were also frustrated that the unvaccinated group was always highlighted in the news, even though there were cases of vaccinated children infected with the diseases.

> *"Yes, most didn't get their vaccines, but some who've got vaccinated were also affected. So, it means, even if we had the vaccine or not, we have the potential to be affected" (Informant 23)*

> *"There are many deaths also among infants who were vaccinated. I even heard that babies vaccinated and not vaccinated had died. That is my opinion, but only the ones that were not vaccinated were mentioned (in the news)" (Informant 10)*

"Things like this, if those who are vaccinated and who are not vaccinated, if it is destined to happen, it will somehow happen..like my son, if he happens to get measles or what and people start to say it's due to him not being vaccinated, I would say if it is destined to happen, it will somehow happen. Aaa, even my friends who are vaccinated got themselves warded too" (Informant 24)

iii. Contextual Factors of Risk

Parents also felt that other social and environmental factors, such as antibodies, dietary patterns, personal hygiene, and socio-economic status, contribute to their child's disease susceptibility. Parents were not convinced enough to point out that children without vaccination can contract the diseases since the number of cases is relatively small.

"If 20 people who get this were the ones who didn't get their vaccines, I think we can accept it because they are not being vaccinated. But if it is just one or two cases, it's not strong enough to be associated with not being vaccinated because sometimes we can trace back to other factors that caused the person to be like that" (Informant 11)

"But the most important, as my husband said, is to take care of our hygiene, observe the children, like even when they are outside, he says that's more important. If we don't take care, it will be easy to fall sick. That's my husband's advice" (Informant 25)

"I see also the cleanliness of people who get diphtheria, their nutrition, and for me, even their socio-economic status plays the role too" (Informant 21)

B. ***Perceived Health and Personality Status***

Even though their children were not vaccinated, most parents believed they had better health conditions. As a result, they argued that there is no urgency to be vaccinated. Surprisingly, some parents felt that vaccinations harm their children's intellectual development.

i. Better Health Status

Some parents were confident that their children's health status was better than those with vaccination. They mentioned that vaccinated children are much more vulnerable to sickness than those not vaccinated. Most of the time, they recover faster than their vaccinated siblings.

"If she gets a fever, it is hard to recover (referring to her child taking the vaccine), this one (referring to her child who does not take the vaccine), she will recover the next day, Alhamdulillah" (Informant 19)

"According to my testimony, it would be my 8th and 9th child (with less/ no vaccine). So far, Alhamdulillah, I can see that we can forgo the vaccine] (Informant 13)

"The sister (referring to the eldest daughter who had complete vaccination) ... if she gets cold, she will surely get fever too, and it takes time to get well. If my other child (referring to another child who had only BCG vaccination) if she gets the flu, it will be only flu (which means no fever), and if the elder brother gets a fever, he won't get infected. That's what I have noticed many times" (Informant 22)

iv. Good Traits

Their observation found that those unvaccinated children are more intelligent and well-mannered than those vaccinated. They expressed their doubt about the content of the vaccine, which may affect the child's intelligence and character.

> *" [When they (her children) took it (referring to the vaccine), we had more difficulties looking after them. I'm referring to my first four children who had completed the vaccination. Studying in tahfiz, I opened my tahfiz, studying Al-Quran, and learning about the religion of Islam, but difficult for them to absorb. The rejection is much higher. Whereas my other four children after they are less vaccinated, and the youngest one had the least, but is the most intelligent among all of them" (Informant 14)*
>
> *"For my second child, I did not give him the MMR shot, but he looks like ok lah. Haaaa…his IQ is also better compared to the elder brother. Hah..this is based on my experiment" (Informant 12)*
>
> *"But we see the differences in their intelligence, and it differs from the eldest child (vaccinated) with this one (not vaccinated)" (Informant 21)*

The parents also cited that unvaccinated children are more obedient than unvaccinated children, who are more rebellious and agitated.

> *"It may affect a few because we also would not know about it,..what is inside the vaccine and what is being injected. So, as I said, I could see differences in the character and behaviour" (Informant 13)*
>
> *"Aaa, in terms of following our command or obeying something, the one who did not get injected is better than the one who got injected, and they have their characteristics. We have to follow their way instead" (Informant 17)*
>
> *"But like the first, second and third child, after getting their vaccine shot, the effect after the injection was that they became agitated…so after that, tried with this child (the child was not vaccinated), and this child did not have that issue at all.." (Informant 16)*

Discussion

This study found that some parents had negative perceptions of vaccination. This situation may drive most parents to refuse vaccination for their children. They stressed that the

children remain healthy even without vaccination, which aligns with a study by Harmsen et al. (2013). These parents believed that if their healthy child does contract a disease naturally, it would be beneficial and lead to long-lasting immunity.

At the same time, several parents in this study claimed that their children's health status is better than those of vaccinated children. They even thought that the media exaggerated the threat of not taking the vaccine, similar to Lundgren's finding in 2015. Meanwhile, some parents in this study pointed out that both groups (vaccinated and unvaccinated) are susceptible to diseases. These findings are similar to the study by Saeed, Hashmi and Hashmi (2021), who found that the parents did not think their children needed vaccination. These findings might be due to the assumption that it is normal for children to get sick frequently as their immunity is not fully developed yet.

This study also showed that some parents claimed other factors were affecting children's immune systems besides vaccination, such as breastfeeding, As-Sunnah food, dietary patterns, and personal hygiene. The finding is consistent with the study done by Harmsen et al. (2013) in the Netherlands, confirming that they practice a healthy lifestyle to keep their children healthy. Good nutrition and breastfeeding (for 1 ½ to two years) practices will ensure the child's immune system is robust. Kata (2012), in her study, found that many websites pointed to decreases in disease levels, which were credited to improvements in sanitation, nutrition, and poverty. Thus, to tackle this misunderstanding, efforts should be concerted to educate about a healthy lifestyle and the importance of vaccination in defending children's health.

Most of the parents in this study felt that vaccine-preventable diseases' severity was low, which was supported by Ruijs et al. (2012) and Gowda and Dempsey (2013). Luthy et al. (2012) also cited identical findings. They found out that significantly more parents of exempt children (unvaccinated) thought their children had a low probability of contracting the diseases. The parents perceived the severity of the diseases as minimal compared to vaccinated children. These beliefs might reflect that the incidence of VPDs over the last century has resulted in parents perceiving such diseases as non-threatening, and their risks seem less critical than vaccination risks. Therefore, it seems very important that MOH keep communicating about the severity and susceptibility of VPDs to the public.

Interestingly, in this study, some parents claimed that their unvaccinated or partially vaccinated children are more intelligent than fully vaccinated children. This finding aligns with the research done among mothers attending antenatal clinics at Lagos University Teaching Hospital (LUTH) in Nigeria. A few respondents felt that immunisation would make their children brilliant (Hagan & Phetlhu, 2016). Hence, to offset this misperception, specific information must be designed to correct the fallacies that link unvaccinated children with intelligence.

Conclusion

The findings showed numerous intricate elements are at play regarding parents' belief in vaccine-preventable diseases. Moreover, it is essential to consider intriguing nuances, including the perspectives of parents on the correlation between manner, IQ and vaccination. Consequently, program managers must meticulously identify the target audience and grasp their opinions regarding vaccination. They should accurately discern the target group's genuine beliefs and perceptions about immunisation. Subsequently, intervention measures should be devised, taking into account relevant perceptions that may ultimately influence vaccine acceptance. The program should also address the risks associated with delaying the

immunisation schedule and highlight the benefits of completing the immunisation process. Additionally, employing multiple techniques in tandem appears to be more efficacious than relying on single-component interventions. The best action is to improve health promotion initiatives, especially those involving parents and paediatricians, by having an open dialogue to overcome any misbelief that arises.

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Competing Interests Statement
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