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Acceptance of Childhood Vaccination among Parents in Baling, Kedah

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ABSTRACT

Parents have the main role to make decision for vaccinating their child. Majority of children receive their vaccines on time. However, nearly 20 million worldwide still missed out – pushing them at risk of serious disease, disability and ill health. A cross-sectional study was carried out in July-August 2019 in Baling, Kedah to determine the acceptance of childhood vaccination for their children among parents there. This research used convenience sampling method. Data then has been analyzed using SPSS version 25.0. The response rate was 100%. Majority of the respondents were female (61.5%), Malay race (48.2%), mean age of 36.24 years old, SPM educated (31.0%), work as government officer (42.4%) and had income level in the range of RM1,000-RM3,000 (42.4%). The socio-economics characteristics (education, occupation status and income level), perceived benefits and barrier and external cues to action can caused the acceptance of childhood vaccination. The highest reason of parents' who reject the vaccination was "Did not think the vaccine was save/concern about side effects" (45.5%). 93.0% parents accept the childhood vaccination for their children.

Keywords: *Vaccination acceptance, Perceived benefits, Cues to Action*

INTRODUCTION

The immune system functions to defense against infectious organisms and other invaders. This system is made up from cells, tissues and organs that works together to protect body. One of the important cells is white blood cell or in other word is leukocytes. Leukocytes come with two basic types that combine to seek out and destroy disease causing organisms or substances (Yamini, 2015). According to WHO (2018), a vaccine is a biological preparation to protect body from particular disease. Vaccines contain one special agent that resembles a disease-causing microorganism. That agent is usually made from weakened or killed forms of the microbe, its toxins or one of its surface proteins. By taking vaccine, the agent in the body will stimulates the body's immune system to tell and recognize the agent as foreign and destroys it, then make a reminder about it, so that the immune system will easily recognize and destroy any of the same microorganisms.

People that rejected vaccination have irrational fears concern to vaccine safety, emotion reaction about the effect and religious beliefs (Spier et al, 2001). Hesitancy is one of the major factors in public's attitude toward vaccination. Most hesitant people are well-informed about vaccination (Smith and Marshall, 2010). Vaccines are safe and have their own licenses and approvals. Scientists are constantly observing and monitoring information from sources for any signs of the vaccines that may cause destruction (WHO, 2018).

Body immunity can be improved by taking a vaccination injection. Thus, immunization is a proven tool that shows it can be a prevention of some of the deadliest childhood diseases. There are a lot of vaccines for child such as hepatitis B vaccine at birth, the diphtheria, tetanus, pertussis, hepatitis B and polio (OPV) vaccine at 2, 4, 6 and 18 months. Upon reaching 5 years of age; measles vaccine, mumps and rubella vaccine at 12 months and 5 years, and oral rotavirus vaccination at 2 and 4 months (Burghouts, 2017).

In Malaysia, the initial National Immunization Programme (NIP) was established in 1950s with the missions of protecting the child population from vaccine-preventable diseases, reducing endemic cases, as well as reducing the morbidity and mortality rates associating with vaccine-preventable disease. Childhood vaccination prevents 2 million deaths per year worldwide and is widely considered to be 'overwhelmingly good' by the scientific community (Jheeta & Newell, 2008).

Research performed by Panting et al. (2018) revealed several reasons on vaccine-hesitant parents who did not vaccinate their children, such as being worried about side effect (2.4 percent), having distrust towards vaccine (2.1 percent), and being doubtful about the halal status of vaccine (1.3 percent). According to McKee et al. (2016), these reasons vary broadly between parents, but encompass in 4 overarching categories. The 4 categories are religious reasons, personal beliefs or philosophical reasons, safety concerns, and desire for more information from healthcare providers.

According to Ministry of Health Malaysia (2014), childhood immunization coverage that recorded in 2013, B.C.G immunization coverage of infants, DPT – HIB immunization of infants (3rd dose), Polio and Hepatitis B immunization coverage of infants are 98.59 percent, 96.92 percent, 96.87 percent and 96.32 percent respectively. MMR immunization coverage of children age 1 to < 2 years is 95.25 percent while HPV immunization coverage of girls aged 13 years is 94.33 percent. It is known that childhood vaccination should be carried out on children as many benefits of preventing diseases with a vaccine far outweigh the risk.

This study is to know the reasons among parents in Baling, Kedah on childhood vaccination according to Health Belief Model and other reasons to reject vaccination. It has become popular these days to express vaccine rejection in Malaysia through social media. Vaccination is an important step that parents can take for their children, therefore the reasons for rejection are attempted to find out. Through this research of acceptance of childhood vaccination among parents in Baling, Kedah, the results explained the possible reasons for acceptance of vaccination.

There are three objectives of this research:

1. To determine the prevalence of acceptance to childhood vaccination among parents in Baling, Kedah.
2. To identify the relationship between socio-economic characteristic (income, education and occupation) with the acceptance of childhood vaccination among parents in Baling, Kedah.
3. To determine the significant difference in vaccination perceived benefits and barrier between parents who accept the childhood vaccination and parents who reject the childhood vaccination in Baling, Kedah.
4. To determine the significant difference in vaccination external cues to action between parents who accept the childhood vaccination and parents who reject the childhood vaccination in Baling, Kedah.

Significance of the Study

Parents

The findings of this study will provide a clarification for the parents who want to know about the childhood vaccine acceptance that will give benefits to their children. It will help the parents to have better understanding about the factors that cause acceptance of childhood vaccination which are external cues, perceived benefit or barrier and socio-economic.

Health Minister of Malaysia and World Health Organization (WHO)

The findings of the study allow the health promotion practitioners to explain further about the factors of childhood vaccine acceptance among parents in Baling, Kedah. The findings may allow health promotion practitioners to determine what are the factors that cause the parents accept childhood vaccination. Therefore, this study helps the health promotion practitioners to promote the benefits of vaccination among the parents by using more evidence-based study effectively.

Future Research

Future researchers who intend to research about childhood vaccine acceptance among parents can use this study for their further research. The researchers will experience the benefits from the research. The researcher also can use this research as a guideline or supportive information for other related researches.

LITERATURE REVIEW

Vaccination

According to WHO (2017), vaccination can be defined as a biological preparation that improves immunity to a particular disease such as measles, polio, tetanus, diphtheria, and pertussis (whooping cough). A vaccine typically contains an agent that resembles a disease-causing microorganism, and is frequently made from weakened or killed forms of toxins, microbe,

or one of its surface proteins. The agent stimulates the body's immune system to distinguish the agent as foreign, destroy it, and "remember" it, so that the immune system can more easily identify and destroy any of these microorganisms that it later encounters.

Vaccines are the most current prophylactic public health tools. With the help of vaccines, prevention of infectious disease spread and, in recital with other measures, even eradication has become possible (Hoper, et al., 2015). According to Omer (2009), vaccines is among the most available tools for preventing infectious diseases and their complication and sequelae.

Acceptance of Childhood Vaccination

As noted by Damjanovic (2018), parental decision on child vaccination is a specific case of health-related decision that is highly involving in term of affect and expectation. When discussing vaccination and immunization, the emphasis is on its purposefulness, potential side effects, and efficacy of vaccination.

Evidence for an association between perceived efficacy and child vaccination is mixed. Parents reported not trusting that the vaccine was effective as a reason against vaccination in four studies. Two found that parents vaccinated their child to protect them from the illness and another cited the belief of the effectiveness of the vaccine (Smith et al., 2017).

In 2019, WHO stated that "the majority of people who get disease have been vaccinated" as common misconception about immunization. This is another argument regularly found in anti-vaccine literature, the consequence being that this proves the vaccines are not effective. In fact, it is true that in an outbreak those who have been vaccinated often outnumber those who have not even with vaccines such as measles, which we know to be about 98% effective when used as recommended.

According to Ebrahim (2014), in detailed article addressing this issue, vaccination fulfils all objectives of Al-Maqasid Al-Shariah. When linking vaccination with the preservation of religion, he mentioned that this can be achieved since vaccination acts as preventive measure that promotes the wellbeing of a Muslim. Hence, when the physical and health aspects of a Muslim is taken care of, he can successfully perform his daily obligatory act of worship.

Socioeconomics Factors

Socioeconomic is a combined term of economic and sociological that measures a person's career or job experience. It is also defined as the economic and social position of an individual or a family in relation with the income, occupation, and education (Mclaren, 2007). Moreover, socioeconomic factors are divided into three different categories which include, household income, earners' education, and occupation. Equally, socioeconomic status can be divided into three levels of high, middle, and low to describe the three positions that a family or an individual may fall into (Mackenbach, et al., 2008). When assigning a family or an individual into one of these three categories; the three variables stated earlier which include income, education, and occupation would be assessed (Galobardes et al., 2006).

Income brings up the payment that people receive in their career or business under certain organization (Baadsgaard & Quitzau, 2011). Income can be categorized into unemployed worker's assets and compensations such as social security, trusts, interests or dividends, royalties, pensions, alimony, or other forms governmental, public, or family financial assistance (Montes & Halterman, 2008). Income also plays a major part to make parents take decision in involving finance, sometimes the parent's low income will make them less care about children vaccination. It can thus be suggested that the reasons why parents with low household income have less priority for vaccination, may include transportation problem, finance problem and many more (Fox-Rushby, 2004). This plants a perception for the parents to not show priority for vaccinating the children (Welsh et al., 2010). On the other hand, families with high income would normally show concerns about the children's health and they will follow everything and vaccinate their children according to the month because the facilities are affordable for the high-income parents (Ponnet, 2014).

Education by the same token acts as a big factor in income. Median money on hand rises by all of each laid on the line of education (Best & Kahn, 2016). Education in society can be divided into two which are the educated populace and uneducated populace. Education is a passing or sharing of knowledge from one person down to another which can exist in the form of knowledge of skills (Freed, et al., 2009). Education plays a major role in spreading information which are mostly relevant and recent. The idea and knowledge about vaccination are also explored deeply through education (Yudin, 2010). It is possible, therefore, that the educated parents would normally understand how crucial vaccination is for their children. They also possess

the knowledge about vaccination and why it is crucial for the new-borns and infants (Bruner, 2009). Meanwhile, the parents who had little to no access of education may not give much priority to vaccinate children. This is because the parents do not understand the value of vaccines and the benefit that come with it (Lester & Costley, 2010).

Occupation is an individual's profession that have many types of works and is something you are employed in doing so, but not necessarily a job that is done for work or money (Landrum et al, 2010). There are a number of scales and ranks of occupation involved that divides them into different categories. The categories range from unskilled to skilled labour and to a higher professional level. Occupation also involves the level of education and the income that results from it (Roberts, 2013). Occupation is also a major factor in vaccination that is divided by two categories such as professional and unprofessional. In general, therefore, it seems that professional parents normally have high education experience, high levelled career; however, the reason underside is that these parents are very busy with their career and some tend to not make time to vaccinate their children (Luy et al., 2011). The parents with a nonprofessional career tend to make time for their children and spend more time with their family. They also understand the importance of vaccination to which they will make sure their children get them (Katan, 2009).

Perceived Benefits and Barrier

Perceived benefits talk about one's understandings in efficacy of an advised action to reduce the risk or hazard of a certain impingement (Karen, et al., 2008). People trust that certain actions will suppress the susceptibility to health problems or decline its seriousness (Chen, et al., 2011). However, there is a possibility that people may engage in that behaviour nonetheless of the objective facts regarding the effectiveness of the action (Mirelman, et al., 2014). Furthermore, vaccine-accepting respondents have all stated that they are open to accept vaccination due to the perceived benefits of vaccines, which focuses on either preventing diseases or curing them among children (Geoboo, 2014).

Perceived barrier also focuses on one's stand "of the tangible and psychological costs of the advised action" (Karen, et al., 2008). Perceived barriers mention that an individual's appraisal of the barrier is related to behavioural change (Wallace, et al., 2006). Every individual will perceive the status of health as frightening and believes that a specific action would successfully bring down the threat and barriers that may stop engagement in "health-promoting behaviour" (Reiter, et al., 2009). Within the perceived benefits, one must outweigh the perceived barriers as a mean to change one's behaviour (Serpell & Green, 2006). There are multiple perceived barriers that are taken into action, which include the perceived inconvenience, expense, danger that may rise from side effects of a medical procedure, and discomfort. This includes pain and emotional upset which engage the behaviour (Klein, et al., 2010).

Prevent Disease

The National Vaccine Advisory Committee has invited more parents to give consent in having their children vaccinated and have more healthy children in the country (Modlin, et al., 2004). Besides that, reports from vaccine-accepting physicians and scientists show many positive reactions such as healing of chronic skin rashes, susceptibility to various infectious disease such as, measles, scarlet fever and whooping cough because the vaccine fights off the infection. The body has a supply of cells that help to recognize and supply antibodies (Mayr, 2004).

This finding has important implications for developing working children's body to have natural defenses to help them keep safe and also the immune system can fight off any infections (Plotkin, 2008). Vaccines aid the development of a person's immunity by imitating an infection, but this "imitation" does not create any illnesses. Plus, after the injection, the vaccine often does not show the benefits immediately. It will often take some time to act up but will eventually help children to maintain a good health (Jones & Cunningham, 2004).

Side Effect

Vaccination is also known to cause one or more side effects on the children. The side effects caused by the vaccination are most slight such as redness and swelling. This usually lasts for only a few days and will eventually fade away (Mrozek-Budzyn, et al., 2010). Sometimes, there are cases when children go through critical side effects after vaccination, such as severe allergic reaction. This rarity of side effects would make doctors and clinical staff find the illness difficult to deal with children in that condition (Quaglio, et al., 2002).

In addition, the parents should pay extra attention to their children after vaccination for a few days until they are stable and well (Kiguli, et al., 2011). Many mothers have even claimed that children could lose their lives because of vaccination. Thoughts around the weakness and vulnerability to vaccine's side effects and disease may also be the culprit behind the idea that young and sick children are not strong enough to handle vaccination, is still wide (Dondji, et al., 2005).

External Cues to Action

The health belief model postulates that a cue, or trigger, is crucial for promoting engagement in health-promoting behaviours (Carpenter & Christopher, 2010). Cues to action can be both internal and external. Physiological cues such as pain or symptoms are some examples of internal cues to action (Irvine, et al., 2013). External cues, on the other hand is derived from events or information from medium such as the media, or health care provider that promote engagement in health-related behaviours (Nowrouzi-Kia & McGeer, 2004). The intensity of cues needed to quicken the action varies from individual to another by perceived susceptibility, seriousness, benefits, and barriers (Schmid et al., 2017). For example, by the external cues about the vaccination, information will spread to each parent.

Media

Media is a tool that are used to broadcast, publish, and the inclusion of the internet regarded collectively (Baym et al., 2004). Furthermore, media also have many varieties such as television, radio, and the newspaper of which the public can get information easily (Miller, 2008). The media also can influence the society, especially parents about the vaccination. Many parents tend to believe all the information that flows from the media without any proper credibility check (Neiger et al., 2011). It should be clear that not all information given by the media is true and sometimes the media may even spread fake or unreliable news to the public. With this, people need to be aware of what they are watching and listening, and should check its credibility or source (Sorlin, 2013). However, there are cases where fake news about vaccination are able to persuade parents to have negative perception towards vaccination and avoid providing it to the children. Eventually, this may lead to a drastic reduction of vaccination which may have dangerous consequences (Yoo, et al., 2010).

Information from Close People

The information from close others such as family, friends and colleagues are defined as the data and knowledge we gain from people we often see, talk and believe (Kumashiro & Sedikides, 2005). By that information, the parents always think negatively about vaccination and by believing so, the parents will not give important attention to vaccination.

The information about vaccine is normally given by these close relational people will be perceived as truth and believable because some may think that they can be relied on (Derlega, et al., 2008). People in the inner circle can all be related to this issue of information transfer. Thus, some family carry the tradition by generation to avoid vaccination as they are influenced by their parents and would teach their kids the same (Kelly, et al., 2011). Parents must not entirely believe the people around them all the time and should not take their words for granted as they may not be right every time (Bently & Metcalf, 2007).

Information from Health Care Provider

Health care providers are the people that have professional expertise and knowledge in the field of health (Reiss, et al., 2005). The health care providers may also be a public or community health experts who work for the common good of the society (Lockley et al, 2007).

Parents who do not have any knowledge about vaccines can seek aid from the health care provider who will help and guide them to why children need to be vaccinated (Ylitalo et al., 2013). These health care providers would also notify the parents of advantage and disadvantage of vaccination (Visser et al., 2014). In the end, the health care provider also will guide the parents with beneficial information, by that the number of parents vaccinate will increase (Opel et al, 2013).

Research Hypothesis

H1: There is a relationship between socio-economic characteristic (income, education and occupation) with the acceptance of childhood vaccination among parents in Baling, Kedah.

H2: There is a significant difference in vaccination perceived benefits and barrier between parents who accept the childhood vaccination and parents who reject the childhood vaccination in Baling, Kedah.

H3: There is a significant difference in vaccination external cues to action between parents who accept the childhood vaccination and parents who reject the childhood vaccination in Baling, Kedah.

Research Framework

Parent's acceptance of the vaccination to children is influenced by several factors. Factors that contribute to the acceptance are socio-economic ones which include income of the family, parent's education and parent's occupation. Next factor is perceived benefits or perceived barrier which covers prevention from diseases and also side effect of the vaccination. Lastly, external cues that involve media, information from close others and information that is received from health care provider. Figure 1 shows all factors that influenced the acceptance of the childhood vaccination.

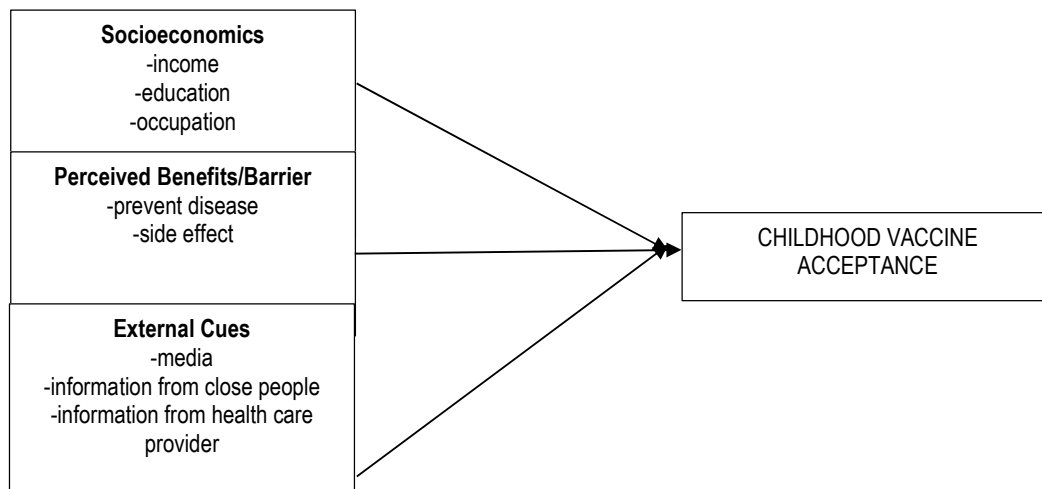


Figure 1: Research framework of the acceptance of childhood vaccination

METHODOLOGY

Research Design

The design of the study was a cross sectional study with quantitative research.

Data Collection

This research was held in Baling, Kedah. Questionnaires were distributed in school area, residential areas, hospital and clinics in Baling, Kedah. Explanation was given to the respondents after they agreed to answer the questionnaires. There was no forcing on the parents to answer. The questionnaires were collected after the respondents have done filling them up.

Sampling

This research used purposive and convenient sampling methods. Public Health Malaysia (2015) showed that Kedah was rated as the highest ranking for vaccine rejection cases. Therefore, purposive sampling method was used in order to choose sampling area. Same sampling method was used to choose a region in Kedah which is Baling as the highest vaccine rejection cases was reported in Baling, Kedah.

By using Krecjie and Morgan for sample size, there were 384 respondents answered the questionnaire. The distributed questionnaire was using convenient sampling method. The reason researchers used this sampling method was to collect the information from parents in Baling, Kedah who are conveniently available to provide it. This involves picking up any available set of respondents convenient for researcher to use.

Data Analysis

The data analysis was performed by using computerized data analysis package known as SPSS 25.0. The data analysis was divided into two which are descriptive analysis and bivariate analysis. The data analysis conducted was used to gather data, assessment, and analysed to form some sort of finding or conclusion.

Simple summaries were provided about the sample and the measures. Thus, in this study the researchers used mean, frequency, standard deviation and percentage as descriptive analysis. The bivariate analysis used was the Chi-squared test and independent sample t-test.

The Chi-Square Test is also known as χ^2 . This test is to observe the statistical significance of the observations under study. Hence, the chi-Square test is a statistical technique used by researchers to examine the differences between categorical variables in the same population.

Independent sample t-test was used in this study to associate the means of two independent group. It was used to determine whether or not there is statistical evidence that related population means are significantly different. If the Sig (2-tailed) value is less than 0.05, there is a statistically significant difference between the two settings.

FINDINGS

Table 1 shows the characteristics of socio-demographics of the respondents. It shows that the majority of the respondents were female (61.5%) and mean of age was 36.45 years old. The races are Malay, Chinese, Indian and others. The majority respondents were Malay with 185 respondents answering the survey which represents 48.2% and 48 respondents for other races which represents 12.5% that come by the race of Siam, Iban, Murut, Melanau, Bajau, Kadazan, Sikh, Indonesian, and Batak. The highest number of respondents were SPM educated by 119 respondents (31.0%) and work as government officers with 121 persons (31.5%) while the highest income salary range is at RM1001-RM3000 by 163 people (42.4%).

Table 2 shows the percentage of vaccination acceptance status by 384 respondents. The parents who accept the vaccination was 357 respondents (93.0%). There are 27 respondents which 7.0% of respondents reject the vaccination for their children.

The reasons of rejection of childhood vaccination among parents in Baling, Kedah is shown in Table 3. Most parents chose "Did not think the vaccine was safe/concern about side effects". The percentage of rejection is 45.5% because most parents worry about the possible side effects that may be faced by their babies. By thinking that, they take decisions to reject the vaccination for their babies.

Table 4 shows relationship between socio-economic characteristics and acceptance of childhood vaccination. For education level, occupation status and income level, since the *P*-value is greater than 0.05, the null hypothesis was not rejected. It shows that, there is not enough evidence to suggest an association between education level and childhood vaccination acceptance. Based on the results, we can state that, no association was found between education level and childhood vaccination acceptance [$X^2(df)= 3.127(1)$, *P*=0.077], occupation status and childhood vaccination acceptance [$X^2(df)= 0.741(1)$, *P*=0.389] and income level with childhood vaccination acceptance [$X^2(df)= 1.020 (1)$, *P*=0.312].

Mean difference of vaccination perceived benefits and barrier in vaccination reject group and vaccination accept group (n=384) was shown in Table 5. Since *P*-value is less than 0.05, we can reject the null hypothesis, and conclude that based on the results, it shows that, there was a significant difference in mean vaccination perceived benefits and barrier between parents who reject childhood vaccination and parents who accept childhood vaccination ($t_{df} = -3.75_{382}$, $P < 0.001$). The average mean of vaccination perceived benefits for parents who accept childhood vaccination was 0.34 higher than the mean of vaccination perceived benefits for parents who reject the childhood vaccination.

Mean difference of vaccination external cues in vaccination reject group and vaccination accept group (n=384) was shown in Table 6. Since *P*-value is less than 0.05, we can reject the null hypothesis, and conclude that the mean vaccination external cues for parents who reject childhood vaccination and parents who accept childhood vaccination is significantly different. Based on the results, it shows that, there was a significant difference in mean vaccination external cues between parents who reject childhood vaccination and parents who accept childhood vaccination ($t_{df} = -6.77_{382}$, $P < 0.001$). The average mean of vaccination external cues for parents who accept childhood vaccination was 0.77 higher than the mean of vaccination external cues for parents who reject the childhood vaccination.

DISCUSSION & RECOMMENDATION

Through this study, it was found that socioeconomics characteristics were not significant with childhood vaccination acceptance. Based from Department of Statistics, ethnics group with highest number is Malay (118,207 people) when compared to the other races (Indian= 5,319, Chinese= 4,731 and others=1,804) and age group with the highest number is 15-64 years old as compared to other age groups. Many respondents are government officers because the most distributed questionnaires were spread at government sector are such as hospital, clinic, and school.

Previous study done by Alshammari et al., (2018) stated that the majority of the respondents were aware of childhood vaccination (78.9%). Other 7% rejected the vaccination for their children. They have a lot of reason for their rejections and the top reason is "Did not think the vaccine was safe/concerned about side effects". Most parents chose "Did not think the vaccine was safe/concern about side effects". The percentage of it is 45.5% because most parents worry about the possible side effects that may be faced by their babies. By that, they take decisions to reject the vaccination for their babies. With the same reason, Bardenheier et al. (2004), conducted experiments on vaccination that causes serious side effects. Most parents who delayed vaccines for their children is due to the reports of fever as a side effect of vaccines and the largest proportion of parents are not trusting the benefits of vaccine given. Among the patients who were not vaccinated, doubts about efficacy of influenza vaccine and fear of its side effects became the reasons for them to avoid the vaccination.

"Someone else told that vaccination was not safe" was the second top reason of vaccine rejection (25.0%). Study by Smith et al. (2006), found that vaccination is not safe all the time. This is further proven with the report made by the parents who had previously vaccinated their children that caused some allergic problem in the skin. Some parents suggest that vaccine is not safe because children have to go through 8 injections of vaccines on different stages of age and that this is not safe for the children to go through the process.

The next top reason was "other beliefs/traditional medicine" (13.6%). A study in 2015 by Browne et al. stated that one of the reasons of rejection toward vaccine is parents believed in Complementary and Alternative Medicine (CAM) or in other word is traditional medicine (25.3%). Parents become more sceptical of vaccine's benefits over children and affected with misconceptions about vaccination. Next, based on the persons who are actively engaged in CAM such as homeopaths, this group of people have negative attitude towards vaccination and also influence people to go against the use of vaccines. Different with another study by Burghouts et al. (2017) found that mothers who believe in traditional healers are not influenced in decision making regarding the acceptance of vaccination for children. This study revealed that mothers believe more in the benefits of vaccination in term of medical than influenced by traditional healers.

"Had a bad experience with previous vaccinator/health clinic" shows 9.1% was the next reason for the parents to reject the vaccination. According to Dube et al. (2015), rejection of vaccine due to the previous experience of relative's pain after shots and spread assumptions that vaccine is not safe. Past experience from family and others become widespread and influence other people to refuse vaccination. Another study by Heyerdahl et al. (2018), people who refused vaccination si due to the experience of family members that became ill after vaccinated. Negative experience of adverse effects is worsen by lack of knowledge that influenced society as barriers of vaccination.

According to an investigation by Ophori et al. (2014), the greatest challenge in the acceptance of vaccination in Nigeria is religious belief. Muslims in north Nigeria have low immunity and lack of knowledge about vaccination. Christians have 24.2% immunization coverage compared to 8.8% Muslims. Thus, this study proved that the stronger Islamic influence, the higher the vaccine rejection. In a different study, Lee et al. (2011) found that rejection of vaccination is due to the belief of the use of aborted foetal tissue in the production of some vaccines. Muslims refuse to accept any vaccination after discovering it may contain product made from pork. Muslims also have the same sceptical with traditional medicine believers that vaccine are unneeded and unnecessary.

Seasonal vaccination did not vary across racial/ethnic groups or by education level, but was associated with gender, age and urbanicity (P -value=0.478) (Ezequiel, et al., 2011). The other study shows the significantly associated ($P= 0.241$) from 2000 respondents between the occupation status with the influenza vaccination. Some categories of occupation non-compliance with vaccination were inadequate available time, uncertainty about vaccine efficacy, and fear to injection (Song et al, 2016). According to Larson, et al. (2016), there was not enough evidence to suggest an association between the income level and vaccine confidence ($P=0.425$). They suggest that vaccination could be buffered by perceived importance, implying that people are willing to take a risk given an effective guard against disease.

The finding provides evidence that the respondents may receive both perceived benefits and barrier by taking the vaccination. Some parents take it positively even when their children after vaccine experienced several side effects such as fever, swelling, redness and many others. The parents give more importance to their children's health by preventing the chronic disease in the future. Besides that, some of the parents who reject the vaccination may be due to inability to go through the side effects of the vaccination. This finding was reliable as it is similar with the results in previous studies stated by Gerend et al. (2014), Ma et al (2007) and Juroskova (2011).

As highlighted by Gerend et al. (2014), the perceived benefits and barriers ($P= 0.01$) was significantly different between women's perceived barriers and increase of interest in receiving the HPV vaccine. Thus, parents of son often reported not vaccinating their son because of the perceived lack of direct benefits. Plus, some parents missed the opportunity to vaccinate their children for some reasons. Study by Ma et al. (2007) found that participants who had gained screening were more likely to perceive themselves to be at high risk for HBV infection compared to participants who had not been screened. Some women are mainly concerned about vaccine protection, whereas other cite perceived lack of need or practical concerns related to attain the vaccine. In addition, Juraskova et al., (2011) concluded that overall HBM predicted vaccination intention ($P<0.001$) and behaviour ($P=0.002$). However, only barriers ($P=0.029$) and benefits ($P=0.001$) independently predicted HPV vaccination intention.

The study by Stuckemann (2019) showed that there was a significant difference in heuristic cues with acceptance in vaccination ($P<0.001$). Researchers have studied the effect of external cues resulting the acceptance of vaccination. This relationship shows that people are exposed to social media tend to trust more the information in text. Thus, this proved the assumption of people's perception of credibility could be affected by social media and trusted people around.

The research study by Brown et al. (2015) found that there were no significant associations between HPV knowledge and influence of influential women ($P=0.003$). Based on this study, parents and family members are indirectly related to influence the acceptance of vaccination. Therefore, parents and family members are considered the closest and can be trusted until they can influence others in term of acceptance of vaccination. However, in a different study, Juraskova, et al. (2011) found a significant association for cues to action with vaccination acceptance (P -value= 0.167).

Ideally, this information should be demonstrated and deepened using qualitative methods to get the better information or other reasons. These qualitative methods can give opportunity to researcher to give advice directly to respondents who have rejected the childhood vaccination and improve future interventions. In addition, qualitative methods can be conducted in future study to obtain high level of reliability of the result. This research can be used for academic purposes and it may increase to the body of knowledge in health care sector. This current findings of research will be valuable for the university students who study wellness or health care industry. This research paper also can be used as a future reference for future research. This research would be an opportunity to the parents and future researchers to use it as the additional information for the study purpose. From this study, researchers hope for future research will report no parents will reject childhood vaccination anymore. Last recommendation from researches is, may government take part in giving consciousness about childhood vaccination to parents in Malaysia.

CONCLUSION

This study determined the acceptance of childhood vaccination among parents in Baling, Kedah. The findings are being concluded. Majority respondents were female (61.5%) answered the questionnaire and the average mean of age is 36.45 years old. The socio-economics characteristics which are education, occupation and income were found to have not enough evidence to suggest an association between education level and childhood vaccination acceptance. There was no relationship between socio-economic characteristics (income, education and occupation) with the acceptance of childhood vaccination among parents in Baling, Kedah. There was significant difference in perceived benefits and barrier between parents who accept the childhood vaccination and parents who reject the childhood vaccination. There also was significant difference in external cues to action between parents who accept the childhood vaccination and parents who reject the childhood vaccination.

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APPENDIX

Table 1: Characteristics of Respondents

| Variables | Mean (SD) | Frequency (n=384) | Percentage (%) |
|--------------------------|----------------|-------------------|----------------|
| Gender | | | |
| • Male | | 148 | 38.5 |
| • Female | | 236 | 61.5 |
| Age | 36.24 (10.367) | | |
| Race | | | |
| • Malay | | 185 | 48.2 |
| • Chinese | | 63 | 16.4 |
| • Indian | | 88 | 22.9 |
| • Others | | 48 | 12.5 |
| Education level | | | |
| • No schooling completed | | 20 | 5.2 |
| • SPM | | 119 | 31.0 |
| • STPM/Matriculation | | 54 | 14.1 |
| • Diploma | | 60 | 15.6 |
| • Bachelor | | 90 | 23.4 |
| • Master | | 31 | 8.1 |
| • PhD | | 10 | 2.6 |
| Occupational status | | | |
| • Not working | | 88 | 22.9 |
| • Self-employed | | 78 | 20.3 |
| • Government officers | | 121 | 31.5 |
| • Private sector | | 84 | 21.9 |
| • Pensioner | | 13 | 3.4 |
| Household Income | | | |
| • <RM1000 | | 118 | 30.7 |
| • RM1001-RM3000 | | 163 | 42.4 |
| • RM3001-RM5000 | | 80 | 20.8 |
| • >RM5001 | | 23 | 6.0 |

Table 2: Percentage of vaccination acceptance status

| Vaccination Status | Frequency (n=384) | Percentage (%) |
|--------------------|-------------------|----------------|
| Accept | 357 | 93.0 |
| Reject | 27 | 7.0 |

Table 3: Percentage of respondents who rejects according to the reason

| Reason of Rejection | Frequency | Percentage (%) |
|---|-----------|----------------|
| Did not think the vaccine was safe/concerned about side effects | 20 | 45.5 |
| Someone else told that the vaccine was not safe | 11 | 25.0 |
| Other beliefs/traditional medicine | 6 | 13.6 |
| Had a bad experience with previous vaccinator/health clinic | 4 | 9.1 |
| Religious reasons | 3 | 6.8 |

Table 4: Relationship between socio-economic characteristics and acceptance of childhood vaccination

| Variables | Acceptance of Vaccination | | χ^2 | df | p-value |
|-------------------|---------------------------|-----------------|----------|----|---------|
| | Reject n (%) | Accept n (%) | | | |
| Education Level | | | | | |
| • Low | 18 (9.3) | 175 (90.7) | 3.127 | 1 | 0.077 |
| • High | 9 (4.7) | 182 (95.3) | | | |
| Occupation Status | | | | | |
| • Unemployed | 9 (8.9) | 92 (91.1) | 0.741 | 1 | 0.389 |
| • Employed | 18 (6.4) | 265 (93.6) | | | |
| Income | | | | | |
| • Low | 22 (7.8) | 259 (92.2) | 1.020 | 1 | 0.312 |
| • High | 5 (4.9) | 98 (95.1) | | | |

Table 5: Mean difference of vaccination perceived benefits and barrier in vaccination reject group and vaccination accept group (n=384)

| Variable | Vaccination Acceptation | | t-value | df | P-value |
|---|-------------------------|---------------------|---------|-----|---------|
| | Reject Mean (SD) | Accept Mean (SD) | | | |
| Vaccination perceived benefit and barrier | 3.03 (0.59) | 3.37 (0.45) | -3.75 | 382 | 0.000* |

*P<0.001

Table 6: Mean difference of vaccination external cues in vaccination reject group and vaccination accept group (n=384)

| Variable | Vaccination Acceptation | | t-value | df | P-value |
|---------------------------|-------------------------|---------------------|---------|-----|---------|
| | Reject Mean (SD) | Accept Mean (SD) | | | |
| Vaccination external cues | 3.16 (0.66) | 3.93 (0.57) | -6.77 | 382 | 0.000* |

*P<0.001