YUPPIE'S PARENTAL DECISIONS ON CHILDREN VACCINATION IN THE EAST COAST REGION, MALAYSIA

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DOCTOR OF PHILOSOPHY

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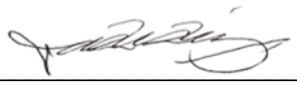

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ABSTRAK

Pemvaksinan memainkan peranan utama dalam kesihatan awam sebagai medium pencegahan awal dan kawalan jangkitan penyakit berjangkit, khususnya dalam kalangan kanak-kanak. Walaupun pemvaksinan diterima secara meluas sebagai langkah pencegahan paling berkesan dalam kesihatan awam, tetapi semakin ramai ibu bapa menganggap pemvaksinan sebagai tidak penting. Di samping itu, bilangan kes penolakan vaksin yang semakin meningkat menimbulkan cabaran untuk mencapai kadar pemvaksinan yang optimum. Kajian ini meneliti faktor-faktor yang mempengaruhi niat dan tingkah laku vaksinasi dalam kalangan ibu bapa golongan profesional muda (Yuppies) di Wilayah Pantai Timur, Malaysia. Kaedah persampelan bertujuan telah digunakan, menghasilkan sejumlah 357 responden untuk kajian ini. Hipotesis diuji menggunakan Pemodelan Persamaan Berstruktur (SEM) dengan Smart PLS versi 4.0. Kajian ini mengkaji perhubungan antara beberapa faktor yang dikenal pasti seperti tanggapan kerentanan, ketenatan, tanggapan halangan, sikap, norma subjektif, dan tanggapan kawalan tingkah laku serta kesan-kesannya terhadap niat dan tingkah laku ibu bapa berkenaan pemvaksinan. Selain itu, kajian ini juga meneliti sejauh mana tanggapan keberkesanan polisi (PPE) dan pengaruh media menyeimbangkan perhubungan ini. Dapatan kajian menunjukkan bahawa tanggapan kerentanan, tanggapan halangan, sikap, norma subjektif dan tanggapan kawalan tingkah laku memberikan pengaruh besar terhadap niat pemvaksinan. Sementara itu, tanggapan ketenatan pula, tidak mempengaruhi niat pemvaksinan dan sekaligus membuktikan kepentingan untuk mewujudkan komunikasi yang bersesuaian berkenaan tahap ketenatan penyakit. Selain itu, tanggapan keberkesanan polisi tidak memberikan impak yang signifikan terhadap hubungan antara pemboleh-pemboleh ubah dan niat pemvaksinan ibu bapa. Namun begitu, niat pemvaksinan menjadi lebih kukuh apabila tanggapan keberkesanan polisi adalah sepadan dengan norma-norma subjektif, Di samping itu, pengaruh media tidak membawa apa-apa kesan besar terhadap hubungan antara niat dan tingkah laku pemvaksinan sebenar. Pendedahan pada kandungan media berkaitan vaksin tidak sentiasa membawa pada peningkatan tingkah laku pemvaksinan. Analisis terhadap faktor-faktor penentu yang dikenal pasti, tanggapan keberkesanan polisi dan pengaruh media memberikan tinjauan terperinci tentang keputusan pemvaksinan ibu bapa yapis di Malaysia. Komunikasi tersuai, akses pemvaksinan yang lebih baik, dan polisi lebih kukuh adalah penting untuk menghilangkan keraguan tentang pemvaksinan serta meningkatkan lagi kadar pemvaksinan. Kajian ini juga menyumbang pada pemahaman terhadap keputusan ibu bapa untuk memvaksin anak-anak mereka di Malaysia. Tambahan pula, kajian ini bukan sahaja menjadi asas bagi kajian-kajian masa hadapan yang meneliti niat dan tingkah laku ibu bapa berkenaan pemvaksinan malah menyediakan pandangan berguna kepada pembuat polisi dan agensi kerajaan, termasuklah Jabatan Kesihatan Awam, Kementerian Kesihatan dan agensi kesihatan berkaitan yang lain. Dengan mengenal pasti faktor-faktor yang mempengaruhi kadar pemvaksinan, kajian ini boleh membantu dalam pembangunan usaha intervensi yang bermatlamat untuk meningkatkan perlindungan pemvaksinan dan mengukuhkan lagi keimunan populasi.

Kata kunci: Pemvaksinan, Yapis, Tanggapan Keberkesanan Polisi, Pengaruh Media

ABSTRACT

Vaccination plays a central role in public health through the early prevention and controlling of infectious diseases, especially among children. Although vaccination is widely recognised as one of the most effective preventive measures in public health, a growing number of parents consider it unnecessary. In addition, the increasing instances of vaccination refusal poses a challenge to achieving optimal vaccination rates. This study examines the factors that influence the vaccination intentions and behaviours of young urban professional (Yuppies) parents in East Coast Region, Malaysia. A purposive sampling method was employed, yielding a total of 357 respondents for the study. The hypotheses were tested using Structural Equation Modeling (SEM) with Smart PLS version 4.0. This study examines the relationships between a few identified factors - such as perceived susceptibility, severity, barriers, attitudes, subjective norms, and perceived behavioural control — and their effect on parents' vaccination intentions and behaviours. It also examines how perceived policy effectiveness (PPE) and social media influence moderates these relationships. Results show that perceived susceptibility, perceived barriers, attitudes, subjective norms, and perceived behavioural control significantly influences vaccination intentions. Perceived severity, on the other hand, has little influence on vaccination intentions, indicating the need for tailored communication about the importance of disease severity. Furthermore, perceived policy effectiveness does not significantly affect the relationship between the variables and vaccination intentions of parents. However, when perceived policy effectiveness matches subjective norms, vaccination intentions are noticeably strengthened. Surprisingly, the influence of the media does not significantly strengthen the relationship between intentions and actual vaccination behaviour. Exposure to vaccine-relevant media content does not consistently lead to increased vaccination behaviour. This analysis of the determinants, perceived policy effectiveness and social media influence sheds light on the vaccination decisions of Yuppie parents in Malaysia. Tailored communication, better accessibility of vaccination, and stronger policies are crucial to overcome vaccination hesitancy and increase vaccination rates. This study also contributes to the understanding of parental decisions towards vaccination of children in Malaysia. It not only provides a foundation for future studies that examine parental intentions and behaviours related to vaccination but also provides valuable insights for policymakers and government agencies, which includes the Public Health Department, the Ministry of Health, and other health-related agencies. By identifying factors that influence vaccination rates, this study can assist in the intervention developments aimed at increasing vaccination coverage and boosting population immunity.

Keywords: Vaccination, Yuppies, Perceived Policy Effectiveness, Social Media Influence

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LIST OF ABBREVIATIONS

ATT	Attitude
AVE	Average Variance Extracted
CMV	Common Method Variance
CR	Composite Reliability
CB-SEM	Covariance-Based SEM
CA	Cronbach Alpha
HBM	Health Belief Model
PLS-SEM	Partial Least Square – Structural Equation Modelling
PU	Perceived Usefulness
PB	Perceived Barriers
PBC	Perceived Behavior Control
PSV	Perceived Severity
RO	Research Objective
RQ	Research Question
SM	Social Media
SPSS	Statistical Package for Social Science
SEM	Structural Equation Modelling
SN	Subjective Norms
TPB	Theory Of Planned Behavior

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Vaccination stands as one of the most powerful tools in public health for proactively preventing and controlling infectious diseases. A vaccine boosts the immune system's capacity to develop immunity against a specific disease, thereby shielding individuals from its harmful effects. Vaccination programmes to combat dangerous infectious diseases has been around for decades. Vaccination and its development have been considered as significant health developments in the last two centuries (Montero et al., 2024). Children's vaccination coverage is one of the global parameters used to assess a country's progress in reducing child mortality rates (Moyer et al., 2013). It's important to highlight that elevated vaccination rates, coupled with herd immunity, result in immunity for the entire population.

To sustain herd immunity, the World Health Organization (WHO) advises that 80% of newborns should undergo the vaccination series for diphtheria, pertussis, tetanus, and polio, while 90% should receive the vaccination series for mumps, measles, and rubella. (Albany et al., 2018). In addition, vaccination leads to a significant reduction in mortality rates. Higher vaccination rates have been found to reduce the risk of dying from a virus by as much as 50% (Hupert et al., 2022). In addition, vaccination plays a crucial role in reducing the significant healthcare costs associated with diseases. People who are not vaccinated and fall ill not only suffer from reduced labour productivity but also contribute to the rapidly rising costs, a trend that health research underscores. In Malaysia, the Malaysian Ministry of Health offers free vaccinations for children. According to Faridah (2017), the Malaysian target for vaccination coverage is 95% or more for all vaccine series.

While vaccination is widely acknowledged as one of the most effective methods to safeguard public health, a growing number of parents perceive it as both unsafe and ineffective. (Albany et al., 2018). The global trend shows a rising number of parents

opting not to vaccinate their children. In Europe, for example, vaccination rates have been consistently low since 2015, reflecting the growing influence of the anti-vaccination movement. In Asia, public confidence in vaccines fell between 2015 and 2018 in the Philippines and Indonesia. Between 2015 and 2019, confidence fell in Indonesia as Muslim authorities questioned vaccination coverage. They also raised the issue of a fatwa, claiming that Islam forbids the taking of vaccines (Yufika, 2020).

The routine vaccination of children has been impacted by the Covid-19 pandemic. Following social distancing measures, vaccination campaigns have been postponed, increasing the risk of disease outbreaks. Major polio vaccination programmes in Malaysia have also been delayed (UNICEF Malaysia, 2020). If children do not receive their necessary polio vaccinations, they will remain vulnerable to the disease and there is a risk that it will spread once travel restrictions are lifted. According to current projections, up to 800,000 people could have contracted vaccine-preventable diseases in 2019 (UNICEF, 2020a). Due to limited access to medical care and vaccinations, there was a surge in the number of children missing their initial vaccinations. In 2019, an additional 3.5 million children did not receive their first dose of DTP-1 (diphtheria, tetanus, and pertussis), while in 2020, 3 million more children missed their first dose of the measles vaccination. (UNICEF, 2021). The temporary disruptions to vaccination services, while inconvenient, are unavoidable to prevent the spread of COVID-19. Once services resume, it will be most crucial to resume procurement of vaccines for children.

In addition, government policies can be used to incentivise parents to have their children vaccinated. Governments can use these policy tools to influence people's behaviour in various ways, such as through necessary beneficial regulations, incentives, advertising, education, and the creation of practical and helpful infrastructure (Wan & Shen, 2013). In Malaysia, the National Health Policy was formulated to safeguard the welfare of the populace. Established in the 1950s, the National Immunisation Programme (NIP) was an integral component of this overarching health policy. (Faridah, 2017).

As per Wan & Shen (2013), a policy action has the potential to incentivise certain behaviours among individuals. When one perceives a stronger and more effective incentive when engaging in certain behaviour, the desire to engage in said behaviour increases. Take the case of a person who is in favour of vaccination but believes that the government is making it difficult for them to get vaccinated; they are unlikely to agree to

be vaccinated. For this reason, governments around the world have responded with new laws and measures to increase vaccination rates through education, information campaigns, and incentives. These measures can be aimed at the public, health organizations or doctors.

Nevertheless, despite parents harboring positive intentions to vaccinate their children, it's crucial to acknowledge that this intention doesn't invariably result in a vaccination rate of 100%. Even with the inclination to act in a certain manner, numerous studies demonstrate that intention doesn't consistently manifest into actual behaviour (Juraskova et al., 2012; Fall et al., 2018). Therefore, it is of utmost importance to understand the elements that influences intended behaviour to increase vaccination rates in the future (Alhalaseh et al., 2020).

Based on current studies, vaccines are a concern to Malaysian parents due to misinformation from unreliable internet and mass media sources (Ahmed et al., 2018). Many unverified myths from these sources are propagated by the media, which has a direct impact on parents' intentions and actual behaviour. The pivotal function of the media involves spreading vaccination information and conveying insights on public health and disease prevention, emphasising the advantages of vaccination in averting fatal and infectious diseases. A variety of news sources also play an important role in spreading misinformation to the public, especially parents. Parental refusal to have their children vaccinated has increased due to widespread false vaccination comments found on the Internet (Danova et al., 2015). It's essential to comprehend what influences parents' intentions and actions regarding vaccination. This understanding is vital for crafting interventions that can bolster or align with the efficacy of country-specific public health policies.

1.2 Background of the Study

Vaccines can protect people from a wide range of diseases. By immunising the entire population, mass vaccination successfully protects against infectious diseases. Since a large majority of people is immunised, the likelihood of the infection spreading in the community is also reduced. Consequently, herd immunity protects the group from diseases. Vaccinations undoubtedly protect not only individuals, but also entire populations. Nevertheless, refusal to be vaccinated is becoming increasingly common.

In recent years, however, vaccine refusal has attracted a lot of attention worldwide. Opinions about vaccines range from complete acceptance to outright rejection. Vaccines are extremely effective in preventing disease transmission in the general population, including children. They are protected from situations that could harm them. In 2013, an estimated 21.8 million children worldwide were unvaccinated (Vakili et al., 2015). Even worse, due to the COVID-19 outbreak, children vaccination rates have dropped, and 23 million children were not provided with essential children vaccines in 2020, the highest number since 2009 and comparatively 3.7 million more than in 2019 (UNICEF, 2021).

In addition, Malaysia has seen a significant increase in whooping cough cases in 2023. As of August 19, a total of 329 cases of whooping cough and 23 related deaths have been reported in 2023 (Bernama, August 19, 2023). Infectious diseases are becoming more widespread in society as more and more parents refuse vaccinations. Every year, around 6.6 million children worldwide die from vaccine-preventable diseases (Greenwood, 2014).

In Malaysia, the government initiated a national vaccination programme in the 1950s. The free vaccination programme, designed to protect children from infectious diseases, was distributed to Malaysians via government clinics. However, concerns were raised in Malaysia about the increase in vaccine-preventable diseases (Ahmed et al., 2018). Faridah (2017) noted that in Malaysia, parents began to refuse vaccinations circa 2012-2013. It all started as a small movement, which is now widespread all-over social media. The growth of anti-vaccination activities in Malaysia is now widely evident. For instance, statistics indicate a growing trend of parents declining vaccination for their children. Nonetheless, vaccine-preventable diseases remain a significant health issue for Malaysian children.

In 2015, the Malaysian Ministry of Health documented those 1,541 parents declined to vaccinate their children against measles (Rumetta et al., 2020). Subsequently, in 2016, the number of Malaysian parents refusing vaccination for their children surged, as indicated by the 2016 National Health and Morbidity Survey. From 637 in 2013 to 1,603 in 2016, this shows a significant increase in parents of children under the age of two choosing to not vaccinate their children (Albeny, 2018). In Selangor alone, the number of children refusing vaccination increased from 637 in 2013 to 1541 in 2016.

In Pahang, a consistent trend emerged. Each year witnessed a rise in the number of parents declining vaccination for their children. As reported by Hidir (2017), there were 84 cases in 2014, 126 in 2015, and 178 in 2016. Furthermore, in March 2017, Datuk Seri Dr. Hilmi Yahaya, a former deputy health minister, disclosed in Parliament that there were approximately 1,600 instances of children vaccination refusal, compared to 1,500 in March 2015. According to figures reported, Kedah, Pahang, Selangor, Perak, Kelantan, Terengganu and Penang have the highest number of refusals (Farhana, 2017). These statistics indicate a growing trend of parental refusal to vaccinate their children in Malaysia. It's probable that the actual figures are higher, as these statistics don't encompass data from private clinics and hospitals.

With an increasing number of parents opting against vaccinating their children, this prevailing stance has heightened the susceptibility to infection from vaccine-preventable diseases, disrupted herd immunity, and eroded public trust in the capability of health systems to safeguard individuals (Lam & Lep, 2018). Measles, polio, pertussis, diphtheria, tetanus, and tuberculosis are vaccine-preventable diseases that can be prevented if children are fully immunised. Vaccination decisions are important and involve parents, as vaccination is a decision that is subject to social pressure and influences the child's wellbeing. Because of their strong involvement, parents may underestimate the known negative effects of the vaccine. Therefore, parents focus more on the potential effects of vaccination decisions, which leads to a stronger bias as a result.

Parental consent for their children's routine vaccinations is critical to maintaining children's health, as high vaccination coverage reduces the number of vaccine-preventable diseases. Children are more susceptible to infectious diseases than adults, and refusing vaccinations puts them at risk of contracting vaccine-preventable diseases because of their young age. It is the parents' fault if the children were harmed due to inadequate vaccination. Regardless of their socio-economic situation, every child has the right to be vaccinated because diseases know no borders. While certain children may be unable to receive vaccinations for medical reasons, and availability may be limited in certain regions, an increasing number of children remain unvaccinated or receive vaccinations belatedly due to deliberate choices made by their parents. Vaccine refusal entails the direct rejection or postponement of vaccination despite the accessibility of vaccination services (Succi, 2018).

Many attempts have been made to overcome the fear of vaccination, but most have failed (Dubé et al., 2018; Pluviano et al., 2017). Therefore, the factors relating to parents' vaccination decisions need to be discovered and analysed. Furthermore, knowledge and attitudes are essential factors for the acceptance of vaccinations in the future. Awadh et al. (2014), mentioned that the main reasons for incomplete or non-vaccination were problems related to vaccination services as well as parents' knowledge and attitudes. Regrettably, when parents postpone or decline vaccinations, it elevates the likelihood of vaccine-preventable diseases affecting both individual children and the wider community (Terzi et al., 2021). The actions of these parents have directly contributed to the rise in cases of vaccine-preventable diseases.

In 2015, the incidence rates of vaccine-preventable diseases were recorded as follows: 12.65 cases per 100,000 for hepatitis B, 4.32 cases for measles, 3.08 cases for pertussis, and 0.01 cases for diphtheria (Abidin et al., 2017). Adding to the concern, a sporadic case of diphtheria emerged in Langkawi, Kedah, in November 2015, resulting in the tragic death of an eight-year-old boy who had not received adequate immunisation. In 2015, there were also 28 cases of diphtheria and five deaths, suggesting that the incidence of vaccine-preventable infections is increasing (Hisham, 2019). An anti-vaccination movement that flared up again in 2016 resulted in five deaths and hundreds of confirmed diphtheria infections. During that same year, there were 18 newly reported cases of diphtheria, resulting in two fatalities, occurring in the states of Malacca and Kedah (Azizi et al., 2017).

In December 2019, a three-month-old boy from Tuaran was diagnosed with polio. Although the WHO declared Malaysia polio-free in 2000, this was the first occurrence of the disease in 27 years (Iskandar, 2019). Worst of all, the incidence of preventable children’s diseases in Malaysia skyrocketed after the pandemic in 2022: instances of whooping cough by 818%, diphtheria by 80% and measles by 63% (Morhan, 2023).

This shows that parents' intention to have their children vaccinated comes at a cost. If they choose not to vaccinate their children, they could die from a disease that could have been prevented by a vaccination. Furthermore, the parents would be to blame if the children were disabled due to a lack of vaccination (Azreena et al., 2016).

According to research conducted by Azizi et al. (2017), parents exhibiting hesitancy towards vaccinating their children often fall into the category of Young Urban Professionals, commonly known as Yuppies. This study indicates that younger parents, including those identified as Yuppies, harbor uncertainties regarding the safety and effectiveness of vaccinations. Similarly, Tang et al. (2023) and Montalti et al. (2021) found a trend of young parents showing higher levels of vaccine hesitancy in their children. Furthermore, Facciolà et al. (2019) propose that parents possessing a higher educational attainment are inclined to decline all vaccinations for their children compared to parents with lower educational levels. Taken together, these findings indicate that parents of elevated social standing tend to exhibit greater hesitancy towards vaccinating their children.

1.3 Problem Statement

A country's progress in reducing the infant mortality rate is measured by its children vaccination coverage. Most countries in the world are striving to achieve the standard of the UN Sustainable Development Goals (SDG), particularly in health and well being (SDG3). It is explicitly linked to vaccinating newborns and children and aims to eliminate preventable diseases and epidemics through vaccination. Vaccination also contributes to achieving 14 of the 17 SDGs, such as the eradication of poverty, hunger, and equality (Decouttere et al., 2021). Therefore, vaccination is recognised as a crucial factor towards achieving the UN SDGs. Children vaccination is vital because it helps prevent deadly diseases, such as polio, diphtheria, whooping cough, measles, and tuberculosis (Wong & Lee, 2021). When someone is immunised, it helps others in the community, especially those who are vulnerable to these diseases.

However, the goal of achieving the ninety-five percent vaccination rate required to fully protect communities from vaccine-preventable diseases and epidemics is still a long way off (UNICEF, 2021). According to Dubé et al. (2021), the World Health Organization identified vaccine hesitancy as one of the top ten global health challenges in 2019. Despite vaccination being widely acknowledged as one of the most effective preventive measures in public health, an increasing number of parents view it as unsafe and unnecessary (Albany et al., 2018). The World Health Organization reported that in

2017, approximately 19.9 million young children worldwide did not receive routine vaccinations (UNICEF, 2020). By 2020, this figure rose to 23 million children, marking the highest number since 2009, which is approximately 3.7 million more than in 2019 (UNICEF, 2021).

In Malaysia, as per the Ministry of Health, there has been a consistent rise in the number of parents opting not to vaccinate their children (Hamid, 2019). In 2017, there were around 1,600 cases of children vaccination refusal, with Pahang, Kelantan and Terengganu among the states with the highest number of vaccination refusals (Farhana, 2017). Recently, since March 2020, the measles, mumps and rubella (MMR) vaccination coverage has dropped by 60% to 70%. From March to May 2020, there was a similar drop in the varicella vaccination coverage, which fell by 41% to 83% (Wong & Lee, 2021). Worst of all, there was a remarkable increase in vaccine-preventable diseases among children in Malaysia after the pandemic in 2022: whooping cough cases increased by 818%, diphtheria by 80% and measles by 63% (Morhan, 2023). Farhana (2017) also pointed out that the actual figures are probably even higher because the statistics do not consider private clinics and hospitals.

Malaysian parents have been refusing to vaccinate their children since 2012. It started with a small movement on social media, and now the activity has spread to the whole of Malaysia (Faridah, 2017). The scenario has deteriorated to some extent due to the absence of a government mandate requiring parents to vaccinate their children. This policy permits parents to decline vaccination by completing a vaccination refusal form (Faridah, 2017). Consequently, this refusal has resulted in the resurgence of vaccine-preventable diseases, with Malaysia experiencing a reappearance of polio since 1992, despite the World Health Organization declaring Malaysia polio-free in 2000 (Iskandar, 2019).

Children who do not receive complete immunisation are at higher risk of developing chronic or recurrent infections in their later years, potentially resulting in inhibited growth, and jeopardising their adult health, cognitive functions, and economic productivity (Nandi & Shet, 2020). In addition, disease and mortality rates would increase in tandem (Rodrigues & Plotkin, 2020), putting a strain on human capital. Therefore,

children vaccination is crucial for governments to achieve their human capital goals (Limaye et al., 2020). Moreover, the objective of the population policy to attain a population of 70 million individuals by 2100 (Ibrahim et al., 2018) would face significant challenges if parents continue to decline vaccination for their children.

Parents who opt not to vaccinate their children encompass individuals classified as Young Urban Professionals, commonly known as Yuppies. Azizi et al. (2017) points out that younger parents, including Yuppies, are often uncertain about vaccinations. Similarly, Tang et al. (2023) observed a pattern among young parents showing greater reluctance to vaccinate their children. Conversely, Davis et al. (2020) discovered that parents holding at least a bachelor's degree exhibited a higher inclination to vaccinate their children. Taken together, these studies indicate that parents of elevated socioeconomic status are more inclined to ensure their children receive vaccinations.

Theoretically, previous researchers (Attwell et al., 2020; Olson et al., 2020; Musa et al., 2021) have suggested that perceived policy effectiveness may increase parents' willingness to have their children vaccinated. As such, governments can promote parental intentions through policy tools such as mandatory regulations, incentives, and awareness through advertising and education (Wan & Shen, 2013). Moreover, further research is required to explore how the perceived effectiveness of policies might influence the relationship between the identified variables (Xiao & Wong, 2020). As such, this study employs perceived policy effectiveness as a moderating factor to the dependent and independent variables. Nevertheless, despite having the intention to act in a particular manner, individuals do not always follow through with their intended behaviour (Fall et al., 2018). Lin & Lagoe (2013) asserted that the extent to which individuals heed the messages propagated by the media correlates with the likelihood of their behaviour being either reinforced or altered.

Therefore, this study also used social media influence as a moderating variable between parents' vaccination intention and actual vaccination behaviour. Numerous Malaysian parents reject vaccination for their children primarily due to misinformation propagated by unverified online and mass media outlets (Melovic et al., 2020; Anwar et al., 2023; Bezbaruah et al., 2024; Ahmed et al., 2018).

In recent times, research has delved into the vaccination intentions of typical parents (Yufika et al., 2020; Dubé et al., 2018; Ooi et al., 2019). Nevertheless, none of these studies have specifically examined the vaccination practices among children of young urban professionals (Yuppies). As young urban working parents, they are supposed to be role models for other parents. However, studies show that educated and urban parents are among the groups of people who refuse to have their children vaccinated (Barbieri & Couto, 2015; Ahmad et al., 2017; Facciolà et al., 2019). Hence, the present study seeks to address the existing research gap in children vaccination literature by exploring the vaccination intentions and behaviours of Yuppie parents concerning their children. Moreover, this study endeavours to examine the obstacles hindering Yuppie parents' intentions and actions regarding their children's vaccination, as well as the motivating factors driving them to pursue vaccination.

1.4 Research Questions

In pursuit of its objectives, the ongoing study seeks to address the following research questions (RQ);

1. What is the vaccination behaviour level observed among Yuppie parents?
2. Do perceived susceptibility, perceived severity, perceived barriers, attitude, subjective norms, and perceived behavioural control influence vaccination intention?
3. Does vaccination intention influence actual vaccination behaviour?
4. Does the perceived policy effectiveness moderate the association between perceived susceptibility, perceived severity, perceived barriers, attitude, subjective norms, perceived behavioural control, and vaccination intention?
5. Does social media influence moderate the connection between vaccination intention and actual vaccination behaviour?

1.5 Research Objectives

The study was conducted with the following research objectives (RO) in mind:

1. To analyse the level of vaccination behaviour among Yuppie parents.

2. To examine the relationship between perceived susceptibility, perceived severity, perceived barriers, attitude, subjective norms, perceived behavioural control, and vaccination intention.

3. To investigate the relationship between vaccination intention and actual vaccination behaviour.

4. To determine the moderating effect of Perceived Policy Effectiveness on the Relationship Between Perceived Susceptibility, Perceived Severity Perceived Barriers, Attitude, Subjective Norms, Perceived Behaviour Control, and Vaccination Intention.

5. To examine the moderating effects of social media influence on the impact of vaccination intention on vaccination behaviour.

1.6 Hypotheses of the Study

Hypothesis 1: Perceived susceptibility is positively related to vaccination intention

Hypothesis 2: Perceived severity is positively related to vaccination intention.

Hypothesis 3: Perceived Barriers is negatively related to vaccination intention.

Hypothesis 4: Attitude is positively related to vaccination intention.

Hypothesis 5: Subjective norms is positively related to vaccination intention.

Hypothesis 6: Perceived behavioural control is positively related to vaccination intention

Hypothesis 7: Vaccination intention is positively related to vaccination behavior

Hypothesis 8: The positive relationship between perceived susceptibility and vaccination intention will be stronger if the perceived policy effectiveness is higher.

Hypothesis 9: The positive relationship between perceived severity and vaccination intention will be stronger if the perceived policy effectiveness is higher.

Hypothesis 10: The negative relationship between perceived barriers and vaccination intention will be weakened if the perceived policy effectiveness is higher.

Hypothesis 11: The positive relationship between attitude and vaccination intention will be stronger if the perceived policy effectiveness is higher.

Hypothesis 12: The positive relationship between subjective norms and vaccination intention will be stronger if the perceived policy effectiveness is higher.

Hypothesis 13: The positive relationship between perceived behavioural control and vaccination intention will be stronger if the perceived policy effectiveness is higher.

Hypothesis 14: The positive relationship between vaccination intention and vaccination behaviour will be stronger if the social media influence is higher.

1.7 Conceptual Framework

The diagram below illustrates the conceptual framework of this study, which encompasses six exogenous variables: perceived susceptibility, perceived severity, perceived barriers, attitude, subjective norms, and perceived behavioural control. This study adapts the model from Theory of Planned Behaviour (Ajzen, 1991) and Health Belief Model (Rosenstock, 1966 & Rosenstock et al., 1988). Additionally, the study includes two endogenous variables: vaccination intention and vaccination behaviour Furthermore, it integrates two moderating variables, perceived policy effectiveness, and media influence. Figure 1.1 illustrates the comprehensive conceptual framework guiding this research endeavour.

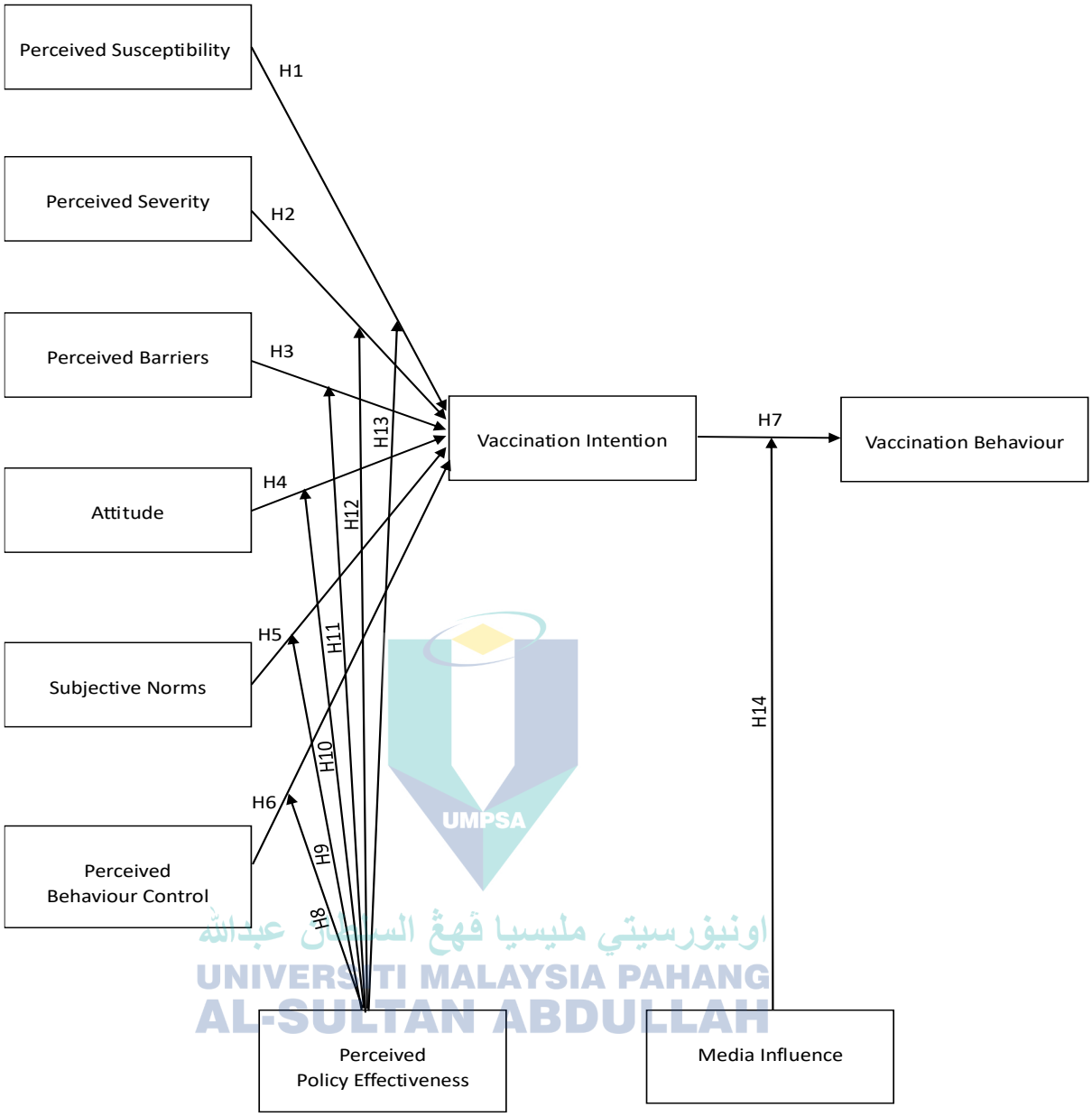

Figure 1.1 Conceptual Framework of the study

1.8 Scope and Delimitations

Vaccinating children stands out as one of the most effective healthcare measures to diminish illness and mortality. Given that diseases recognise no boundaries, every child deserves access to vaccination, regardless of their socio-economic background. The responsibility of deciding whether children should be vaccinated rests with parents, who play a pivotal role in safeguarding their children's future health and well-being. It is expected that parents prioritise their children's health and well-being. Hence, this study

focuses on parents, particularly those classified as Yuppie parents. As defined earlier, Yuppies refer to young, affluent parents residing in urban areas (Short, 1989).

In Malaysia, the Ministry of Youth define the age bracket of Youth as between 15 to 40 years old. They have at the very least, a tertier level of education (Hidayana, 2019) and work in professional or managerial positions (Andler, 1984). Based on the above statement, Yuppies can also be considered as influencers. Nowadays, influencers have a much stronger influence on individuals. The reason for this is that people usually trust the people they admire and follow-on social media and want to follow in their footsteps (Mishra & Ashfaq, 2023). Furthermore, Zak & Hasprova (2020) explained that influencers are those people who can influence other people's attitudes due to their knowledge, skills, and character. Therefore, it is assumed that Yuppie parents can influence other parents in their decision to have their children vaccinated. More details about Yuppies will be discussed in the next chapter.

Parental efforts to ensure their children receive vaccinations cover a series of vaccines provided from infancy up to the age of 15. In accordance with the Ministry of Health's vaccination schedule, children should receive eight essential vaccinations by the time they reach 24 months of age. As per the National Immunisation Schedule, infants should complete the following vaccines by the age of 24 months: one dose each of Bacillus Calmette-Guerin (BCG) and Hepatitis B (HepB) at birth, followed by two doses of HepB vaccine at 1 and 6 months old. Subsequently, at one year of age, they should receive three doses of diphtheria, tetanus, acellular pertussis with Haemophilus influenzae type b (Hib), and inactivated poliovirus (IPV). At the age of 7, children should receive the MR vaccine (measles and rubella) and the DT booster dose (diphtheria and tetanus). Furthermore, the HPV vaccine for human papillomavirus is administered to girls aged 13, with the second dose given 6 months after the first. Finally, a tetanus booster is given to 15-year-olds. This indicates that children in Malaysia are vaccinated up to the age of 15. Consequently, this study concentrates on Yuppie parents with children ranging from newborns to 15 years old.

This study was carried out, emphasising the states located on the east coast of Malaysia, namely Pahang, Terengganu, and Kelantan. In 2017, there were around 1,600 cases of children vaccination refusal, with Pahang, Kelantan and Terengganu being among the states with the highest number of refusals (Farhana, 2017). In addition, the

East Coast states had the lowest registration rate for the national COVID-19 vaccination programme which rolled-out in March 2021 (Amzad, 2021).

Nevertheless, this study adopted a quantitative cross-sectional survey design, which was confined to the geographic regions of Pahang, Kelantan, and Terengganu on the east coast of Malaysia. Moreover, the study exclusively targeted Yuppie parents, with other parents outside the specified age range at the time of the interview being excluded. Consequently, the findings of this study are only applicable to Yuppie parents in the East Coast region, representing the study's sample pool.

1.9 Significance of the Study

The importance of this research can be segmented into three areas of impact, theoretical, empirical, and managerial. These will be elaborated on below:

1.9.1 Empirical Contribution

This research holds significance in augmenting the existing reservoir of empirical data and insights pertaining to vaccination. The current body of knowledge on vaccination in Malaysia serves as a vital resource for researchers and students to keep abreast of developments in this field. By leveraging the findings of this study, researchers and students can deepen their comprehension of the prevailing landscape in Malaysia. Furthermore, they can utilise the data to assess the repercussions of vaccination hesitancy. Given the scarcity of empirical data regarding parents' inclination towards vaccination in Malaysia, the outcomes of this study can also serve as a compass for future investigations. Additionally, the data can be a valuable resource for students, advocates, and individuals seeking to delve deeper into the realm of vaccination. In addition, the Ministry of Health can use the results to address the issue of vaccination refusal.

Moreover, this study incorporates perceived policy effectiveness as a moderating factor. It is anticipated that this moderating element will bolster the association between the independent and dependent variables. Additionally, social media influence is employed as a moderator between intention and behaviour in this study. Interventions aimed at this moderating factor could potentially elevate vaccination rates. Furthermore, this research bears significant implications for government officials tasked with crafting and executing tailored intervention initiatives to enhance children vaccination rates. Since

intention does not automatically lead to 100% vaccination rates, understanding the elements that significantly influence the relationship between intention and behaviour would significantly increase future vaccination rates. Drawing from its empirical contribution, it is anticipated that the findings of this study will offer valuable insights for prospective researchers embarking on studies concerning vaccination. The originality inherent in this research could potentially catalyse the emergence of a fresh body of knowledge and enhance the existing pool of literature, thereby offering advantages to scholars in the realm of vaccination behaviour.

1.9.2 Theoretical Contribution

In this study, the integration of the Theory of Planned Behaviour and the Health Belief Model has resulted in the formation of a novel framework where all independent variables exert influence on the dependent variable. The outcomes of this research could offer policymakers the ability to forecast the vaccination behaviour of Yuppies. In addition, most previous studies used a single theory/model to predict vaccination intentions. Therefore, based on this combination of theories, the latest findings on vaccination intentions and behaviour in the Malaysian context could be extended. Additionally, the study's findings are projected to yield a fresh model that elucidates vaccination intention and behaviour within the Malaysian context.

Moreover, the study sought to explore the vaccination intentions of Yuppie parents regarding their children. At the time, there was a limited body of research on the vaccination intentions of Yuppie parents in Malaysia, potentially attributed to the dearth of academic literature on the topic. Hence, this study was considered crucial for augmenting the current understanding of vaccination and potentially enriching social science education, particularly in Malaysia. Students who have social science knowledge could have used the results to better understand parents' motivating factors and intentions in vaccinating their children. They can also compare Malaysia with other countries.

Interestingly, this study also looked at the discrepancy between vaccination intention and actual vaccination behaviour. There may have been wide gaps between intentions and actual behaviour (Fall et al., 2018). Therefore, recognising and addressing the concerns of the more insecure people who had lower vaccination intentions was crucial to maintain and continue the success of vaccination programmes. Furthermore,

knowing parents' vaccination intentions could have helped predict whether parents would continue to have their children vaccinated.

1.9.3 Practical Contribution

Due to its theoretical and empirical contribution, this study is essential for the formulation of guidance as a practical contribution. The findings of this study hold potential for dissemination to various agencies and stakeholders, including the Ministry of Health and relevant health departments. These results offer valuable insights for devising strategies to mitigate vaccination hesitancy in Malaysia. They can be leveraged by these entities to advocate for and inform governmental actions, particularly within the Ministry of Health, aimed at bolstering vaccination rates. Moreover, the outcomes can inform the Ministry's planning, policymaking, and decision-making processes regarding national health policies. Additionally, the empirical data and theoretical insights garnered from this study can contribute to enhancing vaccination coverage in Malaysia. As a result, multiple stakeholders stand to benefit, including the Malaysian government, researchers, educators, and students.

In addition, this study examines the intention of Yuppies to have their children vaccinated. Previous studies investigated the vaccination intentions of ordinary parents (Kline, 2018; Huber et al., 2020; Ohammah et al., 2020). Nonetheless, there is a scarcity of studies focusing on Yuppie parents and the influence of online media and perceived effectiveness of interventions. Consequently, this study endeavors to bridge this gap by conducting a targeted investigation into this emerging parent demographic: the Yuppies. Furthermore, understanding parents' vaccination intentions and actual behaviours could provide information to the Ministry of Health, Malaysian Communications and Multimedia Commission (MCMC) and other relevant agencies to formulate sound public policies on vaccination. The results can also be used for the Ministry's planning, policy, and decision-making in relation to the national health policy.

In addition, this study also provides benefits for parents. For example, by knowing the factors that affect vaccination intentions, parents can make informed decisions about their children's health. They can evaluate the benefits and risks based on evidence-based information. In addition, when parents know the factors that influence their vaccination intentions, they can promote vaccination in their communities. By promoting the

importance of vaccination and debunking myths or misconceptions, they can contribute to public health efforts. Finally, the knowledge gained from this study can help parents assess and mitigate the risks associated with vaccine-preventable diseases. This understanding can lead to proactive measures to protect the health of their children.

1.10 Operational Definition

The operational concept is a concept that serves as a guide towards a certain goal and to avoid possible misunderstandings. Syafi (2018) explains that operational concepts are derived from related theoretical concepts to ensure that the variables in a research work are practically and empirically operated. It should be put into specific words so that it is easy to measure.

1.10.1 Vaccine

A vaccine serves as a stimulus for the immune system, encouraging it to develop immunity against a particular disease, shielding the individual from its effects (Zepp, 2016). The mechanism behind vaccines involves the exposure of an individual to fragments or the entirety of a pathogen, prompting the immune system to spring into action. Various vaccine formulations are available to guard against specific diseases, each carrying distinct advantages and drawbacks (Vetter et al., 2018).

1.10.2 Vaccination

Vaccination is the administration of a vaccine to a person (MacDonald et al., 2019). Vaccines can be administered orally or by injection (Jones et al., 2019). In simpler terms, vaccination is the administration of a vaccine. Vaccination stands as a straightforward, secure, and efficient method to safeguard individuals from dangerous diseases prior to their onset. As outlined by Vetter et al. (2018), the objective of vaccination is to provoke a defensive immune reaction against a specific pathogen, consequently diminishing the likelihood of contracting the disease and mitigating potential complications stemming from it.

1.10.3 Immunisation

Upon receiving a vaccine, an individual's body initiates an immune reaction akin to what would transpire in response to real disease exposure. By introducing components of the pathogen into the body, e.g. in an attenuated or inactive form, the immune system is primed to recognise and remember these components. Should the person come into contact with the disease naturally in the future, their immune system is already familiar with it and can fight the infection more quickly and effectively before it can do any damage.

Immunisation is therefore the process by which people acquire protection against a disease. The main difference between vaccination and immunisation lies in their function. A vaccine is given to a person to immunise them against a specific disease. For example, before an infant is immunised against polio, he or she is not immune to the disease and is therefore at an increased risk of infection. Vaccination therefore helps to develop resistance or immunity to a particular disease (World Health Organization, 2019).

1.10.4 Vaccine Refusal

Vaccine refusal is characterised by the rejection or postponement of vaccination, even when vaccination services are accessible (Gowda & Dempsey, 2013). It can also manifest as a hesitancy to accept or decline vaccination despite the presence of vaccination services (Betsch et al., 2015).

1.10.5 Vaccine-Preventable Disease (VPD)

VPD denotes illnesses that are preventable through vaccination. Within Malaysia, the National Immunisation Program (NIP) identifies 12 such preventable diseases, including diphtheria, Haemophilus influenzae type B, hepatitis B, human papillomavirus, Japanese encephalitis, measles, mumps, pertussis (whooping cough), poliomyelitis, rubella, tetanus, and tuberculosis (Wong et al., 2020).

1.10.6 Yuppies

Young urban professionals (yuppies) can be defined as people who fulfil several specific criteria. In this study, yuppies are characterised by respondents aged 15 to 40 years, in line with Malaysia's National Youth Development Policy 1997, which defines young people in this age range.

Furthermore, according to Short (1989), yuppies are identified as people who live in cities, a view that is also supported by Hidayana et al. (2019) who describe yuppies as affluent urban dwellers. Furthermore, Andler (1984) states that yuppies usually hold a professional or managerial position.

In terms of education, Hidayana et al. (2019) state that yuppies are young adults with higher educational qualifications. Accordingly, yuppies are defined in this study as people who have at least a tertiary education, e.g. STPM, undergraduate or postgraduate.

Finally, Yuppies often come from affluent backgrounds. The Malaysian government categorises households into three income brackets: T20 (Top 20 per cent), M40 (Middle 40 per cent) and B40 (Bottom 40 per cent), divided according to household income (Department of Statistics Malaysia, 2021). Typically, yuppie parents fall under the T20 classification, i.e. households with an average monthly income of more than RM10,971.

Therefore, yuppies in this study are educated young parents (aged 15 to 40) who live in urban areas, work in professional or managerial positions, and have an income of more than RM10,971. The detailed criteria that define yuppies are explained in the following chapter.

1.10.7 Children Vaccination

Parents' inclination towards vaccinating their children is typically focused on children up to the age of 15, aligning with the Ministry of Health's vaccination regimen, which mandates 13 essential vaccinations by this age. As per the National Vaccination Schedule, infants should complete their immunisation schedule by 24 months of age. This includes receiving a single dose each of Bacillus Calmette-Guerin (BCG) and Hepatitis B (HepB) at birth, followed by two additional doses of HepB vaccine at 1 and 6 months of age. Furthermore, they should receive three doses of diphtheria,tetanus, and acellular

pertussis vaccines, combined with Haemophilus influenzae type b (Hib) and inactivated poliovirus vaccines (IPV) at 1 and 6 months of age (DTaP-Hib) (Ministry of Health, 2020).

1.10.8 Perceived Susceptibility

Perceived susceptibility refers to the belief that it is likely to contract a disease and indicates an increased awareness of risk (Zampetakis & Melas, 2021). In this study, perceived susceptibility refers specifically to how parents assess the likelihood of their child contracting a particular disease if they are not vaccinated.

1.10.9 Perceived Severity

Perceived severity refers to the assessment of the severity of a disease and its potential impact on a person (Cheney & John, 2013). In this study, perceived severity is about how parents perceive the potential negative consequences if their children become ill, e.g. the severity of symptoms that could occur if their child is infected, and whether these symptoms are considered severe.

1.10.10 Perceived Barriers

Perceived barriers refer to the beliefs regarding the effectiveness and expected costs associated with certain interventions (Coe et al., 2021). In this study, perceived barriers refer to the perceived obstacles or difficulties that might influence parents' willingness to have their children vaccinated.

1.10.11 Attitude

Attitude refers to a person's cognitive and affective evaluation of a particular behaviour, which determines whether it is viewed positively or negatively (Wolff, 2021). In the context of this study, attitude refers to parents' overall judgement of vaccination, which may include their views on the safety or efficacy of the vaccine.

1.10.12 Subjective Norms

Subjective norms refer to the perceived influence of social pressure that compels an individual to behave in a certain way (Wolff, 2021). In the context of children's

vaccination, subjective norms refer to the perceived social expectations, pressures or influences that parents or carers experience from their social circles, such as family, friends or community members, regarding the vaccination of their children.

1.10.13 Perceived Behavioral Control

Perceived behavioural control encompasses a person's overall perception of their ability to influence and control factors that either facilitate or hinder the performance of a particular behaviour (Li et al., 2022). Simply put, it refers to the perceived ease or difficulty of performing certain behaviours. In relation to child vaccination, perceived behavioural control refers to parents' confidence to effectively manage various aspects of their child's vaccination process.

1.10.14 Perceived Policy Effectiveness

Perceived policy effectiveness (PPE) entails an individual's assessment of the positive or negative impacts of incentive measures (Fu et al., 2020). In this study, PPE will be evaluated in the context of how parents perceive the effectiveness of policies related to children's vaccination.

1.11 Research Organization

This thesis comprises five chapters. Chapter 1 serves as an introduction to the topic, exploring parents' intentions and behaviours regarding their children's vaccination. It delineates the study's scope, encompassing the problem statement, research objectives, research inquiries, and significance. Additionally, it provides definitions pertinent to the study.

Chapter 2 delves into the literature on parental vaccination intentions, encompassing a review of both international and local studies. The chapter also delves into the underlying theories and expounds upon all study variables. Furthermore, it elucidates the study's hypotheses and proposes a conceptual framework.

Chapter 3 elucidates the research methodology, encompassing the research design, study site, instruments, data collection, and data analysis procedures. It also

details the data preparation process and rationalises the selection of the software employed for analysis.

Chapter 4 plays a central role in revealing and breaking down the insights gained from the research. As the central section within a thesis, it provides a comprehensive examination and understanding of the data collected. Firstly, the chapter begins with a detailed account of the data collected. The results are then meticulously analysed and interpreted in the context of the research questions.

Chapter 5 is primarily concerned with discussing the findings that emerged during the research process. This chapter aims to comprehensively analyse and interpret the findings and provide insights into their practical implications and significance for management. Furthermore, the concluding chapter will tackle the encountered limitations of the study and offer insightful recommendations for future research endeavors. It will particularly elucidate the practical and managerial implications stemming from the study's findings. Moreover, it will critically assess the identified study limitations and propose thoughtful suggestions for future research trajectories.

1.12 Conclusion

The initial segment of this chapter introduced the investigation concerning parents' vaccination intentions regarding their children. Additionally, it covered the study's background, problem delineation, research aims, research inquiries, study significance, study limitations, definitions, and thesis structure. Ultimately, the chapter concludes with a comprehensive summary.

The subsequent chapter offers an exhaustive exploration of literature pertinent to this thesis. It furnishes an intricate overview of extant research and elucidates the diverse theories and hypotheses underpinning the study. Subsequently, the ensuing chapter is dedicated to presenting the context, review of relevent field literature, theoretical framework, and hypotheses of the study.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter conducts a literature review focusing on parental intentions and behaviour regarding vaccination. It begins with the literature on vaccination. It also discusses the vaccination situation in Malaysia and other countries. This is necessary to examine the key aspects that influence parents' vaccination intention towards their children.

This chapter comprises of several sections. The initial section outlines the main components of the chapter, while the second section delves into the characterisation of Yuppies and their vaccination intentions. The third section examines the vaccination landscape in Malaysia, followed by the fourth section which elaborates on prior research concerning parents' intentions regarding their children's vaccination in various countries. Lastly, the fifth section explores parental vaccination refusal.

The sixth section looks at parents' knowledge about vaccinating their children. The seventh section deals with the groups of people and their intention to be vaccinated. The different groups are namely: educated parents, healthcare workers, teachers and the army. The seventh section then presents the vaccination policy, focusing on the perceived effectiveness of said policy. The eighth section explains how the influence of the media can affect vaccination behaviour.

In the ninth section, the theoretical framework of the study, comprising the Health Belief Model and the Theory of Planned Behaviour, is expounded upon. Following this, the tenth section delineates the study's conceptual framework. Subsequently, the eleventh section provides a more detailed explanation of the study's hypothesis construct. Lastly, the twelfth section concludes the chapter with closing remarks. This study endeavours to address the identified gap in this field by addressing the research questions posited in Chapter One.

2.2 Vaccination

The inception of the first vaccine dates back approximately 300 years, marking the onset of numerous advancements in human vaccination. A pivotal moment in the field occurred during the late 19th century with the inception of laboratory-developed vaccines. Subsequently, in the 20th century, the production of vaccines based on immunological markers became feasible (Bukhari et al., 2021). Vaccines function by prompting the immune system to generate a response that shields against a specific disease. Typically administered via injection, they can also be dispensed orally or as a nasal spray. By introducing an inactivated germ (bacteria or virus) into the body, vaccines train the immune system to combat a particular ailment. As these germs are inactivated, they cannot cause illness; instead, they spur the recipient's immune system to produce antibodies. When people encounter the germ, the immune system is prepared to fight it. In other words, vaccination is the process by which a body is immunised against a particular disease.

There are various methods of administering vaccines, including oral, intranasal, subcutaneous, nasal and intramuscular. The instructions for administration can usually be found on the label of the vaccine (Clark & Pippin, 2023).

Traditional vaccines encompass attenuated, inactivated, and replication-defective pathogens, along with subunit and conjugate vaccines. Live attenuated vaccines, for instance, deliver weakened versions of pathogens. Typically, the attenuation process entails subjecting pathogens to numerous cultures or animal embryos until they lose their capacity to replicate efficiently in human cells. Clinically sanctioned live attenuated vaccines include those targeting smallpox, measles-mumps-rubella (MMR), and yellow fever (Gebre et al., 2021).

In addition to conventional intramuscular administration, alternative methods are also used for various vaccines. The rotavirus vaccine, for example, is administered orally, while live attenuated influenza vaccines are administered via an intranasal spray. In addition, certain vaccines such as MMR, MMRV, varicella and meningococcal vaccines are administered subcutaneously. For intramuscular injections, an injection needle with a gage of 22 to 25 is recommended. The length and location of the injection are determined based on the patient's age and weight (Clark & Pippin, 2023).

Oral vaccines are very attractive due to their ability to elicit robust immune responses in the gut, their minimal invasiveness and their suitability for mass administration. Usually, oral vaccines are consumed and must withstand the acidic conditions of the stomach to access the gut-associated lymphoid tissue (GALT), primarily situated in the lower sections of the small intestine. However, an alternative approach involves employing the tissues of the oral mucosa directly for antigen delivery. Immunisation via the oral mucosa, particularly targeting the buccal (inner cheek) and sublingual (under the tongue) regions, is regarded as a practical, safe, and non-invasive method of mucosal vaccination (Jones et al., 2019).

A vaccine is designed to boost a person's innate immune response against invading viruses by making them recognise antigens, i.e. specific molecules on the surface of pathogens. When the immune system encounters these antigens, it ideally produces specific immune cells that either fight the pathogen directly or produce antibodies and specific proteins. These antibodies bind to the antigens and attract immune cells that envelops and eliminates the pathogen. An unbalanced immune response can lead to abnormalities either in the antibodies, the immune cells or both (Peeples, 2020).

Vaccination holds significance as it triggers the immune system, fostering antibody production and enhancing the body's ability to detect and combat diseases through protective cells. Strengthening the immune system aids in disease detection and control. The recent COVID-19 pandemic serves as a prime example highlighting the crucial role of vaccination. Scientists around the world were trying to develop a vaccine against Covid-19, while the people around the world were also being urged to get vaccinated as soon as possible to end the pandemic. Without a vaccine to protect the population, the pandemic is a warning sign of how quickly an infection can spread. Therefore, vaccines are a life-saving infectious disease control and prevention strategy that is safe and effective for all sections of the population, including children.

Immunising children stands as one of the most triumphant public health interventions in diminishing illness and fatalities. Disease transcends boundaries, underscoring every child's entitlement to vaccination irrespective of socioeconomic status. It is the prerogative of parents to determine whether their children receive vaccination, thereby wielding a pivotal influence over their children's future health outcomes. Parents are expected to take care of their children's health and wellbeing.

Vaccines can therefore be seen as a key factor in protecting children from many deadly diseases. The global measles mortality rate has fallen by 84% between 2000 and 2016 since newborns have been fully vaccinated. (Ahmed, 2018). In the recent Covid-19 pandemic, children under the age of 24 months cannot receive the Covid-19 vaccines. Therefore, they must receive a full routine vaccination.

Children must maintain current vaccines to protect themselves from dangerous infections. Thus when a child interacts with other children, they will be protected against various other diseases. The COVID-19 outbreak is a reminder of how important vaccinations are. It shows that parents should have their children vaccinated if a vaccine is available for a disease. Without vaccination, diseases can spread quickly and with devastating consequences. Measles and other infections, for example, are a constant threat. Parents should consider themselves lucky to have the necessary vaccination protection against diseases.

For decades, vaccination programmes to eradicate deadly infectious diseases has ensured that children are vaccinated. Science and research in the field of immunisation are among the most significant developments of the last two centuries (Montero et al., 2024). Initiated in 1974 by the World Health Organization (WHO), the Expanded Programme on Immunisation (EPI) serves as a pivotal public health initiative aimed at bolstering neonatal survival and establishing a framework for subsequent health services. This program has markedly diminished infant mortality rates attributable to the six primary vaccine-preventable diseases across numerous nations. Integrated within maternal and child health initiatives, the EPI underscores the WHO's endorsement of cost-free children vaccination within maternal and child health programs (McAbee et al., 2021). This complimentary service is supported by both urban and rural governmental bodies.

To underscore how important children's lives are, one of the global metrics used to assess a country's progress in reducing child mortality rates is children vaccination coverage (Moyer et al., 2013). In addition to the protection provided by vaccines, high vaccination rates lead to herd immunity (Plans-Rubió., 2021). The World Health Organization recommends that 90% of newborns receive a series of vaccinations against diphtheria, pertussis, tetanus and polio to ensure herd immunity, and that the 90% are vaccinated against mumps, measles and rubella (Plans-Rubió., 2021). Vaccination will

also significantly reduce the mortality rate. This rate has been shown to reduce virus-related mortality by half.

Vaccinations play a crucial role in reducing the significant healthcare costs caused by disease. People who are not vaccinated and fall ill not only suffer from reduced labour productivity, but also contribute to rapidly rising costs, a trend underscored in population-based health research (Blanchet Zumofen et al, 2023). Additionally, the under-five mortality rate has witnessed a substantial decline, plummeting from 93 per 1000 live births in 1960 to a mere 7 per 1000 live births by 2015 (Vakili et al., 2015). However, the prevalence of children globally lacking complete vaccination coverage remains notably high.

According to the World Health Organization (WHO), an estimated 19.9 million infants worldwide did not receive routine vaccinations in 2017 (Perappadan, 2018). Moreover, as per a UNICEF report, approximately 182 million children missed their initial dose of the measles vaccine between 2010 and 2018, translating to an average of 20.3 million children annually (UNICEF, 2021c). Furthermore, global vaccination coverage saw a decline from 86% in 2019 to 83% in 2020. Roughly 23 million children under the age of one remain devoid of routine vaccinations, marking the highest count since 2009, with an additional 3.4 million children projected to remain unvaccinated by 2020 (World Health Organization (WHO), 2021).

In response to this challenge, the World Health Organization (WHO) initiated the Expanded Programme on Immunisation (EPI) in 1974, aiming to ensure equitable vaccine access for all vulnerable populations (World Health Organization, 2021b). Countries grappling with high incidences of poliomyelitis, diphtheria, pertussis, tetanus, measles, and tuberculosis are urged to promptly implement tailored vaccination initiatives to combat these diseases.

However, devising a vaccination regimen for children is contingent upon country-specific factors, with no universal approach. The paramount consideration is ensuring vaccination before children are susceptible to disease contraction. Thus, safeguarding children from vaccine-preventable illnesses emerges as an intrinsic right. The Covid-19 pandemic serves as a stark reminder of the catastrophic consequences of disease proliferation, particularly in the absence of vaccination.

2.3 Vaccination In Malaysia

Vaccination became an international issue for the first time 50 years ago. During the 1950s, Malaysia initiated its National Immunisation Programme with the aim of safeguarding Malaysian children against vaccine-preventable illnesses. The program's objectives included curtailing endemic instances and minimising the morbidity and mortality associated with such diseases (Ahmed et al., 2018). Since then, the vaccination programme has been integrated into maternal and child health programmes. Later, in 1982, Malaysia introduced the EPI (Expanded Programme on Immunisation) as a nationwide programme.

In 1982, the measles vaccine was introduced to protect infants, followed by the rubella and hepatitis B vaccines in 1986 and 1989. In 2002, this programme was expanded to include a combination of measles, mumps and rubella vaccine (MMR) and the Haemophilus influenzae type B vaccine (Albany et al., 2018). Furthermore, vaccinations against diphtheria, pertussis and tetanus (DPT), Bacillus Calmette Guerin (BCG) and polio are among the vaccines also given to children in this country. Despite the EPI's recommendation that all nations should vaccinate children against six diseases, Malaysia's National Immunisation Programme (NIP) has expanded to 12 primary diseases that pose a high-risk threat towards children (Albany et al., 2018). In addition, in 2006, the Malaysian Ministry of Health (MOH) began a four-year preparatory process to introduce a human papillomavirus (HPV) vaccination programme. Interagency and intersectoral partnerships were established for the Malaysian HPV school vaccination programme. In 2010, it was approved for nationwide implementation for 13-year-old girls or students in the first year of secondary school (Azizi et al., 2017).

In addition, the Ministry of Health has budgeted RM60 million for the National Vaccination Programme in 2020 to administer the pneumococcal vaccine to children free of charge. The RM30.6 billion allocated to the Ministry of Health in the 2020 budget improved healthcare services for the general population, especially the rural poor, the urban indigent and indigenous peoples (Iskandar, 2019). In 2021, the Malaysian National Immunisation Programme (NIP) was developed to protect against 13 major diseases that pose a high-risk threat towards children. These include diphtheria, human papillomavirus,

Japanese encephalitis, measles, mumps, whooping cough, poliomyelitis, rubella, tetanus and tuberculosis.

In summary, free vaccines for children are available in all government clinics run by the Malaysian Ministry of Health (Lim et al., 2017). Malaysia has a well-developed primary healthcare system (Ahmed et al., 2018). In terms of vaccination schedules, these are created to balance the durability of protection and effectiveness in children and to ensure that parents adhere to the vaccination schedule (Betti et al., 2021). Ensuring complete protection by considering timeliness is critical to the success of a vaccination programme in preventing vaccine-preventable diseases and providing children with complete immunity (Hargreaves et al, 2020). Numerous studies show that children who are not vaccinated on time appear to be more susceptible to diseases (Zhang et al., 2017). Consequently, the Ministry of Health has released the vaccination timetable to aid healthcare professionals. This guideline, titled "Child Immunisation," serves as a clinical reference for administering vaccines.

Per the national vaccination timetable, children up to the age of 15 should receive the following vaccines: one dose each of Bacillus Calmette-Guerin (BCG) and Hepatitis B vaccine (HepB) at birth (or within 24 hours), followed by two additional doses of HepB vaccine at 1 and 6 months old. Additionally, three doses of the diptheria, tetanus, and acellular pertussis vaccine with Haemophilus influenzae type b (Hib) and inactivated poliovirus (IPV) should be administered at 1 and 6 months old (DTaP-Hib) (Ahmad et al., 2017). In addition, the vaccines are given to the school health service administrators and at the age of 7 years, children receive their MR and DT vaccines. 13 year old students receive their HPV vaccine and 15 year old receive their tetanus vaccines respectively through this same mechanism (Faridah, 2017). Figure 2.1 below shows the national vaccination schedule from 2021.

Figure 2.1 National Vaccination

Children's vaccination milestones are documented in vaccination cards or child health records kept by hospitals or private clinics. Complete vaccination coverage is defined as receipt of all prescribed primary vaccine doses and proof of a vaccination card at 12 months of age (Lim et al., 2017). If the ID card is lost or stolen, parents of affected children can apply for a replacement from the relevant facilities or clinics. Records of vaccinations can be found in the logbook or system of the hospital where the vaccinations were administered. As per the World Health Organization, Malaysia maintains a vaccination coverage rate of no less than 95% across all vaccination series (Faridah, 2017). Both governmental and private healthcare facilities utilise the Health Management Information System for monitoring vaccination coverage. Subsequently, this data undergoes examination and analysis at the Health Informatics Centre (Lim et al., 2017).

Despite the widely acknowledged effectiveness of vaccination in safeguarding public health, an escalating number of individuals perceive it as unsafe and ineffective (Albany et al., 2018). Data provided by Malaysia's Ministry of Health indicates a concerning trend: the count of Malaysian parents refusing vaccination for their children surged from 637 in 2013 to 1,603 in 2016 (Hamid, 2019). In 2015, the BCG vaccination coverage rate was 98.53%, the 3rd dose Hep B vaccination coverage rate was 99.27%, the 3rd dose DPT-Hib vaccination coverage rate was 99.04%, the 3rd dose polio vaccination coverage rate was 99.04% and the MMR vaccination coverage rate was 93.07% (Abidin, 2017).

Even though the Malaysian government claims that more than 90% of infants were vaccinated in 2016, the prevalence of vaccine-preventable diseases among Malaysian children is still found (Balbir Singh et al., 2019). Worst of all, the COVID-19 pandemic has severely disrupted the regular vaccination routines for children. Access to essential medical services, including antenatal care, newborn screening, and vaccinations, has been significantly impeded. Additionally, there's widespread fear among individuals about contracting the virus when visiting healthcare providers. In response to the situation, in February 2020, the Malaysian Ministry of Health acquired 2.5 million doses of polio vaccine. These were designated for distribution among more than 1 million children under the age of 13 in Sabah state, as part of a focused polio vaccination initiative launched following an outbreak of the disease. However, the national Movement Control Order (MCO) delayed this process (UNICEF Malaysia, 2020). As vaccination efforts have been postponed due to social isolation measures, the risk of an outbreak of the disease increases.

If children do not receive the necessary vaccinations, they will remain vulnerable to these vaccine-preventable diseases and there is a risk of the disease spreading. Therefore, continued routine vaccination of children and vaccinations for the most vulnerable groups is essential as part of necessary service delivery. It's crucial to prioritise keeping children's vaccination schedules current. While vaccination isn't mandated in Malaysia, it's vital to consider the broader implications for community health, safety, and the well-being of children.

2.4 Previous Studies on Children Vaccination

Fourteen studies between 2014 and 2020 on children vaccination among parents in North America, Europe, East Asia, South Africa and Malaysia were selected for this section. These exemplary regions were selected to examine the phenomenon of children vaccination intention that occurs almost around the globe. This section examines the issues related to parents' intentions and behaviours regarding vaccination of their children in these selected regions (but not limited to the issues discussed in this section).

Table 2.1 Previous Studies on Children vaccination in Selected Countries

Author	Country	Key issues	Major Findings
(Kline, 2018)	United States	Exposure to information about vaccination, vaccination choice made by the parent	There was no notable correlation found between parents' perceptions of disease susceptibility and their vaccination choices, nor between their vaccination decisions and exposure to anti-vaccine content online.
(Huber et al., 2020)	Hungary	Vaccination intention among parents	Families with fewer than three children residing in urban areas, those who have witnessed varicella complications, and parents with a university education demonstrated significantly higher vaccination rates.
(Sowers, 2017).	United States	IVs: prenatal vaccination education DVS: knowledge, attitude, beliefs, and intent to immunise their babies.	Expectant mothers who received prenatal immunisation education exhibited enhanced understanding of vaccination, along with increased perceptions of its benefits and their control over the immunisation process.
(Ohammah et al., 2020)	Nigeria	IVs: tribe, religion, socioeconomic status, and parental trust in government Dvs: vaccination status of children	Statistically significant relationships were observed between factors such as tribal affiliation, parental income, educational attainment, level of trust, and children's immunisation status.
(Yufika et al., 2020)	Indonesia	IVs: Sociodemographic characteristics, including age, gender, education, employment status, monthly average income, number of children, Dvs: parents' attitude towards vaccination	Despite holding diploma certificates, 152 parents (15.9%) expressed vaccine hesitancy, while being employed in the healthcare sector was significantly associated with a reduced tendency towards hesitancy regarding their children's vaccinations.
(Donadiki et al., 2014)	Athens, Greece	IVs: demographic variables and some health-related variables are considered independent variables. Dvs : non-HPV vaccination	The non-vaccination rate stood at 71.65%. Participants scoring high on measures related to perceived barriers, both general and vaccination-specific, as well as those perceiving minimal benefits from vaccination, were more inclined to report being unvaccinated.
(Nawaz et al., 2011)	United States	IVs: knowledge, awareness and acceptance Dvs: decision regarding the vaccination of their children against HPV	There was a notable disparity in South Asian parents' knowledge and awareness of HPV, which directly impacted their acceptance of HPV vaccination.
(Wallace & Wallace, 2015)	United States	IVs: guidance from governing agencies to vaccinate against influenza, vaccine mandate Dvs: influenza vaccine uptake	Almost all respondents, accounting for 99.5%, received the influenza vaccine. Among healthcare workers (HCWs), 81% believed that the benefits of the influenza vaccine outweighed the risks

Table 2.1 Continued

Author	Country	Key issues	Major Findings
(O'Flarity 2012)	United States	IVs: HPV Knowledge Perceived Susceptibility Perceived Severity Perceived Benefits Perceived Barriers Dvs: HPV & HPV Vaccine Awareness Basic	While 77.4% of respondents had heard of the HPV vaccine, there was no significant statistical distinction between genders regarding both HPV knowledge and attitudes towards the vaccine.
(Balbir Singh et al., 2019)	Ipoh	IVs: age, ethnicity, education level, employment status Dvs: Knowledge and attitude	A majority of mothers studied demonstrated good knowledge and attitude scores towards vaccination, yet religious misconceptions and concerns about autism were identified as the primary drivers of vaccine resistance in Malaysia.
(Fairuz Fadhilah Mohd Jalani, 2016)	Negeri Sembilan	IVs: knowledge, attitude, and practice towards human papillomavirus (HPV) infection, cervical cancer Dvs: HPV vaccination practice	Females exhibited significantly higher knowledge scores compared to males. Additionally, most respondents (86.6%) expressed intent to receive HPV vaccines, with willingness to vaccinate significantly associated with knowledge levels of cervical cancer.
(Aziz et al., 2018)	Sungai Petani, Kedah, Malaysia	IVs: parent's knowledge Dvs: practice towards children's vaccination	Based on respondents' education levels, a notably moderate positive correlation was identified (Φ= 0.359, p-value<0.001). Regarding vaccination practices, 51.8% of parents residing in urban areas demonstrated good practices, while this figure was 30.2% for those in rural areas. The number of children had a substantial impact on parental vaccination practices (p-value >0.001).
(Ahmad et al., 2017)	All 13 states and 2 Federal Territories in Malaysia	IVs; locality, sex, ethnicity, citizenship, household income, maternal profiles: age group, marital status, education level, and occupation; paternal profile: education level and occupation, healthcare providers during antenatal care, and belief on the vaccine.	Urban areas in Malaysia were more likely to have children with incomplete immunisation.
(Musa et al., 2019)	337 Parents in Kuala Lumpur		Factors contributing to vaccine hesitancy included negative past vaccination experiences, distrust of the pharmaceutical industry, and health system distrust. Further studies are warranted to explore temporal relationships influencing the under-immunisation of children, aiming to achieve WHO's recommended immunisation coverage.

2.5 Vaccination Refusal

Parental consent to routine children vaccination is critical to maintaining children's health, as high vaccination coverage reduces the number of vaccine-preventable diseases. Individuals who refuse to be vaccinated have been classified as a diverse population, ranging from complete compliance to complete refusal (Awadh et al., 2014). Refusal may stem from various factors, such as concerns regarding potential side effects of the vaccine (Terzi et al., 2021). Across the world, vaccine uptake has been consistently low since 2015, demonstrating the growing influence of the anti-vaccination movement. Between 2015 and 2018, for example, confidence in vaccines also declined in the Philippines and Indonesia (De Figueiredo et al., 2020). There was also a significant drop in confidence in Indonesia between 2015 and 2019 as Muslim authorities questioned vaccination coverage. They also raised the issue of a fatwa, claiming that Islam forbids the taking of vaccines. They claimed that the vaccines contained swine-based ingredients that Muslims must not tolerate (Yufika, 2020). In addition, the use of natural vaccine substitutes has lowered public faith in the vaccine.

The rise in vaccine-preventable diseases could be attributed to vaccine refusal, which stems from widespread scepticism regarding scientific evidence. Parents perceive vaccines as unsafe and unnecessary, leading to a decline in vaccination rates. This refusal increases the likelihood of contracting vaccine-preventable diseases, disrupts herd immunity, and erodes public confidence in healthcare systems' ability to safeguard individuals and communities (Lam & Lep, 2018). Vaccination decisions are of great importance and involve parents, as vaccination is a socially motivated decision that affects the wellbeing of a child. Due to their strong involvement, parents may not want to underestimate the known harmful effects of the vaccine. Consequently, parents focus more on the potential consequences of vaccination decisions, leading to increased outcome bias.

Despite certain children being unable to receive vaccinations due to medical contraindications and the limited availability of vaccines in certain regions, a growing number of children remain unvaccinated or receive vaccinations belatedly as a result of their parents' deliberate choices (Terzi et al., 2021). Vaccine refusal is defined as refusing or delaying vaccination despite the availability of vaccination services (Succi, 2018). Many attempts have been made to overcome vaccination refusal, but most have failed

(Dubé et al., 2018; Pluviano et al., 2017). Therefore, to overcome vaccination refusal, the determinants of parents' vaccination intentions need to be discovered and investigated. Today, parents are expected to be involved in the health care of their children, which entails a great responsibility. Refusal of vaccinations can be due to a variety of factors. In the case of the HPV vaccine, perceptions of minimal risk or insignificance of the vaccine's necessity, limited comprehension of its purpose, concerns regarding its safety and effectiveness, and apprehensions about potential adverse effects commonly underlie the refusal of HPV vaccination (Restivo et al., 2018; Dib et al., 2022; Garcia et al., 2023).

In Malaysia, there is growing concern over the rising trend of parents refusing to vaccinate their children. This refusal has led to an uptick in vaccine-preventable diseases like measles and diphtheria. Despite Malaysia boasting an adequate and effective vaccination program, the widespread dissemination of anti-vaccination sentiments has caused confusion among the public. For instance, in June 2016, five children succumbed to diphtheria, a preventable disease through vaccination (Fong, 2016). By 2022, there was a noticeable surge in cases of whooping cough, diphtheria, and measles. According to data released in July 2023 by the World Health Organization (WHO) and UNICEF regarding the global resurgence in children vaccinations, Malaysia experienced a significant rise in all three vaccine-preventable infectious diseases in 2022. Nationally, there was an alarming 818% surge in whooping cough cases, escalating from 11 cases in 2021 to 101 cases in 2022. Diphtheria also saw a notable increase, climbing from five cases in 2021 to nine cases in 2022, marking an 80% rise. Additionally, measles cases rose by 63%, reaching 209 cases in 2022 compared to 128 cases in 2021 (Pillai, 2023).

According to Faridah (2017), the refusal of parents to get vaccinated started in Malaysia in 2012. Beginning with a small movement that quickly spread through social media. The growth of anti-vaccination activities in Malaysia is now very evident. Worst of all, the Malaysian anti-vaccination movement employs diverse methods, including social media, public gatherings, publications, and collaborations with healthcare providers and registered non-governmental organizations (NGOs), to advance their agenda. Consequently, they are growing more organised, outspoken, and influential within Malaysia, presenting a rising challenge to the management of vaccine-preventable diseases (Nurul & Zulkipli, 2018). Consequently, the Malaysian government has initiated several initiatives to address these challenges.

The Ministry of Health has initiated the National Vaccination Campaign 2016-2020 to prevent vaccine refusal and strengthen the National Immunisation Programme. This campaign has three objectives: To dispel rumours and claims about the safety of vaccines, to gain community support for the National Vaccination Programme, to reject the anti-vaccination movement, and to engage and educate parents about vaccination (Faridah., 2017). However, as children vaccination is not mandatory in Malaysia, parents have the option to refuse vaccination for their children by filling out the vaccination refusal form. Therefore, when these parents were aware of the shortcomings in the Malaysian vaccination programmes, they simply refused to have their children vaccinated.

2.6 Young Urban Professional Parents (YUPPIES)

Marisa Piesman and Marilee Hartley, in their book "The Yuppie Handbook" (New York: Pocketbooks, 1984), define Yuppies as contemporary Young Urban Professionals (Savells, 1986). The term "Yuppie" refers to people of all races, genders, regions, religions, and socioeconomic backgrounds that share a common age group, mindset and geosocial proclivity. Yuppies are usually young, well educated, adaptable, and ambitious with an elitist attitude (Savells, 1986). Furthermore, Hidayana et al. (2019) defines Yuppies as young adults with a high level of education who work in a well-paid job and live in or near an urban area. The following discussion looks at the criteria that define Yuppies in the current study.

2.6.1 Lives in A City

According to Short (1989), Yuppies are defined as people who live in cities. This view is supported by Hidayana et al. (2019), who claimed that Yuppies are wealthy people who live in a city (Hidayana et al., 2019). Their workplaces are in the heart of the city. According to Ahmad et al. (2017), the Malaysian Department of Statistics characterises a city as a region with a population exceeding 10,000, where a minimum of 60% of residents aged 15 years and older are involved in non-agricultural pursuits.

The National Urbanisation Policy 2006-2015 (NUP 2006) was adopted in 2006 and applies specifically to urban areas in Peninsular Malaysia. It focuses on six central cores that outline the strategy to create safe, systematic, modern and attractive cities.

Subsequently, the Second National Urbanisation Policy 2016-2025 (NUP2) was developed to further implement the unfinished steps of the NUP 2006.

Cities are engines of economic growth, as 75% of gross domestic product (GDP) is generated in urban areas (National Urban Policy, 2016). The urban populace in Peninsular Malaysia is projected to rise from 18.98 million individuals (74.8%) in 2015 to 22.58 million individuals (83.3%) by 2025. To cope with the rapid urbanisation, Malaysia needs a more systematic, planned and efficient urban planning and management system. Challenges arising from rapid urbanisation include the cost of living and human capital development.

People who live in a city have easy access to restaurants, clinics, health food stores and job opportunities. People who grew up in sprawling suburbs are often amazed that they have everything close to their apartment or house. Urban areas offer a greater range of quality healthcare facilities and employment opportunities. Because of the convenience of living in cities, most clinics and hospitals are located in urban rather than rural areas. This means that people who live in cities can provide better healthcare options for their children.

City infrastructures helps its populations to save time on commuting to work, accessing entertainment and keeping in touch with friends and family. It also represents a society with a broader mindset. Suburbs are essentially places for children; they reflect people's willingness to live their lives for the sake of their children. Suburbs are places of comfort, convenience, and for raising the family unit of community. The gardens and greenary, lower density development, and the pursuit of better schools are essential to suburban living. If they have children, Yuppie households satisfy the desires of urban adults and the perceived needs of children (Short, 1989). Yuppies are a modern social community with opportunities for work and consumption, a product of the rise of non-manual, primarily administrative and technical occupations. Yuppies are also the highest-paid among their contemporaries, based primarily in control centres of multinational corporations, the expanding financial services market, manufacturing services, and the media industry (Short, 1989).

Research conducted in Nigeria (Ijarotimi et al., 2018) and Bangladesh (Sarker et al., 2019) indicates that parents residing in urban regions are more inclined to have their

children vaccinated in comparison to those in rural areas. This pattern can be ascribed to enhanced healthcare accessibility, robust transportation systems, higher literacy levels, improved wealth indicators, and superior healthcare amenities available in urban settings. Additionally, findings from a study by Aziz et al. (2018) suggest that parents in metropolitan areas exhibit more favourable vaccination practices than their rural counterparts. Moreover, Sarker (2019) proposed that overall children vaccination rates significantly surpass those in urban areas when juxtaposed with rural locales, primarily due to the abundance of high-quality healthcare facilities in urban settings. The presence of such healthcare establishments ensures improved access to vaccination services, thereby resulting in elevated vaccination rates among urban children.

2.6.2 Young Parents

According to Savells (1986), Yuppies are young people. In Malaysia, the National Youth Development Policy of 1997 defines youths as people within the age range of 15 to 40. However, in 2019, the Dewan Rakyat passed the Youth Organizations Act (Amendment) Bill 2019 (Act 668), which contains a provision that lowers the age limit for youths from 40 to 30 years. Despite the announcement, the implementation of this amendment by the Minister of Youth and Sports has not yet taken place as of August 21, 2021 (Astro Awani, August 21, 2021). Hence, within the framework of this investigation, Yuppies are delineated as individuals aged between 15 and 40 who are also parents.

In specific regions like Pahang, Terengganu, and Kelantan, Yuppies are characterised as individuals aged between 15 and 40 years old. Datuk Sri Mohd Johari Hussain, the Councilor for Youth, Sports, NGOs, and Human Resources in Pahang State, emphasised the demographic distinctions among Pahang, the federal government, and other states that necessitate careful consideration when setting the age threshold for youths. These disparities encompass leadership transition, succession planning, fundamental aspects of youth development, and the available mechanisms for young individuals within this age bracket. Consequently, the Pahang government has opted to retain the youth age range between 15 and 40 years old within the state (Hassan, 2019).

In Kelantan, the Kelantan Youth Council (Exco Belia Kelantan) did not agree with the proposal to lower the maximum age for youths from 40 to 30 years.

Consequently, the state of Kelantan will continue to apply the existing age limit for youths, which is 40 years old (Mohamad, 2019).

In relation to young parents and the vaccination of their children, the results of Azizi et al. (2017) show that younger parents tend to have less confidence in vaccination, especially in terms of safety and efficacy. This lack of confidence can be attributed to their limited experience with vaccinating children and their growing scepticism towards vaccination. Likewise, Yufika et al. (2020) discovered that new mothers exhibit three times more hesitancy compared to those with prior experience. As a result, younger parents, who have had limited exposure to vaccine-preventable illnesses like diphtheria and polio, tend to perceive a reduced risk of contracting such contagious diseases. In addition, Facciolà et al. (2019) found that the highest rates of vaccine hesitancy were observed among young parents, a finding confirmed by Tang et al. (2023), who found that young parents exhibit greater hesitancy to vaccinate.

2.6.3 High Education Level

As far as educated parents are concerned, Hidayana et al. (2019), claimed that Yuppies are young adults with higher education qualifications. In the 1990s, education became a global issue discussed at the International Conference on Population and Development in 1994 and the Millennium Summit in 2000. Parents' level of education has been linked to their knowledge of the vaccination process, and knowledge can lead to attitudes and beliefs about vaccination (Ansari et al., 2021). A review of previous literature clearly emphasises the importance of parents' decision to have their children vaccinated. Therefore, the level of parents' knowledge usually influences their decision to have their children vaccinated (Rasidic et al., 2017). A systematic study by Larson et al. (2014) claims that a higher level of education could promote or hinder vaccination. In this study, Yuppies are defined as parents who have attained at least a minimum level of tertiary education..

In Malaysia, children can start preschool at the age of four, although attendance at this level is not compulsory. Nonetheless, most children under the age of six attend preschools to prepare for entry into the formal school system. In addition, many state schools have integrated preschool classes into their educational programme. At the age of seven, pupils enter elementary school, which lasts for six years. Primary school

education builds on the basic skills acquired in pre-school and includes subjects that go beyond basic reading, writing and arithmetic. Students are introduced to additional subjects such as science, physical education, Islamic studies and moral education.

After completing elementary school, students attend secondary school, where they continue their primary education. This stage is segregated into lower secondary school (Forms 1-3) and upper secondary school (Forms 4 & 5). The Malaysian government offers 11 years of complimentary primary and secondary education. Primary education is obligatory for all Malaysian children, mandating enrolment in an elementary school for those aged seven to 12. Tertiary education encompasses all structured educational pursuits undertaken post-secondary schooling. This encompasses both public and private universities, colleges, technical training institutes, and vocational schools. Tertiary education commences subsequent to students finishing their formal schooling.

As part of tertiary education, individuals are offered various courses of study, including certificates, diplomas, bachelor's degrees and postgraduate studies. Higher education is critical to the realisation of Malaysia's vision as outlined in 'Wawasan 2020' and the 9th Malaysia Plan. The inception of the Malaysian Ministry of Higher Education (MOHE) on March 27, 2004, aimed to spearhead the nation's advancement by placing a paramount focus on nurturing human capital within the national and global socio-economic framework. MOHE supervises a range of higher education establishments, encompassing public universities, polytechnics, and community colleges.

During their tertiary education phase, students can study at different levels of qualification ranging from certificates, diplomas, undergraduate and postgraduate programmes. Undergraduate programmes include bachelor's degrees and professional qualifications, while postgraduate programmes offer master's degrees and doctorates. Diploma programmes are usually aimed at students who have completed secondary school (e.g. SPM) and are at least 17 years of age. Bachelor's degree programmes, on the other hand, usually require a post-secondary qualification which most enrol for at or after age 19, e.g. STPM, GCE A Levels or equivalent. Therefore, in the context of this study, Yuppies are students who have at least a minimal tertiary qualification, i.e. a diploma.

According to Dagher & Linares (2022), social determinants of health refer to sociodemographic factors, which includes one's education level that influences the

circumstances that shape a person's health and overall wellbeing, including their view on vaccination. Moreover, Krishna et al. (2019) uncovered a notable link between parents' educational attainment and the vaccination status of their children.

However, findings from a study conducted in Turkey revealed that parents with higher levels of education were less inclined to vaccinate their children (Temsah et al., 2021). Similarly, research in China by Tang et al. (2023) indicated that highly educated parents exhibited reluctance toward vaccinating their children. This assertion is supported by Facciolà et al. (2019), who suggested that parents with advanced education levels are more prone to rejecting all vaccinations for their children than those with lower educational backgrounds.

Nonetheless, it is essential to highlight that numerous studies have identified a positive correlation between parents' higher education levels and their willingness to vaccinate their children. For instance, Espositi et al. (2014) established a clear connection between higher education and increased awareness regarding vaccines. Parents with elevated educational achievements often have better access to informational resources such as literature and healthcare services, enabling them to critically assess the information they receive and reducing susceptibility to media manipulation. Various published studies support this notion.

Aziz et al. (2018) conducted a study demonstrating that parents with college degrees are more inclined to vaccinate their children compared to those with different educational backgrounds. This observation aligns with the findings of a study in Nigeria by Ijarotimi et al. (2018), which revealed that children of parents with lower education levels were more likely to be partially vaccinated or remain unvaccinated than those whose parents held college degrees.

Additionally, Krishna et al. (2019) discovered a significant correlation between parents' education levels and the vaccination status of their children. Similarly, research in Indonesia by Yufika et al. (2020) indicated that holding a diploma certificate was significantly linked to a positive parental stance on vaccination, suggesting a higher likelihood of vaccine uptake. Likewise, a study in Saudi Arabia found that parents with lower educational attainment exhibited a stronger inclination to vaccinate their children (Temsah et al., 2021).

Overall, these findings underscore the positive relationship between parents' educational levels and their willingness to vaccinate their children, suggesting that those with higher educational achievements are more likely to recognise the importance of vaccination.Furthermore, it is plausible that these well-educated parents are more open to innovative and contemporary approaches, are more confident when it comes to making health-related decisions for their families, and are better able to obtain health-related information. In addition, individuals with a more solid educational background are more likely to utilise preventive health services. Holipah et al (2018), found that parents with the highest levels of education tend to have incredible wealth and better access to health facilities and vaccination services. There is therefore a link between education and a family's overall wellbeing. This implies that individuals with higher educational attainment tend to possess elevated social standing, affording them more opportunities to gain knowledge about vaccine effects and potential side effects.

2.6.4 Working in Professional or Managerial Positions

Andler (1984) postulates that Yuppies work in professional or managerial positions. As per Gokhale & Nuvvula (2016), parental occupation significantly influences the health outcomes of their children. The nature of a parent's occupation can profoundly affect various aspects of a child's wellbeing. Indeed, the employment status of parents can influence their knowledge, attitudes and subsequently their parental care. On the contrary, parents with a lower employment status are at a disadvantage in terms of finances, social support and access to healthcare. They often have limited resources to provide and maintain a healthy environment for their children, and their access to important social resources such as medical and dental care is lacking.

Individuals who hold higher professional and managerial positions typically earn substantial incomes, exert great influence in their workplace, and often pass on significant benefits to their children (Laurison & Friedman, 2016). Parents who hold higher-level occupations are able to adequately care for their children's health. Therefore, parents with a high socioeconomic status can provide essential resources for their children’s health care.

In addition, working parents can be positive role models for their children, and their income can undoubtedly improve their children's lives in many ways, including children's health. In contrast, children from low-income households with working parents

are at higher risk of receiving poor quality childcare or inadequate supervision. Research carried out by Mooi-Reci & Wooden (2022) has shown that the employment status of parents can influence the health care their children receive. In a study by Aedh (2022), it was found that parents who work in a professional occupation, such as doctors, lawyers, engineers or those in other occupations that require specialised expertise and knowledge, show a significantly higher tendency to prioritise vaccinating their children.

This tendency may be due to their understanding of the importance of vaccines in preventing disease and their familiarity with the scientific research and evidence in favour of vaccination. Moreover, their professional occupations often grant them access to reliable and current healthcare information and resources, thereby bolstering their inclination to vaccinate their children. These parents are typically well-versed in the advantages and safety of vaccines, prioritising their children's health and well-being by ensuring they receive recommended vaccinations.

2.6.5 High-Income Parents

The Malaysian government classifies its citizens into three income brackets: T20 (Top 20 percent), M40 (Middle 40 percent), and B40 (Bottom 40 percent). These income categories, encompassing T20 (with an average monthly income exceeding RM10,971), M40 (with an average monthly income ranging between RM4,815 and RM10,970), and B40 (with an average monthly income below RM4,850), serve as benchmarks for state and federal social assistance programs (Department of Statistics Malaysia, 2021).

According to Gokhale & Nuvvula (2016), a family's economic status significantly impacts a child's development, as parental income directly influences the quality of care and overall quality of life for children. Even if vaccination services were free, additional expenses such as loss of income and transportation costs could still be incurred, placing an economic burden on the poorest households. Vukojević et al (2017) confirmed the link between lower parental income and unfavourable health outcomes and delayed child development from infancy to adulthood. Children hailing from low-income households are at an increased risk of encountering diverse illnesses, exhibiting heightened vulnerability to infections, and facing elevated rates of morbidity and mortality. Insufficient nutrition, limited access to health insurance, and inadequate medical attention

are frequently linked with families of lower socioeconomic status. This assertion is bolstered by Sarker (2019), who contends that the economic standing of households significantly influences the vaccination practices for their children. Sarker (2019) also noted that the results are consistent with various studies indicating that the chance of being fully vaccinated is positively associated with household wealth.

In addition, several studies point to the relationship between household income and children vaccination rates. Holipah et al. (2018) discovered that children from households with greater income and wealth indices exhibited a higher likelihood of receiving full vaccination coverage. This aligns with the conclusions drawn by Sarker et al. (2019), who emphasised the pivotal role of socioeconomic status in determining vaccination coverage. Despite the availability of free vaccination services in certain nations, parents from economically disadvantaged backgrounds may encounter barriers in accessing healthcare facilities. Furthermore, a higher household wealth index correlates with improved health status and health-related behaviours, thereby increasing the likelihood of children being fully vaccinated. Tang et al. (2023) conducted research in the United States, revealing that parents with lower incomes were less inclined to express intentions to vaccinate their children. This observation is corroborated by Teasdale et al. (2021), who identified heightened levels of vaccine hesitancy among lower-income parents in the United States. Li et al. (2022) also highlighted that parents with higher incomes or greater earnings are more inclined to ensure their children receive vaccinations.

Thus, research underscores the significance of household income and wealth index as influential determinants of children vaccination rates, with higher income and wealth levels being linked to increased vaccination coverage and intentions to vaccinate. Financial constraints and the hesitancy of low-income parents contribute to the differences in reporting vaccination schedules and use of vaccination services.

2.7 Identified Groups of People and Their Intention To Get Vaccinated

2.7.1 Healthcare Workers

Healthcare professionals provide direct care to the sick and injured in direct roles such as doctors and nurses, or indirectly as assistants, laboratory technicians, or even when managing medical waste disposal. The World Health Organization (WHO) designated the years spanning from 2006 to 2015 as the Decade of Human Capital for Health, acknowledging the pivotal role of healthcare workers as the most invaluable asset for healthcare. When it comes to vaccination, they are a crucial group of people. Healthcare professionals are categorised as a priority category for vaccination due to the increased risk of infection and the possibility of disease transmission to the high-risk patients they care for.

According to Dini et al. (2018), vaccination coverage rates for vaccinations such as the influenza vaccination among healthcare workers can vary from country to country due to differences in healthcare systems, legislation, personal protective equipment and availability of antiviral medication by staff. Cultural and societal values and personal beliefs about the benefits of vaccination based on national or local education programmes may also influence vaccination coverage. Hudu et al. (2016) observed that healthcare workers face a higher likelihood of contracting influenza compared to the general population, thereby posing a risk to patients.

The Centers for Disease Control and Prevention (CDC) in the United States advises that all healthcare workers receive an annual influenza vaccination. It can offer benefits such as a lower risk of infection and death (Hudu et al., 2016). Malaysia has also issued recommendations on seasonal influenza vaccination for healthcare workers, newborns, the elderly and travellers. Despite this recommendation, however, the willingness of healthcare workers to be vaccinated against an influenza pandemic was low (Dini et al., 2018; Alshammari et al., 2019; Nguyen et al,. 2020). Despite the influenza pandemic declaration by the WHO, global vaccination coverage remained low. In studies conducted on similar populations during the pre-pandemic period, actual uptake was lower than previously reported intentions to be vaccinated (Chor et al., 2011; Thoon & Chong, 2010). The low proportion of healthcare workers who believed that the

2009 H1N1 pandemic would affect their health may have influenced the low uptake (Nguyen et al., 2020).

According to a recent investigation conducted by Hudu et al. (2016), the uptake of the influenza vaccination in Malaysian healthcare facilities has declined. Their research revealed that the primary motivation for vaccination was self-protection. Only 16% of non-vaccinated individuals cited concerns about vaccine side effects and its effectiveness as reasons for refusal, while merely 8.1% attributed lack of time as a factor for refusal.This suggests that willingness to vaccinate is still low among healthcare workers, although they should be aware of the dire consequences for the unvaccinated.

2.7.2 Teachers

Teachers hold a crucial position within the school community, necessitating vaccination to safeguard both themselves and the children they engage with in the classroom (Puig & Ageitos, 2022). Therefore, teachers, as well as health care workers, are a strategic focus for influenza vaccination programmes with regard to the influenza vaccination. The flu vaccine should be administered to the teacher and students. Operating within an environment conducive to disease transmission, teachers are frequently vulnerable to infection and the potential spread of illnesses to others.

According to a study by Gargano et al. (2014), most teachers were aware of vaccines that are administered to children and were able to name them. They were aware of the importance of vaccines for disease prevention and knew that children were at risk of contracting certain diseases. Teachers were also guaranteed that they would be allowed to teach about infectious diseases and vaccines if the school authorities authorised it. Teachers were also very supportive when all materials were provided and training was given prior to implementation.

Regarding vaccination intentions, Gargano et al. (2011) found that 78% of teachers intended to be vaccinated against seasonal influenza and 36% intended to be vaccinated against the H1N1 influenza. Furthermore, Masika et al. (2015) conducted a study on HPV vaccination awareness among teachers, revealing a high level of awareness regarding the vaccine (90%). However, teachers only exhibited modest knowledge regarding HPV and cervical cancer (48%). Most teachers will recommend the vaccine to

their daughter or a close relative (89%). Another study (Gargano et al., 2011) found that 52.9% of respondents would get vaccinated against H1N1. From the above facts, it can be concluded that teachers' vaccination intentions remained strong.

However, during the recent COVID-19 outbreak in Malaysia, there were a number of teachers who refused to be vaccinated against Covid 19. In September 2021, 2,500 out of 400,000 teachers declared their refusal to be vaccinated (Sharif, 2021). In Johor, for example, a total of 779 teachers refused the COVID-19 vaccination in August 2021 (Noh, 2021). In Selangor, 450 teachers in national-type schools and 326 kafa teachers had not yet received the vaccine as of August 2021, while 95 kafa teachers refused to be vaccinated (Rahimy, 2021).

To summarise, teachers as trained and professional staff should know their role in society as educators. Teachers should take responsibility for their students and serve as role models for society. This means that they should get vaccinated against diseases unless there are valid medical reasons to not get vaccinated.

2.7.3 Army Personnel

Throughout history, many soldiers and marines have died from infections in battle. Before the First World War, more soldiers died from epidemics than from combat casualties (Mura et al., 2021). The spread of disease was favoured by the wide movement of soldiers, a dense population of susceptible individuals, and the general social chaos of wartime (Mura et al., 2021).

A vaccinated soldier has a lower risk of being exposed to a disease that jeopardises his team's objective in the military environment. By staying healthy, the vaccinated soldier helps the other team members to complete their tasks and return home safely (Grabenstein et al., 2006). Due to their profession, overseas deployment or underlying health condition, army personnel needs to be protected from infection. Soldiers have been vaccinated for over 230 years to protect themselves and support their missions. Military researchers have developed, manufactured, and improved vaccines and vaccine delivery technologies for more than 20 diseases (Grabenstein et al., 2006). It can cause problems for the military if their personnel are not vaccinated. Cervical cancer screening and HPV treatment are the main drivers of HPV-related costs in the U.S. military. For example,

cervical cancer and the screening for abnormalities are a significant problem for female soldiers and their deploying forces (Buechel, 2016).

The recorded uptake rates of the military system may be lower than the national average (Berry-Caban & Buenaventura, 2009). For example, Buechel (2016) conducted a study among members of the US Navy on the topic of vaccination against HPV and found that the HPV vaccine was accepted by most members of the US Navy (53.9%). Although the study found high acceptance of the HPV vaccine among US Navy personnel, only a small proportion of those who initiated the triple vaccine completed it. Although many participants had heard of HPV, they knew nothing about HPV testing or the HPV vaccine. Porter et al (2020) found the same thing. Although most participants had heard of HPV, they knew little about HPV research or the HPV vaccine. In a nutshell, although many of the participants knew about HPV, they knew less or nothing about the field nor about the vaccine against it. From this it can be deduced that vaccination rates within the army are also low.

2.8 Eastern Perspective on Vaccination

The Prophet (peace and blessings be upon him) is quoted as saying, "There is no disease that Allah has created unless He has also created its solution," as narrated by Abu Hurairah RA, a close companion of the Prophet (Sahih al Bukhari, no. 5678) (Zainudin et al., 2018). Presently, the Muslim community has emerged as a burgeoning and appealing consumer market for global brands. The halal industry has transcended its traditional domains of "meat and money" to encompass a wide array of products and services. Halal, an Arabic term denoting "permissible or lawful," represents a comprehensive code of conduct for adherents of Islam. Given the evolving nature of this concept, it significantly influences the consumer behaviour of Muslims. This concept holds paramount importance for companies targeting the Muslim consumer market, as the product life cycle and halal requisites demanded by Muslims are closely intertwined (Bukhari et al., 2021).

Halal pharmaceutical standards are grounded in the Islamic principle of halalan toyyiban (excellent quality and safety). From the sourcing of microbial strains to the equipment utilised in drug manufacturing, these standards are rigorously applied at every stage of the pharmaceutical production process. To be deemed acceptable to the Muslim

consumer market, all these processes must strictly adhere to the halal requirements of Islam. The halal pharmaceutical sector exhibits promising potential, with various halal-certified pharmaceutical manufacturers collectively earning 87 billion US dollars in 2017. Furthermore, propelled by ongoing technological advancements, the industry is projected to attain a global revenue of USD 131 billion by 2023 (Bukhari et al., 2021).

Among the most promising segments within the halal pharmaceuticals sector are halal vaccines. Vaccination remains a contentious topic among Muslims, who adhere to specific laws regarding the use of prohibited substances. However, vaccination, as a critical intervention, aligns with the principles of Islamic jurisprudence (Maqasid al-Shariah), which prioritise the preservation of life, second only to the preservation of religious values. In Islam, life is considered a divine gift from Allah *Subhanahu wa Ta'ala* (SWT), and its safeguarding is deemed imperative. Most Muslim scholars view vaccination as an act of Islah (reform) for the betterment of the Ummah, in accordance with the Islamic concept of Maqasid al-Shariah. Nonetheless, vaccination hesitancy persists among the Muslim populace, including in Malaysia (Zainudin et al., 2018).

In response, companies targeting the Muslim consumer market have introduced a limited range of halal-certified vaccines. Projections indicate that the global vaccine industry is poised to reach US$103.57 billion by 2028. Religious considerations and the perceptions of Muslim consumers regarding the vaccines available in the market have spurred the development of various types of halal vaccines (Bukhari et al., 2021). Scientific challenges have limited the development of vaccines. Instead, history shows that some vaccines have struggled to gain social acceptance. Public resistance to vaccines is due to various factors, including religious, political and even misinformation about the negative effects of vaccination. Research has shown that people in an Islamic country are very fearful of vaccines when it comes to having their children vaccinated. Misconceptions underpin many beliefs against vaccinations, including unfounded fears that certain vaccines may trigger autism in children or that the presence of small amounts of mercury and aluminum in some vaccines could pose health risks (Zerbo et al., 2022).

As a result, religion stands out as a prominent factor contributing to vaccine refusal or boycotts. Throughout history, various religious groups have opposed vaccination based on perceived religious convictions. This phenomenon is observed

globally, with instances among Muslims who abstain from certain vaccines due to concerns regarding their halal certification.

2.8.1 Islam and Vaccination

In 2018, the "Indonesian Ulama Council," the foremost religious authority in Indonesia, issued a fatwa (religious decree) proclaiming the measles, mumps, and rubella (MMR) vaccine as haram, or forbidden, for Muslims. This decree stemmed from the presence of swine-based ingredients in the MMR vaccine, deemed impermissible in Islam. However, the fatwa was subsequently rescinded, with religious authorities declaring the MMR vaccine permissible due to its vital role in preserving human lives. According to the religious scholars, the harm to public health outweighs the haram nature of the banned swine by-products, so Muslims are allowed to use the vaccine. However, the original fatwa had already damaged public perception due to the enormous influence of Muslims' religious views on aspects of their lives. Muslims today are sceptical about vaccines and question whether the raw materials, ingredients and manufacturing processes of these treatments are compatible with their Islamic beliefs.

According to the World Health Organization, the global measles case count has surged by 50%, with outbreaks also afflicting Muslim communities in countries like Malaysia and the Philippines. To address religiously rooted scepticism and reluctance toward vaccinations, numerous prominent Islamic leaders worldwide have endorsed the "Dakar Declaration on Vaccination". This declaration elucidated the imperative of vaccinations in safeguarding children from infectious diseases and outlined Islamic guidelines for vaccine usage. However, despite affirmations from religious scholars and regulatory bodies regarding the permissibility of vaccines for Muslims, lingering apprehensions persist. To cater to the burgeoning Muslim consumer market, vaccines must obtain halal certification.

Furthermore, the core principles of Islamic law prioritises the protection of life, intellect, faith, honour, and wealth. Chief among these principles is the preservation of human life, which aligns with the overarching objective of global vaccination efforts. For over a decade, vaccinations have been instrumental in eradicating severe diseases like smallpox and curbing infections, thereby saving millions of lives worldwide. Vaccines have effectively fulfilled the Islamic mandate of preserving offspring by shielding them

from vaccine-preventable diseases (Zainuddin et al., 2018). As can be seen from the hadith cited above, the use of treatments and medicines is strongly encouraged in Islam. Therefore, from an Islamic perspective, vaccination as a preventive measure is allowed and encouraged.

2.9 Vaccination Policy

It has long been known that health policy in the form of laws, regulations and guidelines has a considerable influence on the state of health. Laws, regulations, court decisions, governmental directives, and budgetary goals all fall under the umbrella of policy (Knill & Tosun, 2020). Despite the availability of effective vaccines and established policies, vaccination refusal or delay remains a prevalent issue across nearly every nation. Consequently, the enactment of laws or legislative initiatives aimed at promoting vaccination can significantly influence individuals' vaccination decisions. Enhancing vaccination rates among both children and adults plays a pivotal role in averting the spread of contagious or hazardous diseases within the population.

Vaccination policies are widespread across all continents; however, global vaccination efforts and policies remain somewhat disorganised (Balbir Singh et al., 2019). In many countries, vaccination remains voluntary, with decisions typically guided by expert recommendations from national technical advisory groups on vaccination (Betsch et al., 2015). Hence, interventions should align with or complement the efficacy of nation-specific public health strategies. Since the recent outbreaks of vaccine-preventable diseases, which include measles, countries have mandated vaccination. The mandate is that vaccination can be combined with appropriate incentives and disincentives. For example, the United States of America has enacted a law that requires school-age children to be vaccinated. No child may be admitted to a public or private primary or secondary school or childcare facility unless they have been fully vaccinated against various diseases, including polio.

The situation is similar in Germany, France, Italy and Singapore, where vaccinations are mandatory before entry into nurseries, kindergartens or elementary schools. Germany has also imposed fines of up to €2,500 for parents and bans on nurseries. This law closes a loophole that allows wealthy parents to enrol their children in home schools or private schools instead of using public facilities. Australia, on the other hand, does not require children to be vaccinated, but offers financial incentives (Greenwood, 2014). Parents in Australia can have their children vaccinated before

receiving welfare benefits under a programme known as "no jab, no pay" (The Star Online, December 10, 2019). Legislative measures, such as Australia's "no jab, no pay" policy can provide financial incentives to parents who successfully vaccinate their children, thereby increasing vaccination rates. Nevertheless, they may not be enough to convince those who refuse to be vaccinated or for whom financial incentives are insignificant (Trent et al., 2019). In addition, Slovenia has a much stricter vaccination policy and those who do not comply are penalised (Greenwood, 2014). In contrast, the Indonesian conditional cash transfer initiative incentivises parents to ensure their children receive vaccinations. A similar cash incentive approach has resulted in increased vaccination rates among both children and adults in India, Nicaragua, and Zimbabwe (The Star Online, December 10, 2019). So it turns out that parents' willingness to vaccinate can increase if there is an incentive or disincentive policy in place, because policies can play a crucial role in increasing the willingness of parents to vaccinate their children.

2.10 Underpinning Theories

2.10.1 Health Belief Model

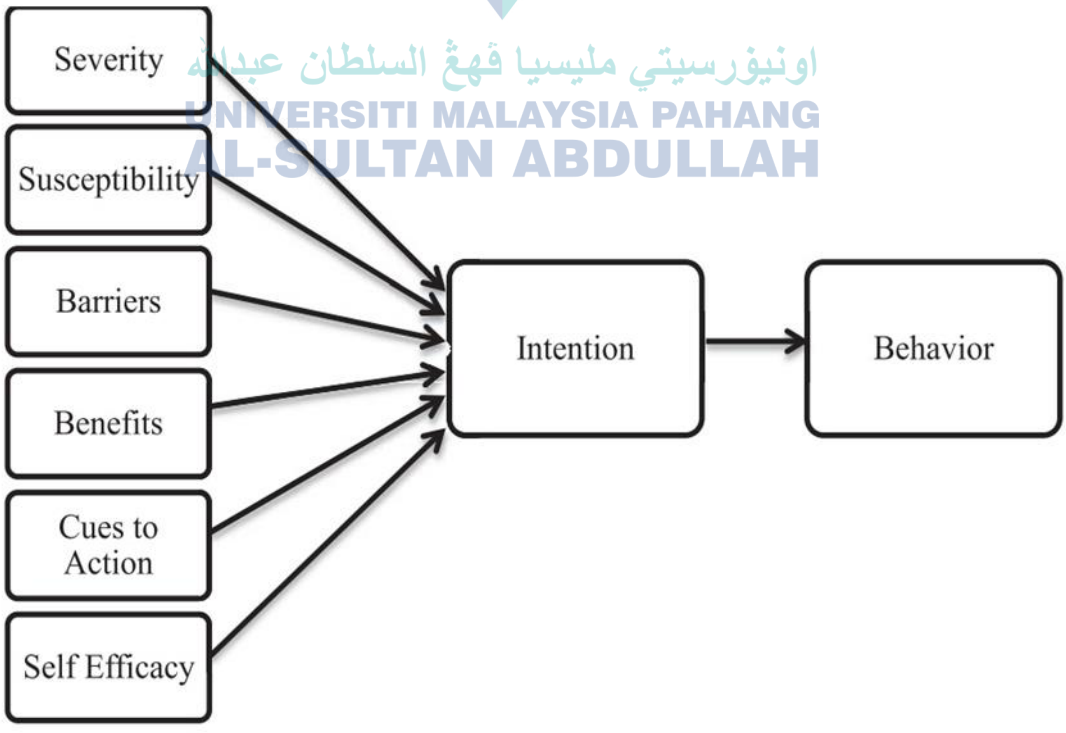

Figure 2.2 Health Belief Model

Developed in the 1950s, the Health Belief Model (HBM) serves as a behavioural theory aimed at elucidating the factors influencing individuals' decisions regarding disease prevention and preventive interventions (Rosenstock, 1966 & Rosenstock et al., 1988). Often classified as a value-expectancy theory, the HBM posits that individuals' behaviours are influenced by both the perceived significance of an outcome and the anticipated likelihood that a specific action will lead to that outcome (Sripad et al., 2019). For health-related behaviours, people are more concerned with avoiding illness and staying healthy, while they expect their actions to help prevent illness (Gaube et al., 2019). Furthermore, people will only take action for their health if they are mentally prepared to deal with a specific health threat or condition (McKinley, 2015).

The Health Belief Model (HBM) is widely utilised in the study of health-related behaviours. Individuals are more inclined to partake in disease prevention activities if they believe (a) they are highly susceptible to the illness, (b) the disease is severe, (c) their actions yield benefits, (d) there are minimal barriers to their behaviours, and (e) they receive encouragement to do so (Donadiki et al., 2014). Anuar et al. (2020) corroborated this assertion, emphasising that the HBM employs four variables to forecast health-related behaviours: perceived susceptibility to illness, perception of illness severity, perceived benefits of specific behaviours, and obstacles to undertaking certain actions. This model was also developed to find out why people do not take preventive health measures (Schaefer, 2010).

HBM was initially developed to help public health officials determine what values should be applied in communication strategies to encourage the population to adopt healthier behaviours (McKinley, 2015). Therefore, the development of HBM helped public health officials and researchers better understand and predict why people participate in or avoid prescribed health activities. HBM has been used in cervical cancer screening, contraceptive use, and bicycle safety helmet use (McKinley, 2015). In addition, HBM has been used extensively in research on attitudes and behaviours related to vaccines (Anuar et al., 2020; Chai et al., 2022; Limbu et al., 2022; Pan., 2024). HBM could explain why people prefer healthy vaccination behaviour. One of the earliest applications of the Health Belief Model (HBM) was its utilisation to examine challenges related to the polio vaccine during the 1950s (Smith et al., 2011). Subsequent studies

(Wong et al., 2020; McKinley, 2015; Fall et al., 2018; Limbu et al., 2022; Pan, 2024) have employed the HBM framework to investigate vaccination intentions.

For instance, concerning the flu vaccine, individuals are more inclined to undergo vaccination if they perceive themselves to be susceptible to the flu, acknowledge the severity of the disease, and believe that the flu shot can mitigate their susceptibility to contracting the flu. They are also more likely to get vaccinated if they believe that the flu symptoms will be less severe, flu vaccination will not incur unnecessary personal costs, and that they can get vaccinated (Alhalaseh et al., 2020; Fall et al., 2018; McKinley, 2015). Studies have demonstrated that perceived susceptibility, severity of the disease, efficacy of the vaccine, barriers, and incentives significantly influence intentions to receive influenza vaccination across various populations (Alhalseh et al., 2020; Ye et al., 2021). Likewise, this model has been applied to elucidate parents' intentions regarding vaccinating their children (Albany et al., 2018; Hobani & Alhalal, 2022; Fadl et al., 2023; Shamueli, 2023).

The Health Belief Model enables parents to make decisions about vaccinations for their children. According to this model, parental involvement in disease prevention is predictable in people with four different components. Parents believe that their children are at risk of disease; they believe that the disease is serious; they believe that disease prevention behaviours are associated with few barriers. They are encouraged to participate in the measures. When parents perceive their child to be vulnerable to a certain disease, view the disease as severe, and find vaccination to be easily accessible, they are more inclined to promptly vaccinate their child. The model comprises of six variables: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, incentives to act, and self-efficacy.

2.10.1.1 Perceived Susceptibility

The likelihood of falling ill hinges on one's perception of susceptibility to a particular disease (Alhalaseh et al., 2020). This perception encompasses a sense of certainty regarding one's vulnerability to specific illnesses. Rosenstock et al. (1988) argues that susceptibility engenders a feeling of being at risk. If individuals don't perceive themselves as susceptible, they're less inclined to take preventive measures against potential health threats. For example, when a person perceives the risk of contracting the

flu as minimal, they are less inclined to seek vaccination (McKinley, 2015). Previous research indicates that those who received the flu vaccine had a higher incidence of influenza infection compared to those who did not receive it. Conversely, individuals who had not been vaccinated perceived a lower risk of contracting the flu (Alhalseh et al., 2020; Ye et al., 2021). Two studies suggested that individuals immune to the flu are motivated by concerns for the health of vulnerable family members and may opt for vaccination for this reason (Doherty et al., 2016). In a study by Vrdelja & Kraigher (2020), Slovenian mothers with young children were found to have a higher perception of their susceptibility to vaccine-preventable diseases. In a study by Alhalaseh et al. (2020), those who wanted to be vaccinated were significantly more likely to recognise the higher susceptibility of sick patients as well as the danger they pose.

2.10.1.2 Perceived Severity

The assessment of a disease's severity and its impact on an individual is termed as the perceived severity level (Cheney & John, 2013). Severity encompasses notions of mortality, suffering, and both physical and mental incapacity (McKinley, 2015). Within this framework, perceived severity holds particular significance when beliefs regarding vulnerability are strong. Consequently, it may be linked to the detrimental consequences of an illness or its effects on an individual's life. Furthermore, it denotes the degree to which an individual perceives an adverse health outcome. If such an outcome does not significantly affect the individual's life, there may be little motivation to take action. Considerations extend to both physical and social ramifications, such as work capability and interpersonal relationships.

For example, if someone assumes that flu symptoms will lead to absence from work, school or friends and family, which is essential, they may be more likely to get a flu vaccination. People who are afraid of catching the flu overestimate the severity of flu complications, including pneumonia and death, and are less likely to follow flu vaccination guidelines. A person who believes that the seasonal flu is no big deal is unlikely to get vaccinated.

Seale et al. (2010) observed that during the 2009 H1N1 influenza pandemic in Australia, individuals who perceived H1N1 influenza as more severe were 2.5 times more likely to agree to vaccination compared to those who perceived it as less severe. However,

studies indicate that perceived severity alone does not significantly predict acceptance of an influenza vaccination (Blue & Valley, 2002; Brewer & Hallman, 2006). This outcome is likely because most individuals, regardless of vaccination status, consider influenza to be a serious illness (Cheney & John, 2013). A study conducted by Vrdelja & Kraigher (2020) among parents in Slovenia found that more than 15% of participants agreed with the statement that it is much better to get the disease naturally than to be vaccinated.

2.10.1.3 Perceived Benefits

The concept of "perceived benefit" encompasses an individual's belief in the advantages gained from receiving a vaccine. In numerous studies, the perceived benefit of vaccination stands out as a robust predictor of vaccine acceptance (Alhalseh et al., 2020; Ye et al., 2021). Among the key benefits, the vaccine's potential to decrease the likelihood or severity of a disease ranks prominently. Any positive outcome linked to a healthcare intervention can help mitigate disease risk, indicating the effectiveness of the vaccine in disease protection. A good example is the prevention, diagnosis and treatment of diseases. Not getting the flu, not going to work or school, feeling well and not being sick, participating in activities you want to do, and not spreading the illness to others are all potential benefits of being vaccinated against seasonal flu. If the person is vaccinated against influenza, the symptoms of seasonal flu may be milder (McKinley, 2015). Nawaz et al. (2011) conducted a study revealing the significant influence of perceived benefits on college students who received the 2009 H1N1 flu vaccination. This indicates that the construct of perceived benefit is an important predictor of vaccination participation.

2.10.1.4 Perceived Barriers

The perceived costs of vaccination are perceived barriers (Guidry et al., 2015). They denote an individual's interpretation of the physical and psychological effects of vaccination (Alhalseh et al., 2020; Ye et al., 2021). When people face significant barriers that prevent them from taking preventive action, they are less likely to do so. For example, the inconveniences of vaccination, such as the lack of time, lack of resources, the convenience of receiving the vaccine at home, school or work, and the possibility of adverse effects from the vaccine are all potential barriers to vaccination. According to HBM, a person facing one or more of these barriers is significantly less likely to get vaccinated (McKinley, 2015).

In their study, Nawaz et al. (2011) investigated college students who received the 2009 H1N1 influenza vaccination, revealing that perceived barriers to vaccination significantly influenced their vaccination intentions. Additionally, Avola & Lyon (2012) asserted that parents who perceive their children as not susceptible to influenza are less inclined to vaccinate them. Moreover, in studies conducted by Esteves et al. (2009) and Rachiotis et al. (2010) regarding influenza vaccination, a perceived obstacle was the fear that the vaccine itself could cause illness, thus preventing the flu. This suggests that people who believe that vaccines hinder the natural immune system or have harmful side effects are also less likely to get vaccinated. The decision to get vaccinated was also hindered by the perception that the vaccine was unsafe and unreliable.

2.10.1.5 Cues to Action

Cues for action are additional elements that can prompt an individual to partake in a particular behaviour (Rosenstock, 1974). It is a cue from the environment that stimulates a person's desire to achieve something and this cue combines persuasion and effort. According to HBM, the more incentives a person experiences, the more likely they are to take the recommended health action. People who receive minimal or no prompts to action are less inclined to participate in the recommended behaviour (McKinley, 2015). Prompts or cues for action include health reports and advertisements on television, exhortation from the family physician, behavioural prompts from family members, and unfavourable changes in the physiological state (Rosenstock, 1974). Family members and people's trust are other important sources of incentives to act (Jabar et al., 2021).

For example, if people still have doubts about vaccination, their decision may be influenced by a nurse or doctor. This is supported by Lin et al. (2021) and Btoush et al. (2022), whose research indicates that healthcare provider recommendations are linked to increased vaccination rates. Interestingly, even among those who did not want to get vaccinated, a doctor's advice increased the likelihood of vaccination (Borah & Hwang., 2022; Deml et al., 2022; Raude, 2023) In other words, facts, people and events that convince a person to get vaccinated are referred to as cues to action.

2.10.1.6 Self-efficacy

Bandura (1977) defines self-efficacy as an individual's confidence in their capacity to execute a suggested behaviour. In recent years, self-efficacy has been proposed as an additional component of the Health Belief Model (HBM) (Rosenstock et al., 1988), included to enhance the model's predictive ability regarding behaviour (Anuar et al., 2020). Specifically in the context of vaccination, self-efficacy pertains to one's belief in their ability to undergo successful vaccination. Despite its importance, few studies have explored the role of self-efficacy in influenza vaccination, as it represents a short-term intervention not reliant on altering complex health habits like exercise or dietary choices (Alhalseh et al., 2020; Ye et al., 2021). Self-efficacy, describing an individual's belief in their capabilities and limitations, is regarded by many public health experts as an independent variable crucial in crafting effective public health initiatives.

2.10.2 Theory of Planned Behaviour

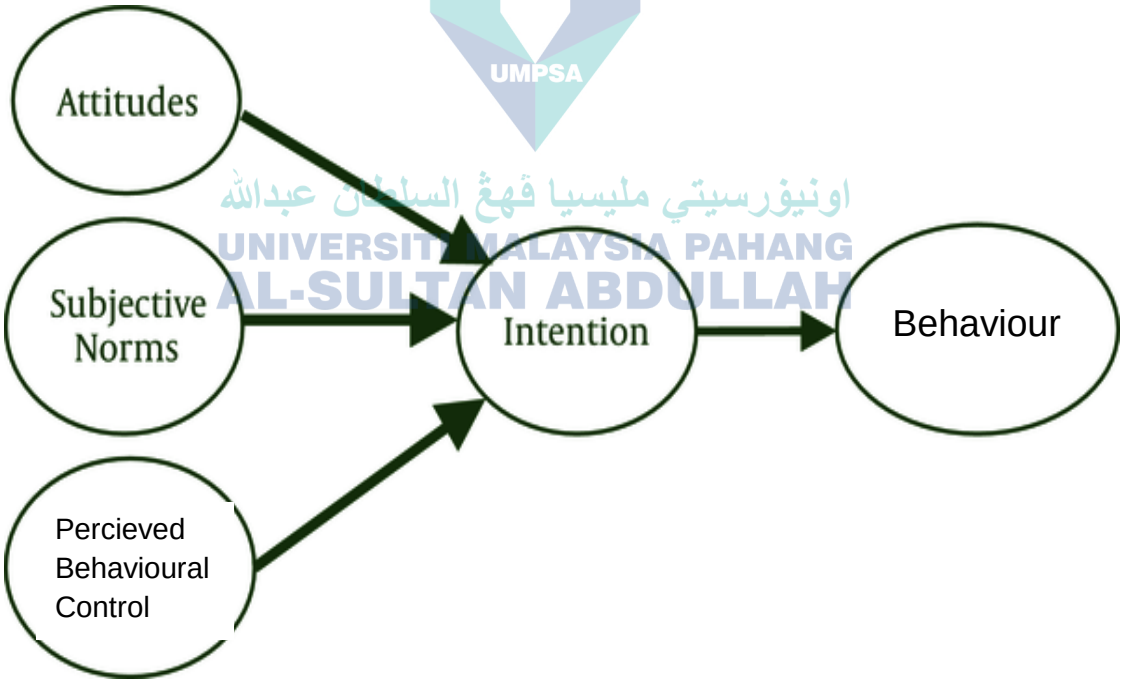

Figure 2.2 Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) stems from the Theory of Reasoned Action (TRA), originally developed to anticipate and elucidate human conduct in specific contexts (Ajzen, 1991). Within TPB, individuals' inclinations toward engaging in a behaviour are shaped by their anticipations, subjective norms, and perceived behavioural control (Ajzen, 1984).

TPB stands as a widely recognised and extensively examined social science framework positing that the stronger an individual's inclination to enact a particular behaviour, the likelier they are to execute it (Ajzen, 1991). This inclination is molded by the belief that performing the action will result in a favourable outcome. The individual perceives the behaviour as likely to yield positive consequences if undertaken and feels social pressure to enact it.

Moreover, TPB underscores behaviour as an additional facet of an individual's intention. Their attitude toward the behaviour's object influences their intentions, along with perceptions of social approval for the behaviour and confidence in their ability to carry it out efficiently. It can also be noted that people's opinion about whether they can successfully perform a certain behaviour influences their intentions, especially when it is a demanding and complex behaviour such as vaccinating their children. (e.g., financing a costly vaccine, starting and completing a vaccination series, postponing a vaccination, etc.).

This theory has frequently been employed to explore the individual, psychological, and societal influences on people's intentions and actions across diverse cultural contexts. It has also been commonly utilised to investigate the intention to receive HPV vaccination. According to Li & Li (2020), the theory posits that an individual's behavioural intention is shaped by three key factors: Attitude, subjective norms, and perceived behavioural control (PBC). In vaccine-related studies, TPB has served as a theoretical framework in a substantial and growing body of research, demonstrating its predictive utility (Xiao & Wong, 2020). For instance, Dillard (2011) found that attitudes, norms, and PBC were robust predictors of women's intention to receive HPV vaccination, collectively explaining 75% of the variance. Similarly, Dubé et al. (2018) revealed that these three constructs significantly forecasted parents' intentions to vaccinate their children.

2.10.2.1 Attitude

Fishbein and Ajzen (1975) assert that behavioural beliefs pertain to the anticipated outcomes of engaging in a specific behaviour, considering the expectations associated with it. Outcome judgments are the resulting evaluation of the performance of a particular behaviour. Attitudes are people's assessment of what would happen if they follow the suggested behavioural advice (Ajzen, 1991). Attitudes are usually based on the prediction of positive and negative consequences (Fishbein & Ajzen, 1975). According to TPB, attitudes represent both expectations for the outcome of a certain suggested behaviour and evaluations of the expected consequences of that behaviour. In other words, an attitude is described as a learned inclination to consistently react positively or negatively (Xiao & Wong, 2020). It arises when individuals have the belief and judgment that performing a certain suggested behaviour will have positive or negative consequences. Additionally, attitude reflects how favourably or unfavourably someone perceives a behavioural object. When individuals have a positive attitude towards certain behaviours, they are more likely to engage in those behaviours (Li & Li, 2020).

Regarding children vaccination, parental attitudes are a factor that contributes to lower willingness to vaccinate (Seed et al., 2021). Parents have the right to determine what they want for their children, including the right to vaccinate their children, as reported by Ramli & Azzahra (2017). Parents who had a positive attitude towards vaccination were more likely to get vaccinated than those with a negative attitude. In contrast, some parents assumed that their children were healthy enough to fight the disease and that hand washing and a healthy diet could help them. A study by Xiao and Wong (2020) found that attitude, social norms, and perceived behavioural control significantly predicted vaccination intentions, with attitude being the most influential factor.

2.10.2.2 Subjective Norms

Subjective norms pertain to an individual's perception of how important people or groups would view their behaviour. These norms reflect what significant reference groups expect from an individual and their willingness to align with these expectations (Ajzen, 1991). The subjective norm is defined as the perceived commonality of a recommended behaviour and the perception of others' expectations regarding its

performance. According to the Theory of Planned Behaviour (TPB), if an individual believes that their social referents (such as parents and friends) view a specific behaviour as obligatory, they are more likely to intend to engage in that behaviour (Li & Li, 2020).

The subjective norms related to seasonal influenza vaccination are determined, for example, by how a person thinks about the people in their social environment and how the people of particular interest to that person would or would not react to them getting the seasonal influenza vaccination. In addition to the reactions of these people, the degree of importance of the general acceptance of these important people must also be taken into account when assessing subjective norms. The reactions and need to accept these important people in a person's social environment may be enough to convince a person to either follow through or reject the suggested behaviour (Deml et al., 2022).

Another example of subjective norms is the assessing of participants' beliefs about whether their healthcare provider, family, and others would approve of them receiving the 2009 H1N1 vaccine. These findings align with other studies demonstrating that subjective norms influence the decision to vaccinate (Winter et al., 2022; Zou et al., 2023; Ayieko et al., 2024).

2.10.2.3 Perceived Behavioural Control

Perceived Behavioural Control (PBC) assesses a person's expectations on their ability to manage their behaviour (McKinley, 2015). It combines perceived control (e.g., the extent of control over getting vaccinated) and self-efficacy (e.g., confidence in one's ability to get vaccinated) (Xiao & Wong, 2020). According to Ajzen (1991), PBC is a multidimensional construct influenced by various factors, such as physical and mental ability, financial resources, transportation, motivation, and time. The components of PBC are controllability, which refers to a person's ability to perform the behaviour, and self-efficacy. Individuals with higher perceived behavioural control are more likely to believe that they have the necessary resources (time, money, transportation, etc.) and can perform the behaviour with minimal obstacles (Ajzen, 1991).

Ajzen (1991) posits that PBC affects behaviour both directly and indirectly through intentions. The direct influence represents the degree of control one feels over the behaviour, while the indirect influence is based on the motivational impact on

behavioural intentions. Individuals with low PBC due to limited resources may still desire to act, even if they have a positive attitude toward the behaviour (Sathyan, 2008). In essence, PBC refers to the perceived ability to perform the desired behaviour (Li & Li, 2020). According to the Theory of Planned Behaviour (TPB), higher self-confidence increases the likelihood of performing the suggested behaviour.

PBC is based on beliefs about the presence or absence of necessary resources and opportunities, similar to self-efficacy or confidence in one's ability to accomplish a task. It is important to distinguish PBC from actual behavioural control, which includes tangible factors like time, resources, and ability that can also influence intentions (Sathyan, 2008). Ajzen's (1991) theory predicts that when an action is within a person's control, PBC plays a significant role. Regardless of attitude or normative pressures, individuals will not perform a behaviour if it is beyond their ability. For instance, a person may have a positive attitude towards the seasonal flu vaccine and be willing to get vaccinated but will not do so if they lack the means to access the vaccine. However, if the vaccine is too expensive or inaccessible where they live, they are unlikely to get vaccinated.

2.11 Children Vaccination Intention

Intention is crucial for measuring people's actual behaviour (Agmeka et al., 2019). People's intentions are influenced by their perception of social support for their behaviour and their belief in their ability to perform it. Behaviour results from a person's attitude toward executing their intention. To accurately predict whether someone will carry out a specific suggested behaviour, they must first intend to perform it. "Behavioural intention" refers to a person's willingness to engage in a particular behaviour, shaped by their attitude towards the behaviour, subjective norms, and perceived behavioural control (Ajzen, 1991). Additionally, a positive attitude towards a specific behaviour also shapes this intention.

Measuring parental intentions to vaccinate their children is crucial for planning interventions to promote vaccination (Seed et al., 2021). Parents who had a good attitude towards vaccination were significantly more likely intend to have their child vaccinated. This was also true for parents who reported greater social support and believed it would be easy to have their child vaccinated. Apart from this, intentions are directly related to

behaviour and actions. Deml et al. (2022) also emphasised that parents want to comply with their doctors' wishes, uphold the vaccination norm and maintain the accepted social pact to have their children vaccinated.

The Theory of Planned Behaviour (TPB) is also associated with the intention to behave in a specific manner. TPB has been shown to predict intentions to engage in various health-related behaviours, including vaccination (Dubé et al., 2018). According to this theory, attitudes, subjective norms, and perceived behavioural control influence the intention to engage in a suggested behaviour, thus determining whether the behaviour will be performed (Ajzen, 1984). Additionally, TPB (Ajzen, 1991) emphasises the connection between beliefs and behaviour, examining the links between beliefs, attitudes, behavioural intentions, and actual behaviour. Factors influencing vaccination intention include risk perception, attitudes, subjective norms, and perceived behavioural control (Xiao & Wong, 2020; Fan et al., 2021; Limna et al., 2022). TPB posits that actual behaviour results from intention, meaning behavioural intention should precede behaviour (Wee et al., 2014).

Furthermore, a person's assessment of their ability to perform the behaviour in question directly influences their intentions. This is usually the case when the behaviour is associated with difficulties and complications, such as getting a vaccination. Financing an expensive vaccine, starting and completing a vaccination series, and coping with inconveniences associated with vaccinations are just a few examples of the related complications faced.

Attitudes toward vaccination showed the strongest relationship between parental intention and the TPB model variables. Other variables not included in TPB, such as previous vaccination behaviour and trust in doctors and health authorities, were also related to parental intention to vaccinate (Dubé et al., 2018). For example, vaccination was associated with parents' need for information and their trust in local institutions. Parents encountering difficulty accessing vaccination services or seeking vaccine information were less inclined to intend to vaccinate their children in the future (Dubé et al., 2018). Conversely, a strong intention to vaccinate their children was linked with trust in doctors and the public health system (Dubé et al., 2018).

Wong et al. (2020) utilised the Health Belief Model (HBM) to forecast vaccination intentions and illustrate its application in understanding COVID-19 vaccination intentions. Their research highlights that high perceived benefits and low perceived barriers to vaccination are the two primary HBM variables influencing a firm intention to receive the COVID-19 vaccine.

Moreover, several studies have explored vaccination intentions (Askelson et al., 2010; Dubé et al., 2018; Wong et al., 2020; Graupensperger et al., 2021). For instance, Askelson et al. (2010) underscored the significance of maternal attitudes and subjective norms in shaping vaccination intentions, suggesting that maternal vaccination intentions are generally low. Additionally, Dubé et al. (2018) discovered that positive attitudes, stronger perceived social support, and greater reported behavioural control were associated with parents' intentions to vaccinate their children. Their study revealed that while most parents reported their children had been vaccinated, those expressing reluctance to vaccinate in the future encountered the most obstacles. Similarly, Graupensperger et al. (2021) investigated college students' intentions to receive the COVID-19 vaccine and found that the majority planned to get vaccinated as soon as the vaccine became available. This number is much higher than the number who reported having received or planned to receive another vaccine.

This shows how important intention is in predicting actual behaviour. According to Wong et al. (2020), methods that address the constructs of intention could be effective in promoting vaccine uptake. Perceived policy effectiveness (PPE) is an example of a construct that may moderate the effects of intention. Wan et al. (2013) explored the direct correlation between Perceived Policy Effectiveness (PPE) and intention, revealing a significant impact of PPE on intention. Liao et al. (2018) suggest that PPE likely acts as a moderator of intention. Their study indicates that perceived policy effectiveness influences the relationship between components of the Theory of Planned Behaviour (TPB) and intention, as well as the relationship between all independent variables in the TPB model and intention (Liao et al., 2018).

Consequently, it becomes imperative to delve into parents' perceptions regarding their children's vaccination, behavioural intentions, and user behaviour (Terzi et al., 2021; Fadl et al., 2023; Shmueli et al., 2023). It can be argued that perception influences the intention to vaccinate children. Therefore, it is important to investigate which variables

have the strongest influence. As a result, behavioural researchers need to investigate the relationships between vaccination intentions and attitudes to improve behavioural methods that increase vaccination rates (Graupensperger et al., 2021).

2.12 Vaccination Behaviour

Human behaviour is influenced by behavioural and psychological intentions, such as attitudes towards subjective behaviour and norms (Agmeka et al., 2019). Behaviour is considered is the basis of an individual's intention (Celik & Cagiltay., 2024). Actual behaviour encompasses the actions influenced by one's intention and attitude towards those actions. It also reflects decisions regarding time, money, and effort allocation.

However, intentions do not always translate into actual behaviour. Numerous studies reveal this gap, indicating that despite having the desire to act, intentions aren't always realised (Juraskova et al., 2012; Fall et al., 2018; Indiani & Fahik, 2020; Conner & Norman, 2022). Conner & Norman (2022) highlight a significant disparity between stated and actual behaviour, known as the "intention-behaviour gap", more prevalent among those with intentions but no action compared to those acting without planning (Gollwitzer & Sheeran, 2006; Fall et al., 2018). Previous research suggests intentions are enacted only 50% of the time (Sheeran & Webb, 2016). For instance, in college students, the intention-behaviour gap was substantial concerning HPV vaccination, with intention predicting less than 10% of behaviour (Juraskova et al., 2012). Moreover, the relationship between intention and behaviour fluctuates based on the consistency of prior intentions (DaCosta Dibonaventura & Chapman, 2005).

According to the Theory of Planned Behaviour (TPB), behaviour is controlled by behavioural intention, influenced by attitude, perceived behavioural control, and subjective norms (Ajzen, 1991). Ajzen (1991) posits that behaviour results from aligning personal intentions and beliefs to regulate behaviour, and prediction can be enhanced by incorporating conditional elements. Consequently, new constructs such as moral norms, institutions, and consequences of behaviour have been introduced. TPB emphasises that a person's intention, primarily influenced by their attitude, is the most crucial determinant of behaviour (Alhalaseh et al., 2020).

In a collectivist society, the example of others and the expectation of others towards doing something can influence the behaviour of individuals and thus change their behaviour (Liao et al., 2018). According to Graupensperger et al. (2021), initial estimates of vaccination rates are high, but not high enough to justify population-wide protection, as actual behaviour may vary. Individuals prefer to repeat behaviours that have the best outcomes (Liao et al., 2018).

Additionally, it's crucial to acknowledge that the intention to vaccinate does not guarantee a 100% vaccination coverage. Hence, pinpointing the factors that notably impact this intention-behaviour link could substantially enhance future vaccination rates (Alhalaseh et al., 2020). During the recent Covid-19 pandemic, there were numerous instances in Malaysia where individuals expressed their intention to receive vaccination by registering their names for the vaccine. However, in almost all states, people did not show up for their vaccination appointments. For example, the media in Kelantan reported in early 2021 that 30,000 people who had registered for their first dose of the COVID-19 vaccine had not shown up at the vaccination centres (Azman, 2021a). Similarly, over 10,000 people in Terengganu (Astro Awani, 2021a) and 10,000 in Pahang (Astro Awani, 2021b) did not show up for their vaccination appointments.

Originally, they were not antivaccinationists (anti-vaxxers), as evidenced by the fact that they had signed up for the vaccination. However, they changed their minds after hearing about some isolated examples of minor side effects in the vaccinated on social media (Azman, 2021a). For example, they may have changed their intention after being misled by false information about the vaccine posted on social media by family members or friends (Mahalingam, 2021). Because of the variance between intention and behaviour, methodologies that assess actual behaviour should be employed to explore other variables associated with intention and behaviour (Liao et al., 2018). Hence, it is vital to analyse parents' real vaccination behaviour in this study.

2.13 Perceived Policy Effectiveness

Certain scholars have proposed that policy interventions might enhance parents' inclination to vaccinate their children (Attwell et al., 2020; Olson et al., 2020; Musa et al., 2021). Governments possess the ability to shape parental intentions through policy measures such as mandatory regulations, incentives, advertising, and educational

campaigns (Wan & Shen, 2013). Moreover, additional research is warranted to explore how interventions can impact these constructs to encourage vaccination (Xiao & Wong, 2020). Hence, perceived policy effectiveness was employed as a moderating variable between the independent and dependent variables in this study.

Parents' intentions to have their children vaccinated can be encouraged by policy measures. Therefore, governments can use policy instruments such as mandatory regulations, incentives, advertising, and education to guide parents' intentions (Wan & Shen, 2013). Moreover, health policies, including laws, regulations, and guidelines, have been recognised for their substantial influence on health-related decision-making. Policy interventions and instruments have been subject to analysis and research. Governments worldwide frequently employ incentives, regulations, and educational initiatives to motivate or alter people's behaviour (Wan & Shen, 2013).

The National Immunisation Programme (NIP) is an initiative by the Malaysian government aimed at preventing infectious diseases. Initiated by the Malaysian Ministry of Health (MOH) in the 1950s, the NIP initially provided free vaccines to Malaysian children (Faridah, 2017). Presently, the NIP safeguards children against various diseases, including tuberculosis, hepatitis B, diphtheria, tetanus, pertussis, polio, Haemophilus influenzae type b, measles, mumps, rubella, Japanese encephalitis (JE), and human papillomavirus (Faridah, 2017). Over the years, the NIP has undergone numerous enhancements, including the incorporation of the hepatitis B vaccine in 1989, the Haemophilus influenzae type b (Hib) vaccine, and the measles, mumps, and rubella (MMR) vaccine in 2002. Additionally, in 2008, the 5-in-1 combination vaccine was introduced to ensure alignment with advancements in science and vaccine technology.

When a policy measure is implemented, it can encourage parents to have their children vaccinated more frequently. When parents recognise the significant incentive, their desire to participate in these initiatives will increase (Wan & Shen, 2013). For example, suppose a parent has a good attitude towards vaccination but believes that the government does not make it easy for them. Therefore, it is doubtful that these parents will want to have their children vaccinated. It can therefore be said that politics can make a positive contribution to vaccination intentions. The term relevant to this aspect is perceived policy effectiveness.

Perceived policy effectiveness entails mutual persuasion, wherein individuals behave similarly. It comprises assumptions about situational variables that determine the benefits and costs of collective action (Lubell, 2003). Wan et al. (2014) characterised perceived policy effectiveness as an individual's positive or negative sentiments toward a policy action. The policy is evaluated based on its effectiveness, appropriateness and ease of implementation. In addition, the perceived effectiveness of a policy may also help to mitigate the effects of other factors on behaviour (Wan et al., 2014). Perceptions of the effectiveness of interventions are thought to be associated with intentions when it comes to attitudes and behaviours toward vaccination. When a more effective motivational tool is seen, the urge to engage in the desired action increases.

Governments around the world have responded with new laws and policies to increase vaccination rates. Education and information campaigns, incentives and regulations are among the typical options. These can be aimed at the general public, health organizations or doctors (Yang & Studdert, 2017). A study conducted by Vrdelja & Kraigher (2020) examined parents' intention to vaccinate their children in response to policy changes. They discovered that respondents expressed their willingness to vaccinate their children if vaccination became mandatory. Furthermore, vaccination data from Slovenia indicates that vaccination coverage ranges between 90 and 95%. However, for non-compulsory vaccinations such as HPV and pneumococcal disease, the coverage rate is approximately 50%. This underscores the importance of implementing mandatory vaccination policies to achieve high vaccination coverage rates.

Building upon this, the perceived effectiveness of any given vaccination policy may exert a moderating influence on parents' inclination to vaccinate their children. It is hypothesised that perceived policy effectiveness may strengthen the relationship with intention to vaccinate. The government can use policy tools such as regulations, incentives, advertising, education, and the development of appropriate and helpful infrastructure to influence people's intentions (Wan & Shen, 2013). These measures are also used to encourage citizens to improve their intentions. According to Liao et al. (2018), perceived policy effectiveness is predicted to have a moderating influence on intention. However, few studies have examined how people's intentions to commit such an act are influenced by their perceptions of policy effectiveness (Wan et al., 2014). Hence, this study employs perceived policy effectiveness as a moderator of parents'

intentions. This approach is corroborated by Xiao & Wong (2020), who emphasised the necessity for research into how interventions can alter these constructs to encourage vaccination.

2.14 Social Media Influence

It is important to keep in mind that intention does not always lead to a 100% vaccination rate. Therefore, comprehending the factors that positively impact the correlation between intention and behaviour would significantly enhance future vaccination rates (Alhalaseh et al., 2020). Findings by Wang et al. (2020) indicate shifts in the relationship between intentions and behaviour, suggesting that more individuals are either embracing or rejecting vaccination due to various factors. Hence, identifying factors that can prompt changes in the intention to engage in a behaviour, and how this intention is influenced by attitudes toward said behaviour, is crucial.

Media attention refers to the extent to which individuals consciously engage with a media message (Slater, 2009), which can actively influence parents' intentions and actual behaviour. Research indicates that the media serves as a vital source of health-related information seeking, significantly impacting health behaviour (Melovic et al., 2020). According to the information processing model, increased attention to media-delivered news is associated with a higher likelihood of reinforcing or altering attitudes (Lin & Lagoe, 2013).

This notion is supported by Awadh et al. (2014), who asserted that safety information and misinformation found on the Internet can effectively shape parents' decisions, albeit potentially leading to misconceptions. Studies indicate that many Malaysian parents decline vaccination for their children due to vaccine-related misinformation circulated by unverified online and mass media sources (Ahmed et al., 2018). The media perpetuates these myths, directly influencing parents' decisions and behaviours. Additionally, the media plays a crucial role in disseminating vaccination information and serves as a conduit for public health information, disease prevention, and the advantages of vaccination in combating deadly and contagious diseases (Aziz et al., 2019).

In addition, various sources of information play an important role in spreading misinformation to the public, especially to parents (Al-Zaharani, 2013). According to Danova et al. (2015), the widespread dissemination of false vaccination claims online has increased parents' concern and instigated the refusal to have their children vaccinated. These websites are run by groups of people who in practice refuse to have their children vaccinated. A variety of news sources also contribute to spreading false information to the public, especially among parents (Al-Zaharani, 2013). The dissemination of false vaccination claims on websites has directly increased parents' reluctance and the refusal to have their children vaccinated (Danova et al., 2015). This is confirmed by Chen et al. (2011), who suggested that the dissemination of false vaccination claims on websites has increased parents' reluctance and refusal to have their children vaccinated.

One study (Barbieri & Couto, 2015) found that mothers turned to the Internet (particularly anti-vaccination social networks) and interacted online with mothers and fathers who had not vaccinated their children. They then gathered a wealth of information about the efficacy and effectiveness of vaccines. With this knowledge, the mothers expressed their concerns and fears about vaccinating their children. Furthermore, Li & Li (2020) discovered that both media attention and interpersonal discussions positively influence individuals' willingness to vaccinate, implying that it is subjective norms that subsequently impacts vaccination intentions. They also observed a positive association between individuals' attitudes towards vaccination and media attention. This finding aligns with the information processing model, which posits that the more attentive individuals are to media messages, the more likely they are to modify or reinforce their attitudes. Thus, Ho et al. (2010) concluded that individuals' attitudes towards vaccination are positively linked to their attention to media messages.

In Malaysia, during the Covid-19 pandemic, misinformation spread on social media led to a significant issue where individuals in nearly all states failed to attend their vaccination appointments.The number of these instances is not small as we are talking about thousands of appointments (Astro Awani, 2021a). In early 2021, the media in Kelantan reported that 30,000 people who had registered for their first dose of the COVID-19 vaccine had not shown up at the vaccination centres (Azman, 2021a). In Pahang and Terengganu, around 10,000 people respectively were also said to have failed to show up for their vaccination appointments (Astro Awani, 2021a).

They were not originally anti-vaccinationists, as evidenced by their registration for the vaccination. However, they changed their minds after hearing about some rare cases of mild side effects in vaccinated people on social media (Azman, 2021a) and after being misled by false vaccination material spread by family members or friends in the media (Mahalingam, 2021). This suggests that intentions do not always translate into actual behaviour. This is consistent with numerous studies indicating that although individuals may intend to behave in a particular manner, this intention does not always manifest into actual behaviour (DaCosta Dibonaventura & Chapman, 2005; Juraskova et al., 2012; Fall et al., 2018). Moreover, the media has been shown to significantly influence individuals' intentions towards actual behaviour (Slater, 2009).

2.15 Theoretical Development

This study advances a model for examining parents' intentions regarding vaccinating their children by integrating the Health Belief Model with the Theory of Planned Behaviour. The Health Belief Model (HBM) and the Theory of Planned Behaviour (TPB) are employed here to expand and construct a model for understanding parents' intentions concerning children vaccination. In the foundational Health Belief Model and Theory of Planned Behaviour, several constructs are linked to vaccination intention. Notably, contributions by Huang et al. (2020) and Zhao & An (2021) have enriched the literature on the combined role of HBM and TPB in predicting behavioural intentions, prompting subsequent research to explore the integration of TPB and HBM in predicting preventive behaviours.

The Health Belief Model (HBM) serves as a behavioural hypothesis explaining individuals' engagement or lack thereof in disease prevention or preventive interventions (Anuar et al., 2020). Similarly, it aims to elucidate factors influencing individuals' participation in preventive health measures. According to the Theory of Planned Behaviour, individuals' intentions are shaped by their attitude toward the action, perceived social norms regarding that behaviour, and their belief in their ability to carry out the action (Fan et al., 2021).

Both the Theory of Planned Behaviour and the Health Belief Model adopt an individual-level approach to predicting health behaviours, grounded in an expectancy-value framework. Furthermore, they share the assumption that health decisions are

primarily a conscious and rational processes. Therefore, combining these theories can help discern which specific constructs explain unique variances in behaviour, thus shedding light on the influences on health-related behaviour (Gerend & Shepherd, 2012).

Moreover, according to Tuan Mansor et al. (2020) and Meng & Cui (2021), the Theory of Planned Behaviour can be enriched by incorporating additional variables and adjusting causal relationships based on situational contexts. Similarly, proponents of the Health Belief Model advocate for a personalised integration of its core constructs rather than their comprehensive and undifferentiated application (Champion & Skinner, 2018). Hence, these two models are mutually complementary (Ku & Hseieh, 2018; Wang et al., 2019; Huang et al., 2020).

However, it's essential to note the convergences between these theories when integrating them. Both theories share the fundamental premise of an individual-level approach to predicting health behaviour within an expected value framework (Gerend & Shepherd, 2012). Additionally, they both assume that decisions related to health are predominantly a deliberative and logical processes (Ritchie et al., 2021; McDowell, 2023). Although TPB and HBM focuses on different elements of behavioural development as drivers, there are natural links between them. Nevertheless, only one of the variables from both theories with a similar construct is used in the present study. Moreover, eliminating overlapping constructs helps avoid issues with discriminant validity in the research, as identified in past literature. According to Noar & Zimmerman (2005), if researchers can justify that certain constructs are similar and essentially measure the same concept, they can eliminate redundant constructs. Therefore, based on the previous literature, several items within the theories show overlap, including cues to action and subjective norms, perceived benefits and attitudes, and, finally, self-efficacy and perceived behavioral control. Hence, only one construct from each overlapping pair has been selected for inclusion in the framework of this study. Further discussion on the rationale behind these choices will be provided in the subsequent sections. This approach offers the added benefit of reducing the number of questions respondents need to answer, thereby streamlining the survey process.

2.15.1 Self-efficacy and Perceived Behaviour Control

In both self-efficacy and perceived behavioural control theories, the significance of self-efficacy in shaping individuals' adoption of health-related behaviours is acknowledged. In essence, personal control is considered a pivotal factor at the outset of behavioural decision-making (Yang, 2015). For instance, the perceived behavioural control element of TPB intersects with the perceived barriers component of HBM. The assessment of self-efficacy often reflects the individuals' confidence in their ability to engage in healthy behaviours despite encountering various obstacles. For example, it gauges the individuals' confidence in their ability to exercise tomorrow, even in unfavorable weather conditions (Gerend & Shepherd, 2012). Hence, the variable of perceived behavioural control from the theory of planned behaviour is utilized in this study.

Moreover, according to Taymoori et al. (2015), there are parallels between perceived control and the concept of self-efficacy. They posit that perceived control resembles self-efficacy in that it gauges an individual's perceived capacity to execute a specific health-related behaviour. Additionally, Farhadifar et al. (2016) contended that perceived control and self-efficacy are conceptually intertwined, as both pertain to the perceived ability to enact a certain behaviour. Therefore, drawing from these arguments, the study concludes that perceived behavioural control and self-efficacy are not conceptually distinct constructs. Consequently, perceived behavioural control is adopted as a construct in this study.

2.15.2 Cues for Action and Subjective Norms

Cues for action may indirectly manifest in individuals' attitudes and subjective norms regarding a specific health-related behaviour, as these attitudes and norms may be influenced by conversations with friends, healthcare providers, or ongoing media campaigns (Gerend & Shepherd, 2012). Furthermore, the subjective norms component of TPB might impact how HBM's prompt to action translates into changes in health-related behaviour. Taking subjective norms into consideration, the direct correlation between action incentives and behavioural intentions becomes less significant (Yang, 2015). Hence, the variable of subjective norms in the Theory of Planned Behaviour is incorporated in this study.

2.15.3 Perceived Benefit and Attitude

The concept of 'perceived benefit' refers to an individual's belief in the advantages of receiving a vaccine (Alhalseh et al., 2020). In other words, it involves the assessment of the potential gains one expects to achieve from taking a specific action. Attitudes, on the other hand, are typically shaped by predictions of both positive and negative consequences (Fishbein & Ajzen, 1975). According to the Theory of Planned Behavior (TPB), attitudes encompass both expectations regarding the outcomes of a suggested behavior and the evaluation of those expected consequences. In the context of vaccination, this translates to an individual's assessment of the benefits they anticipate from vaccinating their children. Hence, in terms of perceived benefit and attitude, scholars in particular have emphasised the importance of incorporating a cost-benefit analysis approach in conceptualising and evaluating attitude in the context of TPB (Yang, 2015). In a study conducted by Gerend & Shepherd (2012), identical sets of four items were employed to evaluate perceived benefits, thereby gauging attitudes towards HPV vaccination. Additionally, Lajunen & Räsänen (2004) asserted a correlation between attitude and benefit. Consequently, the variable of attitude in the Theory of Planned Behaviour is incorporated in this study.

2.16 Hypothesis Development

Based on the conceptual overview described above, fourteen hypotheses were formulated in this study to formulate the cause-effect relationships assumed in the theoretical framework. In scholarly discourse, a hypothesis represents an informed conjecture drawn from existing literature. Given the utilisation of the SEM-PLS approach in this study, it is crucial for these hypotheses to explicitly articulate the direction of the relationship, indicating whether it is positive or negative.

2.16.1 Perceived Susceptibility and Vaccination Intention

Perceived susceptibility refers to the perception of a significant likelihood of contracting a disease, which indicates an increased awareness of risk (Zampetakisb& Melas, 2021). Perceived susceptibility refers to a person's beliefs or perceptions regarding their susceptibility to contracting a particular disease. In the case of children's vaccination, this concept refers to how parents perceive the likelihood of their child

contracting a particular disease if they are not vaccinated. If parents perceive that their child faces an elevated risk of contracting a disease, they are more inclined to regard vaccination as a protective measure against that particular illness. Moreover, perceived susceptibility concerning children's vaccination pertains to parents' or caregivers' beliefs regarding their child's vulnerability to infectious diseases. This involves their subjective evaluation of the likelihood of their child acquiring a specific disease or condition.

Parents' perception of susceptibility is shaped by various factors, including their comprehension of the disease in question, its mode of transmission, and their assessment of their child's risk factors. When evaluating their child's susceptibility, parents may take into account factors such as the child's age, overall health, exposure to potential sources of infection, and vaccination status. The perception of susceptibility significantly influences parents' attitudes and behaviours regarding vaccinating their child. If parents perceive their child to be highly susceptible to a particular infectious disease, they are more likely to recognise the importance of vaccination as a preventive measure. They may feel a greater sense of urgency to protect their child from potential harm and prioritise vaccination.

Conversely, parents who perceive their children to be less susceptible to a disease may underestimate the risks associated with not being vaccinated. This perception could be due to factors such as limited knowledge of disease, misconceptions about the safety or effectiveness of vaccines, or the belief that the child's general health alone provides sufficient protection against infection. When contemplating vaccinating their children, perceived susceptibility refers to parents' evaluation of the likelihood of their children contracting a disease, such as whether they are more or less prone to acquiring it.

Moreover, numerous studies underscore the significance of perceived susceptibility in shaping vaccination intentions (Ling et al., 2019; Wong et al., 2020; Zakeri et al., 2021; Li et al., 2022). Ling et al. (2019) discovered that individuals who perceived themselves as more susceptible to influenza were more inclined to express vaccination intentions. Similarly, Wong et al. (2020) employed the Health Belief Model in a cross-sectional study on COVID-19 vaccination intentions, revealing that heightened perceptions of susceptibility to COVID-19 infection were linked to stronger vaccination intentions.

In addition, Zakeri et al. (2021) found a significant association between parents' intention to have their children vaccinated and their perception of susceptibility, with those who planned to vaccinate expressing a greater sense of susceptibility. Grinberg & Sela (2021) conducted a study with a group of mothers and found a direct correlation between their perception of their child's susceptibility to measles and their willingness to allow their child to be vaccinated. A stronger belief in their children's susceptibility corresponded to a higher willingness to allow for children vaccination. Likewise, Li et al. (2022) observed a favourable correlation between parents' readiness to vaccinate their children and an elevated perception of susceptibility in their investigation.

Prior research has consistently demonstrated a positive linkage between perceived susceptibility and intention to vaccinate. Drawing from these findings, the study posits the following hypothesis:

H1: Perceived susceptibility is positively related to vaccination intention

2.16.2 Perceived Severity and Vaccination Intention

Perceived severity indicates the extent of harm that an individual perceives a risk could inflict (Zampetakis & Melas, 2021). Perceived severity is about how parents generally perceive the possible negative consequences if their children become ill, e.g. the severity of symptoms that may occur if their child is infected and whether these are severe.

In the context of children vaccination, perceived severity refers to parents' perceptions regarding the seriousness of a specific disease and the potential health repercussions of contracting it. When parents or caregivers consider vaccinating their children, perceived severity includes their subjective assessment of the impact the disease could have on their child's health and wellbeing.

Parents' perceptions of severity are influenced by several factors, including their knowledge of a disease, its symptoms, potential complications and available treatment options. In addition, personal experiences or reports from people who have suffered from said disease could influence their perception of its severity.

If parents perceive a disease to be very serious and has a significant impact on their child's health, they may be more inclined to consider vaccination as an essential preventive measure. Parents may opt to prioritise vaccinating their child as a means to mitigate the risk of the disease causing adverse health effects on their child. Recognising high severity can create a sense of urgency and motivate parents to take proactive measures to protect their child's health.

On the other hand, when parents perceive an illness as less severe, they may underestimate the potential health consequences of infection. This perception may be due to limited knowledge of a certain disease, misconceptions about its severity or a belief that their child's immune system can cope well with the infection. Consequently, parents may need more motivation to prioritise vaccinating their children (McNeil et al., 2019).

Understanding parents' perceptions of the severity of a disease is essential for promoting children vaccination. Effective communication and education campaigns are important to provide accurate information about the potential health consequences of certain diseases. Emphasising the severity of these diseases and the importance of vaccination as a preventative measure can help allay parents' concerns and give them an accurate idea. By providing evidence-based information, health care providers and health authorities can contribute to informed decision-making and encourage parents to protect their children's health through timely vaccination.

Previous research examining the factors that influence vaccination decisions has shown that perceived severity of illness significantly influences vaccination intention (Ling et al, 2019; Wong et al, 2020; Qioa, 2020; Grinberg & Sela, 2021; Zakeri et al,2021; Li et al,2022).

Research findings repeatedly emphasise the role of perceived severity in the emergence of vaccination intentions. In a study by Qioa (2020) involving college students in South Carolina, heightened perceptions of the severity of a health condition or disease were positively linked to the intention to receive vaccination. Similarly, Zakeri et al. (2021) observed that parents intending to vaccinate their children held stronger perceptions of severity compared to those not planning to vaccinate.

Furthermore, Grinberg & Sela (2021) examined mothers' perspectives on measles vaccination and revealed a positive correlation between mothers' perceptions of measles

severity and their inclination to vaccinate their children. Similarly, Li et al. (2022) found that parents who deemed the potential health risks or negative consequences of their child contracting an infection as more severe demonstrated greater willingness to vaccinate their children, indicating a positive correlation between perceived severity and vaccination intention.

Past studies consistently demonstrate a positive association between perceived severity and intention to vaccinate. Based on these findings, the study posits the following hypothesis:

H2: Perceived severity is positively related to vaccination intention.

2.16.3 Perceived Barriers and Vaccination Intention

Perceived barriers, as defined by Coe et al. (2021), encompass beliefs concerning the effectiveness and anticipated costs associated with specific actions. This implies that individuals who perceive various hurdles or obstacles related to vaccination, such as concerns regarding vaccine safety, access to vaccination facilities, or the affordability of vaccines, allow these factors to impact their intention to receive vaccination.

Perceived barriers have been extensively investigated as crucial components in health behaviour theories, including the Health Belief Model (HBM). In this context, perceived barriers pertain to the perception of impediments or difficulties that might affect the willingness to vaccinate children. When parents perceive fewer obstacles, such as discomfort or apprehensions about potential side effects, they exhibit greater readiness to have their children vaccinated. A diminished perception of barriers correlates positively with an increased willingness to vaccinate children.

Perceived barriers related to children vaccination refers to the obstacles or challenges that individuals or parents perceive when considering vaccinating their children. These barriers include the factors that individuals believe may hinder or interfere with their ability to successfully complete the vaccination process.

Perceived barriers related to children vaccination can vary from person to person and include a range of influencing factors. How individuals perceive these barriers can significantly affect their intention and ability to vaccinate their child. If parents perceive significant barriers, this may deter them from initiating or completing the vaccination

process. In contrast, when parents perceive minimal barriers or have strategies to overcome them, they are more likely to proceed with vaccinating their children. In other words, Chu & Liu (2021) postulated that perceived barriers influence parents' decision-making process with regards to the vaccination of their children.

Perceived barriers were observed to have greater importance when parents reflect on their behaviour regarding vaccinating their children. As the inclination toward vaccination grows, parents become increasingly attuned to the practicality and feasibility of vaccination-related measures. This underscores the significance of alleviating perceived barriers and surmounting practical impediments to enhance children vaccination rates. It can be inferred that parents who perceive these barriers are often less motivated to vaccinate their children against diseases. Put simply, encountering obstacles related to these factors tends to diminish parents' likelihood of vaccinating their children.

Consistent research demonstrates that perceived barriers exert a significant influence on the intention to receive various vaccines, such as HPV and influenza vaccines (Schmid et al., 2017). Additionally, perceived barriers have been identified as substantial predictors of vaccination intention across different vaccine contexts, including HPV and influenza vaccines (Chu & Liu, 2021). Mercadante & Law (2021) confirmed the impact of perceived barriers on vaccination intention, a finding echoed by Chu & Liu (2021), who identified perceived barriers as a significant predictor of vaccination intention. Grinberg & Sela (2021) observed that higher maternal willingness to vaccinate was associated with lower perceived barriers, while Hayden (2022) identified the perception of barriers as the most influential factor shaping vaccination intentions.

Moreover, multiple studies consistently reveal a negative association between perceived barriers and vaccination intentions. For instance, a survey of women in Slovenia by Vrdelja et al. (2019) found that perceived barriers significantly predicted the intention to refrain from vaccinating their children. Furthermore, Wong et al. (2020), in a cross-sectional study examining individual intentions regarding Covid-19 vaccination, applied the Health Belief Model (HBM) to analyse respondents from Malaysia, revealing a strong correlation between lower perceptions of barriers and a pronounced inclination toward definitive Covid-19 vaccination.

Similarly, Coe et al. (2021) highlighted in their study that perceptions of barriers related to access to Covid-19 vaccines influenced respondents' willingness to express intent to receive the vaccines. Additionally, a study on Covid-19 vaccines by Chu & Liu (2021) indicated that individuals perceiving fewer barriers were more inclined to express an increased intention to vaccinate.

Thus, an inverse relationship is found from existing research in relation to perceived barriers and vaccination intention. In light of these findings, the study proposes the following hypothesis:

H3: Perceived Barriers is negatively related to vaccination intention.

2.16.4 Attitude and Vaccination Intention

Attitude denotes an individual's cognitive and affective assessment of a specific behaviour, determining whether it is regarded favourably or unfavourably (Wolff, 2021). In simpler terms, attitude represents a person's thoughts and feelings towards a particular behaviour and shapes their overall evaluation as either positive or negative. This evaluation can be based on rational considerations, personal beliefs and emotional reactions. Attitude reflects the overall positive or negative assessment of the anticipated outcomes or experiences linked with a suggested behaviour.

In this study, attitude pertains to parents' comprehensive evaluation of a psychological object, which in the context of children vaccination may encompass their perspectives on vaccine safety or effectiveness. According to the Theory of Planned Behaviour (TPB), an individual's attitude toward a specific behaviour significantly influences their behavioural intentions (Ajzen & Kruglanski, 2019). As per TPB, one's intention stands as the primary predictor of engaging in a particular behaviour, with attitude playing a pivotal role in shaping this intention.

Numerous studies consistently underscore the significance of an individual's attitude toward vaccination in predicting their intentions to vaccinate their children (Wong et al., 2020; Qioa, 2020; Caso et al., 2019). This underscores the importance of comprehending and considering parental attitudes toward children vaccination.

Several investigations consistently demonstrate the pivotal role of vaccination attitudes in shaping vaccination intentions. For instance, Qioa (2020) conducted a study among college students in South Carolina, revealing a positive association between vaccination attitudes and intentions to be vaccinated.

Similarly, Caso et al. (2019) revealed that individuals harboring negative attitudes toward vaccination are more inclined to intend not to vaccinate their children. Further, Fan et al. (2021) explored this nexus and discovered a positive correlation between individuals' vaccination attitudes and their intentions to receive vaccination, suggesting that those with favourable attitudes are more likely to possess stronger vaccination intentions.

Wolff (2021) conducted a study on the Norwegian population and found that a positive attitude towards vaccination predicted vaccination intention. In addition, Li et al. (2022) found that parents' decision to have their children vaccinated was positively associated with a positive attitude towards vaccination. Moreover, in their investigation concerning the Covid-19 vaccine, Limbu et al. (2022) identified attitude as the most influential factor associated with vaccination intention, underscoring the pivotal role of attitude in shaping vaccination intention.

Prior research consistently indicates a positive correlation between attitude and vaccination intention. Building on these findings, the study postulates the following hypothesis:

H4: Attitude is positively related to vaccination intention.

2.16.5 Subjective Norms and Vaccination Intention

Subjective norms pertain to the perceived influence of social pressure compelling an individual to act in a specific manner (Wolff, 2021). Furthermore, Fan et al. (2021) defines subjective norms as the way individuals perceive the opinions and judgments of significant others, such as friends, family, and members of society in general, regarding their engagement in a particular behaviour.

According to Wong et al. (2022), the opinions and influence of those around a person are of greater importance to their behavioural decisions than their own opinions.

These influential people may include parents, friends, peers, religious figures, healthcare providers and other people who are held in high regard. Hence, subjective norms wield significant influence over an individual's inclination to act in a particular manner, driven by the inclination to adhere to the expectations set by influential figures. The quest for social acceptance and conformity profoundly shapes decision-making processes and subsequent behavioural outcomes.

In the context of children vaccination, subjective norms denote the perceived social expectations, pressures, or influences that individuals, especially parents or caregivers, discern from their social circles, comprising family, friends, or community members, concerning the immunisation of their offspring.

These subjective norms significantly contribute to the formation of vaccination intentions. Individuals are more inclined to vaccinate their children if they perceive their social milieu to endorse vaccination as a responsible and essential measure. Conversely, individuals who perceive discouragement or indifference toward vaccination within their social network are less motivated to vaccinate their children.

Numerous studies have identified subjective norms as a significant factor associated with vaccination intention. For instance, Li et al. (2022) observed that parents perceiving robust subjective norms regarding vaccination, encompassing social pressures and expectations from their social sphere, exhibit a higher likelihood of vaccinating their children. Put more simply, the more strongly parents believe that their community views vaccination as essential, the more likely they are to intend to have their children vaccinated.

Likewise, Wong et al. (2022) established a correlation between subjective norms and the intention to receive vaccination. Their findings underscore the significant impact of perceived social expectations and behaviours on individuals' vaccination decisions. Dou et al. (2022) similarly noted a positive association between subjective norms and vaccination intention in their research. In the context of Covid-19 vaccination, Limbu et al. (2022) identified subjective norms as influential in shaping vaccination intentions. Wolff (2021) investigated the Norwegian populace and concluded that subjective norms are predictive of vaccination intentions. Barattucci et al. (2022) conducted a study that

also revealed a favourable correlation between subjective norms and vaccination intention.

Drawing from the aforementioned empirical findings, it is reasonable to posit that subjective norms exert a pivotal influence on parents' vaccination intentions. Therefore, in consideration of the discourse and empirical support, the following hypothesis is posited:

H5: Subjective norms is positively related to vaccination intention.

2.16.6 Perceived Behavioural Control and Vaccination Intention

Perceived behavioural control encompasses an individual's overall perception of their ability to influence and manage factors that either facilitate or impede the execution of a specific behaviour (Li et al., 2022). In simpler terms, it reflects a person's self-assurance or confidence in successfully carrying out a particular action (Fan et al., 2021). It entails a subjective evaluation of one's perceived control over the factors that can impact the successful enactment of a recommended behaviour. In other words, it is about how confident a person is regarding their performance of the desired behaviour and overcoming of any potential obstacles or challenges. This concept is critical to understanding the intentions and motivations of individuals engaging in a particular behaviour, such as accepting vaccinations.

When it comes to children vaccination, perceived behavioural control pertains to parents' confidence in effectively handling various aspects of their child's vaccination process. This includes, for example, their belief that they are able to attend and keep vaccination appointments, the finding of an appropriate healthcare provider, coordinating appointments with their work schedule, and securing transportation to the vaccination site (Fan et al., 2021).

In addition, perceived behavioural control includes parents' beliefs about their ability to handle potential challenges or concerns during vaccination. This may include being aware of possible side effects, being prepared to respond to their child's discomfort or anxiety, and having strategies in place to provide comfort and support during vaccination.

The confidence and capability parents feel in managing the practical aspects of vaccinating their child profoundly impacts their readiness and ability to navigate the vaccination process effectively. When parents possess a sense of assurance and proficiency in addressing the logistical and potential hurdles involved, they are more inclined to take the necessary steps to ensure their child receives the recommended vaccinations (Fan et al., 2021).

Li et al. (2022) identified a positive correlation between heightened perceived behavioural control and parental dedication to vaccinating their children. This indicates that parents perceiving greater influence over the vaccination process, including access to information, resources, and support, are more inclined to intend to vaccinate their children. These findings align with Dou et al.'s (2022) discovery of a positive relationship between subjective norms, perceived behavioural control, and vaccination intention.

Wolff (2021) investigated the Norwegian population and found that perceived behavioural control served as a predictor of vaccination intention. Similarly, in a study on the Covid-19 vaccine conducted by Limbu et al. (2022), perceived behavioural control was linked to vaccination intention.

Therefore, perceived behavioural control significantly shapes parents' intention to vaccinate their children. Given the discussions and empirical evidence available, the following hypothesis is proposed:

H6: Perceived behavioural control is positively related to vaccination intention

2.16.7 Vaccination Intention and Actual Vaccination Behaviour

According to Ajzen (1985), people's behaviours are guided by their intentions. In essence, people's actions are guided by their intentions regarding a specific activity or behaviour. Intentions represent an individual's readiness or deliberate choice to partake in a particular behaviour. These intentions are influenced by various factors, including personal beliefs, attitudes, values, and the perceived significance of the behaviour. The stronger the intention, the greater the likelihood that the behaviour will be executed. This concept finds support in the research of Wee et al. (2014), who suggested that a steadfast intention to carry out a specific behaviour heightens the probability of its actual performance.

Ajzen's theory posits that intention serves as a mediator between personal beliefs and actual behaviour, serving as a bridge that links an individual's internal factors to their observable actions. The more positive and robust the intention, the greater the likelihood that it will manifest into the desired behaviour.

Expanding upon Ajzen's theory suggests that a person's firm intention to engage in a specific behaviour enhances their propensity to do so. For example, if someone has a strong intention to have their child vaccinated, they are more likely to take the necessary actions, such as making appointments, finding out about vaccines and following through with the vaccination.

This perspective aligns with Wolff's (2021) argument that the Theory of Planned Behaviour (TPB) considers intentions as a direct antecedent to behaviour. According to TPB, an individual's intentions regarding a specific behaviour significantly influence whether they will engage in that behaviour. Intentions represent a person's deliberate decision and motivation to act in a particular manner.

To sum up, intentions play a pivotal role in translating an individual's thoughts and motivations into tangible behaviour. The stronger a person's resolve to act in a certain manner, the more likely they are to actualise that behaviour (Wolff, 2021). This viewpoint is in line with Fall et al.'s (2018) assertion that vaccination intentions reliably predict future behaviour. Understanding this concept is particularly crucial when examining the formation of vaccination intentions within the broader context of children vaccination in the general populace.

As Fisher et al. (2013) emphasised, the influence of one's intentions on human behaviour is well recognised. "Actual behaviour" refers to the conscious decisions and subsequent actions of individuals. When it comes to children vaccination, "actual behaviour" refers to the steps individuals take to have their children vaccinated. This includes scheduling and attending vaccination appointments, ensuring that the recommended doses of vaccines are taken, and consistent adherence to the vaccination process.

Numerous prior studies have consistently demonstrated a direct association between vaccination intention and subsequent vaccination behaviour. For instance, Juraskova et al. (2012) identified intention as a significant predictor of HPV vaccination

behaviour in their research. Similarly, Fall et al. (2018) underscored the pivotal role of intention in predicting influenza vaccination behaviour in a previous investigation. Furthermore, in their study on Covid-19 vaccinations, Shiloh et al. (2022) revealed that intentions accurately predicted 82.4% of vaccination behaviour. Moreover, an increased intention to receive the Covid-19 vaccine was correlated with a higher willingness to accept vaccination and a recent history of previous vaccinations.

Additionally, behavioural research conducted during the 2009 H1N1 influenza pandemic, also known as swine flu, indicated a positive relationship between stronger intention and higher vaccination rates (Shiloh et al., 2022).

The collective findings from previous studies strongly suggest that intentions influence behaviour. Consequently, the current study hypothesises the following:

H7: Vaccination intention is positively related to vaccination behaviour

2.16.8 Perceived Policy Effectiveness (PPE) moderates the association between Perceived Susceptibility, Perceived Severity, Perceived Barriers, Attitude, Subjective Norms, Perceived Behavioural Control, and Vaccination Intention.

Perceived policy effectiveness (PPE) entails an individual's assessment of the positive or negative impacts of incentive measures (Fu et al., 2020). When individuals perceive these policies as effective, they are more likely to develop positive attitudes and greater awareness of desired behaviours, such as vaccinating their children, leading to a greater willingness to do so. In an environmental context, some researchers have suggested that perceived effectiveness of interventions may increase intention (Liao et al., 2018; Wan & Shen, 2013; Wan et al., 2014).

Numerous previous studies have examined perceived policy effectiveness of interventions as a moderating factor between different variables. Wang et al. (2014) and Xu et al. (2017) have affirmed the moderating impact of perceived policy effectiveness on the strength and direction of the relationship between constructs of the Theory of Planned Behaviour (TPB) and individuals' intentions. In their respective inquiries, Wan et al. (2014) scrutinised the function of perceived policy effectiveness (PPE) in moderating the correlation between social psychological elements and recycling intentions. Similarly, Liao et al. (2018) explored the pivotal role of perceived policy

effectiveness (PPE) in moderating the association between determinants and intentions concerning waste management. Fu et al. (2020) conducted a study that revealed a high level of perceived policy effectiveness as a mediator in bridging the gap between awareness and behaviour, effectively transforming understanding into actionable behaviour. Further research by Wang et al. (2021) in the field of environmental studies, has also shed light on the significant and positive influence of perceived policy effectiveness on people's intentions to adopt, actively support and pursue environmentally friendly practices.

Perceived susceptibility refers to the degree of which parents' rate the likelihood of their child contracting a particular disease if they are not vaccinated. Several studies have underscored the significance of perceived susceptibility in shaping vaccination intentions (Ling et al., 2019; Wong et al., 2020; Zakeri et al., 2021; Li et al., 2022). For instance, Li et al. (2022) identified a positive correlation between parents' inclination to vaccinate their children and an elevated perception of susceptibility. Conversely, Wang et al. (2021) concluded in their research that perceived susceptibility had no notable impact on college students' vaccination intentions. Moreover, a study by Zheng et al. (2022) in the United States revealed an inverse relationship between perceived susceptibility and vaccination intention.

Additionally, perceived severity in this context pertains to parents' evaluations of the seriousness of a specific disease and the potential health ramifications of infection. Zakeri et al. (2021) observed that parents who intended to vaccinate their children showed a stronger perception of disease severity than parents who did not intend to do so. In a study by Qioa (2020) with college students in South Carolina, a stronger perception towards the severity of a health condition or disease correlated positively with the intention to vaccinate. On the contrary, several studies have yielded conflicting results (Alobaidi, 2021; Wang et al., 2021; Zheng et al., 2022; Limbu & Gautam, 2023). For instance, Alobaidi (2021) found that the perceived severity of illness had limited predictive power regarding the definite intention to receive the Covid-19 vaccine among the Saudi population. Similarly, Limbu & Gautam (2023) reported a weaker link between the perceived severity of Covid-19 infection and vaccination intention.

Perceived barriers encompass the hurdles individuals encounter when considering vaccination, such as concerns about vaccine safety, accessibility of vaccination sites, or

financial implications, which influence their willingness to vaccinate. Mercadante & Law (2021) confirmed the impact of perceived barriers on vaccination intention, while Chu and Liu (2021) demonstrated their predictive power. Grinberg & Sela (2021) observed a correlation between increased maternal willingness to vaccinate and reduced perceived barriers. Additionally, Hayden (2022) highlighted the perception of barriers as the most critical determinant of vaccination intentions.

Attitude reflects a parent's overall evaluation of vaccination, including perceptions of safety and effectiveness. Wolff (2021) found that a positive attitude towards vaccination predicted vaccination intention in the Norwegian population. Similarly, Li et al. (2022) identified a positive correlation between parents' decision to vaccinate their children and their positive attitudes towards vaccination. However, these findings contrast with a study by Van Lier et al. (2016), which found no influence of attitude on vaccination intention among Dutch public health professionals and parents. Johnson and Ogletree (2017) also reported inconsistent findings regarding the predictive power of attitude on vaccination intentions.

Regarding subjective norms, Dou et al. (2022) discovered a positive relationship between subjective norms and vaccination intentions. Limbu et al. (2022) found that subjective norms played a role in vaccination intention formation for the Covid-19 vaccine. Conversely, Fan et al. (2021) found no significant predictive power of subjective norms on Covid-19 vaccination acceptance. Ayieko et al. (2024) found no significant association between Covid-19 vaccination acceptance and strong subjective norms among pregnant women in Kenya.

Perceived behavioural control showed a positive correlation with vaccination intention in the study by Dou et al. (2022), while Wolff (2021) found it predictive of vaccination intention in the Norwegian population. However, studies by Xiao & Wong (2020), Britt and Englebert (2018), and Johnson and Ogletree (2017) found no significant relationship between perceived behavioural control and vaccination intention. Abd Rahman et al. (2024) also found no significant association between perceived behavioural control and parents' intention to vaccinate among teachers. Given the inconsistency in previous research findings, this study introduces perceived policy effectiveness as a moderating variable to investigate its potential positive influence on the relationship between the variables. Consequently, the following hypotheses are proposed:

H8: The positive relationship between perceived susceptibility and vaccination intention will be stronger if the perceived policy effectiveness is higher.

H9: The positive relationship between perceived severity and vaccination intention will be stronger if the perceived policy effectiveness is higher.

H10: The negative relationship between perceived barriers and vaccination intention will be weakened if the perceived policy effectiveness is higher.

H11: The positive relationship between attitude and vaccination intention will be stronger if the perceived policy effectiveness is higher.

H12: The positive relationship between subjective norms and vaccination intention will be stronger if the perceived policy effectiveness is higher.

H13: The positive relationship between perceived behavioural control and vaccination intention will be stronger if the perceived policy effectiveness is higher.

2.16.9 Social Media Influence moderates the relationship of Vaccination Intention and Actual Behaviour

Alhadid & Qaddomi (2016) offered an extensive definition of social media, characterising it as a digital platform embodying various online activities grounded in Web 2.0 principles. These platforms facilitate the generation and dissemination of user-generated content, allowing individuals to share, exchange, or create information, ideas, and visual media within both local communities and virtual networks. Leveraging established technologies and smartphones, social media establishes an interactive environment for individuals and communities to collectively engage with and modify user-generated content.

In the context of this study, the impact of social media influence on the correlation between vaccination intention and actual behaviour holds significant importance. It can either reinforce the decision to vaccinate or create barriers that discourage parents from vaccinating their children. Social media thus has the potential to either strengthen or weaken the correlation between vaccination intention and actual behaviour, especially with regard to vaccinating children.

The social media influence plays a crucial role in facilitating the public's access to reliable scientific information. In addition, an individual’s media consumption habits significantly shapes online social support, with media serving as a common resource for

persuasion on social media platforms. A study by Wiyeh et al. (2018) links foreign disinformation campaigns online to declining vaccination rates and increased negative discussions about vaccines on social media platforms.

Several studies underline the influential role of social media influence in shaping behaviour. For instance, Danova et al. (2015) highlight the profound impact of widespread dissemination of false vaccination claims online, contributing to parental reluctance to vaccinate their children. Additionally, Ortiz-Sánchez et al. (2020), Germani & Biller-Andorno (2021), and Mitts et al. (2022) have identified Facebook and Twitter as popular platforms utilised by anti-vaccination communities to promote their agendas, which have subsequently spread to mainstream media platforms like YouTube, Instagram, and messaging services such as WhatsApp.

The Covid-19 pandemic has further exacerbated the proliferation of the anti-vaccination movement, as noted by Lama et al. (2022). Wong et al. (2020) found that vaccination hesitancy is influenced by anti-vaccination propaganda disseminated via social media platforms, especially in Malaysia.

Chadwick et al. (2023) emphasised that a significant portion of health information on social media comes from professional sources but spreads widely through personal networks, reaching a larger audience. Grinberg & Sela (2021) found that frequent media exposure, active participation in health discussions on social media and constant searching for online information reduces young parents' willingness to vaccinate and increases awareness of the pros and cons of vaccination.

Lin & Wang (2021), Alhadid & Qaddomi (2016), Chadwick et al. (2023), and Borah et al. (2022) have delved into the impact of social media influence as a moderator on the transition from intention to behaviour. While intention plays a crucial role in shaping subsequent behaviour (Agmeka et al., 2019), it does not guarantee behaviour on its own (Fall et al., 2018). External factors, such as media exposure, can attenuate the connection between vaccination intentions and actual behaviour (Borah et al., 2022).

Dou et al. (2022) suggest that individuals' vaccination intentions are shaped by the information they receive about vaccines, implying that well-informed individuals are more likely to harbor positive attitudes toward vaccination. In the effort of increasing

vaccination rates, effective interventions are needed to strengthen vaccination intentions and overcome barriers to action (Dai et al., 2021).

Furthermore, Conner & Norman (2022) emphasised that strong intentions allow for a more accurate prediction of behaviour. This view is also confirmed by Wegwarth et al. (2014), who found that expressed intentions to be vaccinated against HPV consistently predicted subsequent vaccination behaviour. Lehman et al. (2014) demonstrated that the intention to receive influenza vaccination reliably predicted actual vaccination. In contrast, Maciuszek et al. (2022) observed disparities between individuals' attitudes toward COVID-19 vaccination and their actual vaccination behaviour.

These findings highlight the conflicting results from previous research regarding the link between vaccination intention and subsequent behaviour. Therefore, this study proposes the introduction of social media influence as a moderating variable to explore its potential to positively impact the relationship between intention and behaviour. As such, the current study posits the following hypothesis:

H14: The positive relationship between vaccination intention and vaccination behaviour will be stronger if the social media influence is higher.

2.17 Conceptual Framework

In prior research, parental vaccination intentions have typically been explored through the lenses of the Health Belief Model (HBM) or the Theory of Planned Behaviour (TPB). This study contributes to the existing literature by incorporating perceived policy effectiveness and social media influence as moderating variables.

The conceptual framework of the study is presented in the following table. This framework elucidates the relationships among independent variables, moderating variables, and the dependent variable of the study. In this study, the study integrate elements from both the Health Belief Model and the Theory of Planned Behaviour. Additionally, the study introduces social media influence and perceived policy effectiveness as moderating variables. Previously scholars such as Wong et al. (2020), Donadiki et al. (2014), McKinley (2015), Cheney & John (2013), and Fall et al. (2018) have employed the Health Belief Model to explore vaccination intention. On the other hand, researchers like McKinley (2015), Fisher et al. (2013), Askelson et al. (2010), Dubé

et al. (2018), and Wheeler & Buttenheim (2013) have utilised the Theory of Planned Behaviour to investigate intention to vaccinate. Therefore, this study integrates both theories to provide a more comprehensive analysis on both aspects.

2.17.1 Conceptual Framework for this Study

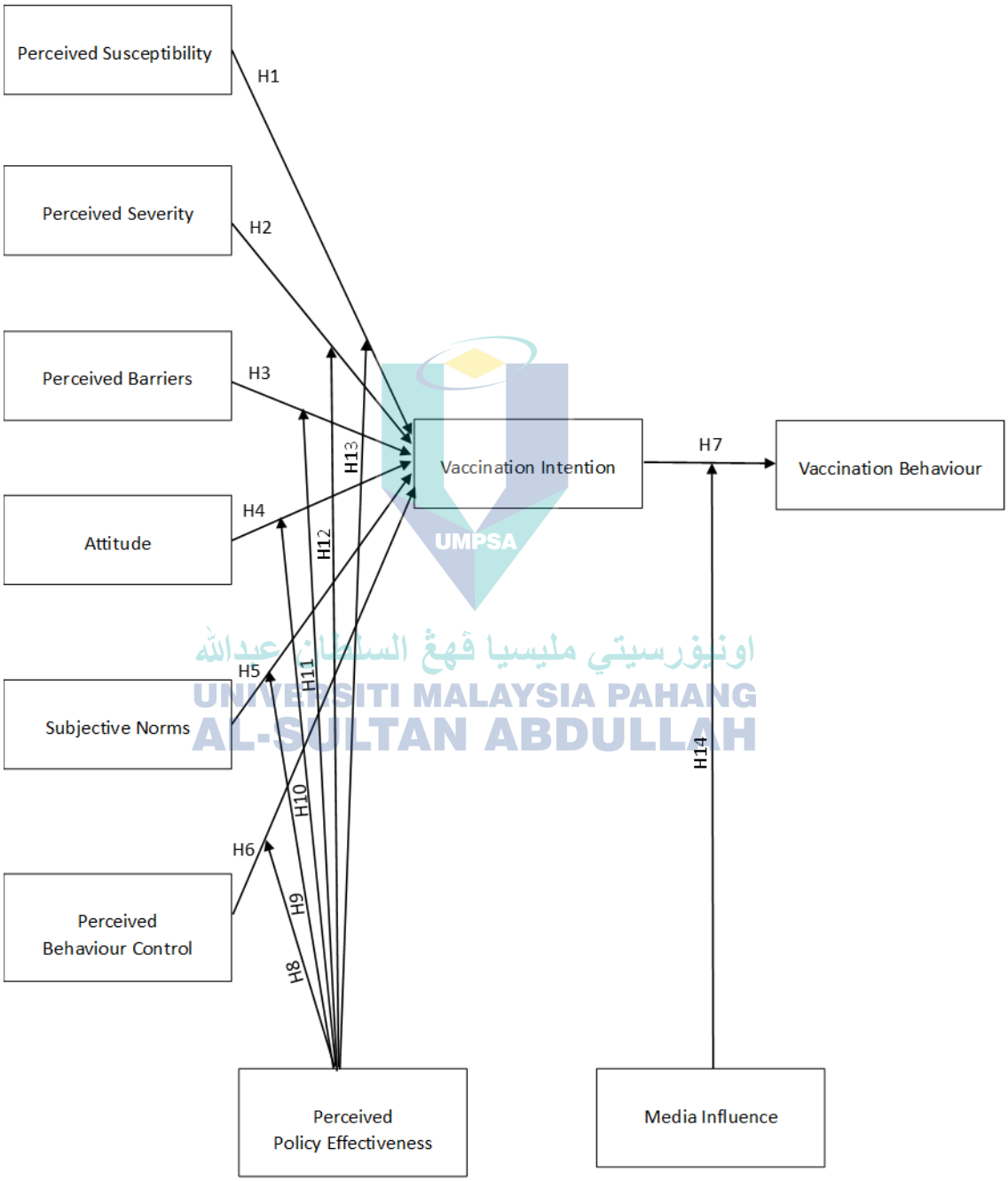

Figure 2.3 Conceptual Framework of this study

2.18 Conclusion

The chapter serves to establish the theoretical foundation for examining parents' vaccination intentions concerning their children, focusing on Yuppie parents. It delves into prior research on parents' vaccination intentions and extends the discussion to include vaccination intentions among various groups such as teachers, medical personnel, and educators. Furthermore, it presents the theoretical framework underpinning this study. Finally, it outlines a conceptual framework and proposes hypotheses regarding parents' vaccination intentions.

Moving forward to the next chapter, detailed discussion is provided on the research methodology employed in this study. Specifically, it elucidates the research paradigm guiding the study's approach, delineates the intricacies of the data collection process, specifies the software utilised, and elucidates the development of the research instrument. This chapter aims to furnish a comprehensive comprehension of the methodological framework employed in the study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the techniques used to study parents' intentions and behaviour concerning vaccinating their children. It presents the research methodology used to examine the relationship between the exogenous factors (independent variables), the moderating variables and the endogenous factors (dependent variables) of the study. The discussion begins with the research design and instruments used for this study, explicating the study population, sampling design, data collection, and data analysis procedures. This study aims to investigate parents' vaccination intention and behaviour concerning children's vaccination. Furthermore, this study examines the moderating effects of perceived policy effectiveness and social media influence on the relationship between parental intentions and vaccination behaviour.

3.2 Research Paradigms

In the early 1960s, Thomas Kuhn introduced the concept of the paradigm shift in the sense of total overhaul and restructure. A paradigm is defined as "the evaluations, social rules, norms, frames of reference, points of view, ideologies, mythologies, theories and accepted procedures of people that determine their thoughts and actions" (Gummesson 2000, p.18). In any research study, the first step to be taken is the choosing of a research topic and an encompassing paradigm (Creswell & Creswell, 2005). The chosen paradigm serves as a set of core beliefs and assumptions that are calculatively made, which then proceeds to serve as touchstones for related research activities.

Research paradigms are critical to a researcher's decisions in developing research strategy and influences the conclusions drawn from the results of the study carried out. The positivist (quantitative) and constructivist paradigms (qualitative) are the two main characteristics of research paradigms. According to Creswell (2011), the post-positivist

assumptions are the traditional way of conducting research and these assumptions are better applied to quantitative analysis than qualitative research. The scientific process or the conducting of a scientific study are terms used to describe this perspective. It is also known as postpositivism, postempiricism, empirical science and positivist/postpositivist research. The deterministic philosophy of postpositivists assumes that causes (probably) influences effects or consequences. Furthermore, there are laws or theories that govern the world and these need to be tested, verified and refined to understand the world. Thus, in the scientific method — the research approach accepted by postpositivists — a researcher begins with a theory, collects data that either confirms or refutes the theory, and then revises it and conducts further testing (Creswell & Creswell, 2005). Similarly, in this study, the researcher developed a theory by formulating narrow hypotheses and then proceeded with collecting data to prove or disprove the hypotheses. The data is collected using a construct or measurement instrument and is analysed using statistical methods of hypothesis testing.

This contrasts with the constructivist or social constructivist approach to qualitative research. Constructivism is usually associated with qualitative methods. This worldview embraces the subjective opinions of participants and their understanding or personal view towards meaning of a certain phenomena. When individuals describe their experiences, they do so from a sense that is shaped by social interaction and personal history. In this approach, research is conceptualised "from the bottom up", starting with individual perspectives and progressing to general patterns and finally towards general findings (Shannon-Baker & Edwards, 2018). Table 3.1 summarises the main characteristics of the two paradigms: positivist (quantitative) and constructivist paradigms (qualitative).

Table 3.1 The main features of the quantitative and qualitative paradigms

Positivistic Paradigm (Quantitative)	**Constructivist Paradigm (Qualitative)**
Applies scientific principles	Applies understanding principles
Uses prediction	Uses exploration
Values objectivity	Values inter-subjectivity
It aims to produce quantitative data	It aims to produce qualitative data
Uses large (statistical) samples	Uses small (theoretical) samples
Concerned with hypothesis testing	Concerned with generating theories
Data is particular and precise	Rich and descriptive data
Artificial location	Natural location
High reliability	Low reliability
Low validity	High validity
Can claim generalisation from sample to population	Can claim transferability, from one context to another that is similar

Source: Adapted from Collis and Hussey (1997).

3.2.1 Justification of Paradigm Choice

The positivist perspective and the quantitative approach were used in this study. The paradigm for this study was chosen for several reasons. The decision was based on the considerations in the previous section and on the existing literature, which was critically evaluated in chapter two. The first reason is that a considerable number of researchers have used a quantitative approach to conduct studies on children vaccination (Azizi et al, 2017; Musa et al, 2019; Davis et al, 2020; Aedh., 2022; Deml et al, 2022; Tang et al, 2023; Fadl et al, 2023).

The second reason is the advantages of the scientific method, which forms the basis of positivist research. This method allows researchers to test their hypotheses and rely on objective measurements (data) to support their findings. Furthermore, a quantitative approach can validate the hypothesis and measure the fit of a chosen model to the available data (Hair et al., 2021).

Third, the application of the quantitative method may lead to new research in the future to gain a better understanding of the factors that influences the vaccination intentions of Yuppie parents. The instrument used in this study can be modified for future studies if replication of results is needed to confirm the theory. Thus, in this case, a quantitative method provides a basis for new research in the context of children vaccination in Malaysia.

3.3 Research Process

In general, this study followed a research procedure typical of all scientific studies. The seven main phases are the problem, the hypothesis, the research design, the measurement, the data collection, the analysis and the generalisation. Each phase affects and is affected by the underlying theory (Frankfort-Nachmias & Nachmias 1992).

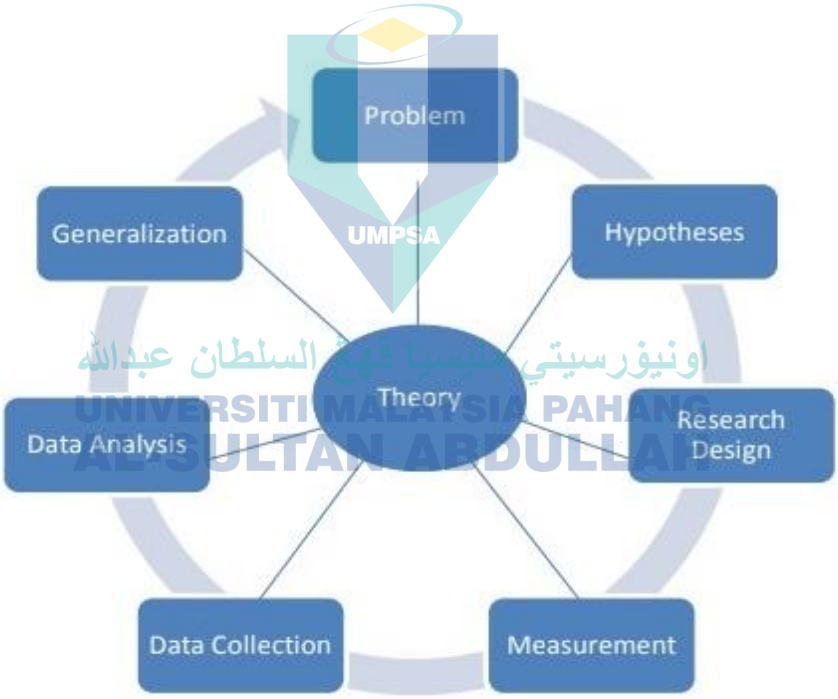

Figure 3.1 The Main Stages of the Research Process
Source: Frankfort-Nachmias and Nachmias (1992)

The research process undertaken is as illustrated in Figure 3.1. The research method began with a literature review in which gaps in the literature were identified and the topic or research questions were developed. An overview of the relevant literature

reviewed was provided in Chapter Two and the research questions for the study were listed in Chapter One.

The next step is the choosing of the best research design for this study. As mentioned in the previous section of this chapter, the researcher must first determine the appropriate study paradigm. After deciding on a study paradigm, a right and fitting research design was selected.

In the measurement phase, it was important to pay close attention to the design of the questionnaire. In this study, an item was adopted and adapted from different literatures, of which the validity of the items was also confirmed by a content expert, followed by a pretest. In the final step of this phase, a pilot study was conducted to determine the reliability and validity of the questionnaire. The questionnaires were fine-tuned based on the results of this phase. The final instruments were then used to collect data from the sample after the questionnaire had been modified and completed.

The information was then analysed in two further phases. First, a preliminary data analysis was conducted to clarify the data and understand the perspectives of the respondents. In the second phase of the study, structural equation modelling was used. The results of the data analysis are explained in Chapter Four

The final phase involved interpretation of the results and a discussion of the implications of the findings. All of these are discussed in detail in Chapter Five. The researcher should then refer to the relevant theories and literature to provide a clear explanation and detailed discussion of the findings.

3.4 Research Design

The research design establishes a framework for collecting and analysing data according to the objectives of the study. A research design is defined as "a roadmap for data collection, measurement, and analysis to better explain the proposed research questions" (Sekaran & Bougie, 2016). The research design involves a series of meaningful decisions about the aim of the study, such as it being exploratory, descriptive, or hypothesis testing based. In addition, the study must be designed to include the area in which it will be conducted, which encompasses the type of investigation, the degree of influence of the researcher, the time horizon, and the unit of analysis of the study.

According to Bryman & Bell (2007), the design methods are an essential part of the design. Through the study design, the researcher can ensure that the results answer the research questions clearly and accurately.

First of all, the purpose of the study is a series of rational decisions regarding the aim of the study, such as whether the survey should be exploratory, descriptive or hypothesis testing based. Thus, the purpose of this study is to analyse and test the formulated hypotheses on the intentions and behaviours of Yuppie parents regarding their children's vaccinations based on the conceptual framework described earlier. According to Sekaran and Bougie (2016), hypothesis testing based studies also attempt to explain the nature of the relationships between the independent and dependent variables. Hypothesis testing provides a better understanding of the relationship between variables, such as determining how many changes in the independent variables causes impact on another dependent variable.

Next is the terming of the unit of analysis. This refers to the level of aggregation at which the data is analysed and conclusions are drawn (Bougie & Sekaran, 2019). Since the information was collected from Yuppies, the unit of analysis of the study is the individual. The data is collected from individuals, and the responses of the Yuppie parents are treated as an individual data source.

This study uses a correlational study as a research method to describe the relationships between the variables. It discusses the aspects that influence Yuppie parents' intentions and actions toward vaccinating their children.

Then, the level at which the researcher intervenes is determined by whether the study questions are correlational or causal. This is also determined by the need to prove a causal relationship beyond reasonable doubt (Bougie & Sekaran, 2019). Therefore, this study is conducted in a natural setting, with the researcher intervening as little as possible in the usual course of events.

There are two types of study environments: artificial and non-artificial. According to Bougie & Sekaran (2019), research can be conducted either in the natural environment (i.e., non-constructed situations) or in artificial environments (i.e., constructed scenarios). Most exploratory and descriptive (correlational) studies are conducted in natural settings,

while most causal studies are conducted in laboratory settings. This study is conducted in an uninfluenced environment without interfering with the respondents' daily lives.

Since the data were collected in a single time period, this study is categorised as a cross-sectional study that examines the vaccination intentions and behaviour of Yuppie parents. According to Sekaran (2003), in a study with a cross-sectional design, the data is only looked at once. It may take days, weeks or even months to answer the study question. The respondents will collect the information for this report and the report will be completed as quickly as possible.

Finally, regarding the methods of data collection, Creswell (2021) stated that to determine the best method, the researcher must identify the research problem, the researcher's personal experience, and the target population. In this study, the study will utilise the quantitative study method. Quantitative research is an approach to test objective theories by examining the relationship between variables. These variables can in turn be measured, usually through the use of instruments, so that the numbered data can be analysed using statistical techniques. If the study aim is to (a) identify factors that influence an outcome, (b) determine the benefits of an intervention, or (c) understand the best predictors of outcomes, then a quantitative approach is most appropriate. It is also the best approach to test a theory or explanation. Moreover, numerous researchers have successfully used a quantitative approach to conduct studies on children vaccination (Lam & Lep., 2018: Balbir Singh et al, 2019; Huber et al, 2020; McElfish et al, 2022; Shmueli., 2023; Fadl et al, 2023).

3.5 Target Population and Sampling Considerations

Sampling begins with the precise definition of the target population. Bryman & Bell (2007) defined a population as the unit from which the sample is derived. The population reflects the totality of samples or elements that meet certain requirements, such as social groups, organizations, communities, educational institutions, students, states, or any other link that is common between samples. The target population in this study is Yuppie parents in the East Coast region of Malaysia. The region was selected because there were approximately 1,600 cases of children's vaccination refusal in 2017, with Pahang, Kelantan and Terengganu being among the states with the highest number of vaccination refusals to date (Farhana, 2017).

However, due to time and cost constraints, researchers do not usually study the entire population. The entire population is often too large and too expensive to study. For this reason, sampling methods are used throughout social science research. Sampling is the selection of a subset of respondents from the entire population under study, so that the analysis of said subset of respondents allows conclusions to be drawn about the population mean. The advantages of sampling methods are the significantly lower costs involved and a faster data collection and analysis process.

3.5.1 Sampling Design

Sampling is about finding the right sample or respondents for a study (Bougie & Sekaran, 2019). Two commonly used sampling methods are the non-probability and probability methods (Bougie & Sekaran, 2019). A study participant is selected using a probability sampling method, where each member of a population has an equal chance of being selected. This is because the selection is random and unbiased. There are five different types of probability sampling: primary random sampling, systematic sampling, cluster sampling, stratified sampling, and multistage sampling (Bougie & Sekaran, 2019). A technique known as "non-probability sampling"," on the other hand, is used to collect samples in a way that does not give all individuals in a population an equal chance of being selected. Random sampling, quota sampling, sequential sampling, purposive sampling and snowball sampling are the five categories of non-probability sampling (Sekaran & Bougie, 2019). Since a set list of Yuppie parents was not available for this study, a non-probability sample was used.

As Seddon & Scheepers (2012) stated, researchers need to define the target population for statistical generalisation. Although probability samples are considered ideal and appropriate for most studies (Rowley, 2014), most social science researchers rely heavily on non-probability sampling to collect data quantitatively using questionnaires (Rowley, 2014) rather than generalising statistically (Calder et al., 1981). This view can be confirmed by Sekaran (2003), who claimed that the results garnered through a non-probability sampling method are not statistically generalisable. Many researchers in the social sciences use the non-probability method in their empirical studies, such as Albeny et al (2018), Kara et al (2018), De Figueiredo et al (2020), Decouttere et al (2021), Limbu et al (2022), Shmueli (2023) and Ayieko et al (2024) to name a few.

This study uses a type of non-probability sampling; therefore, the results of the study may not be generalisable to the entire population and its representatives. However, this is one of the stumbling blocks in quantitative cross-sectional behavioural science research. According to Sekaran & and Bougie (2019), this method may be necessary to obtain information from specific target groups rather than those who are most readily or conveniently available. The sample is then restricted to those who can provide the information needed, either because they are the only ones who have it or because they fulfil the researcher's requirements. Thus, Yuppie parents are the group of people for whom the researcher has already set the study criteria.

In addition, a purposive sample was used in this study because respondents were selected based on certain criteria. A screening was conducted to identify qualified respondents. Participants were filtered based on four requirements to ensure that they met the requirements of the study. The criteria are:

1. Lives in a city
2. Between 15 and 40 years old.
3. Has at least tertiary education (ie: STPM, undergraduate, postgraduate)
4. Work in a professional or managerial position
5. Wealthy parents (Income more than RM10,971)

To summarise, the population for this study is an educated young parent (aged 15 to 40) who live in a city, work in professional or managerial positions, and have an income of more than RM10,971. The criteria for selection were also expressly mentioned in the cover letter of the questionnaire. Filter questions were also asked at the end of the questionnaire (in the demographic section) to confirm that the selected respondents met the requirements.

3.5.2 Sample size

For researchers to generalise the results from the sample population, a reliable and valid sample is required for this study. Creswell (2021) asserts that the determination of a sample size should be based on the researcher's plans for analysis. If the data obtained and collected is too small for analysis in a research study, the study will have a problem with statistical power. On the other hand, if the data collected is very large (i.e. oversampling), research resources will be wasted and the results ineffective. As a result, too much data or a large sample size of a study could be problematic as the study could be prone to type II errors (Sekaran, 2003). Therefore, the sample size must be sufficient to test the research model.

According to Chin & Newsted (1999), the minimum tolerable sample size for PLS-SEM is between 30 and 100 cases. Boomsma & Hoogland (2001) added that the sample size must be larger than 200 observations; therefore, each study should have a sample size of about 200 respondents. Regrettably, some researchers believe that sample size does not matter when using PLS-SEM (Hair et al., 2021). This concept has been justified by the oft-repeated 10-fold rule (Barclay et al., 1995), which states that the sample size should be 10 times the number of independent variables in the PLS path model. According to this rule of thumb, the minimum sample size should be 10 times the maximum number of arrowheads pointing to the latent variable in the PLS model.

Nonetheless, the estimated statistical power should take into account the minimum sample size, although this general principle provides a rough guide (Hair et al., 2021). Consequently, the researcher use a Cohen (1992) power table or a power analysis with a programme such as G*Power to determine the statistical power. In addition, a power analysis is important when developing and testing complex models using PLS path modelling to check the effects of sample size (Akter et al., 2011). Creswell (2021) further explains that a power analysis can estimate a required target sample size if the analysis plan aims to discover a significant relationship between the variables of interest.

Therefore, the a priori power analysis embedded in the G*Power software (Faul et al., 2007; Faul et al., 2009) is used to estimate the sample size required for this study. G*Power (Faul et al., 2007, 2009; Mayers, 2013) is frequently used in behavioural and

social science research. For this study, the F-test of regression via the G*Power application was used. To determine the exact sample size, the power analysis was set for a multiple regression with thirteen predictors. The test uses an alpha of 0.05, a power of 0.80 and a medium effect size of (f2 = 0.15). Since 80% is considered the minimum level of significance in most social science studies (Mayers, 2013), the desired sample size was set at 131.

Therefore, to determine the appropriate sample size for this study, an a priori power analysis is conducted using G*Power software as described by Faul et al. (2007; 2009). The investigation of the moderation model was found to require a sample size of 131 respondents, based on the input parameters, incorporated medium effect size (f2), an α of 0.05, a power of 0.80 and a model with 13 predictors.

In addition, the notion of minimum sample size is also supported by the sample size guideline by Green (1991). According to Green (1991), the sample size for this technique is based on the number of predictors with three effect sizes, small, medium and large. It is common practice to use the medium effect size to determine a good number of respondents for the study. As can be seen in Table 3.2, it was found that with a maximum number of fifteen predictors, the minimum sample size for the medium effect size is 138.

Therefore, the appropriate sample size for the study is approximately 131 respondents (see Appendix), based on the input parameters of medium effect size (f2), alpha of 0.05, power of 0.80 and a total of thirteen predictors for the study model (Mayers, 2013). In addition, related literature points out the need to perform statistical power calculations to determine the adequacy of the sample size (Marcoulides & Saunders, 2006). Considering all methods and the collection of 357 sets of data, it can be concluded that the sample size established is not a problem for this study.

Table 3.2 Sample Size Guideline

Number of predictors	Sample sizes based on power analysis			Sample sizes based on new rule-of-thumb		
	Effect size			Effect size		
	Small	Medium	Large	Small	Medium	Large
1	390	53	24	400	53	23
2	481	66	30	475	63	27
3	547	76	35	545	73	31
4	599	84	39	610	81	35
5	645	91	42	670	89	38
6	686	97	46	725	97	41
7	726	102	48	775	103	44
8	757	108	51	820	109	47
9	788	113	54	860	115	49
10	844	117	56	895	119	51
15	952	138	67	1045	139	60
20	1066	156	77	1195	159	68
30	1247	187	94	1495	199	85
40	1407	213	110	1795	239	103

Source: Green (1991)

Moreover, existing literature emphasises the need to include statistical power calculations to ensure sample size adequacy (Marcoulides & Saunders, 2006). However, it is advisable to exceed the minimum number of respondents during the data collection phase to avoid potential problems with underpowered analyses in post-hoc studies. Therefore, a post-hoc power analysis was performed with G*Power before conducting the data analysis. This analysis showed that the calculated power of the 357 available datasets was 0.9997, exceeding the recommended threshold of 0.80. Consequently, the 357 data sets collected have sufficient statistical power to refute the null hypotheses (Faul et al., 2007). Thus, the influence of significance on the certainty of results can be further explained (McQuitty, 2004)

3.6 Data Preparation

3.6.1 Common Method Variance (CMV)

If the data came from a single source, a study is usually tested for Common Method Variance (CMV) (Podsakoff & MacKenzie, 2012). CMV is the variance associated with the measurement procedure rather than the constructs represented by the measured values (Chang et al., 2010). There is a risk of common method variation (CMV) when data in self-report surveys are collected simultaneously from the same individuals. Perception measures from a single respondent must be considered when both dependent and focal explanatory variables are perception measures (Chang et al., 2010). In the case where CMV is not adequately controlled by certain procedural and statistical remedies, it can significantly affect research results (Tehseen et al., 2017). Therefore, it is strongly recommended that procedures and statistical tools be used to prevent and eliminate the effects of CMV in statistical data analysis.

In this study, both procedural and statistical strategies were used to overcome CMV. The procedural methods used two scales (Podsakoff et al., 2003) to avoid technical bias caused by the similarity of scale endpoints. The exogenous (independent) variables were measured with a 5-point scale, while the endogenous (dependent) variables were measured with a 7-point scale.

Moreover, the statistical methods of the Measured Latent Marker Variable Approach (MLMV) and full collinearity were used in the study. Chin et al. (2013) developed a new approach to detect and correct CMV using partial least squares, also known as the Measured Latent Marker Variable Approach (MLMV). With this method, CMV can be removed from structural routes. To complete this process, several independent measurements must be collected simultaneously with the data for the central research model. To show the effects of the technique, the items of the measured latent marker variable (MLMV) should have no nomological relationship with other study questions when using the same scale and survey style (Chin et al., 2013). These unrelated measures are referred to as MLMVs and are used to detect usually undetected CMV contamination in the data.

3.6.2 Social Desirable Bias

In the social sciences, the tendency of respondents to produce socially desirable bias is the most researched type of response bias and also the most common (Fisher & Katz, 2000). Thus, one of the greatest risks to data validity when using a multiple-indicator self-report scale is the problem of social desirability bias (SDB) (King & Bruner, 2000). Understanding social phenomena and social problems usually involves the quantification and analysis of empathic behaviours or attitudes. Respondents may anticipate negative consequences if they violate social desirability (SD) norms or disclose their private information to others (Tourangeau & Yan, 2007). Therefore, respondents have often misused the self-disclosure method when asked sensitive questions (Tourangeau & Yan, 2007).

In psychology and the social sciences, social-desirability bias (SDB) is considered one of the most common and persistent causes of bias affecting the validity of experimental and survey results (Andersen et al, 2019; Caputo, 2017; Crowne & Marlowe, 1960; Fisher, 1993, 2000; Fisher & Katz, 2000; Jo, 2000; King & Bruner, 2000; Kwak et al, 2019; Neeley & Cronley, 2004). Therefore, it is necessary to maintain control over SDB. This is due to the fact that the main objective of the study is to assess the variables of interest in the study model. Van de Mortel (2008) recommended that researchers partially removed the SDB scale. In terms of statistics, partial removal may alleviate the problem, but it will not solve it completely (Hayes, 2013).

The Marlowe-Crowne Social Desirability Scale (MCSDS) was developed by Crowne and Marlowe in 1960 and proved the validity of a scale to measure social desirability (Crowne & Marlowe, 1960). However, although the MCSDS is the most commonly used instrument to assess social desirability (Vésteinsdóttir et al., 2015), it is excessively long (Fischer & Fick, 1993). It includes 33 true and false statements and is slightly outdated (Stöber, 2001).

Lengthy instruments can present apparent hardship and is a source of difficulty for the respondent. Furthermore, MCSDS instruments have been around for quite some time. However, there did exist a short form of the MCSDS, known as the Strahan-Gerbasi version (Strahan & Gerbasi, 1972). It has ten items but lacks unidimensionality and

reliability (Thompson & Phua, 2012). Later, numerous researchers had also shortened their original social desirability factor scale to make it more comprehensible (e.g. (Fischer & Fick, 1993; Reynolds, 1982).

As a result, researchers have several alternatives to assess the impact of common method bias, including the use of any short form of the social desirability item scale. According to Vésteinsdóttir et al. (2015), the short forms of the MCSDS should be read and used with caution as they were derived from the full 33-item scale and were not treated as short forms. Therefore, Fischer & Fick (1993) proposed a shortened version (X1) of the items to measure the social desirability factor. Therefore, a simplified version (X1) of the items provided by Fischer and Fick (1993) is used in this study to assess the social desirability factor. The first data collection included the seven items present in the shorter version (X1) of the questionnaire. Table 3.6.2 shows the detailed items of the SDS-7.

Table 3.3 Social Desirable Bias

	Social Desirable Bias
1	I like to gossip at times.
2	There have been occasions when I took advantage of someone.
3	I'm always willing to admit it when I make a mistake.
4	I sometimes try to get even rather than forgive and forget.
5	At times I have insisted on having things my way.
6	I have never been irked when people expressed ideas very different from my own.
7	I have never deliberately said something that hurt someone's feelings.

Source: Fischer and Fick (1993) Note: All short forms of social desirability scale developed by Fischer and Fick (1993) had already existed in the original article of Crowne & Marlowe, (1960).

3.7 Data Collection Process

Data can be collected in different ways. There are two methods of data collection namely face-to-face interviews and online distribution. Sekaran (2003) mentions that each method of data collection has its advantages and disadvantages. This study used the online data collection. In addition, in collecting data, this study used a self-administered questionnaire, which is a data collection technique where the respondents read and answer the provided questionnaire and thus respond with their views without a trained interviewer (Hair et al., 2021).

Apart from being the more cost-effective way of collecting data, it also results in a better response rate. Previous studies have shown that respondents are more willing to answer honestly if they complete a questionnaire themselves (Dillman, 2007). This form of data collection is also designed to eliminate the social desirability bias that often occurs when seeking sensitive data (Dillman, 2007). Another approach to data collection in this study was the online survey. An online questionnaire is distributed to respondents by use the Internet. The questionnaire was administered through Google Forms and included a cover letter stating the purpose of the study and instructions for the survey.

It is suitable when respondents are located in a large geographical area and the researcher could not reach all respondents personally. Another advantage of this approach is that respondents can take their time in completing the questionnaires. However, the response rate was quite low and the researcher had to make an effort to remind respondents to complete the questionnaires. Furthermore, the research trend showed that it was very difficult to get a response when the data collection was conducted online. To avoid a shortage of respondents for this study, the researcher decided to use multiple approaches for data collection.

3.7.1 Data collection process

A research model was developed and implemented to ensure that rigorous data collection was conducted to create a database that could be used to answer the research questions and accomplish the objectives of the study. Figure 3.2 illustrates the research model and the procedures used throughout the process.

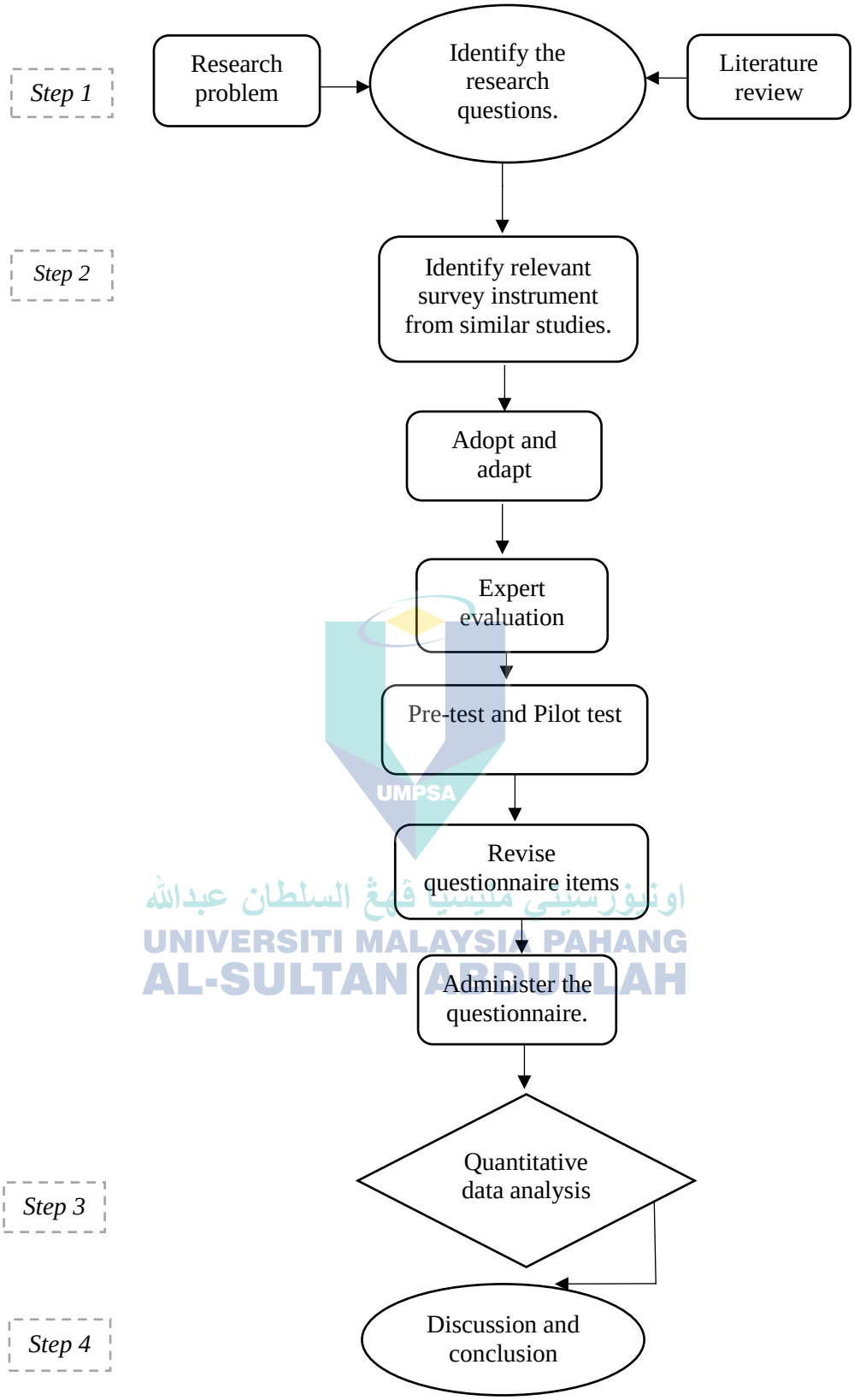

Figure 3.2 Research Process

Step 1

In conducting the study, a research model was used to obtain accurate data through a rigorous data collection process. The process began with identifying and understanding the research problem of the study. Subsequently, the research questions were identified and improved through appropriate modifications based on a thorough literature review.

Step 2

After analysing the advantages of quantitative research in obtaining reliable and valid data to answer the research questions of the study, an appropriate approach, quantitative analysis, was chosen. The design is explained in more detail in the section on instruments in this chapter. Questionnaires were selected and prepared as suitable instruments. In addition, the procedures for data collection using this method are explained in the section on data collection procedures.

Step 3

The process is continued with the data analysis of the data obtained through the questionnaires. The information from the databases was then analysed to validate the results.

Step 4

Finally, in answering the research questions, the results of the study were explicitly discussed. Conclusions were then drawn based on the discussion of the results.

3.8 Statistical Tools and Data Analysis Approaches

Because statistical theory has seen much advancement in this current era, researchers should consider newer statistical methods (Guide & Ketokivi, 2015). In this study, three statistical programs are used to conduct the analysis for this study. The Statistical Package for Social Science (SPSS) was used to analyse the data in the first phase. Smart Partial Least Squares (PLS) was used to test the hypothesis and G*Power was used to test the significance of the analysis.

3.9 Development of the Questionnaire

Questionnaires are an indispensable tool for most researches, regardless of the field, and are particularly useful in the fields of economics, medicine and politics (Belhadjali et al., 2012). A crafted questionnaire functions to capture all the information needed (Dunn & Huss, 2004). In other words, the questionnaire is a tool to collect enough data to answer the research questions of the study accurately and thoughtfully. Sekaran (2003) suggested using the questionnaire measures from previous studies to address concerns about validity and reliability. Sekaran (2003) added that it is better to adapt instruments from previous studies that have been shown to be useful rather than to develop one's own measurement instruments.

Syahrul et al (2011) mentioned that it is recommended that the researcher create a questionnaire by adapting questions from existing intention-to-vaccinate instruments that previous researchers have completed. Even though questionnaires from previous studies were adapted for used in the current study, normality, reliability and validity tests were carried out to ensure that the questionnaires used are valid and reliable.

3.10 Measurement and Instrumentation

To test the research model, the questionnaire contains forty-seven (47) indicators that form the exogenous and endogenous constructs. The indicators are grouped under ten latent constructs. All items are from previous studies and were adapted to ensure their suitability for the current study.

The main instrument used in this study was a series of questionnaires. Table 3.4 illustrates the constructs, items and sources of items in the questionnaire used for this study. Combining existing validated measures is a common approach in developing the instrument as this has two main advantages, namely (1) evaluating existing instruments for validity and reliability and (2) using the existing instruments. This allows for comparisons to be drawn between the new results. Table 3.4 illustrates the constructs and number of items used for this study.

Table 3.4 Constructs and Number of Items

Part	Construct	No of Items	Sources
A	Perceived Severity	3	(Twum et al., 2021)
B	Perceived Susceptibility	3	(Twum et al., 2021)
C	Perceived Barriers	6	(Twum et al., 2021)
D	Attitude	7	(Twum et al., 2021)
E	Subjective Norms	3	(Twum et al., 2021)
F	Perceived Behavioural Control	6	(Twum et al., 2021)
G	Perceived Policy Effectiveness	7	(Wang et al, 2021)
H	Social Media Influence	4	(Pop et al, 2020)
I	Vaccination Intention	3	(Caso et al., 2019)
J	Vaccination Behaviour	5	(Wee et al., 2014)
Total		47	

The questionnaire used in this study was made available in both English and Malay. All questions were designed to be short, concise and easy to understand. The format of the instrument was also intended to be simple, clear, understandable and suitable for statistical analysis.

The questionnaire was divided into several sections, with each section representing the respective constructs of this study. The questionnaire was divided into different sections to comprehensively capture different aspects. These included (1) Vaccination intention and vaccination behaviour in section A, (2) Perceived policy effectiveness and social media influence in section B, (3) Perceived susceptibility, severity, barriers, attitude, norms, and behavioural control in section C, followed by section D focusing on social desirability, and finally section E focusing on demographic profile. Each section is separated from the previous section by a heading. To avoid confusion, instructions were provided as a guide before the start of each section.

3.11 Exogenous Construct

Six exogenous constructs were used in this study: perceived severity, perceived susceptibility, perceived barriers, attitude, subjective norms, and perceived behavioural control. In the following subsection, perceived severity, perceived susceptibility, perceived barriers, attitude, subjective norms and perceived behavioural control are presented and the items used to measure them are discussed.

3.11.1 Perceived Susceptibility

In this study, perceived susceptibility refers to the risk of contracting or developing a particular disease. Therefore, perceived susceptibility was measured based on the scale used in the study carried out by Champion (1984). Champion (1984) used his scale to measure cancer self-examination in 1984, nonetheless, it has since been used in numerous related health researches, including vaccination studies, to adapt the Champion Health Belief Model construct (Blue & Valley, 2002; Frankenfield, 2009; Sundstrom et al, 2015; Neves et al, 2020). A total of 3 questions were used to measure perceived vulnerability on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). These statements were reconstructed to fit the required garnering of information from respondents in this study: Parents versus children vaccination.

Empirically, this instrument was used by Blue & Valley (2002), Frankenfield (2009), Sundstrom et al (2015), Neves et al (2020), as the reliability coefficient was highly reliable with a value of $\alpha = 0.7$, $\alpha = .87$, $\alpha = 0.94$, and $\alpha = .91$, respectively. The reliability coefficient for this measure was therefore significant. Table 3.5 details the indicators used.

Table 3.5 Perceived Susceptibility

	PERCEIVED SUSCEPTIBILITY
1	My children have a high risk of contracting a disease
2	My children can contract certain diseases more easily
3	I feel I could contract a disease in the future

3.11.2 Perceived Severity

The Health Belief Model instrument (perceived severity, perceived vulnerability, and perceived barriers) is based on a series of questions developed by Champion (1984). In 1984, Champion developed a research instrument that linked health related behaviours to HBM. Since then, numerous studies have adapted the Health Belief Model and its accompanying questionnaires to Champion's constructs in related health studies, which includes vaccination studies (Blue & Valley, 2002; Frankenfield, 2009; Sundstrom et al, 2015; Neves et al, 2020).

Percieved severity refers to the perception of the severity of a disease and its consequences, including death, suffering, and physical and mental disability. This study included three items adapted from Champion's (1984) instruments to measure the dimensions of the perceived severity of support. All items were rated on a 5-point Likert scale. Three indicators were used to capture the perceived severity of the intention to vaccinate.

The reliability coefficient for the measures was acceptable; with perceived severity α = .0.7 (Blue & Valley, 2002), α = .87 (Frankenfield, 2009), α = .94 (Sundstrom et al., 2015) and α = .91 (Neves et al., 2020). Table 3.6 details the indicators used.

Table 3.6 Perceived Severity

	Perceived Severity
1	Infectious diseases may pose a serious health problems to my children
2	Diseases with complications are dangerous
3	If my children are sick, the disease could spread to other family members

3.11.3 Perceived Barriers

Perceived barriers are perceived barriers regardless of the favorable or unfavorable cost of vaccination. The items and the scale for measuring the aspect of perceived barriers were indeed adapted from Champion's study. However, the original items (Champion 1984) were modified to suit the research purposes and the context of

children vaccination. In this study, six items were used on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). In addition, the reliability coefficient for the measures were acceptable; perceived barriers α = .0.7 (Blue & Valley, 2002), α = .87 (Frankenfield, 2009), α = .94 ((Sundstrom et al., 2015), and α = .91 (Neves et al., 2020). Table 3.7 illustrates the items used.

Table 3.7 Perceived Barriers

	Perceived Barriers
1	I am generally opposed to children vaccinations
2	Children vaccinations have unpleasant side effects
3	Children vaccinations weaken the natural immune system
4	Children Vaccinations are inconvenient
5	Children vaccinations are expensive
6	I am influenced by negative news about Children vaccines

3.11.4 Attitude

Attitudes are a person's assessment of what would happen if they followed any proposed advice and are usually based on the prediction of positive and negative consequences. Following previous research on attitudes towards vaccination, the successfully used measurement instrument (Caso et al., 2019) was used as a guide in this study to measure parents' attitudes towards their vaccination intention of their children. A total of 7 questions were used to measure attitudes on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

The reliability coefficient for the measures was acceptable; with an attitude α = .88 (Gerend & Shepherd, 2012), α = .82 (Yang, 2015), α = .98 (Caso et al., 2019). Table 3.8 details the items used.

Table 3.8 Attitude

	Attitude
1	I think getting my children vaccinated in the future would be very good for them.
2	I think getting my children vaccinated in the future would be protective for them.
3	I think getting my children vaccinated in the future would be necessary for them.
4	I think getting my children vaccinated in the future would be healthy for them.
5	I think getting my children vaccinated in the future would be advantageous for them.
6	I think getting my children vaccinated in the future would be not painful for them.
7	I think getting my children vaccinated in the future would be beneficial for them.

3.11.5 Subjective Norms

Subjective norm is defined as the perceived prevalence of a behaviour and the perception of others' expectations on how the behaviour should be performed. According to TPB, if a person believes that their social referents (e.g. parents and friends) consider a certain behaviour to be essential, they tend to have a higher intention to perform this behaviour.

The items and the scale for measuring the subjective norm was adapted from a study carried out by Caso et al. (2019). For this study, three items on a 5-point Likert scale were used, ranging from 1 (strongly disagree) to 5 (strongly agree).

The reliability coefficient for the measures were found acceptable; subjective norms $\alpha = .78$ (Gerend & Shepherd, 2012), $\alpha = .79$ (Yang, 2015), $\alpha = .93$ (Caso et al., 2019). Table 3.9 details the items used.

Table 3.9 Subjective norm

	Subjective Norm
1	Most people who are important to me think that I should vaccinate my children
2	My spouse would like me to get my children vaccinated
3	Family members other than my spouse (for example, siblings, aunts, uncles, grandparents, etc.) would like me to get my children vaccinated

3.11.6 Perceived Behavioural Control

Perceived behavioural control is a variable that influences actions both directly and indirectly through intentions. It is assumed that the direct influence on behaviour represents the degree of control one feels over the suggested behaviour. The indirect influence is based on the principle of the motivational effect on behavioural intentions. In this study, the components of perceived behavioural control were measured according to the study carried out by Caso et al. (2019). In this section, respondents were asked to express their opinion on their intentions regarding the vaccination of their children on a 5-point Likert scale which ranged from 1 (strongly disagree) to 5 (strongly agree) on the given statements.

A reliability coefficient was determined for this scale; Perceived behavioural control, α = .88 (Caso et al., 2019). Table 3.10 details the items originally used.

Table 3.10 Perceived Behavioural Control

	Perceived Behavioural Control
1	If I wanted to, I am sure I could have my children vaccinated
2	For me to get my children vaccinated would not be difficult.
3	I have much control over the choice of vaccinating my children
4	I am confident I can vaccinate my children in the next months, even if there is a financial cost
5	I am confident I can vaccinate my children in the next months, even if my schedule is busy
6	I am confident I can find a healthcare provider (for example, clinic, health center, and physician's office) where I can get my children vaccinated

3.12 MODERATING EFFECTS

The Perceived Policy Effectiveness and the construct of social media influence were used as moderating variables in this study. 7 items in total on a 7-point Likert scale was used to measure the moderating variables.

In this study, two components of the moderating variables, perceived policy effectiveness and social media influence, was measured according to a previous study carried out by Wan et al. (2014) and Vezzosi et al. (2017), respectively.

3.12.1 Perceived Policy Effectiveness

The items and the scale for measuring perceived policy effectiveness had been adapted from a study by Wan et al. (2014). However, the items originally used by Wan et al. (2014) were modified to suit the research purposes and the context of children vaccination. Seven items on a 7-point Likert scale from a range of 1 (strongly disagree) to 5 (strongly agree) was used for this study. The coefficient of reliability of the garnered measurements was acceptable. Table 3.11 details the items used for this study.

Table 3.11 Perceived Policy Effectiveness

	Perceived Policy Effectiveness
1	The Government has increased financial investment to support children vaccination
2	The children vaccination programmes organised by the Government have effectively aroused vaccination awareness in the general public
3	The Government provides clear guidelines and regulations on children vaccination
4	The Government campaigns helps citizens understand the importance of children vaccination
5	The Government campaigns clearly explains the benefits of children
6	vaccination
7	The Government promotes children vaccination as a positive symbol
	The Government's policy facilitates me to successfully carry out the necessary children vaccination

3.12.2 Social Media Influence

In this study, the components to measure social media influence were adapted from a study carried out by Melovic et al. (2020). In this section, respondents expressed their opinion on the influence of media on vaccination intention via a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) on the statements given.

This scale has a reliability coefficient for media influence of, α = .892 (Melovic et al., 2020). Table 3.12 details the items used for this study.

Table 3.12 Social Media influence

	Social Media influence
1	My engagement on social media influences my decision to vaccinate my children
2	I use social media to search for information on children vaccination
3	Contents about children vaccination on social media are trustworthy.
4	Contents about children vaccination on social media are believable

3.13 Endogenous Construct

The endogenous variable of this study is the intention and behaviour of the Yuppies in regard to vaccination of their children.

3.13.1 Intention Towards Vaccination

This study adapted the measurement components of vaccination intention according to the study by Caso et al. (2019). Respondents were asked to indicate the level of their intention to have their child vaccinated in this section via a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) to the statements given.

A reliability coefficient was determined for this scale with intention having a value of α = .96 (Gerend & Shepherd, 2012), α = .84 (Yang, 2015), α = .98 (Caso et al., 2019). Table 3.13 details the items used.

Table 3.13 Intention towards Vaccination

	Intention
1	I intend to get my children vaccinated in the future.
2	I plan to get my children vaccinated in the future.
3	I want to get my children vaccinated in the future.

3.13.2 Vaccination Behaviour

Actual vaccination-related behaviour was measured in this study using the scale used in the study carried out by Wee et al. (2014). A total of 5 questions were used to measure actual vaccination behaviour on a Likert scale. Based on their chosen response, respondents were asked to justify their answer on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) to the statements given.

A reliability coefficient of $\alpha = 0.952$ was determined for the scale of vaccination behaviour (Wee et al., 2014). Table 3.14 details the items originally used.

Table 3.14 Behaviour towards Vaccination

	Behaviour
1	I often vaccinate my children
2	I often vaccinate my children on a regular basis.
3	I often vaccinate my children because vaccinations are child-friendly.
4	I often vaccinate my children since vaccinations are safe for use.
5	I often vaccinate my children as and when necessary for their health.

3.14 Pre-Test

The recommendations of Lewis et al. (2005) were adopted in this study through the conducting of pretests and pilot tests to determine content validity. Content validity is of great importance as it assesses whether the items of the instrument can actually accurately measure the intended construct (Lewis et al., 2005). It is critical that each item accurately represents the construct and comprehensively captures all of its various

aspects. By conducting these validity tests, the researcher ensures that the study instrument is reliable and can provide meaningful data for the research.

The researcher describes pre-testing as the initial attempt to garner empirical feedback from a tightly controlled sample to assess the suitability of the initial research instrument. At this stage, the reviewer provides feedback on various aspects of the original instrument design, which includes format, comprehensibility, as well as the ease and speed of completion (Lewis et al., 2005).

The main aims of the pretest were to ensure that the questions detailed in the questionnaire were clear and easy to understand and that the instrument correctly measured the intended constructs. In addition, the pretest was intended to identify problems related to the instructions of the questionnaire and the time required to complete it (Lewis et al., 2005). Conducting the pretest is important because it provides valuable insight into the order of questions, improves respondents' understanding, and allows the researcher to assess the appropriateness of the instructions given (Bryman & Bell, 2007). By accomplishing these goals, the pretest contributes to the overall validity and reliability of the research instrument.

For the pretest of this study, experts with academic and industry backgrounds were consulted to validate the children vaccination behaviour survey instrument. The content experts responsible for reviewing the items of the study were lecturers from universities in Malaysia including University Technology Mara (UiTM). Each expert was tasked with providing feedback on various components, including the appropriateness of the scale used, the precision of the instructions given, the clarity or ambiguity of the construct definitions, and the presentation of the items.

The second group consisted of two industry experts from Pejabat Kesihatan Keluarga Daerah and Health Department. The experts were asked to give their feedback on the design of the questionnaire and to thoroughly review each item in terms of content, scope and purpose. In particular, they were asked to comment on various aspects of the research design, including the clarity of the definitions, the representativeness of the items, the appropriateness of the scale, and the clarity of the instructions. Following the interviews with the field experts, minor adjustments were made to the wording of some items, with two items being deleted and no new items added to the questionnaire.

The third phase was related to language. An English language expert was engaged to review the English and Malay language used in the questionnaire.

Table 3.15 shows the background of the experts who assessed the relevance of each indicator to the construct.

Table 3.15 Background of the panel of experts

Coding	Institution	Position
A	Academic staff	Senior Lecturer
B	Academic staff	Senior Lecturer
C	Academic staff	Senior Lecturer
D	Expert from Health Industry	Health Officer
E	Expert from Health Industry	Health Officer

Table 3.16 shows the results of the expert panel's assessment of the indicators in the questionnaire. The expert panel had the task of assessing the relevance of the individual indicators for the construct of the study by assigning a value on a scale of 1 to 10. This scale was intended to quantify the degree of relevance of each indicator to the objectives of the study. The panel members were instructed to select the value that they felt best represented the relevance of each indicator.

In addition to the numerical scores, the panel was asked to provide comments and suggestions on how the indicators could be refined or improved. This feedback was crucial to ensure that the indicators were not only relevant but also effectively captured the constructs they were intended to measure.

As shown in Table 3.16, most indicators received scores above 8.0. This high level of agreement among the experts suggests that the indicators were generally considered highly relevant and well-suited to the study. As a result, no indicators were removed from the questionnaire as their scores demonstrated strong validity and appropriateness for inclusion in the study.

The feedback from the expert panel combined with the high scores indicates that the questionnaire is robust and capable of effectively capturing the data required for the

study. This expert review process helped to ensure the reliability and validity of the measurement tools and improve the overall quality of the study.

Table 3.16 Panel of expert's opinion assessment analysis

Construct	Indicator	Panel of Experts					Mean Score
		A	B	C	D	E	
Perceived Susceptibility `	My children have a high risk of contracting a disease	10	9	9	8	9	`9
	My children can contract certain diseases more easily	10	9	9	9	8	9
	I feel I could contract a disease in the future	10	9	10	10	10	9.8
Perceived Severity	Infectious diseases may pose a serious health problems to my children	10	9	9	8	9	9
	Diseases with complications are dangerous	10	9	9	10	9	9.4
	If my children are infected, the disease could spread to other family members	10	9	10	9	9	9
Perceived Barriers	I am generally opposed to children vaccinations	9	9	8	10	10	9
	Children vaccinations have unpleasant side effects	10	9	9	9	10	9
	Children vaccinations weaken the natural immune system	10	9	9	9	10	9
	Children Vaccinations are inconvenient	10	9	8	9	10	8
	Children vaccinations are expensive	10	9	8	10	7	8
	I am influenced by negative news about Children vaccines	10	9	10	10	10	9

Table 3.16 Continued

Construct	Indicator	Panel of Experts					Mean Score
		A	B	C	D	E	

Attitudes	I think getting my children vaccinated in the future would be very good for them.	10	9	8	8	10	9
	I think getting my children vaccinated in the future would be protective for them.	10	9	9	9	10	9
	I think getting my children vaccinated in the future would be necessary for them.	10	9	9	9	10	9
	I think getting my children vaccinated in the future would be healthy for them.	10	9	8	8	10	9
	I think getting my children vaccinated in the future would be advantageous for them.	10	9	8	8	10	9
	I think getting my children vaccinated in the future would be not painful for them.	10	9	10	10	10	9
	I think getting my children vaccinated in the future would be beneficial for them.	10	9	8	10	10	9
Subjective Norms	Most people who are important to me think that I should vaccinate my children	10	9	9	10	10	9
	My spouse would like me to get my children vaccinated	10	9	8	10	10	9
	Family members other than my spouse (for example, siblings, aunts, uncles, grandparents, etc.) would like me to get my children vaccinated	10	9	8	10	10	9

Table 3.16 Continued

Construct	**Indicator**	**Panel of Experts**	**Mean**

		A	B	C	D	E	Score
Perceived Behaviour Control	If I wanted to, I am sure I could have my children vaccinated	10	9	8	10	10	9
	For me to get my children vaccinated would not be difficult	10	9	9	10	10	9
	I have much control over the choice of vaccinating my children	10	9	9	8	8	9
	I am confident I can vaccinate my children in the future, even if there is a financial cost	10	9	8	9	8	9
	I am confident I can vaccinate my children in the future, even if my schedule is busy	10	9	8	9	8	9
	I am confident I can find a health-care provider (for example, a clinic, health center, and physician's office) where I can get my children vaccinated	10	9	10	10	10	9
Perceived Policy Effectiveness	The Government has increased financial investment to support children vaccination	10	9	9	10	9	9
	The children vaccination programmes organised by the Government have effectively aroused vaccination awareness in the general public	10	9	9	9	10	9
	The Government provides clear guidelines and regulations on children vaccination	10	9	8	9	10	9
	The Government campaigns helps citizens understand the importance of children vaccination	10	9	9	9	10	9
	The Government campaigns clearly explains the benefits of children vaccination	10	9	9	9	9	9
	The Government promotes children vaccination as a positive symbol.	10	9	9	9	9	9
	The Government's policy facilitates me to successfully carry out the necessary children vaccination	10	9	9	9	10	9

Table 3.16 Continued

Construct	Indicator	Panel of Experts					Mean

		A	B	C	D	E	Score
Social Media Influence	My engagement on social media influences my decision to vaccinate my children	10	9	9	9	10	9
	I use social media to search for information about children vaccination	10	10	9	9	10	9
	Contents about children vaccination on social media are trustworthy.	10	9	9	9	10	9
	Contents about children vaccination on social media are believable	10	10	9	9	10	9
Intention Towards Vaccination	I intend to get my children vaccinated in the future.	10	9	9	9	10	9
	I plan to get my children vaccinated in the future.	10	10	9	9	10	9
	I want to get my children vaccinated in the future.	10	10	9	9	10	9
Behaviour Towards Vaccination	I often vaccinate my children	10	10	9	9	10	9
	I vaccinate my children on a regular basis.	10	9	9	9	10	9
	I often vaccinate my children because vaccinations are child-friendly.	10	9	8	9	10	9
	I often vaccinate my children since vaccinations are safe for use						
	I often vaccinate my children as and when necessary for their health.	10	9	9	9	10	9

3.15 Pilot Test (Reliability Test)

At the end of the pre-test phase, the researcher corrected the shortcomings identified in the questionnaire. A pilot study was then conducted with parents who had similar characteristics to the intended respondents. The purpose of the pilot study was to assess the reliability of the instrument.

The questionnaires were distributed to respondents who met the Yuppie criteria and a total of 30 completed questionnaires were received. The aim was to obtain feedback from respondents on the content and format of the pilot study instruments. Another purpose of this pilot was to collect data that could be used as a template for the quantitative data collection and analysis procedures for the actual fieldwork. The data collected during the pilot test was only used to validate the questionnaire and was not intended for the final data analysis.

The reliability test was conducted to then determine the Cronbach's alpha values. According to Hair et al. (2010), Cronbach's alpha is considered the most widely used and reliable method for assessing internal consistency compared to other similar purposed measures. In general, a minimum value of 0.70 for the Cronbach's alpha is considered acceptable (Hair et al., 2010).

Table 3.17 summarises the values of the reliability coefficients for each section of the children vaccination behaviour questionnaire. If all variables display a Cronbach's alpha value of more than 0.7, this indicates a high reliability of the items. Consequently, all questions of the questionnaire remained valid during data collection.

Table 3.17 Cronbach's Alpha Value

Construct	No. of Items	Cronbach's Alpha
Perceived Severity	3	0.798
Perceived Susceptibility	3	0.766
Perceived Barriers	6	0.827
Attitude	7	0.975
Subjective Norms	3	0.913
Perceived Behavioural Control	6	0.931
Perceived Policy Effectiveness	7	0.958
Social Media Influence	4	0.913
Vaccination Intention	3	0.992
Vaccination Behaviour	5	0.975

3.16 Data Analysis

After the data collection was completed, the data was analysed using the selected software. Data analysis involves linking the data to conceptual constructs and presenting their relationships. Various techniques were used to analyse the information obtained from the questionnaires. First, the data underwent a pre-processing phase, which included editing, coding and categorisation, before being entered into the IBM SPSS statistical software. Descriptive analysis was then performed using the same software. In addition, G*Power tests were used to determine the significance of the analysis. Finally, to test the hypothesis, evaluate the predictive power of the structural model and establish links between the constructs, the partial least squares structural equation modelling (PLS-SEM) method was applied using SmartPLS 4.0 software.

3.17 Statistical Tools And Data Analysis Approaches

Three statistical software tools were used to analyse this study's data. First, the data was analysed using the Statistical Package for Social Science (SPSS) version 26. Subsequently, the Smart Partial Least Squares (PLS) 4.0 was used to test the hypotheses, while G*Power was then used to evaluate the statistical significance of the analysis.

3.17.1 Statistical Analyses Using Statistical Package For The Social Sciences (SPSS)

In the initial phase of data analysis, the IBM SPSS software was the most crucial tool used for entering, defining and processing the data. It facilitated data cleansing and the identification of logical inconsistencies within the data sets. All responses were coded and converted into a data file. Various methods were used to check the data to ensure that there were no missing values, data entry errors or blank responses, thus validating the data collected. The frequency distribution method was then used to determine the occurrence frequency of the respondents' demographic characteristics.

SPSS examined the independent, dependent and moderating categorical variables and calculated their maximum, minimum, mean and standard deviation. Descriptive analysis was then performed to analyse the data. Continuous data were expressed as either mean with standard deviation or median with interquartile range. Categorical data were presented as percentages. Skewness and kurtosis analysis was used to examine the normality of the data distribution. Skewness measures the asymmetry of the data distribution, while kurtosis assesses the peak or flatness of the distribution. These analyses provided information on whether the data followed a normal distribution, which was crucial for the establishment of certain statistical assumptions and interpretations.

3.17.2 G*Power Software

This study utilised the G*power software to calculate the statistical significance of the related analyses performed on the study.

Statistical power refers to the ability of a study to detect a statistically significant effect or relationship for a given sample size and effect size. It helps determine the probability of correctly rejecting the null hypothesis when it is false. With G*power

software, researchers can estimate the required sample size for their study to ensure that it is strong enough to detect meaningful effects or relationships.

G*power software provides various statistical tests and methods for power analysis, allowing researchers to select the appropriate analysis based on their research design and hypotheses. This software helps researchers optimise their study design by determining the required sample size, which in turn increases the reliability and validity of the study results.

Before the data of the study was analysed, the G*Power analysis (Faul et al., 2007, 2009) showed that the power of the 357 available data sets was at 0.9997, which is above the recommended cut-off value of 0.80. The 357 data sets collected therefore have sufficient statistical power to refute the null hypotheses (Faul et al., 2007). As such the effect of significance on the certainty of the results can be illustrated by the study sample (McQuitty, 2004).

3.17.3 Statistical Analyses Using Structural Equation Model (SEM)

The SEM approach was used for the analysis of data in this study. Hair et al. (2014) explained that structural equation modelling (SEM) is a second-generation technique of multivariate data analysis. Multivariate data analysis refers to statistical methods that simultaneously assess multiple variables and include measurements across different categories such as events, activities, and situations. SEM is used to both explore and validate theories. It is also used to measure the relationships between latent variables.

There are two types of SEM approaches, namely PLS-SEM and covariance-based SEM (CB-SEM). SEM has become an important tool in the exercising of the multivariate technique to estimate cause-effect relationships between latent constructs, and it is a robust statistical technique used in behavioural and social science studies (Reisinger & Mavondo, 2007). To determine which statistical method is appropriate for this study, you would need to know the assumptions underlying the different statistical approaches. Several factors should be considered when selecting statistical methods, such as the research objectives, the specification of the measurement model, the structural model, the data characteristics, and the algorithm and model evaluation (Hair et al., 2021).

According to Hair et al. (2014), CB-SEM proves to be more suitable in the following circumstances:

(a) When validating or comparing theories.
b) In cases where the error terms needs to be further specified, such as covariation.
c) When the structural model contains non-recursive relationships.
d) When assessing overall goodness of fit for research purposes.

In addition, Hair et al. (2014) recommend the use of SEM-PLS when:

(a) the study aim is to predict primary target constructs or identify significant driving constructs.
b) formatively measured items are integrated into the structural model.
c) the structural model is complex with numerous constructs and indicators. For example, a model with seven constructs can be considered as complex.
d) the sample size is small and the data need not conform to a normal distribution.

3.17.3.1 Smart Partial Least Squares (PLS) Software

In this study, the PLS-SEM model was used to evaluate the research model according to the guidelines. Structural equation modelling (SEM) techniques were used to test the hypotheses. Partial Least Squares (PLS) - SmartPLS software was used to analyse the collected data. A bootstrapping procedure was used to examine the t-values and the significance level of the individual paths.

The choice of this particular technique was influenced by several factors. According to Hair et al. (2021), PLS-SEM is a statistical method for analysing a research model consisting of reflective and formative constructs. They also added that PLS-SEM is intended for exploratory research, while CB-SEM is intended for confirmatory research. Therefore, PLS-SEM is appropriate when the research objectives predicts the critical target construct or identifies the key "driver" constructs (Awang et al., 2015). In other words, PLS-SEM is appropriate when the research objectives are focused on prediction and theory development. Since this study focuses on theory development, which includes ten constructs so as to be considered complex, the intention is to test for prediction purposes.

In addition, Hair (2014) claimed that a structural model is complex when it consists of numerous constructs and indicators. For example, a model with seven constructs can be considered complex. However, ten constructs are to be tested in this study. Therefore, it is clear that PLS-SEM is the most appropriate software for this study. In addition, Peng & Lai (2012) suggests that PLS should be considered when the research model has extreme complexity that could lead to estimation problems with CB-SEM.

In addition, the study deviates from the data distribution assumptions, as the data was not normally distributed as explained in the previous section. Considering the guidelines and their consistency with the research objectives, it became clear that the use of PLS-SEM was the appropriate approach for analysing the data in this study.

The advantages of the PLS algorithm includes the fact that the input data need not be normally distributed, it requires a smaller sample size compared to other methods, it can examine significant variables with complex structural equation modelling, and it is able to manage reflective and formative constructs (Hackl & Westlund, 2000; Urbach et al., 2010). Table 3.18 below shows the research objectives and the analysis used to test the hypotheses.

Table 3.18 Research Objectives and Instruments

No.	Research Objective	Instrument	Data Analysis
RO1	To analyse the level of vaccination behaviour among Yuppie parents.	Questionnaire	SPSS
RO2	To examine the relationship between perceived susceptibility, perceived severity, perceived barriers, attitude, subjective norms, perceived behavioural control, and vaccination intention.	Questionnaire	Path coefficient for direct effect, Ran the PLS algorithm and bootstrapping procedure.
RO3	To investigate the relationship between vaccination intention and actual vaccination behaviour.	Questionnaire	Path coefficient for direct effect, Ran the PLS algorithm and bootstrapping procedure.
RO4	To determine the moderating effect of Perceived Policy Effectiveness on the Relationship Between Perceived Susceptibility, Perceived Severity Perceived Barriers, Attitude, Subjective Norms, Perceived Behaviour Control, and Vaccination Intention.	Questionnaire	Partial Least Squares Two Stage Approach
RO5	To examine the moderating effects of social media influence on the impact of vaccination intention on vaccination behaviour.	Questionnaire	Partial Least Squares Two Stage Approach

Having justified the use of PLS-SEM instead of CB-SEM in this study, the next task was to explain the procedural aspects and the information required. The analysis process with PLS-SEM involves two main steps: the evaluation of the measurement model and the evaluation of the structural model.

3.18 Steps In Analysis

3.18.1 Normality Test

Partial Least Squares Structural Equation Modelling is a statistical method for analysing relationships between variables in a data set. In contrast to other methods, PLS-SEM is considered non-parametric, i.e. it does not assume a specific distribution for the data, such as a normal distribution. This property is advantageous as it allows researchers to apply PLS-SEM to many data sets without having to transform the data or fulfil strict distributional assumptions (Hair et al., 2014). Because PLS-SEM is independent of the distribution of the data, it provides flexibility and robustness in capturing complex relationships between variables, making it a valuable tool in various research fields.

Although the software can handle non-normal data to a certain extent, it is important to note that excessively non-normal data can pose a challenge, especially in relation to the standard error values obtained from the bootstrapping procedure. In such cases, highly non-normal data can lead to inflated standard errors, which reduces the likelihood of establishing significant relationships (Hair et al., 2011; Henseler et al., 2009). Therefore, it is crucial to ensure that the data does not exhibit extreme non-normality before proceeding with further analysis. Meeting this requirement is an essential prerequisite for conducting reliable and meaningful analyses.

Several methods are usually used to assess the normality of data. The Kolmogorov-Smirnov test and the Shapiro-Wilk test are two such methods that have been developed specifically for this purpose. However, these tests have certain limitations. Given these limitations, Hair et al. (2010) proposed an alternative approach to assess the extent of deviation from normality by examining the measures of skewness and kurtosis of the data. This alternative approach allows for a comprehensive assessment of the deviation of the data from normality without relying solely on the tests.

Skewness is a statistical measure used to assess the symmetry of the distribution of a variable. It quantifies the extent to which the distribution of responses deviates from perfect symmetry. A distribution is considered symmetrical if it has the same amount of data on both sides of its central point (e.g. mean or median). However, it is considered skewed if the distribution stretches more to the left or right. Skewness provides a numerical value that indicates the degree and direction of skewness and helps researchers understand the shape and characteristics of the data distribution.

Kurtosis is a statistical measure that evaluates the sharpness or flatness of a distribution. It provides information about the concentration of data around the central point of the distribution. A distribution with a high kurtosis indicates that the data points are more concentrated near the centre, resulting in a sharper or more peaked shape. Conversely, a distribution with a low kurtosis indicates that the data points are more spread out and have a flatter shape. Kurtosis helps researchers understand the behaviour of the distribution and the concentration of data around the central value. It complements skewness by providing a comprehensive description of the shape and characteristics of the data distribution.

According to a commonly used guideline, a variable can be considered reasonably normally distributed if its skewness and kurtosis values are within the range of -1.0 to +1.0. This rule of thumb provides a rough guide for assessing the similarity of a variable's distribution to a normal distribution.

3.18.2 Assessment of the Measurement Model

In order to test the hypotheses put forward, the researcher used the two-stage analysis procedure introduced by Anderson & Gerbing (1988). This procedure comprises of two different steps. The first step focuses on the evaluation of the measurement model used to assess the validity of the measurement instruments used in the study. In particular, two crucial aspects are examined in this step: convergent validity and discriminant validity.

Convergent validity refers to the extent to which different indicators or items measuring the same construct have consistent and high correlation values. In other words,

it examines whether the items that are intended to measure the same underlying construct actually measure it.

Discriminant validity, on the other hand, examines the extent to which different constructs differ from one another. It ensures that the indicators measuring different constructs do not overlap or correlate too strongly with each other, indicating that they measure separate and unique concepts.

By assessing convergent and discriminant validity within the measurement model, researchers can determine the quality and reliability of their measurement instruments, which form the basis for further analysis and hypothesis testing in subsequent steps.

3.18.2.1 Convergence Validity

Having confirmed the suitability of the data for PLS-SEM analysis, it is usual to validate and establish the reliability of the items used in the study. Without confirmation that these measures actually represent the intended constructs, it would be pointless to use them to test the theoretical model. Therefore, it is important to assess the validity and reliability of the measures.

Once the measures have satisfactory validity and reliability, researchers can move to the next step and test the study's hypotheses. This sequential approach ensures that the measurement instruments accurately capture the constructs of interest, which increases the credibility and validity of the subsequent hypotheses testing phase.

Convergent validity is an assessment that determines the extent to which multiple items measure the same concept. According to Campbell & Fiske (1959), convergent validity exists when all items intended to measure a construct is actually loaded on a single underlying construct. Henseler et al. (2009) also claims that convergent validity means that a set of indicators represents the same underlying construct, which can be demonstrated by their unidimensionality.

To assess convergent validity in depth, Hair et al. (2010) recommends conducting a within-factor analysis to fully understand the dimensionality of the construct.

Convergent validity is confirmed when all items measuring a construct loads consistently on a single factor, as specified in the theoretical framework.

To assess convergent validity, Hair et al. (2013) suggested the use of factor loadings, composite reliability (CR), and average variance extracted (AVE). These measures, such as the value of factor loadings, provide valuable insights into the convergent validity of the measurement instruments and allow researchers to assess the extent to which the items accurately reflect the underlying construct.

a) Indicator Reliability (Outer Loadings)

An indicator is considered reliable if it accurately measures its intended construct. Analysing the reliability of indicators aims to assess whether the indicators actually represent the information they are intended to measure (Urbach & Ahlemann, 2010). In this study, a significant value of 0.5 was used as a cut-off point to determine the relevance of each indicator (Hair et al., 2010). If the sum of the loadings results in high values and leads to average variance extraction (AVE) values of more than 0.5, then loading values of 0.5 or more are considered acceptable (Byrne, 2016).

b) Composite Reliability (CR)

According to Roldán & Sánchez-Franco (2012), the reliability of each item is assessed by analysing the standardised loading or the simple correlation between the indicators and their respective latent variables. In the past, researchers have typically used Cronbach's alpha (CA) to assess the internal consistency or reliability of items measuring constructs. Cronbach's alpha (CA) is traditionally used to assess the internal consistency of items measuring the constructs. Higher CA values indicate that the construct items have a common meaning (Cronbach, 1971). CA determines reliability based on the intercorrelations between the measured variables.

However, with the introduction of composite reliability (CR) by Werts et al. (1974), this situational need has changed. Chin (2009) argued that CR is more suitable for Partial Least Squares (PLS) analysis because it does not assume equal weighting of all indicators, as is the case with SPSS and CA analysis. Although CR also evaluates internal consistency, it takes into account that the indicators may have different loadings.

Therefore, CR is also used to assess reliability in this study. Hair et al. (2013) recommends that the value for CR should be greater than 0.7.

c) Average Variance Extracted (AVE)

The final component for assessing convergent validity is the AVE (Average Variance Extracted). The AVE measures the proportion of variance captured by the manifest variables or indicators of a construct compared to the variance attributable to measurement error (Roldán & Sánchez-Franco., 2012). It indicates the extent to which the items used in the respective constructs explain the observed variance. Bagozzi & Yi (1988) determined that the AVE should be above 0.5. Table 3.19 below explains the summary of the indices for the measurement analysis:

Table 3.19 Summary of Indices for Measurement Analysis

Assessment	Name of Index	Guideline
Internal Consistency Reliability	Composite Reliability (CR)	CR > 0.7
Indicator Reliability / Factor Loadings	Indicator Loading	0.5 and above
Convergent Validity	Average Variance Extracted (AVE)	AVE > 0.5

Source: Ramayah, Cheah, Chuah, Ting and Memon (2018)

3.18.2.2 Discriminant validity

Once the question of convergent validity has been clarified and confirmed, it must be demonstrated that the indicators used in the study differs from the indicators of other constructs. The next step is therefore to establish discriminant validity. Discriminant validity ensures that two measured variables, which are assumed to be unrelated, do not show a significant correlation (Urbach & Ahlemann, 2010). It also indicates the extent to which a particular construct differs. In technical terms, each latent construct must explain more significant variance in its indicators than the variance it shares with another

construct. As Campbell & Fiske (1959) suggests, "the definition of constructs inherently implies that distinctions are made, and the verification of these distinctions is an important aspect of the validation process". This verification process is referred to as discriminant validity.

In the context of Partial Least Squares (PLS), the Fornell-Larcker criteria (Fornell & Larcker, 1981), Cross-Loading (Chin, 2009) and Heterotrait-Monotrait Ratios (HTMT) (Hanseler, 2011) have been widely used to assess discriminant validity. These tests are often used to assess the extent to which the constructs in the PLS-SEM analysis differ from each other.

a) Fornell and Larcker (1981) criterion

The indicators used in this study can be divided into formative and reflective. In this study, all constructs are represented by reflective indicators. For constructs with reflective indicators, Fornell & Larcker (1981) proposed a method for assessing discriminant validity. This method compares the square root of the average variance extracted (AVE) for each construct with the correlation between the constructs.

To perform this test, the construct pairs are assessed individually. The squared multiple correlations (or the squared fully standardised item loadings) for each indicator of the two constructs are averaged separately. The square root of the AVE values is then compared with the intercorrelation between the two constructs under investigation. If the two constructs are different, the square root of the average squared multiple correlations of each construct should be higher than their intercorrelation.

In addition, Hair et al. (2010) suggested that the threshold for loading and cross-loading should be 0.5. In addition, each item within the construct should contribute significantly to its respective construct and stand out from other constructs.

To summarise, according to Fornell & Larcker's (1981) approach, the discriminant validity for constructs with reflective indicators can be assessed by comparing the square root of the AVE values with the intercorrelation between the constructs. If the square root of the average squared multiple correlations for each construct exceeds its intercorrelation, this indicates that the constructs differ.

b) Cross Loading

To establish the discriminant validity of the model, it is important to confirm that the loadings of each indicator associated with a particular construct are above 0.10 compared to the loadings associated with other constructs (Lowry & Gaskin, 2014). In this validation process, it is important to ensure that the external loading of an indicator on its particular construct exceeds the loadings on other constructs. If the loading of each indicator on its assigned construct is greater than the loading on other constructs, this indicates that there is no interchangeability between indicators belonging to different constructs (Chin, 2009).

c) Heterotrait-Monotrait (HTMT)

Due to the criticism of Fornell & Larcker's (1981) criterion, which was emphasised by Henseler et al. (2015), the HTMT ratio was also used in the present study to assess discriminant validity. Kline (2011) emphasised that discriminant validity can be established if the heterotrait-monotrait (HTMT) values are less than or equal to 0.85, and that exceeding this threshold does not definitively indicate a violation of discriminant validity (Henseler et al., 2015). If the study meets the HTMT requirement, this confirms that participants' recognised the presence of 10 different constructs in the study.

A summary of the guidelines for assessing the reliability and validity of measurement models can be found in Table 3.20.

Table 3.20 Discriminant Validity

Assessment	Name of Index	Guideline
Discriminant Validity	HTMT Criterion	HTMT 0.85 (Kline, 2011)

Source: Ramayah, Cheah, Chuah, Ting and Memon (2018)

3.18.3 Assessment Of The Structural Model (Hypothesis Testing)

Once the validity and reliability of the measurement model has been established and deemed satisfactory, the next step is to test the structural model of the study. In the Partial Least Squares Structural Equation Modelling (PLS-SEM), the structural model

tests the extent to which the data supports the hypotheses of the study (Urbach & Ahlemann, 2010). However, it is important to note that the structural model can only be analysed once the measurement model has been confirmed.

According to Hair et al. (2017), the assessment of the structural model in PLS-SEM involves several steps. These steps provide a systematic approach to assessing the relationships and pathways between constructs.

3.18.3.1 Assessment of Collinearity Issues

The presence of collinearity problems was investigated to ensure that the regression results were not biased by the data. Collinearity refers to high intercorrelations between the predictor constructs that may affect the reliability of the regression analyses. A common indicator for identifying collinearity problems is the variance inflation factor (VIF). Predictor constructs with a VIF value greater than 5 are more likely to have collinearity problems, while VIF values between 3 and 5 often indicate the presence of collinearity (Becker et al., 2015; Mason & Perreault, 1991). Ideally, researchers aim for a VIF of three or less to minimise collinearity issues.

When collinearity problems are discovered, one approach to solving these problems is to develop models based on higher-order theory. This means incorporating broader, overarching constructs that capture the essence of multiple related constructs. In this way, the effects of collinearity can be mitigated and more reliable regression results can be obtained (Hair et al., 2017).

It can be concluded that before conducting a structural model analysis, it is essential to address the potential problem of collinearity. As suggested by Hair et al. (2011), the recommended threshold for VIF values is 5.0 or higher. Therefore, if the VIF values of the study are below this threshold, it indicates that there are no collinearity issues. Consequently, the researcher can proceed with testing the hypotheses or analysing the path coefficients.

3.18.3.2 Assessment of the Structural Model Relationship (Path Coefficient)

The research model was tested using a path analysis to test 14 hypotheses. To assess the significance of the results, Chin (1988) recommended the use of bootstrapping in the context of Partial Least Squares (PLS). Bootstrapping, a non-parametric technique, assesses the variability of a parameter by analysing the estimated distribution by resampling from the existing sample data, thereby avoiding reliance on parametric assumptions to assess the precision of the parameters.

This non-parametric approach allows for the precision estimation of PLS estimates (Chin, 2010). In this study, due to the sample size of 357, a bootstrapping procedure with 10,000 replicate samples was chosen as suggested by Hair et al. (2022). Hair et al. (2022) postulates that a larger number of replicate samples consistently improves the accuracy of the estimated parameter distribution and thus the accuracy of subsequent inference tests.

Hair et al. (2022) therefore recommends examining the standard beta values, the t-values obtained from the bootstrapping procedure with 10,000 replicate samples, the p-values at the 5% significance level (one-sided) and the confidence intervals in order to evaluate the structural model. Following the approach proposed by Hair et al. (2019), this study evaluated the beta values, ensuring that it was consistent with the direction of the hypothesis, the t-values ensuring it was greater than 1.645, the p-values ensuring it was less than 0.05, and the confidence interval obtained from the bootstrapping procedure, which should not contain zero values between the lower level (LL) and the upper level (UL). These criteria were used to support the hypotheses based on the analysis.

Table 3.21 Principles of Structural Model (Hypothesis Testing)

Bootstrapping Procedure	**The Threshold value**
beta value	(The direction of the beta value must be aligned with the hypothesis direction)
t-values	> 1.645
p-values	<0.05
Confidence interval gained from employing a bootstrapping procedure	(No zero value between the lower level (LL) and the upper level (UL))

Source: Hair et al. (2019)

3.18.3.3 Assessment of the Level R^2 (Coefficient of Determination)

In addition to performing the path coefficient analyses, as recommended by Hair et al. (2017), another advantage of using Smart PLS is that it can provide predictive insights as well.

The predictive accuracy of the study model was assessed by examining the coefficient of determination (R^2). The ^{R2} value serves as an indicator of the model's ability to explain the observed variation. It represents the extent to which the endogenous structures within the model can explain the variability (Shmueli & Koppius, 2011). In addition, according to Gefen et al. (2011), the R^2 value can also be used to assess the predictive power of the model within the sample. Essentially, the coefficient of determination (R^2), which lies between 0 and 1, reflects the predictive power of the model. Hair et al. (2017) states that a higher R^2 value indicates a stronger predictive power. In addition, Chin (1998) suggested that an R^2 value of 0.67 represents significant predictive power, 0.333 represents average predictive power and 0.19 represents weak predictive power.

3.18.3.4 Assessment of the Level of Effect Size (f2)

The effect size measures the strength or extent of the relationship between latent variables. It plays a crucial role in research as it allows researchers to assess the overall impact of a study. While it is important to determine whether the relationship between variables is statistically significant, it is equally important to indicate the effect size of these relationships (Henseler & Chin, 2010).

The assessment of effect size is guided by Cohen's (1988) guidelines, which provide the standards for interpreting the strength of the relationships. According to Cohen's guidelines, effect sizes of 0.02, 0.15 and 0.35 represent small, medium and large effects of the exogenous latent variable, respectively. These values provide a standardised measure of the practical significance or substantive importance of the relationships under investigation.

By considering effect sizes, researchers gain a more comprehensive understanding of the impact and significance of their findings that goes beyond its mere statistical significance. Effect size analysis helps to convey the magnitude of the

relationships and allows researchers to evaluate the practical implications and contribution of their research study.

Table 3.22 Effect Size

	Effect Size (f^2)
Small	0.02
Medium	0.15
Large	0.35

Source: Cohen (1088)

3.18.4 Moderation Analysis

The presence of a moderator can influence both the direction and the intensity of the relationship between the endogenous and exogenous variables. A moderator refers to a third variable that influences the original correlation between two variables in a correlation analysis (Sekaran, 2006). Moderating variables play a crucial role as they help to explain the relationships between independent and dependent variables. They provide valuable insights into the association between two variables in quantitative research by illuminating specific characteristics that may strengthen, weaken, or even nullify the association (Allen et al., 2017). By identifying and analysing moderators, researchers gain a deeper understanding of the complex dynamics and nuances underlying the relationships they study.

3.19 PLS Predict

After completing the structural model analysis, researchers are advised to perform a PLS predict analysis. To date, researchers have relied solely on the R^2 value to predict the value of the overall sample. However, R^2 only assesses the explanatory power of a model and thus gives no indication of the out-of-sample predictive ability, i.e. the ability to predict values for new cases not included in the estimation process. In addition to R^2, researchers have previously used the blindfolding technique to assess the predictive power of the model, which is quantified by the Q^2 statistic.

However, Sarstedt et al. (2017) claims that the blindfolding technique does not clearly establish whether the model has predictive values. Therefore, the researchers are

recommended to use PLS predict instead of R^2 and Q^2 to assess the practical relevance of the model. According to Shmueli et al. (2019), assessing the predictive power of a statistical model is a central aspect of any study. Researchers assess the validity of their theories and the practical relevance of their analyses by evaluating the ability of their models to generate testable predictions for new observations. PLSpredict is a method developed by Shmueli et al. (2016) based on blind sampling.

Shmueli et al. (2019) suggested that when all item differences (PLS-LM) are lower, there is a strong predictive power, when all are higher, predictive power is not confirmed, while when the majority is lower, there is a moderate predictive power, and when the minority is low, there is low predictive power. The results of the PLS Predict analysis for this study are discussed in the next chapter.

3.20 Conclusion

In this chapter, the methodology of the study was discussed in detail. Firstly, the chosen research design, which forms the basis for the realisation of the study, was presented and explained. This includes a detailed description of the sampling design, in which the study defined the study population and determined the appropriate sample size to ensure that the results were statistically significant and generalisable. The study also describes the data collection methods used to gather information from the selected respondents.

Next, the chapter addressed the rationale for the methodology chosen and why certain approaches were selected to effectively answer the research questions. This section also looked at the instruments and described the tools and measures used to collect data to ensure that they were reliable and valid for the purposes of the study. The study concluded the chapter with a proposed data analysis plan outlining how the data collected should be analysed to provide meaningful insights, followed by a brief conclusion summarising the main points discussed.

The following chapter focuses on the statistical analysis of the collected data. It begins with an explanation of data preparation, a crucial step before performing the Partial Least Squares Structural Equation Modelling (PLS-SEM) analysis. This preparation ensures that the data is clean, accurate and suitable for advanced statistical

modelling. This chapter then presents the basic descriptive statistics that provide a profile of the respondents and an overview of the data characteristics.

The core of the chapter is devoted to a comprehensive analysis aimed at answering the research questions. This includes interpreting the results of the PLS-SEM analysis, discussing the relationships between the variables and assessing the validity of the proposed model. Each step of the analysis is carefully explained to provide a clear understanding of how the results were obtained and how they contribute to the overall objectives of the study

CHAPTER 4

RESULTS AND ANALYSIS OF FINDINGS

4.1 Introduction

This chapter contains the analysis of the data garnered and the interpretation of the results. The data used for the analysis were collected from Yuppie parents in the specified sample areas: Pahang, Kelantan and Terengganu, as mentioned in the previous chapter. Here, the research findings that relate to the research questions posed in this study are reported. The chapter begins with an overview of the data screening process and describes the characteristics of the respondents. Finally, the analysis conducted using PLS-SEM is discussed and the results are interpreted to provide answers to the research questions.

4.2 Data Screening and Preliminary Assumption

Before starting the analysis of the data, the researcher performed a data screening. This preparatory process serves several important purposes, including verifying the accuracy of data entry and identifying variables. Consequently, prior to the in-depth data analysis, important data analysis steps must be first taken, such as identifying missing data and assessing the consistency of the data with normality.

After successfully collecting data from the survey participants, the data was entered into two software tools: SPSS version 26 and Microsoft Excel 2016. The following subsection first provides an overview of the response rate after the data screening as well as the specific data set used in this study.

4.2.1 Missing values

Incomplete data or missing values occurs when respondents have not answered one or more questions in the questionnaire. Missing data such as this can cause two major problems: They impair the ability of statistical tests to detect relationships within data sets and lead to bias in parameter estimation. Cohen (1988) states that missing data in the

order of up to 10% is not a major obstacle to the interpretation of research results. However, in an online survey, each respondent must answer all questions, so that there are no missing values. There are therefore no problems with missing values for this study.

4.2.2 Straight lining

The specific aim of this screening test is to identify unusual response patterns in the data. A frequently observed suspicious pattern is the straight line, where respondents consistently select the same scale value throughout the questionnaire. This behaviour may indicate that respondents are unwilling to engage with the questionnaire, possibly because they do not want to read the questions or intentionally avoid participating in the study. Consequently, respondents tend to give answers that align with a particular scale value, such as consistently selecting all 5s and all 6s, or sticking to a simple pattern that uses other scale values (e.g., 1, 2, or 5) (Hair et al., 2017).

In this study, the standard deviation of all 359 collected sample observations was analysed to identify instances of straightforwardness. A standard deviation of zero means that there is no variability in responses, indicating straightforward behaviour. The analysis revealed that 2 observations displayed straight-line patterns. As a result, these 2 observations were removed from the data set. After elimination, the final data set comprised of 357 samples.

4.2.3 Normality test

PLS-SEM, a non-parametric statistical method, is not based on the assumption of normality of the data (Hair et al., 2014). While the software is applicable to non-normally distributed data, it is important to note that extreme non-normality can be challenging. In particular, extremely non-normal data can inflate the standard errors determined by the bootstrapping procedure. This inflating of standard errors can reduce the chances of observing significant relationships, as mentioned by Hair et al. (2011) and Henseler et al. (2009). Therefore, it is important to ensure that the data does not exhibit extreme non-normality before proceeding with further analysis.

Performing a normality test for all variables is essential before proceeding with further analysis. The purpose of this test is to determine whether the data set is well modelled by a normal distribution or deviates from it. According to Kline. (2016), data

distributions with skewness and kurtosis values between ±3.0 and ±20.0 can be considered approximately normally distributed in the social and educational sciences.

In addition, Hair et al. (2017) and Cain et al. (2017) suggests the use of software to assess multivariate skewness and kurtosis. As suggested by Hair et al. (2022) and Cain et al. (2017), multivariate skewness and kurtosis were assessed in the study. The assessment results showed that the data collected were not multivariate normal; Mardia's multivariate skewness (β = 39.683) and Mardia's multivariate kurtosis (β = 202.229). These values justify the use of Smart PLS, a non-parametric analysis tool. Moreover, usage of Smart PLS can solve the problems of non-normality of the data.

Table 4.1 Output of skewness and kurtosis calculation

Web Application Output

Sample size: 357
Number of variables: 10
Univariate skewness and kurtosis

	Skewness	SE_skew	Kurtosis	SE_kurt
ATT	-0.854	0.129	0.670	0.257
BEH	-1.252	0.129	0.964	0.257
INT	-1.162	0.129	0.548	0.257
PB	0.725	0.129	0.247	0.257
PBC	-0.415	0.129	-1.005	0.257
POPE	-0.686	0.129	0.244	0.257
PS	0.188	0.129	-0.505	0.257
PSV	-0.816	0.129	0.308	0.257
SM	-0.572	0.129	0.021	0.257
SN	-0.579	0.129	-0.411	0.257

Mardia's multivariate skewness and kurtosis

	b	z
Skewness	39.683	2361.161
Kurtosis	202.229	50.145

4.3 Common Method Variance

A common method variance (CMV) assessment was then conducted to determine its potential impact. Common method variance refers to the variance resulting from the measurement method itself rather than the constructs that the measurements are intended to represent (Campbell & Fiske, 1959; Podsakoff et al., 2003).

It is essential to ensure that overall method variance is not a problem in this study. Although we have previously used procedural measures to mitigate common method variance, it is important to statistically validate that it does not affect the validity of this study. Therefore, the study uses the statistical methods of full collinearity (FC) and the measured latent marker variable (MLMV) approach to test for common method variance.

4.3.1 Full Collinearity

As the data collected came from a single source, the study first tested for common method bias by following the suggestions of Chen et al. (2021) and Hair et al. (2019). They state that a VIF of ≤ 5.0 signifies that there is no bias from single source data. The analysis resulted in a VIF of less than 5.0, so single-source bias is not a serious problem for the data collected in this study.

Table 4.2 Full Collinearity Testing

ATT	BEH	INT	PB	PBC	PPE	PS	PSV	SM	SN
3.625	1.708	3.219	1.153	3.085	2.142	1.533	1.870	1.469	3.025

4.3.2 Measured Latent Marker Variable Approach (MLMV)

In addition to performing a full collinearity test, the researcher used the PLS marker variable approach described by Rönkkö and Ylitalo (2011). First, seven items from the same survey that were not included in the model under study were carefully selected and labelled as marker indicators. Next, the researcher constructed a method factor that used these marker indicators as exogenous variables and predicted each endogenous construct within the model. Finally, a comparison was conducted between the method factor model and the base model, which revealed that the significant paths identified in the base model maintained their significance in the method factor model. This suggests that CMV was not a concern in the data analysis.

The marker results show that the R^2 change with and without the inclusion of the marker (MV) is below the threshold of 0.09 (Lindell & Whitney, 2001). In other words, there is no significant difference in the beta (β) value or in the R^2 change with the addition of the marker variable. Therefore, this result has provided further evidence of the

insignificance of CMV and it can therefore be concluded that CMV did not play a role in this study.

Table 4.3 Measured Latent Marker Variable

	Intention	**Behaviour**
R^2 without Marker Variable	0.684	0.578
R^2 with Marker Variable	0.690	0.584

4.4 Respondent Profile

All respondents met the criteria for yuppies as defined in the previous chapter. All 357 respondents in this study meet the criteria for being classified as yuppies. As discussed in the previous chapter, the respondents were carefully selected through a filtering process in the questionnaire to ensure they align with the defined characteristics of yuppies. The demographic profile has some notable characteristics. Among the respondents, 24.4% were male (87 people), while the vast majority, 75.6% (270 people), were female. The age distribution shows that all the respondents is between 15 to 40 years old. Although youth is technically defined as 15 years and above, the respondents in this study were predominantly in their 20s and 30s. This is in line with cultural norms in Malaysia, where most people get married after completing secondary school. According to the Department of Statistics Malaysia (DOSM), the average age of a woman's first marriage has risen from 23.5 years in 1980 to 28.1 years in 2020.

In terms of education level, all of the respondents have a tertiary education level. Most respondents had a university degree, namely 61.6% (220 people). This was followed by respondents with a master's degree, which accounted for 21.8% (78 people), while 9% (32 people) had a PhD. A smaller percentage had a diploma (5% or 18 people), and the smallest group consisted of professionals with specialised certifications, which accounted for 2.5% (9 people).

Geographically, the respondents were spread across the cities in the three states in the East Coast region of Malaysia. The largest proportion, 56% (200 respondents), resided in Pahang, followed by 32.2% (115 respondents) in Kelantan and 11.8% (42 respondents) in Terengganu.

In terms of income level, all respondents fell in the highest income bracket, with 100% (357 people) earning RM10,971 and above. None of the respondents reported having an income in the lower income bracket of RM4,850 and below or RM4,851 to RM10,970. Table 4.4 below shows the demographic profile of the respondents.

Table 4.4 Profile of the respondents

Demographic	**Frequency**	**Percentage (%)**
Demographic		
Male	87	24.4
Female	270	75.6
Age Group		
15-40 years old	357	100
Education Level		
Diploma	18	5.0
Degree	220	61.6
Master	78	21.8
PhD	32	9.0
Professional	9	2.5
State (Live in the city)		
Pahang	200	56.0
Kelantan	115	32.2
Terengganu	42	11.8
Income Level		
RM4,850 and below	0	0
RM4,851 to RM10,970	0	0
RM10,971 and above	357	100

4.5 Level of Vaccination Behaviour

The study examines the vaccination behaviour of parents (research question 1), and the analysis shows that the mean score for behaviour is 5.9782 out of a maximum of 7.000. This result indicates relatively high vaccination behaviour of the parents who participated in the study. A mean score of 5.9782 out of 7.000 indicates a strong commitment to vaccination practices, with most parents having a positive attitude towards vaccination.

Table 4.5 Mean Value for Vaccination Behaviour

	N	Minimum	Maximum	Mean	Std. Deviation
Behaviour	357	1.80	7.00	5.9782	1.19459

4.6 Assessment of The Measurement Model

The remaining hypotheses of the study were tested using the analytical procedure proposed by Anderson & Gerbing (1988), which comprises of two steps, namely the measurement model and the structural model. The first step consists of evaluating the measurement model, which includes both convergent validity and discriminant validity.

4.6.1 Convergence Validity

After ensuring that the data is primed and suitable for a PLS-SEM analysis, it is important to check the validity and reliability of the items used in the study. Confirming that the measures accurately represent the intended constructs is crucial, as the use of unreliable or invalid measures would render the testing of the theoretical model meaningless. If the measures display satisfactory validity and reliability, the study can move on to the next phase: testing the study's hypotheses.

Convergent validity examines the extent to which multiple items measuring the same concepts agree with the core construct. Campbell & Fiske (1959) defined convergent validity as the agreement of all items measuring a construct with a single underlying construct. Henseler et al. (2009) explains that convergent validity signifies that "a set of indicators represents the same underlying construct, as evidenced by their unidimensionality". To assess convergent validity in depth, Hair et al. (2010)

recommended conducting a within-factor analysis to examine the dimensionality of the construct under investigation.

Convergent validity is confirmed when all items measuring a construct loads onto a single factor, as postulated in the theory. Hair et al. (2013) recommended the use of factor loadings, composite reliability (CR) and average variance extracted (AVE) to assess convergent validity.

The measure of convergent validity used in this study is the average variance extracted (AVE). AVE is a metric that assesses the extent to which a construct captures the variance of its indicators compared to the measurement error (Roldán & Sánchez-Franco., 20012). It indicates the proportion of variance explained by the items within the respective constructs. Bagozzi & Yi (1988) recommends that the AVE value should be above 0.5.

According to the results, all constructs included in the model had AVE values above 0.50, ranging from 0.629 to 0.967. This result confirms that the model has convergent validity (Table 4.6).

4.6.1.1 Internal Consistency Reliability (Composite Reliability)

There are two different methods for assessing the reliability of internal consistency, namely the calculation of the Cronbach's alpha coefficient (CA) and the assessment of composite reliability (CR). In assessing the reliability and internal consistency of the first-order constructs, the CR was used in the study. While the CA is traditionally used to identify items within constructs that have similar domain and meaning (Cronbach, 1971), alternative reliability measures are recommended in structural equation modelling (SEM) to assess composite reliability. This is because CA has limitations as it assumes that all indicators have identical loadings and the reliability of internal consistency is often underestimated (Hair et al., 2017).

Therefore, to determine whether the specific indicators adequately represent their respective constructs, composite reliability was assessed (Fornell & Larcker, 1981). The results presented in Table 4.6 show that the composite reliability values in this study exceeded the threshold value of 0.7. These results indicate that the measurement model has an adequate level of reliability.

Furthermore, according to the results presented in Table 4.6, internal consistency reliability was considered acceptable when both Cronbach's alpha and composite reliability scores exceeded the recommended threshold of >0.70. Consequently, the ATT6 and PB6 indicators were considered suitable for retention in the model. If the Cronbach's alpha and composite reliability values were above 0.70, this meant that the model had internal consistency reliability between the constructs (Hair et al., 2017).

4.6.1.2 Factor Loading

This study initially focused on assessing the reliability of the identified indicators. For factor loading, indicators with loadings greater than 0.5 indicate that the analysed construct is responsible for more than 50% of the variability of the indicator (Hair et al., 2017; Sarstedt et al., 2014). However, it is important to note that indicator loadings between 0.40 and 0.69 (Hulland, 1999) can also be considered acceptable under certain conditions. In cases where the indicator loading falls within this range, an assessment of the impact of removing said indicator should be undertaken. If removing the indicator leads to an increase in the measured internal consistency reliability value above the recommended threshold, it should be removed from the model. Otherwise, the model should retain the reflective indicator (Hair et al., 2017).

In this study, most reflective indicators had outer loading values that were above the threshold of 0.708, with the exception of two indicators (ATT6 and PB6) that had loading values of 0.679 and 0.683, respectively. When the loading value of an indicator fell in the range of > 0.40 and < 0.70, the effect on internal consistency reliability was analysed. When internal consistency reliability was assessed, it was found that the values for all constructs were already above the threshold.

Furthermore, the removal of the indicator from the model did not appear to have an impact on the internal consistency reliability values, which remained above the threshold. Therefore, the ATT6 and PB6 indicator was retained in the model following this procedure. However, the loading of the indicator for PB5 fell below 0.40, with a garnered value of 0.330. Therefore, the items were deleted. Hulland (1999) also suggested that items with a loading below 0.4 should be removed.

Table 4.6 Results Summary for Reflective Measurement Models

Construct	Indicator	Indicator Reliability	Internal Consistency Reliability	Convergent Validity
		Outer Loading	CR	AVE
		>.50	> 0.70	> .50
ATTITUDE	ATT1	0.858	0.963	0.789
	ATT2	0.945		
	ATT3	0.922		
	ATT4	0.924		
	ATT5	0.932		
	ATT6	0.679		
	ATT7	0.927		
SUBJECTIVE NORMS	SN1	0.899	0.930	0.815
	SN2	0.890		
	SN3	0.919		
PERCEIVED BEHAVIOUR CONTROL	PBC1	0.888	0.944	0.739
	PBC2	0.842		
	PBC3	0.850		
	PBC4	0.797		
	PBC5	0.912		
	PBC6	0.866		
PERCEIVED SUSCEPTIBILITY	PS1	0.871	0.909	0.770
	PS2	0.893		
	PS3	0.868		
PERCEIVED SEVERITY	PSV1	0.861	0.894	0.737
	PSV2	0.840		
	PSV3	0.873		
PERCEIVED BARRIERS	PB1	0.816	0.894	0.629
	PB2	0.745		
	PB3	0.845		
	PB4	0.864		
	PB6	0.683		
PERCEIVED POLICY EFFECTIVENESS	PPE1	0.813	0.956	0.756
	PPE2	0.829		
	PPE3	0.899		
	PPE4	0.892		
	PPE5	0.901		
	PPE6	0.903		
	PPE7	0.844		
INTENTION	INT1	0.985	0.989	0.967
	INT2	0.981		
	INT3	0.984		
SOCIAL MEDIA	SM1	0.820	0.922	0.749
	SM2	0.844		
	SM3	0.900		
	SM4	0.895		

Table 4.6 Continued

Construct	Indicator	Indicator Reliability	Internal Consistency Reliability	Convergent Validity
		Outer Loading	CR	AVE
		>.50	> 0.70	> .50
BEHAVIOUR	BEH1	0.845	0.937	0.748
	BEH2	0.781		
	BEH3	0.876		
	BEH4	0.911		
	BEH5	0.904		

Notes: CR=composite reliability, AVE= average variance extracted

4.6.2 Discriminant Analysis

Once the lack of convergent validity has been established, it is crucial to demonstrate the distinctiveness of these indicators from those associated with other constructs. Therefore, the next task is to establish discriminant validity. Discriminant validity measures the degree of dissimilarity between a particular construct and other constructs. From a technical perspective, it requires that each underlying construct explain a greater proportion of the variability in its indicators than the shared variability with another construct. As Campbell & Fiske (1959) noted, the act of defining something involves making distinctions, and validating these distinctions is an essential aspect of the validation process. This concept is referred to as discriminant validity. Within the framework of Partial Least Squares (PLS), there are three approaches to assessing discriminant validity.

4.6.2.1 Fornell and Larcker (1981) criterion

There are two types of indicators: formative and reflective. In this study, all constructs are reflective. For constructs with reflective indicators, Fornell & Larcker (1981) suggested testing whether the square root of the average variance extracted (AVE) for each construct exceeds the correlation between the constructs.

The Fornell-Larcker criterion evaluates the relationship between the square root of the average variance extracted (AVE) of the primary construct and the correlation of the other constructs within the model. According to Hair et al. (2017), the square root of the AVE values should exceed the correlation values between the constructs in order to

demonstrate discriminant validity. To perform this test, it is necessary to examine one pair of constructs at a time. For this purpose, the average of the squared multiple correlations (or the squared fully standardised item loadings) is calculated separately for the indicators of each construct.

The square root of the average variance extracted (AVE) values is then compared with the intercorrelation between the two constructs under consideration. If the two constructs are indeed different, the square root of the average squared multiple correlations for each construct should be greater than the intercorrelation between them. Using Table 4.7, the square root of the AVE (Average Variance Extracted) values are in bold, while the values not in bold represent the correlations between the constructs. The results show that the square root of the AVEs exceeds the correlation values between the constructs. Consequently, based on the criterion, it can be concluded that the model has successfully demonstrated discriminant validity.

Table 4.7 Discriminant validity of the constructs -Fornell-Larckell Criterion

	ATT	BEH	INT	PB	PBC	PPE	PS	PSV	SM	SN
Attitude	**0.888**									
Behaviour	0.670	**0.865**								
Intention	0.780	0.746	**0.983**							
Perceived Barriers	-0.557	-0.485	-0.548	**0.793**						
Perceived Behaviour Control	0.776	0.684	0.721	-0.522	**0.860**					
Perceived Policy Effectiveness	0.583	0.619	0.607	-0.418	0.576	**0.869**				
Perceived Susceptibility	0.328	0.266	0.345	-0.087	0.283	0.249	**0.877**			
Perceived Severity	0.523	0.471	0.476	-0.310	0.505	0.403	0.510	**0.858**		
Social Media	0.226	0.313	0.228	-0.076	0.227	0.526	0.170	0.186	**0.865**	
Subjective Norms	0.783	0.664	0.717	-0.535	0.770	0.582	0.343	0.448	0.313	**0.903**

Note: Diagonals (in bold) represent the square root of the AVE and the off diagonals represent the correlation

4.6.2.2 Examining the cross-loadings of indicators

To test the discriminant validity of the model, it is necessary to ensure that the loading values of each indicator that is associated with a particular construct are greater than 0.10 compared to the loadings in other constructs (Lowry & Gaskin, 2014). In simpler words, one way to achieve this is to compare the external loading of an indicator on its corresponding construct and ensure that it outperforms all its loadings on other constructs. Using the cross-loadings shown in Table 4.8, it was found that the loadings associated with the main construct were consistently higher than the loadings of the other constructs. It can therefore be concluded from the cross-loading approach that the model has successfully demonstrated discriminant validity.

Table 4.8 Loadings and cross-loadings

	ATT	BEH	INT	PB	PBC	PPE	PS	PSV	SM	SN
ATT1	**0.858**	0.564	0.642	-0.481	0.624	0.452	0.308	0.491	0.092	0.628
ATT2	**0.945**	0.628	0.722	-0.521	0.714	0.535	0.318	0.522	0.202	0.725
ATT3	**0.922**	0.630	0.738	-0.535	0.701	0.531	0.285	0.498	0.205	0.694
ATT4	**0.924**	0.621	0.716	-0.529	0.729	0.515	0.285	0.455	0.172	0.719
ATT5	**0.932**	0.606	0.707	-0.475	0.726	0.555	0.301	0.486	0.233	0.749
ATT6	**0.679**	0.438	0.527	-0.349	0.541	0.433	0.235	0.289	0.280	0.550
ATT7	**0.927**	0.649	0.766	-0.543	0.764	0.587	0.304	0.483	0.237	0.780
BEH1	0.553	**0.845**	0.627	-0.454	0.583	0.459	0.242	0.392	0.227	0.601
BEH2	0.511	**0.781**	0.561	-0.351	0.564	0.473	0.207	0.348	0.230	0.475
BEH3	0.601	**0.876**	0.665	-0.408	0.586	0.557	0.252	0.369	0.306	0.617
BEH4	0.612	**0.911**	0.695	-0.439	0.602	0.627	0.220	0.481	0.309	0.571
BEH5	0.611	**0.904**	0.669	-0.441	0.625	0.547	0.228	0.437	0.274	0.600
INT1	0.773	0.741	**0.985**	-0.556	0.710	0.592	0.326	0.482	0.215	0.709
INT2	0.750	0.736	**0.981**	-0.544	0.704	0.608	0.337	0.459	0.239	0.705
INT3	0.778	0.724	**0.984**	-0.517	0.714	0.591	0.354	0.463	0.218	0.701
PB1	-0.477	-0.447	-0.510	**0.816**	-0.437	-0.378	-0.065	-0.297	-0.088	-0.468
PB2	-0.362	-0.327	-0.368	**0.745**	-0.337	-0.256	-0.046	-0.089	-0.050	-0.319
PB3	-0.493	-0.390	-0.459	**0.845**	-0.435	-0.315	-0.080	-0.217	0.014	-0.442
PB4	-0.509	-0.421	-0.493	**0.864**	-0.476	-0.419	-0.142	-0.347	-0.116	-0.488
PB6	-0.323	-0.312	-0.287	**0.683**	-0.366	-0.253	0.035	-0.251	-0.050	-0.381
PBC1	0.728	0.637	0.664	-0.479	**0.888**	0.489	0.240	0.460	0.166	0.702
PBC2	0.638	0.581	0.594	-0.459	**0.842**	0.532	0.241	0.416	0.231	0.665
PBC3	0.645	0.581	0.611	-0.436	**0.850**	0.484	0.183	0.417	0.174	0.647
PBC4	0.611	0.494	0.570	-0.404	**0.797**	0.405	0.274	0.415	0.180	0.600
PBC5	0.709	0.651	0.666	-0.480	**0.912**	0.513	0.280	0.458	0.225	0.716
PBC6	0.666	0.575	0.609	-0.428	**0.866**	0.544	0.242	0.437	0.195	0.635
PPE1	0.591	0.634	0.611	-0.454	0.535	**0.813**	0.238	0.436	0.387	0.529

Table 4.8 Continued

	ATT	BEH	INT	PB	PBC	PPE	PS	PSV	SM	SN
PPE2	0.457	0.486	0.491	-0.296	0.454	**0.829**	0.188	0.336	0.486	0.452
PPE3	0.459	0.501	0.497	-0.324	0.468	**0.899**	0.203	0.319	0.511	0.440
PPE4	0.415	0.454	0.439	-0.278	0.420	**0.892**	0.164	0.284	0.493	0.418
PPE5	0.438	0.480	0.463	-0.276	0.435	**0.901**	0.201	0.306	0.493	0.431
PPE6	0.589	0.589	0.597	-0.437	0.589	**0.903**	0.248	0.394	0.414	0.594
PPE7	0.534	0.563	0.537	-0.417	0.547	**0.844**	0.244	0.332	0.442	0.618
PS1	0.256	0.243	0.279	-0.090	0.210	0.242	**0.871**	0.433	0.182	0.272
PS2	0.247	0.212	0.287	-0.038	0.207	0.202	**0.893**	0.415	0.133	0.282
PS3	0.349	0.244	0.335	-0.097	0.315	0.212	**0.868**	0.486	0.135	0.341
PSV1	0.441	0.406	0.409	-0.289	0.442	0.338	0.517	**0.861**	0.152	0.405
PSV2	0.422	0.403	0.373	-0.253	0.437	0.362	0.294	**0.840**	0.134	0.332
PSV3	0.482	0.405	0.440	-0.256	0.424	0.341	0.486	**0.873**	0.188	0.411
SM1	0.182	0.296	0.199	-0.052	0.201	0.420	0.150	0.198	**0.820**	0.270
SM2	0.189	0.244	0.178	-0.081	0.198	0.453	0.091	0.223	**0.844**	0.249
SM3	0.189	0.248	0.183	-0.056	0.184	0.449	0.192	0.097	**0.900**	0.253
SM4	0.221	0.287	0.221	-0.075	0.199	0.496	0.152	0.123	**0.895**	0.304
SN1	0.698	0.593	0.625	-0.440	0.670	0.536	0.285	0.387	0.336	**0.899**
SN2	0.745	0.627	0.690	-0.552	0.724	0.506	0.311	0.429	0.219	**0.890**
SN3	0.673	0.573	0.623	-0.448	0.687	0.535	0.332	0.394	0.299	**0.919**

Note: Bold values are loadings for items that are above the recommended value of 0.5

4.6.2.3 Heterotrait-Monotrait Ratios (HTMT)

HTMT ratios represent the third approach used to assess discriminant validity. The results of the HTMT analysis are detailed in Table 4.9. This approach is widely recognised as the preeminent method for assessing discriminant validity in structural equation modeling (SEM) analysis (Hair et al., 2017; Henseler et al., 2015). HTMT values close to 1.0 indicate a lack of discrimination between constructs, suggesting a lack of discriminant validity. To determine the threshold for HTMT scores (i.e. the extent to which scores should not be close to 1.0), Henseler et al. (2015) recommended two thresholds: primarily not above 0.90 and for more conservative studies not above 0.85. In this study, the researcher chose the more conservative threshold. Table 4.9 shows that all values of the HTMT ratio remained below the threshold of 0.90, confirming the discriminant validity of the model.

Table 4.9 Discriminant Validity – Heterotrait-Monotrait Ratios (HTMT)

	ATT	BEH	INT	PB	PBC	PPE	PS	PSV	SM	SN
ATT										
BEH	0.714									
INT	0.804	0.785								
PB	0.603	0.542	0.584							
PBC	0.823	0.742	0.754	0.581						
PPE	0.603	0.653	0.620	0.444	0.605					
PS	0.360	0.301	0.374	0.110	0.313	0.273				
PSV	0.587	0.542	0.528	0.362	0.579	0.450	0.598			
SM	0.249	0.343	0.242	0.098	0.249	0.578	0.196	0.215		
SN	0.849	0.734	0.766	0.605	0.846	0.626	0.391	0.521	0.353	

Based on the comprehensive assessment of the measurement model conducted, it can be concluded that the research model proposed in this study is both valid and reliable. As a result, it is possible to test the relationships between the constructs within the model. Furthermore, the evaluation of the measurement model in this section is consistent with the final stages of Hinkin's (1998, 2005) instrumentation process. Therefore, based on the results, it can also be claimed that the research model utilises a valid and reliable instrument. The following section focuses on the evaluation of the structural model, in which the hypotheses about the relationships between the constructs are examined.

4.7 Structural Model

4.7.1 Hypothesis Testing

After finalising the measurement model, the next section of this study deals with the evaluation of the structural model. In order to evaluate the structural model, it is important to conduct hypothesis tests that are aligned with the research questions. Based on the established research framework, this study has 14 research hypotheses. As Lowry & Gaskin (2014) pointed out, assessing the structural model identifies significant and effective pathways that support the hypotheses. Moreover, structural model evaluation also provides information about the predictive ability of the model.

Several criteria must be met when assessing a structural model, e.g. assessing collinearity, assessing the relationship of the structural model (path coefficients), assessing the size of the R2 (coefficient of determination), assessing the size of the effect size (f2), assessing the q2 effect size and PLS-Predict.

4.7.2 Assessment of the Collinearity Issues

The first step in evaluating the structural model was to identify collinearity issues between the exogenous constructs. In this study, collinearity was determined using the variance inflation factor (VIF). A VIF value below 5.0 means that there are no collinearity problems between the exogenous constructs. The assessment of collinearity problems at the beginning of the study is crucial to avoid collinearity between predictor and criterion, which can unintentionally obscure the robust causal effect of the model (Kock & Lynn, 2012). Recommended thresholds for VIF values are 5.0 or higher, as suggested by Hair

et al. (2011), or 3.3 or higher, as suggested by Diamantopoulos & Siguaw (2006), indicating the presence of potential collinearity problems. Based on the data presented in Table 4.10, the intrinsic VIF values for all constructs range from 1.199 to 3.839. These values are below the threshold value of 5.0 (Hair et al., 2011), suggesting that there are no collinearity problems in this study.

Table 4.10 Structural Model for Collinearity Issues

	ATT	BEH	INT	PB	PBC	PPE	PS	PSV	SM	SN
ATT			3.839							
BEH										
INT		1.199								
PB			1.674							
PBC			3.748							
PPE			1.851							
PS			1.573							
PSV			1.840							
SM		1.327								
SN			3.610							

4.7.3 Assessment of the Structural Model Relationship (Path Coefficients)

The second step was to evaluate the meaning and relevance of the relationships between the constructs. For this purpose, a bootstrapping procedure with 10,000 samples and 357 observations was conducted in this study. While the initial model estimates can be based on a limited number of bootstrap subsamples, e.g. 1000, the final analysis should include a much larger number, with a minimum of 10,000 subsamples being the recommended threshold. Therefore, 10,000 samples, decided as per the recommendation of Hair et al. (2022), were used in this assessment.

This procedure aimed to test the direct hypotheses developed to examine the relationships between the constructs in the model. The results of this significance analysis are used to answer the research question posed in this study.

As recommended by Hair et al. (2017), the path coefficients, standard errors, t-values, and p-values of the structural model were reported in this study to test the formulated hypotheses. In response to Hahn & Ang's (2017) criticism of the

appropriateness of p-values as a criterion for the significance of hypotheses, confidence intervals were also provided in this study. To determine the path relationships, this study used a bootstrapping function with 10,000 replicate samples, a significance level of 0.05 and a one-tailed test, as suggested by Ramayah et al. (2018).

4.7.4 Path Coefficient – Direct Effects

Seven latent constructs were included in the estimation of path coefficients for direct effects, namely perceived severity, perceived susceptibility, perceived barriers, attitude, subjective norms, perceived behavioural control, intention, and behaviour. A total of seven hypotheses were formulated to test the relationships between these latent constructs. Table 4.11 explains the findings of the study. The seven hypotheses were.

Hypothesis 1: Perceived susceptibility is positively related to vaccination intention

The first hypothesis for this study relates to perceived susceptibility and vaccination intention. As stated in chapter three, the principles of the structural model are that the direction of the beta value must be consistent with the direction of the hypothesis, that the value must be greater than 1.645, that the p-value is less than 0.05 and that there is no zero balance between the LL and the UL (Hair et al. (2019).

For hypothesis 1, the results of the path coefficient show that the beta value is β =0.086, the t-value is 2.32, the p-value is 0.01, LL and UL represent a positive relationship, and the VIF value is 1.573. Therefore, the results fulfil all elements of the structural model, so H1 is supported.

Hypothesis 2: Perceived severity is positively related to vaccination intention.

For hypothesis 2, the path coefficient results show that the beta value is β =-0.023, the t-value is 0.587, the p-value is 0.279, LL is a negative relationship, but UL is a positive relationship, the VIF value is at 1.84, while F2 is 0.001. However, the results show that the beta value is negative (the direction of the beta value does not match the direction of the hypothesis) and that the UL and LL are not in the same direction (UL is negative while LL is positive). Therefore, H2 is not supported.

Hypothesis 3: Perceived Barriers is negatively related to vaccination intention.

For hypothesis 3, the path coefficient results show that the beta value is β =-0.101, the t-value is 2.298, the p-value is 0.011, LL and UL are both in a negative relationship, and the VIF value is 1.674. Therefore, the results fulfil all elements of the structural model, so H3 is supported.

Hypothesis 4: Attitude is positively related to vaccination intention.

For hypothesis 4, the path coefficient results show that the beta value is β =0.315, the t-value is 3.24, the p-value is 0.001, LL and UL are in a positive relationship, and the VIF value is 3.839. Therefore, the results fulfil all elements of the structural model, so H4 is supported.

Hypothesis 5: Subjective norms is positively related to vaccination intention.

For hypothesis 5, the results of the path coefficient show that the beta value is β =0.166, the t-value is 2.171, the p-value is 0.015, LL and UL have a positive relationship, and the VIF value is 3.61. Therefore, the results fulfil all elements of the structural model, so H5 is supported.

Hypothesis 6: Perceived behavioural control is positively related to vaccination intention

For hypothesis 6, the path coefficient results show that the beta value is β =0.191, the t-value is 2.206, the p-value is 0.014, LL and UL have a positive relationship, and the VIF value is 3.748. Thus, the results fulfil all elements of the structural model, so H6 is supported.

Hypothesis 7: Vaccination intention is positively related to vaccination behavior

For hypothesis 7, the path coefficient results show that the beta value is β =0.631, the t-value is 14.67, the p-value is 0.000, LL and UL have a positive relationship, and the VIF value is 1.199. Therefore, the results fulfil all elements of the structural model, so H7 is supported.

Consequently, based on the results from the analyses of H1 to H7, all hypotheses except H2 were supported. Table 4.11 shows the result of the analysis.

Table 4.11 Path coefficient and hypothesis testing

		BETA	SE	T value	P values	LL	UL	VIF	F2	R^2	Decision
H1	PS -> INT	0.086	0.037	2.320	0.010	0.027	0.149	1.573	0.017		Supported
H2	PSV -> INT	-0.023	0.039	0.587	0.279	-0.090	0.037	1.840	0.001		Not supported
H3	PB -> INT	-0.101	0.044	2.298	0.011	-0.174	-0.030	1.674	0.022		Supported
H4	ATT -> INT	0.315	0.097	3.240	0.001	0.169	0.488	3.839	0.094	0.727	Supported
H5	SN -> INT	0.166	0.076	2.171	0.015	0.038	0.287	3.610	0.028		Supported
H6	PBC -> INT	0.191	0.087	2.206	0.014	0.052	0.335	3.748	0.036		Supported
H7	INT -> BEH	0.631	0.043	14.67	0.000	0.559	0.700	1.199	0.882	0.623	Supported

4.8 Assessment The Level of R^2 (Coefficient Of Determination)

Once the relationship between the constructs has been determined by the PLS analysis, the extent of the relationship concerning the endogenous constructs must be assessed. To quantify this, the coefficient of determination (R^2 value) can be used. The R^2 value indicates the collective influence of the exogenous latent variables on the endogenous latent variables. In other words, it quantifies the extent to which the variation in the endogenous constructs is explained by all associated exogenous constructs (Hair et al., 2017).

For the dependent constructs, Sandin et al. (2015) mentioned that an R^2 value above 0.6 indicates a high level of relationship, while values between 0.30 and 0.60 indicate a moderate level and values below 0.3 indicate a low level.

Table 4.12 details the R^2 values garnered from the bootstrapping technique. The R2 values for perceived susceptibility, perceived severity, perceived barriers, attitude, subjective norms, and perceived behavioural control amount to 72.7% of the variance in intention to vaccinate, indicating moderate predictive accuracy, as recommended by Hair et al. (2017) and Sandin et al. (2015). It can be concluded that the model in this study can generally predict up to 72.7% of the variables (perceived susceptibility, perceived severity, perceived barriers, attitude, subjective norms, and perceived behavioural control) that influence vaccination intention, which is considered reasonable for a social science study.

For vaccination behaviour, Table 4.12 yielded an R^2 value of 0.623, which means that 62.3% of the variance in intention to vaccinate is explained by perceived susceptibility, perceived severity, perceived barriers, attitude, subjective norms, and perceived behavioural control.

It can be concluded that the model in this study can generally predict up to 62.3% of the variables (perceived susceptibility, perceived severity, perceived barriers, attitude, subjective norms, and perceived behavioural control) that influence vaccination behaviour, which is considered reasonable for a social science study.

Table 4.12 R2 (Coefficient of Determination)

Endogenous Construct	R-square	R-square adjusted
BEHAVIORAL	0.623	0.620
INTENTION	0.727	0.717

4.9 Assessment The Level of Effect Size (f^2)

Having explored the significance of the relationships between the constructs of the research model, it is important to note that the study is not yet complete. According to Hair et al. (2014), after confirming the significance of these relationships, the researcher should also consider the importance or relevance of these significant relationships.

At this stage, the effect sizes (f^2) are then assessed. The f^2 calculates the relative influence of a predictor construct on the endogenous constructs. As suggested by Sullivan & Feinn (2012), it is important to report the substantial significance (effect size) in addition to the p-value, as this is not influenced by the sample size of the study. In this study, effect sizes were measured according to Cohen's (1988) guidelines, which define values of 0.02, 0.15 and 0.35 as indicators of small, medium and large effects, respectively.

As shown in Table 4.13, the effect sizes (f^2) for perceived severity, perceived susceptibility, perceived barriers, attitude, subjective norms, and perceived behavioural control had small effects on intention to vaccinate compared to intention to vaccinate, which had a large effect size on vaccination behaviour.

Table 4.13 Effect Size (f^2)

Relationship	**f^2**	**Effect**
Perceived Severity --> Intention	0.001	
Perceived Susceptibility --> Intention	0.017	Small
Perceived Barriers --> Intention	0.022	Small
Attitude --> Intention	0.094	Small
Subjective Norms --> Intention	0.028	
Perceived Behaviour Control --> Intention	0.036	Small
Intention --> Behaviour	0.882	Large

4.10 Pls Predict

Shmueli et al. (2019) proposed the usage of PLS predict, a holdout sampling-based procedure that generates item or construct-level predictions using the PLSpredict algorithm with a 10-fold procedure to check predictive relevance. Shmueli et al. (2019) suggested that when all item differences (PLS-LM) are lower, there is strong predictive power, when all are higher, predictive power is not confirmed, while when the majority is lower, there is moderate predictive power, and when the minority is low, there is low predictive power. Table 4.13 shows that all errors of the PLS model were lower than those of the LM model, indicating that the study model has strong predictive power.

The PLS predict procedures were conducted according to the methodology introduced by Shmueli et al. (2016) to evaluate the model's ability to make out-of-sample predictions. An important criterion for evaluating the predictive performance of the PLS analysis was the root mean square error (RMSE). These RMSE values are derived from a linear model (LM) as recommended by Danks and Ray (2018). The hypothesis was that the PLS analysis would have lower prediction errors compared to the simple LM benchmark, indicating improved predictive ability (PLS-LM).

The results presented in Table 4.13 proves that the PLS analysis yielded more favorable prediction errors than the simple LM benchmark, confirming its high accuracy (Hair et al., 2019; Shmueli et al., 2019). Furthermore, the data in Table 4.14 details that all Q2 values are greater than 0, indicating a high degree of predictive relevance.

Table 4.14 PLS Predict

INDICATOR	Q^2predict	PLS-RMSE	LM_RMSE	PLS-LM
BEH1	0.364	1.220	1.282	-0.062
BEH2	0.317	1.179	1.226	-0.047
BEH3	0.389	1.119	1.146	-0.027
BEH4	0.506	0.876	0.934	-0.058
BEH5	0.461	0.957	1.028	-0.071
INT1	0.662	0.763	0.829	-0.066
INT2	0.649	0.802	0.897	-0.095
INT3	0.661	0.788	0.862	-0.074

4.11 Moderation Analysis

After evaluating the primary effects, the study moves on to examine the moderation hypothesis, which relates to research hypothesis 8 to 14. A moderator has properties that can influence the course of a relationship between two constructs and change the extent of that relationship (Hair et al., 2016). The moderating variable in this study is the perceived policy effectiveness and social media. To determine the moderating effect of perceived policy effectiveness and social media influence, 10,000 bootstrap samples were conducted for 357 bootstrap cases (Hair et al., 2022).

As stated in chapter three, the direction of the beta value must be consistent with the direction of the hypothesis, the value garnered must be above 1.645, while the p-value must be less than 0.05, and the LL and UL must be in the same direction (Hair et al., 2019). Table 4.15 explains the result of the moderating analysis. There are 7 moderating analyses in this study as follows:

Hypothesis 8: The positive relationship between perceived susceptibility and vaccination intention will be stronger if the perceived policy effectiveness is higher.

For hypothesis 8, the path coefficient results show that the beta value is β =0.005, t-value is 0.143, p-value is 0.443, LL is in a negative relationship, while UL is a positive relationship, VIF value is 1.988, and F2 is 0.000. However, since the relationship between UL and LL is in the opposite direction, H8 is not supported.

Hypothesis 9: The positive relationship between perceived severity and vaccination intention will be stronger if the perceived policy effectiveness is higher.

For hypothesis 9, the path coefficient results show that the beta value is β =-0.104, t-value is 2.565, p-value is 0.005, both LL and UL have a positive relationship, VIF value is 2.361, and F2 is 0.025. However, since the direction of the beta value is negative, but the hypothesis is in the positive direction, H9 is rejected.

Hypothesis 10: The negative relationship between perceived barriers and vaccination intention will be weakened if the perceived policy effectiveness is higher.

For hypothesis 10, the path coefficient results show that the beta value is β =0.091, the t-value is 1.939, the p-value is 0.026, both LL and UL have a positive relationship,

VIF value is 2.084, and F2 is 0.018. These results indicate that the beta value is positive, but the hypothesis is negative. Consequently, H10 is not supported.

Hypothesis 11: The positive relationship between attitude and vaccination intention will be stronger if the perceived policy effectiveness is higher.

For hypothesis 11, the path coefficient results show that the beta value is β =-0.084, t-value is 1.153, p-value is 0.124, LL is in a negative relationship, while UL is a positive relationship, VIF value 3.02, and F2 is 0.015. However, the direction of the beta value is negative, while the hypothesis is positively directed. In addition, the relationship between UL and LL is opposite, so H11 is not supported.

Hypothesis 12: The positive relationship between subjective norms and vaccination intention will be stronger if the perceived policy effectiveness is higher.

For hypothesis 12, the path coefficient results show that the beta value is β =0.168, t-value is 1.89, p-value is 0.029, both LL and UL are in a positive relationship, VIF value is 3.011, and F2 is 0.04. Therefore, the results fulfill all elements of the structural model, so H12 is supported.

Hypothesis 13: The positive relationship between perceived behavioural control and vaccination intention will be stronger if the perceived policy effectiveness is higher.

For hypothesis 13, the path coefficient results show that the beta value is β =-0.074, the t value is 1.082, the p value is 0.14, LL is in a negative relationship, while UL is in a positive relationship, VIF value is 2.086, and F2 is 0.01. However, the direction of the beta value is negative, but the hypothesis is positive and the relationship between UL and LL is in the opposite direction, therefore H13 is not supported.

Hypothesis 14: The positive relationship between vaccination intention and vaccination behaviour will be stronger if the social media influence is higher.

For hypothesis 14, the path coefficient results show that the beta value is β =-0.275, the t value is 3.977, the p value is 0.000, both LL and UL have a negative relationship with the VIF value being 1.326, and F2 is 0.12. However, since the direction of the beta value is negative, but the hypothesis is positive, H14 is rejected.

Thus, based on the moderation ratio results, only H12 was supported while the other hypotheses were not supported. Table 4.15 shows the result of the moderating effects.

Table 4.15 Result of the Moderating Effect

	Relationship	Beta	SE	t-value	p-values	LL	UL	VIF	F2	Decision
H8	PPE X PS -> INT	0.005	0.038	0.143	0.443	-0.055	0.068	1.988	0.000	Not Supported
H9	PPE X PSV -> INT	-0.104	0.041	2.565	0.005	-0.173	-0.041	2.361	0.025	Not Supported
H10	PPE X PB -> INT	0.091	0.047	1.939	0.026	0.019	0.174	2.084	0.018	Not Supported
H11	PPE X ATT -> INT	-0.084	0.073	1.153	0.124	-0.202	0.024	3.02	0.015	Not Supported
H12	PPE X SN -> INT	0.168	0.089	1.890	0.029	0.001	0.276	3.011	0.040	Supported
H13	PPE X PBC -> INT	-0.074	0.068	1.082	0.140	-0.213	0.022	2.086	0.010	Not Supported
H14	SM X INT -> BEH	-0.275	0.069	3.977	0.000	-0.389	-0.162	1.326	0.120	Not Supported

4.12 Moderation Plot

Dawson (2014) suggested that to further elucidate the moderating phenomenon, the pattern of interaction effects should be recorded to see how the moderator alters the relationship.

Hypothesis 12: The positive relationship between subjective norms and vaccination intention will be stronger if the perceived policy effectiveness is higher.

To facilitate the explanation of significant moderation effects, this study presents the simple slope of subjective norms and intentions (Table 4.15) using high (plus one standard deviation from the mean) and low (minus one standard deviation from the mean) values of the moderator – perceived policy effectiveness. The interaction diagrams are also presented as in Figure 4.1. Table 4.15 and Figure 4.1 to show that the interaction between subjective norms and perceived policy effectiveness was investigated by examining the conditional effects of subjective norms on intention at different levels of perceived policy effectiveness. This suggests that the effect of subjective norms on intention is greater when perceived policy effectiveness is high than when perceived policy effectiveness is low.

In other words, it shows that perceived policy effectiveness positively influences the relationship between subjective norms and vaccination intentions. In simpler terms, when Yuppie parents perceive that a vaccination policy is highly effective, the relationship between subjective norms and their intention to have their children vaccinated is also high.

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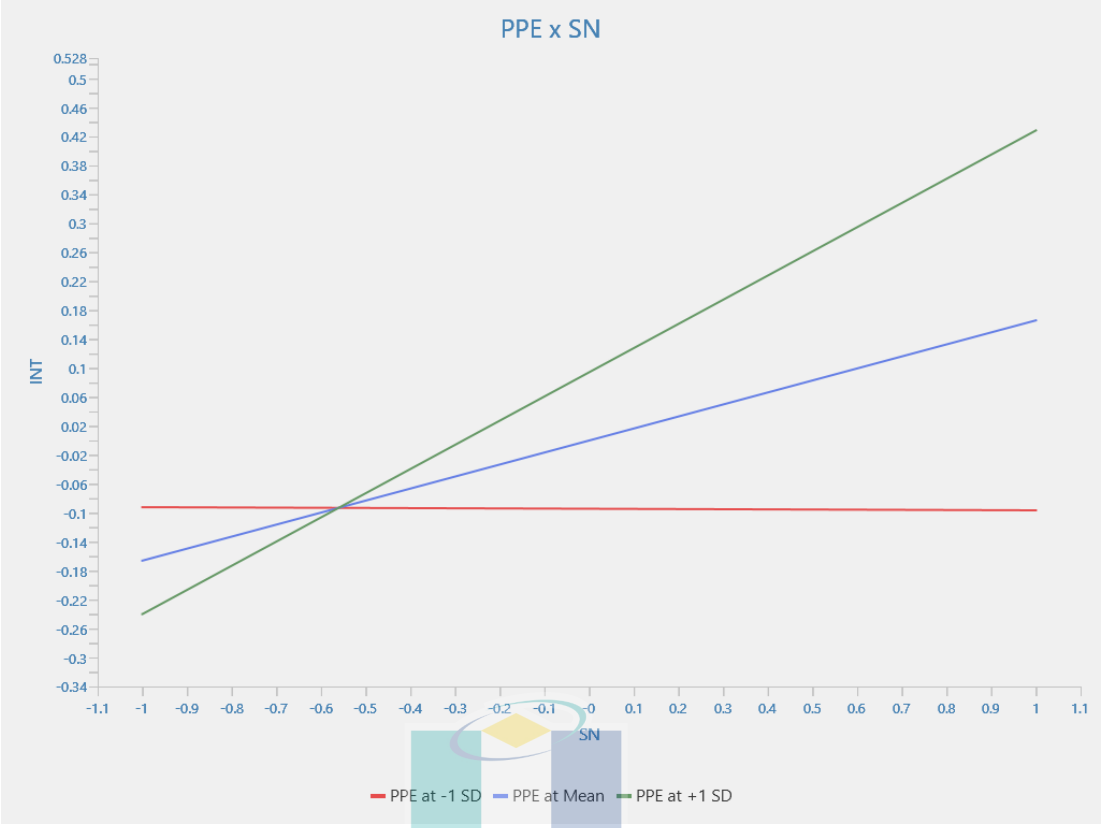

Figure 4.1 Interaction plot of Perceived Policy Effectiveness and Subjective Norms

4.13 Summary of Hypotheses Testing

Table 4.16 Summary of the hypothesis testing

	Hypothesis	Decision
H1	Hypothesis 1: Perceived susceptibility is positively related to vaccination intention	Supported
H2	Hypothesis 2: Perceived severity is positively related to vaccination intention.	Not Supported
H3	Hypothesis 3: Perceived Barriers is negatively related to vaccination intention.	Supported
H4	Hypothesis 4: Attitude is positively related to vaccination intention.	Supported
H5	Hypothesis 5: Subjective norms is positively related to vaccination intention.	Supported
H6	Hypothesis 6: Perceived behavioural control is positively related to vaccination intention	Supported
H7	Hypothesis 7: Vaccination intention is positively related to vaccination behavior	Supported
H8	Hypothesis 8: The positive relationship between perceived susceptibility and vaccination intention will be stronger if the perceived policy effectiveness is higher.	Not Supported
H9	Hypothesis 9: The positive relationship between perceived severity and vaccination intention will be stronger if the perceived policy effectiveness is higher.	Not Supported
H10	Hypothesis 10: The negative relationship between perceived barriers and vaccination intention will be weakened if the perceived policy effectiveness is higher.	Not Supported
H11	Hypothesis 11: The positive relationship between attitude and vaccination intention will be stronger if the perceived policy effectiveness is higher.	Not Supported
H12	Hypothesis 12: The positive relationship between subjective norms and vaccination intention will be stronger if the perceived policy effectiveness is higher.	Supported
H13	Hypothesis 13: The positive relationship between perceived behavioural control and vaccination intention will be stronger if the perceived policy effectiveness is higher.	Not Supported
H14	Hypothesis 14: The positive relationship between vaccination intention and vaccination behaviour will be stronger if the social media influence is higher.	Not Supported

4.14 Conclusion

Considering the comprehensive analysis of respondents' demographic data and the in-depth examination of vaccination intention and behaviour, this study provides several important insights. Regarding the analysis of vaccination behaviour, this study shows remarkable results. The parental vaccination behaviour survey yielded a mean score of 5.9782 out of a possible 7 points, indicating a remarkably high level of vaccination behaviour among participating parents. These results indicate a strong commitment and positive attitude of parents towards vaccination.

In addition, the study rigorously evaluated the measurement model and confirmed the convergent validity and reliability of the constructs used. The average variance extraction (AVE) values for all constructs exceeded the recommended threshold of 0.50, confirming convergent validity. In addition, both the Cronbach's alpha and the composite reliability values exceeded the acceptable threshold of > 0.70, demonstrating the reliability of the internal consistency of the constructs. Factor loadings exceeded the acceptable threshold for the most part, with the exception of a few indicators that were carefully examined and retained or removed due to their impact on internal consistency reliability.

Further assessment of the structural model using various criteria such as collinearity values, path coefficients, R^2 values, effect sizes (f^2), and PLS predict revealed a well-adjusted model that was able to explain a moderate to high percentage of the variance in the constructs as related to vaccination intention and behaviour. The moderation analysis yielded mixed results, supporting some hypothesised relationships while rejecting others. This comprehensive study thus sheds light on the complex interplay of factors influencing parental vaccination intention and behaviour. The robust analysis demonstrates the reliability and validity of the model and sheds light on the determinants that influence parental vaccination behaviour.

These findings have significant implications for public health initiatives and underscore the importance of understanding and addressing the multiple determinants involved in increasing vaccination rates in communities. In conclusion, of the 14 hypotheses developed in the main model, only 7 hypotheses were supported. The hypotheses are H1, H3, H4, H5, H6, H7 and H12. The next chapter will provide a

comprehensive discussion of the analysis, offering insights into the key findings and their implications. It will delve into the practical and theoretical contributions of the study.

CHAPTER 5

CONCLUSION

5.1 Introduction

In this final chapter, the study's results are succinctly summarised, addressing all research objectives. After discussing the research objectives, the theoretical significance and practical implications of the findings are highlighted. Additionally, the limitations of the research are examined. The chapter concludes with recommendations to enhance the understanding of parents' vaccination behaviours for their children, providing valuable insights for future researchers in similar fields.

The results regarding the direct relationship indicators reveal that all hypotheses (H1 - H7) were confirmed except for H2. This indicates that perceived susceptibility, perceived barriers, attitude, subjective norms, and perceived behavioural control significantly influence the intention to vaccinate, whereas perceived severity does not.

Concerning the moderation hypotheses, it is noted that none of the hypotheses (H8 - H14) were confirmed, except for H12. This implies that perceived policy effectiveness did not moderate the relationships between perceived susceptibility, perceived severity, perceived barriers, attitude, and perceived behavioural control concerning the intention to vaccinate. However, it did moderate the relationship between subjective norms and vaccination intention. These results are discussed in detail in the subsequent section.

This chapter also explores both the theoretical and practical implications of the study on parents' decisions to vaccinate their children. The theoretical implications encompass new contributions and advancements within the framework for understanding the complex dynamics of parents' intentions and behaviours related to vaccinating their children. This section analyses the study's impact on existing theories, particularly the Theory of Planned Behaviour (TPB) and the Health Belief Model (HBM), highlighting their extensive integration and adaptation in the context of Yuppie parents' vaccination intentions and behaviours in Malaysia.

On the other hand, the practical implications explain the findings and recommendations derived from the study results that aim to influence children vaccination policies and interventions in practice. These include strategies for community advocacy, working with policy makers, collaborating with health care providers and health care organizations, exploring public-private partnerships, and using Yuppie parents as influencers in advocating for vaccination. Furthermore, this chapter addresses the limitations encountered during the research process and offers recommendations for future studies to enhance our understanding of this critical aspect of public health.

5.2 Research Question 1

What is the vaccination behaviour level observed among Yuppie parents?

Vaccination behaviour is defined by an individual's willingness to undertake a specific action. This willingness is by their attitude towards the behaviour, the influence of subjective norms, and their perceived control over the behaviour (Ajzen, 1991).

The findings of this study indicate that the Yuppie parents who participated exhibited a notably high level of vaccination behaviour. This elevated mean score highlights the critical role of vaccination in public health and demonstrates the proactive approach parents take to safeguard their children's health and wellbeing. These results contribute to a growing body of evidence emphasising the significance of vaccination in preventing and controlling infectious diseases, as well as the vital role parents play as advocates shaped for public health initiatives.

These findings are consistent with previous studies, such as Kara et al. (2018) in Turkey, which reported significant success in vaccinating children. Similarly, AlGoraini et al. (2020) found that a large majority of parents ensured their children were fully vaccinated. McElfish's (2022) research on COVID-19 vaccination among parents revealed that most respondents had already vaccinated their children. Additionally, a study done by Rane et al. (2022) discovered that 74.4% of parents had vaccinated their children in the USA

This study therefore shows that a significant proportion of Yuppie parents have actually ensured that their children are vaccinated. The high vaccination behaviour

observed among these Yuppie parents indicates a proactive attitude toward preventive health care and child wellbeing. Several factors could contribute to this trend. Take for example, the health awareness of Yuppie parents, since they are generally well informed and health-conscious, they place a high value on preventative measures for themselves and their children. They are more likely to inform themselves about vaccinations and make informed decisions based on available scientific evidence.

In addition, they may be more aware of the importance of vaccinations to prevent disease due to their education level and awareness, as Yuppies often have a higher level of education. Yuppie parents may actively seek out information from reputable sources and health care professionals to help them understand the importance of any given vaccination.

This realisation has profound implications for children's health and wellbeing. Children vaccination plays a critical role in averting a spectrum of serious and potentially life-threatening diseases. Vaccination is an effective public health tool that promotes the development of immunity against a wide range of diseases. Its impact extends not only to individual children, but also to the whole community through the concept of herd immunity. The results indicate that parents recognise the importance of vaccination and are actively taking steps to protect their children from preventable diseases.

By choosing to vaccinate their children, parents are safeguarding them against illnesses that can cause serious health complications, hospitalisation, or even death. Vaccines effectively prevent diseases such as measles, mumps, rubella, polio, and influenza. Moreover, vaccinated children contribute significantly to the overall health of the community. High vaccination rates create a strong barrier against the spread of diseases, reducing the risk for individuals who cannot be vaccinated due to medical reasons.

Additionally, parents can use the findings of this study to advocate for vaccination in their communities, particularly in the East Coast region. By sharing this data with other parents, they can help dispel misconceptions and concerns about vaccination, encouraging more parents to prioritise vaccinating their children. This collective effort contributes significantly to achieving herd immunity.

In addition, the awareness that a significant number of peers are actively vaccinating their children can boost and influence parents' confidence in their own vaccination decisions. This realisation reassures them that their decisions are in line with generally accepted practices and can thus protect the health and wellbeing of their family and community.

This collective effort serves to protect the health of the entire population. Overall, the remarkable vaccination rate of the Yuppie parents in this study demonstrates their commitment to health and wellbeing, which may be based on a combination of knowledge, access, and a proactive attitude toward preventive health measures for their children.

5.3 Research Question 2

Do perceived susceptibility, perceived severity, perceived barriers, attitude, subjective norms, and perceived behavioural control influence vaccination intention?

5.3.1 Perceived Susceptibility and Vaccination Intention

H1 : *Perceived susceptibility is positively related to vaccination intention.*

Perceived susceptibility refers to an individual's perception of their likelihood to contract a specific illness, indicating an increased awareness of potential risks (Zampetakis & Melas, 2021). In the context of children vaccination, this concept is closely related to parents' assessment of how likely it is for their child to contract a particular disease if they are not vaccinated. When parents perceive their child to be highly susceptible to a disease, they are more inclined to view vaccination as a means of safeguarding their child against that illness.

The findings of this study reveal a positive association between perceived susceptibility and the intention to vaccinate. This suggests that parents who perceive their child as more susceptible to a disease, or who perceive vaccination as carrying a higher risk of adverse effects, are more inclined to intend to vaccinate their child. Essentially, their perception of risk significantly influences their decision regarding their child's

vaccination. If parents believe that their child is at risk and that vaccination can reduce this risk, they are more inclined to get their child vaccinated.

According to the Health Belief Model, individuals are more likely to adopt health-promoting behaviours when they perceive themselves to be at risk of a particular health issue and believe that the proposed action, such as vaccination, can mitigate that risk. In this study, parents who see their children as vulnerable to vaccine-preventable diseases are more likely to favor vaccination as a preventive measure. This discovery underscores the relevance of the Health Belief Model in comprehending and advocating for parental vaccination decisions. Consequently, it provides information for approaches to increase vaccination rates and protect the population from preventable diseases.

This correlation aligns with the findings of Grinberg & Sela (2021), who conducted a study involving mothers and identified a direct link between their perception of their children's susceptibility to measles and their inclination to vaccinate them. A stronger belief in their children's susceptibility led to a higher willingness to allow administering of the vaccine.

Similarly, Zakeri et al. (2021) observed that parents inclined to vaccinate their children held stronger convictions regarding their susceptibility to vaccine-preventable illnesses compared to those less inclined. Likewise, Li et al. (2022) identified a positive correlation between parents' readiness to vaccinate their children and heightened perceived susceptibility in their research.

Moreover, Ling et al. (2019) found in their study that perceived susceptibility to influenza predicted individuals' intentions to get vaccinated. Similarly, Wong et al. (2020) utilised the Health Belief Model in a cross-sectional analysis of Covid-19 vaccination intentions, revealing that increased perceptions of susceptibility to Covid-19 infection were linked to heightened vaccination intentions.

Concerning the Yuppie parents in this investigation, this propensity may stem from various factors, including the protective tendencies of Yuppie parents. It's plausible that Yuppie parents adopt a cautious stance to safeguard their family's well-being, perceiving themselves to be at risk. Such a mindset could foster a greater readiness to vaccinate, aiming to mitigate the perceived threat of vaccine-preventable diseases.

Furthermore, this trend might also be influenced by the social and cultural dynamics characteristic of Yuppie communities.The social environment, which includes interactions within their social circles or the wider community, could contribute to the perception of susceptibility. Conversations with peers, healthcare professionals or information campaigns may influence their beliefs about disease susceptibility and the importance of vaccination.

Hence, within the scope of this study, perceived susceptibility pertains to Yuppie parents' evaluations of the probability of encountering specific risks, such as potential vaccine side effects, concerning their children's vaccination choices. Consequently, the examination underscores the significance of individual perceptions of susceptibility to a disease, which correlates positively with heightened parental intentions for vaccination, particularly concerning child immunisations. Therefore, public health intervention initiatives should prioritise strategies to improve individual perceptions of susceptibility towards infection.

5.3.2 Perceived Severity and Vaccination Intention

H2: Perceived sevezrity is positively related to vaccination intention.

Perceived severity refers to an individual's assessment of the potential consequences of a condition (Zampetakis & Melas, 2021). In the context of this study, parents who perceive a heightened threat or risk of their children falling ill are more inclined to opt for vaccination. Put simply, parents who perceive their children as being at greater risk of contracting a disease are more likely to express an intention to vaccinate them. This implies that parents who perceive an increased level of danger or threat to their children's health are more motivated to ensure that their children receive necessary vaccinations for protection against potential illnesses (Zampetakis & Melas, 2021).

Previous studies examining factors impacting vaccination decisions have consistently highlighted the significance of perceived disease severity in shaping vaccination intentions (Ling et al., 2019; Wong et al., 2020; Grinberg & Sela, 2021). For instance, Grinberg & Sela (2021) found a positive association between mothers' perception of measles severity and their inclination to vaccinate their children.

Contrary to these findings, the present study diverges from this trend, suggesting that perceived severity exerts no influence on vaccination intention. Despite the Health Belief Model proposing that perceived disease severity affects health behaviours, this study's results challenge this notion concerning vaccination intention. While no notable correlation between perceived severity and intention to vaccinate is observed, the study highlights alternative factors, notably perceived susceptibility, which wield greater influence over parents' vaccination decisions.

The findings indicate that parents who perceive vaccine-preventable diseases as less severe or harmful tend to be less inclined to vaccinate their children. In other words, the more parents believe that these diseases are not very serious or pose no great threat to their children's health, the less motivated they are to get vaccinated. Furthermore, parents' level of concern or fear about the potential severity of a disease does not necessarily make them more likely to want to have their child vaccinated against that disease.

This finding suggests that simply knowing the severity of a disease does not necessarily motivate parents to have their children vaccinated. This observation finds support in the research conducted by Chen et al. (2015) in Taiwan, where the perceived severity of influenza did not reliably predict vaccination intention. Similarly, Vrdelja & Kraigher's (2020) study among parents in Slovenia revealed that perceived severity did not impact parents' vaccination decisions. Furthermore, Zheng et al. (2022) found in their study on the COVID-19 vaccine that perceived severity did not influence vaccination intentions.

For the Yuppie parents in this study, the results garnered could be due to several factors. For example, discrepancies in risk assessment. Yuppie parents are aware of the severity of certain diseases but consider the risk of contracting these diseases to be relatively low. So although they recognise the potential severity of the disease, they may not translate this perception into an increased willingness to vaccinate due to their assessment of the likelihood of infection. This may also be due to conflicting information or misinformation. Yuppies who frequently seek information from multiple sources may encounter conflicting information about the severity of certain diseases or the effectiveness of vaccines. Confusion or conflicting information may contribute to a discrepancy between the perceived severity of a disease and the intention to vaccinate.

Based on these study outcomes, policymakers could consider aligning their communication about the severity of certain diseases with parents' values and beliefs. This approach may potentially enhance vaccination rates and, consequently, improve overall effectiveness. Disseminating clear, evidence-based information about the benefits of vaccination can reduce anxiety. It is also important to educate parents about herd immunity and how vaccinating their child plays a critical role in protecting the community. Emphasising the collective responsibility dimension could serve as a motivating factor for parents who do not place a high priority on the perceived severity of the disease. In addition, it is critical to address parents' specific concerns about vaccines, including questions about safety, potential side effects, and vaccine ingredients. Providing clear and transparent information to parents can significantly reduce these concerns.

5.3.3 Perceived Barriers and Vaccination Intention

H3: Perceived Barriers is negatively related to vaccination intention.

Perceived barriers, as defined by Coe et al. (2021), include beliefs about the effectiveness of certain measures and the expected costs. In the context of vaccination, this concept revolves around the belief that various psychosocial, physical, or financial challenges hinder the vaccination process. When parents perceive these barriers, it often leads to a reduced willingness to have their children vaccinated against diseases. In simpler terms, when parents face obstacles related to these factors, they are less likely to vaccinate their children.

The analysis of the current study revealed a negative correlation between perceived barriers and the intention to vaccinate. This means that parents who perceive fewer obstacles to vaccination are more likely to intend to vaccinate their children.

The study's findings provide important insights into how perceived barriers influence parents' vaccination intentions and align with the principles of the Health Belief Model. Perceived barriers, including concerns about the safety or accessibility of vaccines, may hinder an individuals' willingness to take health-promoting actions, as suggested by the model.

Perceived barriers also include parents' perceptions of barriers or challenges that may influence their willingness to have their children vaccinated. When parents perceive fewer barriers, such as issues of convenience or concerns about side effects, they are more likely to vaccinate their children. A lower perception of barriers correlates positively with a higher willingness to vaccinate.

This finding is consistent with a study by Vrdelja et al. (2019) among women in Slovenia, which found that perceived barriers significantly predicted the intention not to vaccinate their children. Additionally, in a cross-sectional study using the Health Belief Model, Wong et al. (2020) examined Covid-19 vaccination intentions among a Malaysian cohort. Their results showed a positive correlation between lower perceived barriers and a stronger inclination towards Covid-19 vaccination.

Similarly, Coe et al. (2021) found that perceptions of barriers to accessing Covid-19 vaccines negatively influenced the willingness to be vaccinated. Chu & Liu (2021) also found that individuals who perceive fewer barriers are more likely to show a higher intention to vaccinate.

Based on this empirical evidence, this study suggests that parents facing challenges or barriers in accessing vaccinations for their children may be deterred or hindered in their willingness to vaccinate. Put more simply, if parents perceive difficulties in accessing vaccines for their children, they may be less inclined to prioritise their children's required vaccinations. These access barriers may include limited availability of vaccines, long commutes to vaccination sites or complicated registration procedures. Removing these barriers to access is therefore crucial to increasing children vaccination rates.

For Yuppie parents, this indicates that those who perceive fewer barriers to vaccination are more likely to vaccinate themselves and their children. Several factors may contribute to this result. For example, accessibility and convenience: Yuppie parents who live in urban communities may value convenience and accessibility. When they perceive fewer barriers such as long distances to vaccination centres, complicated appointment scheduling or limited vaccine availability, they are more likely to get vaccinated. They also have busy schedules and stressful lifestyles: Yuppie parents often have demanding careers and busy schedules. If they suffer from time constraints, such as

not being able to take time off work to attend a vaccination appointment or having to endure long waiting times at healthcare facilities, this could have a negative impact on their vaccination intentions.

This underscores the importance of addressing and reducing perceived barriers to vaccination in public health campaigns and interventions to achieve higher vaccination rates. When individuals perceive fewer obstacles, they are more likely to follow through on their intention to be vaccinated, which is crucial for disease prevention and overall public health.

5.3.4 Attitude and vaccination intention

H4: Attitude is positively related to vaccination intention.

As Dou et al. (2022) has explained, attitude can be described as the cumulative positive or negative evaluations associated with the expected outcomes or experiences that result from a particular behaviour. In simpler terms, it encompasses the overall emotional and cognitive evaluation of the potential consequences of any given behaviour.

In this study, parents' thoughts about vaccinating their children against diseases may be influenced by various factors that shape their attitudes. They may be positive about vaccination because they believe it will protect their child and the wider community from disease, suggesting a positive evaluation of the consequences. Conversely, concerns about possible side effects or safety issues may evoke negative feelings, indicating a negative evaluation of the outcomes. Ultimately, the collective impact of these positive and negative evaluations shapes parents' overall attitudes towards vaccinating their children.

This study found that parents' attitudes significantly influence their intention to vaccinate their children. Specifically, parents with a positive attitude towards vaccination are more likely to intend to vaccinate their children, thereby increasing the likelihood that they will follow through.

Moreover, the results suggest a strong correlation between parents' attitudes and their willingness to vaccinate their children, aligning with the Theory of Planned Behaviour (TPB). According to TPB, an individual's attitude towards a particular

behaviour, such as vaccination, plays a crucial role in shaping their intentions to engage in that behaviour.

If parents hold a positive attitude towards vaccination, they are much more likely to ensure their children are vaccinated. Their positive attitude towards vaccination is consistent with their determination to ensure that their child receives the necessary vaccinations.

This finding underscores the importance of promoting positive attitudes towards vaccinating children as part of public health campaigns. Parents who view vaccination as a crucial and protective measure for their children's wellbeing are more inclined to follow through with their intentions to vaccinate. This proactive behaviour greatly enhances the effectiveness of vaccination programs and helps prevent vaccine-preventable diseases.

Multiple studies have underscored the pivotal role of attitudes in predicting vaccination intentions. For instance, Catalano et al. (2017) conducted a study among college students, demonstrating the significant impact of attitudes in this context. Xiao & Wong (2020) further substantiated this idea by identifying attitude as the strongest predictor of vaccination intention.

Xiao (2021) extended this understanding by proving that attitude predicts HPV vaccination intention.Similarly, Chu and Liu (2021) identified a positive relationship between attitudes and a stronger intention to vaccinate among participants in the United States. Additionally, Limbu et al. (2022) studied the area of Covid-19 vaccination and found that attitude was the most significant factor associated with vaccination intention. These cumulative results underline the consistent and significant influence of attitude on the prediction of vaccination intentions.

With regard to the Yuppie parents in the study, there are several factors that could be related to the results. For example, in relation to health awareness and proactive attitudes, Yuppie parents often place a high value on health and wellbeing. A positive attitude towards vaccinations could therefore be due to their proactive attitude towards preventive health measures. They may see vaccinations as protecting themselves and their children from preventable diseases, which fits in with their health-conscious lifestyle. There is also their faith in science and medical professionals. Yuppies, who tend to be well educated, are more likely to trust scientific evidence and recommendations

from healthcare professionals. Their positive attitude towards vaccinations is likely influenced by their trust in the vaccines' safety and effectiveness, as endorsed by scientific consensus.

In addition to the studies already cited, it is therefore evident that attitudes significantly influence vaccination intention. This observation underscores the central role of parents' attitudes in determining their intention to have their children vaccinated, which has significant implications for increasing children vaccination rates.

5.3.5 Subjective Norms and Vaccination Intention

H5: Subjective norms is positively related to vaccination intention.

Subjective norms encompasses all social pressures on an individual's perception towards behaving in a certain manner. These perceptions are significantly shaped by the beliefs and attitudes of those they deem important (Barattucci et al., 2022).

In the context of children vaccination, subjective norms reflect the degree to which a person's decision to vaccinate their children is influenced by the approval or disapproval of key social influences in their life. They refer to what the person's relevant peers believe about vaccinating their children and whether these peers approve or disapprove of such behaviour.

The study demonstrates that subjective norms significantly impact parents' decisions to vaccinate their children. Parents who perceive strong social support and positive expectations for vaccination within their social circles and society are more likely to be committed to vaccinating their children. In other words, the encouragement and approval they receive from their social environment aligns with their intention to vaccinate.

The research reveals a strong positive correlation between subjective norms and parents' vaccination intentions, aligning with the theory of planned behaviour (TPB). According to TPB, subjective norms encompasses perceived social pressure and expectations, and so plays a crucial role in shaping individuals' intentions toward specific behaviours, including vaccination. Therefore, this finding underscores the importance of TPB in understanding parental vaccination intentions.

This finding underscores the significant influence of subjective norms and support on vaccination decisions. When parents feel that people around them are in favor of and actively supportive vaccination, they are more likely to follow through on their intention to vaccinate their children. This social influence plays a critical role in promoting children vaccination, contributing to high vaccination rates and ultimately protecting public health by preventing vaccine-preventable diseases.

These findings align with previous research by Catalano et al. (2017), which found that attitudes and subjective norms significantly predict vaccination intentions among college students. Similarly, Xiao & Wong (2020) identified subjective norms as significant predictors of vaccination intention. Chu & Liu (2021) also discovered that a higher intention to vaccinate among participants in the United States were positively influenced by strong subjective norms. Moreover, Limbu et al. (2022) found a similar association between subjective norms and the intention to vaccinate in the context of the Covid-19 vaccine.

Additionally, research done by Dau et al. (2022) in China demonstrated a positive correlation between intention to receive the Covid-19 vaccination and subjective norms. Ekinci et al. (2022) also confirmed that subjective norms are robust predictors of the propensity of the masses to get vaccinated against Covid-19.

These results highlight the consistent and significant role subjective norms play in shaping vaccination intentions across various populations and contexts. The present study explicates that parents who perceive social pressure or anticipate support and encouragement from their immediate social circles or communities are more likely to vaccinate their children. Furthermore, parents often take into account the expectations and beliefs of others in their social networks regarding vaccination, which positively influences their willingness to vaccinate their children. If they find that their social environment overwhelmingly supports and expects children to be vaccinated, this can positively influence their vaccination intentions.

As for the Yuppie parents, several factors may contribute to this result. Firstly, it could be due to social influence and norms. Yuppie parents are often involved in social circles consisting of other parents, work colleagues, friends or family members. If there is a prevailing social norm or consensus in these groups that supports vaccination as an

essential health measure for themselves and their children, this may have a positive impact on vaccination intention. Positive attitudes towards vaccination in these social networks may exert pressure or influence that encourage Yuppie parents to align their behaviour with these norms. In addition, it may also be due to pressure from their peers. Discussions or observations of other parents or influential people (such as healthcare providers) advocating for vaccination can shape subjective norms. If Yuppie parents perceive that others in their social circle prioritises vaccination and consider it important, they may be more likely to adhere to these norms, leading to a higher intention to vaccinate.

Finally, community expectations may also contribute to these outcomes. Yuppies often live in urban areas with diverse communities. If there is an expectation in society that vaccination is accepted as a responsible and necessary measure to protect individual and community health, this may positively influence subjective norms. This acceptance may encourage Yuppie parents to get themselves and their children vaccinated, which would be in line with community expectations.

Therefore, promoting a constructive subjective norm in which discussions about vaccines are both supportive and informative may play a critical role in mitigating vaccine hesitancy. When subjective norms are consistent with vaccination, they can effectively counter misinformation and hesitancy.

5.3.6 Perceived Behaviour Control and Vaccination Intention

H6: Perceived behavioural control is positively related to vaccination intention

Perceived behavioural control, according to Dou et al. (2022), refers to an individual's cumulative beliefs about their ability to overcome or be influenced by various factors that hinder or facilitate the execution of a specific behaviour. In relation to children vaccination, perceived behavioural control pertains to parents' overall assessment of their ability to manage and control various factors that might obstruct or support their child's vaccination. These factors include aspects such as access to vaccination clinics, scheduling, potential side effects, and parents' confidence in the decision to have their children vaccinated.

The analysis of the garnered study data revealed a relationship between perceived behavioural control and vaccination intention that is positive. This suggests that parents who have confidence in their ability to overcome obstacles and successfully navigate the vaccination process increases their intention to have their children vaccinated. Parents' belief in their ability is consistent with their desire to have their children vaccinated.

The study reveals a significant correlation between parents' inclination to vaccinate their children and perceived behavioural control, thus aligning with the theory of planned behaviour (TPB). According to TPB, perceived behavioural control reflects a person's confidence in their ability to carry out a recommended behaviour, such as vaccination. This underscores the pivotal role perceived behavioural control plays in relation to parents' vaccination decisions.

This finding underscores the importance of addressing practical issues and facilitating access to vaccination services. When parents believe they have control over the vaccination process and perceive it as manageable, they are more likely to follow through with their vaccination intentions. This awareness is important for public health initiatives to promote vaccination and achieve high vaccination rates, which in turn help prevent vaccine-preventable diseases.

These findings align with previous research. For instance, Dau et al. (2022) observed a positive relationship between vaccination intention and perceived behavioural control in a study conducted in China. Similarly, Limbu et al. (2022) explored Covid-19 vaccine acceptance and found a correlation with perceived behavioural control. Xiao & Wong (2020) also demonstrated the significance of perceived behavioural control as a predictor of vaccination intention. Moreover, Li et al. (2022) identified a positive link between higher levels of perceived behavioural control and parents' intent to vaccinate their children. This implies that parents who perceive greater control over the vaccination process, including access to information, resources, or support, are more inclined to intend to vaccinate their children. Likewise, Wolff (2021) discovered based on his study carried out on the Norwegian population that vaccination intentions were influenced by perceived behavioural control.

These collective findings emphasise the crucial role of perceived behavioural control in shaping vaccination intentions and underscore the importance of equipping

individuals with the necessary tools and resources to facilitate informed decision-making regarding children vaccination. This underscores the importance of providing parents with information and resources to help them feel in control of their child's vaccination decision, as this can positively influence their vaccination intentions.

As for Yuppie parents, several factors may contribute to these results, for example, ease of access and convenience. This is because when Yuppie parents feel that vaccination is easily accessible and convenient, they are more likely to control their behaviour. So when there are nearby vaccination centres, flexible schedules and easy appointment times, they feel they have more control over the process, which positively impacts their vaccination intention. In addition, knowledge and information can also contribute to these outcomes. Adequate information about vaccines, their effectiveness, safety and benefits, for example, can contribute to perceived control. Yuppie parents who are well informed about the vaccination process, its importance and the procedures involved are more likely to feel empowered and in control, leading to a higher willingness to have their children vaccinated.

5.4 Research Question 3

Does vaccination intention influence actual vaccination behaviour?

5.4.1 Vaccination Intention and Vaccination Behaviour

H7: Vaccination intention is positively related to vaccination behavior

Intention denotes an individual's deliberate choice or inclination to partake in a specific behaviour, influenced by personal convictions, attitudes, values, and the perceived significance of the action. It's noteworthy that when the intention is stronger, the likelier the individual is to enact the behaviour in question. This assertion finds support in the findings of Fall et al. (2018), who asserted that vaccination intentions reliably predict future behaviour. This understanding holds particular significance when examining the formation of vaccination intentions concerning children immunisation. Recognising this is crucial as vaccination programs are widely acknowledged as the most effective means of averting outbreaks of vaccine-preventable illnesses.

In this study, when parents express a strong intention to have their child vaccinated, it means that they are highly motivated and committed to ensuring that their child receives the recommended vaccinations according to the immunisation schedule.

Based on the previous analysis, the study found a positive correlation between vaccination intention and vaccination behaviour. This implies that parents with a firm intention to vaccinate their child are more inclined to take the necessary measures to ensure adherence to recommended vaccination schedules.

Numerous prior studies consistently demonstrate that vaccination intention strongly predicts actual vaccination behaviour. For instance, Juraskova et al. (2012) identified intention as a significant predictor of HPV vaccination behaviour in their research. Similarly, Fall et al. (2018) underscored the pivotal role of intention in forecasting influenza vaccination behaviour in a previous study. Additionally, Shiloh et al. (2021) observed a positive correlation between stronger intention and heightened vaccination rates during their behavioural studies amid the 2009 H1N1 influenza pandemic.

These findings emphasise the centrality of intention in assessing the concrete actions of parents (Agmeka et al., 2019). When appraising individuals' intentions, consideration is given to their perception of social support for the desired behaviour and their self-efficacy in executing it. Ultimately, an individual's behaviour directly reflects their attitude toward fulfilling their intention. Accurate behaviour prediction depends on whether a person truly intends to perform the desired behaviour.

Given the robust and positive relationship between vaccination intention and actual behaviour, healthcare providers and public health campaigns should consistently disseminate clear and compelling messages on the importance of vaccination for children. The main goal of this communication should be to reinforce parents' intention to have their children vaccinated. In addition, educating parents about the importance of vaccination for their children as early as possible, ideally during prenatal care or in the early stages of pregnancy, can create a positive will to vaccinate long before the child is born.

As for Yuppie parents, several factors may contribute to this result. For example, it may be due to the factors of health awareness and action. This is because Yuppie

parents are often proactive when it comes to their health and wellbeing. When they express an intention to get vaccinated, it reflects their health-conscious attitude and motivates them to put that intention into action by scheduling and getting the required vaccination. In addition, the health of the family is an important concern. Yuppie parents often prioritise the health of their children and families. If they want to get vaccinated out of this sense of responsibility, it is more likely that their behaviour will be aimed at fulfilling this commitment by ensuring that their family receives the necessary vaccinations. In addition, it may also be due to internal consistency. Yuppie parents with a strong intention and positive attitude towards vaccination tend to align their actions with these beliefs and intentions, resulting in actual vaccination uptake.

As such, the study's findings reveal a significant positive correlation between vaccination intention and subsequent behaviour, in line with both the Theory of Planned Behaviour (TPB) and the Health Belief Model (HBM). TPB posits that intentions strongly forecast subsequent behaviour, while HBM suggests that individuals who perceive the benefits of health behaviours, such as vaccination, are more inclined to act accordingly.

This highlights the complementary nature of TPB and HBM in comprehending vaccination behaviour, emphasising the importance of considering both cognitive aspects, like intentions, and perceptual factors, namely perceived benefits, in predicting parental vaccination decisions.

Given the predictive importance of vaccination intention and its consistency with TPB and HBM, health care providers and public health interventions can develop tailored strategies to strengthen parents' vaccination intentions. In addition, efforts can focus on reinforcing the perceived benefits of vaccination to increase the likelihood that intention will be acted upon.

Overall, this understanding allows for holistic approaches that utilise both theoretical frameworks to promote parental vaccination behaviour, ultimately leading to vaccination rates that are higher and subsequently better public health outcomes.

5.5 Research Question 4

Does the perceived policy effectiveness moderate the association between perceived susceptibility, perceived severity, perceived barriers, attitude, subjective norms, perceived behavioural control, and vaccination intention?

H 8: The positive relationship between perceived susceptibility and vaccination intention will be stronger if the perceived policy effectiveness is higher.

H9: The positive relationship between perceived severity and vaccination intention will be stronger if the perceived policy effectiveness is higher.

H10: The negative relationship between perceived barriers and vaccination intention will be weakened if the perceived policy effectiveness is higher.

H11: The positive relationship between attitude and vaccination intention will be stronger if the perceived policy effectiveness is higher.

H12: The positive relationship between subjective norms and vaccination intention will be stronger if the perceived policy effectiveness is higher.

H13: The positive relationship between perceived behavioural control and vaccination intention will be stronger if the perceived policy effectiveness is higher.

Perceived policy effectiveness (PPE) denotes the perception of an individual regarding the effects of an incentive-based policy (Fu et al., 2020). When individuals perceive these policies as effective, they tend to develop more positive attitudes and greater awareness of desired behaviours, such as vaccinating their children. In the context of this research, the definition of perceived policy effectiveness (PPE) is a parent's assessment towards the impact of policies tailored to children vaccination, regardless of whether their assessment is positive or negative. If people believe that policy incentives significantly favor children vaccination, this may lead to greater willingness and awareness to engage in said suggested behaviour.

In addition to the direct effect on intention, PPE is expected to have a moderating effect on intention (Wan et al., 2014). This indicates that the perception of a vaccination policy's effectiveness may impact how other factors influence one's intention to vaccinate. If parents perceive a policy as highly effective, it could magnify the impact of factors like susceptibility, severity, positive attitudes, subjective norms, and behavioural control on their vaccination intention. Conversely, if a policy is seen as ineffective, these factors' influence on vaccination intention may weaken.

In essence, the perceived effectiveness of vaccination policies acts as a moderator, either strengthening or diminishing the psychological and social factor influence on parents' vaccination decisions.

Prior research has explored how perceived policy effectiveness moderates various variables. For instance, Wan et al. (2014) studied recycling behaviour in Hong Kong and found that perceived effectiveness of recycling measures significantly influenced individuals' intentions to recycle. Similarly, in environmental research, Wang et al. (2021) discovered that perceived policy effectiveness positively impacted intentions to support pro-environmental practices.

This study investigates perceived policy effectiveness's (PPE) moderating role on perceived susceptibility and severity, barriers, attitude, subjective norms, and behavioural control concerning vaccination intention (H8 – H11, H13). Based on the findings from the preceding chapter, it appears that PPE does not significantly moderate the relationships between these factors and vaccination intention. This implies that perceptions of vaccination intervention effectiveness do not notably influence how psychological and attitudinal factors relate to parents' intention to vaccinate their children.

Moreover, this finding highlight how individual beliefs interact with external policy factors in shaping vaccination intentions, aligning with both the Theory of Planned Behaviour (TPB) and the Health Belief Model (HBM). TPB suggests that behavioural intentions are determined by attitudes, perceived behavioural control, and subjective norms, largely independent of external influences such as perceived intervention effectiveness. Similarly, HBM also suggests that individual perceptions of vulnerability,

severity, and barriers significantly influence health-related behaviours, while independent of external policy considerations.

This finding underscores the need to understand the complicated relationship between individual beliefs and external policy factors in the formation of vaccination intentions. Although policy effectiveness does not directly influence the relationship between individual beliefs and vaccination intentions, both individual-level factors and broader policy implications need to be considered by policymakers when developing strategies to promote vaccination.

Essentially, this study shows that regardless of whether parents believe vaccination policies are effective or not, the influence of these other factors (perceived susceptibility, perceived severity, perceived barriers, attitude, perceived behavioural control) on their decision to have their children vaccinated is not significantly altered. These factors consistently influence the intention to vaccinate, regardless of how parents rate the effectiveness of the measures.

This finding suggests that in the context of this study, parents' beliefs about the effectiveness of the policy does not significantly influence psychological and attitudinal factor impacts on their intention to have their children vaccinated.

As for Yuppie parents, the results suggest that when Yuppie parents perceive a vaccination policy as highly effective, this perception does not improve or strengthen the association between several critical factors (perceived susceptibility, perceived severity, perceived barriers, attitude, and perceived behavioural control) and their intention to have their children vaccinated. This may be due to several factors. For example, Yuppie parents may prioritise the assessment of susceptibility, severity, barriers, attitudes, and behavioural control over the perceived effectiveness of the interventions in their vaccination decisions. Furthermore, Yuppie parents' assessments of disease susceptibility, severity, barriers, attitudes, and behavioural control might remain as individually weighted factors that influence their decisions, regardless of their views on the effectiveness of any given interventions.

However, a notable discovery emerges from H12 in this study, where the perceived effectiveness of vaccination interventions or policies strengthens the association between subjective norms and vaccination intention. This revelation offers

valuable insights into how external factors, such as the perceived effectiveness of interventions, interact with subjective norms to shape vaccination intention, aligning with the tenets of the Theory of Planned Behaviour (TPB).

In TPB, subjective norms encompass perceived social pressures and expectations regarding behaviours like vaccination. The moderating role of perceived policy effectiveness of interventions suggests that the impact of subjective norms on vaccination intention may fluctuate based on individual perceptions of intervention effectiveness.

This study underscores the intricate interplay of factors influencing vaccination behaviour and emphasises the significance of examining both individual-level determinants and external contextual factors, like the perceived effectiveness of interventions, in understanding vaccination intentions.

These findings diverge from that of Wan et al. (2014) in their study on recycling intentions, where they noted that perceived policy effectiveness had a negative moderating effect on the relationship between subjective norms and recycling intentions. Similarly, in Liao et al.'s (2018) investigation of solid waste management, perceived policy effectiveness as a moderator was found to have no impact on the association between subjective norms and intentions.

This discovery is a noteworthy contribution towards the discourse as it indicates that parents who perceive a policy, such as vaccinating their children, to be highly effective, experience a heightened influence of subjective norms on their intention to vaccinate their children.In simpler terms, when parents not only experience social pressure or expectations from others to vaccinate their children, but also believe that the policies promoting vaccination are effective, they are more inclined to have their children vaccinated. Conversely, the influence of subjective norms may have less influence on the intention to vaccinate their children if parents perceive the measures to be less effective.

In practice, this means that parents who both perceive solid social support (subjective norms) for vaccinating their children and have confidence in the effectiveness of the vaccination measures are more likely to get their children vaccinated. This highlights the interplay between social expectations, perceived policy support and the determination to protect children through vaccination, while underscoring the critical role of effective policies in strengthening parents' commitment to vaccinating their children.

With regard to Yuppie parents, the results suggest that when Yuppie parents perceive vaccination policies as highly effective, this perception may enhance or strengthen the correlation between subjective norms and their intention to have their children vaccinated. This could be due to several factors, for example, if Yuppie parents believe that their social environment highly values and endorses vaccination due to the perceived effectiveness of certain policies, this may increase the influence of these norms on their intention to vaccinate. Furthermore, perceptions of effective vaccination policies could reinforce positive social expectations about vaccination in their communities. This reinforcement could increase the influence of subjective norms and lead to a stronger link between these norms and Yuppie parents' vaccination intentions. Furthermore, if Yuppie parents trust the effectiveness of vaccination policies set by health authorities or government agencies, they may be more inclined to align their behaviour with perceived social expectations (subjective norms), especially if they view these policies as effective and beneficial.

5.6 Research Question 5

Does social media influence moderate the connection between vaccination intention and actual vaccination behaviour?

H14: The positive relationship between vaccination intention and vaccination behaviour will be stronger if the social media influence is higher.

Alhadid & Qaddomi (2016) defined social media as a variety of online activities that utilises the basic web (2.0) concepts and technical aspects to enable the creation and dissemination of content generated by its users. The study points out that the role of media in influencing people's intentions to vaccinate their children is significant and can pose a direct impact on their vaccination behaviour. This is supported by Lin & Wang (2021) who postulated that a certain level of stimulation is required to move from intention to behaviour. In this study, the influence of media is the moderating variable between vaccination intention and behaviour. The study claimed that when parents are exposed to a large amount of media content or messages about vaccination, it may strengthen or improve the link between their intention to vaccinate their children and their actual vaccination behaviour.

However, the findings of this study indicate that social media influence did not augment the correlation between vaccination intention and vaccination behaviour. This suggests that exposure to media content or news pertaining to children vaccination did not significantly impact the link between parents' intention to vaccinate their children and their actual vaccination behaviour. This conclusion aligns with the findings of Parsons al. (2018), whose study revealed that interventions had no effect on vaccination intention and actual vaccination behaviour.

The results imply that exposure to media content about vaccination did not substantially enhance the connection between parents' intention to vaccinate their children and their subsequent vaccination behaviour. In essence, even when parents expressed a strong intention to vaccinate their children and were exposed to media information on vaccination, this exposure did not heighten the likelihood of them vaccinating their children. This outcome suggests that social media influence did not significantly contribute to bridging the gap between parental intentions and actual vaccination behaviour for their children in the context of this study.

These study findings significantly contribute to the conflicting results reported in another research. For instance, Alhadid & Qaddomi (2016) discovered that social media acted as a moderating factor between public relations and corporate image. Similarly, Chadwick et al. (2023) identified social media's moderating role between vaccination hesitancy and an individual's intentions. In the United States, Borah et al. (2022) conducted a study highlighting the moderating role of media in the association between vaccination intentions and outcome expectations.

As for Yuppie parents, several factors could contribute to the garnering of this result, for example, it could be that the Yuppies do not significantly change their vaccination behaviour despite the great influence of the media in promoting vaccination. Their media-influenced intention to get vaccinated might not translate into actual behaviour due to various personal or external factors that outweigh the influence of the media. Furthermore, Yuppie parents may consider several factors beyond the media messages, such as their own research, experiences, and advice from healthcare professionals or personal beliefs when deciding to have their children vaccinated. Therefore, despite the influence of the media on their vaccination intention, their actual behaviour may not be solely determined by this influence.

Furthermore, a strong social media influence is no guarantee of a unified or consistent message. Conflicting information or scepticism from different media sources could cause Yuppie parents to critically evaluate the messages, potentially reducing the direct impact of media influence on their vaccination behaviour. As such, Yuppie parents might have an individual decision-making processes in which they consider various aspects such as their family's medical history, personal beliefs, or past experiences that might not match the messages conveyed by the media and thus influence their vaccination behaviour.

Therefore, it is interesting that this study results portrays the extent of social media influence as not consistently leading to a straightforward strengthening of the relationship between parents' intention to vaccinate their children and their actual vaccination behaviour.

5.7 Discussion of the Summary

The study's findings underscore the commendable vaccination behaviour exhibited by young urban professional (Yuppie) parents. This underscores the critical role that parents play as advocates for public health initiatives by ensuring the health and wellbeing of their children through vaccination against preventable diseases. Such proactive measures contribute significantly to broader community immunity and highlight the importance of vaccination in preventing disease transmission.

Perceived susceptibility emerges as a significant determinant of intent to vaccinate, suggesting that parents' perception of their child's disease risk strongly influences their decision to vaccinate. However, the perceived severity of the disease does not consistently impact the intention to vaccinate, suggesting that merely knowing about the severity of the disease may not be sufficient to motivate parents to vaccinate their children. Moreover, their perception of barriers or obstacles are a significant deterrent factor, suggesting that barriers to accessing vaccines may influence parents' willingness to vaccinate.

On the other hand, positive attitudes toward vaccination and strong subjective norms, particularly social support, play pivotal roles in bolstering parents' intentions to vaccinate their children. Additionally, perceived behavioural control is positively

associated with vaccination intention, highlighting the importance of addressing practical barriers to improve vaccine access.

Interestingly, perceived policy effectiveness enhances the link between subjective norms and vaccination intention, indicating that effective policies coupled with social support significantly influence parents' willingness to vaccinate. However, social media influence does not consistently bridge the gap between vaccination intention and behaviour, suggesting that exposure to vaccine-related media content may not significantly impact parents' actual vaccination behaviour.

Moreover, the study contributes to the understanding of the benefits of employing the Theory of Planned Behaviour (TPB) and the Health Belief Model (HBM) by offering empirical evidence of the factors influencing vaccination intention and behaviour.

Primarily, the study confirms that perceived susceptibility, perceived barriers, attitude, subjective norms, and perceived behavioural control play pivotal roles in shaping vaccination intention, aligning with the fundamental principles of TPB and HBM. This underscores the importance of considering individual beliefs, social influences, and perceived control when examining vaccination decision-making processes.

Furthermore, the finding that perceived severity does not significantly influence vaccination intention reveals a disparity between theoretical assumptions and practical evidence, particularly within the HBM framework. This shows that HBM needs to be further investigated and refined to better capture the complicated dynamics of vaccination decisions.

Furthermore, the study also shows that the intention to vaccinate has a clear influence on actual vaccination behaviour, which underpins the predictive power of intention as postulated by TPB. This underscores the importance of interventions aimed at promoting positive vaccination intentions to ultimately increase vaccination coverage.

Regarding the perceived effectiveness of policies, although it doesn't regulate the link between various factors and vaccination intention, its moderating impact on the connection between subjective norms and vaccination intention implies that policy contexts can sway social environmental influences concerning vaccination. This

underscores the need to consider external contextual factors when applying TPB and HBM to vaccination behaviour.

Moreover, the discovered result indicating that media influence did not moderate the correlation between vaccination intention and vaccination behaviour suggests that exposure to media might not strongly influence vaccination behaviour. This highlights the need for interventions that emphasises on other influencing factors identified in the study, such as individual beliefs and social influences.

In summary, these findings contribute to refining and applying both TPB and HBM towards understanding vaccination behaviour. The frameworks provide insights that can lead to targeted interventions to improve vaccination rates and public health outcomes. While vaccination remains a cornerstone of disease prevention, understanding parental perceptions, attitudes, and the impact of the effectiveness of interventions and media exposure is critical to addressing vaccine hesitancy. Policies emphasising effective communication, barrier removal, and the promotion of positive attitudes and societal support are crucial for encouraging vaccination and attaining higher vaccination rates. This, in turn, safeguards public health and contributes to global health objectives.

5.8 Research Contribution

5.8.1 Theoretical Contribution

This study serves as a valuable theoretical contribution on several fronts, particularly in the context of parents' decisions to have their children vaccinated.

This study addresses a significant gap in existing literature by delving into the intricate relationship between parents' intentions to vaccinate their children and their actual vaccination behaviour. It introduces new dimensions of policy effectiveness perception and media influence as moderators within this behavioural context.

A noteworthy accomplishment of this study lies in the development of an integrated model that thoroughly explores the intricate dynamics of parents' intentions and actions concerning the vaccination of their children. The model created offers an in-depth comprehension of the nuanced concept of vaccination intentions and behaviour.

Empirical evidence in this area is relatively scarce, particularly regarding the role of perceived policy effectiveness and media influence as influential factors.

Moreover, this study integrates two well-established theoretical frameworks, the Theory of Planned Behaviour (TPB) and the Health Belief Model (HBM), into a cohesive research model. This integration holds particular significance as it investigates the determinants of parents' vaccination intentions. It underscores the efficacy of combining TPB and HBM to illuminate the complexity of vaccination intentions and behaviour, especially in the context of a developing country like Malaysia. TPB and HBM provide a robust framework for comprehending the multifaceted nature of vaccination intentions and behaviours.

In other words, these findings have several theoretical implications, particularly in relation to the Theory of Planned Behaviour (TPB) and the Health Belief Model (HBM) as well as its relevance to the vaccination decisions of Yuppie parents.

Firstly, the confirmation that perceived susceptibility, perceived barriers, attitude, subjective norms, and perceived behavioural control significantly influence vaccination intention is consistent with both TPB and HBM. Since for Yuppie parents, understanding these factors may help in developing interventions tailored to address specific concerns or reinforce positive beliefs about vaccination.

Secondly, the absence of a notable impact in terms of perceived severity towards vaccination intention suggests that a more nuanced understanding of the mode of action of perceived severity in relation to Yuppie parents' vaccination decisions is needed, despite being a key component of the HBM. This highlights the opportunity for further research to refine HBM in this specific area.

Furthermore, the confirmation that vaccination intention strongly predicts actual vaccination behaviour confirms the predictive power of intention as highlighted by TPB. This is true among Yuppie parents as interventions targeting intention to vaccinate may have a direct impact on increasing their children's vaccination rates.

Regarding the perceived effectiveness of policy, although it does not directly moderate the correlation between the different identified factors and vaccination intention, it’s regulating effect on the association between subjective norms and intention

to vaccinate implies that policy context can impact social environment influences related to vaccination. This underscores the significance of considering broader contextual factors when applying TPB and HBM to the vaccination behaviour of Yuppie parents.

Lastly, the discovery that media influence does not significantly influence the correlation between vaccination intention and vaccination behaviour suggests that media exposure is not a significant determinant of Yuppie parents' vaccination behaviour. This signifies that interventions targeting social media influence have limited effectiveness in this population and that other factors should be prioritised in planned interventions to increase vaccination rates.

Furthermore, this model also contributes to the contextual understanding of Yuppie parents' decision-making. This is since applying the created unified model to the study of Yuppie parents provides a context-specific understanding of their vaccination behaviour. It helps to identify the specific influences, beliefs, and perceptions that affect the vaccination decisions of this population. This information is critical for developing interventions tailored to the specific needs and concerns of Yuppie parents, which in all means and purposes, can be replicated to investigate other population categories and their mindset specific interventions required.

This study broadens our comprehension of the intricate factors shaping parents' intentions and actions regarding their children's vaccination. It also highlights the usefulness of integrating established theoretical frameworks while introducing new elements to ultimately advance our knowledge in a critical area that holds significant public health implications.

5.8.2 Practical Contribution

Drawing from the insights gleaned, several practical implications emerge:

5.8.2.1 Community Advocacy

The research outcomes could inspire community leaders, healthcare practitioners, and influential figures to champion children vaccination, emphasising the significance of vaccination policies in safeguarding public health. Their advocacy can reinforce subjective norms and increase confidence in the effectiveness of policies.

Community leaders, such as local politicians, religious leaders, or respected figures, can be strong advocates for children vaccination. When they publicly advocate and support vaccination, they send a strong message to the community about the importance of vaccination. Their involvement not only lends credibility to vaccination initiatives, but also fosters a sense of trust and reliability in the community.

Yuppie parents are part of the community and are influenced by societal expectations and social influences. When leaders and influential people endorse vaccination, this can positively influence parents' perceptions and strengthen their intention to have their children vaccinated.

Furthermore, healthcare professionals, such as doctors, nurses, and pharmacists, are esteemed sources of medical guidance. Their active endorsement of children vaccination underscores the pivotal role of vaccination as a cornerstone of healthcare. With their expertise, they can offer informed advice and address any medical inquiries or concerns parents may harbor regarding vaccinations.

Social media influencers and individuals with substantial online followings wield significant influence, particularly among parents. Collaborating with influencers who advocate for children vaccination across various platforms can facilitate the dissemination of accurate information and counteract vaccine-related misinformation. Their endorsement holds sway over public sentiment and can motivate parents to prioritise their children's vaccination.

Highlighting the pivotal role of vaccination interventions and policies in safeguarding public health stresses its significance in safeguarding individual and community welfare. When community leaders and influential community figures emphasise the effectiveness of vaccination policies, it can increase parents' confidence in the ability of these policies to protect their children and community from vaccine-preventable diseases.

When community leaders, health professionals and influential individuals advocate for children vaccination and emphasise the importance of vaccination, it can significantly contribute to increasing children vaccination rates. Their support strengthens subjective norms and confidence in the effectiveness of vaccination

interventions, which ultimately leads to better public health outcomes related to children vaccination.

5.8.2.2 Policy Evaluation

Policy evaluation is a critical process that can contribute significantly to the success of children vaccination programmes. By systematically evaluating the effectiveness of vaccination interventions and their impact on vaccination rates, policy makers can make informed decisions to improve public health outcomes.

Policy evaluation involves a continuous and systematic assessment of how well vaccination interventions are achieving their intended goals. This evaluation should include an examination of vaccination coverage rates, disease incidence, and changes in parental attitudes and behaviours related to vaccination.

In addition, policy makers can identify the strengths and weaknesses of existing vaccination policies through this exercise. This includes identifying policies that have successfully increased vaccination rates and those that may need to be adapted or improved. In addition, the evaluation of policies relies on data and evidence to support decision-making. This data-driven approach enables policymakers to make informed decisions about policy adjustments, resource allocation, and the distribution of efforts to address specific children vaccination challenges.

In addition, one of the most important practical contributions of policy evaluation is its ability to ensure that vaccination policies are aligned with parents' actual perceptions and needs. By regularly assessing parents' attitudes, concerns, and preferences regarding children vaccination, policymakers can shape their policies to effectively address these factors.

In addition, evaluating policies and responding to parents' needs can increase public confidence in vaccination programmes. When parents see that policymakers are actively monitoring and improving policies to meet their needs, it serves to increase confidence in the health care system and vaccination recommendations. Finally, evaluating policies allows them to adapt to changing circumstances, such as emerging infectious diseases or changing parental attitudes. Policy makers can use the results of the evaluation to develop strategies to effectively address new challenges.

In summary, policy evaluation is not just an administrative task, but also a dynamic process with practical implications for children vaccination. It ensures that vaccination policies remain relevant and effective and meet the needs and expectations of parents in this ever-changing information landscape. By regularly evaluating and adjusting policies based on data and evidence, policymakers can contribute to higher vaccination rates, better public health, and greater parental confidence in children vaccination programmes.

5.8.2.3 Healthcare Providers and Organizations

Collaboration with healthcare providers and healthcare organizations is critical to promoting children vaccination. This collaboration can pose a major impact on increasing vaccination rates and the wellbeing of children. Healthcare providers, including doctors, nurses and pharmacists, are trusted sources of medical information for parents. It is important to encourage these professionals to actively communicate the effectiveness of vaccination and societal expectations during their consultations with parents. They can explain the benefits of vaccines, address concerns and emphasise the importance of vaccinating children as a preventive health measure.

In addition, parental confidence is very much pertinent in the decision to vaccinate. When healthcare providers endorse vaccination and provide accurate information, it builds trust with parents. Trust is a critical factor in parents' willingness to follow vaccination recommendations and adhere to vaccination schedules for their children.

In addition, many parents have concerns or questions about vaccines. Healthcare providers are well positioned to address these concerns with evidence-based information. They can allay parents' concerns and misconceptions by providing accurate and comprehensive explanations to promote positive attitudes toward vaccination.

Moreover, healthcare providers can provide individualised vaccination recommendations based on a child's medical history and unique circumstances. This tailored approach can help parents feel more confident when making vaccination decisions for their children, as individual factors are considered. Healthcare providers wield significant influence in advocating for vaccination policy and promoting

community standards. They can point out the legal and ethical obligations associated with vaccination and emphasise that it is a personal choice and a responsibility to protect public health.

In addition, routine check-ups for children are the ideal opportunity to talk about vaccination. They can make sure children are up to date with their required vaccination schedule and educate parents about the importance of adhering to said recommended schedule. Moreover, healthcare providers are pivotal in the monitoring and reporting of vaccine-preventable disease cases. By promptly diagnosing and reporting cases, they contribute to the overall health surveillance system, helping to contain outbreaks and preventing the spread of certain diseases in the community. Collaboration with healthcare providers and organizations is indispensable in addressing vaccine hesitancy, advocating for vaccination, and safeguarding children's health. By leveraging the trust and expertise of healthcare professionals, this collaboration effectively communicates the significance of vaccination policy and societal expectations, thereby fostering increased vaccination rates and improved public health outcomes for children.

5.8.2.4 Public-private partnerships

Engaging in public-private partnerships is a valuable strategy to promote children vaccination and reinforce the importance of vaccination policy and social norms. This collaborative approach harnesses the resources and reach of private organizations to improve vaccination efforts. First, the media, including television, radio, print media, and digital platforms, have a far-reaching influence on public opinion. Working with private media organizations allows for the dissemination of pro-vaccination messages. These messages can emphasise the importance of vaccination and influence social norms as well as reach a broad audience of parents and caregivers.

In addition, private sector organizations often have sophisticated communication and marketing capabilities. They can tailor their pro-vaccine messages to different populations and address specific concerns and misconceptions. This targeted approach increases the effectiveness of communication efforts. Furthermore, private companies also have access to resources that can support vaccination campaigns. These include funding educational campaigns, developing educational awareness materials and

organizing vaccination events. Such resources can significantly support vaccination initiatives and make them more accessible and attractive to parents.

Moreover, private sector partners may have extensive experience in outreach and engagement. They can work with local communities, schools and healthcare providers to organise vaccination campaigns and educational events. This grassroots approach can help eliminate disparities in vaccination and reach underserved populations. It is also helpful when companies commit to corporate social responsibility (CSR) initiatives. Collaborating on children vaccination efforts is in line with CSR goals for public health and community wellbeing. It can also enhance a company's reputation and brand image.

In addition, private sector partners can take a multi-channel approach to reach parents and caregivers through various platforms, including advertising, social media, partnerships with influencers and community events. This multi-pronged strategy ensures that pro-vaccine messages are widely disseminated and accessible. Finally, private sector organizations often have access to data analytics and market research tools. This allows them to gain insights into parents' attitudes, preferences and behaviours regarding vaccination. Data-driven insights can support the development of more targeted and effective vaccination campaigns.

In the context of children vaccination, public-private partnerships are critical to strengthening vaccination campaigns. Public health agencies can leverage their communications expertise, resources, and outreach opportunities by working with media, businesses, and other private sector organizations to emphasise the importance of vaccination and reinforce guided societal norms. This cooperative strategy enhances vaccination rates among children, mitigates the threat of vaccine-preventable illnesses, and enhances community welfare.

5.8.3 Yuppie parents as influencers

Yuppie parents have similar characteristics to social media influencers, which enables them to effectively advocate for the vaccination of their children. Their characteristics are similar to those of influential personalities, allowing them to promote vaccination within their social circles and to a wider audience via their social media or professional presence. These parents can have a great influence on others because of their

characteristics. Firstly, they are very tech-savvy and actively engage on social media platforms. They can disseminate information about vaccinating their children through various online channels, reaching a wide audience that includes both parents and influencers.

Moreover, Yuppie parents are often seen as having likable personalities among their peers. Because of their personal experiences, particularly in relation to parenting and healthcare for their children, their advocacy of vaccination is highly credible. Their trustworthiness has the potential to shape the perspectives and inclinations of other parents concerning the vaccination of their own children. In addition, Yuppie parents who value education and keep up to date on health issues can effectively communicate the importance of vaccination. They skillfully dispel misconceptions and disseminate evidence-based information to encourage other parents to prioritise vaccinating their children.

In addition, their active involvement in community events, parent groups and professional networks provides an ideal platform to initiate discussions about vaccination. In this way, they can share accurate information and motivate other parents to consider vaccinations for their children. By taking on the role of a positive influencer, Yuppie parents show their commitment to their children's health through vaccination. By speaking openly about their decision to have their children vaccinated and emphasising the importance of vaccinations, they set an influential example that can affect their peers' attitudes and behaviours towards vaccinations in their social circle.

By leveraging their digital presence, credibility, likability, willingness to share knowledge, community engagement and influential role modeling, Yuppie parents have the potential to effectively advocate for vaccinations of children. Their advocacy will serve a crucial part in countering misinformation, inspiring positive attitudes and encouraging other parents to vaccinate in their social networks and online communities.

5.8.4 Ordinary Parents

The outcomes of this research hold practical implications for parents in making informed choices regarding their children's vaccinations. Firstly, the discovery that perceived susceptibility, barriers, attitudes, subjective norms, and perceived behavioural

control significantly impacts vaccination intentions underscores the importance for parents to take these factors into account when deciding on vaccination. It is crucial for parents to recognise potential concerns or obstacles and foster a positive outlook toward vaccination.

Moreover, the finding that perceived severity does not strongly influence vaccination intention suggests that parents may prioritise other factors such as susceptibility or barriers. Hence, educational campaigns emphasising disease severity may need to be supplemented with information addressing these additional concerns or barriers.

Furthermore, the substantial influence of vaccination intention on actual behaviour emphasises the importance of parents actively planning and committing to vaccinating their children. Encouraging parents to follow through on their vaccination intentions can lead to increased vaccination rates and better protection against diseases.

Although perceived policy effectiveness does not directly affect typical parents' vaccination intentions, its regulating effect on the correlation between subjective norms and vaccination intentions indicates that societal policies and norms regarding vaccination may influence parental attitudes. Therefore, efforts to establish a supportive policy environment and promote positive social norms regarding vaccination may enhance parents' willingness to vaccinate.

Lastly, the finding that social media influence does not significantly impact the correlation of vaccination intention and behaviour suggests that parents should not solely rely on media messages when making vaccination decisions. Instead, seeking information from reliable sources such as healthcare providers or health authorities can ensure well-informed decisions about vaccinating their children.

In conclusion, these study findings offer valuable insights for parents in navigating the complex decision-making process surrounding their children's vaccinations. By considering the various factors influencing vaccination intention and behaviour, parents can play a pivotal role in safeguarding the health of their children and their communities.

5.8.5 Research Model

This study findings reveal a combination of factors from the Theory of Planned Behaviour (TPB) and the Health Belief Model (HBM) which sheds light on the dynamics of Yuppie parents' vaccination behaviour. Perceived susceptibility, a concept consistent with HBM, suggests that parents who perceive their children as susceptible to disease tend to vaccinate them. However, the lack of a positive influence between perceived severity on intention to vaccinate indicates a divergence from HBM, suggesting that disease severity does not significantly influence the intention of Yuppie parents to vaccinate their children. Perceived barriers, as highlighted in HBM, hinders vaccination intention and emphasises the importance of overcoming barriers such as inconvenience or fear of side effects to promote vaccination acceptance. Consistent with the TPB model, factors such as attitude, subjective norms, and perceived behavioural control displayed a positive impact on Yuppie parents' intention to vaccinate, highlighting the role of positive attitudes, supportive social norms, and perceived control over the vaccination decision. The association between intention to vaccinate and vaccination behaviour confirms both the TPB and HBM model factors and underscores the predictive power of intention in determining vaccination behaviour.

While perceived policy effectiveness does not directly affect most factors and vaccination intention, it does strengthen the correlation of subjective norms and vaccination intention, denoting that it plays a role in shaping social influences on Yuppie parents' vaccination decisions. Furthermore, future research could examine the interplay between social media influence and other factors in shaping vaccination behaviour of this population. Integrating these findings into the current research framework improves our understanding of Yuppie parents' vaccination behaviour and provides evidence for targeted interventions to promote vaccination among this group. This integrated model bridges the gap in the TPB and HBM model and enriches its relevance to the vaccination landscape among Yuppie parents. Figure 5.1 below shows the research model for this study.

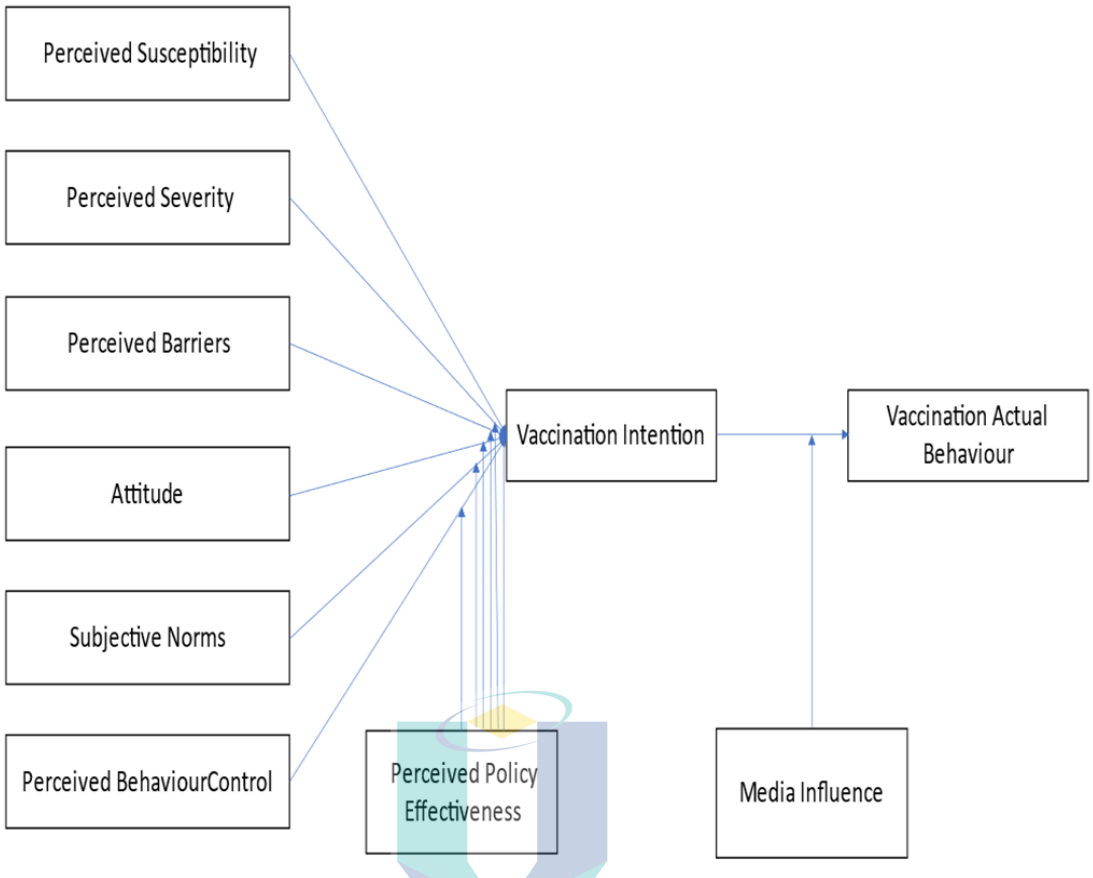

Figure 5.1 Research Model

5.9 Study Limitations

While this study provides valuable theoretical and practical insights, its limitations in data collection underscore the need for further validation of the results. Firstly, the findings are constrained to a sample of Yuppie parents residing in the East Coast region of Malaysia. This geographical and demographic limitation raises concerns regarding the generalisability of the findings, as they may be specific to the context of this region and the characteristics of Yuppie parents therein.

Although the study had an adequate sample size for analysis, it is essential to acknowledge the use of a non-probability sampling method due to the unavailability of a comprehensive list of Yuppie parents. Consequently, the results may not be readily applicable to the broader population.

Furthermore, this study solely focused on factors aligned with the Theory of Planned Behaviour (TPB) and the Health Belief Model (HBM) to explore determinants

of vaccination intention for children. However, it is important to recognise that additional variables beyond these frameworks could influence vaccination intentions. These unexamined variables may encompass various sociodemographic, cultural, and contextual factors shaping parents' vaccination decisions.

For instance, variables such as access to healthcare services, geographic location, socioeconomic status, cultural beliefs, and peer influence could impact vaccination intentions but were not explicitly investigated in this research initiative. Given the multifaceted nature of vaccination decisions, future research endeavors should incorporate broader factors to attain a more comprehensive understanding of the complexities surrounding children vaccination.

5.10 Recommendations For Future Research

In light of the identified limitations, this study respectfully proposes several avenues of future investigation. Firstly, adding on to the previously discussed theories, future investigations could explore alternative adoption theories to elucidate children vaccination behaviour further. Moreover, it is imperative to consider the impact of additional moderating variables on vaccination intention and behaviour in future research endeavors. These initiatives would enrich our understanding of the myriad factors shaping parents' decisions regarding children vaccination, potentially facilitating the development of more efficacious vaccination promotion strategies.

Furthermore, future investigation on children vaccination should extend beyond Yuppie parents to encompass other demographic categories of parents and caregivers. Examining the vaccination decision-making processes among diverse parent groups can offer deeper understanding of the factors influencing vaccination intentions and behaviours. This inclusive approach will foster a more comprehensive view of the obstacles and motivators encountered by various parent demographics in vaccinating their children. It can also contribute to the development of tailored vaccination promotion strategies that address the specific needs and concerns of different groups of parents, ultimately helping to improve children vaccination rates.

5.11 Conclusion

The analysis conducted in the preceding chapter indicates a substantial alignment between the findings of this study and existing research. By focusing on the vaccination intentions and behaviour of young urban working parents (Yuppies), this study extends the current state of research and provides valuable insights into a previously understudied population group. Unlike previous studies that primarily examined the behaviour of conventional parents, this study provides a nuanced understanding specific to Yuppie parents. In addition, it provides a comprehensive examination of the factors influencing vaccination intention and behaviour in this population. Of the 14 proposed hypotheses, 7 were confirmed, providing substantial support for the study's findings.

Furthermore, this study enriches our comprehension of vaccination behaviour within the East Coast region of Malaysia, thus augmenting the literature on parental intentions regarding children vaccination and furnishing valuable insights for future research and policy formulation in this domain. The previous chapters have underscored the importance of understanding the factors that influences parents' vaccination intention for their children and their behaviour along with the importance of tailoring strategies to overcome vaccine hesitancy and promote vaccine readiness among Yuppie parents.

Finally, chapter 5 concludes with a summary of the main theoretical and practical implications that have emerged from the study of parents' vaccination decisions for their children. Theoretical implications underscore the advancements made within existing theoretical frameworks, showcasing the synergistic efficacy of integrating the Theory of Planned Behaviour (TPB) and the Health Belief Model (HBM) within the context of Yuppie parents' vaccination intentions and behaviours in Malaysia. These implications go beyond filling the gaps in the literature and the provision of comprehensive insights that enhance our understanding of the complexities underlying vaccination decisions.

The practical implications highlighted actionable recommendations targeting various stakeholders, including community representatives, policymakers, healthcare providers, public-private entities, and Yuppie parents, to increase vaccination rates and improve public health outcomes. However, to provide context for the study's findings and gauge their applicability, it is crucial to recognise the encountered limitations during the study process. Consequently, recommendations for future investigations are proposed to tackle these limitations and foster a more overarching view of the factors influencing

vaccination decisions among various demographic segments of parents within broader societal contexts. Overall, this chapter underscores the significance of this investigation's contributions and outlines pathways for further study and effective interventions in children vaccination.

This thesis underscores the pivotal role of vaccination as a potent public health tool in preventing and controlling infectious diseases. Globally, vaccination programs aim to reduce mortality rates among infants and achieve the UN Sustainable Development Goals (SDGs), underscoring the critical importance of vaccination in disease prevention. This study explored the factors influencing vaccination intentions and behaviour among young urban profesional parents (yuppies) in East Coast Region, Malaysia. The results showed that perceived susceptibility, perceived barriers, attitudes, subjective norms and perceived behavioural control significantly influenced vaccination intentions. In contrast, perceived disease severity had minimal influence, emphasising the need for more effective communication about the importance of disease severity. Furthermore, while perceived policy effectiveness had no significant impact on the relationship between these factors and vaccination intention, it was found to significantly increase vaccination intention when perceived policy effectiveness was consistent with subjective norms. Interestingly, the influence of media did not significantly strengthen the link between vaccination intentions and actual behaviour. Exposure to vaccine-relevant media content did not consistently lead to increased vaccination rates. This comprehensive analysis of determinants, perceived policy effectiveness and social media influence provides valuable insights into the immunisation decisions of yuppie parents in Malaysia. The study emphasises the importance of tailored communication, better accessibility of vaccines and stronger policies to overcome vaccination hesitancy and increase vaccination rates. Furthermore, it contributes to a deeper understanding of parental decision-making regarding childhood immunisation in Malaysia and provides a foundation for future research in this area. The knowledge gained from this study will also be useful for policy makers and government agencies, including the Public Health Department, Ministry of Health and other health-related organisations, in developing interventions to increase vaccination coverage and boost population immunity.

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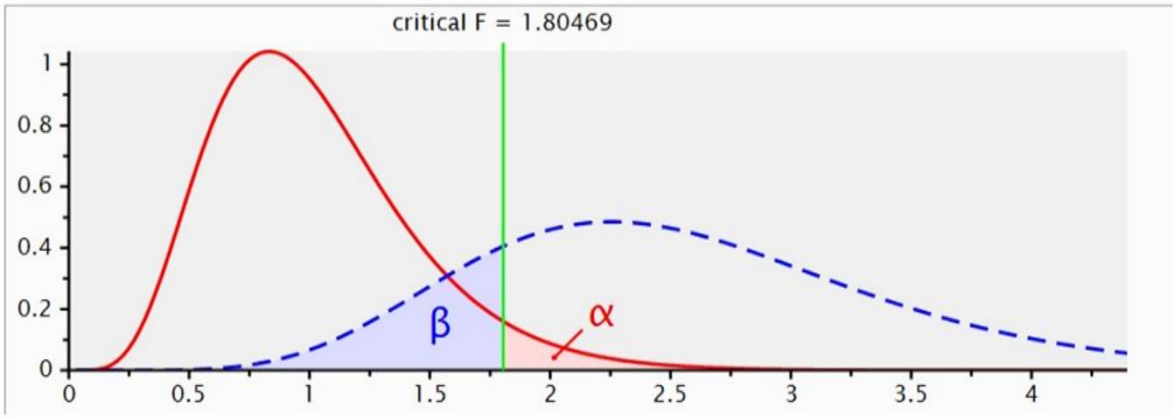
APPENDICES

APPENDIX A: G POWER



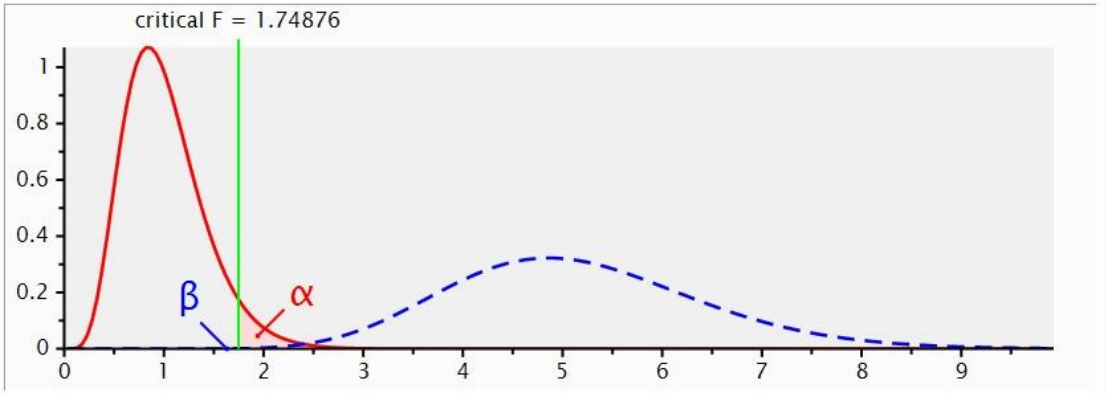
Test family: F tests

Statistical test: Linear multiple regression: Fixed model, R^2 deviation from zero

Type of power analysis: A priori: Compute required sample size – given α, power, and effect size

Input Parameters		Output Parameters	
Determine =>			
Effect size f^2	0.15	Noncentrality parameter λ	19.6500000
α err prob	0.05	Critical F	1.8046919
Power (1–β err prob)	0.8	Numerator df	13
Number of predictors	13	Denominator df	117
		Total sample size	131
		Actual power	0.8019061

Central and noncentral distributions | Protocol of power analyses



Test family: F tests

Statistical test: Linear multiple regression: Fixed model, R^2 deviation from zero

Type of power analysis: Post hoc: Compute achieved power – given α, sample size, and effect size

Input Parameters

Determine =>

Effect size f^2	0.15
α err prob	0.05
Total sample size	357
Number of predictors	13

Output Parameters

Noncentrality parameter λ	53.5500000
Critical F	1.7487615
Numerator df	13
Denominator df	343
Power (1–β err prob)	0.9997664

APPENDIX B: OUTPUT OF SKEWNESS AND KURTOSIS CALCILATION

```
Sample size:  357
Number of variables:  10

Univariate skewness and kurtosis
     Skewness SE_skew Z_skew Kurtosis SE_kurt Z_kurt
ATT    -0.854   0.129 -6.617    0.670   0.257  2.600
BEH    -1.252   0.129 -9.699    0.964   0.257  3.743
INT    -1.162   0.129 -9.004    0.548   0.257  2.128
PB      0.725   0.129  5.616    0.247   0.257  0.961
PBC    -0.415   0.129 -3.212   -1.005   0.257 -3.903
PPE    -0.686   0.129 -5.311    0.244   0.257  0.948
PS      0.188   0.129  1.457   -0.505   0.257 -1.963
PSV    -0.816   0.129 -6.322    0.308   0.257  1.196
SM     -0.572   0.129 -4.432    0.021   0.257  0.083
SN     -0.579   0.129 -4.484   -0.411   0.257 -1.595

Mardia's multivariate skewness and kurtosis
                    b        z p-value
Skewness   39.68337 2361.16071       0
Kurtosis 202.22976   50.14499       0
```

APPENDIX C: LIST OF PUBLICATION

Title	Index	Type of publication
The Influence of Attitude, Subjective Norms, And Perceived Behavioral Control on Vaccination Intention Among Teachers: The Moderating Role of Perceived Policy Effectiveness	Web of Science (WOS)	Journal of Nusantara Studies (JONUS)
"The Post Covid-19 Malaysian Parents' Perspectives on Children's Vaccination: Examining the Veracity of Subjective Norms	Scopus	International Journal of Evaluation and Research in Education (IJERE)
Examining The Factors Influencing Malaysian Parents' Intention Toward Human Papillomavirus (HPV) Vaccination for Children	ERA	International Journal of Academic Research in Business and Social Sciences
Would Malaysian Young Parents Get Their Children Vaccinated? Extending The Theory of Planned Behaviour to The Context of Social Media Influence	My Cite	International Journal of Social Policy and Society
A Comparative Study on Childhood Vaccination Policy in The United States, Australia, Europe, And Malaysia	My Cite	International Journal of Humanities Technology and Civilization
Examining Parents' Intention to Vaccinate Their Children In Pahang: The Role Of Perceived Severity, Perceived Susceptibility, And Perceived Barriers	International Conference on Human Sciences and Civilisations	Conference
"V Untuk Vaksin" Penerbit Universiti Malaysia Pahang	Submitted to UMPSA publisher	Book

APPENDIX D : QUESTIONNAIRE

YUPPIE'S PARENTAL DECISIONS ON CHILDREN VACCINATION IN THE EAST COAST REGION, MALAYSIA

Dear Professor / Assoc. Professor. / Dr. / Sir / Madam

I am Noor Amira Syazwani Abd Rahman, a (PhD) student from Centre of Human Science, University Malaysia Pahang. As part of my study, I am currently conducting research entitled Yuppie's Parental Decisions On Children Vaccination In The East Coast Region, Malaysia. My research is aimed to examine factors (Perceived Susceptibility, Perceived Severity, Perceived Barriers, Attitude, Subjective Norms, Perceived Behavioral Control) influencing yuppies parents' intention and behavior towards children vaccination. This study also employs Perceived Policy Effectiveness and Social Media Influence as a moderating variable.

Therefore, I deeply appreciate if you could participate in my study. This research aimed to examine factors influencing yuppies parents' intention and behavior towards children vaccination. Please be informed that it is NOT a study regarding Covid-19 vaccines but it is a Childhood vaccination that the child received since they were born until 15 years old. Examples, BCG vaccination, Tetanus Vaccine, Hpv Vaccine, Rubella Vaccine, and so on.

Saya Noor Amira Syazwani Abd Rahman, seorang pelajar (PhD) dari Pusat Sains Kemanusiaan, Universiti Malaysia Pahang. Sebagai sebahagian daripada kajian saya, saya sedang menjalankan penyelidikan bertajuk Keputusan Ibu Bapa Yuppie Terhadap Vaksinasi Kanak-Kanak di Wilayah Pantai Timur, Malaysia. Kajian ini bertujuan untuk mengkaji faktor-faktor (Persepsi Kerentanan, Persepsi Keterukan, Persepsi Halangan, Sikap, Norma Subjektif, Kawalan Tingkah Laku yang Dirasakan) yang mempengaruhi niat dan tingkah laku ibu bapa yuppie terhadap vaksinasi kanak-kanak. Kajian ini juga menggunakan Keberkesanan Dasar yang Dirasakan dan Pengaruh Media Sosial sebagai pemboleh ubah moderasi. Oleh itu, saya amat menghargai sekiranya anda dapat mengambil bahagian dalam kajian saya.Kajian ini BUKAN kajian mengenai vaksin Covid-19 tetapi ia berkaitan vaksinasi kanak-kanak yang diambil sejak seseorang itu dilahirkan sehingga usianya mencecah 15 tahun. Sebagai contoh, vaksin BCG, Tetanus, HPV, Rubella dan lain-lain.

Warm regards

Noor Amira Syazwani Binti Abd Rahman

Mobile ; 0129269874

E-mail ; amirarahman@uitm.edu.my

YUPPIE'S PARENTAL DECISIONS ON CHILDREN VACCINATION IN THE EAST COAST REGION, MALAYSIA

Strongly Disagree Strongly Agree

[……1……....2……..…3……..….4……...5]

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

SECTION A: PERCEIVED SUSCEPTIBILITY

	Questionnaire	1	2	3	4	5
1	My children's have a high risk of contracting disease. *Anak saya mempunyai risiko yang tinggi untuk mendapat penyakit*					
2	My children can get sick of disease more easily. *Anak saya senang jatuh sakit*					
3	I feel my children can get disease in the future. *Saya mempunyai perasaan anak saya akan mendapat penyakit di masa hadapan*					

SECTION B: PERCEIVED SEVERITY

	Questionnaire	1	2	3	4	5
1	Disease infection may cause serious health problems to my children.*Jangkitan penyakit boleh menyebabkan masalah kesihatan yang serius kepada anak saya*					
2	Disease with complications is dangerous.*Penyakit yang mempunyai komplikasi adalah berbahaya*					
3	If my children are infected, the disease could spread to other family members*Jika anak saya mendapat jangkitan, penyakit ini boleh tersebar kepada ahli keluarga saya.*					

SECTION C: PERCEIVED BARRIERS

	Questionnaire	1	2	3	4	5
1	I am generally opposed to childhood vaccinations *Secara keseluruhan, saya membantah vaksinasi kanak-kanak*					
2	Childhood vaccinations have unpleasant side effects *Vaksinasi kanak-kanak mempunyai kesan sampingan yang tidak selesa*					
3	Childhood vaccinations weaken the natural immune system *Vaksinasi kanak-kanak melemahkan sistem imunisasi*					
4	Childhood vaccinations are inconvenient *Vaksinasi kanak-kanak adalah menyusahkan*					
5	Childhood vaccinations are expensive *Vaksinasi kanak-kanak adalah mahal*					
6	I am influenced by negative news about Childhood vaccines *Saya terpengaruh dengan berita negetif mengenai vaksinasi kanak-kanak*					

SECTION D: ATTITUDES

	Questionnaire	1	2	3	4	5
1	I think getting the childhood vaccine for my children in the future would be very good for them. *Saya berpendapat vaksinasi anak saya pada masa hadapan adalah sangat baik*					
2	I think getting the childhood vaccine for my children in the future would be protective for them. *Saya berpendapat vaksinasi anak saya pada masa hadapan adalah sangat melindungi*					
3	I think getting the childhood vaccine for my children in the future would be necessary for them. *Saya berpendapat vaksinasi anak saya pada masa hadapan adalah sangat diperlukan*					
4	I think getting the childhood vaccine for my children in the future would be healthy for them. *Saya berpendapat vaksinasi anak saya pada masa hadapan adalah sangat sihat*					
5	I think getting the childhood vaccine for my children in the future would be advantageous for them. *Saya berpendapat vaksinasi anak saya pada masa hadapan adalah sangat bermanfaat*					
6	I think getting the childhood vaccine for my children in the future would be not painful for them. *Saya berpendapat vaksinasi anak saya pada masa hadapan adalah tidak sakit*					
7	I think getting the childhood vaccine for my children in the future would be beneficial for them. *Saya berpendapat vaksinasi anak saya pada masa hadapan adalah sangat berfaedah*					

SECTION E: SUBJECTIVE NORMS

	Questionnaire	1	2	3	4	5
1	Most people who are important to me think that I should vaccine my children *Kebanyakan orang penting dalam diri saya merasakan saya perlu vaksinasi anak saya*					
2	My *spouse would like me to vaccine my children* *Pasangan saya mahu saya vaksinasi anak saya*					
3	Family members other than my spouse (for example, sibling, aunt, uncle, grandparent, etc.) would like me to vaccine my children *Ahli keluarga saya selain pasangan saya (sebagai contoh : adik beradik, makcik, pakcik, atuk, nenek, dan sebagainya) mahu saya untuk vaksin anak saya*					

SECTION F: PERCEIVED BEHAVIOUR CONTROL

	Questionnaire	1	2	3	4	5
1	If I wanted to, I am sure I could vaccine my children *Jika saya mahu, saya pasti boleh vaksinasi anak saya*					
2	For me to vaccinate my children would be easy *Bagi saya, vaksinasi anak saya amat mudah*					
3	I have much control to vaccinate my children *Saya mempunyai kawalan untuk vaksinasi anak saya*					
4	I am confident I can vaccinate my children in the future even if there is a financial cost *Saya yakin saya boleh vaksinasi anak saya pada masa hadapan, walau ianya melibatkan kos kewangan*					
5	I am confident I can vaccinate my children in the future even if my schedule is busy *Saya yakin saya boleh vaksinasi anak saya pada masa hadapan, walaupun jadual saya sibuk*					
6	I am confident I can find a health-care provider (for example, clinic, health center and physician's office) where I can vaccinate my children *Saya yakin saya boleh mencari pusat kesihatan (sebagai contoh, klinik, pusat kesihatan) dimana saya boleh vaksinasi anak saya*					

SECTION G: PERCEIVED POLICY EFFECTIVENESS

Strongly Disagree StronglyAgree

[……..…1………....2………..3……..…4……..…...5………..….6….……..7……..….]

	Questionnaire	1	2	3	4	5	6	7
1	The Government has increased financial investment to support childhood vaccination *Kerajaan telah meningkatkan pelaburan kewangan untuk menyokong vaksinasi kanak-kanak*							
2	The childhood vaccination programs organized by the Government have effectively aroused vaccination awareness in the general public *Program vaksinasi kanak-kanak dianjurkan oleh kerajaan telah berjaya meningkatkan kesedaran vaksinasi kepada umum*							
3	The Government provides clear guidelines and regulations on childhood vaccination *Kerajaan menyediakan penjelasan yang jelas mengenai vaksinasi kanak-kanak*							
4	The Government campaign helps citizens understand the importance of childhood vaccination *Kempen kerajaan membantu rakyat untuk memahami kepentingan vaksinasi kanak-kanak*							
5	The Government campaign clearly explains the benefits of childhood vaccination *Kempen kerajaan sangat jeles menerangkan kebaikan vaksin kanak-kanak*							
6	The Government promotes childhood vaccination as a positive symbol. *Kerajaan mempromosikan program vaksinasi kanak - kanak adalah simbol yang positif*							
7	The Government's policy facilitates me in the childhood vaccination *Polisi kerajaan membantu saya dalam vaksinasi kanak-kanak*							

SECTION H: (SOCIAL MEDIA INFLUENCE)

	Questionnaire	1	2	3	4	5	6	7
1	My engagement on social media influences my decision to vaccinate my children *Penglibatan saya dalam media sosial mempengaruhi keputusan saya untuk memberi vaksinasi kepada anak-anak saya*							
2	I use social media to search information about childhood vaccination *Saya menggunakan media sosial untuk mencari maklumat mengenai vaksinasi kanak-kanak*							
3	Contents about childhood vaccination on social media are trustworthy. *Isi kandungan mengenai vaksinasi kanak-kanak di media sosial boleh dipercayai*							
4	Contents about childhood vaccination on social media are believable *Isi kandungan mengenai vaksinasi kanak-kanak di media sosial dipercayai*							

SECTION I: INTENTION TOWARDS VACCINATION

	Questionnaire	1	2	3	4	5	6	7
1	I intend to vaccinate my children in the future. *Saya bercadang untuk vaksinasi anak saya pada masa hadapan.*							
2	I plan to vaccinate my children in the future. *Saya merancang untuk vaksinasi anak saya pada masa hadapan.*							
3	I want to vaccinate my children in the future. *Saya mahu vaksinasi anak saya pada masa hadapan.*							

.SECTION J: BEHAVIOUR TOWARDS VACCINATION

	Questionnaire	1	2	3	4	5	6	7
1	I often vaccinate my children *Saya selalu vaksinasi anak saya*							
2	I vaccinate my children on regular basics. *Saya vaksinasi anak saya secara rutin*							
3	I often vaccinate my children because they are child friendly. S*aya selalu vaksinasi anak saya kerana ianya mesra kanak-kanak*							
4	I often vaccinate my children that are safety to use. *Saya selalu vaksinasi anak saya yang selamat untuk digunakan*							
5	I often vaccinate my children for their health. *Saya selalu vaksinasi anak saya untuk kesihatan mereka*							

SECTION K: SOCIAL DESIRABILITY SCALE

	Questionnaire	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1	I like to gossip at times. *Ada ketika, saya suka bergosip*							
2	There have been occasions when I took advantage of someone. *Terdapat keadaan di mana saya suka mengambil kesempatan ke atas orang lain*							
3	I'm always willing to admit it when I make a mistake. *Saya selalu sanggup mengaku ketika saya membuat kesilapan*							
4	I sometimes try to get even rather than forgive and forget. *Kadang-kadang saya cuba untuk membalas dendam daripada memaafkan dan melupakan*							
5	At times I have really insisted on having things my own way. *Ada ketika saya benar-benar berkeras untuk memiliki sesuatu dengan cara saya sendiri*							
6	I have never been irked when people expressed ideas very different from my own. *Saya tidak pernah merasa meyampah apabila orang lain melontarkan idea yang berbeza dari saya*							
7	I have never deliberately said something that hurt someone's feelings. *Saya tidak pernah berniat untuk menyatakan sesuatu untuk menyakitkan hati orang lain*							

SECTION L : DEMPGRAPHIC PROFILE

Please tick [√] in the suitable box below which relevant with your personal information.

Sila tandakan [√] dalam kotak yang sesuai di bawah yang berkaitan dengan maklumat peribadi anda.

1	Gender (Jantina)	Male (Lelaki)	___
		Female (Perempuan)	___
2	Age (Umur)		___
3	Education Level (Tahap Pendidikan)	SPM	
		Diploma	
		Degree	
		Master	
		PhD	
4	Household Income (Pendapatan isirumah)	RM4,850 and below	☐
		RM4,851 to RM10,970	☐
		RM10,971 and above	☐
5	State (Negeri)	Pahang	☐
		Terengganu	☐
		Kelantan	☐

APPENDIX E: CONTENT EXPERT

Expert Panel Form

Dear Professor / Assoc. Professor. / Dr. / Sir / Madam

I am Noor Amira Syazwani Abd Rahman, a (PhD) student from Centre of Human Science, UniversityMalaysia Pahang. As part of my study, I am currently conducting research entitled "Vaccination Behaviour of the Yuppies Parents in East Coast Region". My research is aimed to examine factors (Perceived Susceptibility, Perceived Severity, Perceived Barriers, Attitude, Subjective Norms, Perceived Behavioral Control) influencing yuppies parents' intention and behavior towards childrenvaccination. This study also employs Perceived Policy Effectiveness and Social Media Influence as a moderating variable.

Therefore, I deeply appreciate if you could participate in my study by giving your expert opinion onthe validity items used in my survey questionnaire. Your participation in this survey is highly valuedbecause your input may contribute to a formation of the new body of knowledge and enrich the literature sources that will benefit academician in the field of vaccination behavior and the findings can also be utilized for the ministry's concern for their planning, policy, and decision-making relatingto the National Health Policy. Please indicate your evaluation of each item in the questionnaire attached by ticking the appropriate score (ranging from 1 = "Not relevant: to 10 = very relevant") on the evaluation sheet provided. Additional comments are welcome. If you have any concerns or questions regarding this survey, please do not hesitate to contact me. I would be most happy to answerany questions you might have. I look forward to your participation in this survey and receiving yourcompleted questionnaire latest by 31 December 2021.

Thanking you in advance for your precious time and kind cooperation.

Warm regards

Noor Amira
Syazwani Binti Abd
RahmanMobile ;
0129269874
E-mail ; amirarahman@uitm.edu.my

Questionnaire for This Study

"Vaccination Behaviour of the Yuppies Parents in East Coast Region".

Reviewer Direction

Not relevant Very relevant

[……1……..2…….3…….4……...5…….6……..7…..….8……...9…….10……..]

SECTION A: PERCEIVED SUSCEPTIBILITY (Twum et al, 2021)

Perceived susceptibility refers to the risk of contracting or developing a particular illness. The risk ofgetting or becoming ill is based on one's perceived susceptibility to that illness (Avola & Lyon, 2012).It's also a sense of assurance about one's disease susceptibility. Rosenstock et al. (1988) claim that susceptibility causes a sense of vulnerability. If they do not believe they will be affected, people areless likely to intervene to avoid an adverse health outcome. For instance, when the risk of getting theflu is thought to be low, people are less likely to get the flu shot (McKinley, 2015).

Reviewer Direction

Not relevant Very relevant

[……1.....2……3……4……..5……6……..7……8……...9…….10……..]

	Questionnaire	1	2	3	4	5	6	7	8	9	10
1	My children's have a high risk of contracting disease. *Anak saya mempunyai risiko yang tinggi untuk mendapat penyakit*										✓
2	My children can get sick of disease more easily. *Anak saya senang jatuh sakit*										✓
3	I feel my children can get disease in the future. *Saya mempunyai perasaan anak saya akan mendapat penyakit di masahadapan*										✓

SECTION B: PERCEIVED SEVERITY (Twum et al, 2021)

A person's view of the disease's seriousness and implications is the severity (Cheney & John, 2013). Severity refers to a person's perception of the disease's severity and consequences, including death, suffering, and physical and mental disability

Reviewer Direction

Not relevant Very relevant

[……1……...2…..….3…..….4……...5…….6……..7…..….8……...9…….10…...]

	Questionnaire	1	2	3	4	5	6	7	8	9	10
1	Disease infection may cause serious health problems to my children. *Jangkitan penyakit boleh menyebabkan masalah kesihatan yang seriuskepada anak saya*										✓
2	Disease with complications is dangerous. *Penyakit yang mempunyai komplikasi adalah berbahaya*										✓
3	If my children are infected, the disease could spread to other familymembers *Jika anak saya mendapat jangkitan, penyakit ini boleh tersebar kepadaahli keluarga saya.*										✓

SECTION C: PERCEIVED BARRIERS (Twum et al, 2021)

The perceived costs of receiving the vaccine are perceived barriers (Guidry et al., 2015). It relates toa person's perception of vaccination's physical and mental consequences (Brewer & Hallman, 2006).

Reviewer Direction

Not relevant Very relevant

[…..…1…..2…….3…..….4……..5…….6……..7…..….8……...9…….10……..]

	Questionnaire	1	2	3	4	5	6	7	8	9	10
1	I am generally opposed to childhood vaccinations *Secara keseluruhan, saya membantah vaksinasi kanak-kanak*									✓	
2	Childhood vaccinations have unpleasant side effects *Vaksinasi kanak-kanak mempunyai kesan sampingan yang tidak selesa*										✓
3	Childhood vaccinations weaken the natural immune system *Vaksinasi kanak-kanak melemahkan sistem imunisasi*										✓
4	Childhood vaccinations are inconvenient *Vaksinasi kanak-kanak adalah menyusahkan*										✓
5	Childhood vaccinations are expensive *Vaksinasi kanak-kanak adalah mahal*										✓
6	I am influenced by negative news about Childhood vaccines *Saya terpengaruh dengan berita negetif mengenai vaksinasi kanak-kanak*										✓

SECTION D: ATTITUDES (Twum et al, 2021)

Attitudes are people's estimation of what would happen if they obeyed the advice (Ajzen, 1991). Attitudes are usually based on predicting the positive and negative consequences (Fishbein & Ajzen,1975). Attitudes are a person's estimation of what would happen if they obeyed the advice and are usually based on predicting the positive and negative consequences.

Reviewer Direction

Not relevant Very relevant

[…..…1. …..2…….3……..4……...5…….6……..7…..….8……...9…….10……..]

	Questionnaire	1	2	3	4	5	6	7	8	9	10
1	I think getting the childhood vaccine for my children in the future wouldbe very good for them. *Saya berpendapat vaksinasi anak saya pada masa hadapan adalahsangat baik*										✓
2	I think getting the childhood vaccine for my children in the future wouldbe protective for them. *Saya berpendapat vaksinasi anak saya pada masa hadapan adalahsangat melindungi*										✓
3	I think getting the childhood vaccine for my children in the future wouldbe necessary for them. *Saya berpendapat vaksinasi anak saya pada masa hadapan adalahsangat diperlukan*										✓
4	I think getting the childhood vaccine for my children in the future wouldbe healthy for them. *Saya berpendapat vaksinasi anak saya pada masa hadapan adalahsangat sihat*										✓

5	I think getting the childhood vaccine for my children in the future wouldbe advantageous for them. *Saya berpendapat vaksinasi anak saya pada masa hadapan adalahsangat bermanfaat*										✓
6	I think getting the childhood vaccine for my children in the future wouldbe not painful for them. *Saya berpendapat vaksinasi anak saya pada masa hadapan adalah tidaksakit*										✓
7	I think getting the childhood vaccine for my children in the future wouldbe beneficial for them. *Saya berpendapat vaksinasi anak saya pada masa hadapan adalahsangat berfaedah*										✓

SECTION E: SUBJECTIVE NORMS (Twum et al, 2021)

Subjective norms deal with a person's idea of how important people would respond if they behaved or did not behave in a certain way. Subjective norms are what important referent groups want an individual to do and their willingness to comply with these groups (Ajzen, 1991). If a person believesthat social referents (such as parents and friends) consider certain behaviours imperative, they tend to have higher intentions to perform such behaviours (Li & Li, 2020).

Reviewer Direction

Not relevant Very relevant

[……1…..2…….3…….4……...5…….6……..7…..….8……...9…….10……..]

	Questionnaire	1	2	3	4	5	6	7	8	9	10
1	Most people who are important to me think that I should vaccine mychildren *Kebanyakan orang penting dalam diri saya merasakan saya perluvaksinasi anak saya*										✓
2	My *spouse would like me to vaccine my children* *Pasangan saya mahu saya vaksinasi anak saya*										✓
3	Family members other than my spouse (for example, sibling, aunt, uncle, grandparent, etc.) would like me to vaccine my children *Ahli keluarga saya selain pasangan saya (sebagai contoh : adik beradik, makcik, pakcik, atuk, nenek, dan sebagainya) mahu saya untuk vaksin anak saya*										✓

SECTION F: PERCEIVED BEHAVIOUR CONTROL (Twum et al, 2021)

Perceived Behavioural Control was applied to evaluate a person's expectations of their ability to control their behaviour (McKinley, 2015). It can be determined by various variables, such as physical and mental capacity, financial resources, transportation, motivation, and time

Reviewer Direction

Not relevant Very relevant

[……1……...2…….3……..4…...5…….6……..7…..….8……...9…….10……..]

	Questionnaire	1	2	3	4	5	6	7	8	9	10
1	If I wanted to, I am sure I could vaccine my children *Jika saya mahu, saya pasti boleh vaksinasi anak saya*										✓
2	For me to vaccinate my children would be easy *Bagi saya, vaksinasi anak saya amat mudah*										✓
3	I have much control to vaccinate my children *Saya mempunyai kawalan untuk vaksinasi anak saya*										✓
4	I am confident I can vaccinate my children in the future even if there is afinancial cost *Saya yakin saya boleh vaksinasi anak saya pada masa hadapan, walauianya melibatkan kos kewangan*										✓
5	I am confident I can vaccinate my children in the future even if myschedule is busy *Saya yakin saya boleh vaksinasi anak saya pada masa hadapan,walaupun jadual saya sibuk*										✓

6	I am confident I can find a health-care provider (for example, clinic,health center and physician's office) where I can vaccinate my children *Saya yakin saya boleh mencari pusat kesihatan (sebagai contoh, klinik,pusat kesihatan) dimana saya boleh vaksinasi anak saya*										✓

SECTION G: PERCEIVED POLICY EFFECTIVENESS (Wang et al, 2021)

Perceived Policy Effectiveness is a person's positive or negative feelings toward a policy measure. The policy will be evaluated based on its efficacy, appropriateness, and ease of implementation. The government can utilize policy instruments, including required regulation, incentives, promotion, education, and the development of convenient and helpful infrastructure to affect people's intentions**(Wan & Shen, 2013)**

Reviewer Direction

Not relevant Very relevant

[……1……...2…….3……4……...5…….6……..7…..….8……...9…….10……..]

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

	Questionnaire	1	2	3	4	5	6	7	8	9	10
1	The Government has increased financial investment to support childhoodvaccination *Kerajaan telah meningkatkan pelaburan kewangan untuk menyokongvaksinasi kanak-kanak*										✓
2	The childhood vaccination programs organized by the Government haveeffectively aroused vaccination awareness in the general public *Program vaksinasi kanak-kanak dianjurkan oleh kerajaan telah berjayameningkatkan kesedaran vaksinasi kepada umum*										✓
3	The Government provides clear guidelines and regulations on childhoodvaccination *Kerajaan menyediakan penjelasan yang jelas mengenai vaksinasi kanak-kanak*										✓
4	The Government campaign helps citizens understand the importance ofchildhood vaccination *Kempen kerajaan membantu rakyat untuk memahami kepentinganvaksinasi kanak-kanak*										✓

5	The Government campaign clearly explains the benefits of childhood vaccination *Kempen kerajaan sangat jeles menerangkan kebaikan vaksin kanak-kanak*										✓
6	The Government promotes childhood vaccination as a positive symbol. *Kerajaan mempromosikan program vaksinasi kanak -kanak adalahsimbol yang positif*										✓
7	The Government's policy facilitates me in the childhood vaccination *Polisi kerajaan membantu saya dalam vaksinasi kanak-kanak*										✓

SECTION H: (SOCIAL MEDIA INFLUENCE (Pop et al, 2020)

Media sources are a well-established and essential source of health-related information-seeking behaviour, significantly shaping health behaviours (Melovic et al., 2020). The more people pay attention to messages generated by media outlets, the more likely their attitude will be reinforced orchanged (Lin & Lagoe, 2013). Media plays a vital role in providing vaccination information and acting as a communicator in providing information on public health, disease prevention, and the benefits of vaccination in preventing fatal and contagious diseases (Aziz et al., 2019). Social media is a computer-based technology that facilitates the sharing of ideas, thoughts, and information throughthe building of virtual networks and communities. The example of social media networks in this studyinclude Facebook, Instagram, WhatsApp,Twitter, YouTube, and TikTok.

Reviewer Direction

Not relevant Very relevant

[……1……...2…..….3…….4……..5…….6……..7…..….8……...9…….10……..]

	Questionnaire	1	2	3	4	5	6	7	8	9	10
1	My engagement on social media influences my decision to vaccinate mychildren *Penglibatan saya dalam media sosial mempengaruhi keputusan sayauntuk memberi vaksinasi kepada anak-anak saya*										✓
2	I use social media to search information about childhood vaccination *Saya menggunakan media sosial untuk mencari maklumat mengenaivaksinasi kanak-kanak*										✓
3	Contents about childhood vaccination on social media are trustworthy. *Isi kandungan mengenai vaksinasi kanak-kanak di media sosial bolehdipercayai*										✓
4	Contents about childhood vaccination on social media are believable *Isi kandungan mengenai vaksinasi kanak-kanak di media sosialdipercayai*										✓

SECTION I: INTENTION TOWARDS VACCINATION (Caso et al, 2019)

Individuals' intentions are examined considering their perception of social support for engagingbehaviour and their belief in their ability to carry out the activity.

Reviewer Direction

Not relevant Very relevant

[……1……..2…….3…..….4……...5…….6……..7…...….8……...9…….10……..]

	Questionnaire	1	2	3	4	5	6	7	8	9	10
1	I intend to vaccinate my children in the future. *Saya bercadang untuk vaksinasi anak saya pada masa hadapan.*										✓
2	I plan to vaccinate my children in the future. *Saya merancang untuk vaksinasi anak saya pada masa hadapan.*										✓
3	I want to vaccinate my children in the future. *Saya mahu vaksinasi anak saya pada masa hadapan.*										✓

SECTION J: BEHAVIOUR TOWARDS VACCINATION (Wee at al, 2014)

Behaviour can be defined as people's actions influenced by their intention to behave and their attitudetoward those actions. Aside from that, actual behaviour refers to people's decisions about spending their time, money, and effort

Reviewer Direction

Not relevant Very relevant

[……1……..2…….3…….….4……...5…….6……..7…..….8……...9…….10……..]

	Questionnaire	1	2	3	4	5	6	7	8	9	10
1	I often vaccinate my children *Saya selalu vaksinasi anak saya*										✓
2	I vaccinate my children on regular basics. *Saya vaksinasi anak saya secara rutin*										✓
3	I often vaccinate my children because they are childfriendly. *Saya selalu vaksinasi anak saya kerana ianya mesrakanak-kanak*										✓
4	I vaccinate my children that against animal-testing. *Saya vaksinasi anak saya yang bertentangan dengan ujianhaiwan*								✓		
5	I often vaccinate my children that are safety to use. *Saya selalu vaksinasi anak saya yang selamat untukdigunakan*										✓
6	I often vaccinate my children for their health. *Saya selalu vaksinasi anak saya untuk kesihatan mereka*										✓

SECTION K: SOCIAL DESIRABILITY SCALE (Fischer and Fick, 1993)

In the social sciences, the tendency of respondents to produce socially desirable bias is the most researched type of response bias, and it is also the most common (Fisher & Katz, 2000). Therefore, one of the most severe risks to data validity obtained using a multi-indicator self-report scale is the social desirability bias (SDB) issue (King & Bruner, 2000). Van de Mortel (2008) recommended thatresearchers partial out the SDB scale. In terms of statistics, partially out could help relieve the problem.

Reviewer Direction

Not relevant Very relevant

[……1…..2…….3…….….4……...5…….6……..7…..….8……...9…….10……..]

	Questionnaire	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	I like to gossip at times. *Ada ketika, saya suka bergosip*										✓
2	There have been occasions when I took advantage ofsomeone. *Terdapat keadaan di mana saya suka mengambilkesempatan ke atas orang lain*										✓
3	I'm always willing to admit it when I make a mistake. *Saya selalu sanggup mengaku ketika saya membuatkesilapan*										✓
4	I sometimes try to get even rather than forgive and forget. *Kadang-kadang saya cuba untuk membalas dendamdaripada memaafkan dan melupakan*										✓
5	At times I have really insisted on having things my ownway. *Ada ketika saya benar-benar berkeras untuk memilikisesuatu dengan cara saya sendiri*										✓
6	I have never been irked when people expressed ideas very different from my own.										

	Saya tidak pernah merasa meyampah apabila orang lainmelontarkan idea yang berbeza dari saya										✓
7	I have never deliberately said something that hurtsomeone's feelings. *Saya tidak pernah berniat untuk menyatakan sesuatuuntuk menyakitkan hati orang lain*										✓