WOULD MALAYSIAN YOUNG PARENTS GET THEIR CHILDREN VACCINATED? EXTENDING THE THEORY OF PLANNED BEHAVIOR TO THE CONTEXT OF SOCIAL MEDIA INFLUENCE

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Abstract
Parent approval of routine childhood vaccination is essential to sustaining children's health because high vaccination coverage rates lower vaccine-preventable diseases. Children are more susceptible to contagious diseases than adults; thus, delaying or refusing vaccination puts them at risk for serious health problems. Nevertheless, the choices made by parents regarding their children's vaccination are complex and multifaceted. Many Malaysian parents are worried about vaccines due to false information from sources in the media and the internet. The media spreads these myths, which has a direct impact on parental intentions. This study explored factors associated with young parents' intention to vaccinate their children. This study employs the theory of planned behaviour (TPB), in which intentions result from attitudes, subjective norms, perceived behavioural control and added social media. A cross-sectional survey was distributed to 210 Malaysian parents between 18 and 40 years old. However, only 202 questionnaires were usable for data analysis. The data was analysed using SMART-PLS 4.0 by applying a structural equation modelling approach. Results reveal that attitude, subjective norms, and social media significantly and positively influenced the children's vaccination intention.

Keywords: Vaccination, Theory of Planned Behaviour, Intention, media influence

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INTRODUCTION

One of the biggest successes in public health is vaccination, which has helped to reduce fatal illnesses, including tetanus, diphtheria, pertussis, poliomyelitis, and measles. Additionally, vaccinations can effectively protect a community as herd immunity will develop once the vaccination has protected most of society against a particular disease. The World Health Organization (2022) reported that vaccinations could prevent more than 20 fatal diseases. Vaccines prevent 3.5 – 5 million deaths annually from measles, diphtheria, tetanus, pertussis, influenza, and others. Hence, there is no doubt that vaccination has the power to eradicate diseases, reduce mortality rates, and shield populations from contagious diseases. For instance, the human papillomavirus vaccine has the potential to drastically lower cervical cancer incidence.

Furthermore, vaccinations are crucial to protect children because they can support the development of children's immune systems. It will shield the children from possibly deadly side effects. On the other hand, vaccine reluctance is a growing problem. Infectious illnesses have returned because of decreased vaccination coverage and declining vaccine confidence. Even though vaccination is one of the most effective public health preventive strategies, many people think it is harmful and useless (Albeny et al., 2018).

In 2021, the World Health Organization established the objective of 70 per cent worldwide vaccination coverage by mid-2022. However, only 58 out of 194 WHO's Member States had met the 70 per cent objective as of June 2022 (World Health Organization, 2022a). In Malaysia, the number of parents who refused to get their children vaccinated has nearly tripled, from 470 cases in 2013 to 1054 cases as of May 2015 (Ahmed et al., 2018). In 2016, a resurgent anti-vaccination campaign resulted in five deaths and hundreds of confirmed diphtheria cases (Mohd Azizi et al., 2017).

Besides that, in 2021, around 3.78 thousand Hepatitis B reported cases in Malaysia, a disease that vaccinations could have prevented. Meanwhile, 128 measles cases were reported nationwide in the same year (Statista Research Department, 2023). Hence, the statistics reveal that the number of parents who refuse their children is high in Malaysia. Therefore, this study aims to identify the factors influencing young parents' intention to vaccinate their children.

LITERATURE REVIEW

Young parents' intention towards children's vaccination

Young individuals or youth go through an exciting and stressful time when they become parents. In Malaysia, the National Youth Development policy defined the age for youth as those between 15 and 40 years old (Ministry of Youth, 2023). Young parents have much to learn during pregnancy and the first few weeks after birth. In health, young parents frequently must gather and evaluate information on a wide range of subjects about the health and safety of their impending infant, such as vaccinations.

According to Azizi et al. (2017), younger parents felt less confident about vaccination, especially regarding safety and effectiveness. This lack of confident is due to the need for more experience with vaccinations for children, and they are becoming more suspicious of vaccinations. In addition, Yufika et al. (2020) reveal that first-time mothers were three times more likely to be hesitant towards vaccination than experienced mothers.

Correspondingly, younger parents are less likely to experience diphtheria, polio, or other vaccine-preventable diseases, resulting in a low perceived risk of getting these infectious diseases. Alternatively, they tend to rely more on modern information sources such as the Internet and social media and are thus vulnerable to misinformation (Azizi et al., 2017).

Conversely, young parents also may follow the guidelines from the government as they perceive it is best for their children. It can be supported by a study done by Weiner et al. (2015) among new mothers who found that seventy-five per cent planned to have their child receive all the vaccinations consistent with the recommended childhood immunization schedule.

Attitude and vaccination intention

Attitude is a preference to regularly respond favourably or unfavourably (Xiao & Wong, 2020). It develops when people believe and evaluate whether engaging in a particular conduct will result in favourable or unfavourable results. Additionally, attitude describes how positively or negatively a person perceives a behavioural item. According to the Theory of Planned Behaviour (TPB), people are more likely to engage in the act when they have a favourable attitude (Li & Li, 2020). On the contrary, if people believe the action will not benefit them, they will reject performing such conduct. It can be supported by Johnson and Ogletree's (2017) study when they revealed that attitude was not a significant predictor of male college students' intentions to receive an HPV vaccination in their research.

In contrast, if the people believe the conduct will benefit them, they will likely perform it. According to a study by Dube et al. (2018) and Britt and Englebert (2018), parents' intentions to vaccinate their children were linked to their opinions toward vaccination. A study conducted by Balbir Singh et al. (2019) among postpartum mothers found that most participants felt that routine vaccinations are crucial for protecting children against infectious diseases and their complications. It can be strengthened by the study by Xiao and Wong (2020), which discovered that attitude was the strongest significant predictor of vaccination intention. Besides that, considering the current COVID-19 epidemic and the fact that the COVID-19 vaccine effectively protects the individual, Twum et al. (2021) revealed that attitude was a predictor of COVID-19 vaccination intention. Therefore, parents with a positive attitude toward vaccination are expected to be more likely to uptake vaccination than those with negative attitudes.

Based on the discussions and empirical evidence, it is hypothesised that as follows:

H1: Attitude is positively associated with young parents' intentions to uptake children's vaccination.

Subjective norms and vaccination intention

The perception of others' expectations of its performance is considered a subjective norm. According to TPB, people tend to have higher intentions to carry out specific activities if they perceive their social referents, such as parents and friends, view them as necessary (Li & Li, 2020). For instance, a parent who believes their doctor, family, and others will approve of their decision to vaccinate their children is likely to do so. Furthermore, Graupensperger et al. (2021) mentioned that friends significantly influence young adults' health practices and attitudes. Besides, a study done by Dube et al. (2018) among Canadian parents claims that subjective norms were associated with parents' intention to vaccinate their children. It also can be supported by a study by Twum et al. (2021), which found that subjective norms were predictors of COVID-19 vaccination intention. Therefore, it is reasonable to expect subjective norms to play an essential role in shaping young parents' intentions to vaccinate their children. Based on the discussions and empirical evidence, it is hypothesised that as follows:

H2: Subjective norm is positively associated with young parents' intentions to uptake children's vaccination.

Perceived behavioural control and vaccination intention

Perceived behavioural control is a multidimensional construct based on various factors, including physical and mental capacity, financial means, transportation, motivation, and time (Ajzen, 2006). In particular, people who believe they have more control over their behaviour are more likely to think they have the necessary resources and can carry out the behaviour. This can be supported by Li and Li (2020), who mentioned that people who perceived that they had control over their HPV vaccination behaviour would have greater intention to uptake HPV vaccination. In addition, Britt and Englebert (2018) explain that individuals who have engaged in past vaccinations are likely to have higher PBC, as they have shown the ability to receive vaccinations. Besides, a study done by Dube et al. (2018) found that perceived behaviour control was associated with parents' intention to vaccinate their children. It can be postulated by Twum et al. (2021), which found that PBC predicted COVID-19 vaccination intention. Therefore, it is reasonable to expect perceived behavioural control to play an essential role in shaping young parents' intentions to vaccinate their children. Based on the discussions and empirical evidence, it is hypothesised that as follows:

H3: Perceived Behavioural Control is positively associated with young parents' intentions to uptake children's vaccination.

Social media and vaccination intention

Nowadays, people are increasingly using social media to find information about vaccines. Social media is crucial for informing people about medical research and services and influencing public opinion and health-related choices. Lin et al. (2020) assert that social media has become a popular platform for many people to share and look for health-related information. In addition, Aziz et al. (2019) affirm that the media plays a critical role in disseminating knowledge about vaccinations and serving as a communicator for information on public health, disease prevention, and the advantages of Vaccination in the fight against severe and infectious illnesses. This is supported by Ahmad Rizal et al. (2022) assertion that social media platforms like Facebook, Twitter, and YouTube have replaced traditional public and mass communication channels like newspapers, television, and radio.

In addition, social media can influence users' vaccination-related information and attitudes (Lama et al., 2020). This is because various sources of information play an essential role in disseminating incorrect information to the audience, especially among parents. According to Danova et al. (2015), the broad dissemination of inaccurate vaccination claims on the Internet has led to parental reluctance and refusal to vaccinate their children.

It is reported that the existence of social media worsens vaccine reluctance. Participants in a study conducted by Wong et al. (2020) in Malaysia perceived vaccine hesitancy to be affected by anti-vaccination propaganda on social media, which led to poor attitudes toward vaccines. It is comparable to the research conducted by (Melovic et al., 2020), which found that online media substantially impacted the formation of parental attitudes toward childhood vaccination. It is confirmed by Allington et al. (2021), who contend that spreading misinformation on social media is currently driving vaccine hesitancy in the modern era.

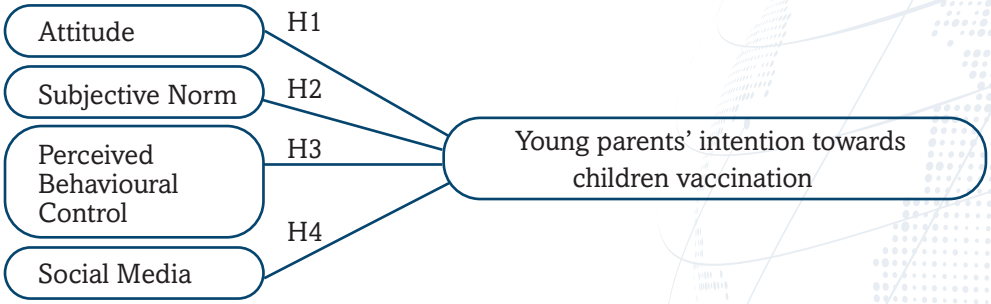
Therefore, it is expected. Media influence positively influences young parents' intentions to vaccinate their children. Based on the discussions and empirical evidence, it is hypothesized that as follows:

H4: Media influence is positively associated with young parents' intentions to uptake children's Vaccination.

Theory of Planned Behaviour and research framework

The theory of planned behaviour (TPB) is frequently used in analysing health-related behaviours (Huang et al., 2020). According to Ajzen (1991), a person's action is determined by behavioural intentions, which are influenced by an attitude toward the behaviour, subjective norms, and perceived behavioural control. In the TPB, behavioural intention is the most influential predictor of behaviour (Teo & Beng Lee, 2010). Hence, the study used intention as the endogenous construct. It is similar to a study by (Van Gelderen et al., 2008; Teo & Beng Lee, 2010; Greaves et al., 2013).

Figure 1 Proposed Research Framework

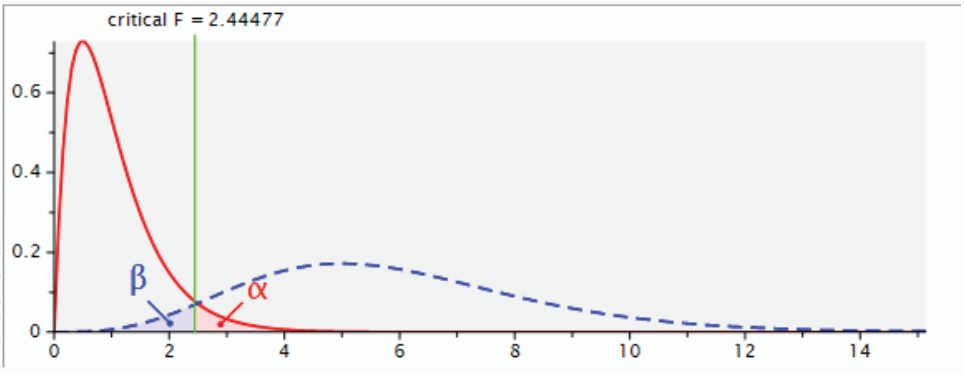


Source: Theory of Planned Behaviour (Ajzen, 1985, 1991).

METHODOLOGY

The study used a quantitative method and an online questionnaire survey to achieve the research objective. The respondents of this study were young parents aged 40 and below. In Malaysia, the National Youth Development policy defined the age for youth as those between 15 and 40 years old (Ministry of Youth, 2023). The sampling technique used was purposive sampling, as random sampling would not achieve this study's objective of targeting young parents aged 40 and below. For the sample size, this study used power analysis (G*power) at the required 95% confidence level and effect size of 0.15 (Figure 2). Regarding the G*power, the minimum sample size required is only 129 respondents. However, 210 respondents were collected for this study to prevent possible constraints associated with a limited sample size. Out of these, eight questions were found defective, which leaves the researchers with 202 usable questions.

Figure 2 G*Power Sample Size



The data for this study were analysed using IBM SPSS for preliminary analysis. In contrast, partial least squares-structural equation modelling (PLS-SEM) analysis was performed, employing SmartPLS 4.0 software to test the hypothesized relationships between the variables. According to Albers (2010), PLS is a powerful predictive technique for the critical construct of the model (interaction effect).

FINDINGS

Demographic characteristics

Table 1 summarises the demographic characteristics of the respondents. Most of the respondents were female (78.9%). Most respondents were Malay (96%), while slightly more than half had degree-level education (59.5%). In addition, 49 per cent of young parents under 40 have a total monthly household income between RM 4,851 and RM 10,970.

Table 1 Demographic Characteristics of the Respondents (n=202)

Categories	Description	Frequency	Percentage (%)
Gender	Male	43	21.3%
	Female	159	78.7%
Races	Malay	194	96.0%
	Chinese	3	1.5%
	India	3	1.5%
	Others	2	1.0%
Education level	SPM/SPMV	17	8.4%
	STPM	6	3.0%
	Diploma	39	19.3%
	Degree	120	59.4%
	Professional Qualification	3	1.5%
	Master	14	6.9%
	PhD	3	1.5%
Total Monthly household income	RM 4, 850 and below	91	45.0%
	RM 4, 851 - RM 10,970	99	49.0%
	RM 10,971 and above	12	5.0%

Descriptive statistics of the latent constructs

This subsection examined the mean and standard deviations for all the constructs. As shown in Table 2, the mean for all five latent variables ranged from 3.9109 to 5.5693. The intention had the highest mean value, at 5.5693, with subjective norms having the lowest value of 3.9109. The standard deviation values ranged from 0.8603 to 1.7158, indicating the scores are not spread too widely around the mean.

Table 2 Results of the Descriptive Analysis

Latent Variable	No of Items	Mean	SD
Intention	3	5.5693	1.7158
Attitude	7	3.9243	0.9854
Subjective Norms	3	3.9109	0.9344
Perceived Behavioural Control	6	3.9554	0.8603
Social Media	4	4.8626	1.3383

Common method variance

The data of this study was gathered utilising a single source. Therefore, Kock (2015) recommended testing standard method variance to address the problem of common method bias and to examine full collinearity. The cut-off value for VIF is less than 5 when regressed against variables, indicating that the data had no severe issues with single-source bias. As shown in Table 3, the VIF for all variables was below 5.

Table 3 Full Collinearity Testing

INT	ATT	SN	PBC	SM
3.077	4.663	4.803	3.711	1.318

Note: INT = Intention , ATT= Attitude, SN = Subjective Norms, PBC = Perceived Behavioural Control, SM = Social Media

Measurement model

The researchers evaluated the measurement model based on the loadings, Cronbach's alpha (CA), composite reliability (CR) and average variance extracted (AVE). According to Hair et al. (2019), loadings' cut-off value should be higher than 0.5, AVE higher than 0.5, and CR higher than 0.7. As shown in Table 4, all the AVE values were above 0.5, and all the CR values were above 0.7. Additionally, the loadings were appropriate, as the values were all above 0.5.

Table 4 Measurement Model

Construct	Item	Loading	CA	CR	AVE
Intention	INT1	0.989	0.992	0.995	0.985
	INT2	0.996			
	INT3	0.993			
Attitude	ATT1	0.937	0.979	0.982	0.889
	ATT2	0.964			
	ATT3	0.963			
	ATT4	0.981			
	ATT5	0.972			
	ATT6	0.813			
	ATT7	0.959			
Subjective Norms	SN1	0.908	0.921	0.950	0.864
	SN2	0.931			
	SN3	0.949			
Perceived Behavioural Control	PBC1	0.915	0.938	0.951	0.764
	PBC2	0.900			
	PBC3	0.817			
	PBC4	0.805			
	PBC5	0.918			
	PBC6	0.882			
Social Media	SM1	0.816	0.867	0.909	0.715
	SM2	0.817			
	SM3	0.884			
	SM4	0.863			

Discriminant validity was evaluated using the HTMT criteria, as Henseler et al. (2015) recommended. According to Franke and Sarstedt (2019), the stricter criteria of HTMT values should be lower than 0.90 for the HTMT criterion standard. As shown in Table 5, the HTMT values were lower than the more stringent criteria of less than 0.90, indicating that the respondents perceived the five constructs differently. Therefore, combining these validity tests resulted in valid and reliable measurement items.

Table 5. Discriminant Validity (HTMT)

	1	2	3	4	
1. ATT					
2. SN	0.883				
3. SM	0.507	0.499			
4. PBC	0.822	0.898	0.476		
5. INT	0.813	0.793	0.480	0.726	

Note: INT = Intention , ATT= Attitude, SN = Subjective Norms, PBC = Perceived Behavioural Control, SM = Social Media

Structural model

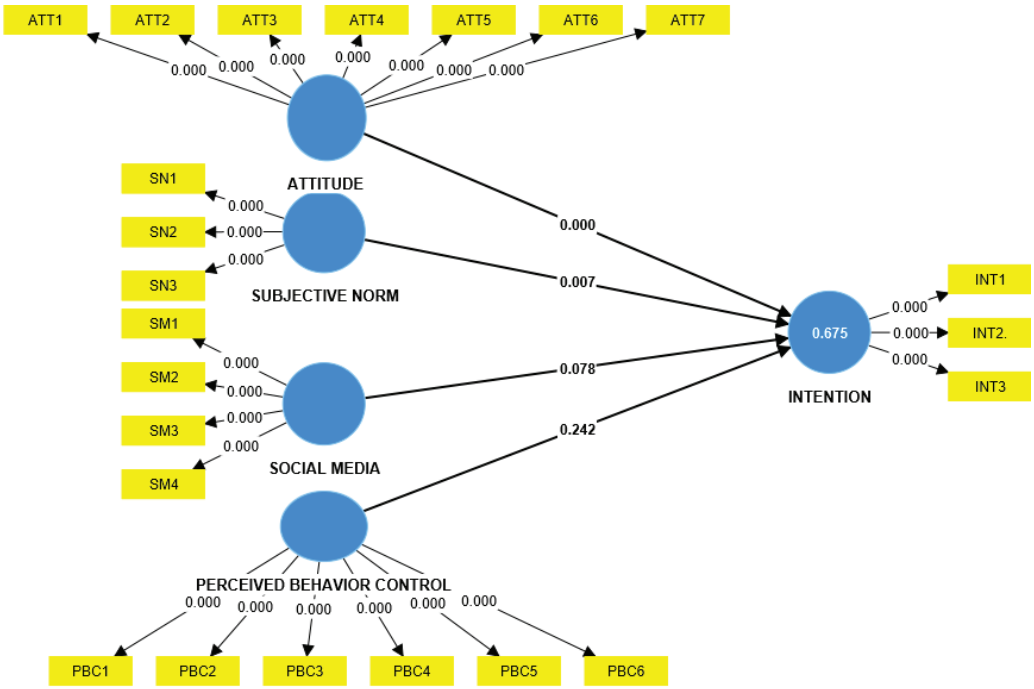
According to Chin et al. (2013) and Hair et al. (2017), this study evaluates multivariate skewness and kurtosis. The results for this study indicate that the data were not normal-multivariate as the value of Mardia's multivariate skewness (β =9.759, p< 0.01) and Mardia's multivariate kurtosis (β = 42.20, p<0.01) were exceeded the cut-off values of 3 and 20 (Kline, 2016). Thus, PLS-SEM is a suitable technique for non-normal data.

Next, testing the developed hypotheses is listed in Table 6. To begin, the effects of the four predictors on young parents' intention towards children's Vaccination were tested. The coefficient of determination, R2, was 0.675 (Q2 = 0.646), indicating that attitude, subjective norms, social media, and perceived behavioural control explained 67.5 per cent of the variance in young parents' intention towards children vaccination, demonstrating a substantial level of predictive accuracy as a guideline of Chin (2010). Attitude (β = 0.523, p<0.001), subjective norms (β = 0.231, p<0.01) and social media (β = 0.070, p<0.1) were positively related to young parents' intention towards children's Vaccination. However, perceived behavioural control (β = 0.231, p<0.01) showed an insignificant relationship, thus indicating that only H1, H2 and H4 were supported.

Table 6. Results of the Structural Model

Relationship			Std Beta	Std Error	t-value	p-value	f2	Decision
H1	ATT	INT	0.523	0.145	3.613	P < 0.001	0.220	S
H2	SN	INT	0.231	0.095	2.444	0.007	0.035	S
H3	PBC	INT	0.069	0.098	0.700	0.242	0.004	NS
H4	SM	INT	0.070	0.049	1.421	0.078	0.011	S

Note: INT = Intention , ATT= Attitude, SN = Subjective Norms, PBC = Perceived Behavioural Control, SM = Social Media, S=Supported, NS=Not Supported



DISCUSSION

Based on the research results, except for perceived behavioural control, the independent variables of attitude, subjective norms, and social media had a significant and positive influence on the vaccination intention of young parents to vaccinate their children. Attitude played a crucial role in predicting the vaccination intentions of young parents for their children in this study. This was consistent with the findings of Twum et al. (2021), who discovered that young parents were more inclined to vaccinate their children after learning that Vaccination contributed to disease protection. Wong et al. (2022) reported the same finding; among 547 young parents under 40, 69.5 per cent were more inclined to vaccinate their children against COVID-19 than older parents (above 40 years). These findings supported Xiao and Wong (2020), Dube et al. (2018) and Britt and Englebert (2018).

Furthermore, subjective norms were associated with young parents' vaccination intentions for their children. This demonstrated that significant and influential individuals, especially within the parent's circles and surroundings, such as family members, friends, teachers, and doctors, encouraged and agreed with young parents' decision to vaccinate their children. For instance, Brewer and Fazekas (2007) asserted that doctor recommendations resulted in a successful vaccination program. Similarly, as studied by Jones and Cook (2008), doctors' recommendations influenced individuals' decisions to get the HPV vaccination. Abd Rahman et al.

(2022) emphasised that communities played a vital role and that their influence substantially impacted parents' decisions to vaccinate their children. In other words, data demonstrated that subjective norms were significant variables that influenced young parents to follow immunisation schedules and fully vaccinate their children.
In addition, social media play a crucial role in disseminating knowledge about vaccinations and communicating information on public health and disease prevention. Similarly, in this study, social media played an increasingly significant role in educating the public about medical research and services and influencing public opinion and health-related decisions, especially among the younger generation. Melovic et al. (2020) affirmed that online media substantially impacted the formation of parental attitudes toward childhood vaccination. Additionally, as suggested by Xin et al. (2021), frequent social media exposure and interpersonal discussion will create awareness of the importance of Vaccination in the fight against dangerous and infectious illnesses.

Nonetheless, this research discovered that perceived behavioural control did not affect young parents' intention to vaccinate their children. This finding may be attributable to mothers and younger parents, particularly those below 40, who felt less confidence in Vaccination due to their lack of experience with children's vaccinations and were more sceptical. Furthermore, Wong et al. (2022) reported that some parents have low confidence in the mRNA technology, fear of unknown adverse effects, and a misconception that the mRNA vaccines contain microchips. This was corroborated by Azizi et al. (2017) and Britt and Englebert (2018).

CONCLUSION

Vaccination is one of the most effective public health strategies for preventing and controlling infectious diseases. A vaccine is a product that boosts a person's immune system's ability to develop immunity to a particular illness, protecting against that disease. This paper aimed to examine young parents' intentions towards children's vaccination. The results of this study showed that attitude, subjective norms, and social media had a significant and positive influence on vaccination intention. On the contrary, perceived behavioural control did not affect young parents' intention to vaccinate their children. Related organisations could use the insights provided by this study to formulate strategies to increase children's vaccination intake. For instance, the Ministry of Health should be concerned about the problems of vaccine refusal among young parents and provide people with much information about the adverse effects and the necessity to vaccinate their children.

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