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Barriers to measles mumps rubella vaccine acceptance in the three southern border provinces of Thailand

Uraiwan Sirithammaphan, Ubontip Chaisang, Kwanjit Pongrattanamarn
Faculty of Public Health and Allied Health Sciences, Praboromarajchanok Institute, Sirindhorn College of Public Health Yala, Yala, Thailand

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Corresponding author:
Uraiwan Sirithammaphan, MNS, PhD
Sirindhorn College of Public Health Yala, 91 Tesaban 1 Rd., Yala, Mueang, Thailand
Tel: +66-993166464, Fax: +66-073-213234
E-mail: Uraiwan@yala.ac.th

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Purpose: This qualitative study utilizing phenomenological methodology aimed to depict parental measles mumps rubella (MMR) vaccine acceptance through the work experiences of health personnel.

Materials and Methods: Twenty-two public health workers working as vaccination providers in the three southern border provinces of Thailand were recruited. In-depth, face-to-face, semi-structured interviews were conducted. Data were analyzed using thematic analysis.

Results: Four main themes emerged: (1) religious beliefs, (2) personal disagreements, (3) fear and mistrust regarding potential vaccine side effects, and (4) misperceptions about the potential severity of measles. Four subthemes were identified: (1) haram (prohibited), (2) the will of Allah, (3) spousal disagreement, and (4) disagreement from a religious leader. The results of this study indicated that perceived religious prohibition was the most important reason for refusing to vaccinate among Muslim parents. Vaccine-hesitant parents were concerned that the vaccine might contain gelatin derived from pig products. Also, halal certification of the vaccine was required from Muslim parents to ensure that vaccine has been approved for Muslims. Meanwhile, a lack of knowledge and positive attitudes concerning immunizations of vaccine-hesitant parents were also found as predominant reasons for incomplete childhood immunizations in the deep south of Thailand.

Conclusion: Health education and engagement by religious leaders to endorse the vaccination and bridge the gap between religious beliefs and vaccine acceptance is needed to overcome this issue. This study findings could be effectively applied to improve vaccination uptake in a Muslim majority context.

Keywords: Vaccination awareness, Vaccine refusal, Vaccine hesitancy, Measles-mumps-rubella vaccine

Introduction

Vaccines are currently necessary for controlling the onset and prevalence of infectious diseases [1]. In 2018, data from the Thai Bureau of Epidemiology indicated that there was a major outbreak of measles in the lower part of the southern region of Thailand with a total of 4,450 reported cases of fever or suspected measles. The three southern border provinces with the Muslim majority populations had the highest number of suspected measles cases (n=3,898). There were 1,621 cases and 10 deaths (307.42 per 100,000 population), 1,788 cases and 10 deaths (251.90 per 100,000 population), and 489 cases and 1 death (61.41 per 100,000 population) in the Yala, Pattani, and Narathi-

wat provinces, respectively [2]. This notification activated authorities to promptly investigate the cause of the outbreak and to provide proper recommendations. A report and relevant study illustrated that incomplete measles vaccine or vaccine for measles, mumps, and rubella (MMR) in children due to parental vaccine refusal was the major cause of the problem [3]. A report from the Department of Disease Control, Ministry of Public Health, indicated that between 1 January and 31 December 2020, 89% of 336 patients with measles dwelling in the deep south of Thailand had not received MMR vaccines [4]. Previous studies indicated that in the Muslim majority region containing the three southern border provinces of Thailand, aside from violent conflict and situations, individual beliefs and social context were the important factors affecting parental vaccine acceptance [3]. After a major outbreak of measles, it was evident that there was a scarcity of information about the major causes of parental vaccine refusal and hesitancy in the Muslim majority provinces, especially from the perspectives of health personnel. Thus, a qualitative phenomenological study regarding barriers to MMR vaccine acceptance through the experience of health personnel was needed. The study findings could be effectively applied to improve vaccination uptake in a Muslim majority context.

Materials and Methods

This study employed a qualitative phenomenological methodology as described in greater detail throughout this section to depict parental MMR vaccine acceptance through the work experiences of health personnel [5].

Study setting and participants

Twenty-two public health workers working as vaccination providers in the three southern border provinces of Thailand, with at least 6 months of experience, were recruited using purposive sampling strategies.

Methods

In-depth, face-to-face, semi-structured interviews were conducted. Data were collected between January and June 2020 for 6 months in total. Finally, data were analyzed using thematic analysis [6].

Ethics statement

Ethical considerations and approval were made by the Ethics Committee for Human Research Subjects of the Faculty of Public Health and Allied Health Sciences, Praboromarajchanok Institute, Sirindhorn College of Public Health Yala, Thailand (approval no., 054/2563).

Results

Four main themes and four sub-themes surrounding the reasons for parental vaccine refusal and hesitancy were identified as the major issues hindering the willingness of parents to vaccinate their children against measles.

Theme 1: Religious beliefs

Due to parental vaccine refusal, it was important to seek the answers for why many parents in this area remained unamenable and, at times, threatening toward health providers. Study findings illustrated that one of the complications in decision-making for Islamic parents deciding not to vaccinate their children was Islamic beliefs. Perceived religious beliefs seemed to be the major cause of parental vaccine refusal and hesitancy as well. Two sub-themes emerged consisting of "*haram*" and "*the will of Allah*" were identified in the theme of religious beliefs.

Haram (prohibited)

Muslim parents place great value on consuming only food, medicine, and cosmetics that are deemed "halal" (following the rules and regulations of Islam). They also carefully avoid things which may be "haram" (something prohibited in Islam). Some Muslim parents believed that the MMR vaccine was prohibited in Islam due to the haram ingredients. They also felt that the absence of halal labelling reinforced their decision not to vaccinate their children. Many parents believed that the MMR vaccine contained haram ingredients or unclean content. One participant illustrated this situation by saying, "Most parents who denied vaccine said that our vaccine is haram. They asked me to show the halal symbol. They also thought that the vaccine contained pork." In fact, the parents were unaware that all of the vaccines used in the Thai national immunization schedule are free of porcine substances. Despite the fact that health professionals tried to inform the parents, they still did not believe that the vaccine did not contain pork products. Another participant described this phenomenon in the following statement: "Even though I tried to tell them that the vaccine is not made from pig products, they (parents) still did not believe me, and they said that the vaccine is not halal."

The will of Allah

"The will of Allah" or "prescription from Allah" was mentioned among parents who did not accept the MMR vaccine because they believed that vaccination is against the will of God. Being a believing Muslim, some parents believed that illnesses, health conditions, as well as other ailments might be an effect of the will of Allah. Health providers who were participants in our study mentioned that, "Parents believe that Allah already plans everything for them including illness, and the God also has created its treatment. Although their children do not get the vaccine, they may not get the disease, if Allah does not provide the illness to them." Another health provider described that, "They (parents) said that if Allah has created the disease for their children, they will inevitable get the illness, whether their children receive a vaccine or not." For these reasons, the local health providers were faced with the major challenges from parents regarding the acceptance of vaccination.

Theme 2: Personal disagreements

Spousal disagreement

According to the socio-cultural context of Muslim families in the study setting, the husband is generally assumed to be the head of his family. Consequently, the husband has the predominant role in the decision to either accept or deny vaccination against measles. Lack of permission from the husband to receive a vaccine was identified as a barrier to the vaccine acceptance. These excerpts from some participants outline the important role of husbands in relation to vaccine hesitancy and refusal: "She (mother) repeatedly told me several times that her husband does not exactly approve of the MMR vaccine for his children." and "Mothers would not take their children to receive vaccination if their husbands do not allow it." The study findings illustrated that sometimes husbands did not approve of their children's vaccinations because of the lack of health communication between health providers and both spouses regarding the importance of vaccinations. Another barrier was the physical absence of the husbands at vaccination appointments. Many Muslim husbands were not physically present because they were performing a noble duty as a preacher called "Dawah." Dawah or religious promotions means to invite non-Muslims to accept Islam. The husbands could be absent due to personal responsibility performing dawah activity for long periods of time. For example, some participants stated, "Some mothers of our target children claimed that their husbands have travelled to other far away cities, or other countries for the purpose of dawah for months. Sometimes they had been absent for one month. Sometimes they had been absent for four months. So, she did not make a decision without her husband." Indeed, parents that refused their children's vaccination sometimes claimed that spousal disagreement was the reason. One of the participants stated, "From my previous experience because parents did not accept the vaccine, they tried to claim many reasons to avoid taking the vaccination."

Disagreement from a religious leader

In Muslim society, the Islamic religious leader (called "Toh imam" or "Imam") plays an important role in Islamic leadership. The personal power attributed to Imam is very strong because he takes an action both as a spiritual advisor and expert in Islamic law. Our study findings illustrated that Islamic religious leaders of some areas in the deep southern region of Thailand brought the vaccine promotion campaigns launched by health professionals to a halt by calling on parents not to allow their children to be immunized. Some examples from the participants revealed, "Some Muslim communities where vaccination was refused believed their Imam. Because some Imams ruled that MMR vaccines contained haram ingredients, the communities' members then refused the vaccines as they believed that immunization is prohibited." and "There is around 30% of non-vaccinated children under my responsibility. Many of which are not vaccinated because of disapproval of Imams."

Theme 3: Fear and mistrust regarding potential vaccine side effects

Though the measles vaccine has been demonstrated to be extremely safe, many parents refused vaccinations for their young children because they perceived that the MMR vaccine presented a greater risk than the disease. Fear and mistrust regarding potential vaccine side effects, particularly fever and local injection site pain, seemed to be one of the major causes of vaccine refusal and hesitancy. These negative consequences affected routine and daily life including the work days of the parents. For example, participants described that "They (parents) rejected MMR vaccine because they perceived that the vaccine causes negative symptoms, such as pain and fever. If children have fever and pain, parents will take care of them. This affects parents' routine on work days and daily life." and "From my experience, many parents are still hesitant to accept MMR vaccination because they are worried about negative side effects of the vaccine, especially

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fever and pain."

Theme 4: Misperceptions about the potential severity of measles

Some children had not been vaccinated against measles because their parents perceived that measles was not a serious problem or was not severe. The parents thought that children may have measles rash for over one week, and that most of them can recover within 2–3 weeks, while the MMR vaccine has the potential to cause serious outcomes. For example, some participants said that "They (parents) told me that the rash will usually disappear without treatment." or "They said that they are more worried about the vaccine than the disease." Our study findings revealed that the impacts of measles remain visible. However, given that the impacts still do not result in life-threatening conditions, the parents believed the impact of the disease was not worth worrying about.

Discussion

Our study findings concluded that considering religious beliefs is essential for understanding vaccine refusal among Muslim parents. Because the MMR vaccine contains gelatin as a stabilizer, vaccine-hesitant parents are concerned that the vaccine may contain gelatin derived from pig products. Most relevant studies concluded that perceived religious prohibition is one of the most important reasons for refusal to vaccinate among Muslim parents [7,8]. Wong et al. [7] in 2020 illustrated that perceived religious prohibition is one important reason for refusal to vaccinate among vaccine-hesitant parents in Malaysia. They believed that vaccines were haram because they contained porcine ingredients [7]. Several studies, nevertheless, illustrated that vaccination is permitted whether it contains porcine substances or not due to the exceptional circumstances [9-12]. As Padela et al. [10] in 2013 revealed, one group of Islamic jurisconsults hold that using vaccines with porcine products is allowed on the determination when it reaches the state of "darurah" or necessity. Also, Elkalmi et al. [11] in 2021 concluded that vaccines with non-halal ingredients are permissible in the absence of other equivalent halal products. Consistent with the study by Grabenstein [12] in 2013, vaccines could be used if necessary. According to the Qur'an, a person is not guilty of sin in an exceptional circumstance where the scarcity of a halal alternative creates a necessity to make an undesirable consumption, which is otherwise haram (Qur'an 2:173) [12].

In fact, Thailand imports measles vaccine products that do not contain pig products including porcine gelatin according to Thai health official, Dr. Vichan Pawan, Director of the Division of Communicable Diseases, Ministry of Public Health, Thailand [13]. Misconceptions, in terms of the vaccine ingredients among vaccination-refusing parents, was a major concern of vaccine hesitancy and refusal, not only in Thailand but also in many Muslim majority countries. Khan and Sahibzada [14] studied the refusal of oral polio vaccination among Islamic parents in Pakistan. They found that the parents believed that the oral poliovirus vaccine was not permitted in Islam because it contained the blood of monkeys and pigs called haram ingredients [14]. In the meantime, halal certification of the vaccine was required from Muslim parents to ensure that vaccine had been approved for Muslims. Previous studies confirmed that the halal status of vaccines is the most important factor for Muslims in considering whether to accept vaccinations or not [14-16]. The broad topic of vaccine production and halal certification of vaccines has been discussed. Khoo et al. [16] in 2019 stated that the demand for halal pharmaceutical products in the future will definitely escalate. Malaysia has cooperatively collaborated with a Saudi Arabian private startup company to launch a program named "Self-Reliance in Vaccine Production," which targets inadequately supplied Halal vaccines. The process of the halal vaccine has been underway to meet the qualifications for approval from a drug regulatory agency or the World Health Organization. These steps need to be met before the products are released to the public [16].

In Thailand, however, due to the absence of halal labeling, community and religious leaders play an important role in endorsing the use of vaccines including advocacy for immunization. They could inform and educate community members. They could share information about the manufacturing process along with assurances that no trace of the porcine substance remains in the products, so that community members have less doubt about getting the vaccines [9]. Furthermore, health education and engagement by religious leaders to endorse the vaccination and bridge the gap between religious beliefs and vaccine acceptance is needed to overcome this issue.

In addition, a lack of knowledge and positive attitudes concerning immunizations of vaccine-hesitant parents were also found as predominant reasons for incomplete childhood immunizations in the deep south of Thailand. The negative attitude towards vaccination of people who refused to be vacci-

nated stemmed from poor knowledge or misconceptions. These misconceptions may positively change after parents receive the right information [17]. Consistent with many relevant studies, for instance, Yigit et al. [18] in 2021 concluded that participants were hesitant about childhood vaccines because of the side effects of vaccinations. Also, they perceived that the vaccines may cause autism due to the chemical ingredients contained in the vaccines [18]. Finally, vaccine refusal and hesitancy may be fueled by health information and education obtained from a variety of sources, traditional media outlets, social media platforms, and interpersonal information sharing. Thus, these same information outlets can be utilized to encourage more positive attitudes regarding vaccines in local communities [19,20].

In conclusion, religious beliefs and a lack of knowledge including negative attitudes concerning immunizations were the predominant causes of parental vaccine refusal in the deep south of Thailand. Community and religious leaders play an important role in endorsing the use of vaccines including advocacy for immunization. The negative attitude towards vaccination by people who refused to be vaccinated stemmed from poor knowledge or misconceptions. Both knowledge and perception may positively change after parents are provided the right information. Finally, information released through traditional media outlets, social media platforms, and interpersonal information sharing can encourage more positive attitudes regarding vaccines in local communities.

ORCID

Uraiwan Sirithammaphan *https://orcid.org/0000-0002-0418-8683*
Ubontip Chaisang *https://orcid.org/0000-0001-9020-7133*
Kwanjit Pongrattanamarn *https://orcid.org/0000-0002-2872-8082*

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