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ORIGINAL ARTICLE

Youth perspective on vaccine hesitancy in Malaysia: A qualitative inquiry

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ABSTRACT

Vaccine hesitancy is one of the leading reasons for non-vaccination. World Health Organization has defined vaccine hesitancy as a delay in acceptance or refusal of vaccines despite the availability of vaccination services. Thus, any lack of convenience, confidence, and complacency may lead to vaccine hesitancy. The trend of vaccination hesitancy and refusal is snowballing due to the spreading of false information on the internet and social media. In this study, we focus on an exploratory qualitative study that investigates the youth perspective in Malaysia. The recruitment of the participants was based on a convenience sampling method. The in-depth interviews among youth from Universiti Malaysia Pahang aged between 18-27 years were conducted with adopted thematic analysis. Codes and themes were generated with investigator triangulation. The emerging themes were summarized into a conceptual model. In this study, 33 participants were interviewed. The majority of the participants were below 20 years of age (54.5%), and most of them were female participants (63.6%) of Malay ethnicity (72.7%). 93.9% of them were studying at the bachelor's degree level and they were all living with other students. Most of the participants (78.8%) used smartphone/tablet as the main platform for exchanging information and 69.7% of them spent about 4 to 6 hours on social media per day. A total of 5 themes and 12 sub-themes were extracted from 101 codes and 12 subcategories. Three themes stipulated by participants were 1) knowledge on infectious diseases, 2) knowledge on the vaccine, 3) information evaluation contributed to confidence issues in vaccine hesitancy. Whereas the other two themes were 4) perception of the vaccine and 5) perception on hesitancy issue contributed to factors influencing complacency in vaccine hesitancy. None of the participants mentioned factors contributing to convenience issues. In conclusion, these five themes contributed to three main components of vaccine hesitancy in Malaysia.

Key words: vaccine hesitancy, qualitative study, youth, Malaysia

INTRODUCTION

Vaccine hesitancy is defined as a delay in acceptance or refusal of vaccines despite the availability of vaccination services. Thus, any lack of convenience, confidence, and complacency may lead to vaccine hesitancy[1]. Ranging from total refusal to total acceptance of all vaccines[2]. According to the previous research[3,4,5,] this comprises those that refuse certain vaccines but accept certain others. About 8.9% to 28.2% was the prevalence range of vaccine hesitancy in the western countries[1,6,7,8] and 11.1% in Malaysia and 11.6% of the parents investigated were regarded to be vaccine-hesitant[9]. Different settings and study populations might cause this variation. This hesitancy phenomenon is spreading wider and at a worrying level in some regions.

Vaccine hesitancy can be detected when the level of vaccination acceptance is lesser than estimation compared to the extent of service availability and information provided. This phenomenon is complex due to its variation across the place, time, types of vaccine, and context[9]. The level of seriousness of the hesitancy issue varies across countries and places. Out of 13 immunization managers (IM) investigated representing 13 countries and World Health Organization (WHO) regions, 11 of them reported that hesitancy issue was uncommon in their countries and the impact on vaccination uptake of the routine immunization programs was insignificant. Two other IM, however, had different stories in which the hesitancy issue was in the worrying state[9]. Several Majority-Muslim-populated countries were experiencing a snowballing increase of vaccine-preventable diseases such as diphtheria, measles, polio, pertussis, and tetanus. More than 80% of the parents reported refusing influenza vaccination to their children in Saudi Arabia1. Developed countries such as the United States has been linked with the phenomenon of vaccine refusal-vaccine preventable diseases association with religious factor as the major cause in the case of measles vaccination[10,11,12].

Vaccination coverage estimation nationally reflects less about variability in a country[13]and the cluster of under-vaccinated individuals can lead to the increased vaccine-preventable-disease transmission[14]. Parents that accept vaccines for their children can still be doubtful and fearful towards immunization[14,15,16,17,18]. Moreover, the trends of public confidence towards vaccines are declining while anti-vaccine movements are inclining in Europe, North America, and other parts of the world[14].

What is more worrying, the decision-making on vaccination is complex involving other than cognitive factors such as spiritual, cultural, social as well as political[6,19]. This problem related to unemotional science-based vaccination information with academic language faced challenges to be accepted by the audiences due to a much more appealing anti-vaccine rhetoric[20]. These anti-vaccine groups influenced people by sharing personal experiences, information, and knowledge[21]. Review studies on the websites and social network contents regarding vaccination were mostly incorrect and negative[9]. Dr. Andrew Wakefield's The Lancet publication and Vexed documentary just made the condition worse as he associated MMR vaccine to autism and alleged the Centers for Disease Control and Prevention (CDC) for covering up vaccination's 'dark sides'[21]. Traditional media such as local newspapers had been utilized as a platform to spread anti-vaccine campaigns and successfully decreased the acceptance rate of certain vaccines significantly[22].

Malaysia has achieved immunization coverage among infants and

young children of more than 95% (IPH, 2016), and 90% of the participants never delayed or refused childhood vaccination[10]. Yet the number of refusal parents doubled from the year 2013 to the year 2014, from 470 cases to 1292 cases. Since the data from private health clinics were not included, the number could be higher[23,24]. Malaysia was among the countries that faced an increment in the number of cases of vaccine-preventable diseases. One of the contributing factors detected was the refusal and hesitancy rates of Muslim parents against childhood vaccination. Measles cases in Malaysia increased by 77.4% from the year 2015 to 2016 and the number of refusal parents[22] nearly tripled from the year 2013 to 2015.

Complacency, convenience, and confidence in vaccinations were among contributing factors of hesitancy while religion, culture, socio-economic, influential leaders, geographical barriers, vaccination past experiences, belief and attitudes about health and prevention were among other factors[10]. Vaccine safety and effectiveness were the doubtful factors among unemployed parents[25] and infection can form better immunity development compared to the vaccine[9].

Unemployed and younger age group parents, mothers expecting first child, and non-Muslims were more vaccine-hesitant significantly with $p<0.05$, meanwhile, ethnicity, household income, educational level, and gender were not significantly associated with vaccine hesitancy. However, the combined characteristics of educational level and monthly household income with unemployment did have a significant association with vaccine hesitancy. Due to the lack of personal experiences unlike parents of older age groups with at least one child, they were more vulnerable to misinformation on the internet and social media networks especially when these were their primary information[9]. Therefore, in this study, we focus to explore youth understanding of vaccinations and to investigate their perspective on vaccine hesitancy issues in Malaysia.

METHODOLOGY

Study design, data collection, and study instrument

The study design was an exploratory qualitative study via background information questionnaires (Part A) and an in-depth interview (Part B). In the interview sessions, each of the participants is given a Participant Information Sheet (PIS) to brief them about the research background and an Informed Consent Form (ICF) to be signed on upon agreeing to participate in the study. After filling up Part A questionnaires, the interview session based on semi-structured questions is commenced one-to-one in a closed room or area for private security. Each interview session was audio-recorded. Part A questionnaire is purposed to collect demographic data of the participants. Part B interview is to explore: their knowledge on infectious diseases and vaccination; their perspective on vaccine hesitancy issue; and their capacity to evaluate information reliability.

Target population and study setting

Target populations were Malaysian youth who had received vaccination through the National Immunization Program (NIP). Inclusion criteria were: 1) youth aged between 18 to 27 years old. Exclusion criteria were candidates who were unable to converse in Malay or English and Medical/Biology-related students. The 33 participants (n=33) managed recruited from Universiti Malaysia Pahang (UMP) from both campuses: Gambang (3 faculties) and Pekan (2 faculties) based on purposive and

convenience sampling method. In a homogenous sample, at least 12 participants are required before thematic saturation is achieved[26].

Data Analysis

The audio-recorded data from the interviews are transcribed into a written form and then translated from Malay to the English language. Once translated, the data were analyzed based on a thematic analysis approach consisting of familiarization, coding, categorizing, and theme generation processes. Familiarization involves searching for meanings, repetitions, and patterns of the data set. Coding and categorization steps coded the familiarized raw data in shorter and concise forms before systematically organizing the codes. At last, in the theme of the generation process, the codes are organized and then collated to identify significant and broader patterns of meaning for potential themes. The themes were reviewed multiply and revised as they were developing. Some themes either collapsed into each other or were divided into smaller units. They are progressively refined until the final and informative themes are found. Codes and themes are generated with investigator triangulation. Three different researchers used to extract key-themes and sub-themes based on their viewpoints to make consensus agreement the emerging themes then are summarized into a conceptual model.

RESULTS

Based on the percentage shown in **Table 1**, the majority of the participants aged below 20 years (54.5%), and mostly they were female participants (63.6%), Malay ethnicity (72.7%) and from Johor (21.2%) and Kelantan (18.2%) place of origin. 93.9% of them were studying at the bachelor degree level and they were all living with other students. In terms of access to the internet, all of them except one participant had access. Most of them (78.8%) used smartphone/tablet as the main platform for exchanging information and 69.7% of them spent about 4 to 6 hours on social media per day.

Table 1 Demographic data

Demography	Number of participants (n=33)	
Gender	Male	12
	Female	21
Ethnic	Malay	24
	Chinese	4
	Indian	2
	Other	3
Place of origin	Kelantan	6
	Kedah	2
	Pulau Pinang	1
	Perak	3
	Selangor	1
	Negeri Sembilan	1
	Johor	7
	Pahang	3

The five themes extracted are 1) knowledge on infectious diseases, 2) knowledge on the vaccine, 3) information evaluation, 4) perception on the vaccine, and 5) perception on vaccine hesitancy issue. These 5 themes and 12 sub-themes are extracted from 101 codes and 12 subcategories shown in **Figure 1**. There is no significant difference between themes among those aged below 20 years old and older. There are none of the participants expressed the reason for vaccine hesitancy is related to convenience issues.

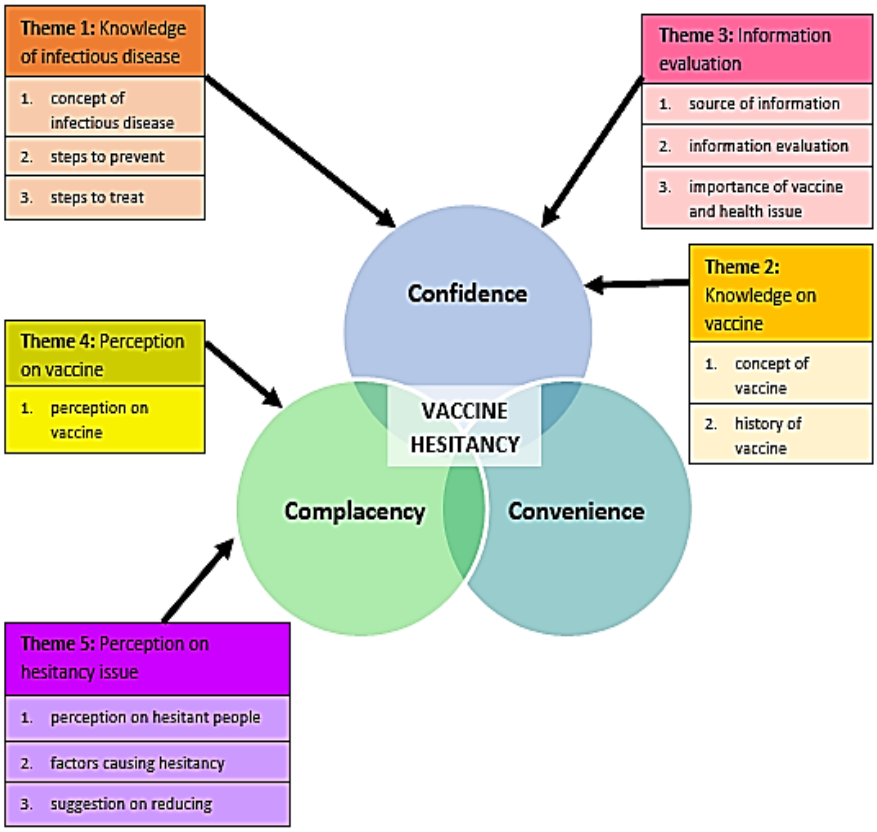

Figure 1 Conceptual model of Youth Perspective on Vaccine Hesitancy in Malaysia

In the first theme (knowledge of infectious diseases), the first subcategory was about the 'concept of infectious diseases'. The most codes found were the 'examples of infectious diseases' such as chickenpox and HIV and infection happens 'through certain media: blood, touch, air, sex, food, saliva and fluid'. There were also unusual codes see **Figure 2**, one of the students says, chickenpox can be 'due to dirt' and infection is 'related to blood type'. The second subcategory was discussing the 'steps to prevent infectious diseases' with 'vaccine' and 'staying away from infected people' as the top two codes found. 'Natural sicknesses were the unusual code found in the subcategory. The third and final subcategory from the first theme conversed the 'steps to treat infectious diseases' that consisted of 'obtaining further treatment from doctors/clinic/ hospital' and 'obtaining antibiotics' as the codes.

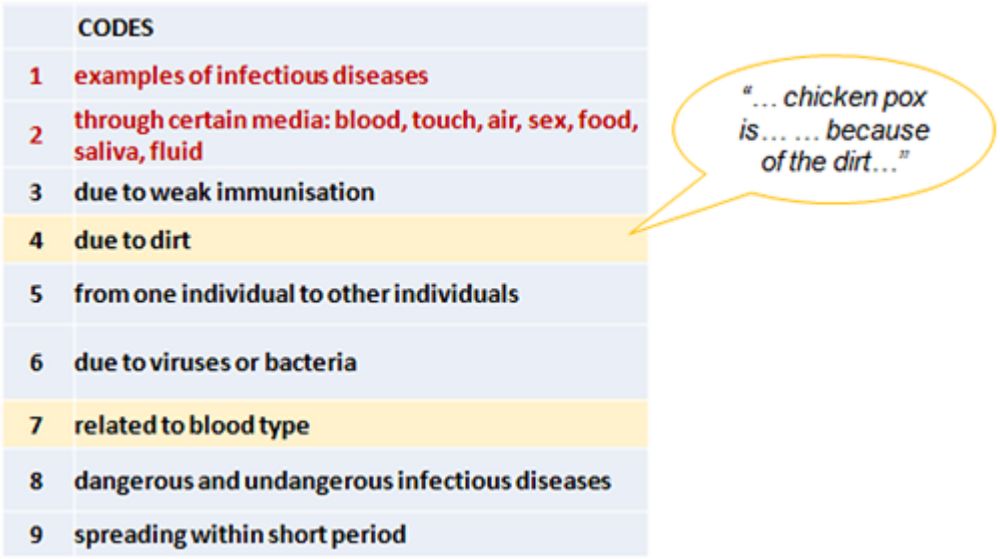

Figure 2 Represent the coding for theme 1 and subcategory 1.

The second theme comprised of 2 subcategories: 'concepts of vaccine' and 'history of vaccine'. In the first subcategory, the most found codes for the 'concepts of vaccine' as shown in **Figure 3**, were vaccine is about 'injecting dead, weakened, inactive, viruses, antigen, diseases, pathogens, germs, microorganisms, bacteria, cells of the disease to produce antibodies to fight against the diseases in the future' and vaccine is 'to increase body's immunization, defense system, immune cells'. However, there were also unusual concepts such as vaccine is about 'injecting antibodies', 'implanting serum', 'given before and after obtaining diseases' and 'vaccine is from the plant'. For the second subcategory, the only code discovered was the 'history of BCG vaccination'.

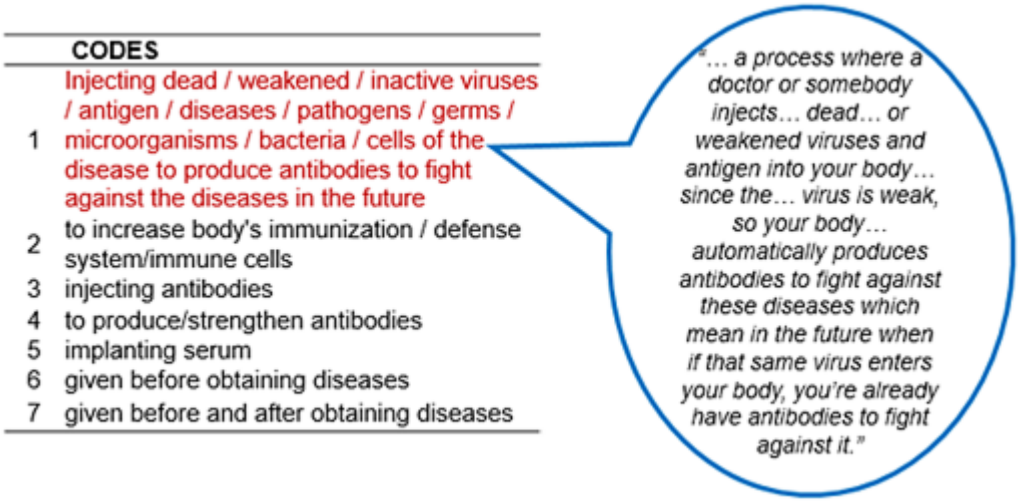

Figure 3 Represent the coding for theme 2 and subcategory 1.

Information evaluation was the next third theme consisting of 3 subcategories namely 'sources of information', 'information evaluation' and 'importance of vaccine and health issue'. In the second subcategory (information evaluation), the

most code stated that, the information was 'reliable if it is from Ministry of Health, medical background people, hospital' and 'on social media, reliable if from medical background people, credible people, has been certified, have evidence, based on facts and statistics'. A few of the participants nonetheless 'only look for information when needed and timely available' and 'will study more about vaccine once married' as quantified in the third subcategory (importance of vaccine and health issues) see **Figure 4**.

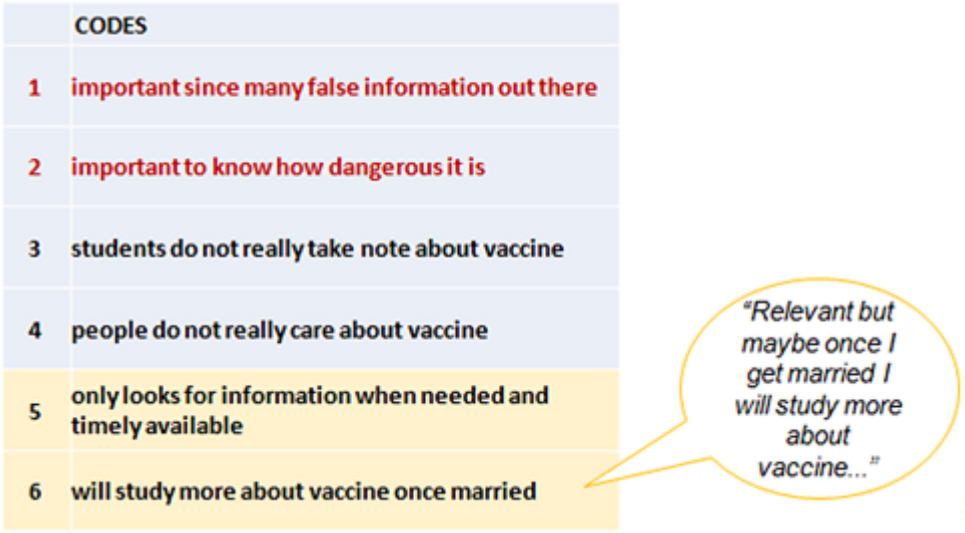

Figure 4 Represent the coding for theme 3 and subcategory 3.

Moving on to the fourth theme: 'perception of vaccine', the only subcategory was also named 'perception on vaccine'. Majority of the participants agreed that vaccine is good and especially 'needed for newborns and kids due to their weak antibodies' other than 'prevention (by the vaccine) is better than cure'. A number of participants stated that vaccine is 'needed to protect us from bad eating habit', 'some vaccines are needed, some vaccines not really needed, depending on situations' see **Figure 5** and one of the participants had 'trust issue with vaccines, doctors, hospitals'.

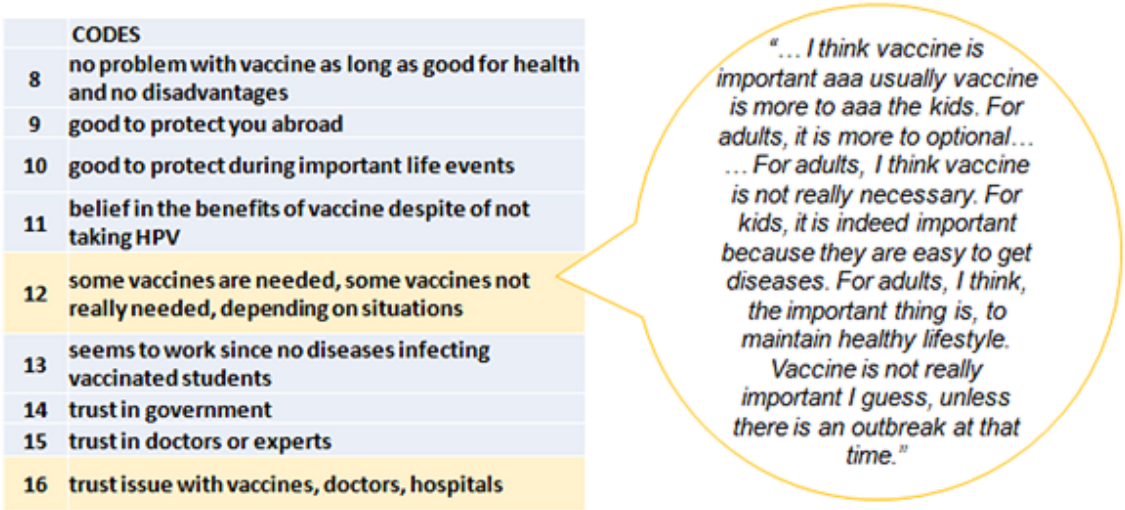

Figure 5 Represent the coding for theme 4 and subcategory 1.

The last theme was 'perception of hesitancy issue'. 3 subcategories were found from this theme. The first subcategory was on 'perception of hesitant people'. Interesting codes found: 'depends on the individuals to accept vaccine or not', 'weird because they used to receive the vaccine and already benefitted from it' and 'will still get the disease if it is meant to be that way despite already receiving vaccine' see **Figure 6**. The second subcategory was about the 'factors causing hesitancy' such as 'fear of having bad effects' and 'easily influenced without looking for further information'. For the third and last subcategory, the participants were talking about 'suggestions on reducing hesitancy issue' that consisted of codes such as 'to spread the information and education more' and 'to revise the method used when asking vaccination permission'.

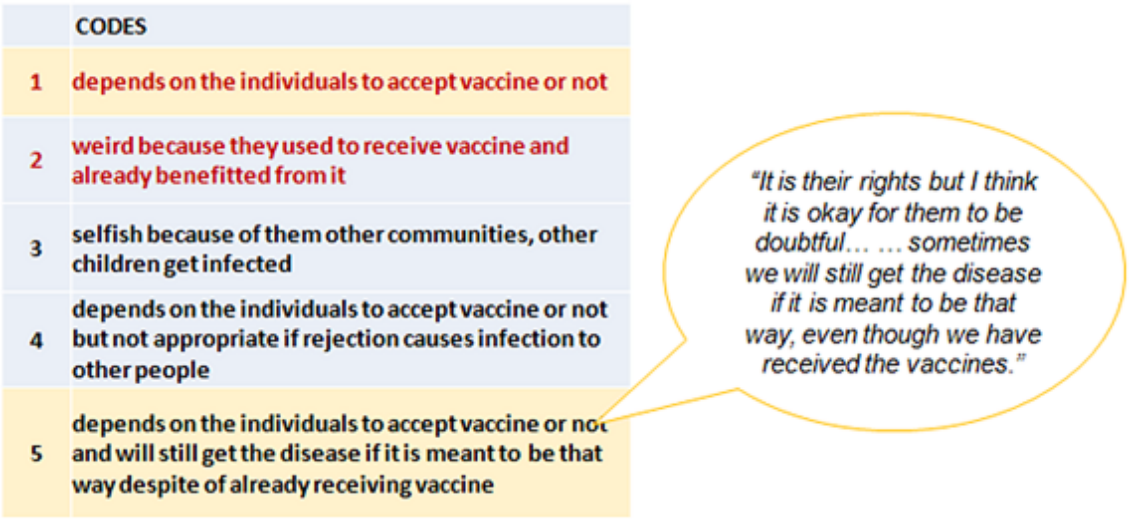

Figure 6 Represent the coding for theme 5 and subcategory 1.

Based on this qualitative study, the observation made was that the majority of participants have basic knowledge of infectious diseases and vaccination. They have the ability in evaluating information and regarded vaccine as required. Only one of the participants was found to be hesitant due to information and analysis inadequacy prior to vaccination.

DISCUSSION

Any lack of convenience, confidence, and complacency may lead to vaccine hesitancy[1]. In the study, we identified misconceptions in the concept of infectious diseases among the participants such as "chickenpox is due to dirt", "infection is related to blood type" and "infectious diseases can be dealt with via natural sickness". Lack of knowledge about infectious disease may lead to a lack of confidence towards vaccination[27]. Moreover, there were misconceptions in the concept of vaccination such as "vaccine is about injecting antibodies, implanting serum, and vaccines are from plants". Other participant says "vaccine was given before and after obtaining diseases" and "given to new-borns to avoid getting diseases once grown-up". Lack of knowledge about vaccines may also reduce confidence[28, 29]. Some participants thought that a vaccine is required for protection against bad eating habits. It was found out that some of the participants lack knowledge in the vital

concept of herd immunity when they stated that it depends on the individuals to accept vaccine or not. There was one of the participants who hesitant with the vaccine due to information and analysis inadequacy before vaccination other than having a trust issue with hospitals and doctors. One of the participants demanded an individual medical check-up before assigning a vaccine to ensure that the vaccine ingredients are not harmful. Other than the hesitancy issue possessed by one of the participants and several misconceptions, the majority of the participants do have basic knowledge in infectious diseases and vaccination, strong ability in evaluating information, regarded vaccine as required. In our study, however, we could only have made a rough estimation of their knowledge and hesitancy levels. A current qualitative study addressing five themes stipulated by the Malaysian youth contributes to vaccine hesitancy. Therefore, a quantitative study is recommended in the future to reveal the magnitude of each theme which later contributing to vaccine hesitancy among youth in Malaysia.

CONCLUSIONS

The knowledge of infectious disease and information evaluation plays a major role in building confidence towards vaccination. Knowledge of vaccines strongly contributes to convenience components in vaccine hesitancy. Perception of vaccine and perception of vaccine hesitancy contributes to complacency components. Finally, we conclude, these five themes contribute to three main components in vaccine hesitancy among youth in Malaysia.

RECOMMENDATIONS

1. A quantitative study should be conducted in the future to address the magnitude of each factor contributing to vaccine hesitancy among youth in Malaysia.

2. A private and public healthcare sector is recommended to provide continuous health education to deliver knowledge on infectious diseases, and knowledge on the vaccine/vaccination.

3. Perception of vaccine and perception on vaccine hesitancy issue could be tackle by promotes awareness and more campaigns involving youth and at the same time may deliver adequate information regarding vaccine and vaccination in Malaysia.

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